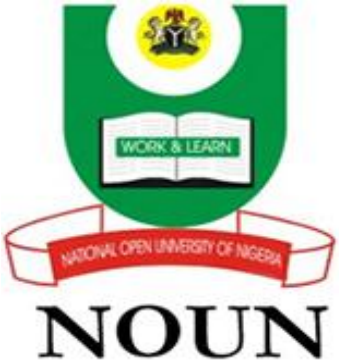

NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY SOCIAL SCIENCES

MONETARY THEORY AND POLICY

ECO 343

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COURSE GUIDE

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Introduction

Welcome to ECO: 343 MONETARY THEORY AND POLICY.

ECO 343: Monetary Theory and Policy is a three-credit and one-semester undergraduate course for Economics student. The course is made up of nineteen units spread across fifteen lectures weeks. This course guide gives you an insight to monetary theory and policy in an elementary way and how to study the economy in larger dimension. It tells you about the course materials and how you can work your way through these materials. It suggests some general guidelines for the amount of time required of you on each unit in order to achieve the course aims and objectives successfully. Answers to your tutor marked assignments (TMAs) are therein already.

Course Content

This course is basically on monetary theory and policy and the topics covered include the analysis of monetary policy, monetary policy: instruments and types, changes in the value of money: the quantity theory of money and its variants, supply and demand for money and other Keynesian approaches of demand for money.

Course Aims

The aims of this course is to give you in-depth understanding of monetary policy analysis as regards

- Fundamental concept of monetary policy
- To familiarize students with monetary policy instruments and types
- To stimulate student's knowledge on changes in the value of money
- To make the students to understand supply and demand for money.
- To expose the students to rudimentary analysis of other Keynesian approaches of demand for money.

Course Objectives

To achieve the aims of this course, there are overall objectives which the course is out to achieve though, there are set out objectives for each unit. The unit objectives are included at the beginning of a unit; you should read them before you start working through the unit. You may want to refer to them during your study of the unit to check on your progress. You should always look at the unit objectives after completing a unit. This is to assist the students in accomplishing the tasks entailed in this course. In this way, you can be sure you have done what was required of you by the unit. The objectives serves as

study guides, such that student could know if he is able to grab the knowledge of each unit through the sets of objectives in each one. At the end of the course period, the students are expected to be able to:

- Define and understand the meaning of monetary policy
- Know the objectives or goals of monetary policy
- Define and understand the Full Employment and Economic Growth
- Understand the relationship between Full Employment, Price Stability and Balance of Payment.
- Understand Price Stability and Balance of Payment
- Define and understand the term Targets of Monetary Policy
- Understand the meaning of Market yield on Equity
- Know the basic indicators of Monetary Policy
- Define and understand monetary strategies in Nigeria
- Understand Effectiveness of monetary policy in Nigeria
- Understand the overview and framework for monetary policy in Nigeria
- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts
- History of Monetary Policy
- Understand the role of monetary policy in a developing economy
- Know the limitations of monetary policy in less developing countries.
- Understand Keynes reformulated quantity theory of money
- Know the superiority of the Keynesian theory over the traditional quantity theory of money
- Know the criticisms of keynes theory of money and prices
- Define and understand the concepts and measures of money supply
- Know the important facts about measures of money supply
- Know the Keynesian approach to demand for money
- Understand the motives of holding money
- Define and understand the Post Keynesian approach of demand for money
- Know the tobin's portfolio and baumol's inventory approach to demand for money

Working through The Course

To successfully complete this course, you are required to read the study units, referenced books and other materials on the course.

Each unit contains self-assessment exercises called Student Assessment Exercises (SAE). At some points in the course, you will be required to submit assignments for assessment purposes. At the end of the course there is a final examination. This course should take about 15weeks to complete and some components of the course are outlined under the course material subsection.

Course Material

The major component of the course, What you have to do and how you should allocate your time to each unit in order to complete the course successfully on time are listed follows:

1. Course guide
2. Study unit
3. Textbook
4. Assignment file
5. Presentation schedule

Study Unit

There are 19 units in this course which should be studied carefully and diligently.

MODULE ONE: **ANALYSIS OF MONETARY POLICY**

Unit One: Meaning of Monetary Policy
Unit Two: Trade-off in Monetary Goals
Unit Three: Targets of Monetary Policy
Unit Four: Strategies and Effectiveness of Monetary Policy Implementation in Nigeria

MODULE TWO: **MONETARY POLICY: INSTRUMENTS AND TYPES**

Unit One: Instruments of Monetary Policy
Unit Two: Expansionary Monetary Policy Vs Restrictive Monetary Policy
Unit Three: Lag in Monetary Policy
Unit Four: Role of Monetary Policy in a Developing Economy

MODULE THREE: CHANGES IN THE VALUE OF MONEY: THE QUANTITY

THEORY OF MONEY AND ITS VARIANTS

Unit One:	Value Of Money
Unit Two:	The Cambridge Equations: The Cash Balance Approach
Unit Three:	The Keynesian Theory of Money and Price
Unit Four:	Friedman's Restatement of Quantity Theory of Money and Supply of Money

MODULE FOUR: SUPPLY AND DEMAND FOR MONEY

UNIT ONE	Money Supply
UNIT TWO	Determinants of Money Supply
UNIT THREE	Supply of Money and High-Powered Money
UN IT FOUR	High Powered Money and Money Multiplier
UNIT FIVE	Demand for Money

MODULE FIVE OTHER KEYNESIAN APPROACHES OF DEMAND FOR MONEY

UNIT ONE	The Post Keynesian Approach
UNIT TWO	Friedman's Theory of Demand for Money

Each study unit will take at least two hours, and it includes the introduction, objective, main content, self-assessment exercise, conclusion, summary and reference. Other areas border on the Tutor-Marked Assessment (TMA) questions. Some of the self-assessment exercises will necessitate discussion, brainstorming and argument with some of your colleagues. You are advised to do so in order to understand and get acquainted with historical economic events as well as notable periods.

There are also textbooks under the references and other (on-line and off-line) resources for further reading. They are meant to give you additional information if only you can lay your hands on any of them. You are required to study the materials; practice the self-assessment exercise and tutor-marked assignment (TMA) questions for greater and in-depth understanding of the course. By doing so, the stated learning objectives of the course would have been achieved.

Textbook and References

For further reading and more detailed information about the course, the following materials are recommended:

Adesoji, J.J., (2014). Introduction to Monetary Policy, 4th edition, Dale Publication limited.

Adewuyi, A.A., (2012). Monetary Policy and the Economy, a textbook, 1st edition, Meridian Publication limited.

Adewunmi, L. K., (2014). Analysis of Demand for Money in an inflationary economy, Journal vol 3, Jillion Publication limited.

Ajayi, S. S., (2016). Introduction to money and Banking, 2nd edition, University Press, Ibadan, Oyo state, Nigeria.

Bala, A.Z., (2014). Monetary Theory and Policy, 2nd edition, University Publication limited.

Becker, B. R., (2012). Money and Banking, 3rd edition Forensic Publication limited

Cecilia, S.D., (2013). Impact of monetary Policy on Economic growth in Nigeria, Journal vol 8, pg 34-49, Mac & Mac Publication limited.

Davids, S.O., (2015). Monetary Policy and its Benefits to an economy, Journal vol 2 pg 22-37, West-point Publisher, Lagos, Nigeria.

Dotun, G. G., (2014). Money and Banking, 1st edition, Dale Publication limited

Faradiza, S.D., (2016). Introduction to Monetary Policy, 1st edition, Parkers Publisher

George, H.F., (2014). Monetary Policy, an engine to economy development in Nigeria. Journal vol 3, pg 71-88, Macmilliano Press.

Igbayilola, A.O., (2016). The impact of Central Bank of Nigeria expansionary monetary/restrictive policy on Nigerian Economy, Journal vol 4, pg 29-42, Mac Publication limited.

Jaiyeola, S. K., (2015). Inflationary rate and Nigerian Economy, Journal vol 12, pg 38-50, Queens Publication limited.

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.

Kelechi, I. U., (2016). *Monetary Economics, 1st edition,* Jaen Publication Limited.

Leon, K. M., (2014). Monetary Economics, a broader perspective, 1st edition, Nilly Publication limited.

Olusanya, S. O., (2008). Introduction to Business Loan and Finance, 1st edition, Saiye Printing Press, Lagos

Purtin, A. A., (2015). Monetary Economics, 2nd edition, Vinder Publication limited.

Sanjo, F.J., (2015). Monetary policy and the economy, Journal vol 2, Mill world Publication limited

Tianishi, G. H., (2014). Monetary Policies in Developing Countries, 1st edition, Griller Publication limited.

Assignment File

Assignment files and marking scheme will be made available to you. This file presents you with details of the work you must submit to your tutor for marking. The marks you obtain from these assignments shall form part of your final mark for this course. Additional information on assignments will be found in the assignment file and later in this Course Guide in the section on assessment.

There are four assignments in this course. The four course assignments will cover:

Assignment 1 - All TMAs' question in Units 1 – 5 (Module 1)

Assignment 2 - All TMAs' question in Units 6 – 10 (Module 2)

Assignment 3 - All TMAs' question in Units 11 – 15 (Module 3)

Assignment 4 - All TMAs' question in Unit 16 – 19 (Module 4).

Presentation Schedule

The presentation schedule included in your course materials gives you the important dates for this year for the completion of tutor-marking assignments and attending tutorials. Remember, you are required to submit all your assignments by due date. You should guide against falling behind in your work.

Assessment

There are two types of the assessment of the course. First are the tutor-marked assignments; second, there is a written examination.

In attempting the assignments, you are expected to apply information, knowledge and techniques gathered during the course. The assignments must be submitted to your tutor for formal Assessment in accordance with the deadlines stated in the Presentation Schedule and the Assignments File. The work you submit to your tutor for assessment will count for 30 % of your total course mark.

At the end of the course, you will need to sit for a final written examination of three hours' duration. This examination will also count for 70% of your total course mark.

Tutor-Marked Assignments (TMAs)

There are four tutor-marked assignments in this course. You will submit all the assignments. You are encouraged to work all the questions thoroughly. The TMAs constitute 30% of the total score.

Assignment questions for the units in this course are contained in the Assignment File. You will be able to complete your assignments from the information and materials contained in your set books, reading and study units. However, it is desirable that you demonstrate that you have read and researched more widely than the required minimum. You should use other references to have a broad viewpoint of the subject and also to give you a deeper understanding of the subject.

When you have completed each assignment, send it, together with a TMA form, to your tutor. Make sure that each assignment reaches your tutor on or before the deadline given in the Presentation File. If for any reason, you cannot complete your work on time, contact your tutor before the assignment is due to discuss the possibility of an extension. Extensions will not be granted after the due date unless there are exceptional circumstances.

Final Examination and Grading

The final examination will be of three hours' duration and have a value of 70% of the total course grade. The examination will consist of questions which reflect the types of self-assessment practice exercises and tutor-marked problems you have previously encountered. All areas of the course will be assessed

Revise the entire course material using the time between finishing the last unit in the module and that of sitting for the final examination. You might find it useful to review your self-assessment exercises, tutor-marked assignments and comments on them before the examination. The final examination covers information from all parts of the course.

Course Marking Scheme

The Table presented below indicates the total marks (100%) allocation.

Assignment	**Marks**
Assignments (Best three assignments out of four that is	30%

marked)	
Final Examination	70%
Total	**100%**

Course Overview

The Table presented below indicates the units, number of weeks and assignments to be taken by you to successfully complete the course, Monetary Theory and Policy (ECO 343).

Units	**Title of Work**	**Week's Activities**	**Assessment (end of unit)**
	Course Guide		
Module 1	**ANALYSIS OF MONETARY POLICY**		
1	Meaning of Monetary Policy	Week 1	Assignment 1
2	Trade-off in Monetary Goals	Week 1	Assignment 1
3	Targets of Monetary Policy	Week 2	Assignment 1
4.	Strategies and Effectiveness of Monetary Policy Implementation in Nigeria.	Week 2	Assignment 1
Module 2	**MONETARY POLICY: INSTRUMENTS AND TYPES**		
1.	Instruments of Monetary Policy	Week 3	Assignment 1
2.	Expansionary Monetary Policy Vs Restrictive Monetary Policy	Week 3	Assignment 1
3.	Lag in Monetary Policy	Week 4	Assignment 2
4.	Role of Monetary Policy in a Developing Economy	Week 4	Assignment 2

Module 3 CHANGES IN THE VALUE OF MONEY: THE QUANTITY THEORY OF MONEY AND ITS VARIANTS			
1.	Value Of Money	Week 5	Assignment 2
2.	The Cambridge Equations: The Cash Balance Approach	Week 6	Assignment 2
3.	The Keynesian Theory Of Money And Price	Week 7	Assignment 2
4.	Friedman's Restatement of Quantity Theory of Money and Supply of Money.	Week 8	Assignment 3
Module 4 SUPPLY AND DEMAND FOR MONEY			
1.	Money Supply	Week 9	Assignment 3
2.	Determinants of Money Supply	Week 10	Assignment 3
3.	Supply of Money and High-Powered Money	Week 11	Assignment 3
4.	High Powered Money and Money Multiplier.	Week 12	Assignment 4
5.	Demand for Money	Week 13	Assignment 4
MODULE FIVE OTHER KEYNESIAN APPROACHES OF DEMAND FOR MONEY			
1.	The Post Keynesian Approach	Week 14	Assignment 4
2.	Friedman's Theory of Demand for Money	Week 15	Assignment 4
	Total	**15 Weeks**	

How to Get The Most From This Course

In distance learning the study units replace the university lecturer. This is one of the great advantages of distance learning; you can read and work through specially designed study materials at your own pace and at a time and place that suit you best.

Think of it as reading the lecture instead of listening to a lecturer. In the same way that a lecturer might set you some reading to do, the study units tell you when to read your books or other materials, and when to embark on discussion with your colleagues. Just as a lecturer might give you an in-class exercise, your study units provides exercises for you to do at appropriate points.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other units and the course as a whole. Next is a set of learning objectives. These objectives let you know what you should be able to do by the time you have completed the unit.

You should use these objectives to guide your study. When you have finished the unit you must go back and check whether you have achieved the objectives. If you make a habit of doing this you will significantly improve your chances of passing the course and getting the best grade.

The main body of the unit guides you through the required reading from other sources. This will usually be either from your set books or from a readings section. Some units require you to undertake practical overview of historical events. You will be directed when you need to embark on discussion and guided through the tasks you must do.

The purpose of the practical overview of some certain historical economic issues are in twofold. First, it will enhance your understanding of the material in the unit. Second, it will give you practical experience and skills to evaluate economic arguments, and understand the roles of history in guiding current economic policies and debates outside your studies. In any event, most of the critical thinking skills you will develop during studying are applicable in normal working practice, so it is important that you encounter them during your studies.

Self-assessments are interspersed throughout the units, and answers are given at the ends of the units. Working through these tests will help you to achieve the objectives of the unit and prepare you for the assignments and the examination. You should do each self-assessment exercises as you come to it in the study unit. Also, ensure to master some major historical dates and events during the course of studying the material.

The following is a practical strategy for working through the course. If you run into any trouble, consult your tutor. Remember that your tutor's job is to help you. When you need help, don't hesitate to call and ask your tutor to provide it.

1. Read this Course Guide thoroughly.
2. Organize a study schedule. Refer to the `Course overview' for more details. Note the time you are expected to spend on each unit and how the assignments relate to the units. Important information, e.g. details of your tutorials, and the date of the first day of the semester is available from study centre. You need to gather together all this information in one place, such as your dairy or a wall calendar. Whatever method you choose to use, you should decide on and write in your own dates for working breach unit.
3. Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their course work. If you get into difficulties with your schedule, please let your tutor know before it is too late for help.
4. Turn to Unit 1 and read the introduction and the objectives for the unit.
5. Assemble the study materials. Information about what you need for a unit is given in the `Overview' at the beginning of each unit. You will also need both the study unit you are working on and one of your set books on your desk at the same time.
6. Work through the unit. The content of the unit itself has been arranged to provide a sequence for you to follow. As you work through the unit you will be instructed to read sections from your set books or other articles. Use the unit to guide your reading.
7. Up-to-date course information will be continuously delivered to you at the study centre.
8. Work before the relevant due date (about 4 weeks before due dates), get the Assignment File for the next required assignment. Keep in mind that you will learn a lot by doing the assignments carefully. They have been designed to help you meet the objectives of the course and, therefore, will help you pass the exam. Submit all assignments not later than the due date.
9. Review the objectives for each study unit to confirm that you have achieved them. If you feel unsure about any of the objectives, review the study material or consult your tutor.
10. When you are confident that you have achieved a unit's objectives, you can then start on the next unit. Proceed unit by unit through the course and try to pace your study so that you keep yourself on schedule.
11. When you have submitted an assignment to your tutor for marking do not wait for it return `before starting on the next units. Keep to your schedule. When the assignment is returned, pay particular attention to your tutor's comments, both on the tutor-marked assignment form and also written on the assignment. Consult your tutor as soon as possible if you have any questions or problems.

12. After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in this Course Guide).

Tutors and Tutorials

There are some hours of tutorials (2-hours sessions) provided in support of this course. You will be notified of the dates, times and location of these tutorials. Together with the name and phone number of your tutor, as soon as you are allocated a tutorial group.

Your tutor will mark and comment on your assignments, keep a close watch on your progress and on any difficulties you might encounter, and provide assistance to you during the course. You must mail your tutor-marked assignments to your tutor well before the due date (at least two working days are required). They will be marked by your tutor and returned to you as soon as possible.

Do not hesitate to contact your tutor by telephone, e-mail, or discussion board if you need help. The following might be circumstances in which you would find help necessary. Contact your tutor if.

• You do not understand any part of the study units or the assigned readings
• You have difficulty with the self-assessment exercises
• You have a question or problem with an assignment, with your tutor's comments on an assignment or with the grading of an assignment.

You should try your best to attend the tutorials. This is the only chance to have face to face contact with your tutor and to ask questions which are answered instantly. You can raise any problem encountered in the course of your study. To gain the maximum benefit from course tutorials, prepare a question list before attending them. You will learn a lot from participating in discussions actively.

Summary

The course, Monetary Policy (ECO 343), exposes you to the field of Monetary Economics such as Analysis of monetary policy, Monetary policy: instrument and types, Changes in the value of money: the quantity theory of money and its variants, Supply and Demand for money and Other Keynesian approaches of demand for money, etc. This course also gives you an insight into Meaning of Monetary Policy, trade-off in Monetary Goals, targets of Monetary Policy, Strategies and Effectiveness of Monetary Policy and implementation in Nigeria.

The course will shed more light on the instruments of Monetary Policy, expansionary Monetary Policy Vs Restrictive Monetary Policy, lag in Monetary Policy and role of Monetary Policy in a Developing Economy. Furthermore, the course shall enlighten you about the value Of Money, the Cambridge Equations: The Cash Balance Approach, the Keynesian theory Of Money and Price, Friedman's Restatement of Quantity Theory of Money and Supply of Money

On successful completion of the course, you would have developed critical thinking skills with the material necessary for efficient and effective discussion on money Supply, Determinants of Money Supply, Supply of Money and High-Powered Money, High Powered Money and Money Multiplier, Demand for Money, the Post Keynesian Approach and Friedman's Theory of Demand for Money. However, to gain a lot from the course please try to apply anything you learn in the course to term papers writing in other economic development courses. We wish you success with the course and hope that you will find it fascinating and handy.

MAIN COURSE

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MODULE ONE: ANALYSIS OF MONETARY POLICY

Unit One: Meaning Of Monetary Policy
Unit Two: Trade-Off in Monetary Goals
Unit Three: Targets of Monetary Policy
Unit Four: Strategies and Effectiveness of Monetary Policy Implementation In Nigeria

UNIT ONE: MEANING OF MONETARY POLICY

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1.0 INTRODUCTION

The discussion on monetary policy has centered on its objectives, targets, indicators and instruments. Jan Tinbergen was the first economist to lay down certain instruments to achieve policy objectives. Economists have extended the discussion to include the targets and indicators of economic policy. These have also been applied to monetary policy. The principal targets, indicators and instruments as applied to monetary policy are as follows:

Objectives or Goals: The objectives of monetary policy are (1) full employment; (2) price stability which also includes controlling economic fluctuations (though some writers mention the latter separately); (3) economic growth and (4) maintaining balance of payments equilibrium.

Target: The usual targets of monetary policy are: (1) money supply; (2) availability of credit; and (3) interest rates.

Indicators: The monetary targets are also employed as indicators of monetary policy. So they are: (1) money supply; (2) bank credit; (3) interest rates.

Instruments: The instruments of monetary policy are: (1) bank rate; (2) Open market operations (OMO); (3) changes in reserve ratios; and (4) selective credit controls. We will then discuss all this in this module.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of monetary policy
- Know the objectives or goals of monetary policy

.

3.0. MAIN CONTENT

3.1 Definition of Monetary Policy

Monetary policy is the macroeconomic policy laid down by the central bank. It involves management of money supply and interest rate and is the demand side economic policy used by the government of a country to achieve macroeconomic objectives like inflation, consumption, growth and liquidity.

It is also an economic strategy chosen by a government in deciding expansion or contraction in the country's money-supply. Applied usually through the central bank, a monetary policy employs three major tools: (1) buying or selling national debt, (2) changing credit restrictions, and (3) changing the interest rates by changing reserve requirements. Monetary policy plays the dominant role in control of the aggregate-demand and, by extension, of inflation in an economy. Also called monetary regime.

More so, the actions of a central bank, currency board or other regulatory committees that determine the size and rate of growth of the money supply, which in turn affects interest rates. Monetary policy is maintained through actions such as increasing the interest rate, or changing the amount of money banks need to keep in the vault (bank reserves).

Monetary policy is concerned with the changes in the supply of money and credit. It refers to the policy measures undertaken by the government or the central bank to influence the availability, cost and use of money and credit with the help of monetary

techniques to achieve specific objectives. Monetary policy aims at influencing the economic activity in the economy mainly through two major variables, i.e., *(a)* money or credit supply, and *(b)* the rate of interest.

The techniques; of monetary policy are the same as the techniques of credit control at the disposal of the central bank. Various techniques of monetary policy, thus, include bank rate, open market operations (OMO), variable cash reserve requirements, selective credit controls.

R.P. Kent defines monetary policy as "the management of the expansion and contraction of the volume of money in circulation for the explicit purpose of attaining a specific objective such as full employment."

According to A. J. Shapiro, "Monetary Policy is the exercise of the central bank's control over the money supply as an instrument for achieving the objectives of economic policy."

In the words of D.C. Rowan, "The monetary policy is defined as discretionary action undertaken by the authorities designed to influence (a) the supply of money, *(b)* cost of money or rate of interest and (c) the availability of money."

Monetary policy is not an end in itself, but a means to an end. It involves the management of money and credit for the furtherance of the general economic policy of the government to achieve the predetermined objectives. There have been varying objectives of monetary policy in different countries in different times and in different economic conditions. Different objectives clash with each other and there is a problem of selecting a right objective for the monetary policy of a country. The proper objective of the monetary policy is to be selected by the monetary authority keeping in view the specific conditions and requirements of the economy.

3.2. Objectives or Goals of Monetary Policy

The following are the principal objectives of monetary policy.

(a) Full Employment

Full employment has been ranked among the foremost objectives of macroeconomic goal. It is an important goal not only because unemployment leads to wastage of potential output, but also because of the loss of social standing and self-respect. Moreover, it breeds poverty.

According to Keynes, full employment means the absence of involuntary unemployment. In other words, full employment is a situation in which everybody who wants to work gets work. Full employment so define is consistent with frictional and voluntary

unemployment. To achieve full employment, Keynes advocated increase in effective demand to bring about reduction in real wages. Thus the problem of full employment is one of maintaining adequate effective demand. Keynes gave an alternative definition of full employment at another place in his *General Theory* thus: "it is a situation in which aggregate employment is inelastic in response to an increase in the effective demand for its output." It means that the test of full employment is when any further increase in effective demand is not accompanied by any increase in output. Since the supply of output becomes inelastic at the full employment level, any further increase in effective demand will lead to inflation in the economy. Thus the Keynesian concept of full employment involves three conditions:

(i) Reduction in the real wage rate
(ii) Increase in effective demand
(iii) Inelastic supply of output at the level of full employment.

According to Professor W.W. Hart attempting to define full employment raises many people's blood pressure. Rightly so, because there is hardly any economist who does not define it in his own way. Lord Beveridge in his book "full employment in a free society" defined it as a situation where there were more vacant jobs than unemployed men so that the normal lag between losing one job and finding another will be very short. By full employment he does not mean zero unemployment which means that full employment is not always full. There is always a certain amount of frictional unemployment in the economy even when there is full employment. He estimated frictional unemployment of 3 percent in a full employment situation for England. But his pleading for more vacant jobs than the unemployed cannot be accepted as the full employment level.

According to the American Economic Association Committee, 'Full employment is a situation where all qualified persons who want jobs at current wage rate find full time jobs.' It does not mean unemployment is zero. Here again, like Beveridge, the committee considered full employment to be consistent with some amount of unemployment.

Furthermore, individual economists may, however, continue to differ over the definition of full employment, but the majority has veered round the view expressed by the United Nations experts on national and international measures for full employment that 'full employment may be considered as a situation in which employment cannot be increased by an increase in effective demand and unemployment does not exceed the minimum allowances that must be made for the effects of frictional and seasonal factors.' This definition is in keeping with the Keynesian and Beveridgian views of full employment. It is now agreed that full employment stands for 96 to 97 per cent employment, with 3 to 4 per cent unemployment existing in the economy due to frictional factors. Full

employment can be achieved in an economy by following an expansionary monetary policy.

(b) Price Stability

One of the goals of macroeconomics policy is to stabilize the price level. Both economists and laymen favour this policy because fluctuations in prices bring uncertainty and instability to the economy. Rising and falling prices are both bad because they bring unnecessary loss to some and undue advantage to others. Again, they are associated with business cycles. So a policy of price stability keeps the value of money stable, eliminates cyclical fluctuations, brings economic stability, helps in reducing inequalities of income and wealth, secure social justice and promotes economic welfare.

However, there are certain difficulties in pursuing a policy of stable price level. The first problem relates to the type of price level to be stabilized. Should the relative or general price level be stabilized, the wholesale or retail, of consumer goods or producer goods? There is no specific criterion with regard to the choice of a price level. Economists suggest, the compromise solution would be to try to stabilize a price level which would include consumers' goods prices as well as wages. But this will necessitate increase in the quantity of money but not by as much as is implied in the stabilization of consumer's goods price.

Second, innovations may reduce the cost of production but a policy of stable prices may bring larger profits to producers at the cost of consumers and wage earners. However, in an open economy which imports raw materials and other intermediate products at high prices, the cost of production of domestic goods will rise. But a policy of stable prices will reduce profits and retard further investment. Under the circumstances, a policy of stable prices is not only inequitable but also conflicts with economic progress.

Despite these drawbacks, the majority of economists favour a policy of stable prices. But the problem is one of defining price stability. Price stability does not mean that prices remain unchanged indefinitely. Comparative prices will change as fluctuating tastes alter the composition of demand; as new products are developed and as cost reducing technologies are introduced. Differential price changes are essential for allocating resources in the market economy. However, since modern economies tend to exhibit fairly rigid downward inflexibility of prices, differential price changes can only be attained by gradual increases in the aggregate price level over the long-run. Further, prices may have to be changed if costs of imported goods increase or if taxation policy leads to the rise in the domestic cost of production. It should be noted that price stability

can be maintained by following a counter-cyclical monetary policy, that is easy monetary policy during a recession and dear monetary policy during boom.

(c) Economic Growth

One of the most important goals of macroeconomics objective in recent years has been the rapid economic growth of an economy. Economic growth is defined as *the process whereby the real per capita income of a country increases over a long period of time.* Economic growth is measured by the increase in the amount of goods and services in each successive time period. Thus, growth occurs when an economy's productive capacity increases which, in turn, is used to produce more goods and services. However, economic development implies raising the standard of living of the people, and reducing inequalities of income distribution. We all will agree that economic growth is a desire goal for a country. But there is non-agreement over *the magic number* viz, the annual growth rate which an economy should attain.

Generally, economists believe in the possibility of continual growth. This belief is based on the presumption that innovations tend to increase productive technologies of both capital and labour over time. But there is very likelihood that an economy might not grow despite technological innovations. Production might not increase further due to the lack of demand which may retard the growth of the productive capacity of the economy. The economy may not grow further if there is no improvement in the quality of labour in keeping with the new technologies.

However, policy makers do not take into consideration the costs of growth. Growth is not limitless because resources are scarce in every economy. All factors have opportunity cost. To produce more of one particular product will mean reduction in that of the other. New technologies lead to the replacement of old machines which become useless. Workers are also displaced because they cannot be fitted in the new technological set up immediately. Moreover, rapid growth leads to urbanization and industrialization with their adverse effects on the pattern of living and environment. People have to live in squalor and slums. The environment becomes polluted. Social tensions develop. But growth has other more basic effects on our environment, and, today, people are not so sure that unrestricted growth is worth all its costs, since the price in terms of change in, deterioration of, or even destruction of the environment is not yet fully known. What does seem clear, however, is that growth is not going to be halted because of environmental problems and that mankind must learn to cope with the problem or face the consequences.

The main problem is to what extent monetary policy can lead to the growth of the economy? It is difficult to say anything definite on this issue. The monetary authority may influence growth by controlling the real interest rate through its effect on the level of investment. By following an easy credit policy and lowering interest rates, the level of investment can be raised which promotes economic growth. Monetary policy may also contribute towards growth by helping to maintain stability of income and prices. By moderating economic fluctuations and avoiding deep depressions, monetary policy helps in achieving the growth objective. However, rapid and variable rates of inflation discourage investment and adversely affect growth, monetary policy helps in controlling hyper-inflation. Similarly, by a judicious monetary policy which encourages investment, growth can be promoted. For example, tight monetary affects small firms more than large firms, and higher interest rates have a greater impact on small investments than on large industrial investments. So monetary policy should be such that encourages investment and at the same time controls hyper-inflation so as to promote growth and control economic fluctuations.

(d) Balance of Payments

Another goal of macroeconomic objectives has been to maintain equilibrium in the balance of payments. The achievement of this goal has been necessitated by the phenomenal growth in the world trade as against the growth of international liquidity. It is also recognized that deficit in the balance of payment will retard the attainment of other goals. This is because a deficit in the balance of payments leads to a sizeable outflow of gold. But it is not clear what constitutes a satisfactory balance of payments position. Clearly a country with a net debt must be at a surplus to repay the debt over a reasonably short period of time. Once any debt has been repaid and an adequate reserve attained, a zero balance maintained over time would meet the policy objective. But how is this satisfactory balance to be achieved on the trading account or on the capital account? The capital account must be looked upon as fulfilling merely a short-term emergency role in times of crises.

Again, another problem relates to the question: what is the balance of payments target of a country? It is where imports equal exports. But, in practice, a country whose current reserves of foreign exchange are inadequate will have a mild export surplus as its balance of payments target. But when its reserve become satisfactory, it will aim at the equality of imports and exports. This is because an export surplus means that the country is accumulating foreign exchange and it is producing more than it is consuming. This will lead to low standard of living of the people. But this cannot last long because some other country must be having import surplus and in order to avoid it, it would impose trade

restrictions on the export surplus country. However, the attainment of a balance of payment equilibrium becomes an imperative goal of macroeconomics policy in a country. How can monetary policy achieve it? A balance of payments deficit is defined as equal to the excess of money supply through domestic credit creation over extra money demand based on increased demand for cash balances. Thus a balance of payments deficit reflects excessive money supply in the economy. As a result, people exchange their excess money holding for foreign goods and securities. Under a system of fixed exchange rate, the central bank will have to sell foreign exchange reserves and buy the domestic currency for eliminating excess supply of domestic currency. Thus is how equilibrium will be restored in the balance of payments.

In conclusion, if the money supply is below the existing demand for money at the given exchange rate, there will be a surplus in the balance of payments. Consequently, people acquire the domestic currency by selling goods and securities to foreigners. They will also seek to acquire additional money balances by restricting their expenditure relatively to their income. The central bank, on its part, will buy excess foreign currency in exchange for domestic currency in order to eliminate the shortage of domestic currency.

Self-Assessment Exercise

Define Monetary Policy and explain the objectives of Monetary Policy.

4.0 CONCLUSION

Monetary policy is the backbone of every economy in the world. Monetary policy is the process by which the monetary authority of a currency controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency. Further goals of a monetary policy are usually to contribute to economic growth and stability, to low unemployment, and to predictable exchange rates with other currencies. Finally, monetary economics provides insight into how to craft optimal monetary policy.

5.0 SUMMARY

In this unit, we learnt that monetary policy can improve the activities of the economy and the objectives of monetary policy can be used to achieve growth in the economy but caution must be put in place in using monetary policy to a large extent. Therefore, we can say that monetary policy is the heart and performance of a good economy.

6.0 TUTOR-MARKED ASSIGNMENT

1. Differentiate between Full employment and Economic growth as the objective of monetary policy.

2. Monetary policy is the back-borne of a good economy. Discuss.

7.0 REFERENCES/FURTHER READINGS

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UNIT TWO: TRADE-OFF IN MONETARY GOALS

CONTENTS

1.0. Introduction
2.0. Objectives
3.0. Main content
    3.1. Full Employment and Economic Growth
    3.2. Economic Growth and Price Stability
    3.3. Full Employment and Price Stability
    3.4. Full Employment and Balance of Payment
    3.5. Price Stability and Balance of Payment.
4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assignment

7.0 References/Further Readings

1.0. INTRODUCTION

In unit one above, the four objectives of monetary policy discussed are not complementary to each other. Rather, they conflict with one another. If a government tries to fulfill one goal, some other goal moves away. It has to sacrifice one in order to attain the other. It is, therefore, not possible to fulfill all these objectives simultaneously. Therefore in this unit we will discuss the conflicts or trade-offs between different objectives.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the Full Employment and Economic Growth
- Understand the relationship between Full Employment, Price Stability and Balance of Payment.

- Understand Price Stability and Balance of Payment

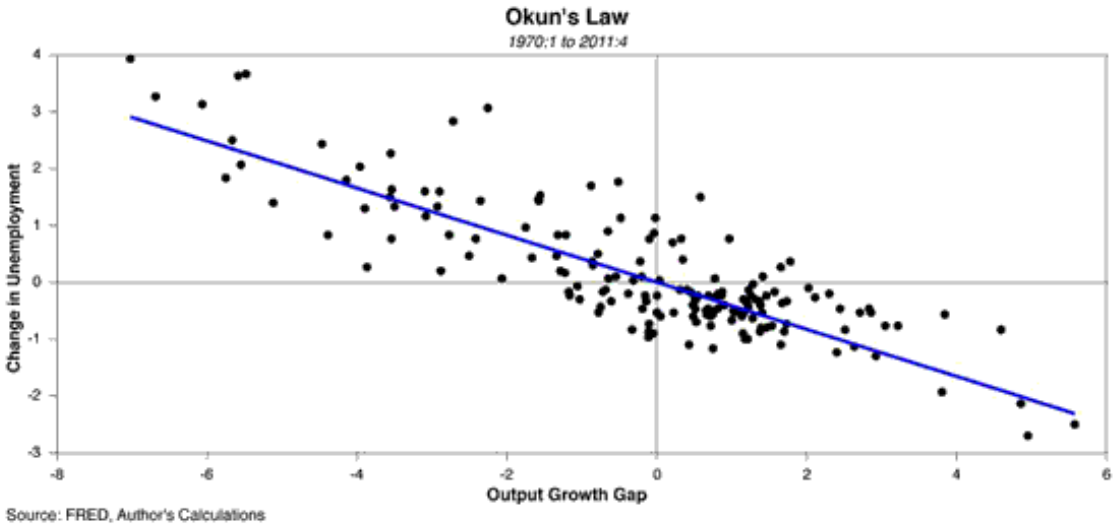
3.0. MAIN CONTENT

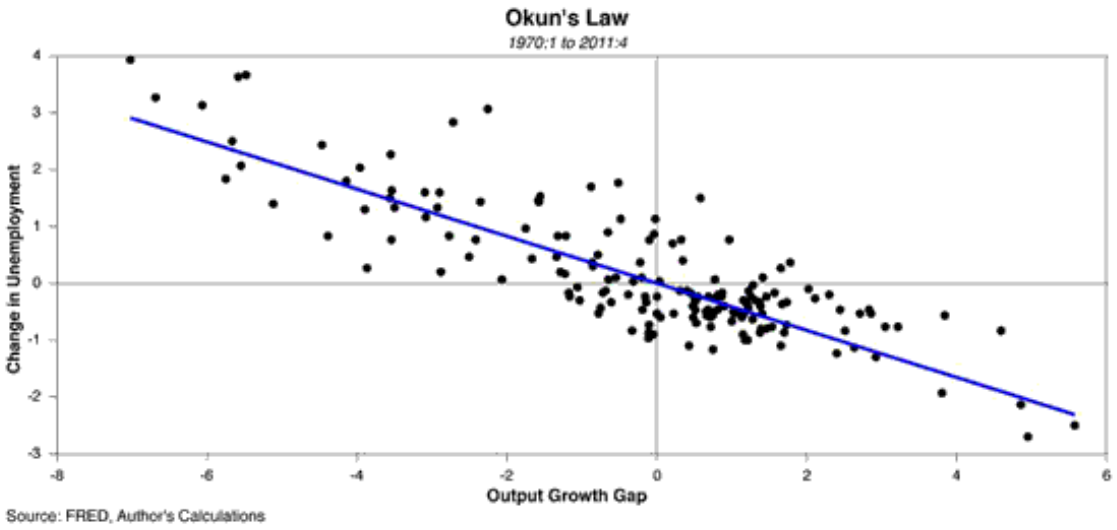
3.1 Full Employment and Economic Growth

The majority of economists hold the views that there is no inherent conflict between full employment and economic growth. Full employment is consistent with 4 per cent unemployment in the economy. So the relationship between full employment and economic growth boils down to a trade-off between unemployment and growth. Periods of high growth are associated with low level of unemployment and periods of low growth with rising unemployment.

In 1961, Arthur Melvin Okun established a relationship between real GNP and changes in the unemployment rate. This relationship has come to be known as OKUN'S LAW. This law states that for every three percentage points growth in real GNP, unemployment rate declines by one percentage point every year. In a nutshell, Okun found that the unemployment rate and the difference between potential GDP growth and real GDP growth interacted in a specific relationship over time. In the graph below, Okun's coefficient is -0.30—the relationship he witnessed and wrote about in his 1962 paper.

Figure 1: Okun's Law





However, certain economists argue that the unemployment rate increases as the growth rate rises. Economic growth leads to reallocation of resources in the economy whereby there is change in the type and quantity of labour demanded. There is shift in the demand for labour from one sector of the economy to the other. As workers are trained for specific jobs, they are displaced when the demand for the products of particular industries falls. This creates unemployment. This is particularly so when growth is the result of technological innovations which are labour-saving and require more qualified and skilled workers. Thus unskilled workers are the worst sufferers because they are thrown out of jobs with automation. Employment can, however, increase with growth if demand is increasing at 3 per-cents per annum and the productivity is increasing at 4 per cent year, the output will expand but employment will decline. Under the circumstances, the government should adopt such monetary policy which should increase the overall demand in the economy.

3.2. Economic Growth and Price Stability

There is conflict between the goals of economic growth and price stability. The rise in prices is inherent in the growth process. The demand for goods and services rises as a result of stepping up of investments on a large scale and consequent increase in incomes. This leads to inflationary rise in prices, especially when the level of full employment is reached. In the long run, when new resources are developed and growth leads to the production of more commodities, the inflationary rise in prices will be checked. But the

rise in prices will be there with the growth of the economy and it will be moderate and gradual.

3.3. Full Employment and Price Stability

One of the objectives of monetary policy in the 1950 was to have full employment with price stability. But the studies of Philips, Samuelson, Solow and others in the 1960s established a conflict between the two objectives. These findings are explained in terms of Philip curve. They suggest that full employment can be attained by having more inflation and the price stability can be achieved by having unemployment to the extent of 5 to 6 per cent. Economists do not find any conflict between unemployment and price stability. They hold that so long as there are unemployed resources, there will be price stability. They hold that so long as there are unemployed resources, there will be price stability. Prices start rising only when there is full employment of resources.

3.4. Full Employment and Balance of Payment

There is a major policy conflict between full employment and balance of payments. Full employment is always related to balance of payments deficit. In fact, the problem is one of maintaining either internal balance or external balance. If there is a balance of payments deficit, then a policy of reducing expenditure will reduce import but it will lead to increase in unemployment in the country. If the government raises aggregate expenditure in order to increase employment, it will increase the demand for imports thereby creating disequilibrium in the balance of payments. It is only when the government adopt expenditure-switching policies such as devaluation that this conflict can be avoided but that too temporarily.

3.5 Price Stability and Balance of payment

There appears to be no conflict between the objectives of price stability and balance of payments in a country. Monetary policy aims at controlling inflation to discourage imports and encourage exports and thus it helps in attaining balance of payments equilibrium. However, if the government tries to remove unemployment and allows some inflation within the economy, there appears a conflict between these two objectives. For a rise in the price level will discourage exports and encourage imports, thereby leading to disequilibrium in the balance of payments. But this may not happen if prices also rise by the same rate in other countries of the world.

Self-Assessment Exercise

Briefly discuss the trade-off in monetary goals.

4.0 CONCLUSION

The trade-off in monetary goals is the process of showing how they conflict with one another because if government policy tries to improves the economy, the other policy objective will move away which will invariably retard the latter. Therefore in achieving policy objective the government will have to let go one objective to achieve or attain the other and this debate goes on in the monetary policy objective to attain one, you must let go another objective.

5.0 SUMMARY

In this unit, we have learnt on what happen between the trade-off that exists in the monetary policy objectives and how government relax one objective for the other to attain one because it always not possible to achieve these objectives simultaneously in the economy.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss in detail the trade-off in monetary goals analysis

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UNIT THREE: TARGETS OF MONETARY POLICY

CONTENTS

1.0. Introduction
2.0. Objectives
3.0. Main content
    3.1. Target of Monetary Policy
    3.2. Market yield on Equity
    3.3. Indicators of Monetary Policy
        3.3.1. Money Supply
        3.3.2. Bank Credit and Interest Rate
4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assignment
7.0 References/Further Readings

1.0. INTRODUCTION

The choice of a target for monetary policy is determined by the mechanism through which money effects growth, employment and prices. Since none of monetary authority's policy tools works directly on these policy variables, the policy makers rely on intermediate targets that feel they can control tolerably well with the instruments at their disposal, and that are closely linked through transmission mechanism to the ultimate targets of production, employment and price level.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the term Targets of Monetary Policy
- Understand the meaning of Market yield on Equity
- Know the basic indicators of Monetary Policy

3.0. MAIN CONTENT

3.1 Targets of Monetary Policy

There are three target variables for monetary policy. They are the money supply, availability of credit, and interest rates.

1. **Money Supply**: So far monetary policy is concerned, the central bank cannot directly control output and prices. So it selects the growth rate of money supply as an intermediate target. If fact, it select an 'operating target' which it considers to be closely linked to its 'intermediate target'. Friedman suggests that the money supply should be allowed to grow steadily at the rate of 3 to 4 per cent per year for a smooth growth of the economy and to avoid inflationary and recessionary tendencies.
2. **Availability of Credit and Interest Rates**: availability of credit and interest rate are the other two target variables of monetary policy. Economists call them as 'money market conditions' which refers to short-term interest rates and the banking system's "free reserves" (that is excess reserves minus borrowed reserves). The monetary authority can influence the short term interest rates. It can change credit conditions and affect economic activity by rationing of credit or other means. The monetary authority influences economic activity by following an easy or expansionary monetary policy through low and/or falling short term interest rates and a tight or contractionary monetary policy through high and/or rising short-term interest rates.

   Its Limitations: the use of interest rates and credit availability as target variables are beset with a number of difficulties.

   A. No doubt interest rates and the supply of credit influence spending, but it cannot be predicted with definiteness about the size and timing of the effects of any change in them.
   B. So far as interest rates are concerned, it is the real interest rate that matters and not the nominal interest rate. It is possible to control and observe the movements in the nominal interest rate and not in the real interest rate because it is difficult to measure the expected rate of price inflation. When the monetary authority raises the nominal interest rate, the real interest rate will also rise other things being equal. But this does not happen always because when money interest rates are raised, the expectations of price inflation are growing. Under such circumstances, a rise in the nominal interest rate may be

associated with a fall in the expected real rate. Thus the nominal interest rate is not good target of monetary policy.

C. The use of credit availability as a monetary target is not helpful in monetary policy. Suppose there is reduction in the availability of credit, it may be offset by credit flows through National bank of financial institution (NBFIs). Moreover, it is difficult to predict the amount of reduction/increase in the availability of credit.

3. **Intermediate Targets**: money supply and interest rate are intermediate targets of monetary policy. In fact, they are competing targets. The central bank can either aim at a certain rate of increase in the monetary supply or at a certain level of interest rate. It cannot adopt both the targets at the same time. The money supply target means loss of control over the interest, while the interest rate target means loss of control over the money supply.

Therefore, to maintain the target interest rate, the central bank has to relinquish control over the money supply. Of the two targets relating to money supply and interest rate, the monetarists prefer a monetary target for various reasons. First, the money supply is measurable, while there are a variety of interest rates. It is, therefore, difficult to adjust nominal interest rates to real interest rates. Second, the money supply linkage with nominal GNP is more direct and predictable than the interest linkage with nominal GNP.

3.2. Market Yield on Equity

Tobin suggests that the market yield on equity as a target variable for monetary policy. According to him, the monetary authority should try to equate this yield with the real return expected from investment in physical capital. When the real rate return on equity rises, the value of existing capital equipment falls which discourages the purchase of new capital equipment. Moreover, investment is encouraged when the cost of production of new capital is less than its market value. Thus the valuation of investment goods relative to their cost is the proper target of monetary policy. This target is superior to other targets because the market value can be compared with a price index of investment goods.

Despite this, it is difficult to compare the value of existing assets with those of newly produced assets. Moreover, it is not possible to link investments with changes in stock market prices. So it is not advisable to adopt market yield on equity as the sole target of monetary policy.

In conclusion, of the various targets of monetary policy, it is advisable for the monetary authority not to rely on any single target. It should select the targets according to the prevailing economic and financial conditions. The interest rate is more suitable during the short run. But in the long run, the credit availability and the money supply should be

relied upon by the monetary authority. The target of market yield on equity is unacceptable by economists.

3.3. Indicators of Monetary Policy

Money supply, bank credit and interest rate which serve as targets are also employed as indicators of monetary.

3.3.1. Money Supply

If the central bank is solely responsible for changes in the money supply, it is a good indicator of monetary policy management. But if the money supply changes regardless of the central bank policy, it is hardly an indicator. According to the monetarists, it is open market operations (OMO) and changes in reserves requirements that are the main cause of movements in the money supply. It is the money supply which is the most important determinant of both the level of output and the price level in the short run and of the price level and the nominal aggregate demand in the long run.

The changes in money supply affect aggregate demand through effects on a wide range of assets. The Keynesians involve a narrow transmission mechanism between money supply and changes in aggregate demand. When the money supply increases it will be spent on bond, thereby lowering interest rates and ultimately leading to an increase in investment.

But according to the monetarists, an increase in money supply will lead to spending on a much broader range of assets than on bonds only. The excess money supply balances will be used to bring not only financial assets but also real assets. Even if the demand for financial assets expands, interest rates will fall but only temporarily. If GNP rises, interest rates will also because rise there is a greater need for day-to-day cash transactions to carry out the expanding business activity. Firms will, therefore, borrow to raise more cash and interest rates will rise. Interest rates will also when an expansionary monetary policy generates inflationary expectations. Thus interest rates may be either lower or higher after an expansionary monetary policy, depending on the speed and strength of the change in GNP and on the expectations regarding prices. Similarly, interest rates may either be higher or lower after a contractionary monetary policy begins, depending on the same factors.

3.3.2. Bank Credit and Interest Rate

So far as interest rate as an indicator of monetary policy is concerned, there are vast differences in the views of the Keynesians and the monetarists. The Monetarists downgrade interest rate as indicator of monetary policy because it is not under the firm control of the central bank. The same view is held by the Keynesians. But the differences arise in the transmission mechanisms. According to the Keynesians, the increase in money supply reduces the interest rate provided the demand for money does not become perfectly elastic (the liquidity trap case). Second, the reduction in the interest rate increases investment provided it is not inelastic to the interest rate. Interest rates will stay down so long as the money supply continues to increase.

The monetarists do not agree with this view. To them, the increase in money supply affects interest rate in the following manner. Suppose the money supply increases through open market purchases of securities by the central bank. This will bring down interest rate by increasing the reserves of commercial banks which expand their loans. This is the *liquidity effect* which causes a short-run reduction in interest rate. The low interest rate will encourage investment in new capital formation, inventories, construction activities, etc. As a result, prices of investment goods will rise and the demand for financial and real assets will increase and raise their prices. The rise in production and demand for money will bid up the interest rate. This is the *output effect.* Therefore, there is the *price expectation effect* because lenders expect prices to rise and they buy interest-bearing securities and other goods. Thus after the initial fall, interest rate will rise again and settle at a new rate. The new rate will depend on the rate of inflation generated by the increase in money supply. So interest rate as an indicator of monetary policy shows that when increases in the money supply lead to increases in interest rate, this will be like an expansionary easy money policy. Friedman, therefore, argues that the monetary authority should concentrate on controlling the money supply rather than manipulating the interest rate.

Finally, the economists do not agree over the use of money supply, bank credit and interest rate as indicators of monetary policy. Brunner and Metzler are of the view that both the money supply and interest rate would have identical effects on the economy. It is changes in the real interest rate that affect economic activity. But in reality, it is only changes in nominal interest rate that are measured. The measurement of real interest rate depends on expected price changes. This is both conceptually and empirically a difficult process and subject to errors. Thus to evaluate monetary policy during inflation or deflation by looking at nominal interest rate is misleading. But this problem does not arise in the case of the money supply because it is nominal values of money which

influence nominal values of economic activity. Therefore, interest rate is not a reliable and predictable indicator of monetary policy whereas the money supply is.

To select an appropriate indicator of monetary policy requires certain issues which are to be tackled. The first issue concerns the nature of money supply and its control. Friedman includes M_2, which is currency, and demand and time deposits in the money supply. But the problem is to what extent the money supply will respond to change in a predictable manner. The second issue concerns the extent to which the money supply affects economic activity. Third, there is the important issue of "the proposed indicator's exogeneity with respect to the economic variables that policy-makers are attempting to influence".

Self-Assessment Exercise

Discuss the various targets of monetary policy

4.0 CONCLUSION

The target of monetary policy is accounted for through the effect of growth, employment and prices and this have a multiplier effect on the performance of the economy. However, because the monetary policy tools are unable to work directly on these policy variables (growth, employment and prices), the policy-makers in the economy rely on the target they can control very well to achieve economic development. More so, the indicators of monetary policy is to be used to work well in the economy, but to pick an appropriate indicator for monetary policy, the policy maker must tackle various issues such as money supply and how to control it, the issue on the effect of money supply on business/economic activity and the influence of policy-maker on an indicator to be used on the economic variables.

5.0 SUMMARY

In this unit, we have learnt the target monetary policy and its implication on the economic variables such as growth, employment and prices and the indicators of monetary policy in the economy, which it was concluded in this unit that the policy-maker must be careful in choosing an indicator for the economy.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the tree target for monetary policy in an economy.
2. Explain the indicators of monetary policy.

7.0 REFERENCES/FURTHER READINGS

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.

UNIT FOUR: STRATEGIES AND EFFECTIVENESS OF MONETARY POLICY IMPLEMENTATION IN NIGERIA

CONTENTS

1.0. Introduction
2.0. Objectives
3.0. Main content
  3.1. Monetary Strategies in Nigeria
  3.2. Effectiveness of Monetary Policy in Nigeria
  3.3. Overview and Framework for Monetary Policy in Nigeria
4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assignment

7.0 References/Further Readings

2.0. INTRODUCTION

There is an opinion that is unanimously agreed upon that Nigerian economy crisis requires more comprehensive policy response that will address the need to stabilize, diversify and structurally adjust the economy through preferable strategy to gear up the non-oil tradable sector.

And also, one major problem that attracts the attention of the Nigerian policy-makers is that of disengaging the economy more quickly from oil-based foundation in the medium term. However, it is in realization of these objectives that the Structural Adjustment Programme (SAP) was implemented in Nigeria.

But it is quite unfortunate that some of the policy measures introduced under the banner of this economic reform programme are not posting the desired effect in terms of promoting the economy. One of the basic objectives which monetary policy is designed to tackle is inflation. Often, a major cause of inflation in most developing countries has been excessive growth in money supply.

Monetary expansion leads to a rise in price in the domestic economy, with negative implication on interest rate, exchange rate and output growth. Therefore it must be noted that monetary expansion and its strategies is triggered by large fiscal shock. Hence, considerable attention must be paid to the size of the fiscal deficit and the mode of its financing.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand monetary strategies in Nigeria
- Understand Effectiveness of monetary policy in Nigeria
- Understand the overview and framework for monetary policy in Nigeria

3.0. MAIN CONTENT

3.1 Monetary Strategies in Nigeria

Monetary policy strategy deals with how central bank carries out monetary policy. And what is central to the form of monetary policy strategy is the choice of the different nominal anchor. For example, we have the monetary targeting by using the information on the monetary aggregates to conduct monetary policy. "Monetary targeting occurs in two forms. These are the rigid Friedman-type monetary targeting rule in which the chosen monetary aggregate is kept on a constant growth rate path as the focus of monetary policy. The second is the flexible variety, which may involve a set of monetary aggregates, each of which is allowed to grow at different rates" (Oyejide; 2002).

Looking at exchange rate targeting for example, we have the hard peg and soft peg. Hard peg is institutionalized whereas soft peg is not. Under the hard peg exchange rate targeting, rigid commitment may be derived from a currency board type of institutional arrangement, which ties one currency to another. At these circumstances, the monetary authorities such as Central Bank give up the independent power of monetary policy. Such approach is expedient for countries having weak political and monetary institutions that can achieve macroeconomic stability.

A monetary policy target such as inflation (price level) target is very popular one aimed at achieving price stability as the primary goal of monetary policy. However, inflation

target requires strong Central Bank's instrument independence, rich data environment, prudent fiscal policy behaviour and robust financial institutions. It is important to note that economic policy goals such as growth in output, employment, real exchange rate. BOP and inflation rate are difficult for Central Bank to control directly. This is mostly, as a result of the problems of transmission mechanism. For any policy action to achieve desirable results there will always be need for an accurate data environment, identifying key intermediate variables and ability to determine time lag between when policy is taken and when the effects on the real economy will begin to materialize.

Intermediate target variables include the money supply aggregate (M1 and M2), the short term interest rate and the exchange rate. In Nigeria today, there are several other features of monetary policy strategy used in conjunction with these intermediate target variables. "We now have public announcement of medium term numerical targets, increased transparency of the monetary policy process through increased communication with the public and financial markets" (Oyejide; 2002).

Sanusi (2001) claimed that "In Nigeria, exchange rate targeting regime held sway during 1959-1973 when the exchange rate was regarded as the nominal anchor for monetary policy, while the period 1974-2001 was assigned to monetary targeting regime with the focus of controlling monetary aggregates so as to achieve stability of macroeconomic variables and monetary policy goals". This observation was contrast to the CBN reports, which stated that the strategy of monetary policy in Nigeria has been targeted on money supply growth. In fact, M1 constituted the primary focus before 1986, and M2 replaced M1 since 1986.

Ojo (1999) held an independent opinion to this, "Nigeria experienced an era of regulation (up to 1986) which featured direct controls on quantitative ceilings on bank credit, sectoral credit allocation and interest rate regulation". The aim was to restrain the growth in money supply, using the cash reserve requirement changes as supplementary measures when necessary. The second era (since 1986) featured market based approach to monetary policy strategy. Bank credits are financed through changes in banks reserve, which are engineered through open market operation (OMO) and activities of discount window.

Again in CBN Bullion publication, April/July 2000, Ojo observed that additional medium to long-term policy measures are now been put in place to ensure proper liquidity management in improving financial environment in Nigeria. Such measures include the introduction of national saving certificate of 3-5 year maturity, Federal Government Development loan stock, vibrant inter-bank market, NDIC impact, universal banking etc. the minimum paid up capital of ₦500 million introduce in 1990 is now ₦1 billion for old and new banks respectively, effective from January 1, 2000. We also have Agricultural Credit Guarantee Scheme (ACGS) with capital base of at least ₦1 billion and for short term and medium term agricultural loans, and the small scale industry loan scheme (10 percent banks' profits set aside). However, Nigeria has not had a long history of market-

based monetary strategy or a true reflection of CBN autonomy, which of course will affect the execution of monetary policy in the economy.

Self-Assessment Exercise

Discuss the monetary strategies in Nigeria

3.2. Effectiveness of Monetary Policy in Nigeria

Monetary policy actions truly affect the economy, but the degree of impact is difficult to measure and analyze because of two reasons. First, is the transmission mechanism, i.e. how will a policy action achieve desired targets in the real economy. The second is the time lag i.e. the inevitable lagged adjustment of economic agents to changes in monetary policy. On transmission mechanism, there is the view that monetary policy affects the economy through their impact on the money supply. Another view suggests that monetary policy affect the economy through their impact on both money supply and interest rate. That is by influencing both the availability of credit and its price. When monetary policy action affects the economy through money supply it will influence the aggregate spending which in turn directly affects the production of goods and services hence the unemployment and inflation rates.

When monetary policy action affects the economy through financial and non-financial variables such as interest rate, discount rate, monetary base etc, it will influence the spending and saving behaviour of economic agents. On the part of the banks, the reserve positions will change, the willingness to lend is affected and there will be a new adjustment in banks portfolio. All these changes in behaviour (spending, savings, lending and portfolio choice) will lead to corresponding changes in aggregate production and income. Again, to have the ultimate impact of monetary policy actions on aggregate production, income and price may occur over a period of several months or even a year. This is because economic agents usually react with a time lag due to complexity of the interrelations among various sectors of the economy. "There is usually a 'feedback effect' as changes in aggregate output and income result on further changes in demand for money and credit which generate additional changes in portfolio choices, the cost and availability of credit and total wealth, which lead again to further changes to the point where these changes will fully work themselves out" (Oyejide,2002).

To overcome the difficulty of predicting the timing and magnitude of the effect of a particular monetary policy action, the monetary authorities needs to have a good knowledge of the complexities of the economy and the ability to 'peer into the future'. Usually, monetary authorities adopt specific growth targets and Taylor's rule. Specific growth target relates to monetary aggregates (money supply), exchange rate and inflation rate. The Taylor's rule is where the monetary authorities adjust the short term nominal interest rate in response to deviations of selected policy indicators such as inflation rate and unemployment rate from their targets. It is important to note that whichever rule

(specific growth target or Taylor's rule) is adopted, it is usually difficult to achieve an optimum results from monetary policy actions. The reason being that economy itself is full of complexities and exogenous shocks.

Often, monetary activities use combined approach by adopting all the rules and with some discretions i.e. 'rules with escape clauses' to allow for some flexibilities. Another major problem militating against the effectiveness of monetary policy is political interference. In most times monetary authorities have instrument independent without monetary policy goals independence and when instruments and goals are well harmonized the monetary policy actions will fail. Effectiveness of monetary policy generally depends on the social and political milieu under which the Central Bank operates. The Central Bank independence, good financial system, social and political stability are the conducive environment for monetary policy implementations. According to Fuhrer (1997, P.34), "a central bank forced to finance the profligate spending of a rogue fiscal authorities would have little scope for conducting monetary policy to stabilize prices and employment properly".

In the same vein, Fisher (1996) argues, "in the imperfect world in which most Central Banks play their trade, political systems tend to behave myopically, favouring inflationary policies with short term benefits and discounting excessively their long-run costs. Only an independent Central Bank, given responsibility for price stability can overcome this inflationary bias". The central issue is that both fiscal and monetary policy will be well coordinated for the latter to be effective.

In assessing the effects of monetary policy in Nigeria, Ogwuma (1994), concludes that, "the ultimate goals of macroeconomic stability and sustainable growth have so far remained elusive". The impact on intermediate target variables also show that monetary aggregates have grown excessively and substantially above the targets set for them e.g. market rate of interest remained high, the Naira exchange rate has depreciated persistently since mid – 1980s.

Ojo (1999) saw monetary policy during 1950s as generally restrictive, yet money supply (M2) increased persistently and well above the established growth rate targets. In an effort to identify the factors hindering monetary policy effectiveness in Nigeria, Ogwuma (1994, P.362) claimed that the CBN could not be entirely blamed. He rather highlighted CBN constraints as:

- Inability of the CBN to regulate money supply in the face of massive government fiscal deficits, and their financing by the CBN as well as the monetization of foreign assets (primary oil receipts).
- Inadequate coordination in the design and implementation of fiscal and monetary policies.
- Lack of independence of the CBN and the inability to act decisively.

In the work of Ojo (1999), he enlarged the list of constraints inhibiting monetary policy effectiveness in Nigeria to include:

- The narrow base of financial market aside from weak productivity capacity;
- The decline of confidence in financial sector due to sharp practices and speculations in money and foreign exchange markets;
- The lack of timely and accurate data needed for effective monetary policy implementation. "In Nigeria, informal sector activities constitute about 30 %"(Obadan, M 2000).

Self-Assessment Exercise

Discuss the effectiveness of monetary policy in Nigeria.

3.3. Overview and Framework for Monetary Policy in Nigeria.

In Nigeria, we had direct monetary control techniques in the years 1960s, 1970 and 1980s until June 1986. The main monetary policy objectives were the maintenance of relative price stability and exchange rate stability to ensure healthy balance of payments position. The major instruments used were administered interest rates, special deposits, administered exchange rates, and prescribed cash reserve requirement and selective credit controls. The most popular was the issuance of credit rationing guidelines i.e. rates of change of the components and aggregate commercial banks loans and advances to the private sectors. Given the fact that the economy and indeed the financial market were narrowly underdeveloped, it was not feasible to adopt the market-base tools of monetary policy and techniques.

Interest rate was controlled to remain at low level in order to promote investment and growth, and to reduce commercial banks reserves and their credit creation capacity, the special deposit requirements were occasionally imposed. The minimum cash ratios was applied only on the bases of banks deposit liabilities and sectoral allocation of bank credit favoured productive sector such as agriculture, industry, construction etc. so as to ensure speedy economic growth and stem inflationary pressures.

By middle 1980s following the introduction of SAP, more indirect monetary techniques were adopted. This was because of the emergence of market-oriented financial system, which h requires effective mobilization of financial saving effective resources allocation. Apart from achieving the primary goals of price and exchange rate stability, there was the urgent need for economic growth and employment in the new policy regime. The monetary policy activities since the introduction of SAP can be summarized as in the work of Anyanwu (1997):

- Deregulation of interest rate in August 1987, though with an upper limit of 21% on lending rate and floor level of 13.5% for saving, prescribed the difference between deposit and lending to 4 percent spread points;
- To reduce the adverse effect of high interest rate on productivity, the strict interest rate deregulation had been reversed since Nov. 1993;
- Increase commercial bank cash reserve requirement in 1989, 1990 and 1992;
- Merchant bank liquidity ratio varied from 39% of demand deposits and call money to 20% of total deposits, but rose again by 1990.
- Public sectors accounts were transferred from commercial bank to Central Bank.
- Issuance of stabilization securities particularly in 1990 to mop up excess liquidity.
- 1991 saw the calculation of cash reserve requirement based not only on demand deposit but including time and saving deposit.
- Since September 1992, the CBN released to the financial system in Nigeria serious prudential guidelines, growth oriented sectoral credit allocation and sound financial management. To this extent there was increased minimum paid-up capital requirement, capital adequacy ratio, and minimum cash reserve and liquidity ratio requirement.
- Open market operation was introduced in June 30, 1993 by the CBN. This led to the buying and selling of government securities such as treasury bills, treasury certificates and government development stocks. OMO was used to achieve substantial monetary tightening so as to reduce inflationary pressures and continuous fall in the foreign exchange value of Naira. According to Nnana (2002).
- There was CBN decree 24 of 1991 and Banks and Financial Institutions Decree (BAFID) 25 of 1991. Also, there was CBN amendment decree 37 of 1998 and BAFID 38 of 1998 that grant CBN more discretion and autonomy (from the control of the ministry of finance) in the conduct of monetary policy.
- Cash reserve requirement (CRR) was increased from 6% in 1995 to 8% in 1997 and 12.5% in April 2001.
- Minimum rediscount rate (MMR) which influences other interest rates was reviewed upward from 18.5% in June 2001 to 20.5% in September, 2001 so as to contain the rapid monetary expansion arising from the expansionary fiscal policy of the three tiers of government in Nigeria.

Indeed, OMO has been the principal instrument of liquidity management, complemented by reserve requirements (cash reserve requirement and statutory minimum liquidity ratios), discount window operations and very recently the issuance of CBN certificates. Interest rate is market determined and influenced by the CBN in line with the desired macroeconomic objectives including price and exchange rate stability, through adjustments of its Minimum Rediscount Rate (MRR). The 2002/2003 monetary policy circular of CBN adopted new medium term monetary framework to take care of the lagged effect of monetary policy on the ultimate objectives. This is to avoid time

inconsistency in implementation and over reaction of the economy due to temporary shocks.

Self-Assessment Exercise

Discuss the various targets of monetary policy

4.0 CONCLUSION

The target of monetary policy is accounted for through the effect of growth, employment and prices and this has a multiplier effect on the performance of the economy. However, because the monetary policy tools are unable to work directly on these policy variables (growth, employment and prices), the policy-makers in the economy rely on the target they can control very well to achieve economic development. More so, the indicators of monetary policy is to be used to work well in the economy, but to pick an appropriate indicator for monetary policy, the policy-maker must tackle various issues such as money supply and how to control it, the issue on the effect of money supply on business/economic activity and the influence of policy-maker on an indicator to be used on the economic variables.

5.0 SUMMARY

In this unit, we have learnt the target monetary policy and its implication on the economic variables such as growth, employment and prices and the indicators of monetary policy in the economy, which it was concluded in this unit that the policy-maker must be careful in choosing an indicator for the economy.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the tree target for monetary policy in an economy
2. Explain the indicators of monetary policy.

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MODULE TWO: MONETARY POLICY: INSTRUMENTS AND TYPES

Unit One: Instruments of Monetary Policy
Unit Two: Expansionary Monetary Policy Vs Restrictive Monetary Policy
Unit Three: Lag in Monetary Policy
Unit Four: Role of Monetary Policy in a Developing Economy

UNIT ONE: INSTRUMENTS OF MONETARY POLICY

CONTENTS

1.0. Introduction
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3.0. Main content
    3.1 Instruments of Monetary Policy
        3.1.1 Direct Instruments of Monetary Policy
        3.1.2 Indirect Instruments of Monetary Policy
    3.2 Monetary Policy Management in Nigeria
        3.2.1 Legal and Institutional Framework for Monetary Policy in Nigeria
4.0 Conclusion
5.0 Summary
6.0 Tutor-Marked Assignment
4.0 References/Further Readings

1.0. INTRODUCTION

The instruments of monetary policy are of two types: first, quantitative, general or indirect; and second, qualitative, selective or direct. However, these two instruments affect the level of aggregate demand through the supply of money, cost of money and availability of credit. Of the two types of instruments, the first category includes bank rate variations, open market operations (OMO) and changing reserve requirements. They are meant to regulate the overall level of credit in the economy through commercial banks. The selective credit controls aim at controlling specific types of credit. They include changing margin requirement and regulation of consumer credit. So therefore we will start this lecture by discussion them one after the other.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of instruments of monetary policy.
- Know the basic macroeconomics concepts

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3.0. MAIN CONTENT

3.1 Instruments of Monetary Policy

Monetary policy guides the central bank's supply of money in order to achieve the objectives of price stability (or low inflation rate), full employment, and growth in aggregate income. This is necessary because money is a medium of exchange and changes in its demand relative to supply, necessitate spending adjustments. Fiduciary or paper money is issued by the central bank based on an estimate of the demand for cash. To conduct monetary policy effectively, the central bank adjusts the monetary aggregates, the policy rate or the exchange rate in order to affect the variables which it does not control directly. The instruments of monetary policy used by the central bank depend on the level of development of the economy, especially the financial sector. These instruments could be direct or indirect.

3.1.1 Direct Instruments of Monetary Policy

(a) Direct or Selective Credit Control

The central bank can direct Deposit Money Banks on the maximum percentage or amount of loans (credit ceilings) to different economic sectors or activities, interest rate caps, liquid asset ratio and issue credit guarantee to preferred loans. In this way the

available savings is allocated and investment directed in particular directions as desired by the authorities.

Selective credit controls are used to influence specific types of credit for particular purposes. They usually take the form of changing margin requirements to control speculative activities within the economy. When there is brisk speculative activity in the economy or in particular sectors in certain commodities and prices start rising, the central bank raises the margin requirement on them. The result is that the borrowers are given less money in loans against specified securities. For instance, raising the margin requirement to 60% means that the pledger of securities of the value of N10,000 will be given 40% of their value, that is N4,000 as loan. In case of recession in a particular sector, the central bank encourages borrowing by lowering margin requirements.

Finally, for an effective anticylical monetary policy, bank rate, open market operations, reserve ratio and selective control measures are required to be adopted simultaneously. But it has been accepted by all monetary theorists that:

i. The success of monetary policy is nil in a depression when business confidence is at its lowest ebb
ii. It is successful against inflation

The monetarists assert that as against fiscal policy, monetary policy possesses greater flexibility and it can be implemented rapidly.

3.1.2 Indirect Instruments of Monetary Policy

i. Reserve Requirements

This instrument is used by the central bank to influence the level of bank reserves and hence, their ability to grant loans. Reserve requirements are lowered in order to free reserves for banks to grant loans and thereby increase money supply in the economy. On the other hand, they are raised in order to reduce the capacity of banks to provide loans thereby reducing money supply in the economy.

This weapon was suggested by Keynes in his ***Treatise on Money*** and the USA was the first to adopt it as a monetary device. Every bank is required by the law to keep a certain percentage of its total deposits in the form of a reserve fund in its vaults and also a certain percentage with the central bank. When prices are rising, the central bank raises the reserve ratio. Banks are required to keep more with the central bank. Their reserves are reduced and they lend less. The volume of investment, output and employment are adversely affected. In the opposite case, when the reserve ratio is lowered, the reserves of

commercial banks are raised. They lend more and the economic activity is favourably affected.

ii. Open Market Operations (OMO)

The most important and flexible tool of monetary policy is open market operations. It is the buying and selling of government securities in the open market (primary or secondary) in order to expand or contract the amount of money in the banking system. By purchasing securities, the central bank injects money into the banking system and stimulates growth whereas by selling securities it absorbs excess money. Thus, if there is excess liquidity in the system, the central bank will in a bid to reduce the money supply sell the government securities such as Treasury Bills. On the other hand, in periods of liquidity shortages, the central bank buys government securities so as to increase money supply.

Instruments commonly used for this purpose include treasury bills, central bank bills, or prime commercial paper. OMO enables the central bank to influence the cost and availability of reserves and bring about desired changes in bank credit and money supply. This important instrument of monetary policy has a number of advantages because it is flexible and precise, it is implemented quickly and easily reversed and the central bank has complete control. The effectiveness of OMO, however, depends on the existence of well-developed financial markets that are sensitive to interest rate movements. Open market operations (OMO) refer to sale and purchase of securities in the money market by the central bank. When prices are rising and there is need to control them, the central bank sells securities. The reserves of commercial banks are reduced and they are not in a position to lend more to the business community. Further investment is discouraged and the rise in prices is checked. Contrariwise, when recessionary forces start in the economy, the central bank buys securities. The reserves of commercial banks are raised. They lend more. Investment, output, employment, income and demand rise, and fall in price is checked.

iii. Discount Window Operations

This instrument is a facility provided by the central bank which enables the DMBs to borrow reserves against collaterals in form of government or other acceptable securities. The central bank operates this facility in accordance with its role as lender of last resort and transactions are conducted in form of short term (usually overnight) loans. The central bank lends to financially sound DMBs at the policy rate. This rate sets the floor

for the interest rate regime in the money market (the nominal anchor rate) and thereby affects the supply of credit, the supply of savings (which affects the supply of reserves and monetary aggregate) and the supply of investment (which affects employment and GDP).

iv. Exchange Rate

The balance of payments can be in deficit or in surplus and this can affect the monetary base, hence the money supply, in one direction or the other. By selling or buying foreign exchange, the central bank ensures that the exchange rate is at an optimal level. The real exchange rate when misaligned affects the current account balance because of its impact on external competitiveness.

v. Prudential Guidelines

The central bank may require DMBs to exercise particular care in their credit operations in order to achieve specified outcomes. Key elements of prudential guidelines remove some discretion from bank management and replace them with rules.

vi. Moral Suasion

The central bank issues licenses to DMBs and regulates the operation of the banking system. Thus, it can persuade banks to follow certain policies such as credit restraint or expansion, increase savings mobilization and promote exports through financial support, which otherwise they may not do, on the basis of their risk/return assessment.

vii. Bank Rate Policy

The bank rate is the minimum lending rate of the central bank at which it rediscounts first class bills of exchange and government securities held by the commercial banks. When the central bank finds that inflationary pressure have started emerging within the economy, it raises the bank rate. Borrowing from the central banks, becomes costly and commercial banks borrow less from it. The commercial banks, in turn, raise their lending rates to the business community and borrowers borrow less from the commercial banks. There is contraction of credit and prices are checked from rising further. On the contrary, when prices are depressed, the central bank lowers the bank rate. It is cheap to borrow from the central bank on the part of commercial banks. The latter also lower their lending rates. Businessmen are encouraged to borrow more. Investment is encouraged. Output, employment, income and demand start rising and the downward movement of prices is checked.

3.2 Monetary Policy Management in Nigeria

3.2.1 Legal and Institutional Framework for Monetary Policy in Nigeria

Monetary policy (formulation and implementation) is the responsibility of the Central Bank of Nigeria (CBN), established in 1958 through the Central Bank of Nigeria Act 1958. The Act made the formulation and execution of monetary policy the exclusive responsibility of the CBN. The various amendments to the Act between 1968 and 1970 curtailed the power of the Bank in monetary policy management by subjugating it to the supervisory purview of the Federal Ministry of Finance. Although the operational autonomy of the Bank was restored by the

CBN Act of 1991, the 1997 amendment brought the Bank back to the supervision of the Ministry of Finance; a situation which was reversed by the 1998 amendment and confirmed by the Central Bank of Nigeria Act 2007. Thus presently, the CBN is the monetary authority in Nigeria with instrument autonomy in line with international best practice. One of the major innovations of the CBN
Act 2007 was the creation of the Monetary Policy Committee (MPC) with the responsibility for monetary policy decisions. The Committee meets bi-monthly for policy decisions under the chairmanship of the Governor of the Bank. There are other committees involved in monetary policy management.

(a) The Institutional Arrangement

i. The Monetary Policy Technical Committee (MPTC)
The MPTC keeps track of economic and financial system developments on monthly basis and provides technical documents on issues of interest for the MPC meeting. The Committee, chaired by the Deputy Governor, Economic Policy
(DGEP), meets once every month and two weeks prior to the MPC meeting.

ii. The Monetary Policy Implementation Committee (MPIC)

THE MPIC serves as the implementation arm of the MPC. It is chaired by the Deputy Governor (Economic Policy), with membership comprising ten Departments from Policy, Operations, Surveillance and Corporate Directorates, as well as the Monetary Operations Adviser (MOA) and the Consultant (Statistics). The Committee is responsible for the implementation of monetary policy as decided by the MPC. It meets weekly to assess the liquidity position of the banking system and reviews issues regarding banking system infrastructure as well as the health of the banking system.

iii. The Liquidity Assessment Group (LAG)

The LAG meets daily to assess the liquidity situation and to suggest policy actions to be taken on each day in both the foreign exchange and domestic money markets. It follows up the implementation of monetary policy measures and reports to the MPIC. The

membership of LAG consists of the Monetary Policy Department (MPD), Banking & Payment System Department (BPSD), Trade and Exchange Department (TED), Reserve Management Department (RED), and Research Department (RD). It is chaired by FMD.

iv. The Fiscal Liquidity Assessment Committee (FLAC)

The FLAC was inaugurated on April 26, 2007 by the Bank, with membership consisting of relevant CBN departments; and departments and agencies of the Federal Government involved in fiscal operations. The terms of reference of the Committee include: (a) providing information on the operations of the Treasury to the Liquidity Assessment Group (LAG) of the Bank for forecasting the level of liquidity in the economy; (b) providing policy advice on fiscal issues to the Management of the Bank; and (c) generating a robust database on the operations of the Treasury that have implication for domestic liquidity. The Committee meets weekly and is chaired by the MPD. There is also the Annual Monetary Policy Conference and Quarterly Monetary Policy Forum which assesses developments in the economy and suggests broad directions for monetary policy. Figure 5.1 shows the current institutional framework for monetary policy.

Self-Assessment Exercise

Explain the principal instruments of monetary policy.

4.0 CONCLUSION

We can conclude that monetary policy plays an important role in increasing the growth rate of the economy by influencing the cost and availability of credit, by controlling inflation and maintaining equilibrium in the balance of payments.

5.0 SUMMARY

In this unit, we have learnt the instruments of monetary policy, and it was discussed that there are direct and indirect instruments of monetary policy. We also learnt about monetary policy management as well as legal and institutional framework for monetary policy in Nigeria. I belief you must have learnt how both the two policies work in the economy.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the instruments of monetary policy in Nigeria.
2. Explain about monetary policy management in Nigeria.

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UNIT TWO: EXPANSIONARY MONETARY POLICY VS RESTRICTIVE MONETARY POLICY

CONTENTS

1.0. Introduction
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3.1.1. Scope and Limitations
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3.2.1. Scope and Limitations
4.0 Conclusion
5.0 Summary
6.0 Tutor-Marked Assignment
7.0. References/Further Readings

2.0. INTRODUCTION

In this unit we shall discuss expansionary and restrictive monetary policy. An expansionary (or easy) monetary policy is used to overcome a recession or depression or a deflationary gap. On the other hand, a monetary policy designed to curtail aggregate demand is called restrictive (or dear) monetary policy. It is used to overcome an inflationary gap. Therefore, we will start this lecture by discussing them one after the other.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Understand the meaning of expansionary monetary policy.
- Comprehend the meaning of restrictive monetary policy.

.

3.0. MAIN CONTENT

3.1. Expansionary Monetary Policy

An expansionary (or easy) monetary policy is used to overcome a recession or depression or a deflationary gap. When there is a fall in consumer demand for goods and services, and in business demand for investment goods, a deflationary gap emerges. The central bank start an expansionary monetary policy that eases the credit market conditions and leads to an upward shift in aggregate demand. For this purpose, the central bank purchases government securities in the open market, lowers the reserve requirements of member banks, lower the discount rate and encourages consumer and business credit through selective credit in the money market, and improves the economy.

In Nigeria, when the CBN's monetary policy Committee wishes to increase the money supply, it can do a combination of three things:

1. Purchase securities on the open market, known as Open Market Operations
2. Lower the CBN Monetary Policy Rate (MPR)
3. Lower Reserve Requirements

These all directly impact the interest rate. When the CBN buys securities on the open market, it causes the price of those securities to rise. The MPR is an interest rate, so lowering it is essentially lowering interest rates. If the CBN instead decides to lower reserve requirements, this will cause banks to have an increase in the amount of money they can invest. This causes the price of investments such as bonds to rise, so interest

rates must fall. No matter what tool the CBN uses to expand the money supply interest rates will decline and bond prices will rise.

Increases in bond prices will have an effect on the exchange market. Rising bond prices will cause investors to sell those bonds in exchange for other bonds. When interest rates are lower, the cost of financing capital projects is less. So all else being equal, lower interest rates lead to higher rates of investment. When the policy-making group at the Federal level gathers, they take a detailed look at current and expected economic conditions. The members of the monetary policy committee will be given forecasts of the likely direction of the economy in the upcoming year or so. To be effective, the committee desires to anticipate economic problems rather than reacting to current conditions.

Let us look at the scenario facing the Nigeria in early 2016. The Nigerian economy had been growing at a rapidly increasing clip during the preceding years. As 2016 began, several key indicators of the economy were entering the danger area. For example, crude oil exports were dwindling and industrial capacity utilization was reaching a level that could cause an increase in the inflation rate by the later part of 2016 if low economic growth rates continued. Rather than wait for the anticipated inflation to materialize, the Federal Government through the CBN initiated an expansionary monetary policy to speed the growth rate of GDP. Figure 2 is money market equilibrium, which shows the demand and supply of money in the money market.

***Figure 2*: Money Market Equilibrium**

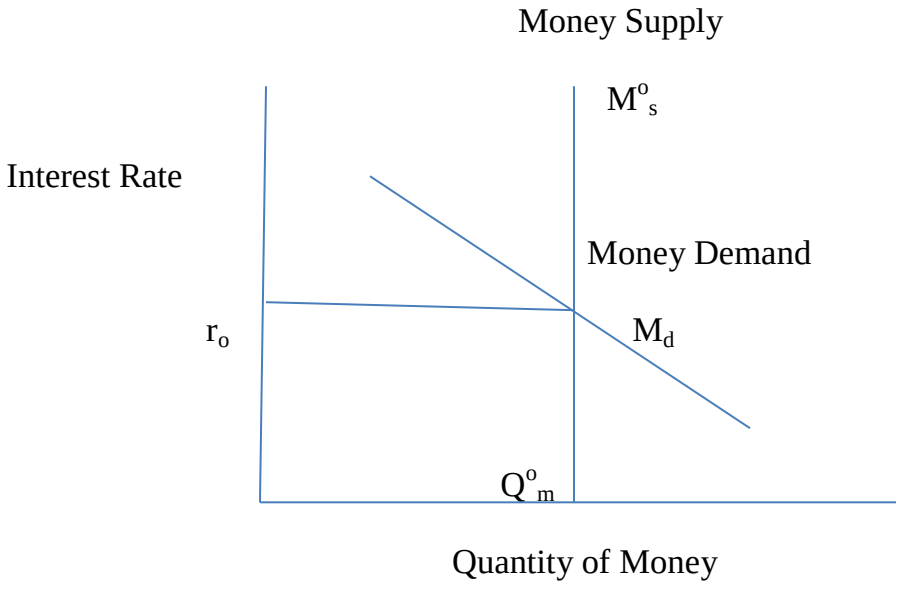


Figure 2 shows the demand and supply of money in the money market**.** We show the money supply as a vertical line at a level controlled by the CBN. The equilibrium interest rate, r_0, is determined by the intersection of the demand for money and the supply of money, labeled money supply.

3.1.1. Scope and Limitations

During the 1930s and 1940s, it was believed that the success of monetary policy in stimulating recovery from a depression was severely limited than in controlling a boom and inflation. This view emerged from the experiences of the Great Depression and the appearance of Keynes's General Theory.

The monetarists hold that during a depression the central bank can increase the reserves of commercial banks through a cheap money policy. They can do so by buying securities and reducing the interest rate. As a result, their ability to extend credit facilities to borrowers increases. But the experience of the Great Depression tells us that in a serious depression when there is pessimism among businessmen, the success of such a policy is practically nil. In such a situation, banks are helpless in bringing about a revival. Since business activity is almost at a standstill, businessmen do not have any inclination to borrow to build up inventories even when the rate of interest is very low. Rather, they want to reduce their inventories by repaying loans already drawn from the banks.

Moreover, the question of borrowing for long-term capital needs does not arise in a depression when the business activity is already at a very low level. The same is the case with consumers who faced with unemployment and reduced incomes do not like to purchase any durable goods through bank loans. Thus all that the banks can do is to make credit available but they cannot force business men and consumers to accept it. In the 1930s, very low interest rates and the piling up of unused reserves with the banks did not have any significant impact on the depressed economies of the world.

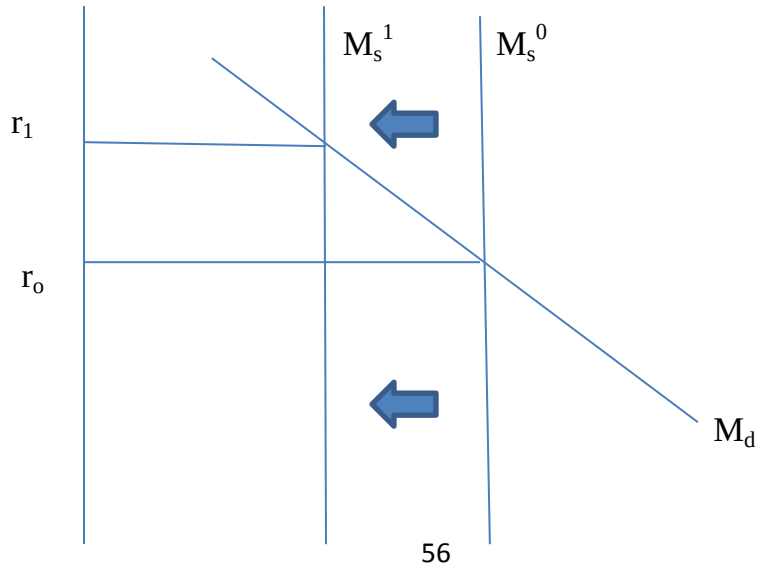
This is not to say that an easy monetary policy in times of severe contraction will be without beneficial effect, its effect will be largely that of preventing a bad situation from getting worse. But a restrictive monetary policy combined with a business downturn would surely aggravate the downturn-the classical example of this was the monetary policy in 1931 that contributed to the deepening of the Great Depression. However, if credit is readily available on favourable terms, it clearly has a stabilizing effect. By meeting the liquidity requirements of business, it can slow and perhaps reduce the extent of the downturn.

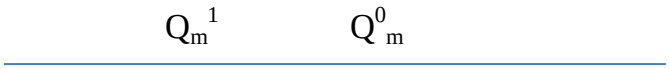
But what led to the decline of monetary policy in the 1930s and 1940s? In addition to the sad and disillusioning experiences during and after the Great Depression, it was Keynes's General Theory that led to a decline in monetary policy as an instrument of economic stabilization. Keynes pointed out that a highly elastic liquidity preference schedule (liquidity trap) renders monetary policy impotent in time of severe depression.

3.2. Restrictive Monetary Policy

A monetary policy designed to curtail aggregate demand is called restrictive (or dear) monetary policy. It is used to overcome an inflationary gap. The economy experiences inflationary pressures due to rising consumers' demand for goods and services and there is also boom in business investment. The central bank starts a restrictive monetary policy in order to lower aggregate consumption and investment by increasing the cost and availability of bank credit. It might do so by selling government securities in the open market, by raising reserve requirements of member banks, by raising the discount rate, and controlling consumer and business credit through selective measures. By such measures, the central bank increases the cost and availability of credit in the money market and thereby controls inflationary pressures. Figure 3 below depicts the effects of restrictive monetary policy when interest rate is increased.

***Figure 3*: Restrictive Monetary Policy (Increases Interest Rates)**





From the figure 3 above, the increase in interest rates causes investment demand to decline. Since investment is a component of GDP and thus aggregate demand, a decrease in investment leads to a reduction in aggregate demand and output (GDP) growth. The consequences are a reduction in inflationary pressures, but the fall in output growth may cause the unemployment rate to rise.

3.2.1. Scope and Limitations

But the scope of monetary policy is severely limited in controlling inflation. The following are its limitations.

1. **Increase in the Velocity of Money**

   One of the important limitations on the effectiveness of monetary policy in controlling inflation is the increase in the velocity of money held by the public. The central bank can control the money supply and the cost of money by a tight monetary policy but it does not possess any power to control the velocity of money. The public can make an effective use of the money supply held by them thereby making a restrictive monetary policy ineffective and this can be done in a number of ways.

   (a) Commercial Bank Portfolio Adjustments

   In the face of a restrictive monetary policy, commercial banks meet the borrowers demand for loans by selling government securities to the central bank. Such a policy simply converts idle deposits held by the banks in the form of securities into active deposits. Government securities lying in the bank's portfolios are substituted for loans. But there is no change in either the total deposits or the money supply with the banks. However, this leads to increase in total spending when the banks lend money to borrowers. Thus the restrictive monetary policy of the central bank becomes ineffective.
   Moreover, when the banks sell government securities to the central bank, their prices fall and the interest on them rises in the market. This will raise the general interest rate structure in the market. But the fall in the prices of securities brings capital losses to the banks and they may be reluctant to bear them. This depends upon whether they expect the fall in security prices (or rise in interest rate) to be short-lived or continue overtime. If the fall in security prices is expected to be short-lived, the banks will prefer to keep securities rather than sell them at a

capital loss. On the other hand, if they expect it to continue for some time, they will sell securities for giving loans to customers at higher interest rates, thereby recouping the capital loss on the sale of securities through higher interest rates on loans. But once the demand for loans subsides, the banks can buy back government securities now at prices lower than at which they sold, and again in the transaction. Thus the commercial banks' policy of portfolio adjustment raises the velocity of total money supply even in the face of a tight monetary policy thereby making the latter ineffective.

(b) The Role of Non-Bank Financial Intermediaries

NBFIs act as a restraint on the effectiveness of monetary policy to restrict the money supply in two ways. First, they sell securities for advancing loans, and thus increase velocity in the same manner as commercial banks do, as explained above. Second, as interest rates on securities rise in a tight monetary policy, financial intermediaries raise the interest rates on deposits with them to attract more funds from savers. This induces savers to shift more idle money to the intermediaries which increase their lending power further. In this way, they are able to raise the velocity of money thereby making tight restrictive monetary policy ineffective.

(c). Methods to Make Better Use of Available Money Supply

The private sector has evolved many ways to make better use of available supply of money which make a restrictive monetary policy ineffective. Some of the methods are the evolvement of improved methods of collecting funds by sales finance companies, borrowing funds by companies from the public at higher rates than offered by commercial banks, etc. by getting funds from sources other than the commercial banks, such institutions are able to increase the velocity of the available supply of money even under restrictive monetary policy.

2. **Discriminatory**

A restrictive monetary policy is discriminatory in its effects on particular sectors of the economy. It is argued that firms that depend upon internal sources of financing are not affected by a restrictive monetary policy. On the other hand, only those firms are affected that depend for funds on the banking system. In particular, a tight monetary policy *"is thought to work against small businessmen, because they are poorer credit risks, and against residential construction and some types of state and local government spending, because they are most sensitive to changes in credit cost."* It may slow down or even halt spending by them.

3. **Threat To Credit Market**

If the central bank rigorously tightens the credit market and investors expect continued increases in interest rate, this may lead to the drying up of loanable funds to the credit market. As a result, securities may not be sold and the credit market may cease to function.

4. **Threatens Solvency of NBFIS**

   A vigorous restrictive monetary policy by swiftly raising interest rates may threaten the solvency of such NBFIs as savings banks, and savings and loan associations. This is because unlike the commercial banks, they are not in a position to adjust themselves to rapidly increasing interest rates.

5. **Alter Expectations of Borrowers and Lenders**

   A very tight monetary policy may alter the expectations of borrowers and lenders. So they bring irreversible changes in credit market conditions. A rapid rise in interest rates may so change expectations that even when this policy is abandoned and an expansionary policy is started, lenders may be reluctant to make long-term loans in anticipation of rise in interest rates again. On the other hand, borrowers may borrow long-term funds even if they do not need them immediately in anticipation of rise in interest rates in the future.

6. **Time Lags**

   Another important limitation of a tight monetary policy is the existence of time lags which are related to the need of action, its recognition, and the decision and operation of actions in time. As the monetary authority is not able to adopt restrictive monetary measures in time due to these time lags, monetary policy works very slowly and hence it is not very effective in controlling inflation.

4.0 CONCLUSION

We can conclude that monetary policy plays an important role in increasing the growth rate of the economy by influencing the cost and availability of credit, by controlling inflation and maintaining equilibrium in the balance of payments. Expansionary monetary policy causes an increase in bond prices and a reduction in interest rates. It also lowers interest rates which lead to higher levels of capital investment.

The restrictive monetary policy is used by the CBN to deal with situations of either high inflation or an anticipated rise in future inflation. By raising interest rates, the CBN will either reduce or slow the growth of aggregate demand. If the CBN is counteracting actual high inflation rates, it raises interest rates to decrease aggregate demand, and a recession

is the likely consequence. In this case, GDP growth becomes negative and unemployment rates jump upward. If instead, the CBN is dealing with anticipated future inflation, the appropriate CBN policy is to raise interest rates only enough to slow the growth rate in aggregate demand. If done correctly, the growth of aggregate demand will be consistent with the expansion in aggregate supply (productive capacity), which is also known as the fabled soft landing.

5.0 SUMMARY

In this unit, we have learnt the expansionary and restrictive monetary policy, and it was discussed that expansionary monetary policy is used to overcome a recession or depression or deflationary gap while restrictive monetary policy is to curtail aggregate demand and it is used to overcome an inflationary gap. I belief you must have learnt how both the two policies work in the economy.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the expansionary monetary policy.
2. Explain the restrictive monetary policy.

7.0 REFERENCES/FURTHER READINGS

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UNIT 3: LAG IN MONETARY POLICY

CONTENTS

4.0. Introduction
5.0. Objectives
6.0. Main content
    3.1. Types of Lags
    3.2. Lags in Monetary Policy
4.0 Conclusion
5.0 Summary
6.0 Tutor-Marked Assignment
7.0. References/Further Readings

1.0INTRODUCTION

One of the limitations of monetary policy in countercyclical manner is the existence of time lags. It takes time for the monetary authority to realize the need for action and its recognition, and the taking of action and the effect of the action on economic activity. Friedman define lag as the timing relation between the resulting monetary series and resulting series of effects of monetary actions. According to him, monetary actions affect economic conditions only after a lag that is both long and variable.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. Main Content

3.1. Types of Lags

Friedman distinguishes among three basic lags: the recognition lag, the administrative lag, and the operation lag. These lags are explained as under:

1. **The Recognition Lag:** It refers to the time between the development of need for action and the recognition of that need by the monetary authority. It is difficult to know the occurrence of a turning point in a business cycle and recognize the need for action by the monetary authority. Empirical evidence in the U.S. suggests that in the past the Federal Reserve Bank recognized the need for monetary action only three months after the trough in a business cycle and about six months after a boom had started. Thus the recognition has been longer at the peaks than at the troughs.
2. **The Administrative Lag:** This relates to the period of time that occurs when the monetary authority recognizes the need for action and the data on which action is actually taken. The length of the administration lag (or decision or action lag) varies with the type of monetary policy being considered and the decision-making process of the monetary authority. Usually, this lag is very short. The administrative lag and thee recognition lag taken together are termed as inside lags because they fall within the jurisdiction of monetary authority. Sometimes, it is difficult to distinguish between the two because the time between recognition of the need for action and the taking of action is so short that the administrative lag becomes the recognition lag.
3. **Operation Lag:** The operation lag (or the effects lag) refers to the period of time between the adoption of monetary policy and the final effect of that policy on the economic activity. For analytical convenience, this lag is divided into the intermediate lag and the outside lag.

(i) The intermediate Lag relates to the moment at which action is taken by the monetary authority and the moment at which the economy is faced with changes in interest rates and the money supply through monetary action.

(ii) The outside Lag refers to the time involved between changes in interest rates, total reserves, credit rationing, etc., and their effects on aggregate spending, income and output of the economy.

3.2. Lags in monetary policy

The effectiveness of monetary policy as a countercyclical instrument depends heavily on the quickness of policy action and the quickness of response of the economy. Ideally, policy actions would be taken as soon as adverse developments appeared, or even in anticipation of such developments; and there would be an immediate and full response of aggregate demand and of such policy objectives as employment and output. Under such ideal conditions a high degree of stability might be maintained continuously. In practice, of course, such ideal performance is not realized. Economists have long recognized three lags in monetary policy: (1) the recognition lag—the interval between the time when a need for action develops and the time the need is recognized; (2) the administrative lag—the interval between recognition and the actual policy action; and (3) the operational lag—the interval between policy action and the time that the policy objectives, such as output and employment, respond fully.

Both the length and significance of these lags depend heavily on the reliability of economic forecasting. If developments could be reliably forecast well in advance, the first two lags could be eliminated and actions could be taken soon enough to allow for the operational lag. But when economic forecasting is unreliable the monetary authority is likely to wait until a development appears before taking action to deal with it. In such cases the length of the operational lag becomes highly important for countercyclical policy. Those who favor flexible countercyclical monetary policies implicitly assume that the operational lag is rather short, that all or most of the effects of a monetary action will be achieved within a few months or a year.

This view has been challenged by some economists, notably by Milton Friedman. These economists contend that the responses to a given monetary action are distributed over time and that the full effects are realized only after a lag of considerably more than a year. Because of this, monetary actions taken to counter cyclical fluctuations may actually produce, or at least accentuate, these fluctuations. For example, expansionary policy actions taken to counter recession may have little effect for several months and then achieve their full expansionary effects on aggregate demand only when the economy is in its next boom phase. And actions taken to restrict aggregate demand during a boom may in fact precipitate and accentuate an ensuing depression.

For this and other reasons, members of this school oppose flexible countercyclical monetary policies. They believe that a greater degree of stability will be achieved by a monetary policy aimed at a steady growth of the money supply, regardless of cyclical conditions. This growth should be at an annual rate approximating the growth rate of real gross national product.

This whole question, which is obviously crucial for countercyclical monetary policy, remains unresolved and controversial. Friedman's theoretical and statistical arguments have been strongly challenged but not wholly refuted. Much more research is needed on both the magnitude and timing of responses to monetary policy actions. The same applies to the various types of fiscal policy actions.

Self-Assessment Exercise

List and explain the three types of lags.

4.0 CONCLUSION

In this unit, we can conclude that time lags occur between the onset of an economic problem and the full impact of the policy intended to correct the problem. Policy lags come in two broad categories--inside lag (getting the policy activated) and outside lag (the subsequent impact of the policy). The three specific inside lags are recognition lag, decision lag, and implementation lag. The one specific outside lag is termed impact lag. Policy lags can reduce the effectiveness of business-cycle stabilization policies and can even destabilize the economy. Policy lags, especially inside lags, are often different for monetary policy than for fiscal policy.

5.0 SUMMARY

In this unit, we discuss on time lag in monetary policy and monetary policy changes normally take a certain amount of time to have an effect on the economy. The time lag could span anywhere from nine months up to two years. Fiscal policy and its effects on output have a shorter time lag. When monetary policy attempts to stimulate the economy by lowering interest rates, it may take up to 18 months for evidence of any improvement in economic conditions to show up. Additionally, if the government changes its fiscal policy and chooses to increase spending, for example, the fiscal stimulus may still take several months to have any effect on the economy.

6.0 TUTOR-MARKED ASSIGNMENT

1. Differentiate between long and variable lags in monetary policy.
2. Explain the term "intermediate lag".

7.0 REFERENCES/FURTHER READINGS

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.

UNIT 4 ROLE OF MONETARY POLICY IN A DEVELOPING ECONOMY

CONTENTS

0.0. Introduction
1.0. Objectives
2.0. Main content
  3.1. History of Monetary Policy
  3.2. The Role of monetary policy in a developing Economy
  3.3. Limitations of monetary policy in less developing countries
4.0 Conclusion
5.0 Summary
6.0 Tutor-Marked Assignment
7.0. References/Further Readings

1.0 INTRODUCTION

Monetary policy in an underdeveloped country plays an important role in increasing the growth rate of the economy by influencing the cost and availability of credit, by controlling inflation and maintaining equilibrium in the balance of payments. So the principal objectives of monetary policy in such a country are to control credit for controlling inflation and to stabilize the price level, to stabilize the exchange rate, to achieve equilibrium in the balance of payments and to promote economic development.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- History of Monetary Policy
- Understand the role of monetary policy in a developing economy
- Know the limitations of monetary policy in less developing countries.

3.0. MAIN CONTENT

3.1. History of Monetary Policy

Monetary policy is associated with interest rates and availability of credit. Instruments of monetary policy have included short-term interest rates and bank reserves through the monetary base. For many centuries there were only two forms of monetary policy: (i) Decisions about coinage; (ii) Decisions to print paper money to create credit. Interest rates, while now thought of as part of monetary authority, were not generally coordinated with the other forms of monetary policy during this time. Monetary policy was seen as an executive decision, and was generally in the hands of the authority with seigniorage, or the power to coin. With the advent of larger trading networks came the ability to set the price between gold and silver, and the price of the local currency to foreign currencies. This official price could be enforced by law, even if it varied from the market price.

Paper money called "jiaozi" originated from promissory notes in 7th century China. Jiaozi did not replace metallic currency, and were used alongside the copper coins. The successive Yuan Dynasty was the first government to use paper currency as the predominant circulating medium. In the later course of the dynasty, facing massive shortages of specie to fund war and their rule in China, they began printing paper money without restrictions, resulting in hyperinflation.

With the creation of the Bank of England in 1694, which acquired the responsibility to print notes and back them with gold, the idea of monetary policy as independent of executive action began to be established. The goal of monetary policy was to maintain the value of the coinage, print notes which would trade at par to specie, and prevent coins from leaving circulation. The establishment of central banks by industrializing nations was associated then with the desire to maintain the nation's peg to the gold standard, and to trade in a narrow band with other gold-backed currencies. To accomplish this end, central banks as part of the gold standard began setting the interest rates that they charged, both their own borrowers, and other banks who required liquidity. The maintenance of a gold standard required almost monthly adjustments of interest rates.

During the period 1870–1920, the industrialized nations set up central banking systems, with one of the last being the Federal Reserve in 1913. By this point the role of the central bank as the "lender of last resort" was understood. It was also increasingly understood that interest rates had an effect on the entire economy, in no small part because of the marginal revolution in economics, which demonstrated how people would change a decision based on a change in the economic trade-offs.

Monetarist economists long contended that the money-supply growth could affect the macro economy. These included Milton Friedman who early in his career advocated that government budget deficits during recessions be financed in equal amount by money creation to help to stimulate aggregate demand for output. Later he advocated simply increasing the monetary supply at a low, constant rate, as the best way of maintaining low inflation and stable output growth. However, when U.S. Federal Reserve Chairman Paul Volcker tried this policy, starting in October 1979, it was found to be impractical, because of the highly unstable relationship between monetary aggregates and other macroeconomic variables. Even Milton Friedman later acknowledged that direct money supply targeting was less successful than he had hoped

3.2 The Role of Monetary Policy in a Developing Economy

The roles of monetary policy in a developing economy are discussed as follows:

1. To Control Inflationary Pressures

To control inflationary pressures arising in the process of development, monetary policy requires the use of both quantitative and qualitative methods of credit control. Of the instruments of monetary policy, the open market operations (OMO) are not successful in controlling inflation in underdeveloped countries because the bill market is small and

undeveloped. Commercial banks keep an elastic cash-deposit ratio because the central bank's control over them is not complete. They are also reluctant to invest in government securities due to their relatively low interest rates. Moreover, instead of investing in government securities, they prefer to keep their reserves in liquid form such as gold, foreign exchange and cash. Commercial banks are also not in the habit of rediscounting or borrowing from the central bank.

2. The Bank Rate Policy

Bank rate is also not so effective in such countries due to:

(i) The lack of bill of discount
(ii) The narrow size of the bill market
(iii) A large non-monetised sector where barter transactions take place
(iv) The existence of indigenous banks which do not discount bills with the central bank
(v) The habit of the commercial banks to keep large cash reserves and
(vi) The existence of a large unorganized money market.

3. The Use of Variable Reserve Ratio

The use of variable reserve ratio as an instrument of monetary policy is more effective than open market operations and bank rate policy in LDCs. Since the market for securities is very small, open market operations (OMO) are not successful. But a rise or fall in the variable reserve ratio by the central bank reduces or increases the cash available with the commercial banks without affecting adversely the prices of securities. Again, the commercial banks keep large cash reserves which cannot be reduced by an increase in bank rate or sale of securities by the central bank. But raising the cash reserve ratio reduces liquidity with the banks. The use of variable reserve ratio has certain limitations in LDCs. The non-banking financial intermediaries do not keep deposits with the central bank so they are not affected by it. Second, banks which do not maintain excess liquidity are more affected than those who maintain it.

4. The Qualitative Credit Control Measures

The qualitative credit control measures are however, more effective than the quantitative measures in influencing the allocation of credit, and thereby the pattern of investment. In LDCs, there is a strong tendency to invest in gold, jewelry, inventories, real estate, etc., instead of in alternative productive channels available in agriculture, mining, plantations and industry. The selective credit controls are more appropriate for controlling and

limiting credit facilities for such unproductive purposes. They are beneficial in controlling speculative activities in food grains and raw materials. They prove more useful in controlling 'sectional inflations' in the economy. They curtail the demand for imports by making it obligatory on importers to deposit in advance an amount equal to the value of foreign currency. This has also the effect of reducing the reserves of the banks in so far as their deposits are transferred to the central bank in the process. The selective credit control measures may take the form of changing the margin requirements against certain types of collateral, the regulation of consumer credit and the rationing of credit.

5. To Achieve Price Stability

Monetary policy is an important instrument for achieving price stability. It brings a proper adjustment between the demand for and supply of money. An imbalance between the two will be reflected in the price level. A shortage of money supply will retard growth while an excess of it will lead to inflation. As the economy develops, the demand for money increases due to the gradual monetization of the non-monetized sector, and the increase in agricultural and industrial production. These will lead to increase in the demand for transaction and speculative motives. So the monetary authority will have to raise the money supply more than proportionate to the demand for money in order to avoid inflation.

6. To Bridge Bop Deficit

Monetary policy in the form of interest rate policy plays an important role in bridging the balance of payments deficit. Under-developed countries develop serious balance of payments difficulties to fulfil the planned targets of development. To establish infrastructure like power, irrigation, transport, etc and directly productive activities like iron and steel, chemicals, electrical, fertilizers, etc., underdeveloped countries have to import capital equipment, machinery, raw materials, spares and components thereby raising their imports. But exports are almost stagnant. They are high-priced due to inflation. As a result, an imbalance is created between imports and exports which leads to disequilibrium in the balance of payments. Monetary policy can help in narrowing the balance of payments deficit through high rate of interest. A high interest rate attracts the inflow of foreign investments and helps in bridging the balance of payment gap.

7. Interest Rate Policy

A policy of high rate in an underdeveloped country also acts as an incentive to higher savings, develops banking habits and speed up the monetization of the economy which

are essential for capital formation and economic growth. A high interest rate policy is also anti-inflationary in nature, for it discourages borrowing and investment for speculative purposes, and in foreign currencies. Further, it promotes the allocation of scare capital resources in more productive channels. Certain economists favour a low interest rate policy in such countries because high interest rates discourage investment. But empirical evidence suggests that investment in business and industry is interest-inelastic in underdeveloped countries because interest forms a very low proportion of the total cost of investment. Despite, these opposite views, it is advisable for the monetary authority to follow a policy of discriminatory interest rate, which means charging high interest rates for non-essential and unproductive uses and low interest rates for productive uses.

8. To Create Banking And Financial Institutions

One of the objectives of monetary policy in an underdeveloped country is to create and develop banking and financial institutions in order to encourage, mobilize and channelize savings for capital formation. The monetary authority should encourage the establishment of branch banking in rural and urban areas. Such a policy will help in monetizing the non-monetized sector and encourage saving and investment for capital formation. It should also organize and develop money and capital market. These are essential for the success of a development-oriented monetary policy which also includes debt management.

9. Debt Management

Debt management is one of the important functions of monetary policy in an underdeveloped country. It aims at proper timing and issuing of government bond, stabilizing their prices and minimizing the cost of servicing the public debt. The primary aim of debt management is to create conditions in which public borrowing can increase from year to year. Public borrowing is essential in such countries in order to finance development programmes and to control the money supply. But public borrowing must be at cheap rates. Low interest rate raise the price of government bonds and make them more attractive to the public. They also keep the burden of the debt low.

However, an appropriate monetary policy, as outlined above, helps in controlling inflation, bridging balance of payments gap, encouraging capital formation and promoting economic growth.

3.2. Limitations of Monetary Policy in Less Developing Countries.

The experience of underdeveloped countries reveals that monetary policy plays a limited role in such countries. The following arguments are given in support of this view

1. Large Non-Monetized Sector

There is a large non-monetized sector which hinders the success of monetary policy in such countries. People mostly live in rural areas where barter is practiced. However, monetary policy fails to influence this large segment of the economy.

2. Underdeveloped Money and Capital Markets

The money and capital markets are undeveloped. These markets lack in bills, stocks and shares which limit the success of monetary policy.

3. Large Number of NBFIs

Non-bank financial intermediaries like the indigenous bankers operate on a large scale in such countries but they are not under the control of the monetary authority. This factor limits the effectiveness of monetary policy in such countries.

4. High Liquidity

The majority of commercial banks possess high liquidity so that they are not influenced by the credit policy of the central bank. This also makes monetary policy less effective.

5. Foreign Banks

In almost every underdeveloped country foreign owned commercial banks exist. They also render monetary policy less effective by selling foreign assets and drawing money from their head offices when the central bank of the country is following a tight monetary policy.

6. Small Bank Money

Monetary policy is also not successful in such countries because bank money comprises a small proportion of the total money supply in the country. As a result, the central bank is not in a position to control credit effectively.

7. Money Not Deposited With Banks

The well-to-do people do not deposit money with banks but use it in buying jewelry, gold, real estate, in speculation, in conspicuous consumption, etc. Such activities encourage inflationary pressures because they lie outside the control of the monetary authority.

Therefore, because of these limitations of monetary policy in an under-developed country, economists advocate the use of fiscal policy along with it.

Self-Assessment Exercise

Explain the principal instruments of monetary policy.

4.0 CONCLUSION

The unit concludes that Monetary policy is the process by which the monetary authority of a country controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency.

5.0 SUMMARY

In this unit, we have discussed extensively on history of monetary policy, role of monetary policy in a development economy and the limitations of monetary policy in less developing countries.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss the role of monetary policy in an economy
3. What are the limitations of monetary policy in less developing countries.

7.0 REFERENCES/FURTHER READINGS

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MODULE THREE: CHANGES IN THE VALUE OF MONEY: THE QUANTITY THEORY OF MONEY AND ITS VARIANTS

Unit One: Value Of Money

Unit Two: The Cambridge Equations: The Cash Balance Approach

Unit Three: The Keynesian Theory Of Money And Price

Unit Four: Friedman's Restatement of Quantity Theory of Money and Supply of Money

UNIT ONE: VALUE OF MONEY

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        3.2.1 Quantity theory of money: Income version
        3.2.2 Assumption of the Theory
        3.2.3 Criticisms of the theory
4.0 Conclusion
5.0 Summary
2.0 Tutor-Marked Assignment
7.0 References/Further Readings

1.0. INTRODUCTION

Value for money is in the perception of the buyer or receiver of goods and/or services. Proof of good value for money is in believing or concluding that the goods/services received was worth the price paid. Examples of the types of factors that may be considered are suitability, quality, skills, price, whole of life costs and other criteria. The mix of these and other factors and the relevant importance of each will vary on a case by case basis. It is also the difference between the amount of work that should have been paid for and the actual amount paid. To calculate the labor rate variance, determine the difference between actual labor rate per hour and standard labor rate per hour and then multiply by number of hours actually worked.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

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3.0. MAIN CONTENT

3.1 Meaning of Value Of Money

By value of money is meant the purchasing power of money over goods and services in a country. What a naira can buy in Nigeria represents the value of money of the naira. However, the phrase, 'value of money' is a relative concept which expresses the relationship between a unit of money and the goods and services which can be purchased with it. This shows that the value of money is related to the price level because goods and services are purchased with a money unit at given prices. But the relation between the value of money and price level is an inverse one. If V presents the value of money and P the price level, then, V = 1/P. When the price level rises, the value of money falls, and vice versa. Thus, in order to measure the values of money, we have to find out the general price level.

The value of money is of two types, namely:

1. **The internal value of money and**
2. **The external value of money.**

The internal value of money refers to the purchasing power of money over domestic goods and services. The external value of money refers to the purchasing power of money over foreign goods and service.

Self-Assessment Exercise

Discuss the various targets of monetary policy

3.2. Fisher's Quantity Theory of Money: The Cash Transactions Approach

The quantity theory of money states that the quantity of money is the main determinant of the price level or the value of money. Any change in the quantity of money produces an exactly proportionate change in the price level.

In the words of Irving Fisher, "Other things remaining unchanged, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa." If the quantity of money is doubled, the price level will also double and the value of money will be one half. On the other hand, if the quantity of money is reduced by one half, the price level will also be reduced by one half and the value of money will be twice.

Fisher has explained his theory in terms of his equation of exchange:

PT=MV+ M* V*…….. (1)

Where P = price level, or 1/P. = the value of money;

M = the total quantity of legal tender money;

V = the velocity of circulation of M;

M* = the total quantity of credit money;

V* = the velocity of circulation of M;

T = the total amount of goods and services exchanged for money or transactions performed by money.

This equation equates the demand for money (PT) to supply of money (MV= M* V*). The total volume of transactions multiplied by the price level (PT) represents the demand for money.

According to Fisher, PT is SPQ. In other words, price level (P) multiplied by quantity bought (Q) by the community (S) gives the total demand for money. This equals the total supply of money in the community consisting of the quantity of actual money M and its velocity of circulation V plus the total quantity of credit money M* and its velocity of circulation V*. Thus, the total value of purchases (PT) in a year is measured by

MV+ M* V*. Hence, the equation of exchange is PT=MV+ M* V*'. In order to find out the effect of the quantity of money on the price level or the value of money, we write the equation as

$$P = \frac{MV + M^* V^*}{T} \quad \ldots\ldots\ldots\

When the quantity of money is doubled to M_2, the price level is also doubled to P_2. Further, when the quantity of money is increased four-fold to M_4, the price level also increases by four times to P_4. This relationship is expressed by the curve P = f (M) from the origin at 45°.

In panel B of the figure, the inverse relation between the quantity of money and the value of money is depicted where the value of money is taken on the vertical axis. When the quantity of money is M_1 the value of money is HP. But with the doubling of the quantity of money to M_2, the value of money becomes one-half of what it was before, $1/P_2$. And with the quantity of money increasing by four-fold to M_4, the value of money is reduced by $1/P_4$. This inverse relationship between the quantity of money and the value of money is shown by downward sloping curve 1/P = f (M).

Let us give a numerical example.

Suppose the quantity of money (M) is N5,000,000 in an economy, the velocity of circulation of money (V) is 5; and the total output to be transacted (T) is 2,500,000 units, the average price level (P) will be:

P = MV/T

= 5, 000,000 × 5/ 2,500,000 = 2,500,000/ 2,500,000

= N10 per unit.

If now, other things remaining the same, the quantity of money is doubled, i.e., increased to N10,000,000 then:

P = 10,000,000 × 5/ 2,500,000 = N20 per unit

We thus see that according to the quantity theory of money, price level varies in direct proportion to the quantity of money. A doubling of the quantity of money (M) will lead to the doubling of the price level. Further, since changes in the quantity of money are assumed to be independent or autonomous of the price level, the changes in the quantity of money become the cause of the changes in the price level.

3.2.1. Quantity Theory of Money: Income Version:

Fisher's transactions approach to quantity theory of money described in equation (1) and (2) above considers such variables as total volume of transaction (T) and average price level of these transactions are conceptually vague and difficult to measure.

Therefore, in later years quantity theory was formulated in income from which considers real income or national output (i.e., transactions of final goods only) rather than all transactions. As the data regarding national income or output is readily available, the income version of the quantity theory is being increasingly used. Moreover, the average price level of output is a more meaningful and useful concept.

Indeed, in actual practice, the general price level in a country is measured taking into account only the prices of final goods and services which constitute national product. It may be noted that even in this income version of the quantity theory of money, the function of money is considered to be a means of exchange as in the transactions approach of Fisher. In this approach, the concept of income velocity of money has been used instead of transactions velocity of circulation. By income velocity we mean the average number of times per period a unit of money is used in making payments involving final goods and services, that is, national product or national income. In fact, income velocity of money is measured by Y/M where Y stands for real national income and M for the quantity of money.

In view of the above, the income version of quantity theory of money is written as under:

MV = PY…….. (3)

P = MV/PY …… (4)

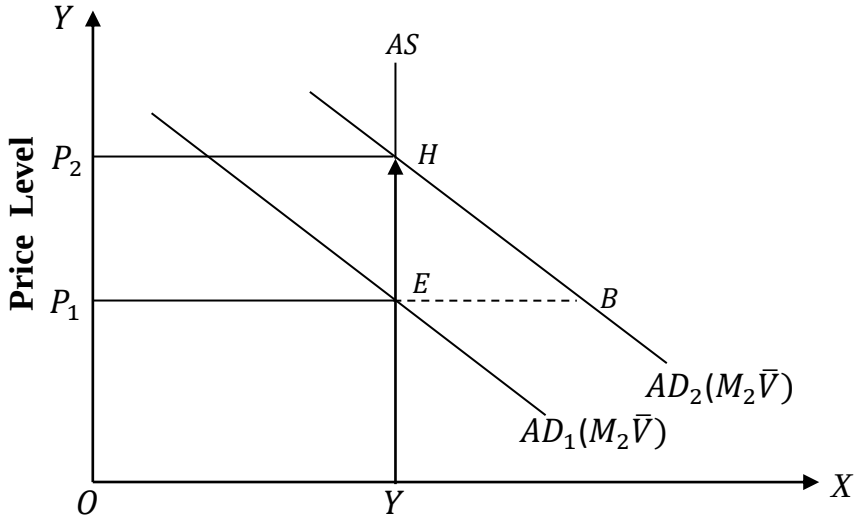
Where, M = Quantity of money

V = Income velocity of money

P = Average price level of final goods and services

Y = Real national income (or aggregate output)

***Figure 5*: Aggregate Demand and Aggregate Supply**



Aggregate Demand and Aggregate Supply

Like that in the transactions approach, in this new income version of the quantity theory also the different variables are assumed to be independent of each other. Further, income velocity of money (V) and real income or aggregate output (Y) is assumed to be given and constant during a short period.

More specifically, they do not vary in response to the changes in M. In fact, real income or output (Y) is assumed to be determined by the real sector forces such as capital stock, the amount and skills of labour, technology etc. But as these factors are taken to be given and constant in the short-run and further full employment of the given resources is assumed to be prevailing due to the operation of Say's law and wage-price flexibility supply of output is taken to be inelastic and constant for purposes of determination of price level. It follows from equations (3) and (4) above that with income velocity (V) and national output (F) remaining constant, price level (P) is determined by the quantity of money (M).

Classical quantity theory of money is illustrated in Fig. 20.1 through aggregate demand and aggregate supply model. It is worth noting that the quantity of money (M) multiplied by the income velocity of circulation (V), that is, MV gives us aggregate expenditure in

the quantity theory of money. Now with a given quantity of money, say M_1 and constant velocity of money V, we have a given amount of monetary expenditure (M_1 V).

Given this aggregate expenditure, at a lower price level more quantities of goods can be purchased and at a higher price level, less quantities of goods can be purchased. Therefore, in accordance with classical quantity theory of money aggregate demand representing M_1 slopes downward as shown by the aggregate demand curve AD_1 in Fig. 20.1. If now the quantity of money is increased, say to M_2, aggregate demand curve representing new aggregate monetary expenditure M_2 V will shift upward.

As regards, aggregate supply curve, due to the assumption of wage-price flexibility, it is perfectly inelastic at full-employment level of output as is shown by the vertical aggregate supply curve AS in Fig. 20.1. Now, with a given quantity of money equal to M_1, aggregate demand curve AD_1 cuts the aggregate supply curve AS at point E and determines price level OP_1.

Now, if the quantity of money is increased to M_2, the aggregate demand curve shifts upward to AD_2. It will be seen from Fig. 20.1 that with the increase in aggregate demand to AD_2 consequent to the expansion in money supply to M_2, excess demand equal to EB emerges at the current price level OP_1. This excess demand for goods and services will lead to the rise in price level to OP_2 at which again aggregate quantity demanded equals the aggregate supply which remains unchanged at OY due to the existence of full employment in the economy.

3.2.2. Assumptions of the Theory:

Fisher's theory is based on the following assumptions:

1. P is passive factor in the equation of exchange which is affected by the other factors.
2. The proportion of M* to M remains constant.
3. V and V^* are assumed to be constant and are independent of changes in M and M*.
4. T also remains constant and is independent of other factors such as M, M*, V and V^*.
5. It is assumed that the demand for money is proportional to the value of transactions.
6. The supply of money is assumed as an exogenously determined constant.
7. The theory is applicable in the long-run.
8. It is based on the assumption of the existence of full employment in the economy.

3.2.3. Criticisms of the Theory:

The Fisherian quantity theory has been subjected to severe criticisms by economists.

1. Truism:

According to Keynes, "The quantity theory of money is a truism." Fisher's equation of exchange is a simple truism because it states that the total quantity of money (MV+M*V*) paid for goods and services must equal their value (PT). But it cannot be accepted today that a certain percentage change in the quantity of money leads to the same percentage change in the price level.

2. Other things not equal:

The direct and proportionate relation between quantity of money and price level in Fisher's equation is based on the assumption that "other things remain unchanged". But in real life, V, V* and T are not constant. Moreover, they are not independent of M, M* and P. Rather, all elements in Fisher's equation are interrelated and interdependent. For instance, a change in M may cause a change in V.

Consequently, the price level may change more in proportion to a change in the quantity of money. Similarly, a change in P may cause a change in M. Rise in the price level may necessitate the issue of more money. Moreover, the volume of transactions T is also affected by changes in P. When prices rise or fall, the volume of business transactions also rises or falls. Further, the assumptions that the proportion M* to M is constant, has not been borne out by facts. Not only this, M and M* are not independent of T. An increase in the volume of business transactions requires an increase in the supply of money (M and M*).

3. Constants Relate to Different Time:

Prof. Halm criticizes Fisher for multiplying M and V because M relates to a point of time and V to a period of time. The former is a static concept and the latter a dynamic. It is therefore, technically inconsistent to multiply two non-comparable factors.

4. Fails to Measure Value of Money:

Fisher's equation does not measure the purchasing power of money but only cash transactions, that is, the volume of business transactions of all kinds or what Fisher calls the volume of trade in the community during a year. But the purchasing power of money (or value of money) relates to transactions for the purchase of goods and services for consumption. Thus the quantity theory fails to measure the value of money.

5. Weak Theory:

According to Crowther, the quantity theory is weak in many respects. First, it cannot explain 'why' there are fluctuations in the price level in the short run. Second, it gives undue importance to the price level as if changes in prices were the most critical and important phenomenon of the economic system. Third, it places a misleading emphasis

on the quantity of money as the principal cause of changes in the price level during the trade cycle.

Prices may not rise despite increase in the quantity of money during depression; and they may not decline with reduction in the quantity of money during boom. Further, low prices during depression are not caused by shortage of quantity of money, and high prices during prosperity are not caused by abundance of quantity of money. Thus, "the quantity theory is at best an imperfect guide to the causes of the trade cycle in the short period" according to Crowther.

6. Neglects Interest Rate:

One of the main weaknesses of Fisher's quantity theory of money is that it neglects the role of the rate of interest as one of the causative factors between money and prices. Fisher's equation of exchange is related to an equilibrium situation in which rate of interest is independent of the quantity of money.

7. Unrealistic Assumptions:

Keynes in his General Theory severely criticized the Fisherian quantity theory of money for its unrealistic assumptions. First, the quantity theory of money is unrealistic because it analyses the relation between M and P in the long-run. Hence, it neglects the short-run factors which influence this relationship. Second, Fisher's equation holds well under the assumption of full employment. But Keynes regards full employment as a special situation. The general situation is one of the under-employment equilibrium. Third, Keynes does not believe that the relationship between the quantity of money and the price level is direct and proportional.

Rather, it is an indirect one via the rate of interest and the level of output. According to Keynes, "So long as there is unemployment, output and employment will change in the same proportion as the quantity of money, and when there is full employment, prices will change in the same proportion as the quantity of money." Thus Keynes integrated the theory of output with value theory and monetary theory and criticized Fisher for dividing economics "into two compartments with no doors and windows between the theory of value and theory of money and prices."

8. V not Constant:

Further, Keynes pointed out that when there is underemployment equilibrium, the velocity of circulation of money V is highly unstable and would change with changes in the stock of money or money income. Thus it was unrealistic for Fisher to assume V to be constant and independent of M.

9. Neglects Store of Value Function:

Another weakness of the quantity theory of money is that it concentrates on the supply of money and assumes the demand for money to be constant. In order words, it neglects the store-of-value function of money and considers only the medium-of-exchange function of money. Thus the theory is one-sided.

10. Neglects Real Balance Effect:

Don Patinkin has critcised Fisher for failure to make use of the real balance effect, that is, the real value of cash balances. A fall in the price level raises the real value of cash balances which leads to increased spending and hence to rise in income, output and employment in the economy. According to Patinkin, Fisher gives undue importance to the quantity of money and neglects the role of real money balances.

11. Static:

Fisher's theory is static in nature because of its unrealistic assumptions as long-run, full employment, etc. It is, therefore, not applicable to a modern dynamic economy.

Self-Assessment Exercise

Discuss in detail the quantity theory of money

4.0 CONCLUSION

The quantity theory of money is the idea that the supply of money in an economy determines the level of prices and changes in the money supply result in proportional changes in prices. In other words, the quantity theory of money states that a given percentage changes in the money supply results in an equivalent level of inflation or deflation. This concept is usually introduced via an equation relating money and prices to other economic variables.

5.0 SUMMARY

In this unit, we have learnt about the quantity theory of money which is the main determinant of the price level or the value of money and that any change in the quantity of money produces an exactly proportionate change in the price level.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the quantity theory of money
2. Explain and analyze the fisher's equation of money

7.0 REFERENCES/FURTHER READINGS

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.

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UNIT TWO: THE CAMBRIDGE EQUATIONS: THE CASH BALANCE APPROACH

CONTENTS

1.0. Introduction
2.0. Objectives
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3.4 Superiority of Cambridge cash balances approach over Fisher's transaction approach of money.
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1.0. INTRODUCTION

The Cambridge equation formally represents the Cambridge cash-balance theory, an alternative approach to the classical quantity theory of money. Both quantity theories, Cambridge and classical, attempt to express a relationship among the amount of goods produced, the price level, amounts of money, and how money moves. The Cambridge equation focuses on money demand instead of money supply. The theories also differ in explaining the movement of money: In the classical version, associated with Irving Fisher, money moves at a fixed rate and serves only as a medium of exchange while in the Cambridge approach money acts as a store of value and its movement depends on the desirability of holding cash.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. MAIN CONTENT

3.1. The Cambridge Equations: The Cash Balances Approach

As an alternative to Fisher's quantity theory of money, economists associated with Cambridge University, including Alfred Marshall, A.C. Pigou, and John Maynard Keynes (before he developed his own, eponymous school of thought) contributed to a quantity theory of money that paid more attention to money demand than the supply-oriented classical version. The Cambridge economists argued that a certain portion of the money supply will not be used for transactions; instead, it will be held for the convenience and security of having cash on hand. This portion of cash is commonly represented as ***k***, a portion of nominal income (the product of the price level and real

income), $P \cdot Y$). The Cambridge economists also thought wealth would play a role, but wealth is often omitted from the equation for simplicity. The Cambridge equation is thus:

$$M^d = k \cdot P \cdot Y$$

$M^d = K.P.Y$

Assuming that the economy is at equilibrium ($M^d = M$), Y is exogenous, and *k* is fixed in the short run, the Cambridge equation is equivalent to the equation of exchange with velocity equal to the inverse of *k*:

$$M \cdot \frac{1}{k} = P \cdot Y$$

The Cambridge equation first appeared in print in 1917 in Pigou's "Value of Money". Keynes contributed to the theory with his 1923 *Tract on Monetary Reform*.

The Cambridge version of the quantity theory led to both Keynes's attack on the quantity theory and the Monetarist revival of the theory. Marshall recognized that *k* would be determined in part by an individual's desire to hold liquid cash. In his *General Theory of Employment, Interest and Money*, Keynes expanded on this concept to develop the idea of liquidity preference,[3] a central Keynesian concept.

Self-Assessment Exercise

Discuss the cash balances Approach of Cambridge equation.

3.2. Quantity Theory of Money: The Cambridge Cash Balance Approach:

The equation of exchange has been stated by Cambridge economists, Marshall and Pigou, in a form different from Irving Fisher. Cambridge economists explained the determination of value of money in line with the determination of value in general.

Value of a commodity is determined by demand for and supply of it and likewise, according to them, the value of money (i.e., its purchasing power) is determined by the demand for and supply of money. As studied in cash-balance approach to demand for money Cambridge economists laid stress on the store of value function of money in sharp contrast to the medium of exchange function of money emphasized by in Fisher's transactions approach to demand for money.

According to cash balance approach, the public likes to hold a proportion of nominal income in the form of money (i.e., cash balances). Let us call this proportion of nominal income that people want to hold in money as *k*.

Then cash balance approach can be written as:

$M^d = kPY$ ….(1)

Y = real national income (i.e., aggregate output)

P = the price level PY = nominal national income

k = the proportion of nominal income that people want to hold in money

M^d = the amount of money which public want to hold

Now, for the achievement of money-market equilibrium, demand for money must equal worth the supply of money which we denote by ***M***. It is important to note that the supply of money ***M*** is exogenously given and is determined by the monetary policies of the central bank of a country. Thus, for equilibrium in the money market.

$M = M^d$

As $M^d = kPY$

Therefore, in equilibrium $M = kPY$ …(2)

Monetary equilibrium Cambridge cash balance approach is shown in Fig. 6, where demand for money is shown by a rising straight line kPY which indicates that with k and Y being held constant demand for money increases proportionately to the rise in price level. As price level rises people demand more money for transaction purposes.

Figure 6: **Monetary equilibrium Cambridge cash balance approach**

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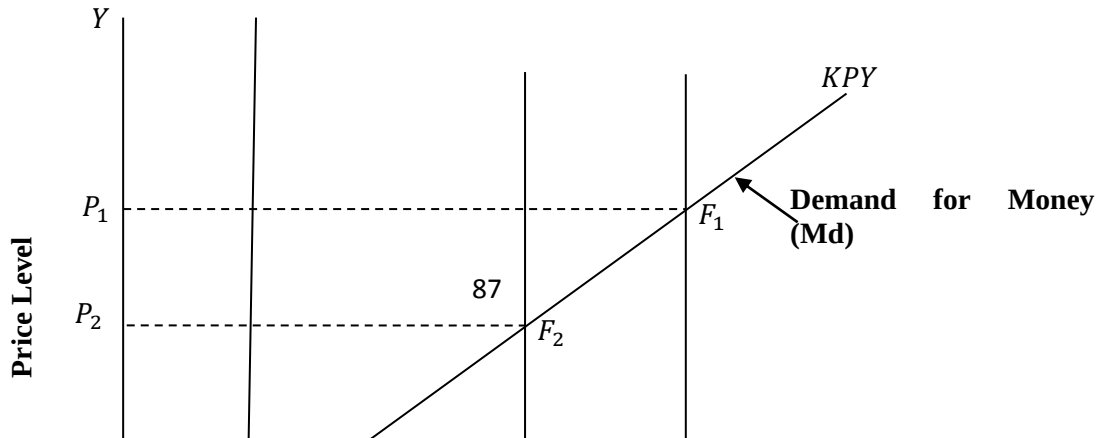

Now, if supply of money fixed by the Government (or the Central Bank) is equal to M_0, the demand for money APK equals the supply of money, M_0 at price level P_0. Thus, with supply of money equal to M_0 equilibrium price level P_0 is determined. If money supply is increased, how the monetary equilibrium will change? Suppose money supply is increased to M_1 at the initial price level P_0 the people will be holding more money than they demand at it.

Therefore, they would want to reduce their money holding. In order to reduce their money holding they would increase their spending on goods and services. In response to the increase in money spending by the households the firms will increase prices of their goods and services.

As prices rise, the households will need and demand more money to hold for transaction purposes (i.e., for buying goods and services). It will be seen from Fig. 20.2 that with the increase in money supply to M_1 new equilibrium between demand for money and supply of money is attained at point E_1 on the demand for money curve kPY and price level has risen to P_1.

It is worth mentioning that k in the equations (1) and (2) is related to velocity of circulation of money V in Fisher's transactions approach. Thus, when a greater proportion of nominal income is held in the form of money (i.e., when k is higher), V falls. On the other hand, when less proportion of nominal income is held in money, K rises. In the words of Crowther, "The higher the proportion of their real incomes that people decide to keep in money, the lower will be the velocity of circulation, and vice versa.

It follows from above that $k = 1/V$. Now, rearranging equation (2) we have cash balance approach in which P appears as dependent variable. Thus, on rearranging equation (2) we have

$P = 1/k.M/Y$……(3)

Like Fisher's equation, cash balance equation is also an accounting identity because k is defined as:

Quantity of Money Supply/National Income, that is, M/PY

Now, Cambridge economists also assumed that k remains constant. Further, due to their belief that wage-price flexibility ensures full employment of resources, the level of real national income was also fixed corresponding to the level of aggregate output produced by full employment of resources.

Thus, from equation (3) it follows that with k and Y remaining constant price level (P) is determined by the quantity of money (M); changes in the quantity of money will cause proportionate changes in the price level.

Some economists have pointed out similarity between Cambridge cash-balance approach and

Fisher's transactions approach. According to them, k is reciprocal of V ($k = 1/V$ or $V = 1/k$). Thus in equation (2) if we replace k by 1, we have

$M = 1/PY$

Or $MV=PY$

Which is income version of Fisher's quantity theory of money? However, in spite of the formal similarity between the cash balance and transactions approaches, there are important conceptual differences between the two which makes cash balance approach superior to the transactions approach. First, as mentioned above.

Fisher's transactions approach lays stress on the medium of exchange function of money, that is, according to him people want money to use it as a means of payment for buying goods and services. On the other hand, cash balance approach emphasizes the store-of-value function of money. They hold money so that some value is stored for spending on goods and services after some lapse of time.

Further, in explaining the factors which determine velocity of circulation, transactions approach points to the mechanical aspects of payment methods and practices such as frequency of wages and other factor payments, the speed with which funds can be sent from one place to another, the extent to which bank deposits and cheques are used in dealing with others and so on.

On the other hand, k in the cash balance approach is behavioural in nature. Thus, according to Prof S.B. Gupta, 'Cash- balance approach is behavioural in nature: it is built around the demand for money, however simple. Unlike Fisher's V, k is a behavioural ratio. As such, it can easily lead to stress being placed on the relative usefulness of money as an asset."

Thirdly, cash balance approach explains determination of value of money in a framework of general demand-supply analysis of value. Thus, according to this approach, value of money (that is, its purchasing power is determined by the demand for and supply of money).

To sum up, cash balance approach has made some improvements over Fisher's transactions approach in explaining the relation between money and prices. However it is essentially the same as the Fisher's transactions approach. Like Fisher's approach, it considers substitution between money and commodities.

That is, if they decide to hold less money, they spend more on commodities rather than on other assets such as bonds, shares real property, and durable consumer goods. Further, like Fisher's transactions approach it visualizes changes in the quantity of money causes proportional changes in the price level.

Like Fisher's approach, cash balance approach also assumes that full- employment of resources will prevail due to the wage-price flexibility. Hence, it also believes the aggregate supply curve as perfectly inelastic at full-employment level of output.

An important limitation of cash balance approach is that it also assumes that the proportion to income that people want to hold in money, that is, k, remains constant. Note that. In practice it has been found that proportionality factor k or- velocity of circulation has not remained constant but has been fluctuating, especially in the short run.

Besides, cash-balance approach falls short of considering demand for money as an asset. If demand for money as an asset were considered, it would have a determining influence on the rate of interest on which amount of investment in the economy depends. Investment plays an important role in the determination of/level of real income in the economy.

It was left to J.M. Keynes who later emphasized the role of demand for money as an asset which was one of the alternative assets in which individuals can keep their income or wealth. Finally, it may be mentioned that other criticisms of Fisher's transactions approach to quantity theory of money discussed above equally apply to the Cambridge cash balance approach.

Self-Assessment Exercise

Discuss the Cambridge cash balances approach of quantity theory of money

3.3. Criticisms Faced By the Cash Balance Approach To The Quantity Theory Of Money

The cash balances approach to the quantity theory of money has been criticized on the following counts:

1. Truisms

Like the transactions equation, the cash balances equations are truisms. Take any Cambridge equation: Marshall's P = M/kY or Pigou's P = kR/M or Robertson's P=M/kT or Keynes's p=n/k, it establishes a proportionate relation between quantity of money and price level.

2. Price Level does not Measure the Purchasing Power

Keynes in his *A Treatise on Money* (1930) criticized Pigou's cash balances equation and also his own real balances equation. He pointed out that measuring the price level in wheat, as Piogu did or in terms of consumption units, as Keynes himself did, was a serious defect. The price level in both equations does not measure the purchasing power of money. Measuring the price level in consumption units implies that cash deposits are used only for expenditure on current consumption. But in fact that they are held for "a vast multiplicity of business and personal purposes." By ignoring these aspects the Cambridge economists have committed a serious mistake.

3. More Importance to Total Deposits

Another defect of the Cambridge equation "lies in its applying to the total deposits considerations which are primarily relevant only to the income-deposits." And the importance attached to κ "is misleading when it is extended beyond the income deposits."

4. Neglects other Factors

Further, the cash balances equation does not tell about changes in the price level due to changes in the proportions in which deposits are held for income, business and savings purposes.

5. Neglect of Saving Investment Effect

Moreover, it fails to analyze variations in the price level due to saving-investment inequality in the economy.

6. k and Y not Constant

The Cambridge equation, like the transactions equation, assumes κ and Y (or R or T) as constant. This is unrealistic because it is not essential that the cash balances (κ) and the income of the people (K) should remain constant even during short period.

7. Fails to Explain Dynamic Behaviour of Prices

The theory argues that changes in the total quantity of money influence the general price level equi-proportionally. But the fact is that the quantity of money influences the price level in an "essential erratic and unpredictable way." Further, it fails to point out the extent of change in the price level as a result of a given change in the quantity of money in the short period. Thus it fails to explain the dynamic behaviour of prices.

8. Neglects Interest Rate

The cash balances approach is also weak in that it ignores other influences, such as the rate of interest which exerts a decisive and significant influence upon the price level. As pointed out by Keynes in his General Theory, the relation between quantity of money and price level is not direct but indirect via the rate of interest, investment, output, employment and income. This is what the Cambridge equation ignores and hence fails to integrate monetary theory with the theory of value and output.

9. Demand for Money not Interest Inelastic

The neglect of the rate of interest as a causative factor between the quantity of money and the price level led to the assumption that the demand for money is interest inelastic. It means that money performs only the function of medium of exchange and does not possess any utility of its own, such as store of value.

10. Neglect of Goods Market

Further, the omission of the influence of the rate of interest in the cash balance approach led to the failure of neoclassical economists to recognize the interdependence between the commodity and money markets. According to Patinkin, they laid an undue concentration on the money market, a corresponding neglect of the commodity markets, and a resulting 'dehumanising'of the analysis of the effects of monetary changes."

11. Neglects Real Balance Effect

Patinkin has criticised the Cambridge economists for their failure to integrate the goods market and the money market. This is borne out by the dichotomy which they maintain between the two markets. The dichotomization implies that the absolute price level in the

economy is determined by the demand and supply of money, and the relative price level is determined by the demand and supply of goods. The cash balances approach keeps the two markets rigidly apart.

For instance, this approach tells that an increase in the quantity of money leads to an increase in the absolute price level but exercises no influence on the market for goods. This is because of the failure of Cambridge economists to recognize "the real balance effect." The real balance effect shows that a change in the absolute price level does influence the demand and supply of goods. The weakness of cash balances approach lies in ignoring this.

12. Elasticity of Demand for Money not Unity

The cash balances theory establishes that the elasticity of demand for money is unity which implies that the increase in the demand for money leads to a proportionate decrease in the price level. Patinkin holds that "the Cambridge function does not imply uniform elasticity."

According to him, this is because of the failure of Cambridge economists to recognize the full implications of the "real balance effect". Patinkin argues that a change in the price level will cause a real balance effect. For instance, a fall in the price level will increase the real value of cash balances held by the people. So, when there is excess demand for money, the demand for goods and services is reduced. In this case, the real balance effect will not cause a proportionate but non-proportionate change in the demand for money. Thus the elasticity of demand for money will not be unity.

13. Neglects Speculative Demand for Money

Another serious weakness of cash balances approach is its failure to consider the speculative demand for money. The neglect of the speculative demand for cash balances makes the demand for money exclusively dependent on money income thereby again neglecting the role of the rate of interest and the store of value function of money.

3.4. Superiority of Cambridge Cash Balances Approach over Fisher's Transaction Approach of Money

The Cambridge cash balances approach to the quantity theory of money is superior to Fisher's transaction approach in many respects. They are discussed as under:

1. Basis of Liquidity Preference Theory of Interest

The cash balances approach emphasizes the importance of holding cash balances rather than the supply of money which is given at a point of time.

It thus led Keynes to propound his theory of liquidity preference and of the rate of interest, and to the integration of monetary theory of value and output.

2. Complete Theory

The cash balances version of quantity theory is superior to the transactions version because the former determines the value of money in terms of the demand and supply of money. Thus it is a complete theory. But in the transactions approach, the determination of value of money is artificially divorced from the theory of value.

3. Discards the Concept of Velocity of Circulation

The cash balances approach is superior to the transactions approach because it altogether discards the concept of the velocity of circulation of money which 'obscures the motives and decisions of people behind it.

4. Related to the Short Period

Again the cash balances version is more realistic than the transactions version of the quantity theory, because it is related to the short period while the latter is related to the long period. As pointed out by Keynes, "In the long-run we may all be dead." So the study of the relationship between quantity of money and price level during the long-run is unrealistic.

5. Simple Equations

In the cash balances equations, transactions relating to final goods only are included where P refers to the level of final goods. On the other hand, in the transactions equation P includes all types of transactions. This creates difficulties in determining the true price level. Thus the former equations are simpler and realistic than the latter.

6. New Formulation in the Monetary Theory

Further, the Cambridge equation regards the cash balances held by the people as a function of the level of income. The introduction of income (Y or R or T or O) in this equation as against V (the velocity of circulation of money) in the transaction equation has made the cash balances equation realistic and led to new formulations in monetary theory. "It points out that changes in the level of money income can come about through changes in the price level, through changes in real output or through both at once."

7. Explains Trade Cycles

Hansen regards κ in the Cambridge equation superior to V in Fisher's equation for understanding cyclical fluctuations. According to him, "Drastic and sudden shifts in the desire to hold money, reflected in a change in k, may produce large and quickly moving changes in the level of income and prices. Shifts in the public psychology, in expectations must be taken into account not less than changes in the money supply. In the Cambridge analysis, a shift in κ may start an upward or downward movement." For instance, when κ (the fraction of total real income that people wish to hold in cash balances) increases because of low business expectation, the price level falls, and vice versa.

8. Study of Subjective Factors

As a corollary to the above, V in Fisher's equation is mechanistic while κ in the Cambridge equation is realistic. The subjective factors behind variations in κ have led to the study of such factors as expectations, uncertainty, motives for liquidity, and the rate of interest in modern monetary theory. In this sense, it can be justifiably said that, "the Cambridge equation moves us on from the tautology represented by the equation of exchange to a study of economic behaviour."

9. Applicable under AH Circumstances

Fisher's transactions approach holds true only under full employment. But the cash balances approach holds under all circumstances whether there is full employment or less than full employment.

10. Based on Micro Factors

The Cambridge version is superior to the Fisherian version because it is based on micro factors like individual decisions and behaviours. On the other hand, the Fisherian version is based on macro factors like T, total velocity of circulation, etc..

Self-Assessment Exercise

Discuss the quantity theory of money base on ;

(i) the Cambridge cash balance Approach
(ii) the Cambridge cash balance Approach

3.5. Similarities between Fisher's Transaction Approach and the Cambridge Cash Balances Approach

There are certain points of similarities between Fisher's transaction approach and the Cambridge cash balances approach. These are discussed as under:

I. Similarities:

The two approaches have the following similarities:

1. Same Conclusion:

The Fisherian and Cambridge versions lead to the same conclusion that there is a direct and proportional relationship between the quantity of money and the price level and an inverse proportionate relationship between the quantity of money and the value of money.

2. Similar Equations:

The two approaches use almost similar equations. Fisher's equation P = MV/T is similar to Robertson's equation P = M/kT However, the only difference is between the two symbols V and k which are reciprocal to each other. Whereas V = (1/k) k = (1/V). Here, V refers to the rate of spending and k the amount of money which people wish to hold in the form of cash balances or do not want to spend. As these two symbols are reciprocal to each other, the differences in the two equations can be reconciled by substituting 1/V for k in Robertson's equation and 1/k for V in Fisher's equation.

3. Money as the Same Phenomenon:

The different symbols given to the total quantity of money in the two approaches refer to the same phenomenon. As such MV+M*V* of Fisher's equation, M of the equations of Pigou and Robertson, and n of Keynes' equation refer to the total quantity of money.

II. Dissimilarities:

Despite these similarities the two approaches have many dissimilarities:

1. Functions of Money:

The two versions emphasize on different functions of money. The Fisherian approach lays emphasis on the medium of exchange function while the Cambridge approach emphasizes the store of value of function of money.

2. Flow and Stock:

In Fisher's approach money is a flow concept while in the Cambridge approach it is a stock concept. The former relates to a period of time and the latter to a point of time.

3. *V* and *k* Different:

The meaning given to the two symbols V and κ in the two versions is different. In Fisher's equation, V refers to the rate of spending and in Robertson's equation κ refers to the cash balances which people wish to hold. The former emphasizes the transactions velocity of circulation and the latter the income velocity.

4. Nature of Price Level:

In Fisher's equation, P refers to the average price level of all goods and services. But in the Cambridge equation P refers to the prices of final or consumer goods.

5. Nature of T:

In Fisher's version, T refers to the total amount of goods and services exchanged for money, whereas in the Cambridge version, it refers to the final or consumer goods exchanged for money.

6. Emphasis on Supply and Demand for Money:

Fisher's approach emphasizes the supply of money, whereas the Cambridge approach emphasizes both the demand for money and the supply of money.

7. Different in Nature:

The two approaches are different in nature. The Fisherian version is mechanistic because it does not explain how changes in V bring about changes in P. On the other hand, the Cambridge version is realistic because it studies the psychological factors which influence k.

It is on account of these differences that Hansen wrote: "It is not true as is often alleged that the cash balance equation is merely the quantity theory in new algebraic dress."

Self-Assessment Exercise

Discuss the term "Fisher's transaction Approach".

4.0 CONCLUSION

The Cambridge equation formally represents the Cambridge cash-balance theory, an alternative approach to the classical quantity theory of money. Both quantity theories, Cambridge and classical, attempt to express a relationship among the amount of goods produced, the price level, amounts of money, and how money moves. The Cambridge equation focuses on money demand instead of money supply. The theories also differ in

explaining the movement of money: In the classical version, associated with Irving Fisher, money moves at a fixed rate and serves only as a medium of exchange while in the Cambridge approach money acts as a store of value and its movement depends on the desirability of holding cash.

5.0 SUMMARY

In this unit, we have learnt the debate between the Cambridge and the cash balances plus the debate on Cambridge and the Fisher's transaction approach of money and I belief you must follow the flow of this unit in details.

6.0 TUTOR-MARKED ASSIGNMENT

1. Discuss in detail the debate between the Cambridge equation of cash balances Approach and the quantity theory of money.
2. Discuss the similarities between Fisher's transaction Approach and the Cambridge cash balances Approach.

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UNIT THREE: THE KEYNESIAN THEORY OF MONEY AND PRICE

CONTENTS

1.0. Introduction
2.0. Objectives
3.0. Main content
    3.1. Keynes Reformulated quantity theory of money
    3.2. Superiority of the Keynesian theory over the traditional quantity theory of money.
    3.3. Criticisms of keynes theory of money and prices

4.0. Conclusion
5.0. Summary
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1.0. INTRODUCTION

Keynes in his General theory, he attacked the classical quantity theorists for keeping separate monetary theory and value of money. He then presented a reformulated quantity theory of money which brought about a transition from a monetary theory of prices to a monetary theory of output. In doing this, Keynes made an attempt to integrate monetary theory with value theory and also linked the theory of interest into monetary theory. But it is through the theory of output that value theory and monetary theories are brought into just a position with each other.

Keynes does not agree with the older quantity theorists that there is a direct and proportional relationship between quantity of money and prices. According to him, the effect of a change in the quantity of money on prices is indirect and non-proportional.

Keynes complains "that economics has been divided into two compartments with no doors or windows between the theory of value and the theory of money and prices." This dichotomy between the relative price level (as determined by demand and supply of goods) and the absolute price level (as determined by demand and supply of money) arises from the failure of the classical monetary economist to integrate value theory with monetary theory. Consequently, changes in the money affect only the absolute prices level but exercise no influence on the relative price level. Further, Keynes criticizes the classical theory of static equilibrium in which money is regarded as neutral and does not influence the economy's real equilibrium relating to relative prices. According to him, the problems of the real world are related to the theory of shifting equilibrium whereas money enters as a link between the present and future.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Understand Keynes reformulated quantity theory of money
- Know the superiority of the Keynesian theory over the traditional quantity theory of money
- Know the criticisms of Keynes' theory of money and prices

3.0. MAIN CONTENT

3.1. Keynes Reformulated Quantity Theory of Money

The Keynesian reformulated quantity theory of money is based on the following:

Assumptions:

1. All factors of production are in perfectly elastic supply so long as there is any unemployment.

2. All unemployed factors are homogeneous, perfectly divisible and interchangeable.

3. There are constant returns to scale so that prices do not rise or fall as output increases.

4. Effective demand and quantity of money change in the same proportion so long as there are any unemployed resources.

Given these assumptions, the Keynesian chain of causation between changes in the quantity of money and in prices is an indirect one through the rate of interest. So when the quantity of money is increased, its first impact is on the rate of interest which tends to fall. Given the marginal efficiency of capita, a fall in the rate of interest will increase the volume of investment.

The increased investment will raise effective demand through the multiplier effect thereby increasing income, output and employment. Since the supply curve of factors of production is perfectly elastic in a situation of unemployment, wage and non-wage factors are available at constant rate of remuneration. There being constant returns to scale, prices do not rise with the increase in output so long as there is any unemployment.

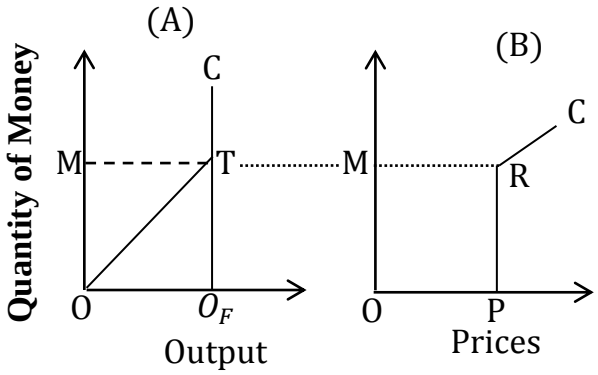
Under the circumstances, output and employment will increase in the same proportion as effective demand, and the effective demand will increase in the same proportion as the quantity of money. But once full employment is reached, output ceases to respond at all

to changes in the supply of money and so in effective demand. The elasticity of supply of output in response to changes in the supply, which was infinite as long as there was unemployment falls to zero. The entire effect of changes in the supply of money is exerted on prices, which rise in exact proportion with the increase in effective demand.

Thus so long as there is unemployment, output will change in the same proportion as the quantity of money, and there will be no change in prices; and when there is full employment, prices will change in the same proportion as the quantity of money. Therefore, the reformulated quantity theory of money stresses the point that with increase in the quantity of money prices rise only when the level of full employment is reached, and not before this.

This reformulated quantity theory of money is illustrated in Figure 7 (A) and (B) where OTC is the output curve relating to the quantity of money and PRC is the price curve relating to the quantity of money. Panel A of the figure shows that as the quantity of money increases from O to M, the level of output also rises along the OT portion of the OTC curve.

Figure 7: **The reformulated quantity theory of money**



As the quantity of money reaches OM level, full employment output OQF is being produced. But after point T the output curve becomes vertical because any further increase in the quantity of money cannot raise output beyond the full employment level OQ_F.

Panel B of the figure shows the relationship between quantity of money and prices. So long as there is unemployment, prices remain constant whatever the increase in the quantity of money. Prices start rising only after the full employment level is reached.

In the figure, the price level OP remains constant at the OM quantity of money corresponding to the full employment level of output OQ_1. But an increase in the quantity

of money above OM raises prices in the same proportion as the quantity of money. This is shown by the RC portion of the price curve PRC.

Keynes himself pointed out that the real world is so complicated that the simplifying assumptions, upon which the reformulated quantity theory of money is based, will not hold. According to him, the following possible complications would qualify the statement that so long as there is unemployment, employment will change in the same proportion as the quantity of money, and when there is full employment, prices will change in the same proportion as the quantity of money.

(1) "Effective demand will not change in exact proportion to the quantity of money.

(2) Since resources are homogenous, there will be diminishing, and not constant returns as employment gradually increases.

(3) Since resources are not interchangeable, some commodities will reach a condition of inelastic supply while there are still unemployed resources available for the production of other commodities.

(4) The wage-unit will tend to rise, before full employment has been reached.

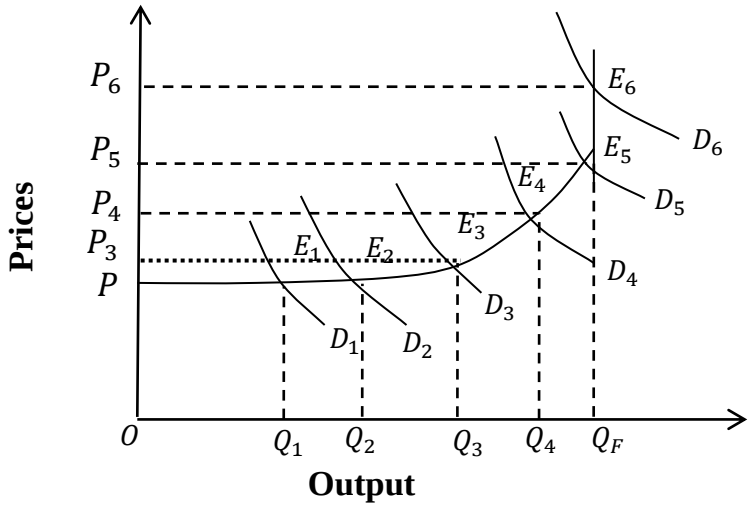
(5) The remunerations of factors entering into marginal cost will not all change in the same proportion."

Taking into account these complications, it is clear that the reformulated quantity theory of money does not hold. An increase in effective demand will not change in exact proportion to the quantity of money, but it will partly spend itself in increasing output and partly in increasing the price level. So long as there are unemployed resources, the general price level will not rise much as output increases. But a sudden large increase in aggregate demand will encounter bottlenecks when resources are still unemployed.

It may be that the supply of some factors becomes inelastic or others may be in short supply and are not interchangeable. This may lead to increase in marginal cost and price. Price would accordingly rise above average unit cost and profits would increase rapidly which, in turn, tend to raise money wages owing to trade union pressures. Diminishing returns may also set in. As full employment is reached, the elasticity of supply of output falls to zero and prices rise in proportion to the increase in the quantity of money.

The complicated model of the Keynesian theory of money and prices is shown diagrammatically in Figure 8 in terms of aggregate supply (S) and aggregate demand (D) curves. The price level is measured on the vertical axis and output on the horizontal axis.

Figure 7: **the Keynesian theory of money and prices**



According to Keynes, an increase in the quantity of money increases aggregate money demand on investment as a result of the fall in the rate of interest. This increases output and employment in the beginning but not the price level. In the figure, the increase in the aggregate money demand from D_1 to D_2 raises output from OQ_1 to OQ_2 but the price level remains constant at OP. As aggregate money demand increases further from D_2 to D_3 output increases from OQ_2 to OQ_3 and the price level also rises to OP_3.

This is because costs rise as bottlenecks develop through the immobility of resources. Diminishing returns set in and less efficient labour and capital are employed. Output increases at a slower rate than a given increase in aggregate money demand, and this leads to higher prices. As full employment is approached, bottlenecks increase. Furthermore, rising prices lead to increased demand, especially for stocks. Thus prices rise at an increasing rate. This is shown over the range in the figure.

But when the economy reaches the full employment level of output, any further increase in aggregate money demand brings about a proportionate increase in the price level but output remains unchanged at that level. This is shown in the figure when the demand curve D^5 shifts upward to D_6 and the price level increases from OP_5 to OP_6 while the level of output remains constant at OQ_F.

Self-Assessment Exercise

List and explain Keynes reformulated quantity theory of money.

3.2. Superiority of the Keynesian Theory over the Traditional Quantity Theory of Money:

The Keynesian theory of money and prices is superior to the traditional quantity theory of money for the following reasons.

Keynes's reformulated quantity theory of money is superior to the traditional approach in that he discards the old view that the relationship between the quantity of money and prices is direct and proportional. Instead, he establishes an indirect and non-proportional relationship between quantity of money and prices.

In establishing such a relationship, Keynes brought about a transition from a pure monetary theory of prices to a monetary theory of output and employment. In so doing, he integrates monetary theory with value theory. He integrates monetary theory with value theory and also with the theory of output and employment through the rate of interest.

In fact, the integration between monetary theory and value theory is done through the theory of output in which the rate of interest plays the crucial role. When the quantity of money increases the rate of interest falls which increases the volume of investment and aggregate demand thereby raising output and employment. In this way, monetary theory is integrated with the theory of output and employment.

As output and employment increase they further raise the demand for factors of production. Consequently, certain bottlenecks appear which raise the marginal cost including money wage rates. Thus prices start rising.

Monetary theory is integrated with value theory in this way. The Keynesian theory is, therefore, superior to the traditional quantity theory of money because it does not keep the real and monetary sectors of the economy into two separate compartments with 'no doors or windows between the theory of value and the theory of money and prices.'

Again, the traditional quantity theory is based on the unrealistic assumption of full employment of resources. Under this assumption, a given increase in the quantity of money always leads to a proportionate increase in the price level. Keynes, on the other hand, believes that full employment is an exception.

Therefore, so long as there is unemployment, output and employment will change in the same proportion as the quantity of money, but there will be no change in prices; and when there is full employment, prices will change in the same proportion as the quantity of money. Thus the Keynesian analysis is superior to the traditional analysis because it studies the relationship between the quantity of money and prices both under unemployment and full employment situations.

Further, the Keynesian theory is superior to the traditional quantity theory of money in that it emphasizes important policy implications. The traditional theory believes that every increase in the quantity of money leads to inflation.

Keynes, on the other hand, establishes that so long as there is unemployment, the rise in prices is gradual and there is no danger of inflation. It is only when the economy reaches the level of full employment that the rise in prices is inflationary with every increase in the quantity of money. Thus this approach has the virtue of emphasizing that the objectives of full employment and price stability may be inherently irreconcilable.

Self-Assessment Exercise

Discuss the traditional theory of money over the Keynesian theory of money.

3.3. Criticisms of Keynes Theory of Money and Prices:

Keynes' views on money and prices have been criticized by the monetarists on the following grounds.

1. Direct Relation:

Keynes mistakenly took prices as fixed so that the effect of money appears in his analysis in terms of quantity of goods traded rather than their average prices. That is why Keynes adopted an indirect mechanism through bond prices, interest rates and investment of the effects of monetary changes on economic activity. But the actual effects of monetary changes are direct rather than indirect.

2. Stable Demand for Money:

Keynes assumed that monetary changes were largely absorbed by changes in the demand for money. But Friedman has shown on the basis of his empirical studies that the demand for money is highly stable.

3. Nature of Money:

Keynes failed to understand the true nature of money. He believed that money could be exchanged for bonds only. In fact, money can be exchanged for many different types of assets like bonds, securities, physical assets, human wealth, etc.

4. Effect of Money:

Since Keynes wrote for a depression period, this led him to conclude that money had little effect on income. According to Friedman, it was the contraction of money that

precipitated the depression. It was, therefore, wrong on the part of Keynes to argue that money had little effect on income. Money does affect national income.

Self-Assessment Exercise

List and explain the criticism of Keynes theory of money and prices

4.0. CONCLUSION

In this unit, we can conclude that the quantity theory of money (QTM) states that money supply has a direct, proportional relationship with the price level. For example, if the currency in circulation increased, there would be a proportional increase in the price of goods. The theory was challenged by Keynesian economics, but updated and reinvigorated by the monetarist school of economics. While mainstream economists agree that the quantity theory holds true in the long-run, there is still disagreement about its applicability in the short-run. Critics of the theory argue that money velocity is not stable and, in the short-run, prices are sticky, so the direct relationship between money supply and price level does not hold. Alternative theories include the real bills doctrine and the more recent fiscal theory of the price level.

5.0 SUMMARY

In this unit, we have discussed thee Keynes reformulated quantity theory of money, superiority of the Keynesian theory over the traditional quantity theory of money as well as a critique of Keynes theory of money and prices.

6.0. TUTOR-MARKED ASSIGNMENT

1. List and explain the criticisms of Keynes theory of money and prices.
2. Discuss the superiority of the Keynesian theory over the traditional quantity theory of money.

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UNIT FOUR: FRIEDMAN'S RESTATEMENT OF QUANTITY THEORY OF MONEY AND SUPPLY OF MONEY

CONTENTS

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1.0INTRODUCTION

Following the publication of Keynes' *the General theory of employment, interest and money* in 1936, economists discarded the traditional quantity theory of money. But at the University of Chicago the quantity theory continued to be a central and vigorous part of the oral tradition throughout the 1930s and 1940. At Chicago, Milton Friedman, Henry Simons, Lloyd Mints, Frank Knight and Jacob Viner taught and developed a more subtle and relevant version of the quantity theory of money in its theoretical form in which the quantity was connected and integrated with general price theory. The foremost exponent of the Chicago version of the quantity theory of money who led to the so-called "Monetarist" is Professor Friedman. He, in his essay "The Quantity Theory of Money- a Restatement" published in 1956, set down a particular model of quantity theory of money, and this are discussed below.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. MAIN CONTENT

3.1. Friedman's Theory

In his reformulation of the quantity theory, Friedman asserts that the quantity theory is in the first instance a theory of the demand for money. It is not a theory of output, or of money income, or of the price level. The demand for money on the part of ultimate

wealth holders is formally identical with that of the demand for a consumption service. He regards the amount of real cash balances (M/P) as a commodity which is demanded because it yields services to the person who holds it. Thus, money is an asset or capital good. Hence, the demand for money forms part of capital or wealth theory.

For ultimate wealth holders, the demand for money, in real terms, may be expected to be a function primarily of the following variables:

1. Total Wealth:

The total wealth is the analogue of the budget constraint. It is the total that must be divided among various forms of assets. In practice, estimates of total wealth are seldom available. Instead, income may serve as an index of wealth. Thus, according to Friedman, income is a surrogate of wealth.

2. The Division of Wealth between Human and Non-Human Forms:

The major source of wealth is the productive capacity of human beings which is human wealth. But the conversion of human wealth into non-human wealth or the reverse is subject to institutional constraints. This can be done by using current earnings to purchase non-human wealth or by using non-human wealth to finance the acquisition of skills. Thus the fraction of total wealth in the form of non-human wealth is an additional important variable. Friedman calls the ratio of non-human to human wealth or the ratio of wealth to income as ***w***.

3. The Expected Rates of Return on Money and Other Assets:

These rates of return are the counterparts of the prices of a commodity and its substitutes and complements in the theory of consumer demand. The nominal rate of return may be zero as it generally is on currency, or negative as it sometimes is on demand deposits, subject to net service charges, or positive as it is on demand deposits on which interest is paid, and generally on time deposits. The nominal rate of return on other assets consists of two parts: first, any currently paid yield or cost, such as interest on bonds, dividends on equities, and costs of storage on physical assets, and second, changes in the prices of these assets which become especially important under conditions of inflation or deflation.

4. Other Variables:

Variables other than income may affect the utility attached to the services of money which determine liquidity proper. Besides liquidity, variables are the tastes and preferences of wealth holders. Another variable is trading in existing capital goods by ultimate wealth holders. These variables also determine the demand function for money along-with other forms of wealth. Such variables are noted as u by Friedman.

Broadly, total wealth includes all sources of income or consumable services. It is capitalized income. By income, Friedman means "permanent income" which is the average expected yield on wealth during its life time.

Wealth can be held in five different forms: money, bonds, equities, physical goods, and human capital. Each form of wealth has a unique characteristic of its own and a different yield.

1. Money is taken in the broadest sense to include currency, demand deposits and time deposits which yield interest on deposits. Thus, money is luxury good. It also yields real return in the form of convenience, security, etc. to the holder which is measured in terms of the general price level (P).

2. Bonds are defined as claim to a time stream of payments that are fixed in nominal units.

3. Equities are defined as a claim to a time stream of payments that are fixed in real units.

4. Physical goods or non-human goods are inventories of producer and consumer durable.

5. Human capital is the productive capacity of human beings. Thus each form of wealth has a unique characteristic of its own and a different yield either explicitly in the form of interest, dividends, labour income, etc., or implicitly in the form of services of money measured in terms of P, and inventories. The present discounted value of these expected income flows from these five forms of wealth constitutes the current value of wealth which can be expressed as:

$W = y/r$

Where W is the current value of total wealth, Y is the total flow of expected income from the five forms of wealth, and r is the interest rate. This equation shows that wealth is capitalized income. Friedman in his latest empirical study Monetary Trends in the United States and the United Kingdom (1982) gives the following demand function for money for an individual wealth holder with slightly different notations from his original study of 1956 as:

$M/P = f (y, w; R_m, R_b, R_e, g_p, u)$

Where M is the total stock of money demanded; P is the price level; y is the real income; w is the fraction of wealth in non-human form: R_m is the expected nominal rate of return on money; R_b is the expected rate of return on bonds, including expected changes in their prices; R_e is the expected nominal rate of return on equities, including expected changes in their prices; $g_p=(1/P)\ (dP/dt)$ is the expected rate of change of prices of goods and

hence the expected nominal rate of return on physical assets; and u stands for variables other than income that may affect the utility attached to the services of money.

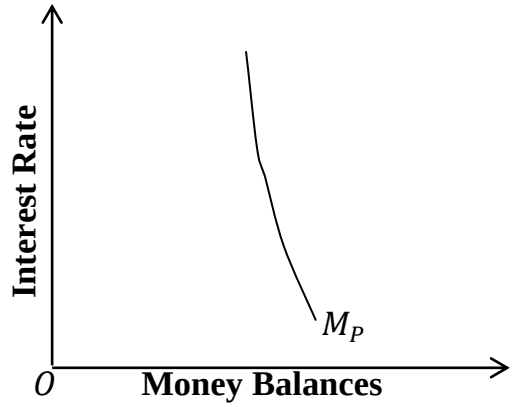
The demand function for business is roughly similar, although the division of total wealth and human wealth is not very useful since a firm can buy and sell in the market place and hire its human wealth at will. But the other factors are important.

The aggregate demand function for money is the summation of individual demand functions with M and y referring to per capita money holdings and per capita real income respectively, and w to the fraction of aggregate wealth in nonhuman form.

The demand function for money leads to the conclusion that a rise in expected yields on different assets (R_b, R_e and g_p) reduces the amount of money demanded by a wealth holder, and that an increase in wealth raises the demand for money. The income to which cash balances (M/P) are adjusted is the expected long term level of income rather than current income being received.

Empirical evidence suggests that the income elasticity of demand for money is greater than unity which means that income velocity is falling over the long-run. This means that the long-run demand for money function is stable and is relatively interest inelastic, as shown in fig. 8, where M_D is the demand for money curve. If there is change in the interest rate, the long-run demand for money is negligible.

Figure 8: **The income elasticity of demand for money**



In Friedman's restatement of the quantity theory of money, the supply of money is independent of the demand for money. The supply of money is unstable due to the actions of monetary authorities. On the other hand, the demand for money is stable. It means that money which people want to hold in cash or bank deposits is related in a fixed way to their permanent income.

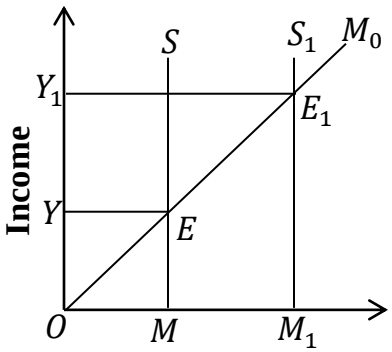
If the central bank increases the supply of money by purchasing securities, people who sell securities will find their holdings of money have increased in relation to their permanent income. They will, therefore, spend their excess holdings of money partly on assets and partly on consumer goods and services.

This spending will reduce their money balances and at the same time raise the nominal income. On the contrary, a reduction in the money supply by selling securities on the part of the central bank will reduce the holdings of money of the buyers of securities in relation to their permanent income.

They will, therefore, raise their money holdings partly by selling their assets and partly by reducing their consumption expenditure on goods and services. This will tend to reduce nominal income. Thus, on both counts, the demand for money remains stable. According to Friedman, a change in the supply of money causes a proportionate change in the price level or income or in both. Given the demand for money, it is possible to predict the effects of changes in the supply of money on total expenditure and income.

If the economy is operating at less than full employment level, an increase in the supply of money will raise output and employment with a rise in total expenditure. But this is only possible in the short-run. Friedman's quantity theory of money is explained in terms of Figure 9. Where income (Y) is measured on the vertical axis and the demand for the supply of money is measured on the horizontal axis. M_D is the demand for money curve which varies with income. MS is the money supply curve which is perfectly inelastic to changes in income. The two curves intersect at E and determine the equilibrium income OY. If the money supply rises, the MS curve shifts to the right to M_1S_1. As a result, the money supply is greater than the demand for money which raises total expenditure until new equilibrium is established at E_1 between M_D and M_1S_1, curves. The income rises to OY_1.

Figure 9: **Friedman's quantity theory of money**



Demand and Supply of Money

Thus Friedman presents the quantity theory as the theory of the demand for money and the demand for money is assumed to depend on asset prices or relative returns and wealth

or income. He shows how a theory of the stable demand for money becomes a theory of prices and output. A discrepancy between the nominal quantity of money demanded and the nominal quantity of money supplied will be evident primarily in attempted spending. As the demand for money changes in response to changes in its determinants, it follows that substantial changes in prices or nominal income are almost invariably the result of changes in the nominal supply of money.

3.1.1. Criticisms

Friedman's reformulation of the quantity theory of money has evoked much controversy and has led to empirical verification on the part of the Keynesians and the Monetarists. Some of the criticisms leveled against the theory are discussed as under.

1. Very Broad Definition of Money:

Friedman has been criticized for using the broad definition of money which not only includes currency and demand deposits (M_1) but also time deposits with commercial banks (M_2). This broad definition leads to the obvious conclusion that the interest elasticity of the demand for money is negligible. If the rate of interest increases on time deposits, the demand for them (M_2) rises. But the demand for currency and demand deposits (M_1) falls.

So the overall effect of the rate of interest will be negligible on the demand for money. But Friedman's analysis is weak in that he does not make a choice between long-term and short-term interest rates. In fact, if demand deposits (M_1) are used a short-term rate is preferable, while a long-term rate is better with time deposits (M_2). Such an interest rate structure is bound to influence the demand for money.

2. Money not a Luxury Good:

Friedman regards money as a luxury good because of the inclusion of time deposits in money. This is based on his finding that there is higher trend rate of the money supply than income in the United States. But no such 'luxury effect' has been found in the case of England.

3. More Importance to Wealth Variables:

In Friedman's demand for money function, wealth variables are preferable to income and the operation of wealth and income variables simultaneously does not seem to be justified. As pointed out by Johnson, income is the return on wealth, and wealth is the present value of income. The presence of the rate of interest and one of these variables in the demand for money function would appear to make the other superfluous.

4. Money Supply not Exogenous:

Friedman takes the supply of money to be unstable. The supply of money is varied by the monetary authorities in an exogenous manner in Friedman's system. But the fact is that in the United States the money supply consists of bank deposits created by changes in bank lending. Bank lending, in turn, is based upon bank reserves which expand and contract with (a) deposits and withdrawals of currency by non-bank financial intermediaries; (b) borrowings by commercial banks from the Federal Reserve System; (c) inflows and outflows of money from and to abroad: and (d) purchase and sale of securities by the Federal Reserve System. The first three items definitely impart an endogenous element to the money supply. Thus, the money supply is not exclusively exogenous, as assumed by Friedman. It is mostly endogenous.

5. Ignores the Effect of Other Variables on Money Supply:

Friedman also ignores the effect of prices, output or interest rates on the money supply. But there is considerable empirical evidence that the money supply can be expressed as a function of the above variables.

6. Does not consider Time Factor:

Friedman does not tell about the timing and speed of adjustment or the length of time to which his theory applies.

7. No Positive Correlation between Money Supply and Money GNP:

Money supply and money GNP have been found to be positively correlated in Friedman's findings. But, according to Kaldor, in Britain the best correlation is to be found between the quarterly variations in the amount of cash held in the form of notes and coins by the public and corresponding variations in personal consumption at market prices, and not between money supply and the GNP.

In conclusion, despite these criticisms, 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.

Self-Assessment Exercise

Discuss the Friedman's quantity theory of money and its criticisms

3.2. Friedman Vs Keynes

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

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

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

Third, there is also the difference between the monetary mechanisms of Keynes and Friedman as to how changes in the quantity of money affect economic activity. According to Keynes, monetary changes affect economic activity indirectly through bond prices and interest rates.

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

Fourth, there is the difference between the two approaches with regard to the motives for holding money balances. Keynes divides money balances into "active" and "idle" categories. The former consist of transactions and precautionary motives, and the latter consist of the speculative motive for holding money. On the other hand, Friedman makes no such division of money balances.

According to him, money is held for a variety of different purposes which determine the total volume of assets held such as money, physical assets, total wealth, human wealth, and general preferences, tastes and anticipations.

Fifth, in his analysis, Friedman introduces permanent income and nominal income to explain his theory. Permanent income is the amount a wealth holder can consume while

maintaining his wealth intact. Nominal income is measured in the prevailing units of currency. It depends on both prices and quantities of goods traded. Keynes, on the other hand, does not make such a distinction.

4.0 CONCLUSION

In this unit, we conclude that Milton Friedman improved on Keynes's liquidity preference theory by treating money like any other asset. He concluded that economic agents (individuals, firms, governments) want to hold a certain quantity of real, as opposed to nominal, money balances. If inflation erodes the purchasing power of the unit of account, economic agents will want to hold higher nominal balances to compensate, to keep their real money balances constant. The level of those real balances, Friedman argued, was a function of permanent income (the present discounted value of all expected future income), the relative expected return on bonds and stocks versus money, and expected inflation.

5.0 SUMMARY

In this unit, we discuss on the Friedman's quantity theory of money and its criticisms, the graph of money balances and demand/supply of money. The unit also discuss on the differences in the view of Friedman and Keynesian quantity of money.

6.0. TUTOR-MARKED ASSIGNMENT

1. List and explain the criticisms of Friedman's quantity theory of money
2. With the aid of diagram explain the money balances analysis and demand and supply of money
3. Discuss the differences between Friedman and Keynesian quantity theory of money.

7.0 REFERENCES/FURTHER READINGS

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MODULE FOUR: SUPPLY/DEMAND FOR MONEY AND HIGH POWERED MONEY

Unit One: Money Supply
Unit Two: Detreminants Of Money Supply
Unit Three: Supply Of Money And High-Powered Money
Un It Four: High Powered Money And Money Multiplier
Unit Five: Demand For Money

UNIT ONE: MONEY SUPPLY

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1.0. INTRODUCTION

Money Supply is the entire stock of currency and other liquid instruments in a country's economy as of a particular time. The money supply can include cash, coins and balances held in checking and savings accounts. Economists analyze the money supply and develop policies revolving around it through controlling interest rates and increasing or decreasing the amount of money flowing in the economy. Money supply data is collected, recorded and published periodically, typically by the country's government or central bank. Public and private sector analysis is performed because of the money supply's possible impacts on price level, inflation and the business cycle. In the United States, the Federal Reserve policy is the most important deciding factor in the money supply.

Features of Money Supply include 'money held by public only'. The term 'public' signifies the money-using sector, i.e. individuals and business firms. It does not include money-creating sector, i.e. Government and banking system as cash balances held by them do not come into actual circulation in the country and it is a 'Stock Concept', i.e. it is concerned with a particular point of time.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the concepts and measures of money supply
- Know the important facts about measures of money supply

3.0. MAIN CONTENT

3.1. Measures of Money Supply:

(I) M1:

It is the first and basic measure of money supply. It is also known as transaction money as it can be directly used for making transactions.

M1 = Currency and coins with Public + Demand Deposits of Commercial Banks + Other Deposits with RBI

M1 is the most liquid measure of money supply as all its components are easily used as a medium of exchange.

1. Currency and coins with Public:

It consists of paper notes and coins held by the public. Remember, any currency held with the government and banks is not to be included.

2. It includes coins of denominations of coins: 10K, 25K, etc. and paper notes of denominations like N1,000, N500, N100, etc.

3. Currency money is also termed as 'Fiat Money'. Fiat money is defined as the money which is under the fiat or order from the government to act as money, i.e. under law, it must be accepted for all debts.

4. It is also termed as 'Legal Tender Money' as it can be legally used to make payment of debts or other obligations.

5. Demand Deposits of Commercial Banks:

It refers to demand deposits of the public with the commercial banks. Demand deposits are the deposits, which can be encased by issuing cheques at any time by the account holders. A demand deposit is treated as equal to currency held as it is readily accepted as a means of payment.

Only Net Demand Deposits are included:

It must be noted that demand deposits are taken on net basis, i.e. inter-bank deposits are excluded. Inter-bank deposits are the deposits held by banks on behalf of other banks. Such deposits do not form a part of the money supply, as they do not belong to the public.

1. Other deposits with the Bank:

It include deposits held by the bank on behalf of foreign banks and governments, public financial institutions, World Bank, IMF, etc. However, it does not include deposits of the Nigerian Government and commercial banks.

It must be noted that 'Other deposits with bank' constitute a very small proportion of M_1. Therefore, they do not have any significant role to play in the monetary policy formulation.

(ii) M2:

It is a broader concept of money supply as compared to M1. In addition to $M1_{,}$ it also includes savings deposits with post office saving bank.

M2 = M1 + Savings deposits with Post Office Saving Bank

'Savings deposits with Post Office Saving Bank' is not withdrawable by cheque. So, they could not be placed under demand deposits with bank. As a result, the concept of M_2 was evolved.

(iii) M3:

This concept is broader as compared to $M_{1,}$ In addition to $M_{1;}$ it also includes net time deposits.

M3 = M1 + Net Time Deposits with Banks

(iv) M4:

This measure includes total deposits with post office saving bank in addition to M3.

M4 = M3 + Total Deposits with Post Office Saving Bank (Excluding NSC)

NSC is National Saving Certificate

3.2. Important Facts about Measures of Money Supply:

i. The four measures of money supply represent different degrees of liquidity, with M1 being the most liquid and M4 being the least liquid.

ii. M3 is widely used as a measure of money supply and it is also known as 'aggregate monetary resources of the society'.

iii. M1 and M2 are generally known as narrow money supply concepts, whereas, M3 and M4 are known as broad money supply concepts.

Example of Money Supply

Calculate M1, M2, M3 and M4:

(i) Currency with public	84,000
(ii) Demand deposits with banks	68,000
(iii) Other deposits with CB	3,612
(iv) Total deposits with Post office	22,500
(v) Time deposits with banks	200,555

(vi)Post office saving bank deposits 5,528

Solution:

M1 = Currency with public + Demand deposits + Other deposits with Nigeria naira in the bank
M1 = 84,000 + 68,000 + 3,612 = N155,612
M2 = M1+ Savings deposits with post office saving bank
M2 = 155,612 + 5,528 = N161,140
M3 = M1 + Net time deposits with banks
M3 = 155,612 + 200,555 = N356,167
M4 = M3 + Total deposits with Post office
M4 = 356,167 + 22,500 = N378,667

Self-Assessment Exercise
Discuss the measures of money supply

3.3. Importance of Money Supply:

Money supply plays a crucial role in the determination of price level and interest rate. In economic analysis it is generally presumed that money supply is determined by the policy of Central Bank of a country and the Government.

However, this is not fully correct as in the determination of money supply, besides Central Bank and Government, the public and commercial banks also play an important role. There are various measures of money supply depending upon which types of deposits of banks and other financial institutions are included in it.

Growth of money supply is an important factor not only for acceleration of the process of economic development but also for the achievement of price stability in the economy. There must be controlled expansion of money supply if the objective of development with stability is to be achieved. A healthy growth of an economy requires that there should be neither inflation nor deflation. Inflation is the greatest headache of a developing economy.

A mild inflation arising out of the creation of money by deficit financing may stimulate investment by raising profit expectations and extracting forced savings. But a runaway inflation is highly detrimental to economic growth. The developing economies have to face the problem of inadequacy of resources in initial stages of development and it can make up this deficiency by deficit financing.

But it has to be kept strictly within safe limits. Thus, increase in money supply affects vitally the rate of economic growth. In fact, it is now regarded as a legitimate instrument of economic growth. Kept within proper limits it can accelerate economic growth but exceeding of the limits will retard it. Thus, management of money supply is essential in the interest of steady economic growth.

3.3.1. The Concept of Money Supply and its Measurement:

By money supply we mean the total stock of monetary media of exchange available to a society for use in connection with the economic activity of the country.

According to the standard concept of money supply, it is composed of the following two elements:

1. Currency with the public,

2. Demand deposits with the public.

Before explaining these two components of money supply two things must be noted with regard to the money supply in the economy.

First, the money supply refers to the total sum of money available to the public in the economy at a point of time. That is, money supply is a stock concept in sharp contrast to the national income which is a flow representing the value of goods and services produced per unit of time, usually taken as a year.

Secondly, money supply always refers to the amount of money held by the public. In the term public are included households, firms and institutions other than banks and the government. The rationale behind considering money supply as held by the public is to separate the producers of money from those who use money to fulfill their various types of demand for money.

Since the Government and the banks produce or create money for the use by the public, the money (cash reserves) held by them are not used for transaction and speculative purposes and are excluded from the standard measures of money supply. This separation of producers of money from the users of money is important from the viewpoint of both monetary theory and policy.

Let us explain the two components of money supply at some length.

I. Currency with the Public:

In order to arrive at the total currency with the public in Nigeria we add the following items:

1. Currency notes in circulation issued by the Central Bank of Nigeria.

2. The number of naira notes and coins in circulation.

3. Small coins in circulation.

It is worth noting that cash reserves with the banks have to be deducted from the value of the above three items of currency in order to arrive at the total currency with the public. This is because cash reserves with the banks must remain with them and cannot therefore be used for making payments for goods or by any commercial banks' transactions.

It may further be noted that these days paper currency issued by Central Bank of Nigeria (CBN) are not fully backed by the reserves of gold and silver, nor considered necessary to do so. Full backing of paper currency by reserves of gold prevailed in the past when gold standard or silver standard type of monetary system existed.

According to the modem economic thinking the magnitude of currency issued should be determined by the monetary needs of the economy and not by the available reserves of gold and silver.

Under this system, minimum reserves of N25Billion have to be kept with the CBN by Nigerians banks and against this any amount of currency can be issued depending on the monetary requirements of the economy.

Another important thing to note is that paper currency or coins are fiat money, which means that currency notes and metallic coins serve as money on the bases of the fiat (i.e. order) of the Government. In other words, on the authority of the Government no one can refuse to accept them in payment for the transaction made. That is why they are called legal tender.

II. Demand Deposits with the Public:

The other important components of money supply are demand deposits of the public with the banks. These demand deposits held by the public are also called bank money or deposit money. Deposits with the banks are broadly divided into two types: demand deposits and time deposits.

Demand deposits in the banks are those deposits which can be withdrawn by drawing cheques on them. Through cheques these deposits can be transferred to others for making payments from which goods and services have been purchased.

Thus, cheques make these demand deposits as a medium of exchange and therefore make them to serve as money. It may be noted that demand deposits are fiduciary money

proper. Fiduciary money is one which functions as money on the basis of trust of the persons who make payment rather than on the basis of the authority of Government.

Thus, despite the fact that demand deposits and cheques through which they are operated are not legal' tender, they functions as money on the basis of the trust commanded by those who draw cheques on them. They are money as they are generally acceptable as medium of payment.

Bank deposits are created when people deposits currency with them. But far more important is that banks themselves create deposits when they give advances to businessmen and others. On the basis of small cash reserves of currency, they are able to create a much larger amount of demand deposits through a system called fractional reserve system which will be explained later in detail.

In the developed countries such as USA and Great Britain deposit money accounted for over 80 per cent of the total money supply, currency being a relatively small part of it. This is because banking system has greatly developed there and also people have developed banking habits.

On the other hand, in the developing countries banking has not developed sufficiently and also people have not acquired banking habits and they prefer to make transactions in currency.

Self-Assessment Exercise

Discuss the importance of money supply

3.4 Four Measures of Money Supply:

Several definitions of money supply have been given and therefore various measures of money supply based on them have been estimated. First, different components of money supply have been distinguished on the basis of the different functions that money performs.

For example, demand deposits, credit card and currency are used by the people primarily as a medium of exchange for buying goods and services and making other transactions. Obviously, they are money because they are used as a medium of exchange and are generally referred to as M_1. Another measure of money supply is M_3 which includes both M_1 and time deposits held by the public in the banks. Time deposits are money that people hold as store of value.

The main reason why money supply is classified into various measures on the basis of its functions is that effective predictions can be made about the likely effects on the

economy of changes in the different components of money supply. For example, if M_1 is increasing, firstly it can be reasonably expected that people are planning to make a large number of transactions.

On the other hand, if time-deposits component of money-supply measure M_3 which serves as a store of value is increasing rapidly, it can be validly concluded that people are planning to save more and accordingly consume less.

Therefore, it is believed that for monetary analysis and policy formulation, a single measure of money supply is not only inadequate but may be misleading too. Hence various measures of money supply are prepared to meet the needs of monetary analysis and policy formulation.

Four concepts of measures of money supply are explained below.

1. Money Supply M1 or Narrow Money:

This is the narrow measure of money supply and is composed of the following items:

$M_1 = C + DD + OD$

Where

C = Currency with the public

DD = Demand deposits with the public in the Commercial and Cooperative Banks.

OD = Other deposits held by the public with Reserve Bank of India.

The money supply is the most liquid measure of money supply as the money included in it can be easily used as a medium of exchange, that is, as a means of making payments for transactions.

Currency with the public (C) in the above measure of money supply consists of the followings:

(i) Notes in circulation.

(ii) Circulation of coins

(iii) Cash reserves on hand with all banks.

Note that in measuring demand deposits with the public in the banks (i.e., DD), inter-bank deposits, that is, deposits held by a bank in other banks are excluded from this measure.

3.4.1. Money Supply M2:

M2 is a broader concept of money supply in Nigeria than M1. In addition to the three items of M1, the concept of money supply M2 includes savings deposits with the post office savings banks. Thus,

M2 – M1 + Savings deposits with the post office savings banks.

The reason why money supply M2 has been distinguished from M1 is that saving deposits with post office savings banks are not as liquid as demand deposits with Commercial and Co-operative Banks as they are not chequable accounts. However, saving deposits with post offices are more liquid than time deposits with the banks.

3.4.2. Money Supply M3 or Broad Money:

M_3 is a broad concept of money supply. In addition to the items of money supply included in measure of M2, in money supply M3 time deposits with the banks are also included. Thus,

M3 = M2+ Time Deposits with the banks.

It is generally thought that time deposits serve as store of value and represent savings of the people and are not liquid as they cannot be withdrawn through drawing cheque on them. However, since loans from the banks can be easily obtained against these time deposits, they can be used if found necessary for transaction purposes in this way. Further, they can be withdrawn at any time by forgoing some interest earned on them.

It may be noted that recently M3 has become a popular measure of money supply. The working group on monetary reforms under the chairmanship of Late Prof. Sukhamoy Chakravarty recommended its use for monetary planning of the economy and setting target of the growth of money supply in terms of M3.

3.4.3. Money Supply M4:

The measure M4 of money supply includes not only all the items of M_3 described above but also the total deposits with the post office savings organization. However, this excludes contributions made by the public to the national saving certificates. Thus, M4 = M3 + Total Deposits with Post Office Savings Organization.

Self-Assessment Exercise

Define M1, M2 and M3 of money supply

4.0. CONCLUSION

Money supply is the entire stock of currency and other liquid instruments in a country's economy as of a particular time. The money supply can include cash, coins and balances held in checking and savings accounts. Economists analyze the money supply and develop policies revolving around it through controlling interest rates and increasing or decreasing the amount of money flowing in the economy.

5.0. SUMMARY

In this unit, we discuss the measures of money supply, important fact about measures of money supply, importance of money supply, four measures of money supply and analysis of M1, M2 and M3 respectively.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the measures of money supply
2. List and explain the four measures of money supply.

7.0 REFERENCES/FURTHER READINGS

Dotun, G. G., (2014). Money and Banking, 1st edition, Dale Publication limited

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UNIT TWO: DETERMINANTS OF MONEY SUPPLY

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1.0. INTRODUCTION

Main determinants of the supply of money are (a) monetary base and (b) the money multiplier. These two broad determinants of money supply are, in turn, influenced by a number of other factors. Various factors influencing the money supply are Monetary Base, Money Multiplier, Reserve Ratio, Currency Ratio, and Confidence in Bank Money, Time-Deposit Ratio, Value of Money, Real Income, Interest Rate, Monetary Policy, and Seasonal Factors.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. MAIN CONTENT

3.1. Determinants of Money Supply:

In order to explain the determinants of money supply in an economy we shall use M1 concept of money supply which is the most fundamental concept of money supply. We shall denote it simply by M rather than M1. As seen above this concept of money supply is composed of currency held by the public (Cp) and demand deposits with the banks (D). Thus

$M = C_P + D$…..,,,

The two important determinants of money supply as described in (1) are (a) the amounts of high-powered money which is also called Reserve Money by the Central Bank of Nigeria and (b) the size of money multiplier. We explain below the role of these two factors in the determination of money supply in the economy.

3.1.1. High-Powered Money (H):

The high-powered money which we denote by H consists of the currency (notes and coins) issued by the Government and the central Bank of Nigeria. A part of the currency issued is held by the public, which we designate as C_P and a part is held by the banks as reserves which we designate as R.

A part of these currency reserves of the banks is held by them in their own cash vaults and a part is deposited in the Central Bank of Nigeria (CBN) in the Reserve Accounts which banks hold with CBN. Accordingly, the high-powered money can be obtained as sum of currency held by the public and the part held by the banks as reserves. Thus,

$H = C_P + R$ ……(2)

Where

H = the amount of high-powered money

C_P = Currency held by the public R

D = Cash Reserves of currency with the banks.

It is worth noting that Central Bank of Nigeria and Government are producers of the high-powered money and the commercial banks do not have any role in producing this high-powered money (H). However, commercial banks are producers of demand deposits which are also used as money like currency.

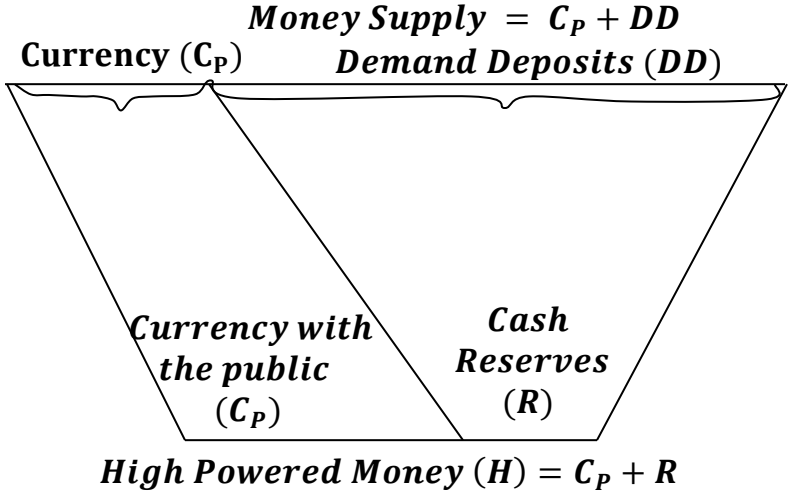
But for producing demand deposits or credit, banks have to keep with themselves cash reserves of currency which have been denoted by R in equation (2) above. Since these cash reserves with the banks serve as a basis for the multiple creations of demand deposits which constitute an important part of total money supply in the economy, it provides high poweredness to the currency issued by Central Bank and Government.

A glance at equations (1) and (2) above will reveal that the difference in the two equations, one describing the total money supply and the other high-powered money is that whereas in the former, demand deposits (D) are added to the currency held by the public, in the later it is cash reserves (R) of the banks that are added to the currency held by the public. In fact, it is against these cash reserves (R) that banks are able to create a

multiple expansion of credit or demand deposits due to which there is large expansion in money supply in the economy.

The theory of determination of money supply is based on the supply of and demand for high- powered money. Some economists therefore call it 'The H Theory of Money Supply. However, it is more popularly called 'Money-multiplier Theory of Money Supply' because it explains the determination of money supply as a certain multiple of the high-powered money. How the high-powered money (H) is related to the total money supply is graphically depicted in Fig 10. The base of this figure shows the supply of high-powered money (H), while the top of the figure shows the total stock of money supply. It will be seen that the total stock of money supply (that is, the top) is determined by a multiple of the high-powered money (H).

Figure 10: **High-Powered Money relationship with Money supply**



It will be further seen that whereas currency held by the public (C_P) uses the same amount of high-powered money, that is, there is one-to-one relationship between currency held by the public and the money supply. In sharp contrast to this, bank deposits (D) are a multiple of the cash reserves (R) of the banks which are part of the supply of high-powered money.

That is, one Naira of high-powered money kept as bank reserves gives rise to much more amount of demand deposits. Thus, the relationship between money supply and the high-powered money is determined by the money multiplier. The money multiplier which we denote by m is the ratio of total money supply {M) to the stock of high-powered money, that is, m = M/H.

The size of money multiplier depends on the preference of the public to hold currency relative to deposits, (that is, ratio of currency to deposits which we denote by K) and banks' desired cash reserves ratio to deposits which we call r. We explain below the

precise multiplier relationship between high- powered money and the total stock of money supply.

It follows from above that if there is increase in currency held by the public which is a part of the high powered money with demand deposits remaining unchanged, there will be a direct increase in the money supply in the economy because this constitutes a part of the money supply.

If instead, currency reserves held by the banks increase, this will not change the money supply immediately but will set in motion a process of multiple creation of demand deposits of the public in the banks.

Although banks use these currency reserves held by the public which constitutes a part of the high- powered money to give more loans to the businessmen and thus create demand deposits, they do not affect either the amount of currency or the composition of high-powered money. The amount of high-powered money is fixed by CBN by its past actions. Thus, changes in high-powered money are the result of decisions of CBN or the Government which own and control it.

3.1.2. Money Multiplier:

As stated above, money multiplier is the degree to which money supply is expanded as a) result of the increase in high-powered money. Thus,

$m = M/H$

Rearranging we have, $M = H.m$…… (3)

Thus money supply is determined by the size of money multiplier (m) and the amount of high- powered money (H). If we know the value of money multiplier we can predict how much money will change when there is a change in the amount of high-powered money.

As mentioned above, change in the high-powered money is decided and controlled by Central Bank of Nigeria, the money multiplier determines the extent to which decision by CBN regarding the change in high-powered money will bring about change in the total money supply in the economy.

3.1.3. Size of Money Multiplier:

Now, an important question is what determines the size of money multiplier. It is the cash or currency reserve ratio r of the banks (which determines deposit multiplier) and currency-deposit ratio of the public (which we denote by k) which together determines size of money multiplier. We derive below the expression for the size of multiplier.

From equation (1) above, we know that total money supply (M) consists of currency with the public (C_P) and demand deposits with the banks. Thus,

$M = C_P + D$ …… (1)

The public hold the amount of currency in a certain ratio of demand deposits with the banks. Let this currency-deposit ratio be devoted by k.

$C_P = kD$

Substituting kD for C_P in equation (1) we have

$M = kD + D = (k+1)D$ ……(2)

Now take equation which defines high powered money (H) as

$H = C_P + R$ ……(3)

Where R represents cash or currency reserves which banks keep as a certain ratio of their deposits and is called cash-reserve ratio and is denoted by r. Thus

$R = rD$

Now substituting rD for R and kD for C_P in equation (3) we have

$H = kD + rD$

$H = (k + r) D$ ……(4)

Now money multiplier is ratio of total money supply to the high powered money, therefore we divide equation (1) by equation (4), to get the value of multiplier, which we denote by m. Thus

$M=C_p + D$ ……(1)

The public hold the amount of currency in a certain ratio of demand deposits with the banks. Let this currency-deposit ratio be devoted by k,

$C_p = kD$

Substituting kD for C_p in equation (1) we have

$M = kD + D = (k+ 1) D$ ……(2)

Now take equation which defines high powered money (H) as

$H=C_p+R$ …… (3)

where R represents cash or currency reserves which banks keep as a certain ratio of their deposits and is called cash-reserve ratio and is denoted by r. Thus

$R = rD$

Now substituting rD for R and kD for C_p in equation (3) we have

$H = kD + rD$

$H = (k + r)D$ …… (4)

Now money multiplier is ratio of total money supply to the high powered money, therefore we divide equation (1) by equation (4), to get the value of multiplier, which we denote by m. Thus

$m = M/H = (k+1)\ D/(k+r)D = k+1/k+1$

or, Money multiplier (m) = $M/H = 1+k/r+k$

or $M = H\ 1+k/r+k$ ……(4)

Where

r = Cash or Currency-reserve ratio of the banks

k = Currency-deposit ratio of the public. From above it follows that money supply is determined by the following:

1. H, that is, the amount of high powered money.

2. r, that is, cash reserve ratio of banks (i.e., ratio of currency reserves to deposits of the banks). This cash reserve ratio of banks determines the magnitude of deposit multiplier.

3. k, that is, currency deposit ratio of the public.

From the equation (4) expressing the determinants of money supply, it follows that money supply will increase:

1. When the supply of high-powered money (i.e., reserve money) H increases;

2. When the currency-deposit ratio $(k)^3$ of the public decreases; and

3. When the cash or currency reserves-deposit ratio of the banks (r) falls.

3.1.4. Cash Reserve Ratio and the Deposit Multiplier:

With a small increase in cash reserves with the banks, they are able to create a multiple increase in total demand deposits which are an important part of money supply. The ratio of change in total deposits to a change in reserves is called the deposit multiplier which depends on cash reserve ratio. The value of deposit multiplier is the reciprocal of cash reserve ratio, (dm = 1/r) where dm stands for deposit multiplier.

If cash reserve ratio is 10 per cent of deposits, then dm = 1/0.10 = 10. Thus deposit multiplier of 10 shows that for every N100 increase in cash reserves with the banks, there will be expansion in demand deposits of the banks by N1000 assuming that no leakage of cash to the public occurs during the process of deposit expansion by the banks.

3.1.5. Currency Deposit Ratio and Multiplier:

However, in the real world, with the increase in reserves of the banks, demand deposits and money supply do not increase to the full extent of deposit multiplier. This is for two reasons. First, the public does not hold all its money balances in the form of demand deposits with the banks.

When as a result of increase in cash reserves, banks start increasing demand deposits; the people may also like to have some more currency with them as money balances. This means during the process of creation of demand deposits by banks, some currency is leaked out from the banks to the people.

This drainage of currency to the people in the real world reduces the magnitude of expansion of demand deposit and therefore the size of money multiplier. Suppose the cash reserve ratio is 10 per cent and cash or currency of N100 is deposited in a bank A.

The bank A will lend out N90 and therefore create demand deposits of N90 and so the process will continue as the borrowers use these deposits for payment through cheques to others who deposit them in another bank B. However, if borrower of bank A withdraw N10 in cash from the bank and issue cheques of the remaining borrowed amount of N80, then bank B will have only N80 as new deposits instead of N90 which it would have if cash of N10 was not withdrawn by the borrower.

With these new deposits of N80, bank B will create demand deposits of N72, that is, it will lend out N72 and keep N8 as reserves with it (80 x 10/100 = 8). The drainage of currency may occur during all the subsequent stages of deposit expansion in the banking

system. The greater the leakage of currency, the lower will be the money multiplier. We thus see the currency-deposit ratio, which we denote by k is an important determinant of the actual value of money multiplier.

It is important to note that deposit multiplier works both ways, positively when cash reserves with banks increase, and negatively when the cash reserves with the banks decline. That is, when there is a decrease in currency reserves with the banks, there will be multiple contractions in demand deposits with the banks.

3.1.6. Excess Reserves:

In the explanation of the expansion of demand deposits or deposit multiplier we assumed that banks do not keep currency reserves in excess of the required cash reserve ratio. The ratio r in the deposit multiplier is the required cash reserve ratio fixed by Reserve Bank of India.

However, banks like to keep with themselves some excess reserves, the amount of which depend on the extent of liquidity (i.e. availability of cash with them) and profitability of making investment and rate of interest on loans advanced to business firms. Therefore, the desired reserve ratio is greater than the statutory minimum required reserve ratio. Obviously, the holding of excess reserves by the banks also reduces the value of deposit multiplier.

In conclusion, theory of determination of money supply explains how a given supply of high-powered money (which is also called monetary base or reserve money), leads to multiple expansion in money supply through the working of money multiplier.

We have seen above how a small increase in reserves of currency with the banks leads to a multiple expansion in demand deposits by the banks through the process of deposit multiplier and thus causes growth of money supply in the economy.

Deposit multiplier measures how much increase in demand deposits (or money supply) occurs as a result of a given increase in cash or currency, reserves with the banks depending on the required cash reserve ratio (r) if there are no cash drainage from the banking system.

But in the real world drainage of currency does take place which reduce the extent of expansion of money supply following the increase in cash reserves with the banks. Therefore, the deposit multiplier exaggerates the actual increase-in money supply from a given increase in cash reserves with the banks.

In contrast, money multiplier takes into account these leakages of currency from the banking system and therefore measures actual increase in money supply when the cash

reserves with the banks increase. The money multiplier can be defined as increase in money supply for every Naira increase in cash reserves (or high powered money), drainage of currency having been taken into account. Therefore, money multiplier is less than the deposit multiplier. It is worth noting that rapid growth in money supply in Nigeria has been due to the increase in high-powered money H, or what is also called Reserve Money.

The money supply in a country can be changed by central bank by undertaking open market operations (OMO), changing minimum required currency reserve-deposit ratio, and by varying the bank rate. The main source of growth in money supply in Nigeria is creation of credit by central bank for Government for financing its budget deficit (through borrowing) and thus creating high-powered money.

Further, though the required currency reserve-deposit ratio of banks can be easily varied by central bank, the actual currency reserve-deposit ratio cannot be so easily varied as reserves maintained by banks not only depend on minimum required cash reserve ratio but also on their willingness to hold excess reserves.

Lastly an important noteworthy point is that though money multiplier does not show much variation in the long run, it can change significantly in the short run causing large variations in money supply. This unpredictable variation in money multiplier in the short run affecting money supply in the economy prevents the Central Bank of a country from controlling exactly and precisely the money supply in the economy.

Self-Assessment Exercise

List and explain the determinants of money supply.

3.2. Money Creation (Credit Creation) in Commercial Banks

It is one of the most important activities of commercial banks. Through the process of money creation, commercial banks are able to create credit, which is in far excess of the initial deposits.

This process can be better understood by making two assumptions:

(i) The entire commercial banking system is one unit and is termed as 'Banks'.

(ii) All receipts and payments in the economy are routed through the Banks, i.e. all payments are made through cheques and all receipts are deposited in the banks. The deposits held by Banks are used for giving loans. However, banks cannot use the whole of deposit for lending.

It is legally compulsory for the banks to keep a certain minimum fraction of their deposits as reserves. The fraction is called the Legal Reserve Ratio (LRR) and is fixed by the central bank. Banks do not keep 100% reserves against the deposits. They keep reserves only to the extent indicated by the Central Bank.

Let us then ask ourselves a question on why only Fraction of deposits is kept as Cash Reserves?

Banks keep a fraction of deposits as Cash Reserves because a prudent banker, by his experience, knows two things:

(i) All the depositors do not approach the banks for withdrawal of money at the same time and also they do not withdraw the entire amount in one go.

(ii) There is a constant flow of new deposits into the banks.

So, to meet the daily demand for withdrawal of cash, it is sufficient for banks to keep only a fraction of deposits as cash reserve. It means, if the experience of the banks shows that withdrawals are generally around 20% of the deposits, then, it needs to keep only 20% of deposits as cash reserves (LRR).

Let us now understand the process of Money Creation through an example:

1. Suppose, initial deposits in banks is N1,000 and LRR is 20%. It means, banks are required to keep only N200 as cash reserve and are free to lend N800. Suppose they lend N800. Banks do not lend this money by giving amount in cash. Rather, they open the accounts in the names of borrowers, who are free to withdraw the amount whenever the like.

2. Suppose borrowers withdraw the entire amount of N800 for making payments. As all the transactions are routed through the banks, the money spent by the borrowers comes back into the banks in the form of deposit accounts of those who have received this payment. It will increase the demand deposits of banks by N800.

3. With new deposits of N800, banks keep 20% as cash reserves and lend the balance N640. Borrowers use these loans for making payments, which again comes back into the accounts of those who have received the payments. This time, banks deposits rise by N640.

4. The deposits keep on increasing in each round by 80% of the last round deposits. At the same time, cash reserves also go on increasing, each time by 80% of the last cash reserve. Deposit creation comes to end when total cash reserves become equal to the initial deposit.

Refer the following table:

As seen in the table, banks are able to create total deposits of N5,000 with the initial deposit of just N1,000. It means, total deposits become 'five times' of the initial deposit. Five times is nothing but the value of 'Money Multiplier'.

3.3. **Money Multiplier**:

Money Multiplier or Deposit multiplier measures the amount of money that the Banks are able to create in the form of deposits with every unit of money it keeps as reserves.

It is calculated as:

Money Multiplier = 1/LRR

In the given example, LRR is 20% or 0.2. So,

Money Multiplier = 1/0.2 = 5

It signifies that for every unit of money kept as reserves, banks are able to create 5 units of money. The value of money multiplier is determined by LRR. Higher the value of LRR, lower is the value of money multiplier and less money is created by the banking system.

Practical Problems

1. Suppose that First Bank of Nigeria Plc. has reserves totaling N100,000 on N1,000,000 of deposits. The reserve requirement is 10 percent. Can this bank make any new loans? Explain.

2. Suppose that Obaka, fearing an impending financial crisis, withdraws N20,000 from his account at First Bank of Nigeria Plc. and buries the cash in his backyard. By how much will the bank have to reduce its loans? Calculate the maximum amount the money supply may contract as a result. Show your work.

Solutions

1. No, it cannot because with a 10 percent reserve requirement, the N100,000 in actual reserves is exactly equal to the N100,000 in required reserves it must hold on deposits of N1,000,000.

2. First Bank of Nigeria Plc.'s reserves decrease by N20,000 to N80,000 when Obaka withdraws the N20,000 in cash. Its deposits fall to N1,000,000-N20,000 = N980,000. First Bank of Nigeria Plc. should have N98,000 in reserves to cover deposits equal to

N980,000. Therefore, First Bank of Nigeria Plc. must reduce its loans by N18,000, causing the money supply to contract by as much as N180,000 — the money multiplier multiplied by the amount by which loans must be reduced. Note that deposits can contract by as much as N200,000, including the initial reduction in deposits equal to N20,000.

Self-Assessment Exercise

Define the term "Money multiplier"

4.0. CONCLUSION

Money supply or money stock is the total amount of monetary assets available in an economy at a specific time. There are several ways to define "money," but standard measures usually include currency in circulation and demand deposits (depositors' easily accessed assets on the books of financial institutions). However, money multiplier is the mathematical relationship between the monetary base and money supply of an economy. It explains the increase in the amount of cash in circulation generated by the banks' ability to lend money out of their depositors' funds. When a bank makes a loan, it 'creates' money because the loan becomes a new deposit from which the borrower can withdraw cash to spend. This money-creating power is based on the fractional reserve system under which banks are required to keep at hand only a portion (between 10 to 15 percent, typically 12 percent) of the depositors' funds.

5.0. SUMMARY

In this unit, we have discussed extensively on money supply, its determinants and money multiplier and creation of money.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the commercial bank create money in the economy
2. Explain the term "Money Supply"

7.0 REFERENCES/FURTHER READINGS

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.

UNIT THREE: SUPPLY OF MONEY VS HIGH POWERED MONEY

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1.0 Introduction
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1.0. INTRODUCTION

The various types of money in the money supply are generally classified as "M"s such as M0, M1, M2 and M3, according to the type and size of the account in which the instrument is kept. Not all of the classifications are widely used, and each country may use different classifications. M0 and M1, for example, are also called narrow money and include coins and notes that are in circulation and other money equivalents that can be converted easily to cash. M2 included M1and, in addition, short-term time deposits in banks and certain money market fund.

An increase in the supply of money typically lowers interest rates, which in turns generates more investment and puts more money in the hands of consumers, thereby stimulating spending. Businesses respond by ordering more raw materials and increasing production. The increased business activity raises the demand for labour. The opposite can occur if the money supply falls or when its growth rate declines.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. MAIN CONTENT

3.1. Definition of Money Supply

The supply of money is a stock at a particular point of time, though it conveys the idea of a flow over time. The term ‘the supply of money’ is synonymous with such terms as ‘money stock’, ‘stock of money’, ‘money supply’ and ‘quantity of money’.

The supply of money at any moment is the total amount of money in the economy. There are three alternative views regarding the definition or measures of money supply. The most common view is associated with the traditional and Keynesian thinking which stresses the medium of exchange function of money.

According to this view, money supply is defined as currency with the public and demand deposits with commercial banks. Demand deposits are savings and current accounts of depositors in a commercial bank. They are the liquid form of money because depositors can draw cheques for any amount lying in their accounts and the bank has to make immediate payment on demand. Demand deposits with commercial banks plus currency with the public are together denoted as M1, the money supply. This is regarded as a narrower definition of the money supply.

The second definition is broader and is associated with the modern quantity theorists headed by Friedman. Professor Friedman defines the money supply at any moment of time as "literally the number of dollars people are carrying around in their pockets, the number of dollars they have to their credit at banks or dollars they have to their credit at banks in the form of demand deposits, and also commercial bank time deposits."

Time deposits are fixed deposits of customers in a commercial bank. Such deposits earn a fixed rate of interest varying with the time period for which the amount is deposited. Money can be withdrawn before the expiry of that period by paying a penal rate of interest to the bank. So time deposits possess liquidity and are included in the money supply by Friedman. Thus, this definition includes M1 plus time deposits of commercial banks in the supply of money. This wider definition is characterized as M2 in America and M3 in Britain and India. It stresses the store of value function of money or what Friedman says, 'a temporary abode of purchasing power'.

The third definition is the broadest and is associated with Gurley and Shaw. They include in the supply of money, M2 plus deposits of savings banks, building societies, loan associations, and deposits of other credit and financial institutions.

The choice between these alternative definitions of the money supply depends on two considerations: One "a particular choice of definition may facilitate or blur the analysis of the various motives for holding cash and two from the point of view of monetary policy an appropriate definition should include the area over which the monetary authorities can have direct influence. If these two criteria are applied, none of the three definitions is wholly satisfactory.

The first definition of money supply may be analytically better because M1 is a sure medium of exchange. But M1 is an inferior store of value because it earns no rate of interest, as is earned by time deposits. Further, the central bank can have control over a narrower area if only demand deposits are included in the money supply.

The second definition that includes time deposits (M2) in the supply of money is less satisfactory analytically because in a highly developed financial structure, it is important to consider separately the motives for holding means of payment and time deposits.

Unlike demand deposits, time deposits are not a perfect liquid form of money. This is because the amount lying in them can be withdrawn immediately by cheques.

Normally, it cannot be withdrawn before the due date of expiry of deposit. In case a depositor wants his money earlier, he has to give a notice to the bank which allows the withdrawal after charging a penal interest rate from the depositor. Thus, time deposits lack perfect liquidity and cannot be included in the money supply. But this definition is more appropriate from the point of view of monetary policy because the central bank can exercise control over a wider area that includes both demand and time deposits held by commercial banks.

The third definition of money supply that includes M2 plus deposits of non-bank financial institutions is unsatisfactory on both the criteria. Firstly, they do not serve the medium of exchange function of money. Secondly, they almost remain outside the area of control of the central bank. The only advantage they possess is that they are highly liquid store of value. Despite this merit, deposits of non-bank financial institutions are not included in the definition of money supply.

Self-Assessment Exercises

Define the term "money supply"

3.2. Determinants of Money Supply:

There are two theories of the determination of the money supply. According to the first view, the money supply is determined exogenously by the central bank. The second view holds that the money supply is determined endogenously by changes in the economic activity which affects people's desire to hold currency relative to deposits, the rate of interest, etc.

Thus the determinants of money supply are both exogenous and endogenous which can be described broadly as: the minimum cash reserve ratio, the level of bank reserves, and the desire of the people to hold currency relative to deposits. The last two determinants together are called the monetary base or the high powered money.

1. The Required Reserve Ratio:

The required reserve ratio (or the minimum cash reserve ratio or the reserve deposit ratio) is an important determinant of the money supply. An increase in the required reserve ratio reduces the supply of money with commercial banks and a decrease in required reserve ratio increases the money supply.

The RR_1 is the ratio of cash to current and time deposit liabilities which is determined by law. Every commercial bank is required to keep a certain percentage of these liabilities in the form of deposits with the central bank of the country. But notes or cash held by commercial banks in their tills are not included in the minimum required reserve ratio.

2. The Level of Bank Reserves:

The level of bank reserves is another determinant of the money supply. Commercial bank reserves consist of reserves on deposits with the central bank and currency in their tills or vaults. It is the central bank of the country that influences the reserves of commercial banks in order to determine the supply of money. The central bank requires all commercial banks to hold reserves equal to a fixed percentage of both time and demand deposits. These are legal minimum or required reserves.

Required reserves (RR) are determined by the required reserve ratio (RRr) and the level of deposits (D) of a commercial bank: RR-RRr' D. If deposits amount of N80 and required reserve ratio is 20 percent, then the required reserves will be 20% x 80= N16. If the reserve ratio is reduced to 10 per cent, the required reserves will also be reduced to N8.

Thus the higher the reserve ratio, the higher the required reserves to be kept by a bank, and vice versa. But it is the excess reserves (ER) which are important for the determination of the money supply. Excess reserves are the difference between total reserves (TR) and required reserves (RR): ER=TR-RR. If total reserves are N80 and required reserves are N16, then the excess reserves are N64 (N80-N16).

When required reserves are reduced to N8, the excess reserves increase to N72. It is the excess reserves of a commercial bank which influence the size of its deposit liabilities. A commercial bank advances loans equal to its excess reserves which are an important component of the money supply. To determine the supply of money with a commercial bank, the central bank influences its reserves by adopting open market operations and discount rate policy.

Open market operations refer to the purchase and sale of government securities and other types of assets like bills, securities, bonds, etc., both government and private in the open market. When the central bank buys or sells securities in the open market, the level of bank reserves expands or contracts.

The purchase of securities by the central bank is paid for with cheques to the holders of securities who, in turn, deposit them in commercial banks thereby increasing the level of bank reserves. The opposite is the case when the central bank sells securities to the public and banks that make payments to the central bank through cash and cheques thereby reducing the level of bank reserves.

The discount rate policy affects the money supply by influencing the cost and supply of bank credit to commercial banks. The discount rate, known as the bank rate in India, is the interest rate at which commercial banks borrow from the central bank. A high discount rate means that commercial banks get fewer amounts by selling securities to the central bank. The commercial banks, in turn, raise their lending rates to the public thereby making advances dearer for them. Thus there will be contraction of credit and the level of commercial bank reserves. Opposite is the case when the bank rate is lowered. It tends to expand credit and the consequent bank reserves.

It should be noted that commercial bank reserves are affected significantly only when open market operations and discount rate policy supplement each other. Otherwise, their effectiveness as determinants of bank reserves and consequently of money supply is limited.

3. Public's Desire to Hold Currency and Deposits:

People's desire to hold currency (or cash) relative to deposits in commercial banks also determines the money supply. If people are in the habit of keeping less in cash and more in deposits with the commercial banks, the money supply will be large. This is because banks can create more money with larger deposits. On the contrary, if people do not have banking habits and prefers to keep their money holdings in cash, credit creation by banks will be less and the money supply will be at a low level.

3.3. High Powered Money and the Money Multiplier:

The current practice is to explain the determinants of the money supply in terms of the monetary base or high-powered money. High-powered money is the sum of commercial bank reserves and currency (notes and coins) held by the public. High-powered money is the base for the expansion of bank deposits and creation of the money supply. The supply of money varies directly with changes in the monetary base, and inversely with the currency and reserve ratios.

4. Other Factors:

The money supply is a function not only of the high-powered money determined by the monetary authorities, but of interest rates, income and other factors. The latter factors change the proportion of money balances that the public holds as cash. Changes in business activity can change the behaviour of banks and the public and thus affect the money supply. Hence the money supply is not only an exogenous controllable item but also an endogenously determined item.

Self-Assessment Exercise

What are the determinants of money supply in Nigeria?

4.0. CONCLUSION

We have discussed above the factors which determine money supply through the creation of bank credit. But money supply and bank credit are indirectly related to each other. When the money supply increases, a part of it is saved in banks depending upon the depositors' propensity to save. These savings become deposits of commercial banks who, in turn, lend after meeting the statutory reserve requirements. Thus with every increase in the money supply, the bank credit goes up. But it may not happen in exactly the same proportion due to the following factors:

(a) The marginal propensity to save does not remain constant. It varies from time to time depending on changes in income levels, prices, and subjective factors.

(b) Banks may also create more or less credit due to the operation of leakages in the credit creation process.

(c) The velocity of circulation of money also affects the money supply. If the velocity of money circulation increases, the bank credit may not fall even after a decrease in the money supply. The central bank has little control over the velocity of money which may adversely affect bank credit.

5.0. SUMMARY

In this unit, we have discussed on definition of supply of money, determinants of money supply and high powered money and the money multiplier

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss in details the determinants of money supply.
2. Explain the high powered money and the money multiplier.

7.0 REFERENCES/FURTHER READINGS

Ajayi, S. S., (2016). Introduction to money and Banking, 2nd edition, University Press, Ibadan, Oyo state, Nigeria.

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UNIT FOUR: HIGH-POWERED MONEY VS THE MONEY MULTIPLIER

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1.0. INTRODUCTION

High powered money - The total liability of the monetary authority of the country, is called the monetary base or high powered money. It consists of currency (notes and coins in circulation with the public and vault cash of commercial banks) and deposits held by the Government and commercial banks. If a member of the public produces a currency note to central bank, the latter must pay her value equal to the figure printed on the note. Similarly, the deposits are also refundable by central bank on demand from deposit holders. These items are claims which the general public, government or banks have on central bank and are considered to be the liability of central bank.

Central bank acquires assets against these liabilities. The process can be understood easily if we consider a simple stylized example. Suppose the central bank of Nigeria purchases gold or dollar's worth N5. It pays for the gold or foreign exchange by issuing currency to the seller. The currency in circulation in the economy thus goes up by N5, an item that shows up on the liability side of CBN's Balance sheet. The value of the acquired asset, also equal to N5, is entered under the appropriate head on the Asset's side. Similarly, the CBN acquires debt bonds or securities issued by the government and pay the government by issuing currency. It issues loans to commercial banks in a similar fashion. However, money multiplier is one of various closely related ratios of commercial bank money to central bank money under a fractional-reserve banking system. Most often, it measures the maximum amount of commercial bank money that can be created by a given unit of central bank money. That is, in a fractional-reserve banking system, the total amount of loans that commercial banks are allowed to extend (the commercial bank money that they can legally create) is a multiple of reserves; this multiple is the reciprocal of the reserve ratio, and it is an economic multiplier.

2.0. Objectives

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. MAIN CONTENT

3.1. High-Powered Money Vs the Money Multiplier:

The current practice is to explain the determinants of the money supply in terms of the monetary base or high-powered money. High -powered money is the sum of commercial bank reserves and currency (notes and coins) held by the public. High-powered money is the base for the expansion of bank deposits and creation of the money supply. The supply of money varies directly with changes in the monetary base, and inversely with the currency and reserve ratios.

The use of high-powered money consists of the demand of commercial banks for the legal limit or required reserves with the central bank and excess reserves and the demand of the public for currency. Thus high-powered money H=C+RR+ER where C represents currency, RR the required reserves and ER the excess reserves.

A commercial bank's required reserves depend upon its deposits. But a bank usually holds reserves in excess of its required reserves. In fact, banks do not advance loans up to the legal limits but precisely less than that. This is to meet unanticipated cash withdrawals or adverse clearing balances. Hence the need arises for maintaining excess reserves by them. The money supply is thus determined by the required reserve ratio and the excess reserve ratio of commercial banks. The required reserve ratio (RRr) is the ratio of required reserves to deposits (RR/D), and the excess reserve ratio (ERr) is the ratio or excess reserves to deposits (ER/D).

Currency held by the public is another component of high-powered money. The demand for currency by the public is expressed as a proportion of bank deposits. Thus, the currency ratio is C/-C/D, where C is the currency and D deposits. The currency ratio is influenced by such factors as changes in income levels of the people, the use of credit instruments by the public, and uncertainties in economic activity.

The formal relation between the money supply and high-powered money can be stated in the form of equations as under:

3.2. Money Supply and High Power Money Calculation

The money supply (M) consists of deposits of commercial banks (D) and currency (C) held by the public. Thus, the supply of money:

$$M = D + C \qquad \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

High-power money (H) (or monetary base) consists of currency held by the public (C) plus required reserves (RR) and excess reserves of commercial banks. Thus, high-powered money is:

$$H = C + RR + ER \qquad \text{…….. (2)}$$

The relation between M and H can be expressed as the ratio of M to H. So divide equation (1) by (2):

$$\frac{M}{H} = \frac{D + C}{C + RR + ER}$$

Divide the numerator and denominator of the right hand side of equation (3) by D:

$$\frac{M}{H} = \frac{\frac{D}{D} + \frac{C}{D}}{\frac{C}{D} + \frac{RR}{D} + \frac{ER}{D}}$$

Or

$$\frac{M}{H} = \frac{1 + \frac{C}{D}}{\frac{C}{D} + \frac{RR}{D} + \frac{ER}{D}} \qquad \text{… … … (4)}$$

By substituting Cr for C/D, RRr for RR/D and Err for ER/D, equation (1) becomes

$$\frac{M}{H} = \frac{1 + Cr}{Cr + RRr + ERr} \qquad \text{… … … (5)}$$

Thus high-powered money

$$H = \frac{Cr + RRr + ERr}{1 + Cr} \times M \qquad \text{… … … (6)}$$

And supply of money

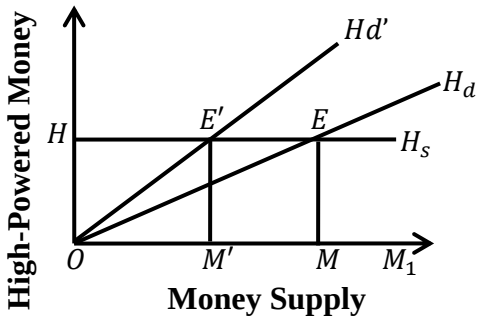
Equation (7) defines money supply in terms of high-powered money. It expresses the money supply in terms of four determinants, H, Cr, RRr, and ERr. The equation states that the higher the supply of high powered money, the higher the money supply. Further, the lower the currency ratio (Cr), the reserve ratio (RRr), and the excess reserve ratio (ERr) the higher the money supply, and vice versa.

The relation between the money supply and high-powered money is illustrated in the Figure above. The horizontal curve Hs shows the given supply of high-powered money. The curve Hd shows the demand for high-powered money associated with each level of money supply and represents equation (6). The slope of the Hd curve is equal to the term (Cr + RRr + ERr)/(1+Cr). Given Cr, RRr, Err and the high-powered money Hi, the equilibrium money supply is OM. If the money supply is larger than this, say OM_y there

will be excess demand for high-powered money. On the contrary, a less than OM money supply will mean less demand for high-powered money.

If there is an increase in any one of the ratios Cr or RRr or ERr, there would be an increase in the demand for high-powered money. This is shown by the Hd' curve in Figure 11 where the increase in the demand for high-powered money leads to decline in the money supply to OM.

Figure11:**High-Powered Money and Money Supply**



The quotient of equation (7) is the money multiplier m. Thus

$m = 1 + Cr/ CR+RRr+ERr$…… (8)

Now the relation between the money supply and high -powered money of equation (7) becomes

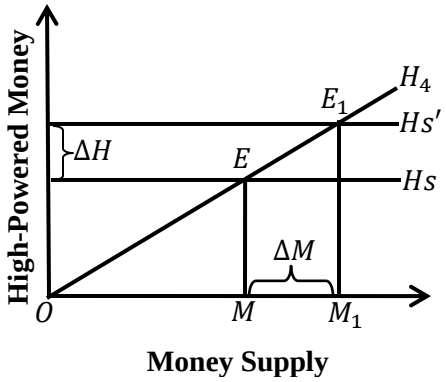
$M = mH$ ……..(9)

Equation (9) expresses the money supply as a function of m and H. In other words, the money supply is determined by high powered money (H) and the money multiplier (m). The size of the money multiplier is determined by the currency ratio (Cr) of the public, the required reserve ratio (RRr) at the central bank, and the excess reserve ratio (ERr) of commercial banks. The lower these ratios are, the larger the money multiplier is. If m is fairly stable, the central bank can manipulate the money supply (M) by manipulating H. The central bank can do so by open market operations. But the stability of m depends upon the stability of the currency ratio and the reserve ratios RRr and ERr. Or, it depends upon off-setting changes in RRr and ERr ratios. Since these ratios and currency with the public are liable to change, the money multiplier is quite Money Supply volatile in the short run.

Given the division of high-powered money between currency held by the public, the required reserves at the central bank, and the excess reserves of commercial banks, the money supply varies inversely with Cr, RRr and ERr. But the supply of money varies

directly with changes in the high-powered money. This is shown in Figure 12. An increase in the supply of high- powered money by DH shifts the Hs curve upward to Hs'. At E, the demand and supply of high-powered money is in equilibrium and money supply is OM. With the increase in the supply of high-powered money to Hs', the supply of money also increases to OM_1 at the new equilibrium point E_1. Further, Figure 10 reveals the operation of the money multiplier.

Figure12:**High-Powered Money and Money Supply**



Some economists do not take into consideration excess reserves in determining high-powered money and consequently the money supply. But the monetarists give more importance to excess reserves. According to them, due to uncertainties prevailing in banking operations as in business, banks always keep excess reserves. The amount of excess reserves depends upon the interaction of two types of costs: the cost of holding excess reserves, and the cost generated by deficiency in excess reserves. The first cost is in terms of the market rate of interest at which excess reserves are maintained. The second cost in terms of the bank rate which is a sort of penalty to be paid to the central bank for failure to maintain the legal required reserve ratio by the commercial bank.

The excess reserve ratio varies inversely with the market rate of interest and directly with the bank rate. Since the money supply is inversely related to the excess reserve ratio, decline in the excess reserve ratio of banks tends to increase the money supply and vice versa. Thus the money supply is determined by high-powered money, the currency ratio, the required reserve ratio and the market rate of interest and the bank rate.

The monetary base or high-powered money is directly controllable by the central bank. It is the ultimate base of the nation's money supply. Of course, the money multiplier times the high-powered money always equals the money supply, i.e. M=mH. This formulation tells us how much new money will be created by the banking system for a given increase in the high-powered money.

The monetary policy of the central bank affects excess reserves and the high-powered money identically. Suppose the central bank makes open market purchases. This raises the high-powered money in the form of excess reserves of banks.

An increase in money supply that results from it comes from the banking system which creates new money on the basis of its newly acquired excess reserves. Thus this concept tells us that the monetary authorities can control the money supply through changing the high-powered money or the money multiplier.

Self-Assessment Exercise

Discuss the theory of money supply and high powered money.

4.0. CONCLUSION

Money supply is the entire stock of currency and other liquid instruments in a country's economy as of a particular time. The money supply can include cash, coins and balances held in checking and savings accounts. Economists analyze the money supply and develop policies revolving around it through controlling interest rates and increasing or decreasing the amount of money flowing in the economy. Money supply data is collected, recorded and published periodically, typically by the country's government or central bank. Public and private sector analysis is performed because of the money supply's possible impacts on price level, inflation and the business cycle. In the United States, the Federal Reserve policy is the most important deciding factor in the money supply while the monetary base (also base money, money base, high-powered money, reserve money, outside money, central bank money or, in the UK, narrow money) in a country is defined as the portion of the commercial banks' reserves that are maintained in accounts with their central bank plus the total currency circulating in the public (which includes the currency, also known as vault cash, that is physically held in the banks' vault). The monetary base should not be confused with the money supply which consists of the total currency circulating in the public plus the non-bank deposits with commercial banks

5.0. SUMMARY

In this unit, we have discussed in detail the high powered money and the money multiplier and I believe you must have learnt a lot in this unit.

6.0. TUTOR-MARKED ASSIGNMENT

3. Define the term monetary base.
4. Make a clarification between high powered money and money multiplier.

7.0 REFERENCES/FURTHER READINGS

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.

UNIT FIVE: DEMAND FOR MONEY

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1.0. INTRODUCTION

The Theory of Money Demand is considered the brain-child of the famous Polish astronomer and mathematician, Copernicus. In the hands of the Jean Bodin, the noted economist, the theory progressed immensely in establishing the relation between gold and silver imports and rise in the market prices. In the Quantity Theory of Money, the "Equation of Exchange" which substantiates the relation between the supply of money and the value of cash transaction was first affirmed by David Hume, the well-known philosopher and later expanded by the renowned British political economist, John Stuart Mill. Between 19th and 20th century, other prominent economists like Irving Fisher, Simon Newcomb and Alfred de Foville further developed the theory, offering it the present form. There are basically three theories to the demand for money.

However, the demand for money arises from two important functions of money. The first is that money acts as a medium of exchange and the second is that it is a store of value. Thus individuals and businesses wish to hold money partly in cash and partly in the form of assets.

What explains changes in the demand for money? There are two views on this issue. The first is the "scale" view which is related to the impact of the income or wealth level upon the demand for money. The demand for money is directly related to the income level. The higher the income level, the greater will be the demand for money.

The second is the "substitution" view which is related to relative attractiveness of assets that can be substituted for money. According to this view, when alternative assets like bonds become unattractive due to fall in interest rates, people prefer to keep their assets in cash, and the demand for money increases, and vice versa.

The scale and substitution view combined together have been used to explain the nature of the demand for money which has been split into the transactions demand, the precautionary demand and the speculative demand. There are three approaches to the

demand for money: the classical, the Keynesian, and the post-Keynesian. We discuss these approaches below.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the classical approach to demand for money
- Know the Keynesian approach to demand for money
- Understand the motives of holding money

3.0. MAIN CONTENT

3.1. The Classical Approach

The classical economists did not explicitly formulate demand for money theory but their views are inherent in the quantity theory of money. They emphasized the transactions demand for money in terms of the velocity of circulation of money. This is because money acts as a medium of exchange and facilitates the exchange of goods and services. In *Fisher's "Equation of Exchange"*,

$MV=PT$

Where M is the total quantity of money, V is its velocity of circulation, P is the price level, and T is the total amount of goods and services exchanged for money.

The right hand side of this equation PT represents the demand for money which, in fact, "depends upon the value of the transactions to be undertaken in the economy, and is equal to a constant fraction of those transactions." MV represents the supply of money which is given and in equilibrium equals the demand for money. Thus the equation becomes

$Md = PT$

This transactions demand for money, in turn, is determined by the level of full employment income. This is because the classicists believed in Say's Law whereby supply created its own demand, assuming the full employment level of income. Thus, the demand for money in Fisher's approach is a constant proportion of the level of transactions, which in turn, bears a constant relationship to the level of national income. Further, the demand for money is linked to the volume of trade going on in an economy at any time.

Thus its underlying assumption is that people hold money to buy goods.

But people also hold money for other reasons, such as to earn interest and to provide against unforeseen events. It is, therefore, not possible to say that V will remain constant when M is changed. The most important thing about money in Fisher's theory is that it is transferable. But it does not explain fully why people hold money. It does not clarify whether to include as money such items as time deposits or savings deposits that are not immediately available to pay debts without first being converted into currency.

It was the Cambridge cash balance approach which raised a further question: Why do people actually want to hold their assets in the form of money? With larger incomes, people want to make larger volumes of transactions and that larger cash balances will, therefore, be demanded.

The Cambridge demand equation for money is

$$Md=kPY$$

where Md is the demand for money which must equal the supply to money (Md=Ms) in equilibrium in the economy, k is the fraction of the real money income (PY) which people wish to hold in cash and demand deposits or the ratio of money stock to income, P is the price level, and Y is the aggregate real income. This equation tells us that other things being equal, the demand for money in normal terms would be proportional to the nominal level of income for each individual, and hence for the aggregate economy as well.

3.1.1. Its Critical Evaluation

This approach includes time and saving deposits and other convertible funds in the demand for money. It also stresses the importance of factors that make money more or less useful, such as the costs of holding it, uncertainty about the future and so on. But it says little about the nature of the relationship that one expects to prevail between its variables, and it does not say too much about which ones might be important.

One of its major criticisms arises from the neglect of store of value function of money. The classicists emphasized only the medium of exchange function of money which simply acted as a go-between to facilitate buying and selling. For them, money performed a neutral role in the economy. It was barren and would not multiply, if stored in the form of wealth.

This was an erroneous view because money performed the "asset" function when it is transformed into other forms of assets like bills, equities, debentures, real assets (houses,

cars, TVs, and so on), etc. Thus, the neglect of the asset function of money was the major weakness of classical approach to the demand for money which Keynes remedied.

Self-Assessment Exercise

Discuss the theory of demand for money

3.2. The Keynesian Approach: Liquidity Preference:

Keynes in his General Theory used a new term "liquidity preference" for the demand for money. Keynes suggested three motives which led to the demand for money in an economy: (1) the transactions demand, (2) the precautionary demand, and (3) the speculative demand.

3.2.1. The Transactions Demand for Money:

The transactions demand for money arises from the medium of exchange function of money in making regular payments for goods and services. According to Keynes, it relates to "the need of cash for the current transactions of personal and business exchange." It is further divided into income and business motives. The income motive is meant "to bridge the interval between the receipt of income and its disbursement."

Similarly, the business motive is meant "to bridge the interval between the time of incurring business costs and that of the receipt of the sale proceeds." If the time between the incurring of expenditure and receipt of income is small, less cash will be held by the people for current transactions, and vice versa. There will, however, be changes in the transactions demand for money depending upon the expectations of income recipients and businessmen. They depend upon the level of income, the interest rate, the business turnover, the normal period between the receipt and disbursement of income, etc.

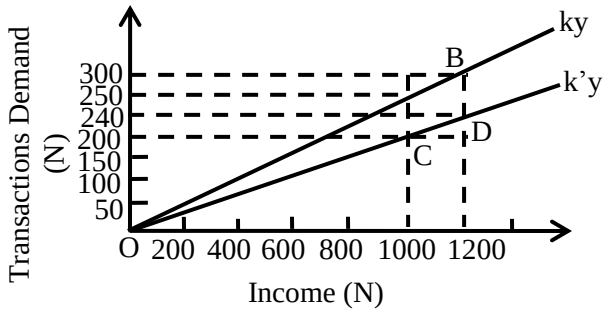
Given these factors, the transactions demand for money is a direct proportional and positive function of the level of income, and is expressed as

$L_1 = kY$

Where L_1 is the transactions demand for money, k is the proportion of income which is kept for transactions purposes, and Y is the income.

This equation is illustrated in Figure 13 where the line kY represents a linear and proportional relation between transactions demand and the level of income. Assuming k= 1/4 and income N1000, the demand for transactions balances would be N250, at point A. With the increase in income to N1200 the transactions demand would be N300 at point B on the curve kY.

Figure13:**Transactions Demand for money**



If the transactions demand falls due to a change in the institutional and structural conditions of the economy, the value of κ is reduced to say, 1/5, and the new transactions demand curve is kY. It shows that for income of N1000 and N1200, transactions balances would N200 and N240 at points C and D respectively in the figure. Thus we conclude that the chief determinant of changes in the actual amount of the transactions balances held is changes in income. Changes in the transactions balances are the result of movements along a line like kY rather than changes in the slope of the line. In the equation, changes in transactions balances are the result of changes in Y rather than changes in k.

3.2.2. Interest Rate and Transactions Demand

Regarding the rate of interest as the determinant of the transactions demand for money Keynes made the L_T function interest inelastic. But he pointed out that the "demand for money in the active circulation is also the some extent a function of the rate of interest, since a higher rate of interest may lead to a more economical use of active balances. However, he did not stress the role of the rate of interest in this part of his analysis, and many of his propagates ignored it altogether. In recent years, two post-Keynesian economists William J. Baumol and James Tobin have shown that the rate of interest is an important determinant of transactions demand for money.

They have also pointed out the relationship, between transactions demand for money and income is not linear and proportional. Rather, changes in income lead to proportionately smaller changes in transactions demand.

Transactions balances are held because income received once a month is not spent on the same day. In fact, an individual spreads his expenditure evenly over the month. Thus a portion of money meant for transactions purposes can be spent on short-term interest-yielding securities. It is possible to put funds to work for a matter of days, weeks, or months in interest-bearing securities such as U.S. Treasury bills or commercial paper and other short-term money market instruments.

The problem here is that there is a cost involved in buying and selling. One must weigh the financial cost and inconvenience of frequent entry to and exit from the market for securities against the apparent advantage of holding interest-bearing securities in place of idle transactions balances.

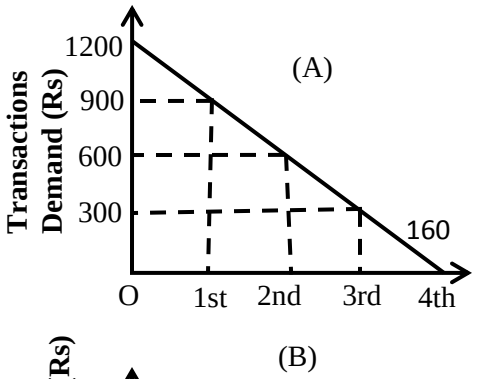
Among other things, the cost per purchase and sale, the rate of interest, and the frequency of purchases and sales determine the profitability of switching from ideal transactions balances to earning assets. Nonetheless, with the cost per purchase and sale given, there is clearly some rate of interest at which it becomes profitable to switch what otherwise would be transactions balances into interest-bearing securities, even if the period for which these funds may be spared from transactions needs is measured only in weeks. The higher the interest rate, the larger will be the fraction of any given amount of transactions balances that can be profitably diverted into securities.

The structure of cash and short-term bond holdings is shown in Figure 14 (A), (B) and (C). Suppose an individual receives N1,200 as income on the first of every month and spends it evenly over the month. The month has four weeks. His saving is zero.

Accordingly, his transactions demand for money in each week is N300. So he has N900 idle money in the first week, N600 in the second week, and N300 in the third week. He will, therefore, convert this idle money into interest bearing bonds, as illustrated in Panel (B) and (C) of Figure 12. He keeps and spends N300 during the first week (shown in Panel B), and invests N900 in interest-bearing bonds (shown in Panel C). On the first day of the second week he sells bonds worth N300 to cover cash transactions of the second week and his bond holdings are reduced to N600.

Similarly, he will sell bonds worth N300 in the beginning of the third and keep the remaining bonds amounting to N300 which he will sell on the first day of the fourth week to meet his expenses for the last week of the month. The amount of cash held for transactions purposes by the individual during each week is shown in saw-tooth pattern in Panel (B), and the bond holdings in each week are shown in blocks in Panel (C) of Figure 14.

Figure14: **The structure of cash and short-term bond holdings**

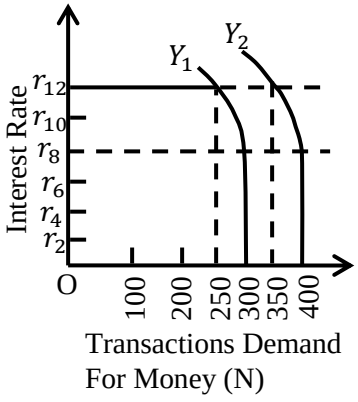


The modern view is that the transactions demand for money is a function of both income and interest rates which can be expressed as $L_1 = f(Y, r)$.

This relationship between income and interest rate and the transactions demand for money for the economy as a whole is illustrated in Figure 13. We saw above that $L_T = kY$. If y= N1,200 and k= 1/4, then L_T = N300.

This is shown as Y_1 curve in Figure 15. If the income level rises to N1,600, the transactions demand also increases to N400, given k = 1/4. Consequently, the transactions demand curve shifts to Y_2. The transactions demand curves Y_1, and Y_2 are interest- inelastic so long as the rate of interest does not rise above r_8 per cent.

Figure15: **The relationship between income and interest rate and the transactions demand for money for the economy as a whole**



As the rate of interest starts rising above r_8, the transactions demand for money becomes interest elastic. It indicates that given the cost of switching into and out of securities, an interest rate above 8 per cent is sufficiently high to attract some amount of transaction balances into securities. The backward slope of the K, curve shows that at still higher rates, the transaction demand for money declines.

Thus when the rate of interest rises to r_{12}, the transactions demand declines to N250 with an income level of N1,200. Similarly, when the national income is N1,600 the transactions demand would decline to N350 at r_{12} interest rate. Thus the transactions demand for money varies directly with the level of income and inversely with the rate of interest.

3.2.3. The Precautionary Demand for Money:

The Precautionary motive relates to the desire to provide for contingencies requiring sudden expenditures and for unforeseen opportunities of advantageous purchases. Both individuals and businessmen keep cash in reserve to meet unexpected needs. Individuals hold some cash to provide for illness, accidents, unemployment and other unforeseen contingencies.

Similarly, businessmen keep cash in reserve to tide over unfavourable conditions or to gain from unexpected deals. Therefore, money held under the precautionary motive is rather like water kept in reserve in a water tank. The precautionary demand for money depends upon the level of income, and business activity, opportunities for unexpected profitable deals, availability of cash, the cost of holding liquid assets in bank reserves, etc.

Keynes held that the precautionary demand for money, like transactions demand, was a function of the level of income. But the post-Keynesian economists believe that like transactions demand, it is inversely related to high interest rates. The transactions and precautionary demand for money will be unstable, particularly if the economy is not at full employment level and transactions are, therefore, less than the maximum, and are liable to fluctuate up or down.

Since precautionary demand, like transactions demand is a function of income and interest rates, the demand for money for these two purposes is expressed in the single equation LT=f(Y, r).

3.2.4. The Speculative Demand for Money:

The speculative (or asset or liquidity preference) demand for money is for securing profit from knowing better than the market what the future will bring forth. Individuals and businessmen having funds, after keeping enough for transactions and precautionary purposes, like to make a speculative gain by investing in bonds. Money held for speculative purposes is a liquid store of value which can be invested at an opportuned moment in interest-bearing bonds or securities.

Bond prices and the rate of interest are inversely related to each other. Low bond prices are indicative of high interest rates, and high bond prices reflect low interest rates. A bond carries a fixed rate of interest. For instance, if a bond of the value of N100 at 4 per cent interest and the market rate of interest rises to 8 per cent, the value of this bond falls to N50 in the market. If the market rate of interest falls to 2 per cent, the value of the bond will rise to N200 in the market.

This can be worked out with the help of the equation

$V = R/r$

Where V is the current market value of a bond, R is the annual return on the bond, and r is the rate of return currently earned or the market rate of interest. So, a bond worth N100 (V) and carrying a 4 per cent rate of interest (r), gets an annual return (R) of N4, that is,

V=N4/0.04= N100. When the market rate of interest rises to 8 per cent, then V= N4/0.08= N50; when it fall to 2 per cent, then V= N4/0.02= N200.

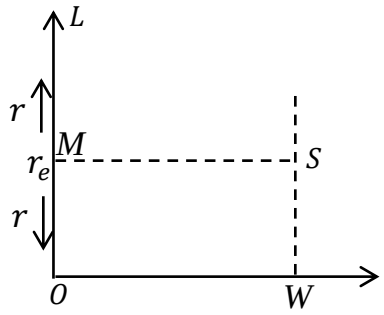
Thus, individuals and businessmen can gain by buying bonds worth N100 each at the market price of N50 each when the rate of interest is high (8 per cent), and sell them again when they are dearer (N200 each when the rate of interest falls (to 2 per cent).

According to Keynes, it is expectations about changes in bond prices or in the current market rate of interest that determine the speculative demand for money. In explaining the speculative demand for money, Keynes had a normal or critical rate of interest (r_c) in mind. If the current rate of interest (r) is above the "critical" rate of interest, businessmen expect it to fall and bond price to rise. They will, therefore, buy bonds to sell them in future when their prices rise in order to gain thereby. At such times, the speculative demand for money would fall. Conversely, if the current rate of interest happens to be below the critical rate, businessmen expect it to rise and bond prices to fall. They will, therefore, sell bonds in the present if they have any, and the speculative demand for money would increase.

Thus when $r > r_0$, an investor holds all his liquid assets in bonds, and when $r < r_0$ his entire holdings go into money. But when $r = r_0$, he becomes indifferent to hold bonds or money.

Thus relationship between an individual's demand for money and the rate of interest is shown in Figure 16 where the horizontal axis shows the individual's demand for money for speculative purposes and the current and critical interest rates on the vertical axis. The figure shows that when r is greater than r_0, the asset holder puts all his cash balances in bonds and his demand for money is zero.

Figure16: **The relationship between an individual's demand for money and the rate of interest**

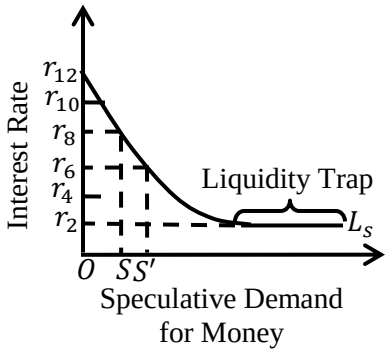


Speculative Demand for Money

This is illustrated by the LM portion of the vertical axis. When r falls below r_0, the individual expects more capital losses on bonds as against the interest yield. He, therefore, converts his entire holdings into money, as shown by OW in the figure. This relationship between an individual asset holder's demand for money and the current rate of interest gives the discontinuous step demand for money curve LMSW.

For the economy as a whole the individual demand curve can be aggregated on this presumption that individual asset-holders differ in their critical rates r_0. It is smooth curve which slopes downward from left to right, as shown in Figure 17.

Figure17: **Aggregate Individual Demand Curve**



Thus the speculative demand for money is a decreasing function of the rate of interest. The higher the rate of interest, the lower the speculative demand for money and the lower the rate of interest, the higher the speculative demand for money. It can be expressed algebraically as Ls = f (r), where Ls is the speculative demand for money and r is the rate of interest.

Geometrically, it is shows in Figure 15 above. The figure shows that at a very high rate of interest r_{J2}, the speculative demand for money is zero and businessmen invest their cash holdings in bonds because they believe that the interest rate cannot rise further. As the rate of interest falls to say, $r_{8,}$ the speculative demand for money is OS. With a further fall in the interest rate to r_6, it rises to OS'. Thus the shape of the Ls curve shows that as the interest rate rises, the speculative demand for money declines; and with the fall in the interest rate, it increases. Thus, the Keynesian speculative demand for money function is highly volatile, depending upon the behaviour of interest rates.

Self-Assessment Exercise

Discuss the theory of Classical Approach to Money

3.3. Liquidity Trap

Keynes visualized conditions in which the speculative demand for money would be highly or even totally elastic so that changes in the quantity of money would be fully absorbed into speculative balances. This is the famous Keynesian liquidity trap. In this case, changes in the quantity of money have no effects at all on prices or income. According to Keynes, this is likely to happen when the market interest rate is very low so that yields on bond, equities and other securities will also be low.

At a very low rate of interest, such as r_2, the Ls curve becomes perfectly elastic and the speculative demand for money is infinitely elastic. This portion of the Ls curve is known as the liquidity trap. At such a low rate, people prefer to keep money in cash rather than invest in bonds because purchasing bonds will mean a definite loss. People will not buy

bonds so long as the interest rate remain at the low level and they will be waiting for the rate of interest to return to the "normal" level and bond prices to fall.

According to Keynes, as the rate of interest approaches zero, the risk of loss in holding bonds becomes greater. When the price of bonds has been bid up so high that the rate of interest is, say, only 2 per cent or less, a very small decline in the price of bonds will wipe out the yield entirely and a slightly further decline would result in loss of the part of the principal. Thus, the lower the interest rate, the smaller the earnings from bonds, therefore, the greater the demand for cash holdings. Consequently, the Ls curve will become perfectly elastic.

Further, according to Keynes, "a long-term rate of interest of 2 per cent leaves more to fear than to hope, and offers, at the same time, a running yield which is only sufficient to offset a very small measure of fear." This makes the Ls curve "virtually absolute in the sense that almost everybody prefers cash to holding a debt which yields so low a rate of interest."

Prof. Modigliani believes that an infinitely elastic Ls curve is possible in a period of great uncertainty when price reductions are anticipated and the tendency to invest in bonds decreases, or if there prevails "a real scarcity of investment outlets that are profitable at rates of interest higher than the institutional minimum."

The phenomenon of liquidity trap possesses certain important implications.

First, the monetary authority cannot influence the rate of interest even by following a cheap money policy. An increase in the quantity of money cannot lead to a further decline in the rate of interest in a liquidity-trap situation. Second, the rate of interest cannot fall to zero.

Third, the policy of a general wage cut cannot be efficacious in the face of a perfectly elastic liquidity preference curve, such as Ls in Figure 15. No doubt, a policy of general wage cut would lower wages and prices, and thus release money from transactions to speculative purpose, the rate of interest would remain unaffected because people would hold money due to the prevalent uncertainty in the money market. Last, if new money is created, it instantly goes into speculative balances and is put into bank vaults or cash boxes instead of being invested. Thus, there is no effect on income. Income can change without any change in the quantity of money. Consequently, monetary changes have a weak effect on economic activity under conditions of absolute liquidity preference.

3.3.1. The Total Demand for Money

According to Keynes, money held for transactions and precautionary purposes is primarily a function of the level of income, L_T=f (F), and the speculative demand for

money is a function of the rate of interest, Ls = f (r). Thus the total demand for money is a function of both income and the interest rate:

$L_T + L_S = f(Y) + f(r)$

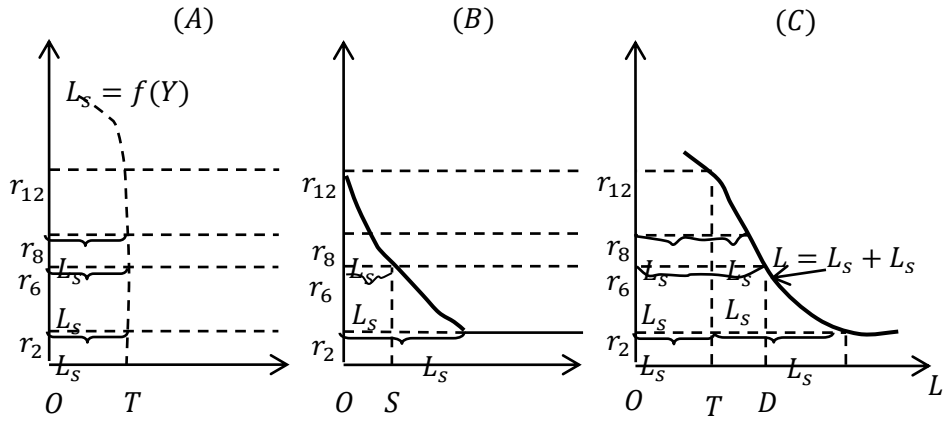
or $L = f(Y) + f(r)$

or $L=f(Y, r)$

Where, L represents the total demand for money.

Thus the total demand for money can be derived by the lateral summation of the demand function for transactions and precautionary purposes and the demand function for speculative purposes, as illustrated in Figure 18 (A), (B) and (C). Panel (A) of the Figure shows OT, the transactions and precautionary demand for money at Y level of income and different rates of interest. Panel (B) shows the speculative demand for money at various rates of interest. It is an inverse function of the rate of interest.

Figure18: **Aggregate the total demand for money curve**



For instance, at r_6 rate of interest it is OS and as the rate of interest falls to r the Ls curve becomes perfectly elastic. Panel (C) shows the total demand curve for money L which is a lateral summation of LT and Ls curves: $L=L_T+L_S$. For example, at r_b rate of interest, the total demand for money is OD which is the sum of transactions and precautionary demand OT plus the speculative demand TD, OD=OT+TD. At r_2 interest rate, the total demand for money curve also becomes perfectly elastic, showing the position of liquidity trap.

3.4. The Theory of Money Demand

As earlier noted, the Theory of Money Demand is considered the brain-child of the famous Polish astronomer and mathematician, Copernicus. In the hands of the Jean Bodin, a famous economist, the theory progressed immensely in establishing the relation between gold and silver imports and rise in the market prices. In the Quantity Theory of Money, the "Equation of Exchange" which substantiates the relation between the supply of money and the value of cash transaction was first affirmed by David Hume, the well-known philosopher and later expanded by the renowned British political economist, John Stuart Mill. Between 19th and 20th century, other prominent economists like Irving Fisher, Simon Newcomb and Alfred de Foville further developed the theory, offering it the present form. There are basically three theories to the demand for money.

However, the demand for money arises from two important functions of money. The first is that money acts as a medium of exchange and the second is that it is a store of value. Thus individuals and businesses wish to hold money partly in cash and partly in the form of assets.

What explains changes in the demand for money? There are two views on this issue. The first is the "scale" view which is related to the impact of the income or wealth level upon the demand for money. The demand for money is directly related to the income level. The higher the income level, the greater will be the demand for money.

The second is the "substitution" view which is related to relative attractiveness of assets that can be substituted for money. According to this view, when alternative assets like bonds become unattractive due to fall in interest rates, people prefer to keep their assets in cash, and the demand for money increases, and vice versa.

The scale and substitution view combined together have been used to explain the nature of the demand for money which has been split into the transactions demand, the precautionary demand and the speculative demand. There are three approaches to the demand for money: the classical, the Keynesian, and the post-Keynesian. We discuss these approaches below.

Let us look at a critical example on demand for money;

The demand for money function is given as follows:

$$Md = 1.2Y - 150r$$

Where income Y is million naira and interest rate 'r' is percentage.

a. Compute the demand for money when income (Y) is 8000 million naira and the interest rate (r) is 10 percent.
b. Given that level of income remains equal to N8000 millions, if interest rate of interest drops to 4 percent, how much does it affect demand for money?

c. If interest rate hikes to 16%, what will be the demand for money?

Solution

(a)

$$Md = 1.2Y - 150r \quad \text{.....Equation (1)}$$

Substituting the values of Y and r in the equation, we obtain the following:

$$Md = (1.2 \times N8000) - (N150 \times 10\%)$$

$$= N9600 - (N150 \times 0.1)$$

$$= N9600 - N15$$

$$= \mathbf{N9585m}$$

(b) When the interest rate declines to 4 percent, then we obtain the following:

$$Md = (1.2 \times N\ 8000) - (N150 \times 4\%)$$

$$= N9600 - (N150 \times 0.04)$$

$$= N9600 - N6$$

$$= \mathbf{N9594m}$$

Therefore, at a lesser rate of interest the demand for money to hold is more.

(c) When the rate of interest is 16 %, then we obtain the following:

$$Md = (1.2 \times 8000) - (N150 \times 16\%)$$

$$= N9600 - (N150 \times 0.16)$$

$$= N9600 - N24$$

$$= \mathbf{N9576m}$$

Therefore, at a higher rate of interest, the demand for money made by people will be lesser to hold.

Self -Assessment Exercise

With the aid of diagram discuss the liquidity trap analysis.

4.0. Conclusion

In this unit, we conclude that the classical economists did not unambiguously devise demand for money thesis but their outlooks are intrinsic in the volume of thesis of money. They highlighted the transactions demand for money of exchange and smooth the progress of the exchange of goods and services.

5.0. Summary

In this unit, we have discussed extensively on the classical approach, Keynesian approach of demand for money which is the speculation demand for money, precautionary motive demand for money and Transactionary motive demand for money.

6.0. Tutor-Marked Assignment

1. List and explain the Keynesian motive of holding money
2. Discuss the interest rate and transactions demand for money analysis

7.0 References/Further Readings

Adewunmi, L. K., (2014). Analysis of Demand for Money in an inflationary economy, Journal vol 3, Jillion Publication limited.

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MODULE FIVE OTHER KEYNESIAN APPROACHES OF DEMAND FOR MONEY

Unit One: The Post Keynesian Approach
Unit Two: Friedman's Theory of Demand for Money

UNIT ONE: THE POST KEYNESIAN APPROACH

CONTENTS

1.0. Introduction
2.0. Objectives
3.0. Main content
    3.1. The post Keynesian approach
        3.1.1. Tobin's Portfolio approach to demand for money
        3.1.2. Tobin's Liquidity preference function
    3.2. Baumol's inventory approach to transactions demand for money
        3.2.1. Baumol's analysis of transactions demand
4.0 Conclusion
5.0 Summary
6.0 Tutor-Marked Assignment
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1.0. INTRODUCTION

Post-Keynesian economics is a school of economic thought with its origins in The General Theory of John Maynard Keynes, although its subsequent development was influenced to a large degree by Michał Kalecki, Joan Robinson, Nicholas Kaldor, Paul Davidson, Piero Sraffa and Jan Kregel. Keynes' biographer Robert Skidelsky writes that the post-Keynesian school has remained closest to the spirit of Keynes' own work.

The term post-Keynesian was first used to refer to a distinct school of economic thought by Eichner and Kregel (1975) and by the establishment of the Journal of Post Keynesian Economics in 1978. Prior to 1975, and occasionally in more recent work, post-Keynesian could simply mean economics carried out after 1936, the date of Keynes's General Theory.

Post-Keynesian economists are united in maintaining that Keynes' theory is seriously misrepresented by the two other principal Keynesian schools: neo-Keynesian economics, which was orthodox in the 1950s and 60s, and new Keynesian economics, which together with various strands of neoclassical economics has been dominant in mainstream macroeconomics since the 1980s. Post-Keynesian economics can be seen as an attempt to rebuild economic theory in the light of Keynes' ideas and insights. However, even in the early years, post-Keynesians such as Joan Robinson sought to distance themselves from Keynes and much current post-Keynesian thought cannot be found in Keynes. Some post-Keynesians took a more progressive view than Keynes himself, with greater emphases on worker-friendly policies and redistribution. Robinson, Paul Davidson and Hyman Minsky emphasized the effects on the economy of practical differences between different types of investments, in contrast to Keynes' more abstract treatment.

The theoretical foundation of post-Keynesian economics is the principle of effective demand, that demand matters in the long-run as well as the short-run, so that a competitive market economy has no natural or automatic tendency towards full employment. Contrary to the views of new Keynesian economists working in the neoclassical tradition, post-Keynesians do not accept that the theoretical basis of the market's failure to provide full employment is rigid or sticky prices or wages. Post-Keynesians typically reject the IS–LM model of John Hicks, which is very influential in neo-Keynesian economics.

The contribution of post-Keynesian economics has extended beyond the theory of aggregate employment to theories of income distribution, growth, trade and development in which money demand plays a key role, whereas in neoclassical economics these are determined by the forces of technology, preferences and endowment. In the field of monetary theory, post-Keynesian economists were among the first to emphasize that money supply responds to the demand for bank credit, so that a central bank cannot control the quantity of money, but only manage the interest rate by managing the quantity of monetary reserves.

This view has largely been incorporated into monetary policy, which now targets the interest rate as an instrument, rather than the quantity of money. In the field of finance, Hyman Minsky put forward a theory of financial crisis based on financial fragility, which has received renewed attention.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the Post Keynesian approach of demand for money
- Know the Tobin’s portfolio and Baumol’s inventory approach to demand for money

3.0. MAIN CONTENT

3.1. The Post Keynesian Approach:

- **Tobin's Portfolio and**
- **Baumol's Inventory Approaches**

By introducing speculative demand for money, Keynes made a significant departure from the classical theory of money demand which emphasized only the transactions demand for money. However, as seen above, Keynes' theory of speculative demand for money has been challenged.

The main drawback of Keynes' speculative demand for money is that it visualizes that people hold their assets in either all money or all bonds. This seems quite unrealistic as individuals hold their financial wealth in some combination of both money and bonds.

This gave rise to portfolio approach to demand for money put forward by Tobin, Baumol and Freidman. The portfolio of wealth consists of money, interest-bearing bonds, shares, physical assets etc. Further, while according to Keynes' theory, demand for money for transaction purposes is insensitive to interest rate, the modem theories of money demand put forward by Baumol and Tobin show that money held for transaction purposes is interest elastic.

We discuss below the Post-Keynesian theories of demand for money put forward by Tobin, Baumol and Friedman.

3.1.1. Tobin's Portfolio Approach to Demand for Money:

An American economist James Tobin, in his important contribution explained that rational behaviour on the part of the individuals is that they should keep a portfolio of assets which consists of both bonds and money. In his analysis he makes a valid assumption that people prefer more wealth to less.

According to him, an investor is faced with a problem of what proportion of his portfolio of financial assets he should keep in the form of money (which earns no interest) and interest-bearing bonds. The portfolio of individuals may also consist of more risky assets such as shares.

According to Tobin, faced with various safe and risky assets, individuals diversify their portfolio by holding a balanced combination of safe and risky assets.

According to Tobin, individual's behaviour shows risk aversion. That is, they prefer less risk to more risk at a given rate of return. In the Keynes' analysis an individual holds his wealth in either all money or all bonds depending upon his estimate of the future rate of interest.

But, according to Tobin, individuals are uncertain about future rate of interest. If a wealth holder chooses to hold a greater proportion of risky assets such as bonds in his portfolio, he will be earning a high average return but will bear a higher degree of risk. Tobin argues that a risk averter will not opt for such a portfolio with all risky bonds or a greater proportion of them.

On the other hand, a person who, in his portfolio of wealth, holds only safe and riskless assets such as money (in the form of currency and demand deposits in banks) he will be taking almost zero risk but will also be having no return and as a result there will be no growth of his wealth. Therefore, people generally prefer a mixed diversified portfolio of money, bonds and shares, with each person opting for a little different balance between riskiness and return.

It is important to note that a person will be unwilling to hold all risky assets such as bonds unless he obtains a higher average return on them. In view of the desire of individuals to have both safety and reasonable return, they strike a balance between them and hold a mixed and balanced portfolio consisting of money (which is a safe and riskless asset) and risky assets such as bonds and shares though this balance or mix varies between various individuals depending on their attitude towards risk and hence their trade-off between risk and return.

3.1.2. Tobin's Liquidity Preference Function:

Tobin derived his liquidity preference function depicting relationship between rate of interest and demand for money (that is, preference for holding wealth in money form which is a safe and "riskless" asset. He argues that with the increase in the rate of interest (i.e. rate of return on bonds), wealth holders will be generally attracted to hold a greater fraction of their wealth in bonds and thus reduce their holding of money.

That is, at a higher rate of interest, their demand for holding money (i.e., liquidity) will be less and therefore they will hold more bonds in their portfolio. On the other hand, at a lower rate of interest they will hold more money and fewer bonds in their portfolio.

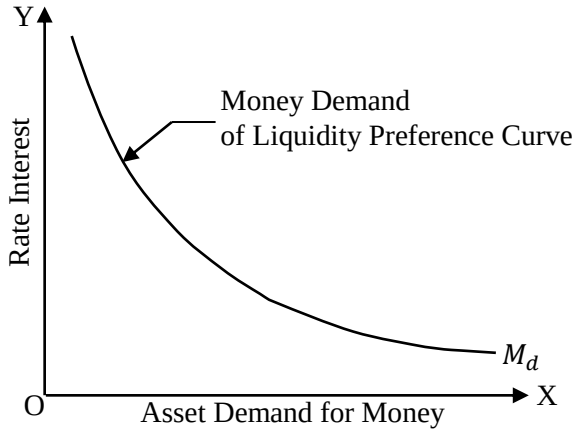
This means, like the Keynes's speculative demand for money, in Tobin's portfolio approach demand function for money as an asset (i.e. his liquidity preference function curve) slopes downwards as is shown in Fig. 17, where on the horizontal axis asset demand for money is shown. This downward-sloping liquidity preference function curve

shows that the asset demand for money in the portfolio increases as the rate of interest on bonds falls.

In this way Tobin derives the aggregate liquidity preference curve by determining the effects of changes in interest rate on the asset demand for money in the portfolio of individuals. Tobin's liquidity preference theory has been found to be true by the empirical studies conducted to measure interest elasticity of the demand for money.

As shown by Tobin through his portfolio approach, these empirical studies reveal that aggregate liquidity preference curve is negatively sloped. This means that most of the people in the economy have liquidity preference function similar to the one shown by curve M_d in Fig. 19.

Figure19: **Aggregate liquidity preference curve**



Tobin's approach has done away with the limitation of Keynes' theory of liquidity preference for speculative motive, namely, individuals hold their wealth in either all money or all bonds. Thus, Tobin's approach, according to which individuals simultaneously hold both money and bonds but in different proportion at different rates of interest yields a continuous liquidity preference curve.

Further, Tobin's analysis of simultaneous holding of money and bonds is not based on the erroneous Keynes's assumption that interest rate will move only in one direction but on a simple fact that individuals do not know with certainty which way the interest rate will change.

It is worth mentioning that Tobin's portfolio approach, according to which liquidity preference (i.e. demand for money) is determined by the individual's attitude towards risk, can be extended to the problem of asset choice when there are several alternative assets, not just two, of money and bonds.

3.2. Baumol's Inventory Approach to Transactions Demand for Money:

Instead of Keynes's speculative demand for money, Baumol concentrated on transactions demand for money and put forward a new approach to explain it. Baumol explains the transaction demand for money from the viewpoint of the inventory control or inventory management similar to the inventory management of goods and materials by business firms.

As businessmen keep inventories of goods and materials to facilitate transactions or exchange in the context of changes in demand for them, Baumol asserts that individuals also hold inventory of money because this facilitates transactions (i.e. purchases) of goods and services.

In view of the cost incurred on holding inventories of goods there is need for keeping optimal inventory of goods to reduce cost. Similarly, individuals have to keep optimum inventory of money for transaction purposes. Individuals also incur cost when they hold inventories of money for transactions purposes.

They incur cost on these inventories as they have to forgone interest which they could have earned if they had kept their wealth in saving deposits or fixed deposits or invested in bonds. This interest income forgone is the cost of holding money for transactions purposes. In this way Baumol and Tobin emphasised that transaction demand for money is not independent of the rate of interest.

It may be noted that by money we mean currency and demand deposits which are quite safe and riskless but carry no interest. On the other hand, bonds yield interest or return but are risky and may involve capital loss if wealth holders invest in them.

However, saving deposits in banks, according to Baumol, are quite free from risk and also yield some interest. Therefore, Baumol asks the question why an individual holds money (i.e. currency and demand deposits) instead of keeping his wealth in saving deposits which are quite safe and earn some interest as well.

According to him, it is for convenience and capability of it being easily used for transactions of goods that people hold money with them in preference to the saving deposits. Unlike Keynes both Baumol and Tobin argue that transactions demand for money depends on the rate of interest.

People hold money for transaction purposes "to bridge the gap between the receipt of income and its spending." As interest rate on saving deposits goes up people will tend to shift a part of their money holdings to the interest-bearing saving deposits.

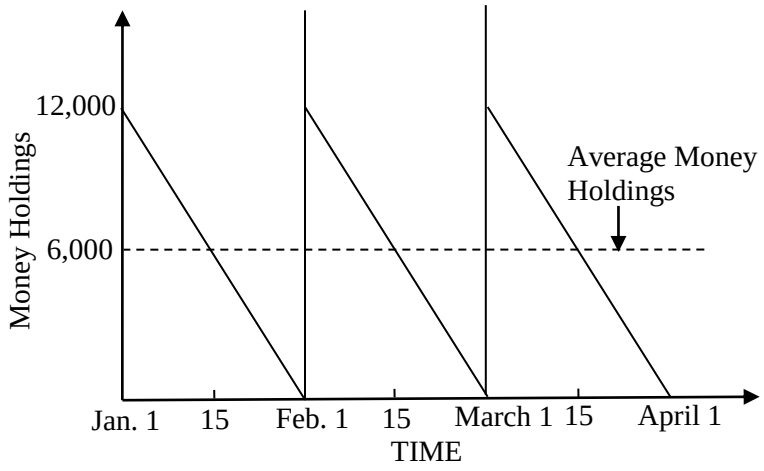
Individuals compare the costs and benefits of funds in the form of money with the interest- bearing saving deposits. According to Baumol, the cost which people incur when they hold funds in money is the opportunity cost of these funds, that is, interest income forgone by not putting them in saving deposits.

3.2.1. Baumol's Analysis of Transactions Demand:

A Baumol's analysis of the transactions demand for money is about an individual who receives income at a specified interval, say every month, and spends it gradually at a steady rate. This is illustrated in Fig. 20. It is assumed that individual is paid N12000 salary cheque on the first day of each month.

Suppose he gets it cashed (i.e. converted into money) on the very first day and gradually spends it daily throughout the month. (N400 per day) so that at the end of the month he is left with no money. It can be easily seen that his average money holding in the month will be = N12000/2 = N6,000 (before 15th of a month he will be having more than

***Figure 20*: Baumol's Analysis of Transactions Demand**



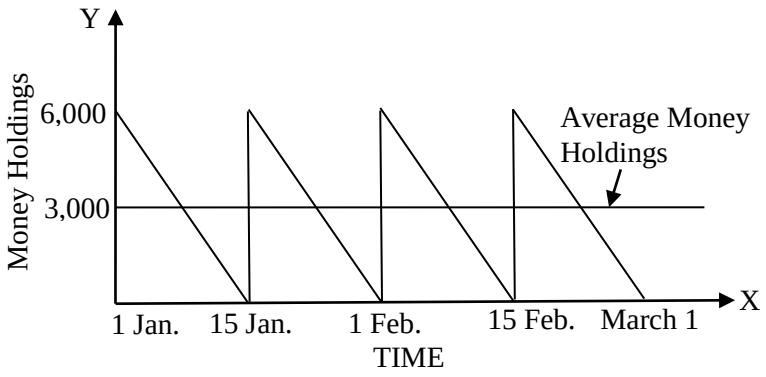
N6,000 and after 15th day he will have less than N6,000).Average holding of money equal to N6,000 has been shown by the dotted line. Now, the question arises whether it is the optimal strategy of managing money or what is called optimal cash management. The simple answer is no. This is because the individual is losing interest which he could have earned if he had deposited some funds in interest-bearing saving deposits instead of withdrawing all his salary in cash on the first day.

He can manage his money balances so as to earn some interest income as well. Suppose, instead of withdrawing his entire salary on the first day of a month, he withdraws only half of it i.e. (N6,000 in cash and deposits the remaining amount of N6,000 in saving

account which gives him interest of 5 per cent, his expenditure per day remaining constant at N400).

This is illustrated in Fig. 21. It will be seen that his money holdings of N6,000 will be reduced to zero at the end of the 15th day of each month. Now, he can withdraw N6,000 on the morning of 16th of each month and then spends it gradually, at a steady rate of 400 per day for the next 15 days of a month. This is a better method of managing funds as he will be earning interest on N6,000 for 15 days in each month. Average money holdings in this money management scheme is N6000/2 = N3000

***Figure 21*: Baumol's Analysis of Transactions Demand**



Likewise, the individual may decide to withdraw N4,000 (i.e., 1/3rd of his salary) on the first day of each month and deposits N8,000 in the saving deposits. His N4,000 will be reduced to zero, as he spends his money on transactions, (that is, buying of goods and services) at the end of the 10th day and on the morning of 11th of each month he again withdraws N4,000 to spend on goods and services till the end of the 20th day and on 21st day of the month he again withdraws N4,000 to spend steadily till the end of the month. In this scheme on an average he will be holding N4000/2 = N2000 and will be investing remaining funds in saving deposits and earn interest on them. Thus, in this scheme he will be earning more interest income.

Now, which scheme will he decide to adopt? It may be noted that investing in saving deposits and then withdrawing cash from it to meet the transactions demand involves cost also. Cost on brokerage fee is incurred when one invests in interest-bearing bonds and sells them.

Even in case of saving deposits, the asset which we are taking for illustration, one has to spend on transportation costs for making extra trips to the bank for withdrawing money from the Savings Account. Besides, one has to spend time in the waiting line in the bank to withdraw cash each time from the saving deposits.

Thus, the greater the number of times an individual makes trips to the bank for withdrawing money, the greater the broker's fee he will incur. If he withdraws more cash, he will be avoiding some costs on account of brokerage fee.

Thus, individual faces a trade-off problem-, the greater the amount of pay cheque he withdraws in cash, less the cost on account of broker's fee but the greater the opportunity cost of forgoing interest income. The problem is therefore to determine an optimum amount of money to hold. Baumol has shown that optimal amount of money holding is determined by minimizing the cost of interest income forgone and broker's fee. Let us elaborate it further.

Let the size of the pay cheque (i.e. salary) be denoted by Y, the average amount of the cash he withdraws each time the individual goes to the bank by C, the number of times he goes to the bank to withdraw cash by T, broker's fee which he has to bear each time he makes a trip to the bank by b. In the first scheme of money management when he gets his whole pay-cheque cashed on the first day of every month he incurs broker's fee only once since he makes only a single trip to the bank.

Thus T in our first case is equal to one T = Y/C = 12000/12000 = 1 because in this case C = Y. In the second, case, T = 12000/6000 =2 and in the third case T = 12000/4000 =3.

Interest income lost by holding money is the average amount of money holding multiplied by the interest rate. As seen above, average money held is one half of cash withdrawn each time (i.e., C/2).

Thus, interest income lost in the first case is $r_C/2$ = 5/100 x 1200/2 = N300, in the second case interest lost =$r_C/2$ = 5/100 x 6000/2 = 150 and m the third case it is 5/100 x 4000/2 = 100.

Thus the total cost incurred on broker's fee and interest income forgone is given by

Total Cost =$bT + r_C/2$

Where b stands for broker's fee

As seen above, T = Y/C

Therefore, Total Cost = $Y/Cb + r_C/2$

Baumol has shown that average amount of cash withdrawal which minimizes cost is given by

$C = \sqrt{2bY/r}$

This means that average amount of cash withdrawal which minimize cost is the square root of the two times broker's fee multiplied by the size of individual's income (Y) and divided by the interest rate. This is generally referred to as Square Root Rule.

For this rule, it follows that a higher broker's fee will raise the money holdings as it will discourage the individuals to make more trips to the bank. On the other hand, a higher interest rate will induce them to reduce their money holdings for transaction purposes as they will be induced to keep more funds in saving deposits to earn higher interest income. That is, at a higher rate of interest transactions demand for money holdings will decline.

Keynes thought that transactions demand for money was independent of rate of interest. According to him, transactions demand for money depends on the level of income. However, Baumol and Tobin have shown that transactions demand for money is sensitive to rate of interest.

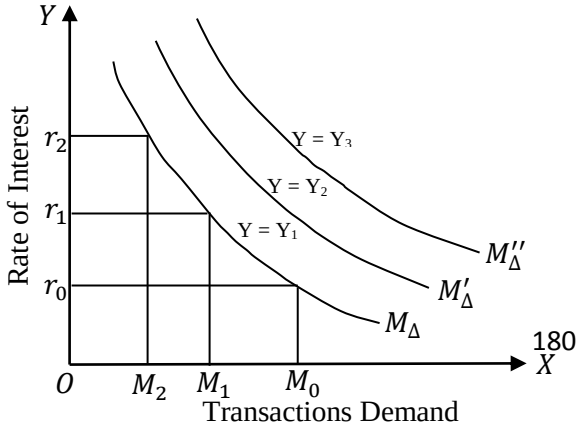
As explained above, interest represents the opportunity cost of holding money instead of bonds, saving and fixed deposits. The higher the rate of interest, the greater the opportunity cost of holding money (i.e. the greater the interest income forgone for holding money for transactions).

Therefore, at a higher rate of interest people will try to economies the use of money and will demand less money for transactions. At a lower interest rate on bonds, saving and fixed deposits, the opportunity cost of holding money will be less which will prompt people to hold more money for transactions.

Therefore, according to Baumol and Tobin, transactions demand curve for money slopes downward as shown in Fig 22. At higher interest rates, bonds, savings and fixed deposits are more attractive relative to money holding for transactions.

Therefore, at higher interest rates people tend to hold less money for transaction purposes. On the other hand, when the rates of interest are low, opportunity cost of holding money will be less and, as a consequence, people will hold more money for transactions. Therefore, the curve of transaction demand for money slopes downward.

***Figure 22*: Baumol's Analysis of Transactions Demand For Money Curve**



Transactions Demand for Money: Baumol- Tobin Approach

It will be observed from the square root rule given above that transactions demand for money varies directly with the income (Y) of the individuals. Therefore, the higher the level of income, the greater the transactions demand for money at a given rate of interest.

In Fig. 20 the three transactions demand curves for money M_d, M_d‘ and M_d“, for three different income levels, Y_1, Y_2, Y_3 are shown. It will be known from the square root rule that optimum money holding for transactions will increase less than proportionately to the increase in income. Thus, transactions demand for money, according to Baumol and Tobin, is function of both rate of interest and the level of income.

$M_{td} = f(r, Y)$

Where M_{td} stands for transactions demand for money, r for rate of interest and Y for the level of income.

Self Assessment Exercise

Discuss the following;

1. Tobin’s portfolio approach to demand for money
2. Baumol’s inventory approach

7.0. Conclusion

Post Keynesians went back to basics and decided to interpret John Maynard Keynes’s “The General Theory of Employment, Interest and Money.” They felt that mainstream macroeconomics was not focusing or even applying some of the things Keynes was truly trying to say. They disagree with Keynesian, New Keynesian, Classical and New Classical economics, basically all mainstream macroeconomics. Their focus is primarily financial markets and their implications on the economy, which they feel as been ignored in entirety.

5.0. Summary

In this unit, we have discussed on the post Keynesian approach such as tobin’s portfolio approach to demand for money, baumol’s inventory approach to transactions demand for money.

6.0. Tutor-Marked Assignment

1. Discuss the theory of post Keynesian approach to demand for money
2. Discuss the differences that exit between Tobin's portfolio approach to demand for money and Baumol's inventory approach to transactions demand for money

7.0 References/Further Readings

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UNIT TWO: FRIEDMAN'S THEORY OF DEMAND FOR MONEY

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1.0. INTRODUCTION

A noted monetarist economist Friedman put forward demand for money function which plays an important role in his restatement of the quantity theory of money and prices.

Friedman believes that money demand function is most important stable function of macroeconomics. He treats money as one type of asset in which wealth holders can keep a part of their wealth. Business firms view money as a capital good or a factor of production which they combine with the services of other productive assets or labour to produce goods and services.

2.0. OBJECTIVES

At the end of this unit, you should be able to:

- Define and understand the meaning of macroeconomics as a field of study
- Know the basic macroeconomics concepts

3.0. MAIN CONTENT

3.1 Friedman Demand for Money

According to Friedman, individuals hold money for the services it provides to them. It may be noted that the service rendered by money is that it serves as a general purchasing power so that it can be conveniently used for buying goods and services.

His approach to demand for money does not consider any motives for holding money, nor does it distinguishes between speculative and transactions demand for money. Friedman considers the demand for money merely as an application of a general theory of demand for capital assets.

Like other capital assets, money also yields return and provides services. He analyses the various factors that determine the demand for money and from this analysis derives

demand for money function. Note that the value of goods and services which money can buy represents the real yield on money. Obviously, this real yield of money in terms of goods and services which it can purchase will depend on the price level of goods and services.

Besides money, bonds are another type of asset in which people can hold their wealth. Bonds are securities which yield a stream of interest income, fixed in nominal terms. Yield on bond is the coupon rate of interest and also anticipated capital gain or loss due to expected changes in the market rate of interest.

Equities or Shares are another form of asset in which wealth can be held. The yield from equity is determined by the dividend rate, expected capital gain or loss and expected changes in the price level. The fourth form in which people can hold their wealth is the stock of producer and durable consumer commodities.

These commodities also yield a stream of income but in kind rather than in money. Thus, the basic yield from commodities is implicit one. However, Friedman also considers an explicit yield from commodities in the form of expected rate of change in their price per unit of time.

Friedman's nominal demand function (M_d) for money can be written as

$Md=f\ (W, h, r_m, r_b, r_e, P, \Delta P/P, U)$

As demand for real money balances is nominal demand for money divided by the price level, demand for real money balances can be written as

$M_d/P = f(W, h, r_m, r_b, r_e, P, \Delta P/P, U)$

Where M_d stands for nominal demand for money and M_d/P for demand for real money balances, W stands for wealth of the individuals, h for the proportion of human wealth to the total wealth held by the individuals, r_m for rate of return or interest on money, r_b for rate of interest on bonds, r_e for rate of return on equities, P for the price level, $\Delta P/P$ for the change in price level {i.e. rate of inflation), and U for the institutional factors.

3.1.1. Wealth (W):

The major factor determining the demand for money is the wealth of the individual (W) In wealth Friedman includes not only non-human wealth such as bonds, shares, money which yield various rates of return but also human wealth or human capital. By human wealth Friedman means the value of an individual's present and future earnings.

Whereas non-human wealth can be easily converted into money, that is, can be made liquid. Such substitution of human wealth is not easily possible. Thus human wealth

represents illiquid component of wealth and, therefore, the proportion of human wealth to the non-human wealth has been included in the demand for money function as an independent variable.

Individual's demand for money directly depends on his total wealth. Indeed, the total wealth of an individual represents an upper limit of holding money by an individual and is similar to the budget constraint of the consumer in the theory of demand.

The greater the wealth of an individual, the more money he will demand for transactions and other purposes. As a country, becomes richer, its demand for money for transaction and other purposes will increase.

Since as compared to non- human wealth, human wealth is much less liquid, Friedman has argued that as the proportion of human wealth in the total wealth increases, there will be a greater demand for money to make up for the illiquidity of human wealth.

3.1.2. Rates of Interest or Return (r_m, r_b, r_e):

Friedman considers three rates of interest, namely, r_b, r_e and which determine the demand for money, r_m is the own rate of interest on money. Note that money kept in the form of currency and demand deposits does not earn any interest.

But money held as saving deposits and fixed deposits earns certain rates of interest and it is this rate of interest which is designated by r_m in the money demand function. Given the other rates of interest or return, the higher the own rate of interest, the greater the demand for money.

In deciding how large a part of his wealth to hold in the form of money the individual will compare the rate of interest on money with rates of interest (or return) on bonds and other assets. As mentioned earlier, the opportunity cost of holding money is the interest or return given up by not holding these other forms of assets.

As rates of return on bond (r_b) and equities (r_e) rise, the opportunity cost of holding money will increase which will reduce the demand for money holdings. Thus, the demand for money is negatively related to the rate of interest (or return) on bonds, equities and other such non-money assets.

3.1.3. Price Level (P):

Price level also determines the demand for money balances. A higher price level means people will require a larger nominal money balances in order to do the same amount of transactions, that is, to purchase the same amount of goods and services.

If income (Y) is used as proxy for wealth (W) which, as stated above, is the most important determinant of demand for money, then nominal income is given by Y.P which becomes a crucial determinant of demand for money.

Here Y stands for real income (i.e. in terms of goods and services) and P for price level. As the price level goes up, the demand for money will rise and, on the other hand, if price level falls, the demand for money will decline. As a matter of fact, people adjust the nominal money balances (M) to achieve their desired level of real money balances (M/P).

3.1.4. The Expected Rate of Inflation (ΔP/P):

If people expect a higher rate of inflation, they will reduce their demand for money holdings. This is because inflation reduces the value of their money balances in terms of its power to purchase goods and services.

If the rate of inflation exceeds the nominal rate of interest, there will be negative rate of return on money. Therefore, when people expect a higher rate of inflation they will tend to convert their money holdings into goods or other assets which are not affected by inflation.

On the other hand, if people expect a fall in the price level, their demand for money holdings will increase.

3.1.5. Institutional Factors (U):

Institutional factors such as mode of wage payments and bill payments also affect the demand for money. Several other factors which influence the overall economic environment affect the demand for money. For example, if recession or war is anticipated, the demand for money balances will increase.

Besides, instability in capital markets, which erodes the confidence of the people in making profits from investment in bonds and equity shares will also raise the demand for money. Even political instability in the country influences the demand for money. To account for these institutional factors Friedman includes the variable U in his demand for money function.

3.2. Simplifying Friedman's Demand for Money Function:

A major problem faced in using Friedman's demand for money function has been that due to the non-existence of reliable data about the value of wealth (W), it is difficult to estimate the demand for money. To overcome this difficulty Friedman suggested that since the present value of wealth or $W = Y_P/r$ (where Y_p is the permanent income and r is

the rate of interest on money.), permanent income Yp can be used as a proxy variable for wealth.

Incorporating this in Friedman's demand for money function we have:

$M_d = (Y_p,h,r_m,r_b,r_e\ \Delta P/P,U)$

If, we assume that no price change is anticipated and institutional factors such as h and U remain fixed in the short run and also all the three rates of interest return are clubbed into one, Friedman's demand for money function is simplified to

$M_d = f(Y_p r)$

Self-Assessment Exercise

Discuss the theory of Friedman's demand for money

4.0. CONCLUSION

This unit concludes, Friedman argued that the demand for money is stable. But, he didn't mean that the demand for money is constant, or that it fluctuates around a stable mean; rather, he posited a stable demand *function*, meaning a stable relationship between income, the price level, relative rates of return, and the demand for money,

5.0. SUMMARY

In this unit, we have discussed on Friedman demand for money looking at the wealth, rates of interest or return, price level, the expected rate of inflation, institutional factors and simplifying Friedman's demand for money.

6.0. TUTOR-MARKED ASSIGNMENT

1. Discuss the theory of Friedman demand for money analysis
2. Is Friedman's approach to demand for money superior to the other?

7.0 REFERENCES/FURTHER READINGS

Jhingan, M.L (2004) *Monetary Economics, 6th edition*, Vrinda Publication Limited.