



EEC-11 Fundamentals of Economics

Block

8

MONEY AND PRICES

UNIT 18

Quantity Theory of Money **5**

UNIT 19

Inflation and Unemployment **23**

Expert Committee

Mr. Kalyanjit RoyChaudhary St. Stephens College University of Delhi Delhi	Mr. R.S. Malhan St. Stephens College University of Delhi Delhi	Dr. Narayan Prasad IGNOU Dr. Madhu Bala IGNOU
Mr. B.S. Bagla PGDAV College University of Delhi Delhi	Mr. R.S. Bharadwaj Shivaji College University of Delhi Delhi Dr. Gopinath Pradhan IGNOU	Dr. Kaustuva Barik IGNOU Mr. Saugato Sen IGNOU Prof. S.K. Singh (retd.) IGNOU

Course Editor Course Coordinator Block Coordinator

Mr. Bhawani Sankar Bagla	Dr. Gopinath Pradhan	Dr. Gopinath Pradhan
--------------------------	----------------------	----------------------

Block Preparation Team

Unit No.	Unit Writer	Unit Editor (IGNOU Faculty)
18	Sh. Sunil Ashra	Dr. G. Pradhan
19	Mr. S. Sen	Dr. G. Pradhan & Dr. K. Barik

Production Cover Design Word Processing

Mr. Arvind Kumar	Ms. Arvinder Chawla	Mrs. Rekha Mishra
Mr. Manjit Singh		Ms. Daisy Lal

March, 2003

© Indira Gandhi National Open University, 2003

ISBN-81-266-0766-1

All rights reserved. No part of this work may be reproduced in any form, by mimeograph or any other means, without permission in writing from the Indira Gandhi National Open University.

Further information on the Indira Gandhi National Open University courses may be obtained from the university's office at Maidan Garhi, New Delhi-110 068.

Printed and published on behalf of the Indira Gandhi National Open University, New Delhi, by Professor Kapil Kumar, Director, School of Social Sciences.

Laser typeset by : HD Computer Craft, EA1/75, Main Market Inderpuri, New Delhi-110012. Ph: 2583 1437; 3108 1117

Printed at :

BLOCK 8 MONEY AND PRICES

Introduction

This block discusses the role of money in the economic system. Theories of demand for money are discussed by introducing classical, Keynesian and monetarist versions of quantity theory (**Unit 18**). The problem of price rise and employment is covered in **Unit 19**. Whole range of issues centred on the functions of money, supply of money, situations of consistent rise in prices of commodities and their impact on production and employment form the subject matter of the block.

UNIT 18 QUANTITY THEORY OF MONEY

Structure

- 18.0 Objectives
- 18.1 Introduction
- 18.2 Money : Features and Functions
- 18.3 Alternative Theories of Demand for Money
- 18.4 Quantity Theory of Money— Classical Approach
- 18.5 Keynesian Theory of Demand for Money
 - 18.5.1 Transaction Demand for Money
 - 18.5.2 Precautionary Demand for Money
 - 18.5.3 Speculative Demand for Money
- 18.6 Quantity Theory of Money— Modern Version
- 18.7 Three Versions Compared
- 18.8 Let Us Sum Up
- 18.9 Key Words
- 18.10 Some Useful Books
- 18.11 Answers to Check Your Progress Exercises

18.0 OBJECTIVES

After going through this unit, you will be able to :

- 1 understand the importance of money and functions it performs;
- 1 know why or for what reason individuals demand money;
- 1 ascertain theoretical implications of demand for money; and
- 1 compare the theories of demand for money and their policy implications.

18.1 INTRODUCTION

In a barter economy, goods and services were exchanged directly for goods and services. For example, if person 'A' has surplus shoes and she wanted rice and another person 'B' has surplus rice and she wanted shoes and they are able find each other. Only then the exchange will be possible such a system of exchange is called Barter. The barter system is also referred to as the direct exchange of one good or, service for another without mediation of money.

Problems of a Barter System

The barter system has many disadvantages. The main four of these are as follows:

- i) **Lack of a common measure of value:** There is no common measure of value in a barter system. All commodities do not possess equal value. Suppose 'A' has rice and 'B' has wheat. How to decide that so much of wheat is equal to so much of rice? As there is no common measure of value, the ratio will be fixed according to the intensity of reciprocal of demand by 'A' and 'B';
- ii) **Absolute insistence on double coincidence of demand:** The functioning of barter system necessitates a double coincidence of demand on the part of those involved in exchange of goods and services. It is absolutely necessary for one party to want exactly what the other party is offering in exchange and *vice versa*. If this double coincidence of demand is not matched exactly, no exchange

will take place. Suppose, for example a farmer wants to sell her wheat and wants to buy shoes; then he has to find a person who has surplus shoes to sell and wants to buy wheat in exchange;

- iii) **Indivisibility of commodities:** There are many goods, which cannot be divided. Suppose 'A' has a horse and 'B' has 1 kg of rice. Both of them agree to an exchange transaction. But according to the ratio of exchange arbitrarily fixed between them a portion of horse is equal to the value of 1 kg of rice. The transaction cannot take place because it is unthinkable to cut out a portion of living horse for exchange; and
- iv) **Difficulties in storing wealth:** Another problem under the barter system is related to storing of wealth for future use. Most of the goods like wheat, horses, leather etc., lack sufficient durability and deteriorate with passage of time. Therefore, they cannot be conveniently stored for future use.

The barter system was compatible only with simple and primitive economies where the material needs of the people were few and everyone wore the same kind of clothes, the same kind of food and engaged in similar activities. But as the civilization advanced, wants multiplied and a certain degree of division of labour was achieved. In the changed economic scenario the problems of barter system became highly pronounced. Such a feature encouraged some suitable alternative medium of exchange, which would eliminate above-mentioned difficulties of barter system and facilitate transactions. This led to the innovation of 'Money'.

Money is not needed for its own sake as one needs food, clothes and a house for living but to mediate transactions. It has purchasing power, which enables us to exchange goods and services. This feature makes money a unique commodity.

18.2 MONEY: FEATURES AND FUNCTIONS

We are all familiar with money in our day-to-day transactions. Perhaps the oldest and simplest role of money has been the 'medium of exchange' for all economic transactions. This is because money is acceptable to everybody. In short, money is anything, which is acceptable as a means of payment in the settlement of all transactions, including debt. It is commonly used as medium of exchange or means of transferring purchasing power. General acceptability as a means of payment or as a medium of exchange is the unique feature of money. It does not need to be converted into something else before it can be spent or used for settlement of debt. What makes money 'money' is the belief held by everyone that it would be accepted as such by all others in the economy.

Functions of Money

The function of money have been well summed up in a couplet:

*Money is a matter of functions four
A medium, a measure, a standard, a store*

Thus, the four broad functions money are:

- i) **Medium of Exchange:** We saw in the last section that in barter economy there must be a double coincidence of demand for a transaction to occur. Money takes care of this problem: persons A, B, and C can sell their output to others for money with which they can buy the things they require. This property of money is associated with development of commerce and trade on a larger scale. Emergence of money has also made the transactions quicker and economical to settle.

- ii) **Unit of Value:** Money customarily serves as a common unit of account or measure of value in terms of which the values of all goods and services are expressed. This makes possible to have a meaningful accounting system by adding up the values of a variety of goods whose quantities are measured in different physical units. Important example of value totals is the national income estimates of a country, total money cost of a project, total sale proceeds of a firm producing many products etc. This makes comparisons of various kinds across time and across regions possible. It has truly been said that it has been possible for economics to grow as a science, because it analyses social behaviour concerned with production, exchange, distribution and consumption of goods and services whose value could be measured in a common unit, money.

- iii) **Standard of Deferred Payment:** Money also serves as a standard or unit in terms of which deferred or future payments are stated and settled. This applies to payments of interest, rents, salaries, pensions, insurance premium, etc. In a money using economy, the bulk of deferred payments are stipulated in money terms. But large fluctuations in the value of money (because of inflation or deflation of prices) makes money not only a poor measure of value, but also a poor standard of deferred payment.

- iv) **Store of Value:** Money also serves as a store of value, i.e., people can hold their wealth in the form of money. This function is derived from the use of money as a medium of exchange in a two-fold manner: First, the use of money as a medium of exchange decomposes a single barter into two separate transactions of purchase and sale. Under barter, purchase and sale are necessarily simultaneous operations. The use of money separates the two transactions in time. This will require that the medium of exchange also serves as a store of value. This is encouraged by unique feature of money that is, generalized purchasing power, and as such only perfectly liquid asset. No doubt, money is not the only store of value. There are other assets like gold, shares, and bonds. But money is unique as a store of value in that it alone is perfectly liquid. That is, it alone serves as a generally acceptable means of payment. The fluctuation in the value of money that affects its functions as a measure of value and as a standard of deferred payment also influences its role as a store of value.

Check Your Progress 1

- 1) What are the problems in having a horse as a medium of exchange?

- 2) Now you know the functions of money, i.e., it should be stable, divisible, durable and portable. Rank the following commodities according to their closeness to money, stating reasons, in the order of your preference:
 i) sugar; ii) horse; iii) salt; iv) prepared *idli*; v) gold.

3) What are the differences between money and barter economy?

.....

.....

.....

.....

18.3 ALTERNATIVE THEORIES OF DEMAND FOR MONEY

To be able to analyze the effects of changes in the stock of money, it is essential to study the equilibrium of the money market. Money is an asset for the holding public, therefore, the public must have a demand for it and a supply of it, and so also a market for it. The demand for money comes from the general public while its supply comes from the government and the banking system, whose liability the money is. The money market, then is, simply the market comprising these demanders and suppliers of money. In this unit, we shall assume that supply of money is autonomously given by the monetary authority.

Money is a stock variable. The stock of it refers to its quantity at a point of time. As an asset, the demand for it is the public's demand to hold money, whatever the reason (motive) for holding it and whatever length of the time period for which it is held. *Holding cash in one's pocket for spending it is as much a part of the demand for money as burying currency notes in a pot.* The several motives for holding money will be studied later in this unit as an explanation for various theories of demand for money.

We will analyse the aggregate demand for money, i.e., the demand for money of the public as a whole. Thus, we will consider, the sum of all the money demanded by individual members of the public, whether households or firms.

Theories of demand for money are mainly concerned with the question: what are the determinants of public's demand for money and why? A related question is: why does the public demand money? Several explanations have been offered in reply. This unit will explain them in detail. Each explanation has its own implications for explaining the economic effects of changes in supply of money.

The classical theory of demand for money, popularly known as the **Quantity theory of Money (QTM)**, is basically is a theory of the price-level. However, under the influence of Keynes, the theory of demand for money became a theory of rate of interest, output and employment. Friedman later tried to rescue the *quantity theory of money* through his restatement. In his version of the theory of demand for money he completely neglected the Keynes' classification of motives for holding money and corresponding components of the demand for money. Instead of motives, he identified the key determinants of the demand for money. The essentials of his theory have been set out in format of the classical theory, and relatively much less in terms of Keynesian theory.

Theories of demand for money could be divided into three broad categories, viz.;

- a) Classical theory of demand for money or the QTM;
- b) Keynesian theory of demand for money; and
- c) Friedman's restatement of Classical QTM.

18.4 QUANTITY THEORY OF MONEY— CLASSICAL APPROACH OR THEORY OF PRICE LEVEL

Several versions of classical *Quantity Theory of Money* are popular. One version, also known as **transactions version** is due to Fisher. It is also called **Fisher equation of exchange**:

$$M.V = P.T$$

Where

T is number of transaction of average size

M is defined as quantity money,

V is velocity of circulation of money, and

P is the average price level.

where **T** is a proxy for level of income.

The classical macroeconomic theory relies on the QTM as the theory of demand for money. This theory says that it is the quantity of money in the hands of the public that determines how high or low the price level will be. Such a conclusion has been reached since level of output in the classical model is always at the full capacity (or full employment) level.

It is assumed that output in classical system is 'given' or constant for the duration of the analysis. There **T** is fixed and it is a proxy for national income. Velocity of circulation of money (**V**) is dependent on the payment behaviour of people and is, therefore, a long term constant. It is defined as a number of times a rupee changes hands during a given accounting period.

Given as above definitions, product **PT** will represent product of number of average sized transaction and average price, which is equal to the total amount of money needed to help facilitate sale/purchase of total output. On the other hand, components of the product **MV** shows how many rupees are in circulation and how many times each is used for payments. Thus, **MV** equals the amount of money available for transaction. When money available equals money needed, then will be equilibrium in the system.

Re-arranging the terms of the equation of exchange, $MV = PT$ we get:

$$P = \left(\frac{V}{T}\right)M$$

Since **V** and **T** are both constants, this form of equation gives us a direct relationship between money supply and price level. If **M** doubles, **P** will also double. If **M** is reduced by half, Price level will also be halved. In this sense, classical quantity theory of money can be called a theory of price level.

According to another approach the classical QTM the demand for money can be described as the following relationships with 'nominal output'

$$M \cdot v = P \cdot y$$

where

M = Demand for money

v = Velocity of money circulation

P = Price level

y = Real output level

The above identity is converted into the QTM under the assumption that v and y are constant or stable in the short run. With v and y being constant, the assumption that price level is passive means that P depends on changes in M rather than changes in M depend on changes in P . These assumptions give us the nice and straightforward result that any short run increase (or decrease) in M must lead to proportional rise (or fall) in P . With any one or more of these assumptions not valid would imply that the proportionality is unlikely to hold between M and P .

Say's Law: S.B. Say had propounded another theory about aggregative economic behaviour of a society. His idea is : 'Supply creates its own demand'. In simple terms, it means that in the process of production a society generates sufficient amount of income, which is enough to help its members purchase that output. This theory is critically dependent on implicit assumption of there being perfect price flexibility in the society. If prices are sufficiently flexible, any quality, which is produced, can be sold out. If output exceeds existing demand, prices must fall. If supply in any time period is less than the market demand, a rise in prices will be only natural consequences. This applies to all the commodities and factors of production. That is why, sometimes it (Says' law) is regarded as a natural consequence of perfect competition.

18.5 KEYNESIAN THEORY OF DEMAND FOR MONEY

This theory was formulated by Keynes in his famous book "*The General Theory of Employment, Interest and Money*", Published in 1936.

To understand Keynes' theory two questions need to be separated: first, why is money demanded? and second, what are the determinants of demand for money? Both these questions are inter-linked. Keynesian demand for money has 3 components, they are transaction demand, precautionary demand and the speculative demand.

Keynes made the demand for money a function of 2 variables; namely,

- i) money income, or Y ; and
- ii) rate of interest, or r .

In functional form:

$$M^d = M^d(Y, r)$$

Keynes retained the transactions approach (explained above) to the demand for money under which demand for money is hypothesized to be a function of nominal income. But, according to him, this only explained the transaction demand for money and not the entire demand for money. The revolutionary insight of Keynes has been the speculative demand for money component. Through it Keynes made this part of the demand for money a declining function of rate of interest, which is purely a monetary phenomenon and solely influenced by the monetary influences in the economy. The speculative demand for money arises from the speculative motives for holding money due to changes in the rate of interest in the market and uncertainty about them.

18.5.1 Transaction Demand for Money

Money is needed to carry out day-to-day transactions. There are discrepancies between receipts of income (say, once in a week or a month) and the expenditures of a person. A person may be assumed to incur expenditure almost daily throughout the week till her income is exhausted. Thus, while receipts of income are discrete, expenditure is almost continuous. Because of this discrepancy, it is necessary that individuals have cash at their disposal for meeting their current (or daily) expenditures. This demand for money is called the **transaction demand for money**. The level of income determines the control over goods and services in the market. Given the payments habit of the community, an individual has to have cash at her disposal to meet these expenditure requirements. An individual with higher level of income has a greater demand for goods and services (in general) than an individual with a lower level of income. It means that transactions are directly related to the level of income. In other words, more cash is needed by an individual with a higher level of income compared to one with lower level of income. Thus,

$$M_t^d = M_t^d(Y)$$

The classical economists, the Quantity Theorists, also considered the transaction demand for money, which emphasizes the role of money as medium of exchange. However, the precautionary and the 'speculative' demand for money are Keynes' additional sources of 'liquidity preference' (or, demand for money).

For simplicity, we can say that transaction demand for money, is a constant proportion, k , of the level of national income, Y

$$\text{i.e., } M_t^d = k \cdot Y = k \cdot P \cdot y \quad 0 < k < 1$$

This equation says that if the level of income (nominal) is say, Rs. 800 crore and $k = 2/5$, then, the transaction demand for money in the economy would amount to Rs. 320 crore [$800 \times (2/5) = 320$]. This means that the economy would require Rs. 320 crore of money in order to finance smoothly production and sale worth of goods and services of Rs. 800 crore. If the level of national income (nominal) goes up to Rs. 1000 crore and k remains at the same level of $2/5$ then the transaction demand for money will be Rs. 400 crore.

$$\text{We know that } M_t^d = k \cdot Y$$

it follows then,

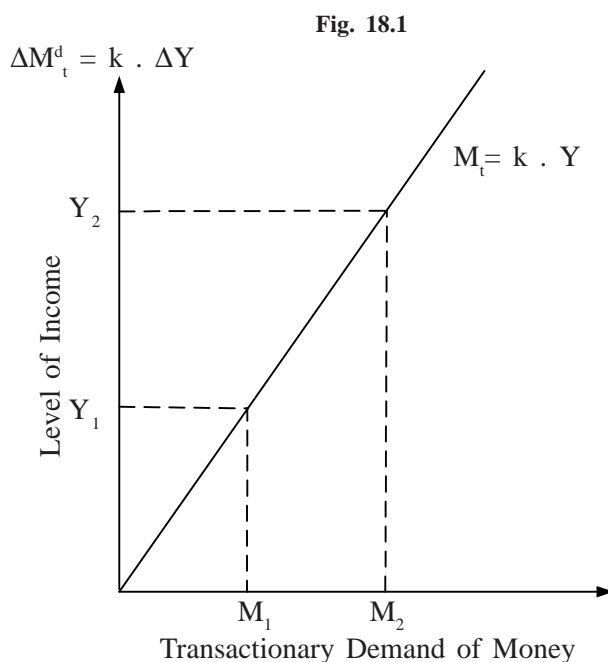


Fig. 18.1: Depicts transactionary Demand for money as a proportion k of money income. As income rises by $Y_2 - Y_1$. The demand for money goes up by $M_2 - M_1$. Note that $M_2 - M_1 = k(Y_2 - Y_1)$

where

ΔM^d_t = change in the transaction demand for money

ΔY = change in the level of national income(nominal)

In case of a decline of Rs. 200 crore in the level of national income(nominal) there will be a decline in the transaction demand for money by Rs. 80 crore.

The functional relationship between transaction demand for money(M^d_t) and the level of nominal national income (Y) is depicted in Figure 18.1. In this figure, the transaction demand for money is shown on X-axis and level of nominal national income (Y) is shown on the Y-axis, At OY_1 level of national income, OM_1 money will be demanded to meet transactions demand and at the OY_2 level, OM_2 amount will be demanded. This means that as the level of national income (nominal) increases from OY_1 to OY_2 , the additional transaction demand for money would be $M_1M_2 = OM_2-OM_1$.

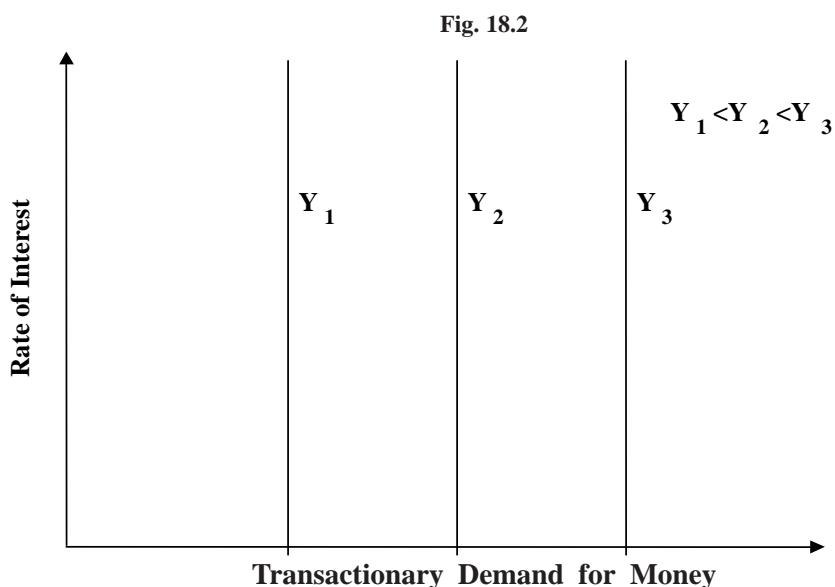


Fig. 18.2 : This figures emphasizes the idea that rate of interest does not affect *transactionary demand for money*. Y_1 , Y_2 and Y_3 represent different levels of income and money needed by people at these levels is constant, for each level, separately irrespective of the rate of interest.

Note: Y indicates level of Income

According to transaction demand theory, the determinant of demand for money is the level of national income (nominal). The transaction demand for money is not affected by the rate of interest. Figure 18.2 shows three different level of National income(nominal) where $Y_1 < Y_2 < Y_3$. This figure illustrates the relation, or rather lack of relation, between rate of interest & transaction demand for money. Here vertical axis depicts the rate of interest and horizontal axis depicts transaction demand for money. The fact that each curve is a vertical straight line means that the rate of interest does not affect the transaction demand for money.

18.5.2 Precautionary Demand for Money (M^d_p)

The Precautionary demand for money arises out of the need for any contingent payments/expenditures. Individuals and firms desire to hold cash balances for covering events of a more uncertain nature like accidents, prolonged illness, sudden change in technology forcing firms to replace machinery to stay competitive. These are referred to as **precautionary demand for money**. Like the transaction demand for money, precautionary demand for money is also closely related to the level of income. At the higher level of income, individuals and firms may keep more cash balances for meeting

unforeseen situations. Thus, the precautionary demand for money is also a function of level of Y :

$$M_p^d = g(Y)$$

Keynes aggregated transaction and precautionary demands for money and pointed out that these two demands are a stable function of the level of national income(nominal). The rate of interest as an important determinant of demand for money enters through the third motive, the speculative demand for money.

Check Your Progress 2

1) What are the important assumptions of classical Quantity Theory of Money?

.....

2) The transaction demand for money depends on three factors. What are they?

.....

18.5.3 Speculative Demand for Money, M_{sp}^d

In addition to working as a medium of exchange, money also serves a role of store of value. The speculative demand for money is the demand for money as an asset or as a store of value. This is considered by Keynes, as ‘Liquidity Preference Proper’. This was truly novel and revolutionary element of Keynes’ theory of demand for money. Through it Keynes made (a part of) the demand for money a declining function of rate of interest. The speculative demand for money constitutes the main pillar of Keynes’ revolution in monetary theory and Keynes’ attack on Quantity Theory of Money.

Fig. 18.3

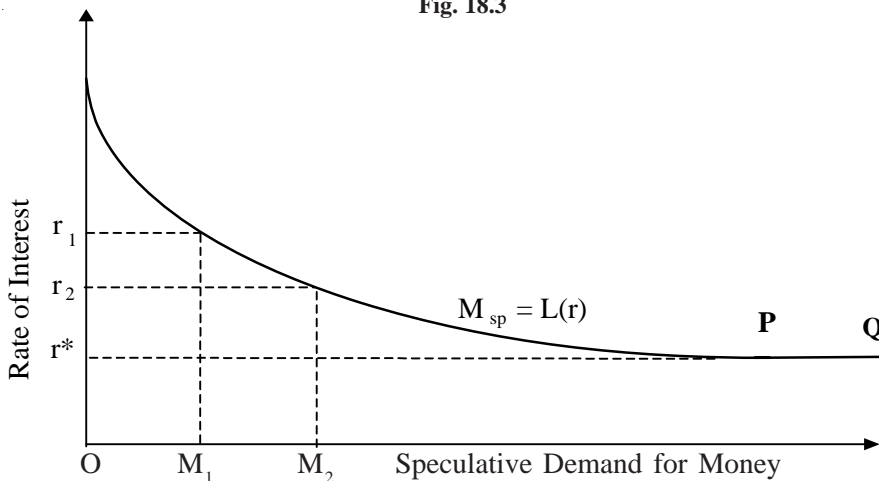


Fig. 18.3: Sepculative Demand for money is a function of rate of interest. At very low rate of interest, r^* , the demand for money function becomes parallel to horizontal axis-the stretch PQ. This is known as *liquidity trap*.

The speculative demand for money arises from the speculative motive for holding money. This arises from the variability of interest rates in the market and uncertainty about them. For simplicity, Keynes' assumed all securities (bonds, shares etc.) to be of only one type, i.e., perpetual bonds. These perpetual bonds are the only non-money financial assets, which compete with money in the asset portfolio of the public. Money doesn't earn its holders any interest income but its capital value. Bonds on the other hand, yield interest income to their holders. But this income can be more than wiped out if bond prices fall in future. We can show algebraically that the price of a (perpetual) bond is given by the reciprocal of the market rate of interest times the coupon rate of interest (payable on the bond).

Economic agents hold a part of their wealth in the form of financial assets. In the two asset model of money and bonds (perpetual), bond prices keep increasing sometime with the change in the rate of interest. Therefore, they are subject to capital gains or losses. Thus, for a bondholder the return from bond holding per period (say a year) per rupee is the rate of interest. At the time of making decision about an investment in bonds, the market rate of interest will be a given datum to an economic agent, but the future rate of interest, gain or loss, will have to be anticipated. Hence the element of speculation in the bond as well as the money market comes in.

Keynes' asserted that as rate of interest falls, speculators find it profitable to keep more cash with them so that they can benefit from the opportunities which may arise. If, on the other hand, rate of interest goes up, then holding cost will go up. As a result they will demand less liquid cash. Thus, at high interest rate, r_1 speculators demand for cash may be zero. As rate of interest falls to say, r_1 they demand a larger quantity of money, M_1 . A still lower rate r_2 induces speculation to demand M_2 amount of money. This inverse relation between aggregate speculative demand for money and rate of interest is shown in Fig. 18.3.

Keynes discussed the possibility of the existence of 'liquidity trap' which refers to a situation when at a certain very low level of rate of interest, r , the speculative demand for money becomes perfectly elastic (PQ stretch in Fig. 3). This will happen when at r , very low rate of interest, all the asset holders become bears so that none of them is willing to hold bonds and everyone wants to move into cash. The r seems as the banking system and credit institutions have to survive on the rate of interest they earn. Hence, that is an institutional rock bottom below, which the rate of interest cannot fall.

In equation form, speculative demand for money is a function of rate of interest;

$$\text{i.e., } M_{sp}^d = L(r)$$

We have noted earlier that the transaction and precautionary demands for money depend on the level of Y . Moreover, this relationship is proportional one given by the proportionality factor, k . We can now aggregate the demand for money, which is given by

$$M^d = k.(P.y) + L(r)$$

i.e., the demand for money has two components - one depending on the level of nominal income and the other on the rate of interest. This demand for money function is shown in Fig. 18.4

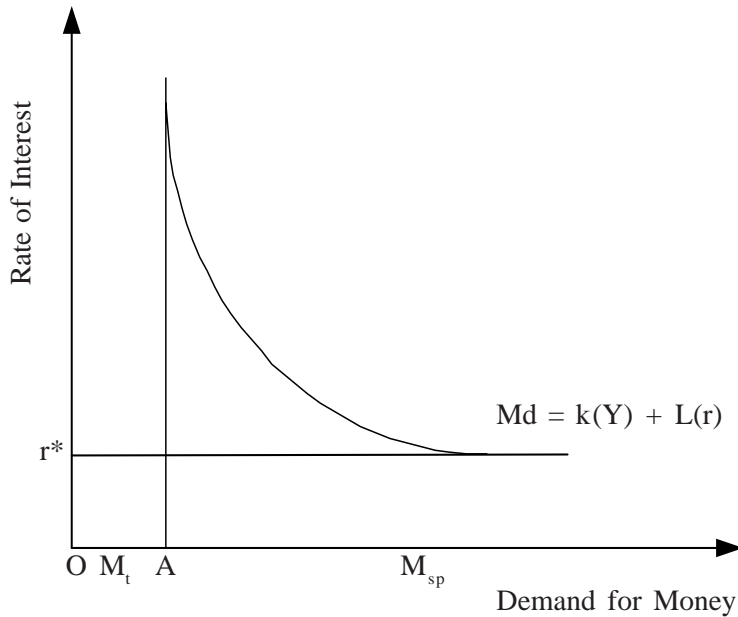


Fig. 18.4 : Total demand for money depends on both, income and the rate of interest. It is shown on interest-money plane. For each level of money income Y, we will get one such schedule. Note that OA=Transactions demand for money while rest of the segment represents speculative demand.

In this unit, supply of money (M^s) is assumed to be exogenous, i.e., it is determined outside the system. In other words, monetary authority (the Reserve Bank of India and Government of India in case of India) determines the supply of money and firms and households do not play any role in influencing supply of money.

Thus, $M^s = \bar{M}$ (given)

where M^s = supply of money.

Now for the money market to be in equilibrium, the demand for money should equal the supply of money, i.e., actual money holding or, cash balances of the public should match the total needed or, desired balances

or,

$$M^d = k.P.y + L(r) = \bar{M} = M^s$$

From this equation, it follows that combination of Y and i must be such that people's demand for money equals supply of money by the monetary authority (see Fig. 18.5)

In Fig. 18.5, $M_t^d = OA$, and $M^s = OB$, demand for money must equal OB so that $M_{sp} = L(i)$ must equal $OB - OA = AB$. Hence the money market equilibrium occurs when $r = r^e$ so that $M_{sp} = AB$. Thus, it is through the rate of interest that the money market equilibrium occurs. Note that here P, k, y & M^s are all given.

So, according to Keynes', the rate of interest is purely a monetary phenomenon, determined by the demand for and supply of money. This is in sharp contrast to the QTM of classical economists. For them rate of interest is a real variable determined by the commodity market by the equation between the supply of real saving and the demand for investment.

Impact of Changes in Supply of Money

You may call that changes in supply of money would mean the M^s schedule in the Fig. 18.5 would shift to M^s_1 , what would be its consequences? Increase in supply of money would push down the rate of interest in the money market, which would make the bears active. As a result of this the *speculative demand for money* would start rising till the point where the excess supply of money gets absorbed by the rise in demand for money and equilibrium is restored in the money market at r_1 (lower rate of interest) and M_1 (higher quantity of money) levels.

Fig. 18.5

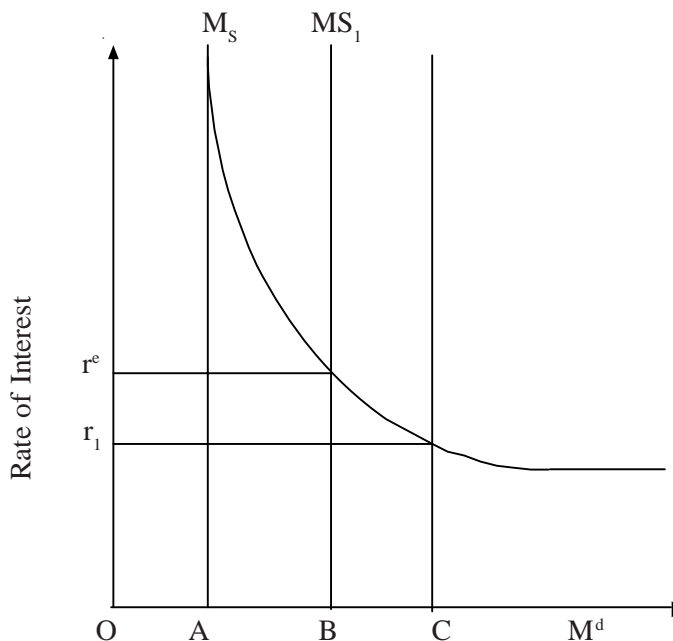


Fig. 18.5 : M^d shows aggregate demand for money and M^s is policy determined aggregate supply of money at a given level of income. Equilibrium rate of interest is $M^d=M^s$, that is r_e . Note that total money demanded =OB, out of which OA is transactionary component and AB is the speculative component. If money supply is raised of M^s , new equilibrium rate will be r_1 . The speculative demand component will rise and become equal to AC.

Check Your Progress 3

- 1) Point out the main differences between classical and Keynesian theory of demand for money?

.....

- 2) Explain the difference between speculative and transaction demand for money using diagram.

.....

3) State three differences between money and bonds. Explain in four lines.

.....

4) Briefly explain the concept of ‘liquidity preference’ in six-to eight lines with the help of diagram.

.....

5) What happens when supply of money is increased?

.....

6) Explain the concept of liquidity trap.

.....

18.6 QUANTITY THEORY OF MONEY- MODERN VERSION

Milton Friedman, a Chicago economists, has made a restatement of the Quantity Theory of Money. His version is referred to as Monetarism or the New Quantity Theory. It is the modern version of the classical QTM. Friedman’s theory of the demand for money is partly Keynesian and partly classical (or, non-Keynesian). The classical QTM is basically a theory of general price-level. For Friedman, however, it is primarily a theory of the demand for money. It is non-Keynesian in the sense that Friedman neglects completely Keynes’ classification of the motives for holding money and the corresponding component demands for money.

In the classical macroeconomics, role of money is emphasized as a medium of exchange. Friedman, in his version of the theory, regards money as an asset or a capital good also (similar to Keynes’ theory). According to him, wealth can be held not only in the form of (i) money and (ii) bonds as analyzed by Keynes, but also in the form of (iii) equities, (iv) physical goods (durable and semi-durable consumer goods, structures and real property), and (v) human wealth. Human wealth as embodied in human beings is the form of their potential to earn income. Total wealth is one of the key determinants of Friedman’s demand for money. In practice, especially the wealth in human form it is very difficult to estimate. He, to overcome this problem, took permanent income as an approximate index of wealth.

We shall now discuss the expected rates of return on various forms of wealth, w , which is another key determinant of the demand for money.

- i) *Money*: Friedman used broader definition of money to include not only currency, but also demand deposits(DDs) and time deposits(TDs) with the commercial banks. Money provides security and convenience to the holder. Currency is barren and provide no yield. Deposits with the banks bring in nominal interest. A change in the p -level affects the value of money: if the p -level rises (falls) money depreciates (appreciates) in value.
- ii) *Bonds*: These are debentures or government securities that yields interest.
- iii) *Equities*: These are shares in corporate companies. Owners of equities are the shareholders of a company. Shares bring dividend.
- iv) *Physical goods*: Capital gains can be realised if nominal price of such physical goods increases. For example in India most desired physical good may be gold, land and houses as their value appreciates very fast.
- v) *Human Wealth*: It is the income earning capacity of a person. This capacity is determined by the person's capabilities in terms of health, education, working conditions etc.
- vi) *Change in rate of interest*: Change in the rate of interest depends on the production and demand conditions in an economy.
- vii) *Expected inflation*: Expected rate of inflation depends on the expectations of growth of output level and past rates of inflation.

18.7 THREE VERSION COMPARED

Now we shall discuss one issue, which makes for the crucial distinction between Keynesian approach and Friedman's approach. This concerns the stability of demand function for money. By stability, in this case, we mean that functional relationship between money demanded and the variable influencing it is not subject to frequent changes.

According to the monetarist approach, led by Friedman, the classical demand for money function $Mv = Py$ is quite stable. In other words, the velocity of money v is relatively stable. Given the stability of the value of v , the supply of money determines Y in the short run. Indeed, the essence of monetarism is that money supply is the major determinant of nominal income(Y) growth. Monetarism, like the Keynesian multiplier is a theory of determination of aggregate demand. However, according to the monetarists, crudely speaking, "*Only money matters*", in determining aggregate demand while fiscal policy does not. For, given v , it is M that determines nominal income. Suppose v were not stable but an upward rising function of the cost of holding money so that people want to minimize their cash balances. In other words, velocity of circulation of a unit of currency increases per period of time. The government's fiscal policy, by stimulating public expenditure may partially reduce the induced private investment by driving up the rate of interest. This results in an increase in v and hence, in nominal income. Thus, even without an increase in M , fiscal policy can raise nominal income if v is an increasing function of the rate of interest. The constancy of v as assumed by the monetarists, rules out any importance of the fiscal policy.

However, the volatility of the value of v and the existence of liquidity trap, led the Keynesians to delimit the importance of monetary policy. In the simple Keynesian system money is sidelined completely and exclusive importance is attached to the

fiscal policy in determining the level of aggregate demand of the economy.

The Keynesian policy makers were at their hey-day in fifties and sixties. The resurgence of inflation in the seventies has given the monetarists a certain respectability. The controversy between the Keynesian and the monetarist theories and policies still continues. However, Samuelson and Nordhaus note that there has been convergence to a certain degree “*from disagreement into the synthesis of modern mainstream macroeconomics*”.

Check Your Progress 4

- 1) Explain briefly the difference between Keynesian and Friedman’s version of demand for money.

.....

.....

.....

.....

18.8 LET US SUM UP

In this unit we dealt with problems associated with a barter economy, which, later on, led to the invention of money to rectify such problems. Money performs certain crucial economic functions by being a unit of account, a medium of exchange and a store of value. In **QTM**, the classical economists regarded money as only a veil beneath which all the real transactions in the economy occur. They argued that money is neutral and it does not affect real variables at all. The only advantage of money being to operate as a lubricant and thus, hastening economic transactions by reducing the costs involved in exchange. As discussed above, in a barter, this cost is considerable requiring double coincidence of demands. Keynes, in addition to the transactions demand for money described by the **QTM**, explained two other motives of holding money - the precautionary and the speculative motives. In his analysis, the classical dichotomy ceases to exist and real and monetary (nominal) variables are interrelated and interdependent. Friedman’s monetarist analysis placed money at the centre of the stage in determining aggregate nominal income. Keynes was skeptical about the role of monetary policy in determining aggregate output, especially in the context of the **Great Depression**, which was the context of his ‘General Theory’. He gave prime importance to the fiscal policy for the economic recovery after the Depression. Friedman, having satisfied himself about that the velocity of money is constant argued that the fiscal or, monetary policy does not help. The essence of monetarism is, thus, “*money does not matter*”, i.e., it does not affect the real variables. In other words classical QTM is basically true.

18.9 KEY WORDS

- Bears** : They are operators in the share/bond market who expect the price of share/bond to fall.
- Bond Market** : It is a market concerning demand and supply of bonds, which together determine its price.
- Bulls** : They are operators in the share/bond market who expect the price of share/bond to rise.
- Barter Economy** : A direct exchange based economy without the mediation of money.

- Capital gains/loss** : The positive difference between the selling price of an asset and its cost price. If the selling price is less than the cost price, the difference is called capital loss.
- Classical QTM** : Money acts as a veil beneath which all the economic activities take place. Change in money supply only affects the nominal variables leaving real variables unaffected. The crux of the theory is: supply of money determines the level of prices.
- Classical Dichotomy** : It basically is the argument that real and monetary economy operate independently of each other.
- Income Velocity of money** : The number of times in year, a unit of currency changes hands in transactions only for final goods and service.
- Nominal Income** : Value of income measured at the prevailing (or, current) price level.
- Near-money** : It is a term which is used for those assets which are not perfectly liquid but can be easily converted into liquidity or money.
- Nominal cash balances** : These are the money holdings of a transactor kept in the form of cash or money.
- Normal rate of interest** : Introduced by J.M. Keynes, it refers to that rate of interest, which tends to prevail in the market at 'normal' conditions.
- NMFAS** : It is a term used to represent non-money financial assets.
- Permanent income** : It is a weighted average of past and present values of income.
- Precautionary Demand for Money** : Precautionary motive induces public to hold money to provide for unforeseen contingencies requiring sudden expenses, unforeseen opportunities of advantageous purchases. This motive is a product of uncertainties of all kinds.**Speculative Demand for Money:** Demand for money as an asset to be utilized in bond (or, share) market because holders of such speculative balances may anticipate such fall in future bond prices which will make the loss of foregone interest look relatively smaller.
- Portfolios** : It refers to a mixture of shares of various types, bonds, debentures, bills of exchange maintained by a transactor.
- Transaction Demand** : The transactions motive gives rise to transaction demand for money, which refers to the demand for cash of the public for making current transactions of all kinds. This is basically the medium of exchange role of money.

18.10 SOME USEFUL BOOKS

Ackley, Gardner(1977), *Macroeconomics: Theory & Policy*, Macmillan, New York.

Bhaduri, Amit(1986), *Macroeconomics, The Dynamics of Commodity Production*, Macmillan, London.

Gupta, Suraj B.(1982), *Monetary Economics*, S.Chand & Company, New Delhi.

IGNOU(1992), *Money, Output and The General Price Level*, in EEC-01, Fundamentals of Economics" School of Social Sciences, New Delhi.

Shapiro, Eduard(1985), *Macroeconomic Analysis*, Edward Brace Juanovich, New York.

18.11 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) The problem with having horse as a medium of exchange will be that when you want to exchange it for say 1 kg. of rice. You cannot do that as it is not possible to divide the horse.
- 2)
 - i) Value of sugar is likely to fluctuate with the season, though it is divisible and can be durable but is difficult to move it to wherever required.
 - ii) Value of a horse is likely to depreciate as the horse becomes older and as we saw in the Section 18.2 it is not divisible. Durability also is doubtful because it has life and its health is likely to be subject to various influences. It is also not easy to take the horse everywhere where the transactions are taking place. It is very unlikely candidate as a substitute for money.
 - iii) Salt is a somewhat better substitute for money as it is more or less stable in value, is divisible and also durable but it is difficult to be ported for facilitating the transactions due to its weights especially for the high-value goods.
 - iv) Idli is very poor substitute of money due to its perishable nature. Also it is neither stable in value nor portable. It satisfies only divisibility function of money

	STABLE	DIVISIBLE	DURABLE	PORTABLE
Sugar	X	√	√	√
Horse	X	X	X	X
Salt	√	√	√	X
Idli	X	√	X	X
Gold	√	√	√	√

UNIT 19 INFLATION AND UNEMPLOYMENT

Structure

- 19.0 Objectives
- 19.1 Introduction
- 19.2 Price, Price Level and the Measures Thereof
 - 19.2.1 Definition of Index Number
- 19.3 Inflation Defined
- 19.4 Effects of Inflation on Society and Economy
- 19.5 Types of Inflation
- 19.6 Causes of Inflation
 - 19.6.1 Inflation: the Demand-side
 - 19.6.2 Inflation: the Supply-side
- 19.7 Structural Inflation
- 19.8 Anti-Inflationary Policies
- 19.9 Deflation
- 19.10 Stagflation
- 19.11 Inflation and Unemployment : the Phillips Curve
- 19.12 Let Us Sum Up
- 19.13 Key Words
- 19.14 Some Useful Books
- 19.15 Hints to Check Your Progress Exercises

19.0 OBJECTIVES

In this unit you will learn about prices and inflation, a phenomenon, which we come across in our everyday life. The aspects that we would look at are:

- 1 prices and price levels, and their measurement;
- 1 meaning of inflation;
- 1 effect of inflation on various sections of society and the economy in general;
- 1 causes of inflation;
- 1 anti-inflationary policies for inflation; and
- 1 relation between inflation and unemployment using the Phillips curve.

19.1 INTRODUCTION

We come across the term inflation in newspapers every day. The reason why it holds such importance is because of its adverse effects on an economy as well as people. A question that could arise at this point is in what way does inflation affect our everyday life? Let us illustrate with the help of a single household. Inflation, in simple words, is a steady rise in the prices of various goods and services. Given the level of the money income, a household consumes a group of commodities at a given price level. With inflation, the price level goes up. So with the same level of money income, this household can consume a smaller amount of the commodities than it was consuming earlier. Alternately, to maintain the earlier level of consumption this household now needs to have more money. For example, suppose the household has a monthly income of Rs.100, consumes the entire income on a single commodity A and does not save anything. If the price of commodity A is assumed to be Rs. 4 then the household consumes 25 units of A in a month. Now suppose, the price of commodity A goes up from Rs.4 to Rs.5, the household will be able to consume only 20 units of commodity A. To maintain the level of consumption at 25 units of A per month, the household needs to have a monthly income of Rs. 125. Thus, we

see that with inflation, one unit of money purchases a smaller amount of goods than what it was doing earlier. In other words, with inflation, purchasing power of money goes down.

In the example cited above, consumption of the household comprises one commodity only. But for a typical household, consumption involves a variety of goods and services. As a result, increase in the price of one commodity need not affect household consumption adversely if there is a decline in the price of some other good. Therefore, to ascertain the effect of inflation we need to take into account the change in the prices of all the goods consumed by the household. To do that we try to find the change in the general level of prices. Therefore, before defining inflation we need to understand the meaning of price and price level and the changes in these concepts.

19.2 PRICE, PRICE LEVEL AND THE MEASURES THEREOF

What are prices? What do we mean by the term price level? What is the difference between the two? And how do we measure price level? These are some of the question we try to answer in the present section.

In simplified terms price is defined as the rate at which goods and services are exchanged for money. It is the amount of money received for selling or, paid for buying, one unit of a commodity (or services) in an exchange economy.

The term price level is an aggregate concept. It relates to the price of a basket of goods and services. See that we do not refer to the price of a single commodity but to a group of goods and services taken as a whole. Therefore, when we talk of a change in the price level it is always in reference to a group of commodities. Since the prices of commodities differ, in order to measure a change in the price level of a group of commodities, it is necessary to use index numbers. More specifically, we have to use price index. Let us understand the idea of an **index number** in an elementary form.

19.2.1 Definition of Index Number

An index number is a device for comparing the general level of magnitude of a group of distinct, but related, variables in two or more time periods. A price index is used for comparing changes in the general level of prices of a group of commodities. Generally the index number refers to changes in the prices obtained over time. It is expressed by putting a particular period (called the base) equal to 100 and the price level for other periods are expressed relative to this base. For example, when we say, the whole sale price index has gone up this year with respect to last year, we are taking last year price level as the base or, the reference point = 100. With respect to it we measure the change in the price level this year.

The *price relative* of an individual item is the ratio of its current price to its price in a base period. The simplest price index for a given commodity can be expressed as

$$I_{t,o} = 100 (p_t / p_o) \dots\dots\dots (1)$$

where p_t and p_o denote prices in the current period 't' and the base period '0' respectively.

For instance, if price of a kilo of potato goes up from Rs. 8 in 1995 to Rs. 10 in 1996, then the price index in this case would be:

$$I_{1995, 1996} = 100 (10/8) = 125$$

This index shows a 25 per cent increase in the price of a kilo of potato. In other words, you need 25% more money to maintain your consumption of potatoes at the same old level.

Check Your Progress 1

1) What is meant by prices? What does the price level imply?

.....

2) What is an index number?

.....

19.3 INFLATION DEFINED

With the background of prices and price level in view we go on to the definition of inflation. We mentioned earlier that Inflation is defined as a persistent rise or, a tendency towards persistent rise in the general level of prices. The adjective ‘persistence’ has to be taken note of. The reason is, if price level goes up today but again falls tomorrow then it may not imply inflation, but only short-term fluctuations in prices. The term general price level is also important since, over a period of time, prices of some commodities may have gone up while some may have actually fallen. As a result, on the whole, the average of these prices may remain constant or even go down. Similarly if the price of a group of commodities, which constitute a small fraction of the total value of output of the economy, would go up, then again it might not be inflationary as such. That is, the effect of rise in prices of such commodities might be too small so as to affect the average price level of all the commodities. Thus we see that inflation is a macroeconomic phenomenon and is not concerned with the rise in the price of a particular commodity, or, a small group of commodities.

Another aspect of inflation is that it need not be open. That is, one would not see any changes in the quoted prices of certain goods. This can happen in a controlled economy where rise in prices of essential commodities are artificially suppressed. In India, goods sold through the public distribution system (PDS) are sold at administered prices, which are maintained at a level much below the prices in the open market. This is known as **suppressed inflation**, as commodities sold in the ration shops may be available at a cheaper rate, but carry a higher price in the market.

In Section 19.1, it was pointed out how inflation is likely to affect a household with fixed money income. In many cases, however, some of the income classes actually benefit from inflation or at the least may remain unaffected by it. The next section discusses how this happens.

19.4 EFFECTS OF INFLATION ON SOCIETY AND ECONOMY

Inflation affects various segments of the society in different ways. It is the poor and the fixed income earners who are almost always the worst affected. For instance, a large proportion of the Indian population are daily-wage earners who work on other people's farm or in small factories. They are employed on the basis of a daily wage or a piece-rate system. Given the huge army of unemployed in our country and the paucity of a employment opportunities (they arise during harvesting and sowing, in case of agriculture), those willing to work far exceed the number that can be employed. As a result, employers almost always find adequate number of workers willing to work, howsoever small the wage rate offered. Workers have very little bargaining power vis-à-vis employers. In times of inflation the unemployment factor plays a crucial role, as the workers are unable to bargain for higher wages to offset increase in prices. Though minimum wage rates are fixed by the government, they are revised after considerable gaps and in many cases are not implemented at all. Thus a worker getting a fixed rate of Rs 12 per garment stitched, would lose in times of inflation as purchasing power of Rs.12 would be declining continuously. The poor have an added disadvantage as they rarely have any savings to fall back upon in times of adversity.

There are others in the society who either gain during inflation or at least manage to maintain the same level of real income. Organized working class like government employees manages to keep pace with inflation to a large extent as their salary is indexed to inflation. Businessmen and entrepreneurs, who can raise prices of their goods and services, may sometimes gain from inflationary situations marked by scarcity of essential services. Thus we see that inflation affects the poor, the fixed income earners and the unorganized working class much more adversely than any other section of the society. On the whole, inflation redistributes income in favour of the rich ?making the rich richer and the poor poorer.

19.5 TYPES OF INFLATION

On the basis of the severity of inflation or, the rate of acceleration in prices we can divide inflation into three different types, namely, moderate, galloping and hyperinflation.

When the general price level increases slowly but steadily, it is known as ***moderate inflation***. Moderate inflation remains within a single digit level of less than 9 per cent. You can say that the increase in the price level stays within 'limits'. There are no major uncertainties regarding the price level in the future.

Steady and fairly high rate of increases in the general price level is known as ***galloping inflation***. The rate of inflation runs into two digits (20 per cent, 40 per cent etc.) and sometimes even as high as three digits (i.e., 200 per cent). Some Latin American countries like Brazil and Argentina had experienced inflation rates of over 100 per cent in the 1970s.

Hyperinflation is characterized by astronomical increases in the annual rate of inflation. There have been cases in history when the price index rose from 100 to 10,000,000,000 within a year and a half! In such situations, money ceases to be a store of value as well as a medium of exchange. The most recent example of hyperinflation is perhaps the case of Brazil in the latter half of the 1980s.

1) Does inflation affect various sections of a society in a similar way? If not, explain why?

.....

2) What are the various types of inflation? What are the criteria used for differentiating between them? Explain.

.....

3) What is the difference between open and suppressed inflation?

.....

19.6 CAUSES OF INFLATION

The causes underlying inflation can be generally divided according to the source through which inflation originates. As we learnt in price of a commodity is determined at the point at which its supply equals demand. This is known as the equilibrium price. If the demand goes up, price of the commodity would go up in order to restore the equilibrium. So is the case when there is a fall in supply of a commodity. In either case the price of the commodity goes up till the supply and demand are equalized. But the source of the change in one case originates from the supply side while in the other from the demand side. Sometimes, rise in the cost of production pushes up the supply schedule. This again leads to a rise in prices.

So, depending upon initial process, we can identify two types of inflation: **Demand-pull inflation** or, *demand-side inflation*; and **Cost-push inflation** or, *cost-side inflation*. Note that here, we refer to aggregate demand and aggregate supply in the economy.

19.6.1 Inflation: The Demand-Side

Factors, which influence an increase in aggregate demand with no change in the level of aggregate supply, can be said to cause demand-side inflation. These factors can be an increase in government spending, a decrease in savings rate and a lower rate of taxation, which leave greater amount of money or, increased disposable income with the public, and increase in money supply. Let us examine, how each of these factors generates inflationary tendencies.

1) Inflation Caused by Increase in Government Spending

Suppose the government decides to build roads. In the process many unemployed get employment and earn an income. This increases the number of people who have money to spend. With no change in aggregate supply in the economy, a situation of excess demand arises. There are two ways in which this excess demand can be met, viz., by increasing the production and supply of commodities or, by increasing the price level, which would then have negative impact on the demand. In the short run, more often than not, it is difficult to expand supply. Hence

the price level increases to equilibrate the aggregate supply and aggregate demand. An increase in demand arising out of the increased government spending could be depicted by a shift in the **aggregate demand** (AD) curve as shown in Fig. 19.1. In the figure the **aggregate supply** (AS) curve is shown as a vertical line implying that we have taken aggregate supply as fixed in the short run. Thus with unchanged supply, the national real income remains at Y and only the price level goes up to equilibrate demand and supply.

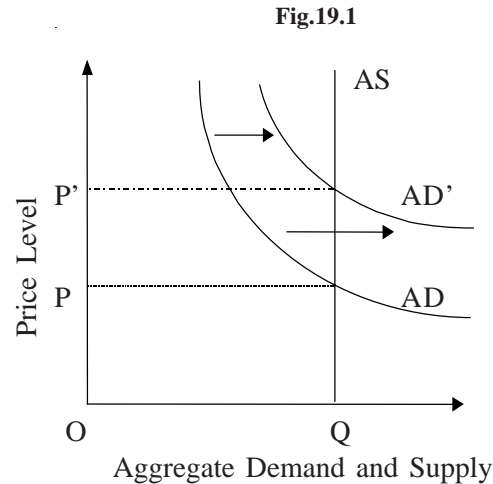


Fig.19.1 : Initially aggregate demand is AD and aggregate supply is AS all of OQ quality is purchased at OP price. Rise in government spending pulls OP the aggregate demand to level AD'. But in the long run, output cannot rise. Therefore, supply remains fixed at OQ level. People compete with one another to buy their requirements and in the process bid up prices to new and higher level OP'

II) Keynesian Inflationary Gap

A related, but a slightly different type, is the Keynesian inflationary gap. Recall that in Keynesian theory, investment plays the vital role in determining the national income. In the Keynesian system, the economy is divided into three broad sectors, namely, the household sector, the government sector and the private sector. The households earn money by offering their labour and other factor services and consume a part of it and save the rest. The private sector produces goods and services, earns profits and invests a part of that, say, for buying machines. The government sector gets revenue from these two sectors by way of taxes and spends it on building of roads, public services and so on. The total income of the economy or the national income consists of the goods and services produced by the above sectors. Expenditure, on the other hand, is the aggregate of consumption, C, investment, I, and government spending, G. Equilibrium in the Keynesian system is obtained where the income, Y, earned in the economy equals the expenditure on it. Assuming that there is no government spending, expenditure would then constitute consumption, C, by households, plus investment, I, by firms. Diagrammatically, equilibrium is obtained where the expenditure line, $C+I+G$, intersects the 45° -degree line (depicting **income = expenditure**), as shown in Fig. 19.2. If government expenditure is raised, the point at which the expenditure line $C+I+G'$ intersects the 45° degree line depicts an increase in the national income level. However, suppose for various reasons, the income level cannot be increased. Then we have a situation of excess demand equal to MN, which will be purely inflationary. MN is known as the *inflationary gap*

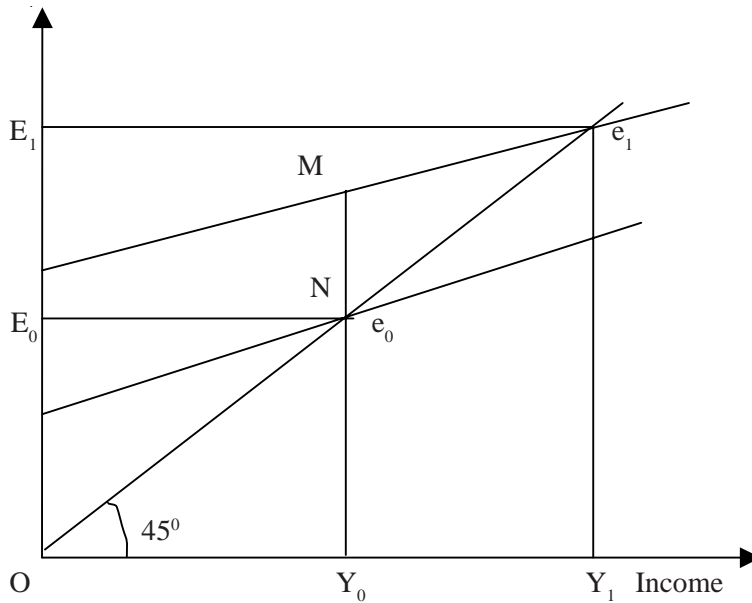


Fig.19.2 : A jump in government spending from G to G' pushes up the aggregate expenditure line from $C+I+G$ to $C+I+G'$. Initially, e_0 was the equilibrium point and Y_0 was the equilibrium level of income and E_0 was the level of expenditure. But new equilibrium at e_1 means the aggregate expenditure and money income ought to be E_1 and Y_1 respectively. If, the real income cannot rise along with money income to new higher level (from Y_0 to Y_1) only the price will rise. Hence MN will be called the *Inflationary gap*.

III) Inflation due to Increase in Money Supply

The above argument holds when there is an increase in the money supply. With increased money supply, there is more money to spend at the disposal of general public. Again a situation of excess demand arises, i.e., a situation of disequilibrium and general price level goes up to restore equilibrium in the system. In this case there is no change in the aggregate supply curve as depicted in **Fig. 19.1**.

19.6.2 Inflation: The Supply-Side

Inflation arising out of movements in the aggregate supply curve with the aggregate demand curve remaining unchanged is known as supply-side inflation. Cost-push inflation, profit-push inflation and supply-shock inflation are three variants of this idea.

I) Cost-push Inflation

Cost-push inflation arises when either the labour unions (or the firms) exercise their market power to increase the wage rate (or the price of their products),. With an increase in the wage rate, producers find that the labour cost per unit of output have risen, and they respond by increasing the prices of goods to cover the higher cost of production. The workers, faced with higher prices, demand still higher wage rate, to which the producers respond by increasing the price of their commodities. A series of increase, in wage rates leads to a series of increase in price. This kind of inflation is known as *wage-push inflation*. When the firms increase the price of their products to increase their profits, there is a demand for higher wage rate by the workers. Higher cost of production due to increases in the wage rate and prices of inputs makes the producers raise their prices further. Again a series of increase in the wage rate leads to a series of increase in the prices. This kind of inflation is known as *profit-push inflation*.

In both the cases, each possible level of output will be supplied at a higher price level than before. As shown in Fig. 19.3, the *aggregate supply* curve (in this case we have taken a curved supply curve for analytical convenience) moves inwards showing that for the same level of output Y_1 the price now being charged is P_2 , which is higher than P_1 . Note, in this case, unlike in demand pull type of inflation, the output level goes down from Y_1 to Y_2 .

A pre-requisite for inflation due to increases in the wage rate is that of unionisation of labour. In India labour is not organized in all sectors and there is very little empirical evidence showing inflation arising out of increases in the wage rate.

Similarly a pre-requisite for the firms to increase the prices is that the firms must be operating in an imperfect market. A firm, which has many competitors, would be unable to increase the price of its products because of the fear of losing its customers. On the other hand, fear of monopolistic or oligopolistic firms can increase their prices without the fear of losing out on demand.

Fig. 19.3

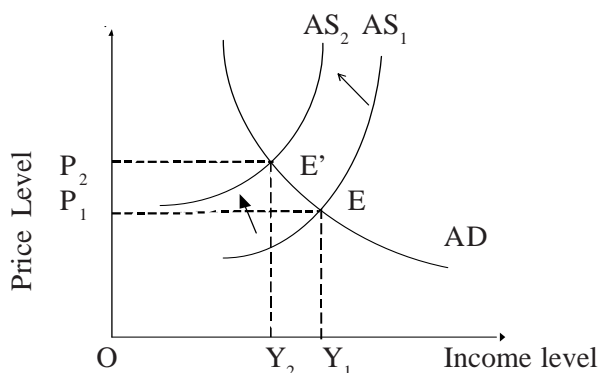


Fig. 19.3 : A rise in the cost of production pushes up the aggregate supply schedule to AS_2 . In other words producers expect the higher price for the same level of output to supply. they were ready to sell Y_1 at P_1 earlier, but now demand P_2 level of price for it. The new equilibrium will take place at E' - where only Y_2 level of goods and services is produced and sold at P_2 price level. Note that equilibrium income Y_2 is less than Y_1 in pre-inflation income

II) Supply-shock Inflation

Inflation can arise out of either an unexpected or unforeseen sharp fall in the supply of commodities or a rise in the prices of commodities. Reasons for a situation lie out of the control of either the firms or the workers. It is known as supply-shock inflation. For instance, a crop failure due to an unfavourable weather condition would give rise to an all round shortage and lead to increase in the general price level. The above can be an example of the supply-shock inflation. Similarly, in 1973 and 1979, when oil prices were unexpectedly raised by the OPEC all the economies world wide experienced a massive rise in the general prices. This is another manifestation of supply-shock inflation.

19.7 STRUCTURAL INFLATION

Theories of inflation discussed so far have all been developed with particular reference to the developed countries. In most cases, they do not have the same applicability to inflationary experience of developing countries like India. Unlike developed countries of the West, the developing countries are characterized by a lack of adequate resources like capital, foreign exchange (for essential imports like machinery and technology), land and infrastructure (roads, railways, power

etc.). Further, over-population with the majority depending on agriculture for their livelihood means that there is a fragmentation of the land holdings. There are other institutional factors like land-ownership, technological backwardness and low rate of investment in agriculture. These features are typical of the developing economies. '**Structural theory of inflation**' explains inflation in the developing economies in terms of the structural features. Let us see, how these factors work.

I) Food Shortages

Majority of population in the developing economies live in the rural areas and depend on agriculture for their livelihood. With development, say, building of some new industry, some people get employment outside of agriculture and they settle down in urban areas. But, due to the various *structural features* such as highly unequal distribution of land-ownership and tenancy, technological backwardness and low rates of investment in agriculture, inadequate growth of the domestic supply of food in correspondence with an increase in demand arising from increasing urbanization and population prices increase. Further, the extreme dependence of agriculture on weather produces an acute shortage of food from time to time due to droughts, floods, etc. In years of food shortages, the prices of food grains increases very fast. Food being the key wage-good, an increase in its price tends to raise other prices as well. Therefore, some economists consider food prices to be the major factor, which leads to inflation in the developing economies.

II) Scarcity of Foreign Exchange

The industrial development of the developing economies requires a heavy import bill on account of import of capital goods, essential raw materials, and in several cases even food grains and other consumer goods. While the developing economies have a very high import requirement, their exports to the developed economies are very small for reasons like poor quality of goods. As a result, the foreign exchange that comes into the country through exports is a much smaller amount than the requirements of the economy. Due to this, the developing economies most of the times face foreign exchange shortages. Moreover, the shortages in the domestic supply of many basic inputs cannot easily be mitigated through imports. As a result, the prices of such goods increase, and the increase spreads to other prices. The result is all-round inflation.

Other structural factors, like socially unproductive private investment in land and precious metals like gold take away a sizable chunk of resources. These resources could have been otherwise invested in new industries, new machines, new roads, better irrigation facilities for agriculture and other productive investment, which could have led to faster development of these countries. According to the **structural approach to inflation**, the above factors and similar other structural features of the developing economies can explain the price rise situations better.

19.8 ANTI-INFLATIONARY POLICIES

Now we have a fairly good idea about the causes of inflation. Let us move on to the question of its remedies. What are the possible ways to control the inflation in an economy? But for recommending a cure, an analysis of the source of the problem, i.e., whether inflation is due to demand-pull factors or cost-push factors, is important. Why that is so, is what we show below.

Fig.19.4

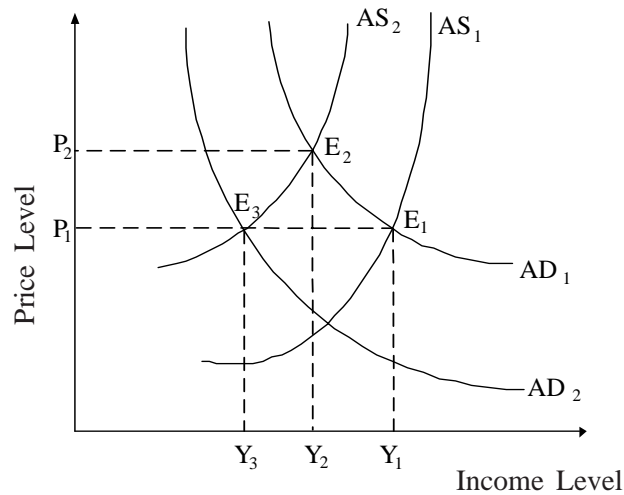


Fig.19.4 : Initial aggregate demand, AD_1 and aggregate supply, AS_1 curves intersect at E_1 where level of income is Y_1 and that of prices is P_1 . However, a rise in cost of production pushes up aggregate supply to AS_2 . This results in a rise in prices to P_2 . At such higher prices, only Y_2 level of income will be generated as the consumers cannot afford to buy larger amounts of goods and services. Adoption of demand management policies under such circumstances, will push down aggregate demand to AD_2 . It may restore the prices to old level P_1 yet level of income at Y_3 is at the lowest level of income.

Suppose, inflation is of the demand-pull variant. This means that a higher level of disposable income with the public with no change in the supply function has given rise to inflation. So, in such situations, inflation can be controlled by simply reducing the extra disposable income in the hands of the people.

The Government can do this by either decreasing the money supply, or by increasing the incentives for savings by giving tax exemptions on savings. Reducing the money supply directly lowers the extra funds available and thus helps in bringing down the demand. Various incentives increase savings, reduce consumption of those who save and thus bring down the level of aggregate demand and the price level. Given the aggregate supply, a rise in the aggregate demand raises the price level. But the demand-regulating measures push back the aggregate demand to AD and restore the old price level.

If the source of inflation lies in a decrease in the aggregate supply, then prescribed policies above would hamper economic situation on the whole. Fig.19.4 shows this situation as well. If policies, which reduce aggregate demand level, are adopted, then the price level would go down. However, equilibrium level of output would also follow a similar trend. Such policies, therefore, would only decrease the demand for labour and create an all around increase in unemployment levels. For tackling supply-side inflation, what one needs to do is to focus on the supply side. Though the government cannot do anything to increase supply in the short run, it can adopt policies, which nullify the inflationary effect arising out of increase in cost of production.

One of the possibilities is to decrease taxes like sales tax and excise duties at various levels, which helps bring down the cost of production. The firms then can reduce the prices of their products and are able to sell larger quantities in the market. In case of situations like crop failures government can augment food supplies by releasing larger stocks through **public distribution system** and bring down prices. Outright sale (from buffer stocks) in the open market can also have similar effect. The extent, to which such deflationary policies are actually effective, depends on various other factors, which we won't go into here.

19.9 DEFLATION

Deflation is a situation where prices fall continuously or have a tendency to fall. This can arise when the aggregate demand is lower than the aggregate supply. Thus, deflation is characterized by a decrease fall in output, increase in unemployment and general slowing down of the economic activities. The Great Depression from 1929 to 1933 in the capitalist countries is an example of an acute deflation when the prices crashed, unemployment catapulted to astronomical heights and the income of these countries fell sharply.

19.10 STAGFLATION

In the Keynesian system an inflationary gap in the short-run would lead to an increase in the real national income and hence employment. Thus while the price level goes up, so does the output, which acts as a dampener on upward movement of the prices. Thus, inflation in the Keynesian system would be accompanied by an increase in the level of real output and employment. However, in 1970s, several countries experienced a peculiar situation. There were rising rate of inflation, which was accompanied, by not only rise in unemployment but also falling or stagnating output. This type of phenomenon is called stagflation.

Suppose the prevailing rate of inflation is 6 per cent. This prevailing rate builds expectations in the minds of people about its level for some time in future. Such an expectation determines the money wage rate to be negotiated by the labour unions and employers. The employers in response to increase in the money wage rate increase their prices, which then increase the rate of inflation in the present period itself. As a result of this unexpected increase in inflation (since inflation rate now is greater than 6 per cent) the labourers find that the earlier negotiated increase in money wage rate is not sufficient to protect them against the falling purchasing power of money and demand a still higher wage rate. Such increase in the money wage rate, to compensate for the new level of inflation, would result in the firms increasing their prices.

Thus the expectation about the future price level plays a crucial role in determining the actual price level today. And according to this view, the simultaneous impact of the remedial policy measures adopted and the lag in the adjustment between the expected inflation rate and the actual inflation rate results in stagflation.

As we saw in Section 19.8, the remedial policy measures initiated would not only bring down the prices but the national income as well. But the effect of such policies is not felt instantaneously. While such policy measures are in the process of exerting their impact, expected inflation is still catching up with actual inflation. That is, the upward pressure on the inflation rate exerted by a slower growth rate of nominal income would be a consequence of the restrictive policy measures followed to control inflation. Therefore, a situation is seen when stagnation in the output level goes hand in hand with the rising inflation.

19.11 INFLATION AND UNEMPLOYMENT: THE PHILLIPS CURVE

In this section we study the relation between the inflation rate and the unemployment rate and see how one affects the other.

For long economists have tried to find a relation between inflation and unemployment. A British economist, A. W. Phillips, studied the relation between the wage inflation (tendency of wages to rise continually) and unemployment. By studying data for the

British economy for the years 1861-1957, he found a correlation between the two, which seemed to suggest that the rate of unemployment and the rate of wage inflation are inversely related. Wage inflation without any change in other factors, we know, would lead to pure inflation of the cost-push variety. This implies a positive relation between the rate of inflation and the wage inflation. On the other hand, an increase in wage rate reduces the demand for labour and thus unemployment increases. This implies an inverse relation between inflation and unemployment. A direct relation between wage inflation and rate of inflation and an inverse one between wage inflation and unemployment imply an inverse relation between rate of inflation and unemployment. We can put these discussions as :

wage rate \propto inflation rate

wage rate \propto (1/unemployment rate)

Therefore: **inflation rate \propto (1/unemployment rate)**

where $\alpha =$ **sign of proportionality.**

There are two ways in which this can happen: When unemployment levels are low i.e., when fewer people are unemployed the unionized labour is in a better bargaining position to demand for an increase in the wage rate. On the other hand, the low unemployment rate and relative scarcity of labour are ordinarily times of buoyant demand and abundant profits. Thus, the firms would usually grant the demand for increase in wage rate than face the possibility of strikes and closure of such profitable production. In the reverse case of high unemployment and low profits neither would the labour unions press for higher wages nor would the firms give in to such demands.

The second explanation is the excess demand for labour. In periods of boom characterized by growing demand and profits. The demand for labour is likely to exceed its supply. As a result, the wage rate may go up leading to increase in the rate of inflation. Therefore, as unemployment goes down inflation rate goes up. Note, these two possible explanations, however, are not mutually exclusive as both the factors can work together in periods of either boom or slowdown.

Thus the Phillips curve is a downward sloping curve with the horizontal axis representing unemployment rate and the vertical axis representing the inflation rate. It shows a trade-off between inflation and unemployment, implying that government policies can reduce the unemployment rate only by accepting a higher inflation rate and vice-versa. (Fig. 19.5)

However, the acceptability of the Phillips curve explanation suffered a setback in the 1970s when the capitalist countries experienced situations where rising inflation rate was accompanied by rising rates unemployment, i.e., a situation of stagflation.

There are many criticisms against the Phillips curve, but we enumerate just two of them.

The first argument says that Phillips curve holds true only in the short run and is not valid in the long run. This is because, an increase in the prices with the nominal wage rate remaining the same, implies that larger profits can be made for each unit of the commodity sold. And even bigger profits are possible if larger quantities of the commodities can be sold. Therefore, when prices go up, in order to reap the benefits of higher prices, producers expand the production of goods and services whose prices have gone up. Greater production means more people are employed. This happens in the short run. This is in contrast to the Phillips Curve relationship since increases in inflation leads to fall in unemployment.

Fig.19.5

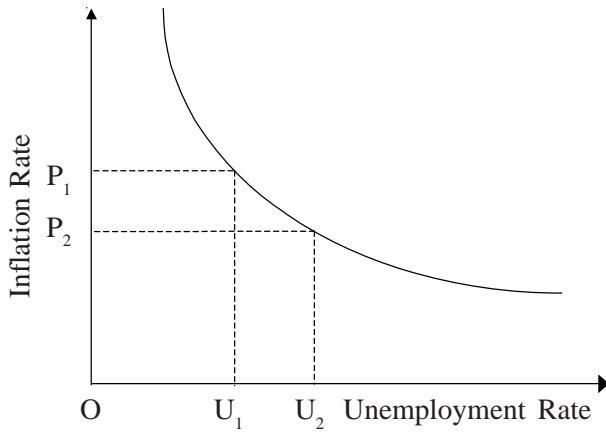


Fig.19.5 : The Phillip curve shows inverse relationship between rate of unemployment inflation. As unemployment to rise from U_1 to U_2 , the rate of inflation comes down brought down from P_1 to P_2 . Conversely, higher rate of inflation is the price a society has to pay to bring down the rate of unemployment

In the long run, things are very different. An increase in prices with the nominal wage rate remaining constant implies that the real wage, which is the ratio of nominal wage rate to general price level, declines. Sooner or later, workers realize that their real wages have gone down and they demand higher nominal wages in keeping with the inflation rate. An increase in nominal wage rate implies that the cost of production goes up and hence it is no longer as profitable for producers to raise production. Therefore, they cut down on production and consequently employment too would go down. Thus, while the inflation rate remains at the present level whereas, the unemployment rate goes up. Thus, the theory of trade-off between inflation and unemployment no longer remains valid. But we must not lose sight of the fact that the Phillips Curve analysis is based on the experience of 96 years, which saw two world wars and many momentous changes in the technology profile of the world.

The other argument runs as follows: It says that the Phillips curve ignores the role of capital in sparking off inflation and unemployment. Under capitalism, capitalists' aim to maximize profits leads them to adopt new technologies, which are generally more capital-intensive. This tends to lower the need for labour and hence increases the rate of unemployment. At the same time these capitalists follow an aggressive mark-up pricing policy with a view to increase their profit margins leading to an inflationary spiral. Thus the theory of trade-off between inflation and unemployment no longer remains valid.

This argument seems to assume that there shall be no expansion in the overall demand for goods and services when the technological changes are raising productivity per worker by substantial amounts! Historical experience of the rising consumerism and mass production would not justify such an assumption.

Check Your Progress 3

1) What are the various causes of inflation? Explain with diagrams

.....

2) What is meant by Stagflation?

.....

3) What is deflation

.....
.....
.....

4) Give a reason why Phillips curve might not be valid.

.....
.....
.....

19.12 LET US SUM UP

In this unit we learnt that price is the rate at which goods and services are exchanged for money. The 'Price level' is an aggregate concept. Increase in the price level denotes less of the goods and services for one unit of money. Since the price level is concerned with many differently priced goods and services, use of index numbers required to measure changes in the price level. An index number is a device for comparing the general level of the magnitude of a group of distinct, but related, variables in two or more time periods. There are different types of measures for price index.

We also learnt that inflation is a sustained rise, or a tendency towards it in the general level of prices. Inflation affects the fixed income earners and the poor most adversely. It also slows down the growth rate of an economy. The types of inflation that a country may face range from moderate to hyperinflation depending on the rate of inflation.

Inflation can arise from either the demand side or the supply side. The former would include factors like increase in government expenditure, lowering of tax rates and increase in supply of money. The latter would include factors like increase in the prices of basic inputs or mass consumption goods, or increases in wage rate. We also read that these causes of inflation in many cases do not explain experience of the less developed countries. Structural inflation tries to do that by taking into account structural peculiarities typical to these countries.

For applying anti-inflationary policies it is necessary to know the source of inflation, i.e., demand-side or supply-side, for getting the best results.

We have learnt that deflation is a situation where prices are continuously falling or have a tendency to fall. Stagflation, on the other hand is a situation where inflation is coupled with a stagnating real output and a high rate of unemployment

Finally, we have seen that the Phillips curve tries to trace out a relation between unemployment and inflation. But other than some decades over which the Phillips curve relationship applies, it is more or less redundant. In the developing countries unemployment has come about historically with little to do with inflation.

19.13 KEY WORDS

Deflation : is a situation where prices fall continuously or have a tendency to fall. This generally happens when the

aggregate demand falls short of the *aggregate supply* in the economy.

- Gestation Period** : The period between the time when investment in a project is made and when production starts.
- Hyperinflation** : It is characterized by an astronomical increase in the annual rate of inflation. This generally happens when people lose faith in money as a medium of exchange.
- Inflation** : It is defined as a persistent rise or a tendency towards persistent rise in the general level of prices. It is the rise in prices of all the commodities, which are part of the price index and should not be confused with a rise in the price of a commodity or a group of commodities such as food products.
- OPEC** : refers to the Organization of the Petroleum Exporting Countries. These include Indonesia, Kuwait, United Arab Emirates, Qatar, Iran, Iraq, Tanzania, Venezuela, Algeria, Libya, Nigeria, and Saudi Arabia.
- Piece-rate System** : A fixed amount of money is paid on the basis of the number of units of a good produced/stitched/collected etc.
- Price level** : is an aggregate concept and it relates to the price of a basket of goods and services.
- Stagflation** : It is a situation when the rising inflation is accompanied by a falling or stagnating output. This generally happens in the conditions of some *structural rigidities* (like shortage of infrastructural facilities like transportation, power, etc.) in an economy.
- Suppressed inflation** : Inflationary situations, which do not get reflected in the quoted prices. This could be done by subsidizing the commodities under question. Governments do this many times to protect the weaker sections of the population to protect them from a fast rise in prices.

19.14 SOME USEFUL BOOKS

Bhaduri, A., *Macroeconomics: The Dynamics of Commodity Production*, Macmillan 1986, Chapter 3.

Gupta, S. B., *Monetary Economics: Institutions, Theory and Policy*, S. Chand and Co. 1989, Chapter 14.

Gupta, S. B., *Monetary Planning for India*, 1979, Oxford University Press, Chapter 3 and Appendices.

Shapiro Edward, 1984, *Macro Economic Analysis* (5th Edition); Galgotia Publications: New Delhi

19.15 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Price is defined as the rate at which goods and services are exchanged for money. It is the amount of money received for selling or paid for buying one unit of a commodity or service in an exchange economy. The term price level is an aggregate concept as it relates to the price of a basket of goods and services. It does not refer to the price of a single commodity but to a group of goods and services taken as a whole. Therefore, when one talks of a change in the price level it is always in reference to a group of commodities.
- 2) An index number is a device for comparing the general level of the magnitude of a group of distinct, but related, variables in two or more time periods. A price index is used for comparing the changes in the general level of prices of a group of commodities. Generally the index number refers to the changes in the prices obtained over time, and it is expressed by putting a particular period (called the base) equal to 100 and expressing the other periods relatively to 100.

Check Your Progress 2

- 1) Inflation affects various sections of a society in different ways. The organized working class, such as government employees, etc. have fixed income but they manage to keep pace with inflation to a large extent. The businessmen and entrepreneurs, who can raise the prices of their goods and services may sometimes, gain from inflationary situations marked by scarcity of essential services. The poor and the fixed income earners, with low bargaining power vis-à-vis their employers and little savings to fall back upon, are the ones who lose maximum during inflation.
- 2) On the basis of the severity or the rate of acceleration of prices we can divide inflation into three different types, namely, moderate, galloping and hyperinflation. When the general price level rises slowly but steadily, it is known as *moderate inflation*. Moderate inflation remains within a single digit and usually the annual inflation rates stays below 9 per cent. Steady and fairly high rate of increases in the general price level is known as *galloping inflation*. The rate of inflation runs into two digits (20 per cent, 40 per cent, etc.) and sometimes even as high three digits (e.g., 200 per cent). *Hyperinflation* is characterized by an astronomical increase in the annual rate of inflation.
- 3) See Section 19.3.

Check Your Progress 3

- 1) The causes of inflation can be divided into two main categories, namely, supply-side factors and demand-side factors. Increase in government expenditure, increase in money supply, etc., are some of the causes in the demand-side factors. Crop failures, sudden increase in prices of basic goods etc., are some of the causes falling under supply-side factors. For details look into the section on the causes of inflation.
- 2) Till the late sixties it was believed that inflation almost always is accompanied by an increase in employment and output. But the experiences of some countries of a rising inflation rate accompanied by a rising unemployment rate, in the early seventies, came as a blow to this belief. Situations like this where a rising inflation is accompanied by a falling or stagnating output are known as *stagflation*

- 3) **Deflation** is a situation where prices fall continuously or have a tendency to fall. This can arise when the aggregate demand is lower than the aggregate supply and as a consequence the price level tends to fall. Deflation is characterized by a fall in output, increase in unemployment and general slowing down of economic activities.

- 4) The Phillips curve shows a trade-off between inflation and unemployment. It says that an economy can achieve a lower rate of inflation only at the cost of a higher rate of unemployment and vice-versa. But the validity of this trade-off has been questioned with the experiences of stagflation. The validity of a trade-off between the two is because the Phillips curve ignores the role of capital in sparking off inflation and unemployment. Under capitalism, the capitalists' aim to maximize profits leads them to adopt new technologies, which are more often than not more capital-intensive in nature. This tends to lower the need for labour and hence increase the rate of unemployment. At the same time these capitalists follow an aggressive mark-up pricing policy with a view to increase their profit margins. This leads to an inflationary spiral.

