



## **MASTER OF ARTS IN ECONOMICS**

### **SEMESTER-I**

#### **ECO-1.3: MACROECONOMIC THEORY**

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**ଦୂର ଓ ଅନ୍ଲାଇନ ଶିକ୍ଷା କେନ୍ଦ୍ର, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ**  
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## PAPER-ECO.1.4: MACRO ECONOMIC THEORY

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		4	Cyclical and Secular Consumption function.
2	Multiplier Theory & Theories of investment	5	The static multiplier, the dynamics multiplier, the super multiplier, the employment multiplier.
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# 1.1

Unit

## CLASSICISTS VS. KEYNES

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### Objectives

After completing this chapter, you will be able to:

- Understand the Supply-oriented Classical Theory of Employment
- Know the various assumption of Full Employment
- Understand Say's Law of Markets
- Understand Interest Rate Flexibility and Classical Model of Employment
- Know the Keynes's Criticisms against Classical Theory
- Understand Fundamental Psychological Law of Consumption
- Know the Consumption Function and Saving Function
- Understand the technical attributes of Consumption Function

### Structure:

- 1.1.1 Introduction
- 1.1.2 Supply-oriented Classical Theory of Employment
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**1.1.1 INTRODUCTION**

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National income, employment and prices and the forces determining them have been control to economic analysis the questions that dominate the discussion are: what are, the factors that determine the level of GNP (or GNI) of a country in any given year? Why does GNP tend to change from time to time? Our queries will be satisfied by the theory of income determination, which seeks to explain how much the economy actually does produce out of its given resources and why its actual and potential output and income are not the same always.

The modern theory of income determination dates back to the publication of J.M. Keynes's General Theory of Employment, Interest and Money, in 1936. For brevity, this celebrated book of Keynes in economic literature, is usually referred to as the General Theory. In fact, Keynes's General Theory created the greatest stir in economic thinking of the present century. Today's modern economists, though they prefer to call themselves "post-Keynesians", in essence, are "pro-Keynesians" in the use of the tools of economic analysis. In this chapter, we shall, therefore, make a brief study of Keynes's analysis of income, determination, together with modern economists' refinements of the theory.

Keynesian economics is the outcome of Keynes's disagreement with the classical economists who avowed a strong belief in the operation of market forces resulting in automatic adjustment at full employment level. To quote Keynes, "I shall argue that the postulates of the classical theory are applicable to a special case only and not to the general case.... Moreover, the characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply to the facts of experience."

In this chapter, we shall discuss the main strands of the Classical Theory of Employment and Keynes's criticism of the same.

### 1.1.2 SUPPLY-ORIENTED CLASSICAL THEORY OF EMPLOYMENT

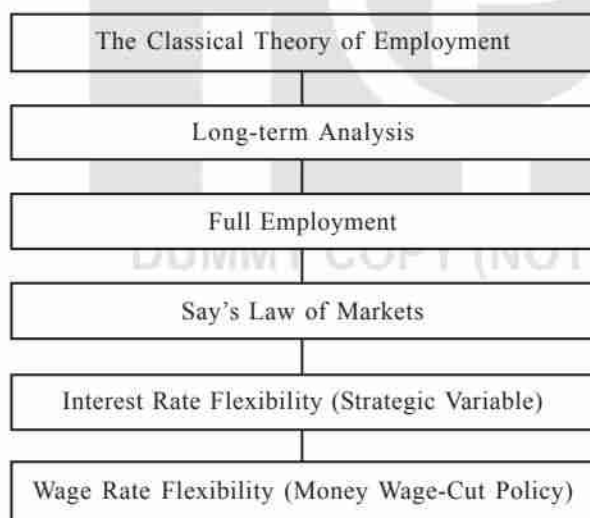
Apparently, the classical theory of employment refers to the theory and ideas about determinants of employment propounded by the classical writers like Adam Smith, Ricardo, Mill and others including Pigou, who is a noted classical thinker of the modern era. To Keynes, however, all his predecessors are classicists.

The classical theory of employment is essentially a supply-oriented theory. The economists were basically concerned with the long-run problem of growth of the economy's productive capacity and the efficient allocation of the given resources at full employment. The classical economics has, therefore, focused its attention more on the supply side with a little emphasis on the demand side of the growth process.

To repeat, the mainstream of the long-run classical analysis was fundamentally supply-oriented. Adam Smith, Ricardo, Say, Mill and all other followers of the classical school of thought, except Malthus, had an avowed belief that there is no problem on demand side as the aggregate demand would always take care of itself. Hence, the main problem is of supply rather than demand.

Chart 1.1.1 gives an outline of the major postulates of the classical theory of employment.

**Chart 1.1.1**



We shall discuss below the main strands of the Classical Theory of Employment and Keynes' criticisms of the same.

### 1.1.3 ASSUMPTION OF FULL EMPLOYMENT

The entire economic premise of the classical economists was based on the assumption of full employment of labour and other economic resources. They believed in the prevalence of a stable equilibrium at full employment as the normal

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characteristic in the long-run. Any deviation, therefrom, was regarded by them as abnormal. They, therefore, concluded that under perfect competition in a free capitalist economy, forces operate in the economic system which tend to maintain full employment (without inflation). Consequently, the level of output is always at full employment with the optimum use of the resources in the long-run.

The concept of full employment does not rule out the possibility of frictional unemployment of a temporary nature. There must be temporary unemployment of some workers due to ignorance about the availability of job opportunities, machinery breakdown, etc. Similarly, somebody may not have a desire to work though the job is available. This is called voluntary unemployment. But, all such phenomena are conducive to full employment condition. Full employment condition implies the absence of any involuntary unemployment. A worker is said to be involuntarily unemployed when he cannot get a job inspite of his willingness to work at the prevailing wage rate. According to the classical economists, unusual disturbances in the economic system may create involuntary unemployment. However, natural economic forces tend to eliminate this involuntary unemployment to restore full employment again.

Hence, when the classical economists took full employment for granted, they never paid due attention to present a systematic theory of employment. Their major concern was, thus, to examine the forces which determined:

- The different types of goods and services that would be produced in the economy;
- The allocation of productive resources among the competing firms and industries. Basically, the classical theory studied the alternative uses of a given quantity of employed resources. The classicists tried to find out the conditions leading to the most efficient use and optimum allocation of the given resources;
- The relative price structure of different goods and factors; and
- The distribution of real income among the productive factors.

The classical belief in full employment as a normal economic condition was essentially based on the following assumptions:

- As supply creates its own demand (Say's Law), there can never be any deficiency in demand; and
- Any unemployment that might result in the process of a competitive system is automatically eliminated by the mechanism of the free market-price system.

### 1.1.4 SAY'S LAW OF MARKETS

Say's Law of markets was rooted in the mainstream of supply-oriented classical economics.



**J.B. Say**

J.B. Say, a French economist of the 19th Century, asserted that: "supply creates its own demand." This appears to be a simple proposition, but has had many different meanings, and many sets of reasoning underlying each meaning — not all of these by J.B. Say.

Basically, Say's Law contends that the production of output in itself generates purchasing power, equal to the value of that output: supply creates its own demand. It is argued that, "Production increases not only the supply of goods but, by virtue of the requisite cost payments to the factors of production, also creates the demand to purchase these goods."

The core of Say's Law of markets is that the supply of a product through the process of production generates the necessary income (earned by the factors of production in the form of wages, interest, rent and profits) to demand the goods produced. By this method an equivalent demand is created in accordance with supply. According to Say, the main source of demand is the flow of factor incomes generated from the process of production itself. Any productive process has generally two effects: (1) Due to the employment of factors of production in the process, an income stream is generated in the economy on account of the payment of remuneration to the factors of production; and (2) a certain output results which is supplied to the market.

Thus, according to Say's Law, additional output creates additional incomes, which create an equal amount of extra expenditure. Therefore, every product produced generates an equivalent amount of purchasing power (income) in the economy which ultimately leads to its sale. In short, a new production process, by paying out income to its employed factors, generates demand at the same time as it adds to supply. Thus, every increase in production soon justifies itself by a matching increase in demand. Then, by doubling production, the producer would invariably double sales too.

#### **Two Main Propositions of Say's Law**

*1. Production is the Sole Cause of Demand:* Supply creates its own demand, because production has a dual effect on economy: (a) it creates supply, and (b) it

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generates factor incomes. Income generated in the production process enables the people to demand the goods so created. Their demand is expressed through their consumption outlay. In this way, 'consumption is co-extensive with production,' says J.S. Mill.

In his *Principles of Political Economy*, J. S. Mill provides his version of Say's Law as follows:

"What constitutes the means of payment for commodities is simply commodities. Each person's means of paying for the production of other people consists of those which he himself possesses. Should we suddenly double the productive powers of the country, we should double the supply of commodities in every market; but we should, by the same stroke, double the purchasing power. Everybody would bring a double demand as well as supply; everybody would be able to buy twice as much, because everyone would have twice as much to offer in exchange."

2. *There can be no Overproduction of Goods any Time:* According to Say's Law; as every additional supply creates an additional demand, there can be no general overproduction. It stresses that aggregate supply always equals aggregate demand. In other words, while individual goods can be overproduced, the supply need not equal demand in a single market. But it will be absorbed by the economy as a whole. At the same time, while general overproduction was considered impossible according to Say's Law, it also denied the possibility of a deficiency in aggregate demand. Similarly, it also denied the possibility of general unemployment. For, if resources are less than fully employed, there are incentives to expand production as entrepreneurs always strive for maximisation of profits.

To express this phenomenon differently, any expansion in the output would create an equivalent expansion in income and in spending. In symbolic terms:

$$\Delta O = \Delta Y = \Delta E$$

where,  $\Delta O$  = increase in output,

$\Delta Y$  = increase in income, and

$\Delta E$  = increase in intended expenditure.

Apparently, the additional income gives rise to an equal additional amount of intended expenditure. Hence, the circular flow of income expenditure is steadily maintained in the economy.

### ***Assumptions Underlying Say's Law***

As a matter of fact, Say's dictum that supply creates its own demand is based on the following assumptions:

1. *Optimum Allocation of Resources:* There is optimum allocation of resources as they are allocated to different channels of production in terms of proportionality and equality of marginal products.



2. *Perfect Equilibrium*: Commodity prices and factor prices are determined in perfect equilibrium of their demand and supply.

3. *Perfect Competition*: There is perfect competition prevailing in the commodity market as well as factor market. Thus, commodity prices are equal to average costs and factor prices are equal to marginal productivities.

4. *Market Economy*: There is free enterprise economy.

5. *Laissez-Faire Policy of the Government*: There is no government intervention in the economic field. The government follows a laissez-faire policy to facilitate automatic adjustment and smooth working of the market mechanism in the capitalist economic system.

6. *Elastic Market*: The size of the market has no limits. Thus, there is automatic expansion of the market with an increase in output offered for sale.

7. *Market Automatism*: The free market economy and its working of price mechanism provide due scope to labour supply and the rising population also stimulates capital formation. In an expanding economy, new workers and firms will be automatically absorbed into the productivity channels by their own products in exchange without displacing or supplanting the existing firms and workers.

8. *Circular Flow*: The circular flow of money is regular and continuous without any leakages. This implies that saving is nothing but another form of spending on capital goods. Savings are, thus, automatically invested. There is absence of hoarding. Hence, there is no break in the flow of income and expenditure. Income is automatically spent through consumption expenditure and investment expenditure.

9. *Savings-Investment Equality*: Since all savings are automatically invested, savings always equal investment. Savings-investment equality is the basic condition of equilibrium in the economy. It is maintained by interest flexibility.

10. *Long-term*: The economy's equilibrium process is perceived from the long-term point of view.

### Implications of Say's Law

The Say's Law of Markets implies that:

1. *Automatic Attainment of Full Employment*: In the long-run, free economy automatically attains equilibrium at full employment level. Keynes held that Say's Law is 'equivalent to the proposition that there is no obstacle to full employment.'

2. *Self-adjusting Mechanism*: There is automatic adjustment when supply creates its own demand. Increase in supply will meet its own demand in the process of functioning of a free capitalist economy. Hence, there is no need for the government to intervene. On the contrary, any government interference in the economic field comes in direct conflict with the self-adjusting mechanism of the Say's Law of Markets.

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3. *There can be no Deficiency of Aggregate Demand:* Since supply automatically creates its own demand, there is no possibility of any general overproduction. Thus, Say's Law is a denial of the possibility of deficiency in aggregate demand.

4. *No Problem of General Unemployment:* When there is no general overproduction, then there can be problem of general unemployment in the long-run, and the economy tends to remain at full employment equilibrium level.

5. *Automatic Resource Adjustment and Utilisation in an Expanding Capitalist Economy:* In an expanding free enterprise economy, when new workers and new firms are productively absorbed, they do not supplant the output, income and employment of the existing ones and as they release additional output and income, the community becomes automatically rich with the increasing size of national income. It also means that employment of new or unused resources in productive process tends to pay its own way and confer benefits to the society at large.

6. *Money has only a Passive Role:* Supply creates its own demand in real terms. Thus, money is just a veil. Behind the flow of money, there is real flow of goods and services which is important. Thus, changes in the supply of money have no impact on the real economy's process of equilibrium at full employment level.

7. *Built-in-flexibility and Automatic Optimisation:* A capitalist economy under the laissez-faire policy has built-in flexibility. It functions automatically to optimum adjustments through freely operating market mechanism and the price system.

8. *Rate of Interest is a Strategic Variable — an Equilibrating Force in the Classical Model:* Savings-investments equality is brought about by the flexibility of interest rates. Rate of interest is, thus, a strategic variable in the equilibrium process of the economy.

This point being the major classical postulate of the employment theory has been discussed further in the following section.

In short, Say's Law suggests that when savings would always be offset by an equivalent investment and as hoarding would always be zero, aggregate demand would always meet the aggregate supply, so there would be no general overproduction in the long-run and equilibrium will be maintained automatically at full employment level. By maintaining that, over-saving would be impossible. Say's Law implied denial of the possibility of underemployment equilibrium.

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### 1.1.5 INTEREST RATE FLEXIBILITY

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According to Say's Law, all income is spent by the community, though it admits that there is a "leakage" of saving in the circular flow of income expenditure. Yet it argues that such saving is not a real leakage, but a sort of channelisation in

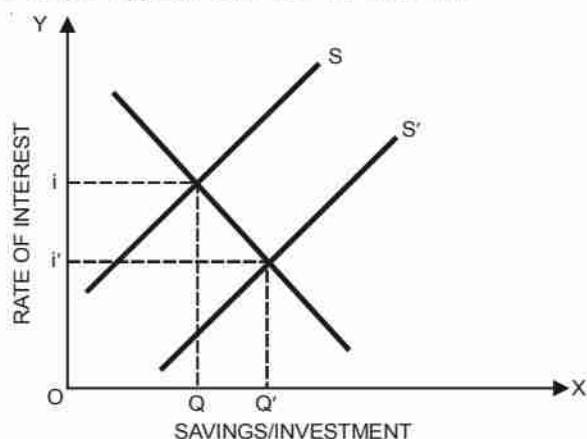
spending. According to the law, saving is another form of spending because, to save means to intend to spend on the producer's good, i.e., investment. In other words, whatever is saved is automatically invested in production activities. In its view, saving and investment are balanced in the community through the flexibility of the rate of interest, for interest is a reward for saving. And if saving exceeds investment, the rate of interest will fall; hence investment will tend to rise and the level of saving will decline till both meet at an equilibrium point.

To illustrate it graphically, the two flows, investment (I) and saving (S), are brought into equilibrium by the rate of interest  $i$ . If the community as a whole decides to increase savings at all levels of the rate of interest, the S curve shifts to  $S'$ . Eventually, the rate of interest falls to  $i'$ . Investment being the inverse function of the rate of interest, it expands to  $OQ'$ , hence, once again saving equals investment (see Fig. 1.1.1).

In essence, in the classical theory of employment, the rate of interest is regarded as a strategic variable which brings about equality between savings and investment. According to the classical economists, thus, the function of the rate of interest is to maintain savings and investment equilibrium. The flexibility of the rate of interest as such helps in maintaining the circular flow of income expenditure.

However, classical economists viewed that an increase in saving represented a decrease in the demand for consumption goods, which caused the prices to fall. Falling prices means falling profits, which cause resources to shift from consumer goods industries to investment goods industries where the demand has increased. Here the classicists presume that a decision to consume less today is linked directly with a decision to consume more in the future; therefore, the demand for investment goods increases. Thus, they do not agree that a fall in consumption instead of leading to an increase in investment may lead to a fall in aggregate demand, thereby to unemployment.

Thus, the classicists hold that the economy can always function at full employment level, in the long-run, irrespective of any level of saving and its increase because they assume that a fall in the rate of interest in a free capitalist economy provides ample opportunities for investment.



**Fig. 1.1.1 Rate of Interest: The Strategic Variable**

### 1.1.6 CLASSICAL MODEL OF EMPLOYMENT

According to classical theory, in real terms, the aggregate production function and the demand and supply function of labour basically determine the equilibrium level of total output and employment at full employment level in the economy.

The classical aggregate production may be stated as under:

$$Q = f(N, C, T)$$

where,

$Q$  = level of output,

$f$  = functional relationship,

$N$  = level of employment,

$C$  = fixed stock of capital,

$T$  = given stage of technology.

The above stated relation implies that under the given condition of technological and fixed stock of capital in the short-run, there exists a positive functional relationship between the level of output and employment. As the level of employment ( $N$ ) increases, the level of output ( $Q$ ) also increases and vice versa. Here, the proportionate relationship between the output and level of employment depends on the marginal productivity of labour. The marginal physical product of labour refers to the addition made to total product by the employing an additional worker, other things being equal.

The above-stated points can be clarified with an illustration as in Table 1.1.1.

**TABLE 1.1.1**  
**The Level of Output, Employment and the Marginal Physical Product of Labour**  
**(Imaginary Data)**

<i>Output (Q)</i>	<i>Employment (N)</i>	<i>Marginal Physical Product of Labour (MPP<sub>L</sub>)</i>
500	100	—
1,200	200	8
1,800	300	7
2,200	400	6
2,500	500	5
2,700	600	4
2,800	700	3

It can be seen that with an increase in employment, total output increases, while marginal physical product of labour (MPP<sub>L</sub>) diminishes.

The marginal physical product of labour curve reflects demand for labour. An entrepreneur employs labour, given a wage rate, till the wage rate is equal to the marginal physical product of labour, because this is his profit maximising condition.

In symbolic terms:

$$\frac{W}{P} = MPP_L$$

where,

$$\frac{W}{P} = \text{real wage } (W = \text{wage rate; } P = \text{price level}).$$

Again, by manipulation:  $W = MPP_L \times P$ , which means that money wage rate is equal to the marginal productivity of labour, i.e., the value of marginal physical product of labour, in the aggregate sense.

Since  $MPP_L = \frac{dQ}{dN}$  (that is, ratio of small change in output to a small unit change in employment.)

$$\therefore \frac{W}{P} = \frac{dQ}{dN} \text{ at equilibrium point.}$$

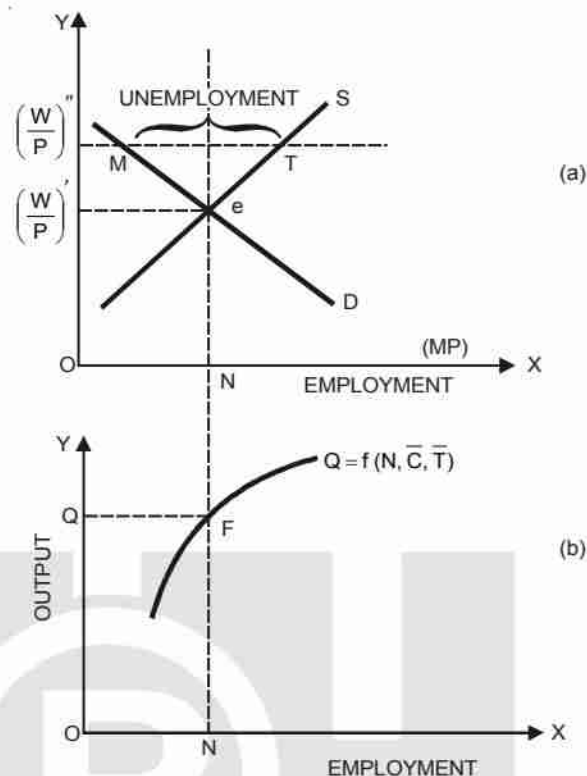
Further,  $DL = f\left(\frac{W}{P}\right)$  which suggests that the demand for labour is the inverse function of the real wage rate.

Similarly, the supply function of labour may be stated as:  $SL = f\left(\frac{W}{P}\right)$  which implies that the supply of labour varies directly with the real wage rates. The classical economists stated supply function of labour with a positive slope on the assumption that the marginal utility of work increases as the number of man-hour worked per unit of time increases.

Given the demand and supply functions of labour, an equilibrium real wage rate is determined at the intersection point of the two functions (curves). In Fig. 1.1.2 (a) the equilibrium real wage is shown as  $(W/P)'$ . The corresponding level of employment is  $ON''$ . If wage is  $(W/P)'$  which is a high rate, the supply of labour will exceed its demand. There will be thus, unemployment to the tune of  $MT$ . Labour market being competitive, the surplus of unemployment labour will cause the wage rate to fall. When it falls to  $(W/P)'$   $ON'$  will be the supply as well as demand for labour. When the equilibrium wage rate is set in the economy, the labour market will reach a full employment situation. At the given full employment level, the total output in the economy depends on the aggregate production function. In Fig. 1.1.2 (b), the curve  $Q$  represents the aggregate production function  $Q = f(N, C, T)$ . With

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regard to the employment level  $ON'$ , the corresponding level of output in the economy is, thus, measured as  $OQ'$ , which is the full employment output.



**Fig. 1.1.2 The Classical Theory of Employment**

It was the belief of the classical economists that there could be no involuntary unemployment in a labour market characterised by free and unhindered competition. They, in fact, could not believe that work is not available to the workers if they are willing to work at the prevailing wage rates.

### 1.1.7 WAGE RATE FLEXIBILITY AND EMPLOYMENT

The classicists have advocated “the money wage cut policy” to solve the problem of unemployment. The classical economists believed that involuntary unemployment, if it existed in an economy, was a consequence of the rigid wage structure. If wages are lowered sufficiently, all involuntary unemployment would disappear. They, thus, assumed that a self-adjusting system of wage rates would push the economy towards full employment stage.

They argued that involuntary unemployment comes into existence due to the interference of the free play of market mechanism in a capitalist economy. Such interference is the result of collective bargaining of trade unions to push up wages or governmental intervention through the passing of law of minimum wages. Such interferences disturb the smooth functioning of the market mechanism in determining the equilibrium wage rates which clears off the labour market. In this



context, Dillard remarks: "Monopolistic behaviour on the part of labour and labour's friend is responsible for unemployment." If the economic system is allowed to function unhindered without such "interference" and the wages are allowed to find their own level in perfectly free competition, involuntary unemployment will cease to exist.

Thus, wage rates fall under the pressure of unemployment until all potential workers are employed. Pigou contends that the removal of "interference" and the existence of free competition would force wages down until it is profitable for the entrepreneur to employ everyone who wants to work. Thus, classical economists believed that involuntary unemployment is due to the rigidity of the wage structure. They, therefore advocated a wage cut policy for increasing employment. Since, involuntary unemployment is caused by high wages, the cure is low wages. Prof. Pigou particularly held the view that unemployment would disappear from society by the device of money wage cuts during a depression.

Finally, the whole structure of the classical theory is based on the policy of *laissez faire*, i.e., government non-intervention in economic affairs. The classicists believed in governmental non-interference and a free economic system under perfect competition. They maintained that the government should not interfere with the economic forces but leave them free and unrestricted to attain equilibrium.

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### 1.1.8 KEYNES'S CRITICISMS AGAINST CLASSICAL THEORY

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Though logically the classical theory is sound and well-knit on the basis of its axioms, Keynes vehemently criticised and completely discarded it on the ground of false premises.

The following are the main points of Keynes' criticisms against the classical theory:

*1. Unrealistic Assumption of Full Employment Condition:* Keynes considered the fundamental classical assumption of full employment equilibrium condition as unrealistic. To him, there is the possibility of equilibrium condition of underemployment as a normal phenomenon. Keynes regarded it as a rare phenomenon. Keynes in fact considered the underemployment condition of equilibrium to be more realistic.

*2. Undue Importance to the Long Period:* Keynes opposed the classical insistence on long-term equilibrium; instead, he attached greater importance to short-term equilibrium. To him, "in the long-run, we are all dead." So, it is no use to say that in the long-run everything will be all right.

*3. Keynes's Denial of Say's Law of Markets:* Classical economists rest on Say's Law which blindly assumed that supply always creates its own demand and affirmed the impossibility of general overproduction and disequilibrium in the

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economy. Keynes totally disagreed with this view and stressed the possibility of supply exceeding demand, causing disequilibrium in the economy and pointed out that there is no automatic self-adjustment in the economy.

He further pointed out the weakness of Say's Law maintaining that all the income earned by the agents of production during the process of production would not necessarily be used to purchase the goods produced; hence there can be a deficiency of aggregate demand. Unemployment, according to him, is the result of deficiency of aggregate demand. He conceived that the entire part of money income which is not spent on consumption goods by individuals, need not necessarily be spent on the purchase of producers' goods or investment goods; money saved is often hoarded by individuals to increase their cash balances. Therefore, there can be shortage of aggregate demand. Evidently, additional supply does not necessarily mean additional demand.

Further, Say's Law laid down that supply and demand would always be in equilibrium and the process of equilibrium was automatic and self-balancing. Keynes refuted this too. He pointed out that the structure of modern society rests on two principal classes — the rich and the poor — and there is unequal distribution of wealth between them. The haves have too much of wealth all of which cannot be consumed by them and the have-nots too little even to meet their minimum consumption, which means a deficiency in aggregate demand in relation to additional supply, and this results in general overproduction and unemployment. Thus, Keynes pointed out the error of the classicists in denying general overproduction and unemployment. He also pointed out that the economic system in reality is never self-balancing in character. He, therefore, maintained that State intervention is necessary for adjustment between supply and demand in the economy.

*4. Attack on Money Wage Cut Policy:* Keynes objected to the classical formulation of employment theory, particularly, Pigou's notion that unemployment will disappear if the workers will just accept sufficiently low wage rates (*i.e.*, a voluntary cut in money wage). He rejected Pigou's plea for wage flexibility as a means of promoting employment at a time of depression. According to Pigou, employment in the society can be increased by a device of money wage cuts and noted that by following a policy of wage-cuts, costs would fall, resulting in the expansion of demand, greater production, and therefore, greater investments and employment. Keynes refuted Pigou's view that flexible wage rates will cure unemployment on two counts, practical and theoretical.

On the practical side, Keynes pointed out that trade unions are an integral part of the modern industrial system and they could certainly resist a wage-cut policy. Strikes and labour unrest are the bad consequences of such a policy. Similarly, there is welfare legislation regarding minimum wage and unemployment insurance in a Welfare State. Dillard remarks: "Therefore, it is bad politics even if it should be considered good economics to object to labour unions and to liberal



labour legislation.” Thus, in modern times, money wage cut is not a practical proposition.

On the theoretical ground, Keynes observed that a general wage cut would reduce the purchasing power in the hands of the workers which means a cut in their consumption, *i.e.*, effective demand for the products of industry. A decline in aggregate effective demand will obviously lead to a decrease in the level of employment. According to Keynes, thus, a general wage cut would reduce the volume of employment.

Keynes, thus, maintained that the volume of employment is determined by the effective aggregate demand and not by the wage bargain between workers and employers as the classicists had explained. The wage cut policy of the classicists appeared both immoral and unsound.

5. *Keynes's Attack on Interest Rate to be Strategic Variable*: Keynes also attacked the classical theory in regard to saving and investment. He objected to the classical idea of saving and investment equilibrium through flexible rates of interest. To him saving and investment equilibrium are obtained through changes in income rather than in the interest rate.

6. *Keynes's Attack on Laissez-faire Policy*: Keynes strongly attacked the classicists for their unrealistic approach to the problems of contemporary capitalist economic system. Pigou's plea for a return to free perfect competition to solve the problem of unemployment seemed 'obsolete' in the changed conditions of the modern world. Pigou grieved at the modern State's intervention with the free working of the economic system because it causes unemployment. He also condemned the activities of the trade unions which prevent the falling of wage level and thereby cause increase in unemployment. Keynes pointed out that the trade unions are an integral part of modern society and they will grow further. Besides, a progressive Welfare State will not refrain from accepting or adopting the principle of fixation of minimum wages. Keynes wanted governmental action to bring about adjustment in the economic system, because the modern economic system is not self-adjusting in character as assumed by the classicists.

In short, classical theory, in Keynes's view, is unrealistic and irrelevant to the present conditions and out of date, and, thus, cannot be a guide to the solution of modern economic problems. Thus, the basic need is for a theory which will diagnose the ills of the modern economic system and furnish a guide for the solution of problems like unemployment, business cycles, inflation and other economic ills.

Consumption expenditure is the major constituent of aggregate demand in an economy. The level of a community's expenditure on consumption is determined by a multitude of factors such as, household income, tastes and preferences, current and expected prices, expected future income, holding of liquid assets, interest rates, debts, real wealth, advertising and sales propaganda, taxation, inflation and the availability of goods. Keynes, however, assumed that in the short-

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run, real consumer spending is primarily determined by current real personal disposable income (that is, gross personal income minus personal tax liabilities). Prof. Hansen remarks that “income is singled out as the main determinant of consumption just as in the case of the familiar demand curve, price is singled out as the primary determinant of the quantity taken.”

In specific terms, Keynes held that current consumption depends upon current disposal income. A rise in income leads to a rise in consumption and vice versa. The empirical consumption income relationship is represented by the *consumption function*.

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### 1.1.9 FUNDAMENTAL PSYCHOLOGICAL LAW OF CONSUMPTION

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The Keynesian concept of consumption function stems from the fundamental psychological law of consumption which states that there is a common tendency for people to spend more on consumption when income increases, but not to the same extent as the rise in income because a part of the income is also saved. The community, as a rule, consumes as well as saves a larger amount with a rise in income.

Thus, Keynes’ psychological law of consumption is based on the following propositions:

- When the total income of a community increases, the consumption expenditure of the community will also increase, but less proportionately.
- It follows from this that an increase in income is always bifurcated into spending and saving.
- An increase in income will, thus, lead to an increase in both consumption and savings. This means that with an increase in income in the community, we cannot normally expect a reduction in total consumption or a reduction in total savings. A rising income will often be accompanied by increased savings, and a falling income by decreased savings. The rate of increase or decrease in savings will be greater in the initial stages of increase or decrease of income than in the later stages.

The gist of Keynes’ law is that consumption mainly depends on income and that income recipients always do not tend to spend all of the increased income on consumption. This is the fundamental maxim upon which Keynes’ concept of consumption function is based.

Keynes’ law is limited by the following assumptions:

1. *Constancy of Psychological and Institutional Factors:* Propensity to consume will remain stable owing to the constancy of the existing psychological and institutional complexities influencing consumption expenditure.

2. *Normal Economic Conditions*: General economic conditions are normal and there are no abnormal and extraordinary circumstances such as war, revolution, inflation, etc.

3. *Laissez-faire Policy*: It is assumed that there exists a free capitalist economy, in which there is no government restriction on consumption when income increases.

### Implications of the Psychological Law of Consumption

A more detailed analysis of Keynes's law shows that it has the following important implications:

1. *Highlighting the Crucial Importance of Investment in an Economy*: A vital point in the law is the tendency of people not to spend on consumption the full amount of an increase in their income. There is thus a "gap" between aggregate income and aggregate consumption. Assuming the consumption function to be stable during a short-run period, the "gap" will widen with an increase in income. This gives rise to the problem of investment. Investment should be increased to fill the gap between income and consumption. Keynes, therefore, stresses that investment is the crucial and initiating determinant of levels of income and employment.

2. *Refuting Say's Law*: It refutes Say's Law of market by indicating the demand deficiency and possibility of over-production.

3. *Explanation to the Business Cycle*: An explanation of the turning points of a business cycle is also provided by this law. The upper turning point from a boom is caused by a collapse of the marginal efficiency of capital owing to the fact that consumption expenditure does not keep pace with increase in income during the prosperity phase. Similarly, the law explains the revival of the marginal efficiency of capital and the turning point of recovery from a depression, on the basis of the fact that when income is reduced consumption expenditure does not decrease in the same proportion.

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#### 1.1.10 THE CONSUMPTION FUNCTION

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The consumption function or the propensity to consume is nothing but an expression of an empirical income-consumption relationship. In technical terms, Keynes postulates that *ceteris paribus* consumption is a function of income.

Algebraically, the relationship between consumption as a dependent variable and total real income as the independent variable is expressed as:

$$C = f(Y) ; f > 0$$

where,  $C$  = real aggregate consumption expenditure,

$Y$  = total real income and

## Notes

$f$  = functional relationship.

$f = > 0$  implies positive or direct relationship.

The propensity to consume or the consumption function shows the relationship between aggregate real consumption and aggregate real income. To put it more simply, the propensity to consume refers to the actual or intended consumption expenditure undertaken out of varying levels of income. Other things being equal, the consumption function shows that changes can be expected in consumption from the given changes in income.

### Schedule of the Propensity to Consume

The propensity to consume does not mean a mere desire to consume, but the actual amount of real consumption that takes place or that is expected to take place at various income levels. In this respect, it is similar to a demand schedule, which refers not to mere desire to buy but an effective desire of demand, backed by an ability and willingness to pay for the goods. Similarly, the propensity to consume also refers to effective consumption and not to a mere desire to consume.

We can tabulate various amounts of consumption expenditure which people are prepared to make at various corresponding levels of income. Such a list is called a schedule of the propensity to consume or is sometimes also referred to as the schedule of intended consumption. A schedule of the propensity to consume is a statement showing the functional relationship between the level of consumption at each level of income. Such a schedule is illustrated in Table 1.1.2.

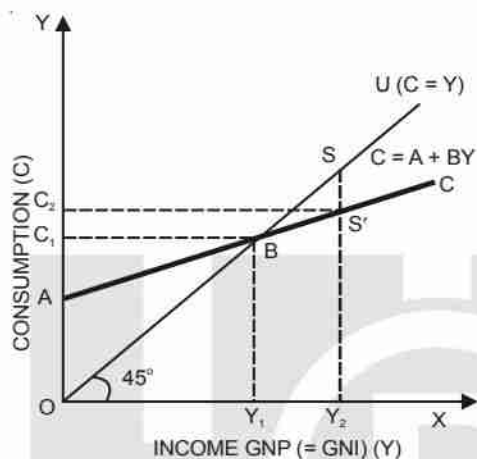
**TABLE 1.1.2**  
**Consumption Function**

<i>Income (Y)</i>	<i>Consumption (C)</i> <i>(In crores of rupees)</i>
200	220
300	300
400	380
500	460
600	540
700	620

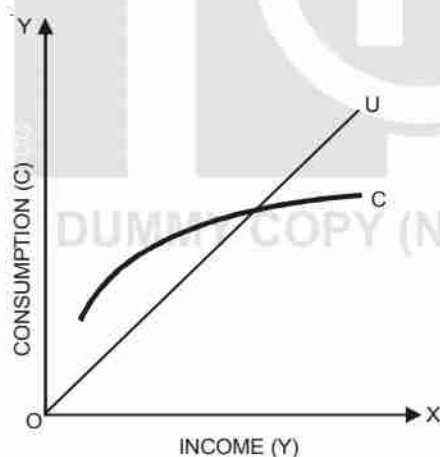
In Table 1.1.2, the first column indicates the various levels of income. The second column shows the amounts of real consumption expenditure at each level of income. It is the whole schedule relating to the various amounts of consumption at various levels of income, and is called “the propensity to consume” or “the consumption function.”

Table 1.1.2 shows that consumption is an increasing function of income as both variables,  $Y$  and  $C$ , move in the same direction. Consumption and income are positively correlated. It may further be noticed that consumption is shown to change by ₹ 80 crores for each ₹ 100 crores change in income. This is on the assumption that in the short-run at any rate, the propensity to consume will remain stable.

We may represent the consumption function diagrammatically as in Fig. 1.1.3. As a matter of fact, the consumption function may be linear as in Fig. 1.1.3 or non-linear as shown in Fig. 1.1.4.



**Fig. 1.1.3 Linear Consumption Function**



**Fig. 1.1.4 Non-Linear Consumption Function**

In both the diagrams, the Y-axis measures consumption and X-axis real income. The  $C$  curve represents the consumption function or the propensity to consume. It moves upward to the right, indicating that consumption increases as income increases. But in Fig. 1.1.3, it should be noticed that the  $C$  curve rises less steeply than the unity line after the intersection, or break-even point  $B$  (the break-even point is the position where consumption is the same as income). This shows that the increase in consumption is smaller than the increase in income. In Fig. 1.1.3, increase in consumption  $C_1C_2$  is less than the increase in income  $Y_1Y_2$ .

**Notes**

Now, since that part of income that is not consumed is saved, diagrammatically  $SS'$  is the saving — the gap between  $OU$ , the unity curve and the  $C$  curve. Thus, the consumption function measures not only the amount spent on consumption but the amount saved. The unity curve ( $45^\circ$  line) may thus be regarded as the zero-saving line, while the shape and position of the  $C$  curve indicate the division of income between consumption and saving.

It is interesting to note that at point  $A$  interception of curve  $C$  at  $Y$ , income is zero, though there is consumption. But this is not an unrealistic phenomenon. Perhaps, this refers to the case of traditional primitive society, where people do not produce any real output but consume fruits, leaves, etc. as available in nature. Further, in a traditional society, people consume more than what they produce. As such, up to  $CB$  on  $C$  curve, we find that consumption exceeds income. In a modern economy, this may be met by dissaving — consuming capital or relying on foreign aid for consumption. Economic development in a real sense (when capital formation emerges from domestic saving which is invested) starts at a point of “break-even.” Break-even point is a theoretical possibility which, however, cannot be proved empirically due to non-homogeneity in macro entities, but its existence cannot be denied.

Usually, as we have seen, the shape of propensity to consume curve, *i.e.*, the  $C$  curve, is such that it moves upward to the right, but less steeply than the unity curve. This normal shape of the consumption function is explained by Keynes in terms of the fundamental psychological law of consumption when he states “that men are disposed as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their incomes.”

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### 1.1.11 SAVING FUNCTION

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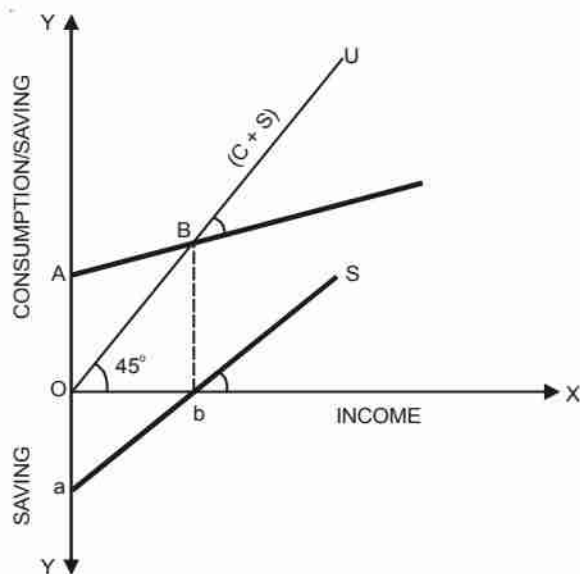
Saving function is the counterpart of the consumption function, because:

$$S = Y - C$$

$$\therefore S = f(Y).$$

A saving function can, thus, graphically be derived from  $C + I$  curve by plotting saving as a function of income; the equilibrium level of income being the one at which saving is equal to the given level of investment.

Thus, from a given consumption curve, saving curve can be derived as in Fig. 1.1.5.



**Fig. 1.1.5 Derivation of Saving Function**

Measure  $OA = Oa$ . At  $B$  point on the  $C$  curve, draw a perpendicular  $Bb$  and along  $ab$  draw  $S$  curve by extending the line.

### 1.1.12 TECHNICAL ATTRIBUTES OF CONSUMPTION FUNCTION

In dealing with the consumption function or the propensity to consume, Keynes considered its two technical attributes: (i) the propensity to consume and (ii) the marginal propensity to consume, both having substantial economic significance.

#### Average Propensity to Consume (APC)

The average propensity to consume (APC) is defined as the ratio of aggregate or total consumption to aggregate income in a given period of time. Thus, the value of average propensity to consume, for any income level, may be found by dividing consumption by income. Symbolically,

$$APC = \frac{C}{Y}$$

where,  $C$  stands for consumption and

$Y$  stands for income.

In Table 1.1.3, the  $APC$  is calculated at various income levels. It is obvious that the proportion of income spent on consumption decreases as income increases. Since the average propensity to consume is 100%, 95%, 92% and 88%. It follows

that the average propensity to save  $\left(\frac{S}{Y}\right)$  is respectively, 0.5%, 8%, 10% and 12%,

$$\therefore APS = \frac{S}{Y} = 1 - \frac{C}{Y}$$



## Notes

Thus, the proportion of income saved increases as income increases.

**TABLE 1.1.3**  
**Schedule of Propensity to Consume**

<i>Income</i>	<i>Consumption</i>	<i>Average Propensity to Consume</i>	<i>Marginal Propensity to Consume</i>
<i>(Y)</i>	<i>(C)</i>	$APC = \frac{C}{Y}$	$MPC = \frac{\Delta C}{\Delta Y}$
300	300	$\frac{300}{300} = 1$ or 100%	
400	380	$\frac{380}{400} = 0.95$ or 95%	$\frac{80}{100} = 0.8$ or 80%
500	460	$\frac{460}{500} = 0.92$ or 92%	$\frac{80}{100} = 0.8$ or 80%
600	540	$\frac{540}{600} = 0.90$ or 90%	$\frac{80}{100} = 0.8$ or 80%
700	620	$\frac{620}{700} = 0.88$ or 88%	$\frac{80}{100} = 0.8$ or 80%

The economic significance of the *APC* is that it tells us what proportion of the total cost of a given output from planned employment may be expected to be recovered by selling consumer goods alone. It tells us what proportion of the total amount of goods and services demanded by the community originates in the demand for consumer goods. The average propensity to save tells what proportion of the total cost of a given output will have to be recovered by the sale of capital goods. Other things remaining equal, the relative development of consumer goods and capital goods industries in an economy depends on the *APC* and the *APS*. This suggests that in highly industrialised economies, the *APC* is persistently low and the *APS* is persistently high.

### Marginal Propensity to Consume

The marginal propensity to consume (*MPC*) is the ratio of the change in the level of aggregate consumption to a change in the level of aggregate income. The *MPC*, thus, refers to the effect of additional income on consumption.

*MPC* can be found by dividing a change (increase or decrease) in consumption by a change (increase or decrease) in income. Symbolically,

$$MPC = \frac{\Delta C}{\Delta Y}$$



where,  $\Delta$  (delta) indicates the change (increase or decrease), and

$C$  denote consumption and

$Y$  denote income.

In Table 1.1.3 above, the  $MPC$  is calculated at various income levels. It is obvious that the  $MPC$  is 0.8 or 80% at all levels. Thus, the  $MPC$  is constant here because the linear consumption function is non-linear,  $MPC$  will not be constant.

Again, the marginal propensity to consume ( $MPC$ ) is always positive but less than one. This behavioural characteristic of the  $MPC$  is attributed by Keynes to the fundamental psychological law of consumption that consumption increases less proportionately than income when income increases.

People's main motivation for not spending the entire increase in income is to save and to create a hedge against special risks and unforeseen contingencies. Thus,  $DC < DY$  always. This means that

$$MPC = \frac{\Delta C}{\Delta Y} < 1.$$

Keynes' hypothesis that the marginal propensity to consume is positive but less than unity  $0 < \frac{\Delta C}{\Delta Y} < 1$  has great analytical and practical significance. It tells us not only that consumption is an increasing function of income but also that it usually increases by less than 100% of any increase in income. K.K. Kurihara observes that this hypothesis will be found helpful in explaining: (1) the theoretical possibility of "underemployment equilibrium", and (2) the relative ability of a highly developed industrial economy. For the hypothesis implies that the gap between income and consumption at all high levels of income is too wide to be easily filled by investment, with a possible consequence that the economy may fluctuate around an unemployment equilibrium.

From the marginal propensity to consume ( $MPC$ ), we can derive the marginal propensity to save ( $MPS$ ) by the following formula:

$$MPS = 1 - MPC \text{ or } 1 = \frac{\Delta C}{\Delta Y}$$

Thus, if the marginal propensity to consume is 0.8, the marginal propensity to save, according to this formula, must be 0.2, as  $MPC + MPS = 1$ . Again, as  $MPC$  is always less than unity,  $MPS$  tends to be always positive.

According to Keynes, the propensity to consume is a fairly stable function of income with the marginal propensity to consume being positive but less than unity. Keynes, however, did not state what would be the exact nature of the  $MPC$  within the limits laid down. The  $MPC$  may rise, fall or remain constant between the limits set. However, Keynes implicitly stated that the  $MPC$  will not be constant when cyclical fluctuations cause change in objectives factors determining the

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propensity to consume. Thus, it may be inferred that during the cyclical upswing, the *MPC* will fall while during the downswing, it will rise. Keynes, however, opines that the long-run *MPC* has tended to decline as nations have become richer.

The economic significance of the concept of marginal propensity to consume (*MPC*) is that it throws light on the possible division of any extra income consumption and investment, thus, facilitating the planning of investment to maintain the desired level of income. It has further significance in the multiplier theory.

It has been observed that the *MPC* is higher in the case of poor than in that of rich people. Therefore, in underdeveloped countries, the *MPC* tends to be high, whereas in advanced countries it tends to be low. Consequently, the *MPC* is high in rich sections and is low in poor sections of the community. The same is true of rich nations and poor nations.

### Graphical Measurement of APC and MPC

Diagrammatically, the average propensity to consume is measured at a single point on the *C* curve. In Fig. 1.1.6, it is determined at Point *A* (where  $\frac{C}{Y}$  gives *APC*).

The marginal propensity to consume, on the other hand, is measured by the slope or gradient of the *C* curve, *i.e.*, the consumption function schedule or curve. To ascertain the slope of the *C* curve, we draw a horizontal line through *A*, the previous consumption income point, and then measure vertically to the tangent *P*, the changed consumption-income point. We shall find that the ratio of the vertical length *PM* to the horizontal length *AM* is 0.8.

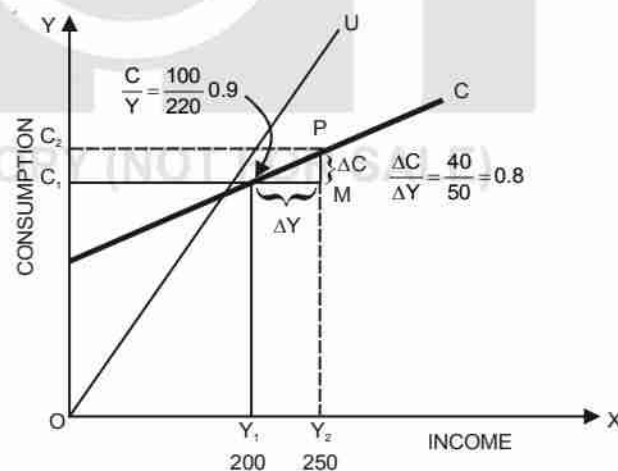


Fig. 1.1.6 Measurement of APC and MPC

## Empirical Relationship between APC and MPC

Notes

The two consumption propensities are closely interrelated.

- When the *MPC* is constant, the consumption function is linear, *i.e.*, a straight line curve. The *APC* will also be constant only if the consumption function passes, through the origin. When it does not pass through the origin, the *APC* will not be constant.
- As income rises, the *MPC* also falls, but it falls to a greater extent than the *APC*.
- As income falls, the *MPC* rises. The *APC* will also rise but at a slower rate.

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### 1.1.13 FACTORS AFFECTING THE CONSUMPTION FUNCTION

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According to Keynes, two types of factors influence the consumption function: subjective and objective. The subjective factors are endogenous or internal to the economic system itself. The subjective factors relate to psychological characteristics of human nature, social structure, social institutions and social practices.

These are likely to remain more or less stable during the short period. Established behaviour pattern undergoes material change only over long periods. These factors fundamentally determine the form of the consumption function (*i.e.*, slope and position of the propensity to consume, the *C* curve).

The objective factors affecting the consumption function are exogenous, or external to the economy itself. These factors may at times undergo rapid changes. Thus, objective factors may cause a shift in the consumption function.

#### Subjective Factors

Subjective factors basically underlie and determine the form of the consumption function (*i.e.*, its slope and position).

The subjective factors concerned are: (1) behaviour patterns fixed by the psychology of human nature, and (2) the institutional arrangements of the modern social order, and social practices relating to the behaviour patterns of business firms with respect to wage and dividend payments and retained earnings, and the institution controlling the distribution of income.

Human behaviour regarding consumption and savings out of increased income depends on psychological motives. First, there are motives which “lead individuals to refrain from spending out of their incomes.” Keynes enlists eight such motives:

1. *The Motive of Precaution:* The desire to build up a reserve against unforeseen contingencies.

2. *The Motive of Foresight:* The desire to provide for anticipated future needs, *e.g.*, in relation to old age, family education, etc.

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3. *The Motive of Calculation:* The desire to enjoy interest and appreciation, because a larger real consumption, at a later date, is preferred to a smaller immediate consumption.

4. *The Motive of Improvement:* The desire to enjoy a gradually increasing expenditure since it gratifies the common instinct to look forward to a gradually improving standard of life rather than otherwise.

5. *The Motive of Independence:* The desire to enjoy a sense of independence and the power to do things.

6. *The Motive of Enterprise:* The desire to secure a mass de manoeuvre to carry on speculation or establish business projects.

7. *The Motive of Pride:* The desire to possess or to bequeath a fortune.

8. *The Motive of Avarice:* The desire to satisfy pure miserliness, *i.e.*, unreasonable, but insistent abstinence from expenditure as such.

To this, Keynes adds a corresponding list of motives on consumption such as enjoyment, short-sightedness, generosity, miscalculation, ostentation and extravagance.

Subjective motivations also apply to the behaviour patterns of business corporations and governmental bodies. In this respect, Keynes listed the following motives for accumulation:

(a) *The Motive of Enterprise:* The desire to do big things, to expand, to secure resources to carry out further capital investment.

(b) *The Motive of Liquidity:* The desire to face emergencies and difficulties successfully.

(c) *The Motive of Improvement:* The desire to secure a rising income and to demonstrate successful management.

(d) *The Motive of Financial Prudence:* The desire to ensure adequate financial provision against depreciation and obsolescence and to discharge debts.

Keynes maintains that the strength of all these motives may vary considerably according to the institution and the organisation of the economic society. Since economic and social institutions and organisations are formed by habits, race, education, morals, present hopes and past experiences, techniques of capital equipment and the prevailing distribution of wealth and established standard of life — all these factors are unlikely to vary in the short run. They, therefore, affect secular progress only very gradually. In other words, these factors, subject to slow change and over a long period, may be considered as given or stable.

## Objective Factors

## Notes

Objective factors, subject to rapid changes and causing violent shifts in the consumption function, are considered below:

1. *Windfall Gains or Losses*: When windfall gains or losses accrue to people their consumption level may change suddenly. For instance, the postwar windfall gains in stock exchanges seem to have raised the consumption spending of rich people in the U.S.A., and to that extent, the consumption function was shifted upward.

2. *Fiscal Policy*: The propensity to consume is also affected by variations in fiscal policy of the government. For instance, imposition of heavy taxes tends to reduce the disposable real income of the community; so its level of consumption may adversely change. Similarly, withdrawal of certain taxes may cause an upward shift of consumption function.

3. *Change in Expectations*: The propensity to consume is also affected by expectations regarding future changes. For instance, an expected war considerably influences consumption by creating fears about future scarcity and rising prices. This leads people to buy more than they immediately need, *i.e.*, to hoard. Thus, the ratio of consumption to current income will rise, which means that the consumption function will be shifted upward.

4. *The Rate of Interest*: In the long-run, substantial changes in the market rate of interest may also influence consumption. A significant rise in the rate of interest may induce people to reduce their consumption at each income level, because people will save more in order to take advantage of the high interest rate. Moreover, if the rate of interest rises, then the lending of the present saving (realised by consuming less) will enable one to obtain an even larger quantity of consumption goods in the future. Keynes, thus, argues that "Over a long period, substantial changes in the rate of interest probably tend to modify social habits considerably."

In addition to these four factors, Keynes also mentioned changes in the wage level, in accounting practices with respect to depreciation (indicating the difference between income and net income), as the objective factors affecting the consumption function.

Keynes' disciples, however, considered his list of objective factors inadequate and have listed others which we consider below:

1. *The Distribution of Income*: With the given level of income, aggregate consumption will vary if income is distributed in different ways among the people. A community with a greatly unequal distribution of income tends to have a low propensity to consume on the whole, while a community with a high degree of equality of income will have a high propensity to consume in general. Thus, redistribution of income through fiscal measures of the State will affect the

## Notes

propensity to consume. Joan Robinson explicitly states that “the most important influence on the demand for consumption goods is the distribution of income.” It may be noted here that Keynes does not specify income distribution as an objective factor but includes it under the common heading of fiscal policy.

2. *Holding of Saving — Liquid Assets:* According to Kurihara another factor affecting the consumption function is the volume of accumulated savings by the people. The larger the amount of such savings (*i.e.*, holding of liquid assets, like cash balances, savings accounts and government bonds), the more likely people will tend to spend out of their current income, because the holding of savings in the form of liquid assets, will give them a greater sense of security. A change in the real value of such assets held by them, owing to general price changes, might also affect the consumption function.

3. *Corporate Financial Policies:* Kurihara observes that business policies of corporations with respect to income retention, dividend payments, and re-investments, produce some effect on the propensity of equity holders to consume. A cautious dividend policy followed by corporations and corporate savings will reduce the consumption function by reducing the residual disposable income of the shareholders (who are consumers, in a way).

All the above-mentioned factors will affect the consumption function in one direction or another. However, all of them are relatively unchanging in the normal short-run and, therefore, cannot explain the changes in total consumption during the short-run period. Income is the only variable which will change considerably in the short-run and affect consumption. Thus, it may be asserted that consumption varies only in the level of income.

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#### 1.1.14 SIGNIFICANCE OF THE CONCEPT OF CONSUMPTION FUNCTION

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It has been widely agreed that the Keynes' concept of consumption function is an outstanding contribution of economic thought. Hansen aptly remarked that “Keynes' analysis of the consumption function is a major landmark in the history of economic doctrines.” In fact, this concept has revolutionised the entire economic thinking in modern times. Briefly, we may mention the points of the significance as under:

1. *Its Stability in the Short-run Stresses the Importance of Investment in the Keynesian Theory of Employment and Income:* From the stability principle of the propensity to consume, Keynes draws the conclusion that “employment can only increase *pari passu* with an increase in investment.” Thus, investment is regarded as a crucial factor determining employment in the short-run. It, then, inevitably follows that in order to increase the level of employment investment should be increased.



2. *It Refutes Say's Law of Markets:* On the basis of the principles of consumption function, Keynes was able to prove the invalidity of Say's Law of Markets, which was a fundamental postulate of the classical theory. By showing that consumption expenditure rises proportionately less than an increase in income, Keynes ruled out the possibility of supply always creating its own demand — the dictum of Say's Law. The nature of the propensity to consume, as described by Keynes, easily proved not only the possibility but also the probability of supply exceeding demand leading to over-production and large-scale unemployment. As a matter of fact, Keynesian hypothesis of the marginal propensity to consume being less than unity, implies that all that is produced (income) is taken off the market (spent) as income increases. In other words, all that is produced is not demanded. Thus, supply exceeds demand which ultimately results in general overproduction and mass unemployment, because the entrepreneurs will fail to get back in sales receipts an amount equal to that which must justify current output. Thus, the refutation of Say's Law implies that the economy is not self-adjusting and that there is a necessity of conscious public control to avert general over-production and unemployment.

3. *It Explains Trade Cycle Phenomenon:* The concept of the consumption function provided, for the first time, a satisfactory explanation of the ups and downs in the trade cycle. According to the Keynesian theory, the upper turning point (or the down-turn from prosperity) is due to the marginal propensity to consume being less than unity. The tendency to save more and more and consume less and less (in terms of percentage) as income increases during a prosperity phase, tends to undermine the strength of a boom, which ultimately gives way to a slump. Thus, Keynes directly explains in terms of a sudden collapse of the marginal efficiency of capital, which is primarily due to a decline in the demand for consumption goods as a result of less and less aggregate consumption expenditures from a rising income. Similarly, Keynes' doctrine of the consumption function indicates that a severe depression is arrested by the fact that consumption does not decrease as rapidly as income decreases. Thus, the concept of consumption function throws a spotlight of the theory of a trade cycle too.

4. *It is Fundamental in the Keynesian Theory of Investment Multiplier:* The concept, especially the term "marginal propensity to consume," is very useful in explaining the multiplier theory and process of income propagation in the Keynesian theory of income and employment. The MPC being less than unity serves as a major leakage from the generation of income stream, through consumption expenditure flow turn by turn — which reduces the magnifying effect of the multiplier to a considerable extent.

We may, thus, conclude that the Keynes' formulation of the consumption function is an epoch-making contribution to the tools of economic analysis.

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### 1.1.15 MEASURES TO INCREASE CONSUMPTION SPENDING

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Keynes rightly pointed out it is difficult to affect people's consumption behaviour in the short period. In the long-run, however, propensity to consume can be raised by certain measures. These are:

1. *Redistribution of Income*: By taxing the rich class progressively, and by providing subsidies to the poor people, an egalitarian redistribution of income is made which can favourably affect the consumption function.

2. *Wage and Income Policy*: A long-run increasing wage rate policy can help in raising the consumption schedule of the wage earners and salaried people.

3. *Social Security*: A well-devised scheme of social security measures, such as old-age pension, unemployment relief, employment insurance, etc. can give security to the working class, which would definitely create a favourable effect in raising their propensity to consume. Economists like Kurihara have recommended an extensive system of social security for achieving a high consumption economy, in order to solve the problem of "paradox of thrift", in wealthy nations.

4. *Consumers' Credit*: Liberal consumption loans and the development of hire-purchase schemes in the sale of durable consumer goods can also stimulate the propensity to consume of average families.

5. *Urbanisation Trend*: With economic progress because of widespread urbanisation in the economy, peoples' habit may change and their propensity to consume improve. The demonstration effect of the urban living in rural areas too help in this matter, to some extent.

6. *Advertisement and Sales Propaganda*: A constant publicity drive through advertisement and sales propaganda influences the psychology of the consumers and they may be induced to spend more.

7. *Tax Reduction*: A reduction in direct taxes would increase a disposable income of the people so that they may become inclined to consume more. Again, a reduction in commodity taxation such as sales tax, excise duties, etc. will also improve the purchasing power of the people while the relative cheapness of the goods will induce them to consume more.

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### 1.1.16 CONSUMPTION THEORIES

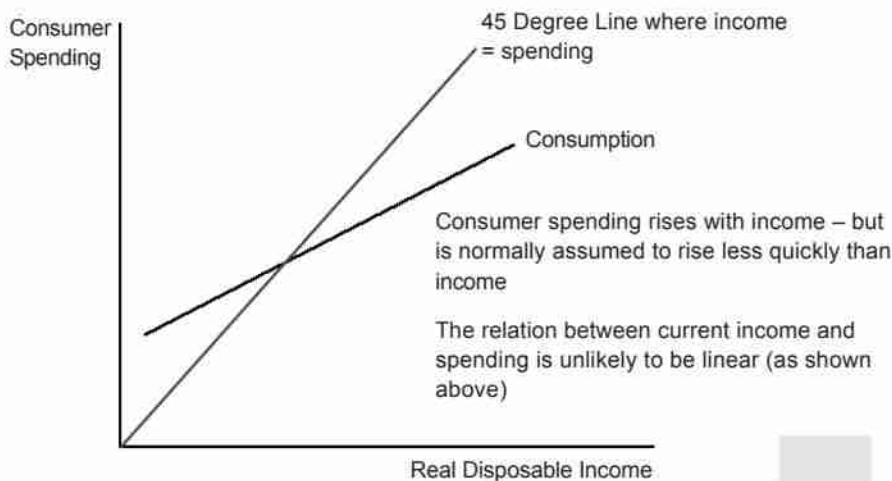
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The Keynesian Theory of consumption is that current real disposable income is the most important determinant of consumption in the short run. Real Income is money income adjusted for inflation. It is a measure of the quantity of goods and services that consumers have buy with their income.



For example, a 10% rise in money income may be matched by a 10% rise in inflation. This means that real income (the quantity or volume of goods and services that can be bought) has remained constant.

### The Keynesian Consumption



Disposable Income ( $Y_d$ ) = Gross Income – (Deductions from Direct Taxation + Benefits)

The standard Keynesian consumption function is as follows:

$C = a + c Y_d$  where,

$C$  = Consumer expenditure

$a$  = autonomous consumption. This is the level of consumption that would take place even if income was zero. If an individual's income fell to zero some of his existing spending could be sustained by using savings. This is known as dis-saving.

$c$  = marginal propensity to consume (mpc). This is the change in consumption divided by the change in income. Simply, it is the percentage of each additional pound earned that will be spent.

There is a positive relationship between disposable income ( $Y_d$ ) and consumer spending ( $C_t$ ). The gradient of the consumption curve gives the marginal propensity to consume. As income rises, so does total consumer demand.

A change in the marginal propensity to consume causes a pivotal change in the consumption function. In this case the marginal propensity to consume has fallen leading to a fall in consumption at each level of income. This is shown below:

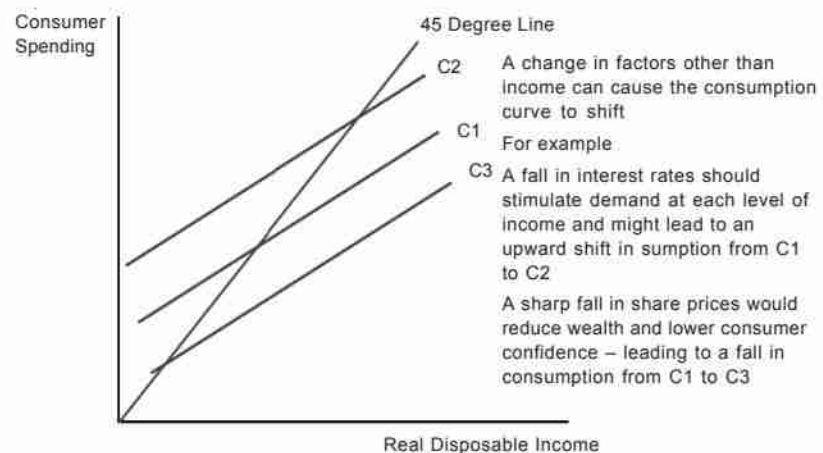
### Key Consumption

Average propensity to consume = Total consumption divided by total income

Average propensity to Save = Total savings divided by total income (also known as the Saving Ratio)

## Notes

## A Shift in the Consumption Function



The consumption - income relationship changes when other factors than income change - for example a rise in interest rates or a fall in consumer confidence might lead to a fall in consumption spending at each level of income.

A rise in household wealth or a rise in consumer's expectations might lead to an increased level of consumer demand at each income level (an upward shift in the consumption curve).

## Life Cycle Hypothesis

The Life Cycle Hypothesis (LCH) is an economic concept analyzing individual consumption patterns. It was developed by the economists Irving Fisher, Roy Harrod, Albert Ando and Franco Modigliani.

Unlike the Keynesian consumption function, which assumes consumption is entirely based on current income, LCH assumes that individuals consume a constant percentage of the present value of their life income. The life-cycle model also predicts that individuals save while they work in order to finance consumption after they retire. If this theory is true, the economy of most industrialized countries should see a large drop in individual saving over the next two decades as a large segment of the population reaches retirement age. Miller, however, carried the stable consumption pattern by observing that people would try to stabilize consumption over their entire lifetime. He stressed that the way consumers save their  $pY$  is based on forward looking expectations. The future provides a rigorous connection between consumption expenditure and the value of assets held by the consumer. Household consumption over their lifetime should equal to Household  $Y +$  Holding of assets that come from sources other than work, e.g. gifts.

The Life Cycle Hypothesis can be explained by the equation

$$C = (W + RY)/T$$

Where  $W$  = Initial endowed wealth,  $R$  = Years until retirement,  $Y$  = Income, and  $T$  = Years of life remaining.

Rewriting the equation or consumption function,

$$C = (1/T)W + (R/T)Y$$

If every individual plans their consumption in such way, the aggregate consumption function of the economy, will take the form

$$C = aW + bY$$

where parameter a is the marginal propensity to consume out of accumulated wealth and b is the marginal propensity to consume out of income.

### Permanent Income Hypothesis

The permanent income hypothesis (PIH) is a theory of consumption that was developed by the American economist Milton Friedman. In its simplest form, the hypothesis states that the choices made by consumers regarding their consumption patterns are determined not by current income but by their longer-term income expectations. The key conclusion of this theory is that transitory, short-term changes in income have little effect on consumer spending behavior.

Measured income and measured consumption contain a permanent (anticipated and planned) element and a transitory (windfall gain/unexpected) element. Friedman concluded that the individual will consume a constant proportion of his/her permanent income; and that low income earners have a higher propensity to consume; and high income earners have a higher transitory element to their income and a lower than average propensity to consume.

In Friedman's permanent income hypothesis model, the key determinant of consumption is an individual's real wealth, not his current real disposable income. Permanent income is determined by a consumer's assets; both physical (shares, bonds, property) and human (education and experience). These influence the consumer's ability to earn income. The consumer can then make an estimation of anticipated lifetime income.

Transitory income is the difference between the measured income and the permanent income. It can be calculated simply by subtracting the measured income and the permanent income.

There is a corollary to the permanent income hypothesis named the permanent production hypothesis. This hypothesis stipulates that the choices made by producers regarding their production patterns are determined not by their present term capital cost but by their longer-term capital cost expectations. The key conclusion of this theory is that transitory, short term changes in capital costs have little effect on production behavior.

### Proof of Permanent Income Hypothesis

Here is the permanent income hypothesis and the permanent production hypothesis in a nutshell. We define variables that will be used in this proof:

## Notes

$M$  = Money Supply (Measured in Dollars)

$V$  = Velocity of Money (Measured in 1/years)

$P$  = Price Level (Measured in ₹/item)

$Q$  = Quantity of Transactions (Measured in items/year)

$S$  = Savings (Measured in Dollars/year)

$I$  = Income (Measured in Dollars/year)

$INT$  = Nominal Annual Interest Rate

$RINT$  = Real Interest Rate

$IRATE$  = Inflation Rate

$GDP$  = Nominal Gross Domestic Product (Measured in dollars/year)

$RGDP$  = Real Gross Domestic Product (Measured in dollars/year)

$D$  = Debt

$NI$  = Noninterest Income (Dollars/year)

$TR$  = Tax Rate

$C$  = Cash

$IL$  = Inverse Leverage Ratio (Total Equities Outstanding/Total Debt Outstanding)

Start with the Fisher equation of exchange:  $M \cdot V = P \cdot Q$

$P \cdot Q$  is normally replaced with nominal GDP. Nominal GDP is simply real GDP multiplied by 1 plus the inflation rate and so,

$$M \cdot V = RGDP \cdot (1 + IRATE)$$

M under Friedman was considered to be money supply. But it doesn't take a genius to figure out that the federal reserve can "print" all the money it likes - if the credit that it extends does not make it into the private sector then you get no GDP. And so let us say that M (money supply) should be replaced with D (debt in dollars).

$$D \cdot V = RGDP \cdot (1 + IRATE)$$

What is  $D \cdot V$ ? At first  $D \cdot V$  glance should be equal to income. You need income to buy the goods represented by GDP. And so:

$$D \cdot V = I$$

But not all income is spent, some is saved and some pays taxes. Likewise not all purchases are made out of current income, some purchases are financed with debt or in the corporate sector equities. Because the units for GDP (likewise for  $M \cdot V$ ) are ₹/year, we look at the change in debt and equities ( $dD/dt$  and  $dEQ/dt$ ) to represent new financing within that year.  $D$  represents all previous debt incurred in previous years and  $EQ$  represents all outstanding equities for reasons that will become apparent.

$$D \cdot V = I \cdot (1 + TR) - S + \frac{dD}{dt} + \frac{dEQ}{dt}$$

Equity ( $EQ$ ) is the total market capitalization of the U. S. market. The total market capitalization is affected by two variables - shares outstanding  $SO$  and price per share  $PS$ .

$$EQ = SO \cdot PS$$

And so:

$$dEQ/dt = PS \cdot dSO/dt + SO \cdot dPS/dt$$

Also  $EQ$  is simply debt times the inverse leverage ratio

$$EQ = D \cdot IL$$

Savings  $S$  represents zero term financial assets or cash  $C$ . Income can be broken into two parts, interest income and non-interest income in this way:

$$I = NI + INT \cdot D$$

Here we will make the assumption that all interest income is taxable.

$$D \cdot V = NI \cdot (1 - TR) + INT \cdot D \cdot (1 - TR) - C + \frac{dD}{dt} + \frac{dEQ}{dt}$$

$$D \cdot V = NI \cdot (1 - TR) + INT \cdot D \cdot (1 - TR) - C + \frac{dD}{dt} + D \cdot \frac{dIL}{dt} + IL \cdot \frac{dD}{dt}$$

In a closed economy (no foreign trade), the after tax non-interest income per year will equal the sum of all zero term financial assets or cash  $C$

$$C = NI \cdot (1 - TR)$$

$$D \cdot V = INT \cdot D \cdot (1 - TR) + \frac{dD}{dt} \cdot (1 + IL) + D \cdot \frac{dIL}{dt}$$

## Notes

Solving the differential equation for D gives:

$$D = e^{f(t)}$$

$$\frac{dD}{dt} = e^{f(t)} * \frac{df}{dt}$$

$$e^{f(t)} \cdot V = INT \cdot e^{f(t)} \cdot (1 - TR) + e^{f(t)} * (1 + IL) * \frac{df}{dt} + e^{f(t)} * \frac{dIL}{dt}$$

$$V = INT \cdot (1 - TR) + \frac{df}{dt} * (1 + IL) + \frac{dIL}{dt}$$

The interest rate has a real and inflation component, and so breaking up the interest rate into its components gives:

$$V = (RINT + IRATE) \cdot (1 - TR) + \frac{df}{dt} * (1 + IL) + \frac{dIL}{dt}$$

Back to the Fisher equation:

$$D \cdot ((RINT + IRATE) \cdot (1 - TR) + \frac{df}{dt} * (1 + IL) + \frac{dIL}{dt}) = RGDP \cdot (1 + IRATE)$$

$$RGDP = D \cdot \left( \frac{((RINT + IRATE) \cdot (1 - TR) + (1 + IL) * \frac{df}{dt} + \frac{dIL}{dt})}{(1 + IRATE)} \right)$$

$$GDP = D \cdot ((RINT + IRATE) \cdot (1 - TR) + (1 + IL) * \frac{df}{dt} + \frac{dIL}{dt})$$

And so the conclusion is simple, if you want to raise real GDP, you raise the real interest rate, you decrease the leverage ratio (sell more equities), you increase population, and you lower the tax rate. This works well enough until you run a huge trade imbalance (like with China) that suppresses real interest rates or if you have a great depression type scenario where the inflation rate is severely negative (massive deflation). In the massive deflation scenario real GDP may show growth while nominal GDP would show contraction. In the huge trade imbalance case real interest rates are suppressed by yield indifferent buyers - aka Mr. Alan Greenspan's bond conundrum and Mr. Ben Bernanke's global savings glut.

The way to get around both scenarios is to sell forward year tax receipts. A forward year tax receipt lowers the after tax cost of credit in the private sector while not depriving the bondholder of income. In a true great depression massive deflation type scenario even tax cuts don't have any traction because if nominal

interest rates are 0, lowering the tax rate would have no effect on either money velocity or GDP.

It is a receipt for taxes paid in advance that are due sometime in the future. Like federal government bonds, FYTR's have a duration and a rate of appreciation. Unlike federal debt, the rate of return is not guaranteed to the owner. The owner of the FYTR must have the tax liability to realize the appreciation.

FO = Outstanding Supply of Forward Year Tax Receipts

FR = Forward Year Tax Receipt Rate of Appreciation

The next thing we express is how the level of debt is related to the level of FYTR's by some constant of multiplication called L

$FO = L \cdot D$  : This constant L is at the discretion of the federal government, how many FYTR's do they want to sell in relation to how much outstanding debt there is. Obviously there are limits to L based upon how much demand there is for them and how they are priced.

And so back to our finance equation:

$$D \cdot V = N \cdot I \cdot (1 - TR) + INT \cdot D \cdot (1 - TR) + FR \cdot L \cdot D - S + \frac{dD}{dt}$$

Note: One thing to be aware of is that the realizable gains from forward year tax receipts can never exceed the total tax receipts in the same year or:

$$FR \cdot L \cdot D < TR \cdot N \cdot I$$

Again, in a closed economy (no foreign trade), the after tax non-interest income per year will equal the savings per year.  $S = NI \cdot (1 - TR)$

$$D \cdot V = INT \cdot D \cdot (1 - TR) + FR \cdot L \cdot D + \frac{dD}{dt}$$

Solving the differential equation for D:

$$D = \exp(t)$$

$$\frac{dD}{dt} = \exp(t)$$

$$\exp(t) \cdot V = INT \cdot \exp(t) \cdot (1 - TR) + \exp(t)$$

$$V + FR \cdot L = INT \cdot (1 - TR) + 1$$

$$V = INT \cdot (1 - TR) + 1 + FR \cdot L$$



## Notes

Again, the interest rate has a real and inflation component, and so breaking up the interest rate into its components gives:

$$V = (RINT + IRATE) \cdot (I - TR) + I + FR \cdot L$$

Back to the Fisher equation:

$$D \cdot ((RINT + IRATE) \cdot (I - TR) + I + FR \cdot L) = RGDP \cdot (1 + IRATE)$$

$$RGDP = [D \cdot ((RINT + IRATE) \cdot (I - TR) + I + FR \cdot FO) / (1 + IRATE)]$$

$$GDP = [D \cdot ((RINT + IRATE) \cdot (I - TR) + I) + FR \cdot FO] / (1 + IRATE)$$

The beauty here is that in a mass deflation scenario both nominal and real gross domestic product hold can be pushed higher by lowering the after tax cost of capital in the private sector. See equations above: even if the inflation rate was say -10%, the FR rate could be set by the federal government to be + 15% -- real GDP growth, nominal GDP growth, presumably rising employment and deflation to boot.

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### 1.1.17 SUMMARY

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The classical theory of employment is essentially a supply-oriented theory. The economists were basically concerned with the long-run problem of growth of the economy's productive capacity and the efficient allocation of the given resources at full employment. The classical economics has, therefore, focused its attention more on the supply side with a little emphasis on the demand side of the growth process.

It gives an outline of the major postulates of the classical theory of employment.

The Classical Theory of Employment, Long-term Analysis, Full Employment, Say's Law of Markets Interest Rate Flexibility, Wage Rate Flexibility .

Their major concern of assumption of full employment was examine the forces which determined: The different types of goods and services that would be produced in the economy; The allocation of productive resources among the competing firms and industries. Basically, the classical theory studied the alternative uses of a given quantity of employed resources. The classicists tried to find out the conditions leading to the most efficient use and optimum allocation of the given resources.

Basically, Say's Law contends that the production of output in itself generates purchasing power, equal to the value of that output: supply creates its own demand. It is argued that, "Production increases not only the supply of goods but, by virtue of the requisite cost payments to the factors of production, also creates the demand to purchase these goods.

Two Main Propositions of Say's Law such as: 1. Production is the Sole Cause of Demand and 2. There can be no Overproduction of Goods any Time.

Keynes' criticisms against the classical theory: 1. Unrealistic Assumption of Full Employment Condition, 2. Undue Importance to the Long Period, 3. Keynes's Denial of Say's Law of Markets, 4. Attack on Money Wage Cut Policy, 5. Keynes's Attack on Interest Rate to be Strategic Variable and 6. Keynes's Attack on Laissez-faire Policy.

Keynes' law is limited by the following assumptions: 1. Constancy of Psychological and Institutional Factors, 2. Normal Economic Conditions and 3. Laissez-faire Policy.

The consumption function or the propensity to consume is nothing but an expression of an empirical income-consumption relationship. In technical terms, Keynes postulates that *ceteris paribus* consumption is a function of income. Algebraically, the relationship between consumption as a dependent variable and

Total real income as the independent variable is expressed as:  $C = f(Y)$ ;  $f > 0$

The average propensity to consume (APC) is defined as the ratio of aggregate or total consumption to aggregate income in a given period of time. Thus, the value of average propensity to consume, for any income level, may be found by dividing consumption by income.

Keynes enlists eight such motives: 1. The Motive of Precaution, 2. The Motive of Foresight, 3. The Motive of Calculation, 4. The Motive of Improvement, 5. The Motive of Independence, 6. The Motive of Enterprise, 7. The Motive of Pride and 8. The Motive of Avarice.

### 1.1.18 SELF ASSESSMENT QUESTIONS

- Q.1. Define the term 'Macro Economics'.
- Q.2. Explain Supply-oriented Classical Theory of Employment.
- Q.3. Discuss the various assumption of Full Employment.
- Q.4. Explain in details Say's Law of Markets.
- Q.5. Write note on: Interest Rate Flexibility.
- Q.6. Discuss Classical Model of Employment.
- Q.7. Explain Wage Rate Flexibility and Employment.
- Q.8. Explain in details Keynes's Criticisms against Classical Theory.
- Q.9. Discuss Fundamental Psychological Law of Consumption.
- Q.10. What is Consumption Function? Discuss in details?

**Notes**

- Q.11. Write note on: Saving Function.
- Q.12. Discuss Technical Attributes of Consumption Function.
- Q.13. Explain various factors affecting the Consumption Function.
- Q.14. Discuss significance of the concept of Consumption Function.
- Q.15. Explain the measures to increase consumption spending.
- Q.16. Discuss in details the Life Cycle Hypothesis.
- Q.17. Explain the Consumption Theory.



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### 1.1.19 **Key Terms**

1. **Laissez-Faire:** A policy approach advocating minimal government intervention in economic affairs, allowing markets to operate freely without interference.
2. **Say's Law:** The proposition that supply creates its own demand. In other words, aggregate production generates an income that creates a demand for goods and services.
3. **Quantity Theory of Money:** The theory that changes in the money supply lead to proportionate changes in the price level. It forms the basis for classical monetary theory.
4. **Ricardian Equivalence:** The idea that individuals are forward-looking and understand the implications of government budget deficits, leading them to adjust their behavior in anticipation of future tax burdens.
5. **Flexible Prices and Wages:** The belief that prices and wages adjust freely to changes in supply and demand, ensuring that markets clear and the economy operates at full employment in the long run.
6. **Real-Balances Effect:** Changes in the purchasing power of money affect consumption and saving decisions, influencing aggregate demand and economic activity.
7. **Classical Aggregate Supply Curve:** The long-run aggregate supply curve is vertical at the full employment level of output, indicating that changes in aggregate demand only affect the price level, not output.

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# 2.1

Unit

## MULTIPLIER THEORY

---

### Objectives

After completing this chapter, you will be able to:

- Understand the static multiplier,
- Know the dynamic multiplier,
- Understand the employment multiplier,
- Understand the foreign trade multiplier,
- Know the balanced budget multiplier,
- Understand the money multiplier,
- Know the Investment- Present value criterion for Investment,
- Understand the accelerator theory and the Profit theory,

### Structure:

- 2.1.1 Introduction
- 2.1.2 The Concept of Multiplier
- 2.1.3 Working of The Multiplier (The Process of Income Propagation)
- 2.1.4 Graphical Representation of the Multiplier Effect
- 2.1.5 Assumptions of the Multiplier Theory
- 2.1.6 Leakages in The Multiplier Process
- 2.1.7 Shortcomings of the Multiplier Theory
- 2.1.8 The Acceleration Principle
- 2.1.9 Summary
- 2.1.10 Self Assessment Questions
- 2.1.11 Key Words & Reference

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### 2.1.1 INTRODUCTION

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The effect of changes in investment upon consumption expenditure and the consequent generation of income in the short-run are examined by Keynes in the theory of multiplier. Keynes rests his analysis of income multiplier (which he named “investment multiplier”) on the behaviour of consumption function, and in particular the coefficient of marginal propensity to consume.

The theory of multiplier is an integral part of General Theory of employment, since it establishes a precise relationship between aggregate employment and income and the rate of investment, given the marginal propensity to consume to consume. It tells us that when there is an increment of aggregate investment, income will increase by an amount which is  $K$  (the investment multiplier) times the increment of investment.

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### 2.1.2 THE CONCEPT OF MULTIPLIER

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Conceptually, the multiplier refers to the effects of changes in investment outlays on aggregate income through induced consumption expenditure. Thus, the multiplier expresses a relationship between an initial increment of investment and the resulting increase in aggregate income. In fact, the multiplier is the name given to the numerical coefficient which indicates the increase in incomes which will result in response to an increase in investment. For instance, if investment increases by one crore of rupees and the aggregate income (or the national income) rises by four crores of rupees, then the multiplier is 4 (increase income of ₹ 4 crores, therefore, increase in investment of ₹ 1 crore = 4). The multiplier may be defined as the ratio of the realised change in aggregate income to the given change in investment.

Symbolically,

$$K = \Delta Y / \Delta I$$

where,  $K$  stands for the investment multiplier,  $\Delta Y$  represents change in income, and  $\Delta I$  refers to a given change in investment.

It follows that, given the multiplier co-efficient  $K$ , we can measure the resulting change in the level of income caused by an intended change in investment:

$$\Delta Y = K \cdot \Delta I$$

Samuelson, therefore, defines the multiplier as “the number by which the change in investment must be multiplied in order to present us with the resulting change in income.”

The propelling force behind the multiplier effect is the consumption function. As a result of an increase in investment outlay, income initially increases in the same magnitude, but as income increases, consumption also increases.



Consumption expenditures, in turn, become additional income to factors of production engaged in the production of consumer's goods. Thus, there is a further increase in income due to induced consumption and so on. This process, however, is not endless as the whole of the increase in income is not consumed. The process continues till the increasing ratio of income to expenditure gradually works itself out, because the marginal propensity to consume is less than unity.

Keynes assumes that when the real income of the community increases or decreases, its consumption will increase or decrease, but not in the same proportion. Hence, the marginal propensity to consume is always less than one. This conception of the marginal propensity to consume is at the heart of the multiplier principle. The value of the multiplier is in fact determined by the marginal propensity to consume. The larger its value, the greater is the value of the multiplier and vice versa. Thus, the investment multiplier is a direct function of the marginal propensity to consume ( $MPC$ ). On the basis, Keynes sets a general formula for the multiplier as follows:

$$K = 1 \text{ or } 1$$

$$1 - (\Delta X/\Delta Y) \text{ or } 1 - MPC$$

where,  $k$  stands for the multiplier coefficient and  $\Delta X/\Delta Y$  refers to the marginal propensity to consume ( $MPC$ ).

Alternatively, since  $1 - MPC = MPS$ , we can also say

$$K = 1/MPS$$

(where  $MPS$  refers to the marginal propensity to save).

This means that the multiplier coefficient is measured as the reciprocal of the marginal propensity to save.

Theoretically, the values of the multiplier have a wide range, from one to infinity; when  $MPC = 0$ ,  $K = 1$ , and when  $MPC = 1$ ,  $K = \infty$ , a result which may prove explosive. But, however, both these cases are a rare phenomenon because, in normal circumstances, the marginal propensity to consume is always less than one and cannot be zero. Keynes estimates the actual value of the multiplier to be about 3, with variations in different phases of the trade cycles.

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### 2.1.3 WORKING OF THE MULTIPLIER (THE PROCESS OF INCOME PROPAGATION)

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The process of the working of the multiplier can be briefly illustrated by a "sequence analysis", which is discussed here.

Suppose, in any given period, investment increases by ₹ 10 crores. It will first increase income by ₹ 10 crores for those engaged in producing investment goods. Assuming the marginal propensity to consume to be 0.5 to 50 per cent in

## Notes

the first round, ₹ 5 crores will be spent on consumption goods by these income recipients. Thus, ₹ 5 crores, in turn, are received as income by those engaged in consumer goods industries. This logic is based on the fundamental proposition that one person's consumption expenditure is another person's income, so that an amount spent on consumption means a further amount of income received within the economy. The recipients of the ₹ 5 crores income will, by hypothesis, in turn, spend 50 per cent of that income on consumption, *i.e.*, ₹ 2.5 crores in the second round. Similarly, ₹ 1.25 crores of income will be generated in the third round, and so on. Economists estimate that each round of expenditure takes about two to three months to materialise. This interval of time between consumption responses is the multiplier period or propagation period. Professor Halm defines the multiplier period as the average period of time taken before money received as income and present on consumption becomes income again. As we move from one multiplier period or round to another, the initial expenditures give rise to a gradually diminishing series of successive additions to income (when  $MPC$  is  $> 0$  but  $< 1$ ). This process will continue till the total increment in income becomes so large that it generates additional saving which is equal to the increase in investment.

Table 2.1.1 shows the process of income propagation in its simplest form.

**TABLE 2.1.1**  
**Process of Income Propagation**  
**( $MPC$ )**

<i>Periodic Rounds of New Consumption</i>	<i>New Income (₹ Crores)</i>	<i>New Savings (₹ Crores)</i>
Initial investment	10.00	Nil
First round of new consumption	5.00	5.00
Second round of new consumption	2.50	2.50
Third round of new consumption	1.25	1.25
Fourth round of new consumption	0.65	0.65
Fifth round of new consumption	0.31	0.31
Remaining rounds of new consumption	0.31	0.31
<b>Total</b>	<b>20.00</b>	<b>10.00</b>

Table 2.1.1 shows that ₹ 10 crores of initial investment generate, over a period of time, an aggregate income of ₹ 20 crores. At this stage, savings (₹ 10 crores) equal investment (₹ 10 crores), and the process of income propagation comes to an end.

Keynes, however, assumes that the multiplier process does not take time to work itself out, so that any increase in investment outlay generates income by the multiple amount immediately. In other words, he ignores time lags by assuming instantaneous adjustments. Modern economists, on the other hand, point out that it takes time for the impact of the initial investment to make itself felt throughout

the entire economy. They recognise the existence of time lags and consider the multiplier effect over time.

In demonstrating the sequence analysis of income propagation, we have, in Table 2.1.1, assumed a single injection of initial investment which is not repeated in subsequent rounds or multiplier periods. Increments in investment have to be repeated at regular time intervals if the aggregate income is to be raised to the multiplier level and kept intact. One injection of new investment will raise the multiplier value, but as soon as the multiplier effect has worked itself out, other things being equal, the aggregate income will fall to its original level. A steady or continuous injection of new investment is, thus, necessary in order to raise the aggregate income to the multiplier level and to keep it steady. Thus, it goes without saying that, in our illustration, in order to maintain the new level of income, that is, ₹ 10 crores plus income for the previous period, investment must be increased steadily at the rate of ₹ 10 crores per round or multiplier period. Otherwise, the income will return to its original level.

The multiplier process, with continuous investment at the rate of ₹ 10 crores, when the marginal propensity to consume is ₹ 0.5, is illustrated at Table 2.1.2. It shows that the steady injection of ₹ 10 crores of new investment in each round enables the aggregate income to rise an amount equal to the multiplier value, and stay there.

**TABLE 2.1.2**  
**The Multiplier Effects of a Steady Injection of New Investment**  
**(MPC)**

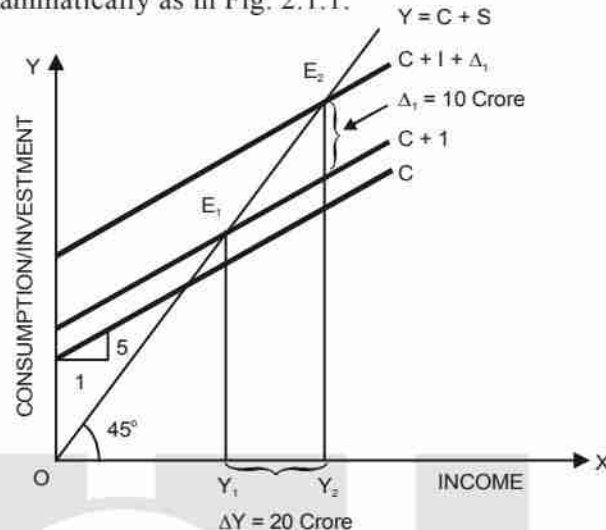
<i>Multiplier Period</i>	<i>Initial Investment I ₹ Crores</i>	<i>(MPC=1/2) Increase in Consumption*</i>	<i>Total increase in Income DY = I + DC</i>
0	10	—	10
1	1	5	15
2	10	5 + 2.5	17.5
3	10	5 + 2.5 + 1.25	18.75
4	10	5 + 2.5 + 1.25 + 0.625	19.375
5	10	5 + 2.5 + 1.25 + 0.625 + 0.312	19.687
—	—	—	—
—	10	—	20.00

\* Successive figures trace these increments of consumption in successive periods, which are attributable to increment of investment in each period.

## Notes

### 2.1.4 GRAPHICAL REPRESENTATION OF THE MULTIPLIER EFFECT

The effect of investment multiplier, in generating income, can also be expressed diagrammatically as in Fig. 2.1.1.



**Fig. 2.1.1 Multiplier**

In Fig. 2.1.1, curve  $C$  refers to a linear consumption function, with a constant  $MPC$  of 0.5. The level of effective demand is determined by consumption and investment outlays, as represented by the curve  $C + I$ , which is merely superimposed on the  $C$  curve. The  $45^\circ$  line,  $OY$ , shows that  $\text{Income} = \text{Consumption} + \text{Saving}$ . The  $C + I$  curve intersects the  $45^\circ$  line at  $E_1$ ; the original equilibrium level of income  $OY_1$ .

An increase in investment is shown by a shift of the  $C + I$  curve to the  $C + I + \Delta I$  curve. The difference between the two curves is the value of the new investment. In our example, it is ₹ 10 crores. Now, this new  $C + I + \Delta I$  curve intersects the  $45^\circ$  line at  $E_2$ , which gives a new equilibrium level of income  $OY_2$ , which is greater than the initial income by  $Y_1Y_2$ . The additional income  $Y_1Y_2$  (that is, ₹ 20 crores in our example) is, in fact, twice the initial outlay (₹ 10 crores), implying that the multiplier coefficient is ₹ 2.

In the aforementioned example, the change in income is  $Y_1Y_2 = ₹ 20$  crores, which is  $K$  times  $\Delta I$  ( $K = 2$ ,  $\Delta I = 10/\Delta Y = 20$ ).

### 2.1.5 ASSUMPTIONS OF THE MULTIPLIER THEORY

The assumption which are implicit in the Keynesian theory of the multiplier may be stated as under:

1. *Constant Marginal Propensity to Consume:* The marginal propensity to consume remains constant during the process of income propagation.

2. *Stable Monetary and Fiscal Policies:* Fiscal and monetary policies remain stable, so that they do not affect the propensity to consume.

3. *Excess Capacity:* Excess capacity exists in the economic system. The assumption is that the economy operates at less than full-employment level, so that the multiplier effect is realised in real terms in that it raises the level of output and employment.

4. *Closed Economy:* A closed economy model is assumed. That is, the country has no foreign trade activity. With this assumption, the impact of international economic transactions and consequent position of the balance of payments on the domestic level of income and consumption is ruled out.

5. *No Dynamic Changes:* A static economic model is assumed. That is, there is absence of dynamic changes in the economy. The state of technology, capital formation and accumulation, labour supply, stock of raw materials, power resources and other output variables are assumed to be given.

6. *No Time-lag:* There is no significant time lag involved between the receipt of income and its expenditure. Thus, the process of income propagation in each round is assumed to be instantaneous.

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### 2.1.6 LEAKAGES IN THE MULTIPLIER PROCESS

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The aforementioned example of the working of the multiplier is based on *ceteris paribus* assumptions, which are rarely found in real life. Consequently, there are serious limitations in applying the concept of a multiplier in practice.

The operation of certain factors reduces the multiplying process of income propagation; these factors are termed as leakages. The process of income propagation peters out because of these leakages, which are discussed here.

1. *Increase in the Marginal Propensity to Save:* In general, the higher the marginal propensity to save, the greater the leakages of additional income out of the income flow.

Keynes' conception of the multiplier effect is based on a constant marginal propensity to consume; so the marginal propensity to save will also necessarily be constant. Hence, the possibility of leakages is theoretically ruled out. In a dynamic economy, however, the marginal propensity to consume or the marginal propensity to save is never constant. In fact, as income increases, the marginal propensity to save is likely to rise and, therefore, the value of multiplier is likely to fall. Thus, in practice, there is nothing stable about the value of the multiplier and its effect.

2. *Debt Cancellation:* If people use a part of the increment of income to repay old bank debts, then instead of spending it for further consumption, that part of income disappears from the income streams.

## Notes

3. *Purchase of Old Shares and Securities:* If a part of the newly-earned income is spent on buying old stocks, shares and securities or on financial investments, consumption will be less and correspondingly the multiplier will be lower.

4. *Hoarding of Cash Balances:* If people prefer to hoard cash balances in the form of inactive bank deposits, with a strong liquidity preference to satisfy transaction, precautionary or speculative motives, there will be a leakage from the income stream. This type of leakage will be greater if business prospects are bad and smaller when business prospects are good. Whenever newly-created money income is hoarded, it cannot reappear as income in the next round, and the multiplier effect will be arrested.

5. *Inflation:* When there is a rise in the price of consumption goods, a good part of the increased money expenditure out of the increased income will be dissipated on higher prices instead of promoting consumption, income and employment.

6. *Net Imports:* A leakage in the domestic income stream also occurs when there is excess of imports over exports, causing a net outflow of funds to foreign countries.

All these possible leakages constitute a potential diversion from the income stream generated by new investment. To the extent that it operates, the multiplier effect of new investment will not be as calculated by Keynes' formula. It follows that to the extent that these leakage can be plugged, the initial increase in investment will have a greater multiplier effect on the level of income and employment.

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### 2.1.7 SHORTCOMINGS OF THE MULTIPLIER THEORY

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Keynes' multiplier theory has the following drawbacks:

1. *It is a Timeless Phenomenon:* By assuming an instantaneous relationship between income consumption and investment. Keynes treated the multiplier as a timeless phenomenon. In reality, however, there is a time lag (interval) between the receipt of income and consumption expenditure of the same as well as between consumption expenditure and its reappearance as income. Thus, modern economists point out that the multiplier effect always takes some time to make its full impact felt.

2. *It is a Static Phenomenon:* Keynes' principle of investment multiplier is a static phenomenon, which is unsuited to the changing processes of the dynamic world. Under certain static assumptions, it shows the process of income propagation from one point of equilibrium to another. There is no analysis of the actual sequence of events nor a there is reckoning of time lag. The result is obtained only under static conditions.



3. *It has no Empirical Verification:* Keynes presents no empirical evidence of his multiplier theory. As Gottfried Haberler points out, "Keynes offers no adequate proof, only a number of rather disconnected observations."

4. *It gives Exclusive Emphasis on Consumption:* Probably, the greatest weakness of the multiplier theory, according to Gordon, is its exclusive emphasis on consumption. It would be more realistic to speak of a "marginal propensity to spend" rather than consume, and then to consider the repercussions of an initial increase in investment, not only on consumption but also on total private investment and government spending.

5. *It has Neglected Derived Demand Phenomenon of Investment in Capital Goods Sector:* The multiplier takes into account only the effects of induced consumption on income; it neglects the repercussions of induced consumption on induced investment. It fails to see the typical relationship between the demand for capital goods and consumption goods, and that the demand for capital goods is a derived demand.

6. *It is a Myth:* Professor Hazlitt held that about the concept of multiplier, some Keynesians make more fuss than about anything else in the Keynesian system. In his view, there can never be any precise, predeterminable or mechanical relationship between investment and income, and that the multiplier is in fact a worthless concept. It is a myth.

### Concluding Remarks

The aforementioned limitations and criticisms of the multiplier should not, however, be construed to mean that the concept is totally useless. On the contrary, it is of utmost importance because it contains an element of truth which is highly important for understanding cyclical fluctuations. It represents an attempt to state in quantitative terms the fact that fluctuations in the rate of investment result in greater than proportional fluctuations in income and employment. It throws light on the cumulative process of trade cycles.

Moreover, the multiplier theory has its practical application during depressions. It is on the basis of the multiplier effect that Keynes advocated a policy of public investment to overcome a depression. He argued that if government takes up public investment outlays such as public works programmes, this would bring about an increase in income several times larger than initial outlay.

### Types of Multiplier

1. Money multiplier
2. Fiscal multiplier
3. Keynesian multiplier



## Notes

*1. Money multiplier*

In, and it is an economic multiplier.

In equations, writing  $M$  for commercial bank money (loans),  $R$  for reserves (central bank money), and  $RR$  for the reserve ratio, a money multiplier is one of various closely related ratios of commercial bank money to central bank money under a fractional-reserve banking system. Most often, it measures the maximum amount of commercial bank money that can be created by a given unit of central bank money. That is, in a fractional-reserve banking system, the total amount of loans that commercial banks are allowed to extend (the commercial bank money that they can legally create) is a multiple of reserves; this multiple is the reciprocal of the reserve ratio. The reserve ratio requirement is that  $R/M \geq RR$ ; the fraction of reserves must be at least the reserve ratio. Taking the reciprocal,  $M/R \leq 1/RR$ , which yields  $M \leq R \times (1/RR)$ , meaning that commercial bank money is at most reserves times  $(1/RR)$ , the latter being the multiplier.

The money multiplier is defined in various ways. Most simply, it can be defined either as the statistic of “commercial bank money”/“central bank money”, based on the actual observed quantities of various empirical measures of money supply, such as  $M2$  (broad money) over  $M0$  (base money), or it can be the theoretical “maximum commercial bank money/central bank money” ratio, defined as the reciprocal of the reserve ratio,  $1/RR$ . The multiplier in the first (statistic) sense fluctuates continuously based on changes in commercial bank money and central bank money (though it is at most the theoretical multiplier), while the multiplier in the second (legal) sense depends only on the reserve ratio, and thus does not change unless the law changes.

For purposes of monetary policy, what is of most interest is the predicted impact of changes in central bank money on commercial bank money, and in various models of monetary creation, the associated multiple (the ratio of these two changes) is called the money multiplier (associated to that model). For example, if one assumes that people hold a constant fraction of deposits as cash, one may add a “currency drain” variable (currency–deposit ratio), and obtain a multiplier of  $(1 + CD)/(RR + CD)$ .

These concepts are not generally distinguished by different names; if one wishes to distinguish them, one may gloss them by names such as **empirical** (or **observed**) multiplier, **legal** (or **theoretical**) multiplier, or **model** multiplier, but these are not standard usages.

Similarly, one may distinguish the observed reserve–deposit ratio from the legal (minimum) reserve ratio, and the observed currency–deposit ratio from an assumed model one. Note that in this case the reserve–deposit ratio and currency–deposit ratio are outputs of observations, and fluctuate over time. If one then uses these observed ratios as model parameters (inputs) for the predictions of effects of monetary policy and assumes that they remain constant, computing a constant

multiplier, the resulting predictions are valid only if these ratios do not in fact change. Sometimes this holds, and sometimes it does not; for example, increases in central bank money may result in increases in commercial bank money – and will, if these ratios (and thus multiplier) stay constant – or may result in increases in excess reserves but little or no change in commercial bank money, in which case the reserve–deposit ratio will grow and the multiplier will fall.

In the “reserves first” model of money creation, a given reserve is lent out by a bank, then deposited at a bank (possibly different), which is then lent out again, the process repeating and the ultimate result being a geometric series.

### Formula of money multiplier

The money multiplier,  $m$ , is the inverse of the reserve requirement,  $RR$ :

$$m = \frac{1}{RR}$$

This formula stems from the fact that the sum of the “amount loaned out” column above can be expressed mathematically as a geometric series with a common ratio of  $1 - RR$ .

To correct for currency drain (a lessening of the impact of monetary policy due to peoples’ desire to hold some currency in the form of cash) and for banks’ desire to hold reserves in excess of the required amount, the formula:

$$m = \frac{(1 + \text{Currency Drain Ratio})}{(\text{Currency Drain Ratio} + \text{Desired Reserve Ratio})}$$

can be used, where Currency Drain Ratio is the percentage of money that people want to hold as cash and the Desired Reserve Ratio is the sum of the Required Reserve Ratio and the Excess Reserve Ratio.

The formula above is derived from the following procedure. Let the monetary base be normalized to unity. Define the legal reserve ratio,  $\alpha \in (0, 1)$ , the excess reserves ratio,  $\beta \in (0, 1)$ , the currency drain ratio with respect to deposits,  $\gamma \in (0, 1)$ ; suppose the demand for funds is unlimited; then the theoretical superior limit for deposits is defined by the following series:

$$\text{Deposits} = \sum_{n=0}^{\infty} [(1 - \alpha - \beta - \gamma)]^n = \frac{1}{\alpha + \beta + \gamma}$$

Analogously, the theoretical superior limit for the money held by public is defined by the following series:

$$\text{Publicly Held Currency} = \gamma \cdot \text{Deposits} = \frac{\gamma}{\alpha + \beta + \gamma} \text{ and the theoretical superior}$$

limit for the total loans lent in the market is defined by the following series:

## Notes

$$\text{Loans} = (1 - \alpha - \beta) \cdot \text{Deposits} = \frac{1 - \alpha - \beta}{\alpha + \beta + \gamma}$$

By summing up the two quantities, the theoretical money multiplier is defined as

$$m = \frac{\text{Money Stock}}{\text{Monetary Base}} = \frac{\text{Deposits} + \text{Publicly Held Currency}}{\text{Monetary Base}} = \frac{1 + \gamma}{\alpha + \beta + \gamma}$$

where  $\alpha + \beta$  = Desired Reserve Ratio and  $\gamma$  = Currency Drain Ratio

The process described above by the geometric series can be represented in the following table, where

- loans at stage  $k$  are a function of the deposits at the precedent stage:

$$L_k = (1 - \alpha - \beta) \cdot D_{k-1}$$

- publicly held money at stage is a function of the deposits at the precedent stage:  $PHM_k = \gamma \cdot D_{k-1}$

- deposits at stage are the difference between additional loans and publicly held money relative to the same stage:  $D_k = L_k - PHM_k$

## 2. Fiscal multiplier

The fiscal multiplier is the ratio of a change in national income to the change in government spending that causes it. More generally, the exogenous spending multiplier is the ratio of a change in national income to any autonomous change in spending (private investment spending, consumer spending, government spending, or spending by foreigners on the country's exports) that causes it. When this multiplier exceeds one, the enhanced effect on national income is called the multiplier effect. The mechanism that can give rise to a multiplier effect is that an initial incremental amount of spending can lead to increased consumption spending, increasing income further and hence further increasing consumption, etc., resulting in an overall increase in national income greater than the initial incremental amount of spending. In other words, an initial change in aggregate demand may cause a change in aggregate output (and hence the aggregate income that it generates) that is a multiple of the initial change.

The existence of a multiplier effect was initially proposed by Richard Kahn in 1930 and published in 1931. It is particularly associated with Keynesian economics. Some other schools of economic thought reject or downplay the importance of multiplier effects, particularly in terms of the long run. The multiplier effect has been used as an argument for the efficacy of government spending or taxation relief to stimulate aggregate demand.

In certain cases multiplier values less than one have been empirically measured (an example is sports stadiums), suggesting that certain types of government spending crowd out private investment or consumer spending that would have otherwise taken place. This crowding out can occur because the initial increase in spending may cause an increase in interest rates or in the price level. In general, the only thing that can be said with certainty is that economists are in fact deeply divided about how well, or indeed whether, such stimulus works.

### *Applications of fiscal multiplier*

The multiplier effect is a tool used by governments to attempt to stimulate aggregate demand. This can be done in a period of recession or economic uncertainty. The money invested by a government creates more jobs, which in turn will mean more spending and so on. The idea is that the net increase in disposable income by all parties throughout the economy will be greater than the original investment. When that is the case, the government can increase the gross domestic product by an amount that is greater than an increase in the amount it spends relative to the amount it collects in taxes.

The difference is the fiscal stimulus. The net fiscal stimulus may be increased by raising spending above the level of tax revenues, reducing taxes below the level of government spending, or any combination of the two that results in the government taxing less than it spends.

The resulting deficit spending must be financed from government reserves (if any) or net borrowing from private or foreign investors. If the money is borrowed, it must eventually be paid back with interest, such that the long term effect on the economy depends on the trade off between the immediate increase to the GDP and the long term cost of servicing the resulting government debt.

It must be noted that the extent of the multiplier effect is dependent upon the marginal propensity to consume and marginal propensity to import. Also that the multiplier can work in reverse as well, so an initial fall in spending can trigger further falls in aggregate output.

The concept of the economic multiplier on a macroeconomic scale can be extended to any economic region. For example, building a new factory may lead to new employment for locals, which may have knock-on economic effects for the city or region.

### *Various types of fiscal multipliers*

The following values are theoretical values based on simplified models, and the empirical values corresponding to the reality have been found to be lower.

Note: In the following examples the multiplier is the right-hand-side equation without the first component.

## Notes

- $y$  is original output (GDP)
- $b_C$  is marginal propensity to consume (MPC)
- $b_T$  is original income tax rate
- $b_M$  is marginal propensity to import
- $\Delta y$  is change in income (equivalent to GDP)
- $\Delta a_T$  is change in lump-sum tax rate
- $\Delta b_T$  is change in income tax rate
- $\Delta G$  is change in government spending
- $\Delta T$  is change in aggregate taxes
- $\Delta I$  is change in investment
- $\Delta X$  is change in exports

**Standard Income Tax Equation**

$$\Delta y = \Delta T * \frac{-C * y}{(1 - C)(1 - T) + M}$$

Note: only  $\Delta b_T$  is here because if this is a change in income tax rate then  $\Delta a_T$  is implied to be 0.

**Standard Government Spending Equation**

$$\Delta y = \Delta G * \frac{1}{(1 - b_C)(1 - b_T) + b_M}$$

**Standard Investment Equation**

$$\Delta y = \Delta I * \frac{1}{(1 - b_C)(1 - b_T) + b_M}$$

**Standard Exports Equation**

$$\Delta y = \Delta X * \frac{1}{(1 - b_C)(1 - b_T) + b_M}$$

**Balanced-Budget Government Spending Equation**

$$\Delta y = \Delta G * 1$$

$$\Delta y = \Delta T * 1$$

### 3. Keynesian multiplier

Keynesian economists often calculate multipliers that measure the effect on aggregate demand only. Opponents of Keynesianism have sometimes argued that Keynesian multiplier calculations are misleading; for example, according to the theory of Ricardian equivalence, it is impossible to calculate the effect of deficit-financed government spending on demand without specifying how people expect the deficit to be paid off in the future.

American Economist Paul Samuelson credited Alvin Hansen for the inspiration behind his seminal 1939 contribution. The original Samuelson multiplier-accelerator model (or, as he belatedly baptised it, the “Hansen-Samuelson” model) relies on a multiplier mechanism which is based on a simple Keynesian consumption function with a Robertsonian lag:

$$C_t = c_0 + cY_{t-1}$$

so present consumption is a function of past income (with  $c$  as the marginal propensity to consume). Investment, in turn, is assumed to be composed of three parts:

$$I_t = I_0 + I(r) + b(C_t - C_{t-1})$$

The first part is autonomous investment, the second is investment induced by interest rates and the final part is investment induced by changes in consumption demand (the “acceleration” principle). It is assumed that  $0 < b$ . As we are concentrating on the income-expenditure side, let us assume  $I(r) = 0$  (or alternatively, constant interest), so that:

$$I_t = I_0 + b(C_t - C_{t-1})$$

Now, assuming away government and foreign sector, aggregate demand at time  $t$  is:

$$Y_{td} = C_t + I_t = c_0 + I_0 + cY_{t-1} + b(C_t - C_{t-1})$$

assuming goods market equilibrium (so  $Y_t = Y_{td}$ ), then in equilibrium:

$$Y_t = c_0 + I_0 + cY_{t-1} + b(C_t - C_{t-1})$$

But we know the values of  $C_t$  and  $C_{t-1}$  are merely  $C_t = c_0 + cY_{t-1}$  and  $C_{t-1} = c_0 + cY_{t-2}$  respectively, then substituting these in:

$$Y_t = c_0 + I_0 + cY_{t-1} + b(c_0 + cY_{t-1} - c_0 - cY_{t-2})$$

or, rearranging and rewriting as a second order linear difference equation:

$$Y_t - (1 + b)cY_{t-1} + bcY_{t-2} = (c_0 + I_0)$$

The solution to this system then becomes elementary. The equilibrium level of  $Y$  (call it  $Y_p$ , the particular solution) is easily solved by letting  $Y_t = Y_{t-1} = Y_{t-2} = Y_p$ , or:

## Notes

$$(1 - c - bc + bc)Y_p = (c_0 + I_0)$$

$$Y_p = (c_0 + I_0)/(1 - c)$$

The complementary function,  $Y_c$  is also easy to determine. Namely, we know that it will have the form  $Y_c = A_1 r_1 t + A_2 r_2 t$  where  $A_1$  and  $A_2$  are arbitrary constants to be defined and where  $r_1$  and  $r_2$  are the two eigenvalues (characteristic roots) of the following characteristic equation:

$$r^2 - (1 + b)cr + bc = 0$$

Thus, the entire solution is written as  $Y = Y_c + Y_p$

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### 2.1.8 THE ACCELERATION PRINCIPLE

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#### Present value criterion of investment MEI

The net present value (NPV) of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows of the same entity. In the case when all future cash flows are incoming (such as coupons and principal of a bond) and the only outflow of cash is the purchase price, the NPV is simply the PV of future cash flows minus the purchase price (which is its own PV). NPV is a central tool in discounted cash flow (DCF) analysis, and is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting, and widely throughout economics, finance, and accounting, it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met. The NPV of a sequence of cash flows takes as input the cash flows and a discount rate or discount curve and outputs a price; the converse process in DCF analysis - taking a sequence of cash flows and a price as input and inferring as output a discount rate (the discount rate which would yield the given price as NPV) - is called the yield, and is more widely used in bond trading.

Each cash inflow/outflow is discounted back to its present value (PV). Then they are summed. Therefore NPV is the sum of all terms,

$$\frac{R_t}{(1+i)^t}$$

where

$t$  - the time of the cash flow

$i$  - the discount rate (the rate of return that could be earned on an investment in the financial markets with similar risk.); the opportunity cost of capital

$R_t$  - the net cash flow (the amount of cash, inflow minus outflow) at time  $t$ . For educational purposes,  $R_0$  is commonly placed to the left of the sum to emphasize its role as (minus) the investment.



The result of this formula if multiplied with the Annual Net cash in-flows and reduced by Initial Cash outlay the present value but in case where the cash flows are not equal in amount then the previous formula will be used to determine the present value of each cash flow separately. Any cash flow within 12 months will not be discounted for NPV purpose.

### The discount rate

A firm's weighted average cost of capital (after tax) is often used, but many people believe that it is appropriate to use higher discount rates to adjust for risk or other factors. A variable discount rate with higher rates applied to cash flows occurring further along the time span might be used to reflect the yield curve premium for long-term debt. Another approach to choosing the discount rate factor is to decide the rate which the capital needed for the project could return if invested in an alternative venture. If, for example, the capital required for Project A can earn five percent elsewhere, use this discount rate in the NPV calculation to allow a direct comparison to be made between Project A and the alternative. Related to this concept is to use the firm's Reinvestment Rate. Reinvestment rate can be defined as the rate of return for the firm's investments on average. When analyzing projects in a capital constrained environment, it may be appropriate to use the reinvestment rate rather than the firm's weighted average cost of capital as the discount factor. It reflects opportunity cost of investment, rather than the possibly lower cost of capital.

For some professional investors, their investment funds are committed to target a specified rate of return. In such cases, that rate of return should be selected as the discount rate for the NPV calculation. In this way, a direct comparison can be made between the profitability of the project and the desired rate of return. To some extent, the selection of the discount rate is dependent on the use to which it will be put. If the intent is simply to determine whether a project will add value to the company, using the firm's weighted average cost of capital may be appropriate. If trying to decide between alternative investments in order to maximize the value of the firm, the corporate reinvestment rate would probably be a better choice. Using variable rates over time or discounting "guaranteed" cash flows differently from "at risk" cash flows may be a superior methodology, but is seldom used in practice. Using the discount rate to adjust for risk is often difficult to do in practice (especially internationally), and is difficult to do well. An alternative to using discount factor to adjust for risk is to explicitly correct the cash flows for the risk elements using NPV or a similar method, then discount at the firm's rate.

### NPV in Investment decision making

NPV is an indicator of how much value an investment or project adds to the firm. With a particular project, if  $R_t$  is a positive value, the project is in the status of discounted cash inflow in the time of  $t$ . If  $R_t$  is a negative value, the project is in the status of discounted cash outflow in the time of  $t$ . Appropriately risked

**Notes**

projects with a positive NPV could be accepted. This does not necessarily mean that they should be undertaken since NPV at the cost of capital may not account for opportunity cost, i.e. comparison with other available investments. In financial theory, if there is a choice between two mutually exclusive alternatives, the one yielding the higher NPV should be selected.

**Present value and marginal efficiency of Profit**

Marginal efficiency of investment expected rates of return on investment as additional units of investment are made under specified conditions and over a stated period of time. A comparison of these rates with the going rate of interest may be used to indicate the profitability of investment. The rate of return is computed as the rate at which the expected stream of future earnings from an investment project must be discounted to make their present value equal to the cost of the project. As the quantity of investment increases, the rates of return from it may be expected to decrease because the most profitable projects are undertaken first. Additions to investment will consist of projects with progressively lower rates of return. Logically, investment would be undertaken as long as the marginal efficiency of each additional investment exceeded the interest rate. If the interest rate were higher, investment would be unprofitable because the cost of borrowing the necessary funds would exceed the returns on the investment. Even if it were unnecessary to borrow funds for the investment, more profit could be made by lending out the available funds at the going rate of interest.

**Marginal efficiency capital (MEC) is a Keynesian concept.** According to J.M. Keynes, nations output depends on its stock capital. An increase in the stock of capital increases output. The question is how much increase in investment raises output? Well, this depends on the productivity of new capital i.e. on the marginal efficiency of capital. Marginal efficiency of capital is the rate return expected to be obtainable on a new capital asset over its life time.

**J.M. Keynes defines marginal efficiency of capital as the:**

The rate of discount which makes the present value of the prospective yield from the capital asset and equal to its supply price. A businessman while investment in a new capital asset, examines the expected rate of net return (profit) on it during its lifetime against the supply price of capital asset (cost of capital asset) if the expected rate of profit is greater than the replacement cost of the asset, the businessman will invest the money in the project.

**Example:**

For example, if a businessman spends ₹ 10,000 on the purchase of a new griding machine. We assume further that this new capital asset continues to produce goods over a long period of time. The net return of the griding machine expected to be ₹ 1000 per annum. The marginal efficiency of capital will be 10%.

$$(1000/10000) \times (100/1) = 10\%$$

**Formula:**

The following formula is used to know the present value of a series of expected income throughout the life span of the capital assets.

$$S_p = (R^1/1+r) + (R^2/1+r^2) + \dots = (R^n/1+r^n)$$

**Here:**

$S_p$  = Stands for supply price of the new capital asset.

$R^1 + R^2 - R^n$  = Stands for returns received on yearly basis.

$R$  = It is the rate of discount applied each the years.

As has been seen earlier, Keynes' theory of multiplier dealt with the effects of initial investment upon the aggregate income through changes in consumption outlay. But the induced consumption may, in turn, induce further investment in the capital goods industries. Such an effect is described as the acceleration effect. The principle of acceleration was expounded by J.M. Clark.

It is widely recognised that the demand for capital goods is a derived demand, derived from the demand for consumer goods. The acceleration theory shows how the demand for capital goods changes as a result of changes in the demand for consumption goods, and explains how a change in the output of consumption goods causes an expansion in the production of capital goods used in making those consumption goods.

Since the production of any given amount of final output usually requires an amount of capital several times larger than the output produced with it during any short period (say, a year), any increase in the final demand for output (through increased consumption) will give rise to an additional demand for capital goods several times larger than the new final consumption demand, so that changes in the demand for consumption goods are transmitted with increasing intensity to the demand for capital goods. Thus, the demand for capital goods is a derived demand. The acceleration principle has been, therefore, also described as the "magnification of derived demand." To understand such acceleration effects better, we should know the acceleration coefficient.

**Acceleration Coefficient**

A change in investment outlay causes a change in the rate of consumption expenditure by an amount equal to the acceleration coefficient. This ratio between the net change in consumption expenditure and the induced investment\* is called

the acceleration coefficient. Symbolically,  $a = \frac{\Delta I}{\Delta C}$  where  $a$  stands for acceleration

---

\* Investment in capital goods is the result of past changes in consumption and this additional investment is called induced investment.

## Notes

coefficient,  $\Delta I$  for net change in investment outlays; and  $\Delta C$  for net change in consumption outlays.

Suppose, for instance, that a net increase in the rate of consumption outlays equal to ₹ 10 crores leads to a net increase in the investment of ₹ 20 crores (for technical reasons, production of consumption goods will require capital goods several times larger), then the acceleration coefficient is 2.

Technically, the value of acceleration coefficient depends upon the capital-output ratio<sup>†</sup> and the durability of capital goods (*i.e.*, the life of machinery and capital equipment). Greater the durability of capital equipment and higher the capital output ratio, greater will be the acceleration effect.

### Working of the Acceleration Principle

The operation of the acceleration principle may be illustrated by a hypothetical example. For this purpose, following Professor Kurihara, let us assume that: (1) initially in an economy, the existing demand for consumption goods is 1,000 units; (2) The capital-output ratio is 1:10. Thus, 100 units of capital goods are needed to maintain a constant flow of 1,000 units of consumption goods; (3) The durability of each unit of capital goods is 10 years, that is to say, 100 units of capital goods wear out in 10 years and therefore, we require 10 units by way of replacement every year in order to maintain the stock of capital intact; and (4) The acceleration coefficient is 1.

Now suppose that in the next period there is a 10 per cent rise in the demand for consumption goods as compared with the previous period. In our example, the demand for consumption goods increases from 1,000 units to 1,100 units. This means a net increase of 100 units of consumption goods in the next period. To produce this additional 100 units of consumption goods, we require additional 10 units of capital goods (capital-output ratio being 1:10). This is, of course, in addition to the 10 units of capital goods required every year for replacement purposes.

**TABLE 2.1.3**  
**Acceleration Effects on Investment**

Period	Consumption	Capital Goods Required (Units)	Investment		Percentage	
			Capital Needed for Replacement	Induced Investment	Total Investment Outlay	Change to Total Investment
0	1,000	100	10	Nil	10	—
1	1,100	110	10	10	0	100

<sup>†</sup> Capital-output ratio indicates the amount of capital required to produce a given amount of consumption goods. For instance, 1 unit of capital will produce 10 units of consumption goods. The capital-output ratio, then, is 1:10.

Thus, in the next period, we need new capital goods investment of 20 units; 10 units for replacement and 10 units to meet increased consumption demand. This result has been summarised in Table 2.1.3.

From the above analysis, we can arrive at an important conclusion that a 10 per cent increase in the demand for consumption goods has resulted in a 100 per cent increase in the total investment outlay (acceleration coefficient being 1). It may be said, in general, that a small change in consumption is likely to lead to a huge change in induced investment.

The principle of acceleration may further be illustrated by referring to an investment in housing. If, in an economy, there are 15 crores housing units in a given year and their average durability is assumed to be 30 years, then yearly replacement requirement is estimated to be 50 lakh housing units. On account of population growth, the demand for houses increases by 10 per cent. Then, the economy needs to construct 1.5 crores of extra houses. Hence, in the next year  $1.5 + 0.5 = 2$  crores of new houses are constructed. This obviously implies that a 10% increase in the demand for housing units has resulted in a 300% increase in the quantum of houses.

### Limitations of Acceleration Principle

The above explanation of the working of acceleration principle is a much simplified one. In practice, the phenomenon cannot be so smooth and simple.

In fact, the following limitations are underlying the acceleration theory:

1. In a dynamic economy, the capital-output ratio does not remain constant as assumed. Thus, the acceleration effect will be different at different times.

2. There should be no excess capacity in the capital goods sector. Otherwise, the increase in demand for consumption goods may be met by better utilisation of existing machinery rather than by investing in new ones.

3. The change in consumption demand is assumed to be a permanent and not of a temporary nature. Otherwise, entrepreneurs will not invest in additional capital goods so required and acceleration will not materialise.

4. Resources are assumed to be elastic so that investment in new capital goods can be undertaken easily. If the economy is operating near full-employment level, there may not be sufficient factors or resources available to expand capital goods industries and to that extent, the acceleration effect will be limited.

5. Money supply, especially credit, is assumed to be elastic so that funds for induced investment are easily available. If there is a shortage of funds, the rate of interest will be very high and induced investment will necessarily be limited.

## Notes

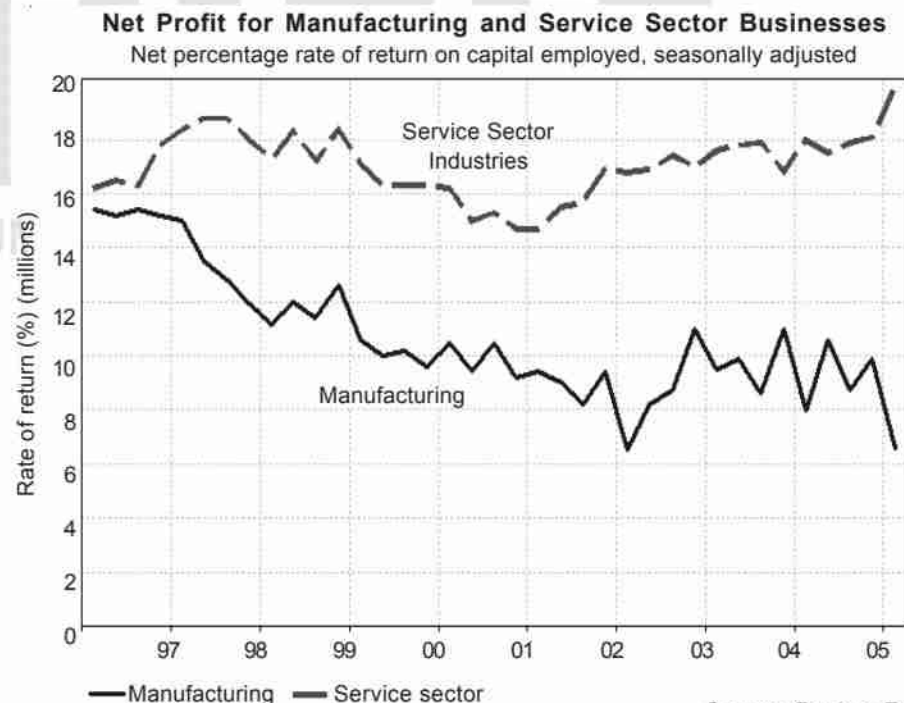
**Significance of the Acceleration Theory**

Since the acceleration principle indicates how a given change in consumption results in a change in the level of investment, we can understand the process of income generation and propagation more clearly. The theory of acceleration further explains why fluctuations in income and employment occur rather violently. Thus, this doctrine also demonstrates that the capital goods industries fluctuate much more than consumption goods industries. Induced investment is very much useful in explaining the upper turning point of a cycle, and what is necessary for a fall in the volume of induced investment is not any absolute fall in the demand for consumption goods but only a decline in its rate of increase.

However, the acceleration principle taken by itself is incapable of explaining the cyclical variations in income and employment. For a complete analysis of the process of income propagation, we must consider, as Prof. Samuelson insists, both the multiplier effect and acceleration effect.

**Profit theory of Investment**

Business profits play an important role in allocating resources for example, higher profits provide the funds for capital investment and also for research and development projects. Profits tend to follow a cyclical pattern they fall during a recession or an economic slowdown. And they recover during phases of stronger economic growth



**Fig. 2.1.2 Manufacturing industry has suffered a profits squeeze in recent years**



The chart above shows the percentage rate of return on capital a measure of business profitability. Throughout the period shown, the profit made by service sector businesses has been higher than for manufacturing industries. Firstly, manufacturing industry in the UK has been in relative decline for many years because it faces much greater competition from lower-cost overseas producers this decline is known as a process of **de-industrialization**. This tough global competition affects the level of demand but it also means that British manufacturing businesses have **less pricing power** in their own markets. In the last few years, there has been a downward trend in business profits the result of:

1. A strong exchange rate which hits the profit margins of exporters.
2. Rising costs e.g. oil prices for firms that use oil as an essential input.
3. Higher labour costs including several rises in the national minimum wage
4. Net investment = gross investment – replacement investment
5. Positive net investment increases a country's productive capacity and contributes to a faster trend rate of growth in the long run
6. Firms invest to increase current supply capacity in the expectation that selling more products increases revenues and profits or leads to lower costs (economies of scale) and improvements in productivity and efficiency.

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### 2.1.9 SUMMARY

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The multiplier refers to the effects of changes in investment outlays on aggregate income through induced consumption expenditure. Thus, the multiplier expresses a relationship between an initial increment of investment and the resulting increase in aggregate income. In fact, the multiplier is the name given to the numerical coefficient which indicates the increase in incomes which will result in response to an increase in investment.

The assumption of multiplier theory such as 1. Constant Marginal Propensity to Consume, 2. Stable Monetary and Fiscal Policies, 3. Excess Capacity, 4. Closed Economy, 5. No Dynamic Changes and 6. No Time-lag.

The operation of certain factors reduces the multiplying process of income propagation; these factors are termed as leakages. 1. Increase in the Marginal Propensity to Save, 2. Debt Cancellation, 3. Purchase of Old Shares and Securities, 4. Hoarding of Cash Balances, 5. Inflation and 6. Net Imports:

Keynes' multiplier theory has the following drawbacks: 1. It is a Timeless Phenomenon, 2. It is a Static Phenomenon, 3. It has no Empirical Verification, 4. It gives Exclusive Emphasis on Consumption; and 5. It has Neglected Derived Demand Phenomenon of Investment in Capital Goods Sector.



**Notes**

Acceleration Coefficient A change in investment outlay causes a change in the rate of consumption expenditure by an amount equal to the acceleration coefficient. This ratio between the net change in consumption expenditure and the induced investment\* is called the acceleration coefficient.

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**2.1.10 SELF ASSESSMENT QUESTIONS**

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- Q.1. Discuss the Concept of Multiplier.
- Q.2. Explain the Process of Income Propagation.
- Q.3. Discuss the Graphical Representation of the Multiplier Effect.
- Q.4. Explain the various assumptions of the Multiplier Theory.
- Q.5. Discuss the Leakages in the Multiplier Process.
- Q.6. What are the shortcomings of the Multiplier Theory?
- Q.7. Discuss the Acceleration Principle.



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### 2.1.11 **Key Terms**

1. **Multiplier:** The multiplier represents the ratio of the change in total output (GDP) to the initial change in autonomous spending. It measures the amplification effect of changes in spending on aggregate demand.
2. **Marginal Propensity to Consume (MPC):** The fraction of an additional unit of income that households spend on consumption. The multiplier effect is determined by the MPC, as higher MPC values lead to larger multiplier effects.
3. **Marginal Propensity to Save (MPS):** The fraction of an additional unit of income that households save rather than spend on consumption. MPS is the complement of MPC (i.e.,  $MPS = 1 - MPC$ ).
4. **Autonomous Spending:** Components of aggregate spending that do not depend directly on the level of income, such as investment, government spending, and exports. Autonomous spending drives changes in aggregate demand and can trigger multiplier effects.
5. **Income Expenditure Model:** A simple macroeconomic model that illustrates the relationship between aggregate output (income) and aggregate spending (expenditure), considering the multiplier effect of changes in autonomous spending.
6. **Simple Keynesian Multiplier:** The basic multiplier formula, which equals 1 divided by the marginal propensity to save ( $1 / MPS$ ) or the reciprocal of the marginal propensity to consume ( $1 / MPC$ ).
7. **Fiscal Multiplier:** The multiplier effect associated with changes in government spending or taxation. The fiscal multiplier measures the impact of fiscal policy on aggregate demand and economic output.
8. **Investment Multiplier:** A specific type of multiplier that focuses on the impact of changes in investment spending on aggregate demand and output. It reflects the sensitivity of the economy's output to changes in investment.
9. **Government Spending Multiplier:** The multiplier effect associated with changes in government spending. The government spending multiplier captures the impact of changes in government purchases of goods and services on aggregate demand and output.
10. **Tax Multiplier:** The multiplier effect associated with changes in taxation. The tax multiplier measures the impact of changes in taxes on disposable income, consumption, and aggregate demand.



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# 3.1

Unit

## MONEY AND INTEREST

### Objectives

After completing this chapter, you will be able to:

- Understand the General Equilibrium of the product and money market
- Know The IS and LM functions and the wage
- Understand Price flexibility
- Know the Keynes effect and Pigou effect
- Understand Integration with Keynesian Aggregate Demand
- Understand Neoclassical Criticisms
- Know the Supply side economics
- Understand the Gist of SSE (The Laffer Curve)

### Structure:

3.1.1 General Equilibrium of the Product and Money Market

3.1.2 The IS and LM Functions and Wage – Price Flexibility

3.1.3 Keynes Effect and Pigou Effect

3.1.4 A Neoclassical Criticisms

3.1.5 Rational Expectation

3.1.6 The Laffer curve

3.1.7 Supply side Economics

3.1.8 The Gist of SSE (The Laffer Curve)

3.1.9 Shortcomings of Keynesian Theory

3.1.10 Summary

3.1.11 Self Assessment Questions

3.1.12 Key Words

3.1.13 Reference

### 3.1.1 GENERAL EQUILIBRIUM OF THE PRODUCT AND MONEY MARKET

#### Money market equilibrium

$$(1) M_D = L/P = n - g(i) + k(Y)$$

$$(2) M_S = M/P = (1/rr_m)(TR)/P$$

$$(3) M_D = M_S$$

where:

$M_D$  demand for real cash balances

$M_S$  real money supply

$n$  autonomous demand for money

$g$  slope of the demand curve

$k$  shift coefficient for income

$rr_M$  reserve requirements for commercial bank deposits

$TR$  total reserve requirements ratio

$P$  general price level (GDP price deflator)

$Y$  real national income

We can solve for the equilibrium interest rate in the money market for a given level of income by substituting the demand and supply equations into the market equilibrium condition and solving for the interest rate “ $i$ ”. The resulting equation takes the following form:

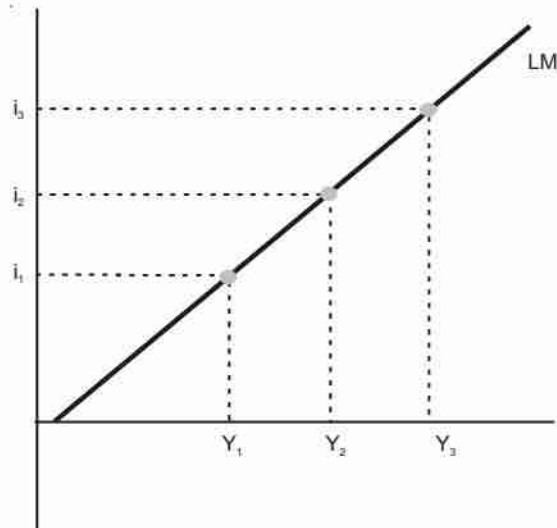
$$(4) i^* = [n + k(Y) - M/P] \div g$$

or

$$(5) i^* = [n + k(Y) - (1/rr_M)(TR/P))] \div g$$

Given this equation, we can derive alternative equilibrium interest rates for given levels of national income ( $Y$ ). If we plot these equilibrium interest rates, we get what is known as the LM curve, where  $L$  represents the demand for “liquidity” as it did in equation (1) and  $M$  represents the money supply as it did in equation (2).

Each and every point along the LM curve depicted above represents equilibrium in the money market.



### Product market equilibrium

$$(6) \quad C = a + b(Y - T)$$

$$(7) \quad I = j - f(i)$$

$$(8) \quad G = G^*$$

$$(9) \quad Y = C + I + G$$

$$(10) \quad T = h + t(Y)$$

where:

$C$  Planned real consumption expenditures

$a$  Autonomous consumption

$b$  Marginal propensity to consume

$Y$  Real national income and product

$T$  Real government revenue

$I$  Real planned investment expenditures

$j$  Autonomous investment

$G$  Real government expenditures (\* denotes fixed spending)

$h$  Tax base

$t$  Marginal tax rate

We can solve for the equilibrium level of product or output in the product market for a given interest rate by substituting the consumption, investment and government expenditures equations into equation (9) and solve for the corresponding level of gross domestic product ( $Y$ ). The resulting equation takes the following form:



## Notes

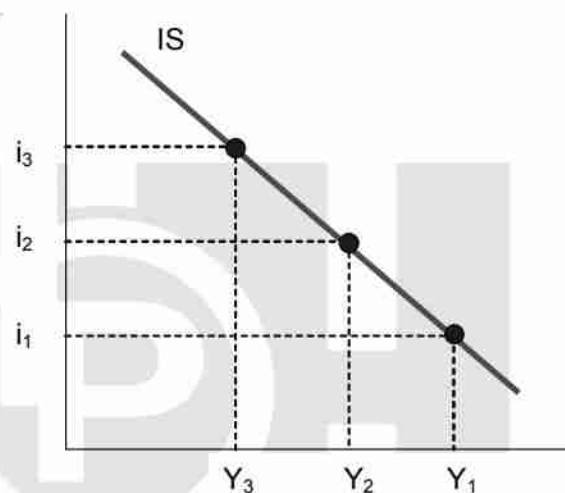
$$(11) Y^* = a + b(Y - T) + j - f(i) + G^*$$

Substituting in the equation for tax revenue (T) into equation (11) and isolating Y on the left-hand side, we see that:

$$(12) Y^* = [a - b(h) + j + G^*] / (1 - b + b(t)/0 [f/(1 - b + b(t))] i$$

Given this equation, we can derive alternative equilibrium gross domestic product for given levels of interest rates (i). If we plot these equilibrium gross domestic product levels, we get what is known as the IS curve, where I represents the demand for investment expenditures as it did in equation (7) and S represents the level of savings in the economy, or:

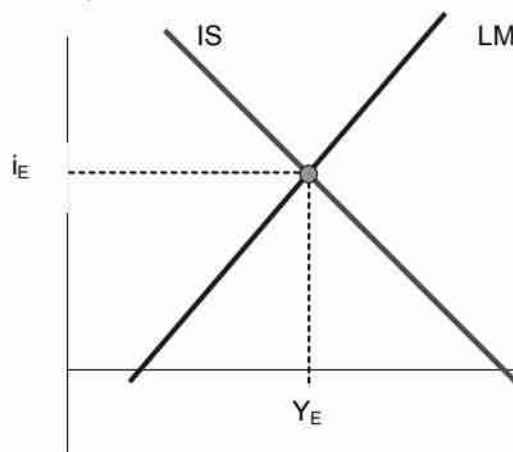
$$(13) S = Y - T - C$$



Each and every point along the IS curve depicted above represents an equilibrium in the product market.

### General equilibrium

We now have two partial equilibriums; one in the money market for given levels of income and one in the product market for given levels of interest rates. We can determine the general equilibrium in both markets by determining where these two curves intersect, or:

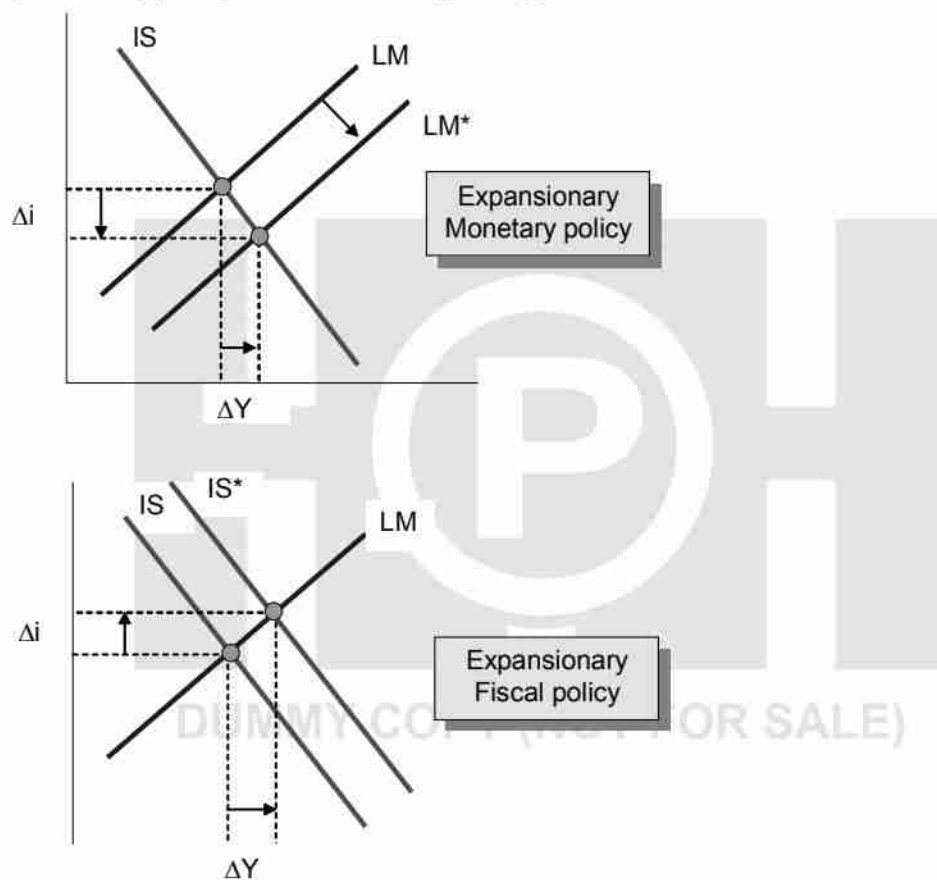


This graph suggests that only one interest rate and one level of gross domestic product satisfies the equilibrium conditions in both markets simultaneously.

### Policy Actions

Make sure you are comfortable with the implications these changes in policy will have upon the directional changes for interest rates and gross domestic product.

Monetary policy actions shift the LM curve and leave the IS curve alone. Expansionary monetary policy will shift the LM curve to the right, lowering interest rates and stimulating aggregate demand through investment, jobs and consumption. Contractionary monetary policy will have exactly the opposite effects.

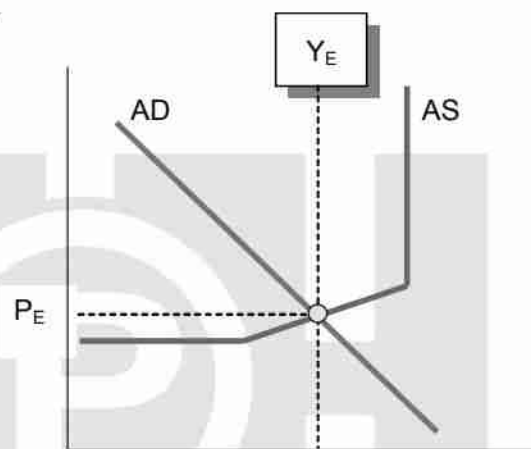
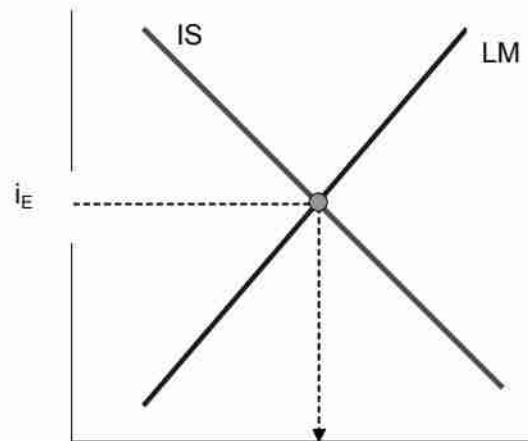


Fiscal policy actions shift the IS curve and leave the LM curve alone. Expansionary fiscal policy will shift the IS curve to the right, stimulating aggregate demand through increased after tax income and government spending, but increasing interest rates. Contractionary fiscal policy will have exactly the opposite effects.

### General Price level

We can determine the general equilibrium price level in the economy ( $P_E$ ) by associating the general equilibrium conditions in the last graph with a graph of the equilibrium in the product market as follows:

## Notes



### 3.1.2 THE IS AND LM FUNCTIONS AND WAGE – PRICE FLEXIBILITY

#### Keynesian versus Classical Theory: The IS and LM Functions and Wage – Price Flexibility

According to the Classical Theory, monetary policy has no effects on the level of real economic variables such as output, consumption, savings, investment and the real interest rate. In the Classical Theory it is assumed that all prices and nominal wages are perfectly flexible both in the short-run and the long-run.

Then:

1. An increase in the level of the money supply  $M$  will increase proportionally the price level  $P$  and the level of the exchange rate  $S$  in an open economy with no real effects.
2. An increase in the rate of growth of the money supply will increase proportionally the rate of inflation, the nominal interest rate and the rate of currency depreciation and will have no real effect on  $Y$ ,  $C$ ,  $I$ ,  $r$ .

The basic idea of the Keynesian Theory IS/LM model is that prices and nominal wages are not flexible in the short-run: they do not clear markets in the

short-run. In other terms, there is inertia in the setting of prices especially when the economy is operating below full capacity/full employment. The producers and sellers of many goods change the price at which the goods are sold only infrequently. This simple modification of the assumption about price flexibility changes dramatically the implications of the effects of monetary policy: monetary policy will have real effects on output in the short-run. We will see in this chapter why.

An important issue related to this non-neutrality of money is the behavior of central banks and monetary policy. During recessions, the Fed expands the level and/or growth rate of the money supply to reduce interest rates and stimulate economic activity. If the world was working according to the Classical Theory in the short-run, such Fed policy would have no real effects and will only increase inflation. An increase in the rate of growth of money leads to an immediate proportional increase in the inflation rate, in the nominal interest rate with no effects on the real interest rate and the level of output. Money is neutral both in the short-run and the long-run.

However, empirical evidence shows that an increase in the rate of growth of the money supply has very different effects in the short-run from those predicted by the Classical Theory. The response in reality is more similar to higher money growth reduces the nominal and real interest rate in the short run and leads to an increase in the rate of inflation only slowly over time. The reduction in the real interest rate, in turn, leads to a short-run increase in investment, consumption and the level of output.

So to summarize the differences between Classical Theory and Keynesian Theory:

1. In the Classical Theory, quantities (output) are determined by the "Supply" of output (who makes it) that depends on technology (the production function) and the equilibrium in the labor market. "Aggregate Demand" affects only the price level: so monetary policy affects only prices.
2. In the Keynesian Theory, it is assumed that the economy is not operating at full employment. Since some machines and workers are unemployed, the supply of output can be increased without an increase in the price level. In this Keynesian model, quantities (output) are determined by the "Demand" for output, i.e. by the aggregate demand for goods  $AD$ . Since prices are sticky (in the short-run) an increase in aggregate demand (generated by an increase in money  $M$  or government spending  $G$ ) will not affect the price level in the short run. Instead, it will lead to an increase in the level of output from  $Y$  to  $Y'$ .

The Keynesian theory with fixed prices is mute on this point: as long as there are unemployed resources and production is below capacity, it is assumed

**Notes**

that firms are willing to increase output when demand goes up without increasing prices. In this Neo-Keynesian variant, nominal wages ( $W$ ) rather than goods prices are sticky in the short run. If the nominal wage is too high, given the level of goods prices, we get unemployment as the demand for labor is below the supply of labor at the initial real wage ( $W/P_1$ ). The employment level  $N_1$  is then determined by the demand for labor and output is equal to  $Y_1$ . An increase in the price level from  $P_1$  to  $P_2$  reduces the real wage to  $(W/P_2)$ , increases the demand for labour to  $N_2$  and increases the supply of output to  $Y_2$ . So the aggregate supply  $AS$  is a positive function of the price level as opposed to the vertical  $AS$  curve of the classical theory and the horizontal  $AS$  curve of the fixed-price Keynesian theory. In this Neo-Keynesian variant, an increase in the money supply leads to an increase in aggregate demand. This increase in demand leads to an increase in the price level; this, in turn, reduces the real wage ( $W/P$ ), increases the demand for labor and leads to an increase in the supply of output. So, money is non-neutral in the sense that it affects real output but an increase in  $M$  also leads to price inflation.

In general the Keynesian Theory is more valuable for short-run analysis while the Classical Theory is more valuable for long-run analysis where prices and wages adjust. We will now describe in more detail the Keynesian Theory.

**Saving and Investment Once More (The IS Curve)**

This will recall that one of the components of the Classical model is a relation between saving and investment:

$$S = S^p(r, Y-T) - (G-T) = S^p + S^g = I(r) + CA$$

where  $S^p$  is saving by households (private savings),  $I$  is new investment in physical capital, and  $G-T$  is the government deficit (negative public savings). As before, let's start by omitting the foreign sector ( $CA=0$ ), so that the equilibrium condition is

$$S^p(r, Y-T) - (G-T) = S^p + S^g = I(r).$$

In the earlier theory  $Y$  was given by technological factors and the equilibrium in the labor market; here we want to allow  $Y$  to change in response to changes in monetary and fiscal policy, as well as other factors. What we need is not a new relation, but a different graphical representation of the same saving and investment relation, which we'll call the IS curve.

The IS curve summarizes equilibrium in what we'll now call the goods market. It's what we called the financial market earlier, but goods make a better story in the present context, as you'll see. Recall that this equation can be thought of as supply and demand for goods, obvious when we express it as aggregate supply equal to aggregate demand (that is the sum of  $C$ ,  $I$  and  $G$ ):

$$Y^s = Y^d = C + I + G$$

or as supply and demand for funds in capital markets, as when we write

$$S^p - (G - T) = I$$

where  $S^p$  is equal to  $Y - C - T$ . The two equations represent the same information in different ways. Now what we want, to get an analysis of the effects of monetary and fiscal policy on output and interest rates, is a graph with  $r$  and  $Y$  on the axes. This is a more complex curve than we've seen before, but it makes what follows easier, since we can put the entire theory in one diagram.

Here's what we do. In our former diagram in Chapter 5 we equated  $S^p - (G - T)$  with  $I$  for given values of  $Y$ ,  $G$ ,  $T$  and other variables that affect the positions of the  $S$  and  $I$  curves. This gives us, as a single equilibrium point, labeled  $A$  in the diagram where  $r = r^*$ ; this point is for a particular value of  $Y$ , say  $Y = 1000$ . We can draw this point in the diagram to the right that relates  $r$  to  $Y$ , also labeled  $A$ .

This same experiment can be done for other values of  $Y$ , for example  $Y = 1500$ . For this value of  $Y$  the saving curve shifts to the right as higher income leads to higher private savings, and we have the equilibrium condition at point  $B$  at which  $r$  is lower and equal to  $r^*$ . If we plot  $B$  on the second diagram we have a point that is southeast of  $A$ . If we continue this for all possible values of  $Y$ , we trace out a downward sloping line in the second diagram. This line gives us all the combinations of  $r$  and  $Y$  that are consistent with equilibrium in the goods and financial markets. The curve is downward sloping because, given the initial point  $A$  where  $S = I$ , an increase in income leads to an increase in savings and causes an excess supply of savings in the financial market. Then, in order to restore the equilibrium in the financial market, we need a fall in the interest rate: this fall reduces savings, increases the investment rate and leads savings to become again equal to investment.

There is an alternative explanation of the downward slope of the IS curve, based on the fact that this curve represents also the equilibrium between aggregate supply of goods and aggregate demand. Aggregate demand is made of three components:

**$G$  = exogenous value**

$$C = c^0 + b(Y - T) - a r$$

$$I = i^0 - d r$$

Here we assume that **government spending  $G$**  is exogenously chosen by the government.

**Private consumption  $C$**  depends on three factors. First, there is some exogenous (autonomous) level of private consumption (defined by  $c^0$ ) even at zero levels of disposable income. Second, consumption depends on disposable income

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( $Y-T$ ) according to the parameter “ $b$ ” that represents the **marginal propensity to consume**: i.e. if  $b = 0.8$ , when income goes up by a rupee, consumption goes up by 80 cents. Third, consumption is a negative function of the interest rate  $r$ ; as interest rates go up, consumers will save a larger fraction of their income and consume a smaller fraction of their income.

**Private investment  $I$**  depends on two factors: first, there is some exogenous (autonomous) level of private investment (defined by  $i^0$ ) that does not depend on the level of interest rates. Second, investment is a negative function of the interest rate: as the interest rate becomes higher, firms (who borrow to buy capital goods) are less likely to invest in new capital goods. The parameter “ $d$ ” represents the sensitivity of investment to changes in the interest rate.

Now let us see why the IS curve represents the equilibrium in the goods market. Then, suppose that we maintain the same initial interest rate  $r'$  and increase income/output from  $Y'$  to  $Y''$ ; in terms of move from the point A to the point X. This increase in output  $Y$  will lead to an excess supply of goods: in fact an increase in output of one rupee by definition increases the supply of goods by one rupee but increases the demand for goods only by “ $b$ ”, the marginal propensity to consume income (say 80 cents if  $b = 0.8$ ). So, point X must be a point of disequilibrium in the goods market: aggregate supply is above aggregate demand ( $Y^s > Y^d$ ) at X. Then, we need to do something to restore the equilibrium in the goods market. A fall in the interest rate will do that since a fall in  $r$  to the level  $r''$  leads to an increase in investment demand and an increase in consumption demand. So as we move from point X to point B, we restore the equilibrium in the goods market: at B demand for goods will be equal to the higher supply of goods  $Y'$ . So to summarize: starting from equilibrium, an increase in  $Y$  leads to an excess supply of goods; then, a fall in interest rate is required to stimulate aggregate demand ( $C$  and  $I$ ) and restore the equilibrium in the goods market. Note that points above the IS curve represent points where aggregate supply is above aggregate demand ( $Y^s > Y^d$ ) and savings are greater than investment ( $S > I$ ); while points below the IS curve are points where ( $Y^s < Y^d$ ) and ( $S < I$ ). Obviously, points along the IS curve represent combination of values of  $Y$  and  $r$  such that aggregate demand is equal to aggregate supply ( $Y^s = Y^d$ ) and savings are equal to investment ( $S = I$ ).

Formally, the IS curve is derived as follows. Equate aggregate supply and aggregate demand:

$$Y = C + I + G = [c^0 + b(Y-T) - a r] + [i^0 - d r] + G$$

Then solve for  $Y$  as a function of  $r$  to get:

$$Y = [(c^0 + i^0 + G - bT)/(1-b)] - (a + d)/(1-b) r$$

Since the slope coefficient  $-(a+d)/(1-b)$  is negative, the equation above represents a negative relation between  $Y$  and  $r$ , i.e. the IS curve.



As with all our curves, there are some changes that are incorporated in movements along the curve and others that involve shifts of the curve. The latter are those that are held fixed during our derivation of the IS curve and include changes in  $G$ ,  $T$  and the autonomous components of consumption and investment (i.e. changes in  $c^0$  and  $i^0$ ). We'll consider these in turn.

### The effect of an increase in government spending $G$ :

Let's see how a change in the exogenous government spending  $G$  leads to a shift to the right of the entire IS curve: intuitively, a higher  $G$  will spur the economy and shift the IS curve out. Let's start at point  $A'$  in the left side where  $S = I$  and aggregate demand is equal to aggregate supply at the initial level of income  $Y'$  and  $r'$  and the initial  $G'$ ; the same point  $A'$  is represented by the  $IS'$  curve in the right side. In the left hand diagram the  $I(r)$  curve remains the same while the national supply of savings is reduced as public savings fall with the increase in  $G$ . This reduction in national savings leads, for the initial income  $Y'$ , to a higher rate of interest  $r''$ . That means that the point  $A'$  shifts to  $A''$ , which is above  $A'$ . The original point  $A'$  is not anymore an equilibrium point as  $G$  is higher; the new equilibrium in the goods/capital market is at point  $A''$  that is on a different new IS curve. This will be true for all points on the IS curve for exactly the same reason: they all shift up. In fact, for any level of initial income  $Y$ , a higher  $G$  leads to lower savings and higher interest rates.

Given the initial  $G'$ , the point  $E$  in the old  $IS'$  curve represents a point where aggregate supply is equal to aggregate demand. When  $G$  increases to  $G''$ , given the initial  $Y'$  and  $r'$ , we get an increase in aggregate demand with no change in aggregate supply as  $Y$  is fixed at point  $E$ . In order to restore the equilibrium in the goods market, we can do two things. We can either move from point  $E$  to point  $E'$  where the interest rate is higher and equal to  $r''$ : the higher interest rate  $r''$  reduces aggregate demand and restores the equilibrium between demand and supply at the initial output level  $Y'$ ; so point  $E'$  is a point on the new  $IS$  curve. Alternatively, if  $r$  remains constant at the initial level  $r'$ , the excess demand at point  $E$  is eliminated via an increase in output from  $Y'$  to  $Y''$ ; this is represented by a movement from  $E$  to  $E''$  where  $E''$  is a point on the new  $IS''$  curve that corresponds to the higher  $G''$ .

### The effect of an increase in taxes $T$

This shifts the IS curve to the left or down and you'd be right as shown in, but it's a little more complicated than the first example. Suppose we start from an initial equilibrium point  $A'$  represented both in the left and right hand sides at point  $A'$ , given the initial  $G'$  and  $T'$ , demand for goods is equal to supply for goods and  $S = I$ . An increase in taxes  $T$  (from  $T'$  to  $T''$ ) has the following effects. First, it leads to an increase in public savings (a reduction in the budget deficit) that causes a shift to the right of the curve  $S$  representing total national savings. This is the movement of the curve from  $A'$  to  $B$  in the left side. However, the

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increase in taxes reduces disposable income ( $Y-T$ ) and causes a reduction in private savings. On net, the increase in taxes leads to a increase in national savings for the same reasons explained, an increase in taxes by one rupees increases public savings by one rupees but reduces private savings only by the marginal propensity to save out of income. Such marginal propensity to save is  $(1-b) < 1$ , i.e. one minus the marginal propensity to consume. For example if  $b = 0.8$ , the marginal propensity to save is  $(1-b) = 0.2$ ; so a fall in disposable income of one rupee (because of higher taxes) reduces private savings by 20 cents. Since private savings fall less than the increase in public savings, total savings go up as shown by the move of the savings function  $S$  from the point  $A'$  to the point  $A''$ . At  $A''$  the higher savings cause a reduction in the interest rate and an increase in national investment. The initial point  $A'$  on the old IS curve is not an equilibrium as higher  $T$  means higher savings while investment is still unchanged. Therefore a fall in the interest rate from  $r'$  to  $r''$  is required to increase investment and restore the equilibrium in the capital market. This shift will be true for all points on the IS curve for exactly the same reason: they all shift down. In fact, for any level of the initial income  $Y$ , a higher  $T$  leads to higher savings and lower interest rates.

The shift in the IS' curve to IS'' following an increase in  $T$ . Given the initial  $T$ , the point  $E$  in the old IS curve represents a point where aggregate supply is equal to aggregate demand. When  $T$  increases to  $T''$ , given the initial  $Y'$  and  $r'$ , we get an fall in aggregate demand (as lower disposable income leads to lower private consumption) with no change in aggregate supply (as  $Y$  is fixed at point  $E$ ). So point  $E$  is now a point of excess supply for goods since  $T$  is higher than before and consumption  $C$  is lower. In order to restore the equilibrium in the goods market, we can do two things. We can either move from point  $E$  to point  $E'$  where the interest rate is lower and equal to  $r''$ ; the lower interest rate  $r''$  increases aggregate demand ( $C$  and  $I$ ) and restores the equilibrium between demand and supply at the initial output level  $Y'$ ; so point  $E'$  is a point on the new IS curve. Alternatively, if  $r$  remains constant at the initial level  $r'$ , the excess supply of goods at point  $E$  is eliminated via an reduction in output from  $Y'$  to  $Y''$ ; this is represented by a movement from  $E$  to  $E''$  where  $E''$  is a point on the new IS curve (that corresponds to the higher  $T$ ).

### **Money and the Rate of Interest (the LM Curve)**

The second element of our theory is the money market. As seen in Chapter 8, the equilibrium in the money market is

$$M/P = L(i, Y) = L(r, Y)$$

where  $M$  is the amount of currency supplied to the public by the Fed (previously called  $MS$  in Chapter 6). Note that, in the Keynesian theory the price level is fixed so that we can assume that there is no difference between the nominal and the real interest rate (i.e.  $r$  and  $i$  are equal). As we discussed in Chapter 8, the Fed affects the level of interest rates by choosing the amount of

currency via open market operations. As in Chapter 8, the equilibrium in the money market is shown in the top panel;  $r$  (or  $i$ ) is determined at the point where the real money supply  $M/P$  is equal to the real money demand  $L$ .

We can now express this equilibrium in the money market as a new relation between the real interest rate  $r$  and real output  $Y$ , given values of  $M$  and  $P$ ; we will call this relation the LM curve. We derive this relation in much the same way we did for the IS curve. Start with supply and demand for money for a given initial value of  $Y$ . Real money supply is fixed since  $M$  and  $P$  are given (that is, outside the theory). Real money demand  $L$  is a downward sloping line. The equilibrium, labeled A, can be drawn as a point in the right hand diagram also labeled A as a combination of the initial  $Y'$  and the initial equilibrium  $r'$ .

Now try a different, higher value of  $Y$ ,  $Y''$  greater than the initial  $Y'$ . These results in greater demand for money more transactions and a shift up of the  $L$  curve: at any level of the interest rate the demand for money is higher since income is higher. This increase in money demand leads to a higher rate of interest  $r''$ , labeled point B in both sides of the diagram. Thus higher output is associated with a higher interest rate along the equilibrium curve for the money market, labeled the LM curve. So the LM curve represents the combination of values of  $Y$  and  $r$  such that the real demand for money is equal to the real supply of money ( $L=M/P$ ).

This upward slope of the LM curve makes sense. Starting from an initial equilibrium point A on the LM curve, a higher  $Y$  leads to a higher demand for money; since the supply of money is given, to restore the equilibrium in the money market we need an increase in the interest rates that reduces the money demand back to the fixed real money supply. In other terms, starting from an equilibrium point A, an increase in  $Y$  (shown as a movement from point A to point X) leads to an increase in the demand for money and an excess demand for money in the money market ( $L>M/P$ ). Then, to bring back the demand for money to the lower exogenous level of the real money supply ( $M/P$ ), we need an increase in the interest rate, i.e. a movement from point X to point B. At B, the equilibrium in the money market equilibrium is restored. Note that points below the LM curve are points of excess demand for money ( $L>M/P$ ) as higher output and/or lower interest rates raise the demand for money above its supply; while points above the LM curve are points of excess supply of money ( $M/P>L$ ). Points along the LM curve are points where real money demand is equal to real money supply ( $L=M/P$ ).

The LM curve summarizes equilibrium in the money market for given values of  $M$  and  $P$ . Changes in any of these variables leads to a shift of the curve. The most important of these is a change in  $M$ . You might guess that an increase in  $M$  shifts the LM curve to the right or down (raises output or lowers the interest rate), as shown in 00 14. That's exactly right, as we now show. Suppose you start from an initial equilibrium in the money market at point A in both sides of

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00 14; the initial output, money supply and price level are  $Y'$ ,  $M'$  and  $P'$ . The equilibrium A is represented by the interest rate  $r'$  and the level of output  $Y'$  in the right side of the 00. The result is a lower equilibrium real interest rate, given the initial value of  $Y$ ,  $Y'$ . In the right hand side diagram, this appears as a shift down from point A' to point A''. The new point is labeled A'' in both diagrams. So, an increase in the money supply leads to an excess supply of money, given the initial values of  $r$  and  $Y$ . Then, we need a reduction of  $r$  (given the level of  $Y$ ) to increase the demand for money to the new higher level of the money supply. So, the equilibrium is restored on a new LM curve at a point A'' where output is still the same  $Y'$  and  $r$  has fallen from  $r'$  to  $r''$ . This increase in the money supply will reduce the interest rate at any level of output  $Y$ . In fact, if we started from a different initial  $Y$ , says  $Y''$  (before the shift in  $M$ ), we would be on a point like B' on the original LM curve. Then, an increase in  $M$  would still lead to a reduction in the interest rate. So, an increase in  $M$  is represented by a shift downward to the right of the entire LM curve from  $LM'$  to  $LM''$ . An additional way of seeing the shift in the LM is as follows. An increase in  $M$  leads to an excess supply of money ( $M/P > L$ ) at the initial levels of  $r$  and  $Y$ . Then, to restore the equilibrium in the money market, you need either a lower  $r$  (for given  $Y$ ) to increase the money demand to the higher supply or a higher  $Y$  (for given  $r$ ) to increase the money demand to the higher level of  $M$ . Either way, the LM shifts to the right.

### Demand-Side Equilibrium

The equilibrium in the Keynesian model consists of intersecting the IS and LM curves. Points of intersection are combinations of  $r$  and  $Y$  such that we have equilibrium in the markets for both goods (the IS curve) and money (the LM curve). The demand side since it involves how much output is demanded (through consumption, investment, and government spending), rather than how the output is produced the production function.

The interesting aspects of this model concern the policy experiments. Note first the effects on  $r$  and  $Y$  of **an increase in the money supply  $M$** . This leads to a shift of the LM curve to the right. The initial equilibrium (before the increase in  $M$ ) is at point A where  $r = r'$ ,  $Y = Y'$  and the LM curve is represented by  $LM'$ . Now, the central bank increases the money supply from  $M'$  to  $M''$ . Given the initial level of output  $Y'$  and interest rate  $r'$ , the increase in the money supply lead to an excess supply of money and a shift of the LM curve from  $LM'$  to  $LM''$ . The equilibrium will move from A to B where  $r$  is lower at  $r''$  and  $Y$  is higher at  $Y''$ . Let us see how the adjustment from A to B occurs. Initially, the level of output is fixed at  $Y'$  and the increase in  $M$  leads to a reduction in the interest rate. Given the initial money demand (for given  $Y'$ ), the interest rate has to fall from  $r'$  to  $r^x$  to clear the money market; since asset prices adjust faster than goods markets, it makes sense to think that in the short-run output is unchanged and the entire burden of equating money demand and money supply

falls on the interest rate. Now, the increase in  $M$  caused the interest rates to fall at the much lower level  $r^x$  represented by the move from point A to point B in the right panel. Note that this is fall in both the nominal and real interest rate since prices and inflation is held fixed. Since real interest rates are lower, the components of aggregate demand more sensitive to interest rates start to increase: firms increase investment by buying more capital goods while households reduce savings and start to consume more (especially big items such as cars, home appliances and other durable goods whose demand is sensitive to interest rates). In turn, this increase in aggregate demand leads firms to produce more as in a Keynesian model aggregate supply is determined by the aggregate demand for goods; so output starts to increase from  $Y'$  to  $Y''$ . Note that, while the interest rate falls on impact following the increase in the money supply, over time it starts to increase even if at the new equilibrium B, the interest rate is at a level  $r''$  that is lower than its pre-monetary shock level  $r'$ . The reason for the increase in  $r$  from  $r^x$  to  $r''$  in the transition from C to B is simple: as output starts to increase, the demand for money will increase too. Since the money supply is now fixed at its new higher level  $M''$ , the increase in money demand pushes up the interest rate. So,  $r$  initially falls from  $r'$  to  $r^x$  but then crawls back up to  $r''$ . In the new short-run equilibrium B, output is higher and the (nominal and real) interest rate is lower. Thus we have delivered on one of our objectives: to have a theory in which more money leads to lower interest rates and higher output. The mechanism, if you stop to think about it, is liquidity: the Fed changes the composition of its debt, raising the fraction of debt in the form of cash. This makes financial markets more liquid and, for a period of time, drives down interest rates. This, in turn, stimulates aggregate demand and leads to an increase in production, output and income.

Over longer periods of time, of course, we might expect that an increase in  $M$  would lead the classical effects to take over: inflation and nominal interest rates would rise. You can see this long-run effect by working through the effects of an increase in  $P$  on the LM curve. If the initial output level  $Y'$  was equal to the full employment output, the increase in output to  $Y''$  puts the economy in a overheated state where output and demand are above the long-run potential level of output. Therefore, the price level starts to increase as bottlenecks in production and increases in wages lead to positive inflation. As the price level  $P$  starts to increase, the real money supply  $M/P$  falls; in fact, the nominal money supply is now given at  $M''$  while  $P$  is now increasing over time. This reduction in the real money supply leads to a leftward shift in the LM curve. In fact, the position of the LM curve depends on the levels of  $M$  and  $P$ ; and an increase in  $P$  is equivalent to a fall in  $M$  since the position of the LM curve depends on the ratio  $M/P$ . Therefore over time, as prices increase, the LM curve shifts back eventually to where it was before the monetary shock; as this backward shift in the LM occurs, the interest rate starts to increase, the demand for goods starts to fall and output falls back towards its full employment level  $Y'$ . In the long-run, the initial increase in the money supply has not effects on output and the



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interest rate and its only effect is an increase in the price level, as predicted by the Classical theory. But in the short run, say 6 to 18 months, the Keynesian model seems appropriate. These two effects together initially the Keynesian “liquidity” effect dominates, but later on the Classical theory takes over, as inflation catches up with the increase in the money supply.

Another policy change we consider is a rise in government spending  $G$ . Note that, since a reduction of taxes  $T$  has the same effect on the IS curve as an increase in government spending  $G$ , the policy experiment we consider (an increase in  $G$ ) has similar effect as a reduction in  $T$ . In fact, both fiscal policy changes lead to a higher budget deficit; here we assume that this budget deficit is financed by issuing bonds. Before the increase in  $G$ , the equilibrium was at point A; the new equilibrium is at point B where both output and the interest rate are higher. Let us see why a fiscal expansion leads to these effects. Starting from equilibrium A, an increase in government spending leads to an increase in aggregate demand; initially this leads to an excess demand for goods but since output is demand determined, the increase in demand soon leads to an increase in supply. Therefore, output starts to increase from  $Y'$  towards  $Y''$ . Note that, as output goes up, the interest rate starts to increase from  $r'$  to  $r''$ . The reasons why the interest rate goes up are two: first, as income goes up the demand for money increases; but since the supply of money is constant, the increase in the demand for money must lead to an increase in the interest rate. Second, since the higher budget deficit is bond-financed, the increased supply of bonds by the government must lead to a fall in their price and an increase in interest rates; agents will hold these extra government bonds only if their return is higher. Therefore, as output increases from  $Y'$  to  $Y''$ , the interest rate goes up from  $r'$  to  $r''$ . Note that the difference between expansionary monetary and fiscal policy, then, is that one lowers interest rates, the other raises them; both of them lead to an increase in output. Note also that, in the case of a fiscal expansion, the increase in the interest rate leads to a “crowding-out” of private investment. In fact, as interest rates go higher, private investment tends to fall leading to a smaller increase in output than would have occurred if interest rates had not gone up. This can be seen by observing that, if the interest rate had remained constant at  $r'$ , the shift in the IS curve to  $IS''$  would have led to an increase in output from  $Y'$  to  $Y^x$ ; instead, the actual increase in  $Y$  is only from  $Y'$  up to  $Y''$  since the increase in interest rates leads to a fall in private investment (the crowding-out effect). This is similar to the Classical theory where higher budget deficits lead to higher interest rates and lower investment.

As in the case of a monetary expansion, the effects described above are only short-run. Since in the long-run output is determined by supply factors, a fiscal expansion cannot permanently increase output above its long-run full employment level. Suppose that the initial  $Y'$  was the full employment output. Then, in the short-run the fiscal expansion leads to an overheating of the economy as output  $Y''$  is above its full employment level. This excess demand for goods,

in turn, will cause over time some positive inflation. As the price level goes up, the real money supply  $M/P$  will fall (since  $M$  is exogenously given and  $P$  is increasing); this fall in real money balances leads to a shift to the left of the LM curve that starts to move from  $LM'$  to  $LM''$ . As the LM shifts back, the interest rate will tend to rise from  $r''$  to  $r'''$ . This increase in interest rates, in turn, leads to a reduction in aggregate demand, especially demand for investment and durable goods. This fall in aggregate demand, in turn, leads to a fall in output. So, the output level starts to shrink from  $Y''$  back to its original full employment level  $Y'$ . The increase in prices terminates when output is back to its full employment level and the excess demand for goods is eliminated. The new equilibrium is at point C where interest rates are even higher than in the short-run. That makes sense: since output is back to its initial level while  $G$  is at a higher level, the goods market clears through a permanent reduction in the components of demand that are interest sensitive, i.e. investment and consumption of durable goods ( $Y = C + \downarrow I + G$ ). So, you get a long-run crowding-out of investment. Note that this permanent long-run crowding-out of investment can be avoided if, over time, the increased budget deficit (caused by the increased  $G$ ) is financed by an increase in taxes  $T$ . If an increase in taxes occurs, the IS curve shifts from  $IS''$  back to the original  $IS'$  and the long run equilibrium is not at point C but back at point A. In this new long-run equilibrium, there is no crowding-out of investment as the interest rate falls back to the original  $r'$ . However, since  $Y$  is constant to its full employment level  $Y'$  while  $G$  is at a higher permanent level  $G''$ , there must be a full crowding-out of private consumption; in fact, the higher taxes reduce disposable income and lead to a permanent reduction in  $C$  (again  $Y = \downarrow C + I + G$ ).

In summary, in the short-run since prices of goods are fixed the Keynesian effects are at work and both a monetary and fiscal expansion lead to higher output. However, if output ends up being higher than its full employment level, over time the price level will start to increase and the long-run effects of these monetary and fiscal expansions is identical to the implications of the Classical theory. Money cannot affect the long run level of real variables such as output,  $C$ ,  $I$  and the real interest rate. For concerns fiscal policy, government spending and budget deficits cannot affect the level of long-run output but may affect its composition between consumption, investment and  $G$ .

Prices that is not rigid for some institutional reason will move in response to excess demands and excess supplies. When demand exceeds supply, disappointed buyers will bid up the price; when supply exceeds demand, unsuccessful suppliers will bid it down. This mechanism solved the excess demand for the oil problem in the illustration above. The question, however, is whether throughout the system as a whole it will always acted so as to move each of the prices toward its general equilibrium value.



**Notes**

This is the flaw in the traditional conception of the operation of the price system that prompted Keynes to introduce the concept of “effective demand.” To pre-Keynesian economists the implied distinction between “effective” and (presumably) “ineffective” demand would have had no analytical meaning. The logic of traditional economic theory suggested two possibilities that might make the price system inoperative: (1) that, in some markets, neither demanders nor suppliers respond to price incentives, so that a “gap” between demand and supply cannot be closed by price adjustments and (2) that, for various institutional reasons, prices in some markets are “rigid” and will not budge in response to the competitive pressures of excess demands or excess supplies. Keynes discovered a third possibility that, he argued, was responsible for the depth and duration of severe depressions: under certain conditions, some prices may show no tendency to change even though desires to buy and to sell do not coincide in the respective markets and even though no institutional reasons exist for the prices to be rigid.

The proposition that prices adjust in the long run is response to market shortages or surpluses. This condition is most important for long-run macroeconomic activity and long-run aggregate market analysis. Price flexibility ensures that long-run aggregate production is equal to full-employment production. In particular, changes in the price level are met by equal changes in resource prices, especially wages. A higher or lower price level might temporarily lead to an increase or decrease in real production, above or below the full employment level, but in the long run, resource prices adjust and full-employment production is maintained.

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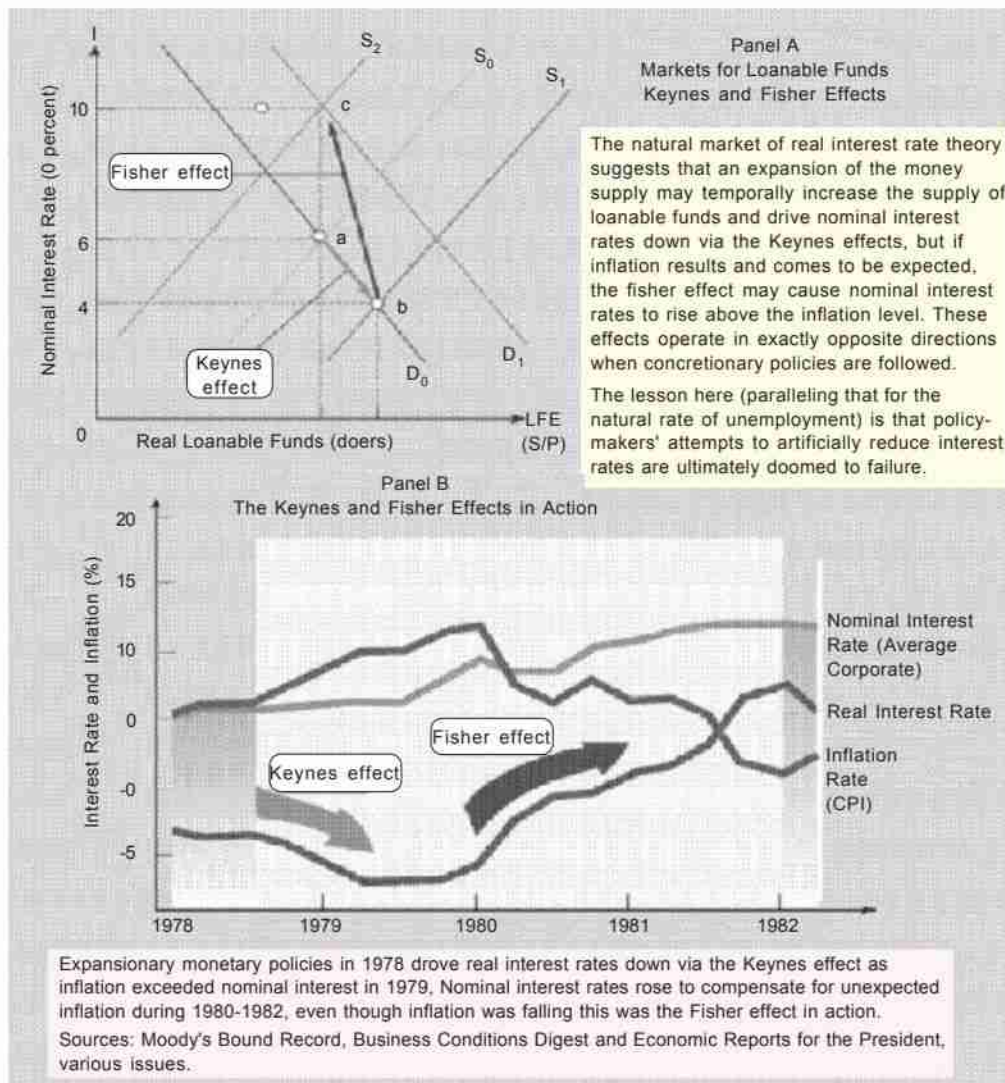
**3.1.3 KEYNES EFFECT AND PIGOU EFFECT**

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**Keynes Effect**

According to the natural rate hypothesis, expansionary monetary policy might temporarily reduce nominal interest rates, but in the long run, expansionary policies drive nominal interest rates up, not down. Figure 3.1.1 shows why by relating the supply and demand for loanable funds to nominal interest rates. The supply and demand for loanable funds is linked closely to the market for money discussed

## Notes



earlier. Changes in real interest rates will shift these supplies and demands.

**Fig. 3.1.1 Keynes and Fisher Effects in the Market for Real Loanable Funds**

Suppose monetary policymakers view a nominal interest rate of 6 percent (at point *a*—the intersection of  $D_0$  and  $S_0$ ) as too high—they perceive it as inhibiting investment and spending. If they follow expansionary open-market operations, the supply of loanable funds initially rises to  $S_1$  and the nominal interest rate falls to 4 percent (point *b*). This temporary fall in nominal interest rates caused by expansionary policies will yield even larger declines in real interest rates because natural rate theory predicts that overly expansionary policies cause inflation.

*The Keynes effect predicts declines in interest rates following expansionary monetary policy, and vice versa.*

If expansionary policies trigger annual inflation of 4 percent, the real rate of interest is zero. Borrowers eventually will boost real demands for funds to, say,  $D_1$  because borrowing seems so cheap loans are repaid in depreciated dollars.

## Notes

Lenders will reduce supplies to  $S_2$  because they gained no real purchasing power at a zero real interest rate. In the long run, the nominal interest rate rises to 10 percent (point  $c$  in Figure 8). Irving Fisher, a prominent early American monetary theorist (see his biography) was the first to systematically address adjustments of this type.

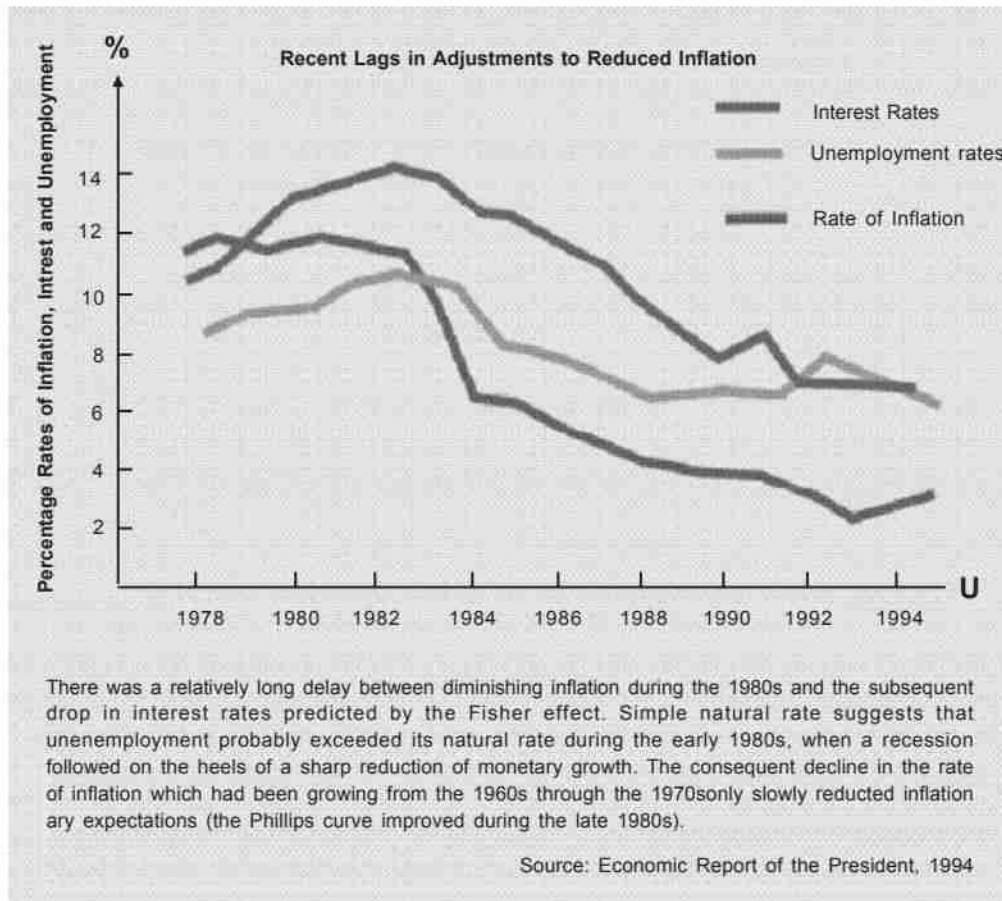
The natural rate of real interest theory suggests that an expansion of the money supply may temporarily increase the supply of loanable funds and drive nominal interest rates down via the Keynes effect, but if inflation results and comes to be expected, the Fisher effect may cause nominal interest rates to rise above the inflation level. These effects operate in exactly opposite directions when contractionary policies are followed. The lesson here (paralleling that for the natural rate of unemployment) is that policymakers' attempts to artificially reduce interest rates are ultimately doomed to failure.

Expansionary money policies in 1978 drove real interest rates down via the Keynes effect as inflation exceeded nominal interest in 1979. Nominal interest rates rose to compensate for unexpected inflation in 1980 —1981, even though inflation was falling; this was the Fisher effect in action.

**Sources:** *Moody's Bond Record*, *Business Conditions Digest*, and *Economic Reports of the President*, various issues.

**The Fisher effect predicts upward adjustments in nominal interest rates as borrowers and lenders compensate for expected inflation, and downward shifts if deflation is expected.**

Contractionary monetary policies tend to reduce the availability of credit in the short run; thus, in such cases the Keynes effect drives nominal interest rates up. After borrowers and lenders have learned to expect the deflationary pressures resulting from contractionary policies, however, the Fisher effect brings nominal interest rates down. One clear example of the Keynes and Fisher effects in action occurred during the period 1978-1982, as illustrated in panel B of Figure 3.1.1. The Federal Reserve eased monetary policy in 1978, reducing real rates of interest (the Keynes effect). During most of 1978-1980, real rates of interest were actually negative or nearly zero. By 1981, real and nominal interest rates began to soar as financial markets adjusted to higher expected inflation (the Fisher effect). Even more recently, however, inflation in the United States steadily subsided from double-digit rates during 1983 —1989, but nominal interest rates remained persistently high, as shown in Panel A of Figure 3.1.2. The eventual drop in nominal interest rates to conform to these lower rates of inflation did not fully occur until between 1990 and 1994. This delay suggests that the Fisher effect is sometimes experienced only after a long lag.



**Fig. 3.1.2 Recent Lags in Adjustments to Reduced Inflation**

There was a relatively long delay between diminishing inflation during the 1980s and the subsequent drop in interest rates predicted by the Fisher effect. Simple natural rate theory suggests that unemployment probably exceeded its natural rate during the early 1980s, when a recession followed on the heels of a sharp reduction of monetary growth. The consequent decline in the rate of inflation, which had been growing from the 1960s through the 1970s only slowly reduced inflationary expectations (the Phillips curve improved during the late 1980s).

**Source:** *Economic Report of the President, 1994*

Unemployment rates also trickled down during 1983-1993, but erratically, as shown in Figure 3.1.2. Thus, in the long run, natural rate theory has some predictive power about how unemployment, inflation, and interest rates are related. Critics point out, however, that long delays before interest rates and unemployment equilibrate to their “natural rates” mean that natural rate theory predicts macroeconomic movement little better than a theory that “what goes up must come down, and vice versa.” In economics, as in many areas, timing is everything.

Overall, natural rate analysis suggests that active policy is futile in the long run; it cannot permanently reduce either real interest rates or unemployment. The advocates of a *fixed monetary growth* rule believe that discretionary policies work temporarily only if people suffer from *money illusion*.



## Notes

**Pigou Effects**

The Pigou effect is an economics term that refers to the stimulation of output and employment caused by increasing consumption due to a rise in real balances of wealth, particularly during deflation. Wealth was defined by Arthur Cecil Pigou as the sum of the money supply and government bonds divided by the price level. He argued that Keynes' General theory was deficient in not specifying a link from "real balances" to current consumption and that the inclusion of such a "wealth effect" would make the economy more 'self correcting' to drops in aggregate demand than Keynes predicted. Because the effect derives from changes to the "Real Balance", this critique of Keynesianism is also called the Real Balance effect.

The Pigou effect was first popularized by Arthur Cecil Pigou in 1943, in *The Classical Stationary State* (an eight page *Economic Journal* article). He had proposed the link from balances to consumption earlier, and Gottfried Haberler had made a similar objection the year after the *General Theory*'s publication. Following the tradition of classical economics, Pigou favoured the idea of "natural rates" to which the economy would return, and saw the "Real Balance" effect as a mechanism to fuse Keynesian and classical models. (In most cases - he acknowledged that sticky prices might still prevent reversion to natural output levels after a demand shock.)

**Integration with Keynesian Aggregate Demand**

Keynes said that a drop in aggregate demand could lower employment and the price level (an everyday concept in the deflationary depression). In the IS-LM framework that Hicks bolted on to Keynesian economics in an effort to paint Keynesianism as a trivial restatement of neoclassical economics (and which he later disclaimed as a "classroom gadget"), a negative aggregate demand shock would shift the LM curve left due to rising real wages changing liquidity preference. The Pigou effect would counterbalance this by shifting the IS curve right due to rising real balances raising expenditures.

**Pigou's hypothesis prevents the liquidity trap**

An economy in a liquidity trap cannot use monetary stimulus to increase output because there is little connection between personal income and money demand, John Hicks thought that this might be another reason (along with sticky prices) for persistently high unemployment. However, the Pigou effect creates a mechanism for the economy to escape the trap: As unemployment rises, the price level drops, which raises real balances, and thus consumption rises, which creates a different set of IS-curves on the IS-LM diagram, intersecting the LM curves above the low interest rate threshold of the liquidity trap.

Finally, the economy moves to the new equilibrium, at full employment.

### Kalecki's criticism of the Pigou effect

The Pigou effect was criticized by Kalecki because 'The adjustment required would increase catastrophically the real value of debts, and would consequently lead to wholesale bankruptcy and a "confidence crisis."

### The Pigou effect and Japan

If the Pigou effect always operates strongly, the Bank of Japan's policy of near-zero nominal interest rates might have been expected to end the Japanese deflation sooner.

Other apparent evidence against the Pigou effect from Japan may be its long period of stagnating consumer expenditure whilst prices were falling. Pigou hypothesised that falling prices would make consumers feel richer (and increase spending) but Japanese consumers tended to report that they preferred to delay purchases, expecting that prices would fall further. A similar, reverse Pigou effect happens throughout the world in consumer electronics because of depreciating prices (this is sometimes called the Osbourne effect).

### Government debt and the Pigou effect

Robert Barro argued that due to Ricardian Equivalence in the presence of an operative bequest motive the public is not fooled into thinking they are richer when the government issues bonds to them, because government bond coupons must be paid from increased taxation. Therefore, he said that: At the microeconomic level, the subjective level of wealth would be lessened by a share of the debt taken on by the national government. Bonds should not be considered as part of net wealth at the macroeconomic level. Therefore: There is no way for the government to create a "Pigou effect" by issuing bonds, because the aggregate subjective level of wealth will not increase.

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#### 3.1.4 A NEOCLASSICAL CRITICISMS

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However, it is unfortunate that most neo-classical economists could not evolve a framework of analysis beyond the problem of their own national economies. This has not only dimmed the scientific basis of the framework, but also rendered it less useful for the under-developed countries. Moreover, their concept of prosperity was based on short-run equilibrium and if projected into long-term phenomena, it losses its optimism. Thus, the neo-classicists could neither present a model of long-term development for their own countries, nor could they indicate any guiding principle for the poor nations.

The neo-classical view that development occurred gradually in continuous manner can be true only in an economic environment which is stable and allows rational decision-making to take place. Thus, the neo-classical school failed to understand reality and could not correctly evaluate the significance of sudden as well as cyclical changes in the development process.

**Notes**

Further, the neo-classicists also failed to analyse properly as to how aggregate demand could be maintained a full employment level. Their basic drawback is also the assumption of full employment which is unrealistic.

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### 3.1.5 RATIONAL EXPECTATION

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**Rational expectations** is a hypothesis in economics which states that agents' predictions of the future value of economically relevant variables are not systematically wrong in that all errors are random. An alternative formulation is that rational expectations are **model-consistent expectations**, in that the agents inside the model assume the model's predictions are valid. The rational expectations assumption is used in many contemporary macroeconomic models, game theory and other applications of rational choice theory.

Since most macroeconomic models today study decisions over many periods, the expectations of workers, consumers and firms about future economic conditions are an essential part of the model. How to model these expectations has long been controversial, and it is well known that the macroeconomic predictions of the model may differ depending on the assumptions made about expectations. To assume rational expectations is to assume that agents' expectations may be individually wrong, but are correct on average. In other words, although the future is not fully predictable, agents' expectations are assumed not to be systematically biased and use all relevant information in forming expectations of economic variables.

This way of modeling expectations was originally proposed by John F. Muth (1961) and later became influential when it was used by Robert E. Lucas Jr and others. Modeling expectations is crucial in all models which study how a large number of individuals, firms and organizations make choices under uncertainty. For example, negotiations between workers and firms will be influenced by the expected level of inflation, and the value of a share of stock is dependent on the expected future income from that stock.

### Theory

Rational expectations theory defines this kind of expectations as being identical to the best guess of the future (the optimal forecast) that uses all available information. Thus, it is assumed that outcomes that are being forecast do not differ systematically from the market equilibrium results. As a result, rational expectations do not differ systematically or predictably from equilibrium results. That is, it assumes that people do not make systematic errors when predicting the future, and deviations from perfect foresight are only random. In an economic model, this is typically modeled by assuming that the expected value of a variable is equal to the expected value predicted by the model.

For example, suppose that  $P$  is the equilibrium price in a simple market, determined by supply and demand. The theory of rational expectations says that the actual price will only deviate from the expectation if there is an 'information

shock' caused by information unforeseeable at the time expectations were formed. In other words ex ante the actual price is equal to its rational expectation:

$$P = P^* + \epsilon$$

$$E[P] = P^*$$

where  $P^*$  is the rational expectation and  $\epsilon$  is the random error term, which has an expected value of zero, and is independent of  $P^*$ .

Rational expectations theories were developed in response to perceived flaws in theories based on adaptive expectations. Under adaptive expectations, expectations of the future value of an economic variable are based on past values. For example, people would be assumed to predict inflation by looking at inflation last year and in previous years. Under adaptive expectations, if the economy suffers from constantly rising inflation rates (perhaps due to government policies), people would be assumed to always underestimate inflation. This may be regarded as unrealistic - surely rational individuals would sooner or later realize the trend and take it into account in forming their expectations?

The hypothesis of rational expectations addresses this criticism by assuming that individuals take all available information into account in forming expectations. Though expectations may turn out incorrect, they will not deviate systematically from the expected values.

The rational expectations hypothesis has been used to support some radical conclusions about economic policymaking. An example is the Policy Ineffectiveness Proposition developed by Thomas Sargent and Neil Wallace. If the Federal Reserve attempts to lower unemployment through expansionary monetary policy economic agents will anticipate the effects of the change of policy and raise their expectations of future inflation accordingly. This in turn will counteract the expansionary effect of the increased money supply. All that the government can do is raise the inflation rate, not employment. This is a distinctly New Classical outcome. During the 1970s rational expectations appeared to have made previous macroeconomic theory largely obsolete, which culminated with the Lucas critique. However, rational expectations theory has been widely adopted throughout modern macroeconomics as a modeling assumption thanks to the work of New Keynesians such as Stanley Fischer.

Rational expectations theory is the basis for the efficient market hypothesis (efficient market theory). If a security's price does not reflect all the information about it, then there exist "unexploited profit opportunities": someone can buy (or sell) the security to make a profit, thus driving the price toward equilibrium. In the strongest versions of these theories, where all profit opportunities have been exploited, all prices in financial markets are correct and reflect market fundamentals (such as future streams of profits and dividends). Each financial investment is as good as any other, while a security's price reflects all information about its intrinsic value.



## Notes

## Criticisms

The models of Muth and Lucas (and the strongest version of the efficient-market hypothesis) assume that at any specific time, a market or the economy has only one equilibrium (which was determined ahead of time), so that people form their expectations around this unique equilibrium. Muth's math (sketched above) assumed that  $P^*$  was unique. Lucas assumed that equilibrium corresponded to a unique "full employment" level (potential output) corresponding to a unique NAIRU or natural rate of unemployment. If there is more than one possible equilibrium at any time then the more interesting implications of the theory of rational expectations do not apply. In fact, expectations would determine the nature of the equilibrium attained, reversing the line of causation posited by rational expectations theorists.

A further problem relates to the application of the rational expectations hypothesis to aggregate behavior. It is well known that assumptions about individual behavior do not carry over to aggregate behavior (Sonnenschein-Mantel-Debreu theorem). The same holds true for rationality assumptions: Even if all individuals have rational expectations, the representative household describing these behaviors may exhibit behavior that does not satisfy rationality assumptions (Janssen 1993). Hence the rational expectations hypothesis, as applied to the representative household, is unrelated to the presence or absence of rational expectations on the micro level and lacks, in this sense, a microeconomic foundation.

It can be argued that it is difficult to apply the standard efficient market hypothesis (efficient market theory) to understand the stock market bubble that ended in 2000 and collapsed thereafter; however, advocates of rational expectations say that the problem of ascertaining all the pertinent effects of the stock-market crash is a great challenge. Furthermore, social scientists in general criticize the movement of this theory into other fields such as political science. In his book *Essence of Decision*, political scientist Graham T. Allison specifically attacked the rational expectations theory.

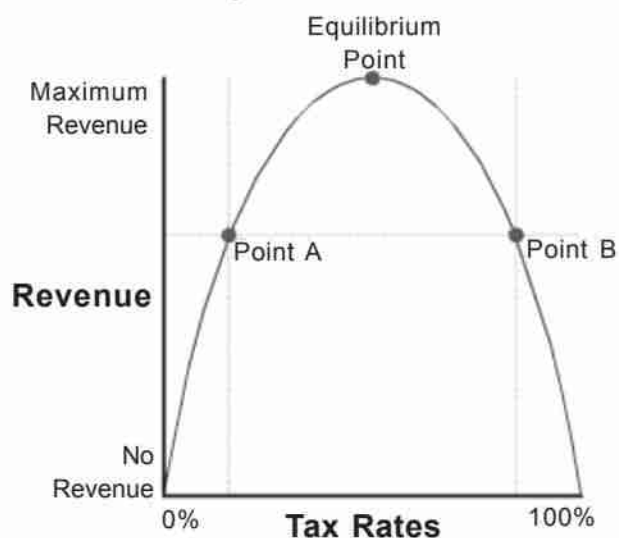
Some economists now use the adaptive expectations model, but then complement it with ideas based on the rational expectations theory. For example, an anti-inflation campaign by the central bank is more effective if it is seen as "credible," i.e., if it convinces people that it will "stick to its guns." The bank can convince people to lower their inflationary expectations, which imply less of a feedback into the actual inflation rate. (An advocate of Rational Expectations would say, rather, that the pronouncements of central banks are facts that must be incorporated into one's forecast because central banks can act independently). Those studying financial markets similarly apply the efficient-markets hypothesis but keep the existence of exceptions in mind.

### 3.1.6 THE LAFFER CURVE

The **Laffer curve** is a theoretical representation of the relationship between government revenue raised by taxation and all possible rates of taxation. It is used to illustrate the concept of taxable income elasticity (that taxable income will change in response to changes in the rate of taxation). The curve is constructed by thought experiment. First, the amount of tax revenue raised at the extreme tax rates of 0% and 100% is considered. It is clear that a 0% tax rate raises no revenue, but the Laffer curve hypothesis is that a 100% tax rate will also generate no revenue because at such a rate there is no longer any incentive for a rational taxpayer to earn any income, thus the revenue raised will be 100% of nothing. If both a 0% rate and 100% rate of taxation generate no revenue, it follows from the extreme value theorem that there must exist at least one rate in between where tax revenue would be a maximum. The Laffer curve is typically represented as a graph which starts at 0% tax, zero revenue, rises to a maximum rate of revenue raised at an intermediate rate of taxation and then falls again to zero revenue at a 100% tax rate.

One potential result of the Laffer curve is that increasing tax rates beyond a certain point will become counterproductive for raising further tax revenue. A hypothetical Laffer curve for any given economy can only be estimated and such estimates are sometimes controversial. The New Palgrave Dictionary of Economics reports that estimates of revenue-maximizing tax rates have varied widely, with a mid-range of around 70%.

The Laffer curve is associated with supply-side economics, where its use in debates over rates of taxation has also been controversial. The Laffer curve was popularized by Jude Wanniski in the 1970s, with Wanniski naming the curve after the work of Arthur Laffer. Laffer later pointed out that the concept was not original, noting similar ideas in the writings of both 14th century North African polymath Ibn Khaldun (who discussed the idea in his 1377 *Muqaddimah*) and John Maynard Keynes. Numerous other historical precedents also exist.



## Notes

## Theory

Laffer explains the model in terms of two interacting effects of taxation: an “arithmetic effect” and an “economic effect”. The “arithmetic effect” assumes that tax revenue raised is the tax rate multiplied by the revenue available for taxation (or tax base). At a 0% tax rate, the model assumes that no tax revenue is raised. The “economic effect” assumes that the tax rate will have an impact on the tax base itself. At the extreme of a 100% tax rate, the government theoretically collects zero revenue because taxpayers change their behavior in response to the tax rate: either they have no incentive to work or they find a way to avoid paying taxes. Thus, the “economic effect” of a 100% tax rate is to decrease the tax base to zero. If this is the case, then somewhere between 0% and 100% lies a tax rate that will maximize revenue. Graphical representations of the curve sometimes appear to put the rate at around 50%, but the optimal rate could theoretically be *any* percentage greater than 0% and less than 100%. Similarly, the curve is often presented as a parabolic shape, but there is no reason that this is necessarily the case.

Jude Wanniski noted that all economic activity would be unlikely to cease at 100% taxation, but would switch to barter from the exchange of money. He also noted that there can be special circumstances where economic activity can continue for a period at a near 100% taxation rate (for example, in war time).

Various efforts have been made to quantify the relationship between tax revenue and tax rates (for example, in the United States by the Congressional Budget Office). While the interaction between tax rates and tax revenue is generally accepted, the precise nature of this interaction is debated. In practice, the shape of a hypothetical Laffer curve for a given economy can only be estimated. The relationship between tax rate and tax revenue is likely to vary from one economy to another and depends on the elasticity of supply for labor and various other factors. Even in the same economy, the characteristics of the curve could vary over time. Complexities such as possible differences in the incentive to work for different income groups and progressive taxation complicate the task of estimation. The structure of the curve may also be changed by policy decisions. For example, if tax loopholes and off-shore tax shelters are made more readily available by legislation, the point at which revenue begins to decrease with increased taxation is likely to become lower.

Laffer presented the curve as a pedagogical device to show that, in some circumstances, a reduction in tax rates will actually increase government revenue and not need to be offset by decreased government spending or increased borrowing. For a reduction in tax rates to increase revenue, the current tax rate would need to be higher than the revenue maximizing rate. In 2007, Laffer said that the curve should not be the sole basis for raising or lowering taxes.

## Criticism

Notes

The Laffer curve assumes that the Government would collect no income tax at a 100% tax rate because there would be no incentive to earn income. There is some question whether this assumption is correct. There are also serious doubts about its relevance in the context of a marginal tax rate. However, some believe that this is simply debating semantics since any existence of untaxed economic activity would by definition mean that aggregate taxation could not be 100%.

## The structural inflation hypothesis

The structural inflation is the inflation which is not caused merely by the excess of demand over supply but built into an economy due to the government's monetary policy.

The inflationary process is not entirely independent of some of those just discussed; its distinguishing feature is its emphasis on structural maladjustment in the economy. One version of it depends upon the simple proposition that resistance to reductions of money wages is so strong that they hardly ever take place. If this is so, then all adjustments of wages to take account of relative changes in the supply of, and demand for, labour in different industries or occupations have to be accomplished through the absolute raising of all wages except those of the group of workers whose market position is weakest. The rate of wage inflation as a whole is then seen as proportional to the rate of structural change in the economy.

Another version, held to be appropriate to some developing countries, focuses on the gap between imports and exports. Imports tend to increase faster in those countries (because of the rising demand for manufactured goods) than the ability of the traditional exporting industries to pay for them. Consequently, there is a continuous downward pressure on the international value of the country's currency; this is felt in a continuous upward pressure on the country's internal prices.

Alternatively, inflation in such countries may result from social and political pressures to provide employment for the overflow into the towns of a rapidly growing rural population; since there is a shortage of savings, this leads to excessive creation of new credit in one way or another and thus to a straightforward "demand-pull" inflation.

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### 3.1.7 SUPPLY SIDE ECONOMICS

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The inflationary gap is widened when the supply of goods and services does not keep pace with the increased monetary demand for things. The case in the supply of goods and services may be limited on various accounts:

**1. Full-employment.** When the full-employment stage is reached by the economy.

## Notes

**2. Shortages.** When there is a shortage and deficiency of factors of production, shortage of land, labour, capital equipment, raw materials, etc. obviously accounts for inadequacy of supply of certain goods.

**3. Diminishing Return.** Operating of the law of diminishing returns in variable factors, with a given technological structure, also causes slow movement of supply of real goods and services.

**4. Export-Induced Scarcity.** Increasing export of certain goods which have a strong domestic demand evidently aggravates the supply situation.

**5. Wage-Price Spiral.** A wage-price spiral is another important factor which aggravates the supply situation. When wages rise, the costs of production also rise. Thus, entrepreneurs usually adjust cost increases by increasing prices rather than by absorbing them, fully or partly, by reducing profits. When demand is inelastic, businessmen are very much inclined to raise prices, on account of wages, and an increase in wages is demanded because of high prices. Thus, a wage-price spiral is developed, simulating inflation further.

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### 3.1.8 THE GIST OF SSE (THE LAFFER CURVE)

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Supply-side economics is the anti-thesis of Keynesian economics, which holds that a higher rate of saving is essential for increase in investment and increased investment is essential for productivity and growth. On this issue, however, the SS economists have examined the implications of government intervention, its fiscal operations in modern times in the light of the classical macro-analysis of public finance and have come out with radical conclusions and policy measures.

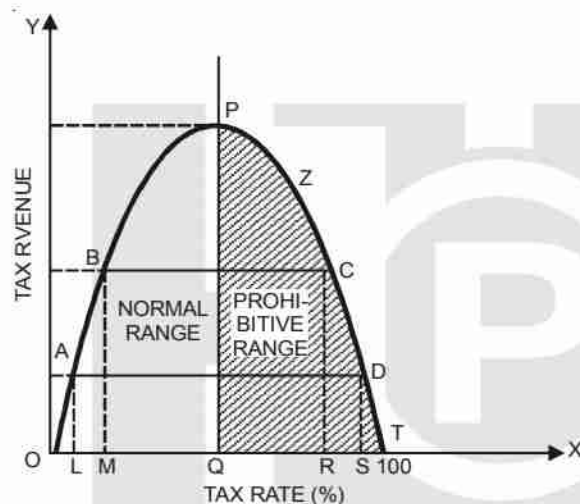
Arthur Laffer, Irving Kristol, Paul Roberts, John Rutledge and Winnisky are the main advocates of SSE. The nexus of SSE, however, lies in the Laffer Curve Analysis. A typical functional relationship between the tax rate and tax revenue is described by Prof. Laffer, which is popularly known as the “Laffer Curve.”

According to Laffer, tax rates carry two kinds of effects on the total revenue of the government: (1) the arithmetic effect; and (2) the economic effect. Arithmetic effect is that which with the raising of tax rates more tax revenue is obtained per rupee of tax base. For pure mathematical reasons,  $\text{Tax Revenue} = \text{Tax Base} \times \text{Tax Rate}$ . It is, thus, always positive with a rise in the tax rate. The economic effort of a high tax rate is, however, negative. When the tax rate rises, incentives to work and save decline, resulting in the shrinkage of the income tax base. Apparently, when “these two effects always work in the opposite direction, and as often as not, an increase in tax rate will ultimately lead to less revenue, not more,” says Prof. Laffer.

To state in graphical terms, the Laffer Curve is a bullet-shaped curve, as in Fig. 3.1.3, which depicts that the minimum and maximum points of tax rate yield zero revenue.

Initially, when the tax rate rises, tax revenue also rises due to the positive arithmetic effect but with no adverse economic effect.

Perhaps there may be a positive economic effect of tax which may induce hard work on the part of tax-payers on account of inelasticity of demand for income. Up to a normal range, tax rates can be gainfully increased to fetch more revenue. But, once the optimum limit is reached, a further rise in the tax rate will lead to a decline in the tax yield due to negative economic effect on the incentive to work and save, which in turn may lead to a reduction in the economic activity and income. In short, after the optimum limit, an increase in the tax rate becomes counter-productive from the revenue point of view. The optimum point here is related to the psychology of the tax-payers when they start experiencing an excessive and unfair burden of taxation and feel that they are just working to pay taxes to the government.



**Fig. 3.1.3 The Laffer Curve**

Laffer, thus, argues that in a highly taxed nation, the government can hope to yield more revenue by lowering the tax rate rather than raising it further.

Graphically,  $OT$  tax rate brings  $RT$  tax revenue, but when it is reduced to  $OQ$ , it will fetch  $MQ$  revenue. The gist of SSE is that too high tax rates discourage economic activity. To augment the aggregate supply, thus, it is necessary to lower the taxes.

Unlike Keynes, the SS economists lay stress on the supply management. They hold that in a dynamic economy, employment can rise only with an increased capacity to produce and invest which is possible only through increased savings and more capital formation.



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### 3.1.9 SHORTCOMINGS OF KEYNESIAN THEORY

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Though Keynesian economics has revolutionised modern economic thinking, it has the following inherent weaknesses:

1. It is fundamentally a capitalistic theory. It basically examines the determinants of employment in a free enterprise economy. Though Keynes suggests government intervention and controlled capitalism his theory fails to deal with the socialist economic system. In communism, Keynes is as dead as Ricardo.

2. Keynesian economics is, by and large, characterised as depressionary economics. It was the outcome of the Great Depression of the Thirties. It suggested policy measures like the deficit financing to solve the problem of unemployment in a depressionary phase of the capitalist economy. In the present era of inflationary situation, the theory has not much validity.

3. Keynes's theory deals with short-run phenomena only. It pays little attention to the long-run problems of a dynamic economy.

4. Keynesian economics is static in nature. It does not consider time lags in the behaviour of economic variables. Indeed, post-Keynesian economic analysis is truly dynamic in nature as it gives due regard to the time element.

5. Keynes assumed a closed economy model for the sake of simplicity. But, in doing so, the impact of international trade on a country's growth of employment and income remained unexposed.

6. Keynesian theory assumes perfect competition in the model which is, however, not a very realistic phenomenon.

7. Keynesian theory being a purely macro-economic analysis, completely neglects micro-economic issues.

8. Keynesian theory is not strictly applicable to underdeveloped countries. Keynes deals with the problem of cyclical unemployment. Underdeveloped countries have the problem of chronic unemployment and disguised unemployment. Keynes encouraged spendings and condemned savings. But, poor countries need curbs on spending and increase in savings for capital formation and wide-scale investment to break the vicious circle of poverty. In short, Keynes's theory is not really "General" in application as Keynes claimed. To quote Prof. Harris, in this context, "Those who seek universal truths, applicable in all places and at all times, had better not waste their time on the General Theory."

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### 3.1.10 SUMMARY

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Monetary policy actions shift the LM curve and leave the IS curve alone. Expansionary monetary policy will shift the LM curve to the right, lowering interest rates and stimulating aggregate demand through investment, jobs.



Fiscal policy actions shift the IS curve and leave the LM curve alone. Expansionary fiscal policy will shift the IS curve to the right, stimulating aggregate demand through increased after tax income and government spending, but increasing interest rates. Contractionary fiscal policy will have exactly the opposite effects.

**Keynesian versus Classical Theory:** The S and LM functions and the wage According to the Classical Theory, monetary policy has no effects on the level of real economic variables such as output, consumption, savings, investment and the real interest rate. In the Classical Theory it is assumed that all prices and nominal wages are perfectly flexible both in the short-run and the long-run.

Private consumption  $C$  depends on three factors. First, there is some exogenous level of private consumption even at zero levels of disposable income. Second, consumption depends on disposable income ( $Y-T$ ) according to the parameter " $b$ " that represents the marginal propensity to consume: i.e. if  $b = 0.8$ , when income goes up by a rupee, consumption goes up by 80 cents. Third, consumption is a negative function of the interest rate  $r$ ; as interest rates go up, consumers will save a larger fraction of their income and consume a smaller fraction of their income.

Private investment  $I$  depends on two factors: first, there is some exogenous level of private investment that does not depend on the level of interest rates. Second, investment is a negative function of the interest rate: as the interest rate becomes higher, firms are less likely to invest in new capital goods. The parameter " $d$ " represents the sensitivity of investment to changes in the interest rate.

Demand-Side Equilibrium in the Keynesian model consists of intersecting the IS and LM curves. Points of intersection are combinations of  $r$  and  $Y$  such that we have equilibrium in the markets for both goods and money. The demand side since it involves how much output is demanded rather than how the output is produced the production function.

Prices flexibility that is not rigid for some institutional reason will move in response to excess demands and excess supplies. When demand exceeds supply, disappointed buyers will bid up the price; when supply exceeds demand, unsuccessful suppliers will bid it down.

The Keynes effect is a term used in economics to describe a situation where a change in interest rates affects expenditure more than it affects savings.

The Pigou effect is an economics term that refers to the stimulation of output and employment caused by increasing consumption due to a rise in real balances of wealth, particularly during deflation.

Supply-side economics is the anti-thesis of Keynesian economics, which holds that a higher rate of saving is essential for increase in investment and increased investment is essential for productivity and growth. On this issue, however, the SS economists have examined the implications of government intervention, its fiscal

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operations in modern times in the light of the classical macro-analysis of public finance and have come out with radical conclusions and policy measures.

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**3.1.11 SELF ASSESSMENT QUESTIONS**

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- Q.1. Explain the General Equilibrium of the product and money market.
- Q.2. Discuss the Keynesian versus Classical Theory.
- Q.3. Explain Saving and Investment Once More (The IS Curve).
- Q.4. Explain Money and the Rate of Interest (The LM Curve).
- Q.5. Write note on: Price flexibility.
- Q.6. Discuss the Keynes effect and Pigou effect.
- Q.7. Explain Integration with Keynesian Aggregate Demand.
- Q.8. Discuss Neoclassical Criticisms.
- Q.9. Explain the Supply side economics.
- Q.10. Discuss the Gist of SSE (The Laffer Curve).



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### 3.1.12 **Key Terms**

1. **Rational Expectations:** The assumption that economic agents form expectations about future variables based on all available information, including past data, current conditions, and anticipated policy actions. These expectations are formed in a manner consistent with the principles of rational decision-making.
2. **Adaptive Expectations:** A contrasting theory to rational expectations, where individuals form expectations about the future based on past observations and adjust them over time as new information becomes available. Adaptive expectations do not necessarily incorporate all available information and may lead to systematic forecasting errors.
3. **Unbiased Expectations:** The assumption that individuals' expectations about future economic variables are, on average, correct and do not exhibit systematic errors or biases over time.
4. **Policy Ineffectiveness Proposition:** The idea that systematic attempts by policymakers to exploit the Phillips curve trade-off between inflation and unemployment will be unsuccessful in the long run if economic agents hold rational expectations. Rational agents anticipate policymakers' actions and adjust their behavior accordingly, neutralizing the intended effects of policy changes.
5. **Lucas Critique:** Named after economist Robert Lucas, the critique suggests that economic models based on historical relationships may fail to accurately predict the effects of policy changes if they do not account for individuals' rational responses to those changes. Policies that work in one economic environment may not have the same effects when the environment changes or when agents' expectations change.
6. **New Classical Economics:** A school of thought in macroeconomics that emphasizes the importance of rational expectations and market efficiency. New classical economists argue that markets are generally efficient, and government interventions are often ineffective or counterproductive due to rational agents' anticipatory responses.
7. **New Keynesian Economics:** A synthesis of Keynesian economics with rational expectations theory. New Keynesian economists recognize the importance of market imperfections and nominal rigidities but incorporate rational expectations into their models to analyze the effects of policy interventions and economic shocks.
8. **Efficient Market Hypothesis (EMH):** A theory in finance that posits that asset prices reflect all available information, making it impossible to consistently outperform the market based on publicly available information. The efficient market hypothesis is consistent with rational expectations in financial markets.

3.1.13 Reference:

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# 4.1

Unit

## RATIONAL EXPECTATIONS

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### Objectives

After completing this chapter, you will be able to:

- Understand rational expectations
- Know Measurement of Rational expectations
- Understand Demand-Pull and Cost push Inflation
- Understand the Price and productivity
- Know the Control of Inflation

### Structure:

- 4.1.1 Demand-Pull vs. Cost-Push Inflation
- 4.1.2 Price and Productivity
- 4.1.3 The Control of Inflation
- 4.1.4 Summary
- 4.1.5 Self Assessment Questions
- 4.1.6 Key Words & Reference

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### 4.1.1 DEMAND-PULL VS. COST-PUSH INFLATION

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Broadly speaking, there are two schools of thought regarding the possible causes of inflation. One school views the demand-pull element as an important cause of inflation, while the other group of economists holds that inflation is mainly caused by the cost-push element.

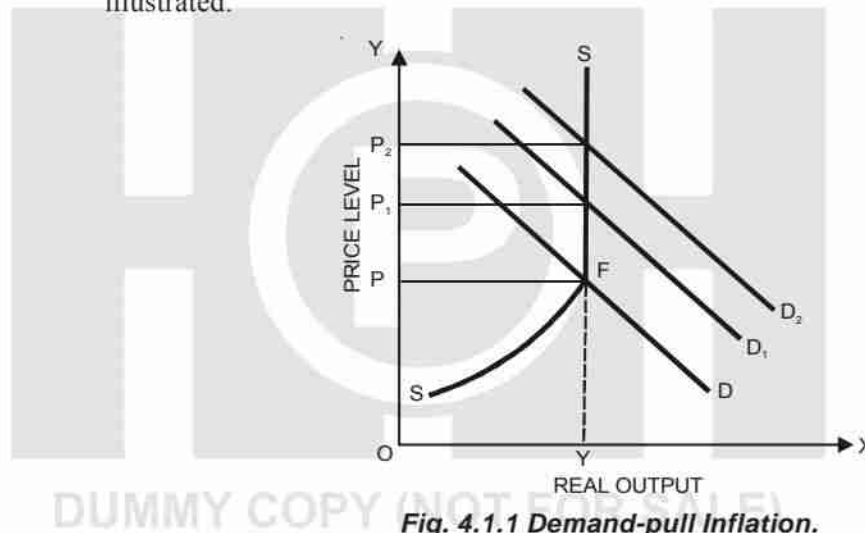
#### Demand-Pull Inflation

According to the demand-pull theory, prices rise in response to an excess of aggregate demand over existing supply of goods and services. The demand pull theorists point out that inflation (demand-pull) might be caused, in the first place, by an increase in the quantity of money, when the economy is operating at full employment level. As the quantity of money increases, the rate of interest will

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fall, and consequently, investment will increase. This increased investment expenditure will soon increase the income of the various factors of production. As a result, aggregate consumption expenditure will increase, leading to an increase in effective demand. With the economy already operating at the level of full employment, this will immediately raise prices thereby generating inflationary forces. Thus, when the general monetary demand rises faster than the general supply, it *pulls up* prices (commodity prices as well as factor prices, in general). Demand-pull inflation, therefore, manifests itself when there is active cooperation, or passive collusion, or a failure to take counteracting measures by monetary authorities.

Demand-pull or just demand inflation may be defined as a situation where the total monetary demand persistently exceeds the total supply of real goods and services at current prices, so that prices are pulled upwards by the continuous upward shift of the aggregate demand function. By using the aggregate demand and supply curves in Fig. 4.1.1, the demand-pull process can be graphically illustrated.



**Fig. 4.1.1 Demand-pull Inflation.**

In Fig. 4.1.1, the X-axis measures real output, and the Y-axis the price level. Curves  $D$ ,  $D_1$  and  $D_2$  represent the aggregate demand curves. The  $SS$  curve represents the aggregate supply function, which slopes upward from left to right and, at point  $F$ , it becomes a vertical straight line. The point  $F$  suggests that the economy has reached a level of full employment. Hence, the real output tends to be fixed or inelastic at this point. Assuming that the  $D$  curve intersects the  $S$  curve at point  $F$ , the real output or income is at full employment and the price level is  $OP$ . When there is an increase in the aggregate demand function beyond  $D$ , either due to an increase in autonomous investment ( $I$ ), or because of an increase in the propensity to consume ( $C$ ), or government spending ( $G$ ), represented by a shift in the aggregate demand curve, such as  $D_1$ ,  $D_2$ , the supply of total real output being inelastic, the price level tends to rise from  $P$  to  $P_1$  and the  $P_2$ .

However, demand-pull inflation can also occur without an increase in the money supply. This can happen when either the marginal efficiency of capital

increases or the marginal propensity to consume rises, so that investment expenditure may rise, thereby leading to a rise in the aggregate demand which will exert its influence in raising prices beyond the level of full employment already attained in the economy.

According to the demand-pull theorists, during the process of demand inflation, rise in wages accompanies or follows the price rise as a natural consequence. Under the condition of rising prices, when the rate of profit is increasing, producers are inclined in general to increase investment and employment, in that they bid against each other for favour, so that labour-prices (*i.e.*, wages) may rise.

In short, the inflationary process, described by the demand inflation theory, implies the following sequences; increasing demand — increasing prices — increasing costs — increasing income — increasing demand — increasing prices — and so on.

It should be noted that the concept of demand-pull inflation is associated with a situation of full employment where increase in aggregate demand cannot be met by a corresponding expansion in the supply of real output. There can be many reasons for such excess monetary demand.

(1) There may be an increase in the public expenditure ( $G$ ) in excess of public revenue. This might have been made possible (or rendered necessary) through public borrowings from banks or through deficit financing, which implies an increase in the money supply:

(2) There may be an increase in the autonomous investment ( $I$ ) in firms, which is in excess of the current savings in the economy. Hence, the flow of total expenditure tends to rise, causing an excess monetary demand, leading to an upward pressure on prices.

(3) There may be an increase in the marginal propensity to consume ( $MPC$ ), causing an excess monetary demand. This could be due to the operation of demonstration effect and such other reasons.

(4) In an open economy, an increasing surplus in the balance of payments also leads to an excess demand. Increasing exports also have an inflationary impact because there is generation of money income in the home economy, due to export earnings but, simultaneously, there is reduction in the domestic supply of goods because products are exported. If an export surplus is not balanced by increased savings, or through taxation, domestic spending will be in excess of domestic output, marketed at current prices.

(5) A diversion of resources from the consumption goods sector either to the capital goods sector or the military sector (for producing war goods) will lead to an inflationary pressure because while the generation of income and expenditure continues, the current flow of real output decreases on account of high gestation period involved in these sectors. Again, the opportunity cost of war goods is quite



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high in terms of consumption goods meant for the civilian sector. This leads to an excessive monetary demand for the goods and services against their real supply, causing the prices to move up.

In fine, it is said that the demand-pull inflation can be averted through deflationary measures adopted by the monetary and fiscal authorities. Thus, passive policies are responsible for demand-pull inflation.

### Cost-Push Inflation

A group of economists hold the opposite view that the process of inflation is initiated not by an excess of general demand but by an increase in costs, as factors of production try to increase their share of the total product by raising their prices. Thus, it has been seen that a rise in prices is initiated by the growing factor costs. Therefore, such a price rise is termed as “cost-push” inflation as prices are being pushed up by the rising factor costs.

Cost-push inflation, or cost inflation, as it is sometimes called, is induced by the wage-inflation process. It is believed that wages constitute nearly seventy per cent of the total cost of production. This is specially true for a country like India, where labour-intensive techniques are commonly used. Thus, a rise in wages leads to a rise in total cost of production and a consequent rise in the price level, because fundamentally, prices are based on costs. It has been said that a rise in wages causing a rise in prices may, in turn, generate an inflationary spiral because an increase in prices would motivate the workers to demand higher wages. Indeed, any autonomous increase in costs, such as a rise in the prices of imported components or an increase in indirect taxes (excise duties, etc.), may initiate a cost-push inflation. Basically, however, it is wage push pressures which tend to accelerate the rising price spiral.

The phenomenon of cost-push inflation is graphically illustrated in Fig. 4.1.2. In the figure, the  $D$  curves represent the aggregate demand function, and the  $S$  curves, the aggregate supply function. The full-employment level of income is  $OY$ , which can be maintained only at rising price levels,  $P, P_1, P_2, P_3$ .

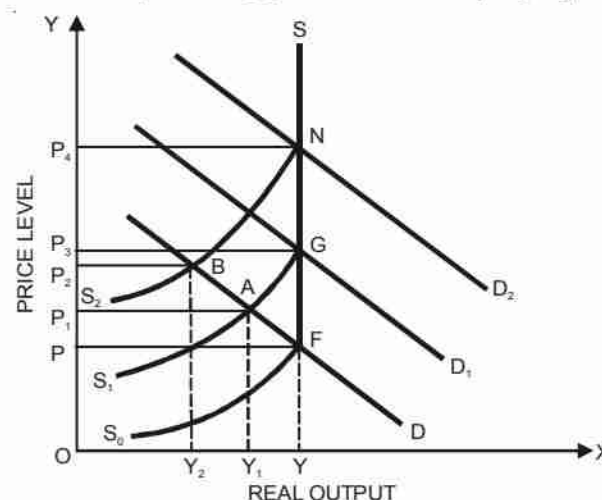


Fig. 4.1.2 Cost-push Inflation

Now, if we begin with the price level  $P$ ,  $F$  is the point of intersection of the aggregate supply curve  $D$  and  $SS_0$ . Let us assume that the aggregate supply function shifts upward as  $S_1$ , which becomes a vertical straight line at point  $A$ , and merges with  $SF$  line (the previous supply curve at full-employment level). The upward shift in the supply curve may be attributed either to an increase in money wages due to trade union's successful collective bargaining, or to the profit-motivated monopolists or oligopolists, who might have raised the prices of goods. Anyway, as the aggregate supply curve shifts to  $S_1$ , the new equilibrium point  $A$  is determined at  $OY_1$  level of real output, which is less than full-employment level at  $P_1$  level of prices. This means that with a rise in the price level, unemployment increases. It is regarded as the cost of holding the price level close to  $P$ . Similarly, a further shift in the aggregate supply curve to  $S_2$  on account of a further wage-push, implies a new equilibrium point  $B$ . This causes the income level to fall further to  $Y_2$ , and prices to rise to  $P_2$ . If, however, the government or monetary authority is committed to maintain full employment, there will be more public spending or more credit expansion, causing the price level to rise much more — such as from  $P$  to  $P_3$  and  $P_4$ . In this case, the sequence of equilibrium points become  $A-B-G-H$ .

Cost-push inflation may occur either due to wage-push or profit-push. Cost-push analysis assumes monopoly elements either in the labour market or in the product market. When there are monopolistic labour organisations, prices may rise due to wage-push. And, when there are monopolies in the product market, the monopolists may be induced to raise prices in order to fetch high profits. Then, there is profit-push in raising the prices.

However, the cost-push hypothesis rarely considers autonomous attempts to increase profits as an important inflationary element. First, because profits are generally a small fraction of the total price, a rise in profits would have only a slight impact on prices. Secondly, the monopolists generally hesitate to raise prices in the absence of obvious demand-pull elements. Finally, the motivation for profit-push is weak since, at least in corporations, those who make the decision to raise prices are not the direct beneficiaries of the price increase.

Hence, cost-push is generally conceived as synonymous with wage-push. When wages are pushed up, cost of production increases to considerable extent so that prices may rise. Since wages are pushed up by demand for high wages by the labour unions, wage-push may be equated with union-push.

A cost-push inflation is much more difficult to control than a demand-pull type. A demand-pull inflation can be controlled by adopting restrictive monetary and fiscal policies so as to drain off excessive monetary demand. But cost-push inflation is not susceptible to direct controls. In order to check cost-push inflation, there is a strong need on the part of labourers and entrepreneurs for restraint in their wage and pricing policies.

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### 4.1.2 PRICE AND PRODUCTIVITY

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Using input and output prices instead of quantities to measure changes in productivity is not a novel idea. Griliches and Jorgenson demonstrated the equivalence of the primal and dual approaches to growth accounting. An early application of the dual approach to economic history can be found in McCloskey, who inferred changes in agricultural productivity during the Industrial Revolution from movements in rents paid for land. Recently, Clark has extended McCloskey technique by also considering changes in farm wages and return on farm capital, deriving overall measures of productivity change in agriculture.

The dual approach has also been used to measure productivity in manufacturing during the Industrial Revolution. McCloskey analyzed output and input price data in several industrial sectors to infer annual productivity change between 1780 and 1860. He summarized the intuition behind the dual approach thus: We do not know annual quantities of china plates and steam coal and probably never can. On the other hand, we know practically anything we choose about price. The technique is to measure physical productivity change by the changes in prices. The degree to which the price of the cloth fell relative to the price of the inputs is therefore a measure of productivity change. Productivity advances will eventually bid up the price of factors of production, as they must in a competitive economy. The extent to which capital, labor and land can receive higher payments is a direct measure of the pace of productivity advances.

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### 4.1.3 THE CONTROL OF INFLATION

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Inflation is a complex phenomenon. It should be attacked from various angles. The following are the broad categories of instruments commonly used in order to control inflation in modern economy: (1) Monetary policy, (2) Fiscal policy, (3) Direct control, and (4) Miscellaneous measures.

#### **Monetary Policy**

Inflation is primarily a monetary phenomenon. Hence, the most logical solution to check the flow of money supply by devising appropriate monetary policy and carefully implementing monetary measures.

Broadly speaking, to control inflation, it is necessary to control total outlays because under conditions of full employment, increase in total outlays will be reflected in a general rise in prices, that is, inflation. Monetary policy used to control inflation is based on the assumption that a rise in prices (inflation) is due to excess of monetary demand for goods and services by the people because easy bank credit is available to them. Monetary policy, thus, pertains to banking and credit availability of loans to firms and households, interest rates, public debt and its management, and the monetary standard.

Monetary management is aimed at the commercial banking system, and through this action, its effects are primarily felt in the economy as a whole. Monetary management, by directly affecting the volume of cash reserves of the banks, can regulate the supply of money and credit in the economy, thereby influencing the structure of interest rates and the availability of credit. Both these factors affect the components of aggregate demand (consumption plus investment) and the flow of expenditure in the economy.

The central bank's monetary management methods, the devices for decreasing or increasing the supply of money and credit for monetary stability is called monetary policy. Central banks generally use three quantitative weapons, namely: (i) bank rate policy, (ii) open market operations, and (iii) variable reserve ratio to control the volume of credit in an economy.

To curb inflationary pressures, a dear money policy is usually followed by using the quantitative methods, the total volume of credit is depleted. In this regard, (i) bank rate may be raised; (ii) open market sales operation may be undertaken; and (iii) in severe cases, the reserve requirement ratio may be increased.

However, there are various limitations on the effective working of the quantitative measures of credit control adopted by the central banks and, to that extent, monetary measures to control inflation are weakened. In fact, in controlling inflation moderate monetary measures, by themselves, are relatively ineffective. On the other hand, drastic monetary measures are not good for the economic system because they may easily turn the economy into a tail spin. Prof. Galbraith doubts very much the effectiveness of the dear money policy in controlling inflation. He suggests that, in times of high earnings, that is, when the marginal efficiency of capital is high investments (long-term as well as short-term) are relatively indifferent to the movement of interest rates. Another reason for the ineffectiveness of the dear money policy lies in the failure of the authority to come to grips with real investment. A third reason is that, the policy, very often, is so mildly applied that it hardly has any impact on inflation.

In a developing economy there is always an increasing need for credit. Growth requires credit expansion but to check inflation, there is the need to contract credit. In such a conflict, the best course is to resort to credit control, restricting the flow of credit into the unproductive, inflation-infected sectors, and speculative activities, and diversifying the flow of credit towards the most desirable needs of productive and growth-inducing sectors.

Indeed, the greatest advantage of monetary policy is its flexibility. Prof. Hansen assigns a secondary role to monetary policy in the control of inflation. It cannot be the primary measure. This is so, because, if the monetary and banking system are to perform their normal functions, they must necessarily be highly flexible. There is no doubt that a sufficiently sharp curtailment of the money supply may quickly end the inflation. A programme to stop an inflationary development merely by reducing the quantity of money is a dangerous device. Therefore,

**Notes**

“moderately used, monetary policy courts the failure of the ineffectiveness pushed to the needed, fanatical extremes, it courts disaster.”

It should be noted that the impression that the rate of spending can be controlled rigorously by the contraction of credit or money supply is wrong in the context of modern economic societies. In modern community, tangible wealth is typically represented by claims in the form of securities, bonds, etc., or near moneys, as they are called. Such near moneys are highly liquid assets, and they are very close to being money. They increase the general liquidity of the economy. In these circumstances, it is not so simple to control the rate of spending or total outlays merely by controlling the quantity of money. Thus, there is no immediate and direct relationship between money supply and the price level, as it normally conceived by the traditional quantity theories.

However, as a secondary measure, there should be a judicious use of the monetary policy in order to control inflation. During inflation, some monetary restraint is necessary and desirable in a period of inflationary pressure, it does not make sense to feed inflation with easy credit. When there is inflation, monetary restraint can, in conjunction with other measures, plays a useful role.

**Fiscal Policy**

Fiscal policy is budgetary policy in relation to taxation, public borrowing, and public expenditure. Changes in the total expenditure can be effected by fiscal measures. To combat inflation, fiscal measures would involve increase in taxation and decrease in government spending. During inflation, the government is supposed to counteract an increase in private spending and thus reduce total outlays. By reducing its expenditure, the government can partly offset the inflationary pressures arising from unregulated private spending. Obviously during a period of full-employment inflation the aggregate demand in relation to the limited supply of goods and services is reduced to the extent that government expenditure is curtailed.

A cut in public expenditure alone is not sufficient. Government must simultaneously increase taxes to effect a cut in private expenditure also, in order to minimise inflationary pressures. As we know, when more taxes are imposed, the size of the disposable income diminishes, as also the magnitude of the inflationary gap, given the available supply of goods and services. Inflationary pressure is significantly weakened by the simultaneous curtailment of government expenditure and an increase in taxation because, more resources are released for expanding the productive capacity in the private sector; the supply curve of aggregate goods and services shifts upwards with a contraction of monetary demand due to a decline in disposable income with people.

It has been argued that a tax policy can be directed towards restricting demand without restricting production. For instance, excise duties or sales tax on various commodities take away the buying power from the consumer goods



market without discouraging the expansion of productive capacity. However, some economists point out that this is not a correct way of combating inflation because of its regressive nature. On the other hand, this may lead to a further rise in prices of such commodities, and inflation can spread from one sector to another and from one commodity to another. But, during an inflation, a progressive direct tax is considered best; it is also justified in the interest of social equity.

Briefly, then, a reduction in public expenditure, and an increase in taxes produces a cash surplus in the budget.

Keynes, however, suggested a programme of compulsory savings, such as “deferred pay” or “forced savings” as an anti-inflationary measure. Deferred pay implies that the consumer defers a part of his pay by buying savings bonds (which, of course, is a sort of public borrowing), which are redeemable after sometime. Such a scheme of compulsory savings is expedient during wartime or during a post-war hyperinflation, but is hardly practicable in peacetime in a democratic state.

Private savings have a strong disinflationary effect on the economy and an increase in these is an important measure for controlling inflation. Government policy should, therefore, include devices for increasing savings. A strong savings drive reduces the spendable income of the people, without any harmful effect of the kind associated with higher taxation.

Moreover, the effects of a large deficit budget, which is mainly responsible for inflation, can be partly counteracted by covering the deficit through public borrowings. It should be noted that it is only government borrowing from non-bank lenders that has a disinflationary effect. Further, public debt may be managed in such a way that the supply of money in the country may be controlled. The government should avoid paying back any of its past loans during inflation in order to prevent an increase in the circulation of money. Anti-inflationary debt management also includes cancellation of public debt held by the central bank out of a budgetary surplus.”

Briefly, fiscal policy alone may not be very effective. An effective programme for combating inflation should combine fiscal and monetary tools in a manner complementary to one another.

### **Direct Controls**

Direct controls refer to the regulatory measures undertaken to convert an open inflation into a repressed one. Such regulatory measures involve the use of direct control on prices and rationing of scarce goods. The function of price control is to fix a legal ceiling, beyond which the prices of particular goods may not increase. When ceiling prices are fixed and enforced, it means prices are not allowed to rise further and so, inflation is suppressed. Under price control, producers cannot raise the price beyond a prevailing level, even though there may

**Notes**

be a pressure of excessive demand forcing it up. Wartime price control is an example of such attempts to suppress inflation.

In view of the severe scarcity of certain goods, particularly, foodgrains, government may have to enforce, rationing, along with price control. The main function of rationing is to divert consumption from those commodities whose supply needs to be restricted for some special reasons, say, in order to make the commodity available to a larger number of people as possible. Thus, rationing becomes essential when necessities, such as foodgrains, are relatively scarce. Rationing has the effect of limiting the variety of quantity of foods available for the good cause of price stability and distributive justice. However, rationing is criticised on the ground that it restricts consumer's sovereignty. According to Keynes, "rationing involves a great deal of waste, both of resources and of employment." Prof. Kurihara, however, suggests that "a sensible progress of rationing should aim at diverting consumption from particular articles whose supply is below and normal rather than at controlling aggregate consumption."

In short, monetary fiscal controls may be used to repress excess demand, in general, but direct controls can be more useful when they are applied to specific scarcity areas.

Direct controls have the following advantages:

1. They can be introduced or changed quickly and easily; hence, the effects of these changes can be rapid.
2. Direct controls can be more discriminatory than monetary and fiscal controls.
3. There can be variation in the intensity of the operation of controls, from time to time, in different sectors.

In a peacetime economy, however, there are serious psychological and political objections to direct economic controls as a stabilising device. Objections have been raised on the following counts:

1. Direct controls suppress individual initiative and enterprise.
2. They tend to inhibit innovations, such as new techniques of production, and new products.
3. Direct controls may breed or induce speculation, which may have destabilising effects. For instance, if it is expected that commodity X, say steel, is to be rationed because of scarcity, people may try to hoard large stocks of it, which further aggravates its shortage. It, thus, encourages the creation of artificial scarcity through large-scale hoardings.
4. Direct controls need a cumbersome, honest, and efficient administrative organisation, if they are to work effectively.
5. Gross disturbances reappear as soon as controls are removed.



In short, direct controls are to be used only in extraordinary circumstances, such as emergencies, and not during peacetime.

### **Miscellaneous Measures**

Among other measures, it has been suggested that production of certain articles of necessity, at the expense of luxury goods, can also serve as an anti-inflationary measure, since they will help to keep prices from rising rapidly.

Control of wages also often becomes necessary in order to stop a wage-price spiral. During galloping inflation, it may be necessary to apply a wage-profit freeze. Ceilings on wages and profits keep down disposable income and, therefore, the total effective demand for goods and services. An appropriate income policy should be devised.

In certain cases, relaxation of restrictions on imports may also help to increase supplies of essential commodities and ease the inflationary pressure. This, however, is possible only to a limited extent, depending upon the balance of payments situation. Similarly, exports may also be reduced to increase the availability of the domestic supply of essential commodities so that inflation is eased. But a country with a deficit balance of payments cannot dare to cut exports and increase imports, because, in that case, the remedy will be worse than the disease itself.

In an overpopulated country like India, it is also essential to check the growth of the population through an effective family planning programme, because this will help in reducing the increasing pressure on the general demand for goods and services. Again, the supply of real goods should be increased by producing more. Without increasing production, inflation just cannot be controlled.

Some economists have even suggested indexing in order to minimise certain ill-effects of inflation. Indexing refers to monetary corrections through periodic adjustments in money incomes of the people and in the values of financial assets, savings deposits, etc. held by them in relation to the degrees of price rise. Thus, if the annual price rise is 20 per cent, the money incomes, values of financial assets, etc. are enhanced by 20 per cent, under the system of indexing.

Brazil adopted the system of indexing in 1964. Since indexing helps in minimising the adverse effects of inflation, it is believed to be a right course for achieving social justice by a welfare government. Indexing also saves the government from public wrath due to severe inflation persisting over a long period. Critics, however, do not favour indexing, as it does not cure inflation. It rather encourages to live with inflation. Moreover, it is a highly discretionary method.

In essence, all the above points of discussion suggest that an anti-inflationary policy should involve a many-sided programme, and cannot exclusively depend on a particular type of measure only.

#### 4.1.4 SUMMARY

Rational expectations is a hypothesis in economics which states that agents' predictions of the future value of economically relevant variables are not systematically wrong in that all errors are random.

Rational expectations theory defines this kind of expectations as being identical to the best guess of the future the optimal forecast that uses all available information. Thus, it is assumed that outcomes that are being forecast do not differ systematically from the market equilibrium results. As a result, rational expectations do not differ systematically or predictably from equilibrium results.

**Demand-Pull Inflation** According to the demand-pull theory, prices rise in response to an excess of aggregate demand over existing supply of goods and services. The demand pull theorists point out that inflation (demand-pull) might be caused, in the first place, by an increase in the quantity of money, when the economy is operating at full employment level.

**Cost-Push Inflation** is a group of economists hold the opposite view that the process of inflation is initiated not by an excess of general demand but by an increase in costs, as factors of production try to increase their share of the total product by raising their prices.

Inflation is a complex phenomenon. It should be attacked from various angles. The following are the broad categories of instruments commonly used in order to control inflation in modern economy: (1) Monetary policy, (2) Fiscal policy, (3) Direct control, and (4) Miscellaneous measures.

Monetary policy is pertained to banking and credit availability of loans to firms and households, interest rates, public debt and its management, and the monetary standard.

Fiscal policy is budgetary policy in relation to taxation, public borrowing, and public expenditure. Changes in the total expenditure can be effected by fiscal measures. To combat inflation, fiscal measures would involve increase in taxation and decrease in government spending.

Direct controls refer to the regulatory measures undertaken to convert an open inflation into a repressed one. Such regulatory measures involve the use of direct control on prices and rationing of scarce goods. The function of price control is to fix a legal ceiling, beyond which the prices of particular goods may not increase.

#### Philips Curve

The Phillips curve is a historical inverse relationship between the rate of unemployment and the rate of inflation in an economy. Stated simply, the lower the unemployment in an economy, the higher the rate of inflation. While it has

been observed that there is a stable short run tradeoff between unemployment and inflation, this has not been observed in the long run.

William Phillips, a New Zealand born economist, wrote a paper in 1958 titled *The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957*, which was published in the quarterly journal *Economica*. In the paper Phillips describes how he observed an inverse relationship between money wage changes and unemployment in the British economy over the period examined. Similar patterns were found in other countries and in 1960 Paul Samuelson and Robert Solow took Phillips' work and made explicit the link between inflation and unemployment: when inflation was high, unemployment was low, and vice-versa.

In the 1920s an American economist Irving Fisher noted this kind of Phillips curve relationship. However, Phillips' original curve described the behavior of money wages.

In the years following Phillips' 1958 paper, many economists in the advanced industrial countries believed that his results showed that there was a permanently stable relationship between inflation and unemployment. One implication of this for government policy was that governments could control unemployment and inflation with a Keynesian policy. They could tolerate a reasonably high rate of inflation as this would lead to lower unemployment - there would be a trade-off between inflation and unemployment. For example, monetary policy and/or fiscal policy (i.e., deficit spending) could be used to stimulate the economy, raising gross domestic product and lowering the unemployment rate. Moving along the Phillips curve, this would lead to a higher inflation rate, the cost of enjoying lower unemployment rates.

Before the 1960s, a leftward movement along the Phillips curve described the path of the U.S. economy. This move was not a matter of deciding to achieve low unemployment as much as an unplanned side effect of the Vietnam war. In other countries, the economic boom was more the result of conscious policies.

Since 1974 seven Nobel Prizes have been given for work critical of the Phillips curve. Some of this criticism is based on the United States' experience during the 1970s, which had periods of high unemployment and high inflation at the same time. The authors receiving those prizes include Thomas Sargent, Christopher Sims, Edmund Phelps, Edward Prescott, Robert A. Mundell, Robert E. Lucas, Milton Friedman, and F.A. Hayek.

In the 1970s, many countries experienced high levels of both inflation and unemployment also known as stagflation. Theories based on the Phillips curve suggested that this could not happen, and the curve came under a concerted attack from a group of economists headed by Milton Friedman.

Friedman argued that the Phillips curve relationship was only a short-run phenomenon. He argued that in the long-run workers and employers will take

**Notes**

inflation into account, resulting in employment contracts that increase pay at rates near anticipated inflation. Unemployment would then begin to rise back to its previous level, but now with higher inflation rates. This result implies that over the longer-run there is no trade-off between inflation and unemployment. This implication is significant for practical reasons because it implies that central banks should not set employment targets above the natural rate.

More recent research has shown that there is a moderate trade-off between low-levels of inflation and unemployment. Work by George Akerlof, William Dickens, and George Perry implies that if inflation is reduced from two to zero percent, unemployment will be permanently increased by 1.5 percent. This is because workers generally have a higher tolerance for real wage cuts than nominal ones. For example, a worker will more likely accept a wage increase of two percent when inflation is three percent, than a wage cut of one percent when the inflation rate is zero.

### **NAIRU and Rational Expectations**

Short-Run Phillips Curve before and after Expansionary Policy, with Long-Run Phillips Curve (NAIRU)

New theories, such as rational expectations and the NAIRU (non-accelerating inflation rate of unemployment) arose to explain how stagflation could occur. The latter theory, also known as the "natural rate of unemployment", distinguished between the "short-term" Phillips curve and the "long-term" one. The short-term Phillips Curve looked like a normal Phillips Curve, but shifted in the long run as expectations changed. In the long run, only a single rate of unemployment (the NAIRU or "natural" rate) was consistent with a stable inflation rate. The long-run Phillips Curve was thus vertical, so there was no trade-off between inflation and unemployment. Edmund Phelps won the Nobel Prize in Economics in 2006 for this.

In the diagram, the long-run Phillips curve is the vertical red line. The NAIRU theory says that when unemployment is at the rate defined by this line, inflation will be stable. However, in the short-run policymakers will face an inflation-unemployment rate tradeoff marked by the "Initial Short-Run Phillips Curve" in the graph. Policymakers can therefore reduce the unemployment rate temporarily, moving from point A to point B through expansionary policy. However, according to the NAIRU, exploiting this short-run tradeoff will raise inflation expectations, shifting the short-run curve rightward to the "New Short-Run Phillips Curve" and moving the point of equilibrium from B to C. Thus the reduction in unemployment below the "Natural Rate" will be temporary, and lead only to higher inflation in the long run.

Since the short-run curve shifts outward due to the attempt to reduce unemployment, the expansionary policy ultimately worsens the exploitable tradeoff between unemployment and inflation. That is, it results in more inflation

at each short-run unemployment rate. The name "NAIRU" arises because with actual unemployment below it, inflation accelerates, while with unemployment above it, inflation decelerates. With the actual rate equal to it, inflation is stable, neither accelerating nor decelerating. One practical use of this model was to provide an explanation for stagflation, which confounded the traditional Phillips curve.

The rational expectations theory said that expectations of inflation were equal to what actually happened, with some minor and temporary errors. This in turn suggested that the short-run period was so short that it was non-existent: any effort to reduce unemployment below the NAIRU, for example, would immediately cause inflationary expectations to rise and thus imply that the policy would fail. Unemployment would never deviate from the NAIRU except due to random and transitory mistakes in developing expectations about future inflation rates. In this perspective, any deviation of the actual unemployment rate from the NAIRU was an illusion.

However, in the 1990s in the U.S., it became increasingly clear that the NAIRU did not have a unique equilibrium and could change in unpredictable ways. In the late 1990s, the actual unemployment rate fell below 4 % of the labor force, much lower than almost all estimates of the NAIRU. But inflation stayed very moderate rather than accelerating. So, just as the Phillips curve had become a subject of debate, so did the NAIRU.

Furthermore, the concept of rational expectations had become subject to much doubt when it became clear that the main assumption of models based on it was that there exists a single (unique) equilibrium in the economy that is set ahead of time, determined independently of demand conditions. The experience of the 1990s suggests that this assumption cannot be sustained.

### The Phillips Curve today

Most economists no longer use the Phillips curve in its original form because it was shown to be too simplistic. This can be seen in a cursory analysis of US inflation and unemployment data 1953-92. There is no single curve that will fit the data, but there are three rough aggregations-1955-71, 1974-84, and 1985-92-each of which shows a general, downwards slope, but at three very different levels with the shifts occurring abruptly. The data for 1953-54 and 1972-73 do not group easily, and a more formal analysis posits up to five groups/curves over the period.

But still today, modified forms of the Phillips Curve that take inflationary expectations into account remain influential. The theory goes under several names, with some variation in its details, but all modern versions distinguish between short-run and long-run effects on unemployment. The "short-run Phillips curve" is also called the "expectations-augmented Phillips curve", since it shifts up when inflationary expectations rise, Edmund Phelps and Milton Friedman argued. In the

**Notes**

long run, this implies that monetary policy cannot affect unemployment, which adjusts back to its "natural rate", also called the "NAIRU" or "long-run Phillips curve". However, this long-run "neutrality" of monetary policy does allow for short run fluctuations and the ability of the monetary authority to temporarily decrease unemployment by increasing permanent inflation, and vice versa. Blanchard (2000, chapter 8) gives a textbook presentation of the expectations-augmented Phillips curve.

An equation like the expectations-augmented Phillips curve also appears in many recent New Keynesian dynamic stochastic general equilibrium models. In these macroeconomic models with sticky prices, there is a positive relation between the rate of inflation and the level of demand, and therefore a negative relation between the rate of inflation and the rate of unemployment. This relationship is often called the "New Keynesian Phillips curve." Like the expectations-augmented Phillips curve, the New Keynesian Phillips curve implies that increased inflation can lower unemployment temporarily, but cannot lower it permanently. Two influential papers that incorporate a New Keynesian Phillips curve are Clarida, Galí, and Gertler (1999) and Blanchard and Galí (2007).

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#### 4.1.5 SELF ASSESSMENT QUESTIONS

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- Q.1. What is rational expectation?
- Q.2. Discuss in details rational expectations.
- Q.3. Explain the measurement procedure of rational expectations.
- Q.4. Discuss the Demand-Pull inflation.
- Q.5. Explain Cost push Inflation.
- Q.6. Write note on: Price and productivity.
- Q.7. Explain Inflation control.
- Q.8. Discuss the Philips curve expectations, inflation and indexation.





#### 4.1.6 Key Terms

1. **Business Cycle:** The periodic fluctuations in economic activity characterized by alternating periods of expansion (boom) and contraction (recession or depression). The business cycle represents the natural rhythm of economic growth and contraction in market economies.
2. **Expansion:** A phase of the business cycle characterized by rising output, employment, and income levels. During an expansion, economic activity typically accelerates, leading to increased consumer and business confidence.
3. **Peak:** The highest point of economic activity during an expansionary phase. At the peak, the economy operates at or near full capacity, with low unemployment and high levels of production and spending.
4. **Contraction:** A phase of the business cycle characterized by declining output, employment, and income levels. Contractionary periods are associated with falling consumer and business confidence, leading to decreased spending and investment.
5. **Recession:** A significant and prolonged downturn in economic activity, typically characterized by falling GDP, rising unemployment, and declining consumer and business spending. A recession is often defined as two consecutive quarters of negative GDP growth.
6. **Depression:** A severe and prolonged recession characterized by deep and widespread economic hardship, including high unemployment, widespread business failures, and significant declines in output and investment.
7. **Trough:** The lowest point of economic activity during a contractionary phase. At the trough, the economy reaches its lowest levels of output and employment before beginning to recover.
8. **Recovery:** A phase of the business cycle following a contraction, characterized by rising output, employment, and income levels. During a recovery, economic activity begins to pick up, and confidence returns, leading to increased spending and investment.
9. **Leading Indicators:** Economic indicators that tend to change before the overall economy. Leading indicators, such as stock prices, consumer confidence, and business investment, are used to forecast future economic trends and predict the onset of recessions or recoveries.



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# 5.1

Unit

## TRADE CYCLE THEORIES

### Objectives

After completing this chapter, you will be able to:

- Understand various features of a Trade Cycle
- Know different phases of a Trade Cycle
- Understand Purely Monetary Theory
- Know the Monetary and non-monetary Over-Investment Theory
- Know the under-Consumption or over-Saving Theory
- Understand the Psychological Theory
- Know the Innovation Theory
- Understand the Keynes' MEC Theory
- Know the Hicks' Theory of Trade Cycles
- Understand the Genesis of Monetarism
- Understand Keynesian vs. Monetarist

### Structure:

- 5.1.1 Introduction
- 5.1.2 Features of a Trade Cycle
- 5.1.3 Phases of a Trade Cycle
- 5.1.4 Important Trade Cycle Theories
- 5.1.5 The Purely Monetary Theory
- 5.1.6 The Monetary Over-Investment Theory
- 5.1.7 Non-Monetary Over-Investment Theory
- 5.1.8 Under-Consumption (Or Over-Saving) Theory
- 5.1.9 The Psychological Theory

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- 5.1.10 The Innovation Theory
- 5.1.11 Keynes' MEC Theory
- 5.1.12 Hicks' Theory of Trade Cycles
- 5.1.13 General Conclusions on the Theories of Trade Cycle
- 5.1.14 Measures of Economic Stabilisation
- 5.1.15 Monetarism
- 5.1.16 Genesis of Monetarism
- 5.1.17 Other Aspects of Friedman's Contribution in Monetarist Doctrine
- 5.1.18 Major Monetarist Propositions
- 5.1.19 Keynesian vs. Monetarist
- 5.1.20 Summary
- 5.1.21 Self Assessment Questions
- 5.1.22 Key Words & Reference

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### 5.1.1 INTRODUCTION

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The economic progress of capitalist countries has been marked by periodical and frequent fluctuations in the tempo of economic activity in investments, in output, in income and in employment. These economies are constantly experiencing such changes. The dynamic forces operating in the capitalist economy creates various kinds of business or economic fluctuations. Some are abrupt, isolated and discontinuous. Some are continuous, lasting for long periods of time in the same direction while some are rhythmic and recurring in nature. Thus, according to their typical characteristics, fluctuations or movements in economic activity are commonly classified as: (1) secular trends; (2) seasonal fluctuations; (3) cyclical fluctuations; and (4) random fluctuations. However, among these, cyclical fluctuations have attracted the major attention of economists, as they create significant disturbances in the functioning of the economic system and their causation is not easily perceived.

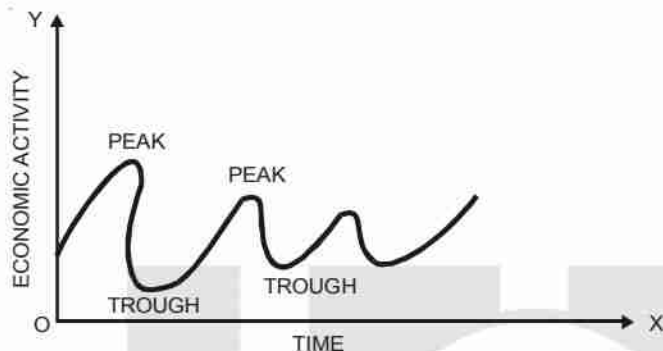
#### **Cyclical Fluctuations**

Cyclical fluctuations are wave-like changes in economic activity characterised by recurring phases of expansion and contraction.

These oscillating movements take the shape of waves from peak to trough and from trough to peak as illustrated in Fig. 5.1.1. One complete period of such oscillation is called a cycle. Cycles have a free rhythm and are irregular. But they exhibit a recognised pattern of recurrent expansions and contractions.

### 5.1.2 FEATURES OF A TRADE CYCLE

The term “trade cycle” in economics refers to the wave-like fluctuations in the aggregate economic activity, particularly in employment, output and income. In other words, trade cycles are ups and downs in economic activity. A trade cycle is defined in various ways by different economists. For instance, Mitchell defined a trade cycle as a fluctuation in aggregate economic activity. According to Haberler, “The business cycle in the general sense may be defined as an alternation of periods of prosperity and depression, of good and bad trade.”



**Fig. 5.1.1 Cyclical Fluctuations**

The following features in a trade cycle are worth noting:

- (i) A trade cycle is a wave-like movement.
- (ii) Cyclical fluctuations are recurrent in nature.
- (iii) Expansion and contraction in a trade cycle are cumulative in effect.
- (iv) Trade cycles are all-pervading in their impact.
- (v) A trade cycle is characterised by the presence of a crisis, *i.e.*, the peak and the trough are not symmetrical, that is to say, the downward movement is more sudden and violent than the change from downward to upward.
- (vi) Though cycles differ in timing and amplitude, they have a common pattern of phases which are sequential in nature.

### 5.1.3 PHASES OF A TRADE CYCLE

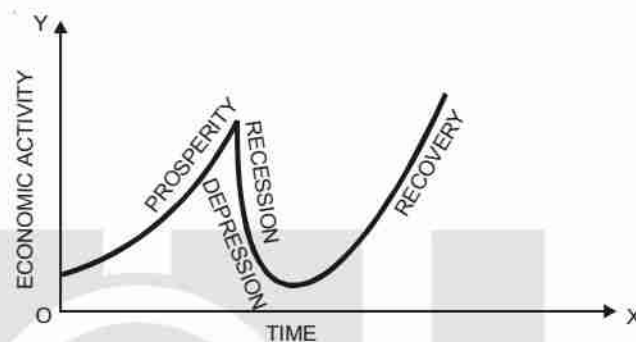
A trade cycle is commonly divided into four well-defined and inter-related recurring phases:

1. Prosperity phase — expansion or the upswing.
2. Recessionary phase — a turn from prosperity to depression (or upper turning point).

## Notes

3. Depressionary phase — contraction or downswing.
4. Revival or recovery phase — the turn from depression to prosperity (or lower turning point).

The above four phases of a trade cycle are shown in Fig. 5.1.2. These phases are recurrent and follow a regular sequence. This means that when prosperity ends, recession starts; depression follows recession; recovery follows depression; prosperity comes after recovery and in turn gives way to recession. Thus, each phase always appears when the immediately preceding phase has run its course. It should be remembered that no phase has any definite periodicity or time interval.



**Fig. 5.1.2 The Phases of a Trade Cycle**

### Prosperity

Haberler defines prosperity as “a state of affairs in which the real income consumed, real income produced and level of employment are high or rising and there are no idle resources or unemployed workers or very few of either.”

As Haberler points out, the characteristic features of prosperity are (i) a high level of output and trade, (ii) a high level of effective demand; (iii) a high level of employment and income; (iv) a high marginal efficiency of capital; (v) a price inflation; (vi) a rising structure of interest rate; (vii) a large expansion of bank credit; (viii) overall business optimism, and (ix) tendency of the economy to operate at almost full capacity along its production possibility frontier.

The prosperity phase comes to an end when the forces favouring expansion become progressively weak. Bottlenecks begin to appear at the peak of prosperity. In fact, the profit-inflation and over-optimism which increase the tempo, carry with them the seeds of self-destruction. In view of high profits and business optimism, entrepreneurs invest more and expand further. But scarcity of resources, particularly, the shortage of raw materials and labour, causes bottlenecks and business calculations go wrong. Hence entrepreneurs become over-cautious and the peak of prosperity and their over-optimism pave the way to over-pessimism. Thus, prosperity digs its own grave.

## **Recession**

Notes

When prosperity ends, recession begins. Recession relates to a turning point rather than a phase. It lasts relatively for a shorter period of time. It marks the point at which the forces that make for contraction finally win over the forces of expansion. Liquidation in the stock market, repayment of bank loans and the decline of prices are its outward symptoms. The stock market is the first to experience the downfall as there will be sudden and violent changes in the prevailing atmosphere. During a recession, businessmen lose confidence. Everyone feels pessimistic about the future profitability of investment. Hence, investment will be drastically curtailed and production of capital goods industries will fall.

During the recessionary phase, the banking system and the people in general try to attain greater liquidity. Therefore, credit sharply contracts. Business expansion stops, orders are cancelled and workers are laid off. There is a general drive to contract the scale of operations, leading to increase in unemployment; thus, income throughout the economy falls. Reduced income causes a decrease in aggregate expenditure and thus, the general demand falls, in turn, prices, profit and business decline.

## **Depression**

During a depression, the most deplorable conditions prevail in the economy. Real income consumed, real income produced and the rate of employment fall or reach subnormal levels due to idle resources and capacity.

As Haberler points out, the characteristic features of a depression are the reverse of prosperity: (i) shrinkage in the volume of output, trade and transactions; (ii) rise in the level of unemployment; (iii) price deflation; (iv) fall in the aggregate income of the community (especially wages and profits); (v) fall in the structure of interest rates; (vi) curtailment in consumption expenditure and reduction in the level of effective demand; (vii) collapse of the marginal efficiency of capital and decline in the investment demand function; (viii) contraction of bank credit, etc.

In short, a depressionary period is characterised by an overall curtailment of aggregate economic activity and its bottom. Thus, depression and prosperity differ in degree rather than in kind. In the former economic activity is at its trough, while in the latter, economic activity is at its peak.

However, a depression cannot be regarded as a permanent feature of an economy. In fact, the very forces which cause the depression are themselves self-defeating. For, during a depression, businessmen postpone replacement of their plant and machinery and consumers postpone the purchase of durable goods. Hence the need for replacement and the purchase of durable goods gradually accumulate. Hence, after a period of time, there will be a moderate increase in the purchase

**Notes**

of durable goods on the consumer's part and replacement of plant and machinery on the part of producers. This will call for an increase in production, in turn leading to an increase in employment, income and aggregate effective demand. Banks will be anxious to expand credit by reducing the rate of interest. Gradually, pessimism vanishes and optimism develops and economic activity once again gathers momentum. Thus, a stage of recovery sets in.

**Recovery Phase**

The revival or recovery phase refers to the lower turning point at which an economy undergoes change from depression to prosperity. With an improvement in demand for capital goods, recovery sets in. When the demand for consumption goods rises or when the capital stock increases, the demand for capital goods will rise and new investment will be induced. Such induced investment will cause a rise in employment and income. The increased income in turn will lead to a rise in consumption which will push up the demand further which in turn leads to a rise in prices, profits, further investment, employment and income. The increased income in turns will lead to a rise in consumption which will push up the demand further which in turns leads to a rise in prices, profits, further investment, employment and income. Once the expansionary movement starts, this is how it gathers momentum. During the revival period, level of employment output and income slowly and steadily improve. Stock markets become more sensitive during this period. A bullish atmosphere will prevail on the stock exchanges. An increase in stock prices favours expansion and hasten revival. The expectations of the entrepreneurs improve and business optimism leads to the stimulation of development investment. The wave of recovery, once initiated, begins to feed upon itself. Thus, during a recessionary period, the expansionary process will be self-reinforcing and if it is continued for some time, the economy will find itself in a position of rising level of income, output and employment. When this happens, revival slowly emerges into prosperity and the cycle repeats itself.

A business cycle is a complex phenomenon which embraces the entire economic system. It can scarcely be traced to any single cause. Normally a business cycle is caused and conditioned by a number of factors, both exogenous and endogenous. Various theories have been expounded by different economists to explain the cause of a trade cycle, the symptoms of which are alternating periods of prosperity and depression. Different explanations stressing one or a few factors at a time have been advanced by economists. A brief review of important trade cycle theories has been attempted in the following sections.



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### 5.1.4 IMPORTANT TRADE CYCLE THEORIES

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A business cycle is a complex phenomenon which embraces the entire economic system. It can scarcely be traced to any single cause. Normally, a business cycle is caused and conditioned by a number of factors, both exogenous and endogenous.\*

Various theories have been expounded by different economists to explain the causes of a trade cycle, the symptoms of which are alternating periods of prosperity and depression. Different explanations have been advanced stressing one or a few factors at a time.

Thus, in order to get a comprehensive idea of such a complex phenomenon, it becomes necessary for us to review certain important explanations provided by eminent trade cycle theorists.

The nineteenth century classical economists could not correctly analyse the causes of economic fluctuations, though throughout the century, alternating periods of inflation and depression were carrying the economy to extremes of disequilibrium which could hardly be ignored. In fact, the classical economists blindly following Say's Law of Market — behind the veil of money under the assumption of full employment and concentrating on the long-run problems of resources allocation and distribution in income — neglected the relatively short-term phenomenon of economic fluctuations.

The twentieth century economists, however, became more conscious about the need to study the cyclical fluctuations. Although between 1900 and 1930, a large number of economists studied and explained the business cycles, they kept the business cycle theory outside the framework of general economic theory. The general economic theory continued to operate under assumption of full employment, whereas business cycle theories were propounded to explain why the economy generates fluctuations in employment and output. It was Keynes who in his book *General Theory* published in 1936, tried to integrate these two sets of economic doctrines by discarding the assumption of full employment.

Let us now make a brief survey of the following important business cycle theories:

1. Purely Monetary Theory.
2. Monetary Over-investment Theory.

\* Exogenous forces are those which are external to the economic system, e.g., war, innovation, population movement, territorial development, etc. These are temporary shocks.

Endogenous factors are integral to the economic structure. They are the forces which operate from within the economic system. As such, they include economic variables like the volume of bank credit, liquidity preference behaviour, the price level, interest rate, the elasticity of supply of production factors, marginal propensity to consume, marginal efficiency of capital, etc. These factors are primarily responsible for the periodic wave-like movements — the cycles. (Hamberg,

## Notes

3. Non-monetary Over-investment Theory.
4. Under Consumption Theory.
5. Psychological Theory.
6. Innovation Theory.
7. Keynes' MEC Theory.
8. Hicks' Theory.

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### 5.1.5 THE PURELY MONETARY THEORY

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R.G. Hawtrey describes the trade cycle as a purely monetary phenomenon, in this sense that all changes in the level of economic activity are nothing but reflections of changes in the flow of money.

Thus, he holds firmly to the view that the causes of cyclical fluctuations were to be found only in those factors that produce expansions and contractions in the flow of money — money supply. Hence, the ultimate cause of economic fluctuations lies in the monetary system.

According to Hawtrey, the main factor affecting the flow of money — money supply — is the credit creation by the banking system. To him, changes in income and spending are caused by changes in the volume of bank credit. The real causes of the trade cycle can be traced to variations in effective demand which occur due to changes in bank credit. Therefore, “the trade cycle is a monetary phenomenon, because general demand is itself a monetary phenomenon.”

He points out that it is the rate of progress of credit development that determines the extent and duration of the cycle, thus, “when credit movements are accelerated, the period of the cycle is shortened.” This implies that if credit facilities do not exist, fluctuation does not occur. So, by controlling credit, one can control fluctuations in the economic activity.

He further maintains that although the rate of progress of cycles may be influenced by non-monetary causes, these factors operate indirectly and through the medium of the credit movement. For example, a non-monetary factor such as optimism in a particular industry can affect activity directly, but it cannot exert a general influence on industry unless optimism is allowed to reflect itself through monetary changes, *i.e.*, through increased borrowing. On these grounds, Hawtrey regarded trade cycle as a purely monetary phenomenon.

The gist of Hawtrey's theory is that the inherent instability in bank credit causes changes in the flow of money which in effect leads to cyclical variations. An economic expansion is caused by the expansion of bank credit and the economic

crisis occurs no sooner the credit creation is stopped by the banking system; thus, a contraction of credit leads to a depression.

### The Monetary Sequence of a Trade Cycle

Basically, Hawtrey's theory dwells upon the following postulates:

1. The consumers' income is the aggregate of money income=national income or community's income in general.
2. The consumers' outlay is the aggregate of money spendings on consumption and investment.
3. The consumers' total outlay constitutes community's aggregate effective demand for real goods and services. Thus, general demand is a monetary demand.
4. The wholesalers or traders have strategic position in the economy. They are extremely sensitive in their stock hoarding business to the changes in the rate of interest.
5. The changes in the flow of money are usually caused by the unstable nature of bank credit. Hence, bank credit has a unique significance in Hawtrey's cyclical model.

According to Hawtrey, changes in business activity are due primarily to variations in effective demand or consumers' outlay. It is the total money income that determines consumers' outlay. The stability of the whole economic system follows from the establishment of monetary equilibrium. Under monetary equilibrium:

- (i) consumers' outlay = consumers' income;
- (ii) consumption = production;
- (iii) cash balances of consumers and traders remain unchanged;
- (iv) bank credit flow is steady;
- (v) market rate of interest=the profit rate;
- (vi) wages (as money costs) and prices on the whole are equal (this means normal profit margin and the normal rate of productive activity); and
- (vii) there is no net export or import of gold.

Hawtrey contends that such a monetary equilibrium situation is one of extremely delicate balance, which can be easily dislocated by any number of causes and when disturbed, tends to move into a transitional period of cumulative disequilibrium. He emphasised that primarily it is the unstable nature of the credit system in the economy that causes changes in the flow of money and disturbs the monetary equilibrium. In this connection he feels that the discount rate or interest rate exerts a great influence.

## Notes

**The Expansion Phase**

A typical expansion phase, according to Hawtrey, might proceed along the following lines.

The expansion phase of the trade cycle is brought about by an increase of credit and lasts so long as the credit expansion goes on. A credit expansion is brought about by banks through the easing of lending conditions along with a reduction in the discount rate, thereby reducing the costs of credit.

By lowering their lending rates, banks stimulate borrowing. Such a reduction in the interest rate is a great stimulus to wholesalers (or traders). According to Hawtrey, traders are in a strategic position as they tend to carry their large stocks primarily with borrowed money. Moreover, traders usually mark their profits as fraction of the value of a large turnover of goods. Hence, a small change in the interest rate affects their profits to a disproportionately large extent. Thus, they are very sensitive to change in the rate of interest.

Traders are induced to increase their stocks — inventories— when the interest rate falls. Hence, they give large order to the producers; the increased orders of traders causes the producers to raise their level of production and employment. This in turn leads to an increase in income and monetary demand. “Thus the whole amount of the funds created by the bank is received as income, whether profits, wages, rents, salaries, or interest, by those engaged in producing the commodities.” Evidently, the increased production leads to an expansion of consumers’ income and outlay.

This means increased demand for goods in general, and traders find their stocks diminishing. These result in further orders to producers, a further increase in productive activity, in consumers’ income and outlay, and in demand, and a further depletion of stocks. Increased activity means increased demand, and increased demand means increased activity.” This leads to a cumulative expansion, set up, fed and propelled by the continuous expansion of bank credit.

Hawtrey further states: “Productive activity cannot grow without limit. As the cumulative process carries one industry after another to the limit of productive capacity, producers begin to quote higher and higher prices.” Thus, when prices rise, traders have a further incentive to borrow and hold more stocks in view of the rising profits. The rising prices operate in the same way as falling interest rates and the spiral of cumulative expansion is accelerated further. This means that there are three important factors which influence credit expansion by banks. These are: (i) the rate of interest charged by the banks; (ii) traders’ expectations about the price behaviour; and (iii) the actual magnitude of their sales. The rate of interest is determined by the banks. Traders’ expectations depend on general business conditions and their psychology. Actual magnitude of sales depend on the net effect of the first two upon the consumers’ outlay. In short, “Optimism encourages borrowing, borrowing accelerates sales, and sales accelerate optimism.”

**Financial Crisis (Recession)**

Notes

According to Hawtrey, prosperity comes to an end when credit expansion ends.

As banks go on increasing credit, their cash funds deplete and they are forced to curtail credit and raise interest rates in order to discourage the demand for new loans. Due to the shortage of gold reserves, the central bank — as lender of the last resort — has to set a limit on the accommodation to commercial banks. Eventually, the central bank will start contracting credit by raising the bank rate. Thus, the drain of cash from the banking system ultimately results in an acute shortage of bank 'reserve', so that the banks not only refuse to lend any more, but actually are compelled to contract. It is interesting to note that in Hawtrey's view a drain upon the cash reserves of the banking system is caused by the public. For a rise in consumers' income generally would lead to an increase in the cash holding (unspent margins) by the public. This happens when the wages rise and consequently wage-earners' demand for cash rises. Thus, what ultimately limits the expansion of credit is the absorption of money in circulation, mainly by wage earning classes.<sup>5</sup>

Moreover, under the international gold standard, if expansion is taking place rapidly in a country, it will lose gold to other countries due to excessive imports. Eventually, the central bank will have to adopt a restrictive policy.

**Contraction Phase (Depression)**

The recessionary phase merges with depression due to the growing shortages of credit. The contraction of credit exerts a deflationary pressure on prices and profits and on consumers' income and outlay. High rate of interest charged by banks discourages traders to hold large stocks and their demand for credit decreases. Prices start falling, profits also drop. Accordingly, traders further reduce stocks and stop ordering goods. Producers in turn will curtail output and employment. The income of the factors of production will decline. When consumers' income and outlay decrease, effective demand decreases, stocks and output decrease, prices fall, profits fall and so on — a cumulative downswing develops.

In a nutshell, it is the contraction of effective demand reflected in reduced outlay by consumers and increased holding of cash balances in view of a large credit curb that causes a vicious circle of deflation leading to severe depression.

**Recovery**

During a depression, as traders experience slackening in the demand for their goods, they will try to dispose of goods at whatever low price they get and repay bank's loans. When loans are liquidated, money gradually flows from circulation into the reserves of bank. As depression continues, banks will have more and more idle funds. The credit creating capacity of banks increases and in order to stimulate

**Notes**

borrowing, banks lower the interest rate. Traders will now be stimulated to increase their inventories and the whole process of expansion will be once again set in motion. The central bank now helps by lowering the bank rate and adopt open market purchases of securities so that cash is pumped into banks improving their lendable resources. And when the purchase of securities is carried far enough, the new money will find an outlet. Hawtrey believes that the ordinary measures of monetary instruments such as bank rate policy and open market operations may help in bringing about a revival.

In Hawtrey's view, this cyclical behaviour is fundamentally a monetary phenomenon. He does not deny that non-monetary causes (such as invention, discovery, bumper crops, etc.) may affect productive activity but he feels that their effects will be synchronised only with monetary effects. Non-monetary causes have no periodicity; the periodicity that appears in trade cycles is due to monetary effects, and it can be surmounted by an appropriate banking policy. According to Hawtrey, it is only the inherent instability of bank credit that causes fluctuations in business and turn them into rhythmic changes. Abolish the instability of bank credit by an appropriate bank policy and the trade cycles will disappear.

**A Critical Appraisal**

No doubt, Hawtrey's theory is perfectly logical in its basic concept of a self-generating cycle of cumulative process of expansion and contraction. One of the most striking features of Hawtrey's theory is his explanation of the period of a cycle, *i.e.*, his explanation of the turning points of expansion and contraction.

Hawtrey, in his analysis, however, exaggerates the significance of wholesalers, ignoring the capital goods industries and all other sectors of the economy.

Some critics have pointed out that monetary inflation and deflation are not causes, as Hawtrey expounds, but the result of trade cycles. In fact, credit expansion follows business expansion, and once it takes place, it would accelerate business activity. So monetary deflation is preceded by business contraction.

The role of bank credit in the economic system is over-emphasised by Hawtrey. It is true that finance is the backbone of business and bank credit plays an important role in it, but it does not mean that banks are always the leaders of economic activity.

Hawtrey asserts that changes in the flow of money are the sole and adequate cause of economic fluctuations. But, a trade cycle, being a complex phenomenon, cannot be attributed to a single cause. There are various non-monetary indigenous and exogenous factors, besides monetary factors which influence economic activity. Thus, it is incorrect to say that trade cycles are a purely monetary phenomenon.



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### 5.1.6 THE MONETARY OVER-INVESTMENT THEORY

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The gist of the monetary over-investment theory is that the working of the monetary system brings about over-investment in the economy, causing crises and depressions. The best known exponent of this theory is the Austrian economist, F.A. Hayek. Broadly speaking, Hayek's theory centres on the analysis of equilibrium between production of capital goods and consumption goods. When the structure of production is in equilibrium, production of capital goods and consumption goods takes place in exactly the same proportion as the distribution of monetary demand by consumers between consumption and saving. It implies that the productive resources are distributed between production of capital goods and consumption goods in the same proportion as the saving and expenditure on consumption goods. According to Hayek, cyclical fluctuations are the result of the shortening and lengthening of the process of production that are brought about by an expansion in money supply, causing the market rate of interest to fall below the natural or equilibrium rate of interest. A fall in interest rate leads to changes in the structure of production.

Thus, in Hayek's analysis, the failure of the banking system to keep the supply of money neutral causes trade cycles. And, therefore, the correct remedy to end trade cycles is to have a "neutral money policy". To achieve this, Hayek suggests that the money supply be kept constant under normal conditions and necessary changes be made only to offset changes in the velocity of money circulation or to adjust monetary supply to the changes in transactions demand for money.

Hayek's theory is based on the assumption that the full utilisation of investment in the capital goods sector would reduce the resources used in the production of consumer goods. But in a situation in which resources are primarily utilised, investment and consumption are complementary rather than competitive. Thus, the fundamental assumption of the theory is incorrect as resources are never fully employed.

Moreover, Hayek's theory wrongly assumes that the increasing demand for consumer goods causes a shortening of the process of production and hence a decline in the capital goods investment. He fails to see that increase in consumption demand may mean a higher marginal efficiency of capital which in turn will stimulate investment rather than retard it. The theory does not, however, explain the major phases of cyclical process, particularly the contraction phase. Therefore, Hayek's theory, like Hawtrey's over-emphasises the monetary cause of disturbances and underestimates the effects of other non-monetary factors which are equally responsible for cyclical fluctuations.



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### 5.1.7 NON-MONETARY OVER-INVESTMENT THEORY

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To some extent, this theory like Hayek's also postulates that an excessive amount of investment causes a boom, and over-investment ultimately leads to a depression. Unlike Hayek, however, the exponents of this theory do not lay too much emphasis on the role of monetary factors. They regard the monetary system as a part of the response mechanism in the process of a trade cycle, but not as a causative factor. According to this theory, trade cycles are caused by real capital (investment goods) rather than money.

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### 5.1.8 UNDER-CONSUMPTION (OR OVER-SAVING) THEORY

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According to another group of economists like Malthus, Sismondi, Marx and Hobson, the root cause of a trade cycle is over-saving or under-consumption which is due to the existing unequal distribution of wealth in the community. Among the under-consumption theorists, Hobson's analysis of the trade cycle is noteworthy. The central idea of Hobson's theory is that during the course of economic prosperity, profiteers share a larger part of increased income than the wage-earners. Thus, relatively, inequality of income in the community increases. The large-income recipients, however, will consume only a portion of their income and save the rest. Thus, saving in the economy will increase. Hobson explains that the undue exercise of the habit of saving would not enrich the community but would impoverish it, because such large amount of saving gives rise to a greater volume of capital formation which in turn produces larger quantities of consumption goods. But, in view of the increasing inequality of income and rising saving, the amount of consumption taking place in the economy will not be sufficient to lift all the goods brought to the market, and a decline sets in. Thus, a boom cannot last long because of the limitations of the community's power of consumption on account of inequalities of income. In short, the originating cause of depression is under-consumption.

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### 5.1.9 THE PSYCHOLOGICAL THEORY

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Certain economists like J.S. Mill, Beveridge and Pigou have expounded a theory of trade cycles which emphasises the importance of psychological factors. Pigou presents a complete explanation of a trade cycle by combining psychological factors with economic influences. In his view the core of industrial fluctuations (*i.e.*, trade cycles) may be found in the waves of "over-optimism" and "over-pessimism" in the business community leading to the tendency of the heavy goods industries to expand and contract by a greater amount in relation to the consumer goods industries. According to Pigou, the psychological errors of optimism and pessimism give rise to a trend of business fluctuations in a pervasive manner. Business optimism and pessimism are interacting forces, for one the business

community realises that it has made an error of optimism, it then tries to correct it by committing errors of pessimism. Eventually, thus, each phase of the cycle generates, in turn, a state of psychology which sets in motion the forces which cause a reversal of the prevailing situation, which again in the process will cause another reversal and so on. Consequently, a wavelike movement in economic activity occurs.

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### 5.1.10 THE INNOVATION THEORY

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The innovation theory of a trade cycle is propounded by J.A. Schumpeter. He regards innovations as the originating cause of trade cycles. The term “innovation” should not be confused with inventions. Inventions, in ordinary parlance, are discoveries of scientific novelties. Innovation is the application of such inventions to actual production (*i.e.*, exploiting them). It is innovations that are subject to cyclical fluctuations, not inventions. Innovation, thus, in economics means the commercial application of inventions like new techniques of production, new methods of organisation, novel products, etc.

Schumpeter regards trade cycles as the offspring of economic progress in a capitalist society. Cyclical fluctuations are inherent in the economic process of industrial production. When there are internal changes taking place on account of innovation, the development process begins. Schumpeter classifies innovation into five categories as follows:

- (i) Introduction of new type of goods.
- (ii) Introduction of new methods of production.
- (iii) Opening of new markets.
- (iv) Discovering of new sources of raw materials.
- (v) Change in the organisation of an industry, like the creation of a monopoly, trust, or cartel or breaking up of a monopoly, cartel, etc.

Innovation, however, does not arise spontaneously. It must be actively promoted by some agency in the economic system. Such an agent, according to Schumpeter, is an “entrepreneur”, entrepreneurs are innovators.

To carry out his innovative function, the entrepreneur needs two things. First, he must have the technical knowledge to produce new products or new services. Second, since the introduction of innovation presupposes the diversion of the means of production from the existing to new channels, the entrepreneur must also possess the power of disposal over the factors of production. The necessary command over the productive factor is provided by the monetary factor in the form of credit. The entrepreneur secures funds for his project not from saving out of his own income but from the crediting bank system.

## Notes

Thus, money capital and bank credit play a significant role in the Schumpeterian theory. According to Schumpeter, credit is important only in so far as the innovation is concerned in the context of a progressing economy, and only if the innovator requires credit to carry on his function, *i.e.*, innovative activity. In the absence of innovation, in a circular flow of money economy, where Say's Law of Market operates *in toto*, no credit is required.

The strategic factors in the Schumpeterian theory are, thus, (i) innovations and (ii) entrepreneurs. Innovations brought about by entrepreneurs disturb the circular flow of stationary economy, so the development is a dynamic, discontinuous, cyclical process. Schumpeter attributes the swarm-like appearance of entrepreneurs to the cyclical nature of economic progress. In his view, the cyclical upswing starts when entrepreneurs start investing in the commercial applications of their innovative ideas. This may start gradually when a few leading entrepreneurs with drive come into the field. But once these few innovators have demonstrated the profitability of their ventures, others will imitate and follow suit. With a few leaders smoothening the path, the original innovators are soon followed by a swarm-like appearance of entrepreneurial activity. Schumpeter assumes that innovating activity is helped by the banking systems' readiness to give credit. The "swarm-like" appearance of entrepreneurial activity naturally raises the volume of investment which in turn raises income, employment and output. Thus, the prosperity phase gathers momentum and the economy moves up, away from the neighbourhood of equilibrium.

In short, the clustering of innovations creates a discontinuous disturbance in the economy. It will lead to an overwhelming outflow of new products when all these innovations are beginning to have their full effect. When the market is flooded with new products, their prices fall and profit margins decline. On the other hand, the credit-financed innovations bid up the factor prices and so the costs of production rise.

New innovations will now cease. Hence prosperity will end and recession begins. At this stage, credit deflation also ensues with the persistent tendency of new firms to utilise the sales receipts of their new products to repay their bank loans. This tends to put the old firms in a difficult position of readjustment and adaptation. For, when credit deflation sets in, the flow of money stream into the economy will slacken hence the demand for revenues of the old firms, making their position still more awkward; so the recession is aggravated further. Schumpeter describes this process as "auto-deflation" implying thereby that commercial banks play only a passive role in the process.

The recession in the economic system is caused by the stoppage of innovations and the slackening of entrepreneurial activity. He stresses that innovations halt not because there is lack of inventions, but because the economic environment is not favourable for further innovation. When there is overproduction in the prosperity

period, general prices decline, reducing the profit margins. The disappearance of profit margins of new investment makes innovations financially unattractive.

Further, during an economic crisis, expectations are dampened under conditions of uncertainty. Since the clustering of innovations in the prosperity period had led the economy to a very disequibrated state, all values and estimates in the system change now. This makes the accurate planning of new investments extremely difficult. So, the economic situation so developed acts as a deterrent to the planning and formation of new enterprises.

However, Schumpeter's theory of trade cycles is imperfect. It suffers from many drawbacks such as:

- (i) His theory is highly institutional: it requires the existence of a typical institutional framework of society for its validity. He considers entrepreneurs as mere innovators. Further, he overemphasises the role of the entrepreneur, thereby creating a very strong personal element in the path of industrial progress.
- (ii) Schumpeter attributes trade cycles to the phenomenon of innovations only. But, the trade cycle being a complex phenomenon cannot be attributed to a single factor alone.
- (iii) Schumpeter unrealistically assumes that innovations are financed solely by means of bank credit. They must be financed out of voluntary savings. Moreover, major innovations generally require long-term credit, whereas the banking system usually grants only short-term loans.

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### 5.1.11 KEYNES' MEC THEORY

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Keynes never enunciated an exclusive trade cycle theory. Nevertheless, he made a significant contribution to it. According to him, a trade cycle occurs due to the fluctuations in the rate of changes in the marginal efficiency of capital. In his own words, "The trade cycle is best regarded as being occasioned by a cyclical change in the marginal efficiency of capital, though complicated and often aggravated by associated changes in the other significant short-period variables of the economic system."

A broad idea of Keynes' theory may be visualised in the following lines: the expansion phase of the cycle is occasioned by a high value of marginal efficiency of capital is high, a rapid increase in the rate of investment would take place. Thus, employment and income would also increase. Through the multiplier effect, there would be multiple increase in income in relation to each increment in new investment outlay. Thus, a cumulative rising trend occurs during the expansionary phase. In this period, businessmen are optimistic about the future, expecting higher and higher profits. Therefore, business activity progressively expands. The process of cumulative economic expansion, thus, goes on and on till the peak level of boom is reached.

## Notes

As expansion enters the boom stage, certain economic forces come into operation which tend to lower the marginal efficiency of capital due to two reasons. First, as more build up in the capital goods investment occurs, the supply prices of the capital assets increase. This happens because the cost of production of new capital assets increases as shortages and bottlenecks of materials and labour develop during the course of expansion. Second, the yields or returns on the capital assets tend to fall below the expectation level as more and more capital goods are built up (which lead to increased competition and falling prices). Both these factors will combine to depress the marginal efficiency of capital. Businessmen are always very sensitive to a decline in the marginal efficiency of capital and will adjust their activities accordingly — hence, a decline in investment.

Thus, according to Keynes, the collapse of the marginal efficiency of capital is a predominant cause of the crisis. The collapse of the marginal efficiency of capital being sudden, the change from an upward to a downward tendency takes place suddenly (the down-turn, *i.e.*, a crisis, is always, therefore, sharp), and in this respect, it differs from the lower turning-point (revival) which occurs imperceptible (the up-turn is, thus, rather flatter).

Just as contraction is due to the collapse of the marginal efficiency of capital, so also a revival takes place only when the marginal efficiency of capital gradually recovers from its low level. In contrast to the fall in the marginal efficiency of capital, which is sudden, its recovery takes time. The time necessary for recovery of the marginal efficiency of capital is determined by the durability of capital assets and the carrying costs of surplus stocks which largely influence the period of their liquidation.

Prof. Hansen summarises in a scholarly fashion the essentials of Keynes' discussion of a trade cycle as follows:

1. Fluctuation in the rate of investment constitute a cycle.
2. Fluctuations in the marginal efficiency of capital cause fluctuations in the rate of investment. Thus, the primary factor responsible for trade cycle is the marginal efficiency of capital.
3. Fluctuations in the rate of interest, though having a significant role to play usually reinforce and supplement the primary factors (*i.e.*, changes in the marginal efficiency of capital).
4. Fluctuations in the marginal efficiency of capital are mainly due to: (i) changes in the prospective yield of capital assets, and (ii) changes in the supply price.
5. At the peak of the boom, the prospective yields decline due to growing abundance (and, therefore, lower marginal productivity) of capital goods. This being an objective fact, it in turn induces a wave of pessimistic expectations (a psychological factor).



6. In the absence of fiscal policy, a variable rate of interest may be useful as a means to stabilise the cycle.

Keynes, however, preferred the maintenance of a low rate of interest in conjunction with other more radical measures like fiscal policy to regularise the cycle.

### **Critical Appraisal of Keynes' Theory**

The real contribution of Keynes' theory of employment to the trade cycle analysis lies in the explanation of turning points of the cycle. Prior to his general theory, an explanation of the lower and upper turning points was perhaps the most difficult task of the trade cycle analysis. Most trade cycle theories usually conceived of some limiting factors like bottlenecks, limits to credit expansion, etc., as an explanation for the turning points of the cycle. After Keynes' theory, however, such an explanation lost its importance. Keynes provided the explanation of the turning points by introducing the concept of consumption function, which indicates that the marginal propensity to consume being less than unity, the expenditure on consumption goods does not increase in proportion to the increase in income. This automatically sets a limit to the expansion of the output of consumption goods and may lead to over-production during the boom period. This fact alone reacts upon the marginal efficiency of capital which tends to decline at the peak of the boom.

However, Keynes' theory of trade cycles is criticised on many grounds. It has been said that his theory fails to provide a proper explanation of the phenomenon; it also does not explain why the change in the rate of interest occurs in such a way as to produce the observed variations in the rate of investment. Moreover, in Keynes' opinion, the marginal efficiency of capital depends on the psychology of the entrepreneurs, and psychological shifts cause fluctuations in the marginal efficiency of capital. But Keynes neglected the real factors underlying these psychological shifts in explaining the crisis. Prof. Hazlitt, however, criticises Keynes for attributing the down-turn to a "sudden collapse in the marginal efficiency of capital." According to Hazlitt, the term "marginal efficiency of capital" is very vague and ambiguous.

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### **5.1.12 HICKS' THEORY OF TRADE CYCLES**

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Prof. Hicks tries to provide a more adequate explanation of trade cycles by combining the multiplier and acceleration principles. According to him, "the theory of acceleration and the theory of multiplier are the two sides of the theory of fluctuations, just as the theory of demand and the theory of supply are the two sides of the theory of value."

## Notes

In the Hicksian model, the following concepts play an important role.

1. The warranted rate of growth.
2. Induced and autonomous investment.
3. The multiplier and the accelerator.

The warranted rate of growth is defined as the rate of growth which will sustain itself in congruity with the equilibrium of saving and investment. Thus, when real investment in an economy is in line with real saving, the economy is said to be growing at a warranted rate of growth. According to Hicks, the interaction of the multiplier and the accelerator causes economic fluctuations around the warranted rate of growth.

Hicks considers two types of investments *viz.*, autonomous and induced. Autonomous investment is that which is independent of changes in the level of output (income). That is to say, it is not a function of the changes in the level of output. Thus, autonomous investment is not related to the growth of the economy. According to Hicks, “public investment, investment which occurs in direct response to inventions, and much of the ‘long-range’ investment which is only expected to pay for itself over a long-period — all of these can be regarded as autonomous investment.” He assumes that investment increases at a regular rate so that it remains in progressive equilibrium if it were not disturbed by extraneous forces.

On the other hand, induced investment is that which depends on changes in the level of output (income). Thus, it is a function of the economy’s growth rate. This induced investment is central to Hicks’ theory of cycles, for the operation of the acceleration principle, a key factor depends on it. An increase in output (consequent upon a permanent increase in demand) from one period to the next causes a “hump” in investment, *i.e.*, expansion of capital stock (induced investment) which, then, interacts through the multiplier. This is Hicks’ accelerator.

According to Hicks, an expansionary phase starts in the economy when there is an autonomous increase in investment due to exogenous factors like technological improvements, territorial developments or population changes. This new autonomous investment will generate an enlarged amount of income, once again under the multiplier effect. Likewise, a super cumulative process of income generation and investment expansion based on the “interaction of the multiplier and the accelerator” will be encountered in a free economy. It is interesting to note that economists use the term “leverage effect” to denote the full, enlarged rise in income that occurs as a result of autonomous investment, and the combined multiplier-accelerator leverage is termed as the “super-multiplier”.

According to Hicks, the process of interaction of the multiplier and accelerator will continue to operate till the expansion of economic activity (measured in terms of income and employment) reaches the “full employment ceiling point” of the



economy. In other words, the upper limit to the expansion of income and employment is determined by the level of full employment in the economy. In a dynamic economy, however, there will be an expanding or rising ceiling and, therefore, it takes much longer time than in a static society to reach the ceiling point; but once the ceiling point is reached, the cycle will undergo a downward movement.

After the upper turning point has been reached, a surplus capacity appears, and therefore, investment declines. With each decline in investment, due to the backward operation of the multiplier, income and consumption expenditure fall further. In Hicks' view, there is a marked asymmetry in one respect between the upswing that takes place after the lower turning point and the downswing that follows the upper turning point. During the upswing, an increase in consumption induces an increase in additional investment in capital goods so that there is a positive acceleration effect operating together with the multiplier effect. On the other hand, during a contractionary phase, the accelerator effect becomes inoperative because investment cannot fall below zero and disinvestment cannot exceed the replacement requirements. Disinvestment in fixed capital can only take place only by a cessation of gross investment, thus, the adjustment of fixed capital to a decline in the level of output and income takes place only by a slow process of wearing out, and hence, must take considerable time. Once this condition is reached, a further fall in output can induce no further disinvestment in fixed capital, at least not immediately. Thus, during the downswing, the extent to which the decline in investment can be carried is not determined according to the accelerator relation (as it is determined during the upswing) but by the magnitude of excess capacity. During the downswing, the place of the accelerator is taken by something which behaves quite differently — something which can best be treated as a downward adjustment in autonomous investment.

Hicks' view that while the upswing is the result of the combined action of multiplier and accelerator, the downswing is largely a product of the multiplier alone, the accelerator remaining inoperative for the most part. Hicks describes it as a "mere ghost" of what it was in the boom. He gives two reasons for this:

1. The reduction of fixed capital can take place only by the process of its wearing out. Thus, it is only the rate of depreciation of capital goods and not the accelerator ratio that can determine the reduction of the capital assets.
2. The working capital may also be prevented from declining in the proportion suggested by the acceleration coefficient. Businessmen may hold back their stocks rather than sell them at a loss.

In Hicks' opinion, since the induced investment tends to be negative during a depression, the lower turning point or recovery is initiated solely by the operation of the autonomous investment.

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During a depressionary phase, there is some production, but much below the economy's production possibility frontier in terms of the existing capital stock. However, during the process of production, equipment tends to depreciate and maintain the plant capacity, the worn out capital assets have to be replaced. This is provided for out of existing surplus plant capacity. Therefore, at the end of each time period, the excess or surplus plant capacity is less than what it was at the beginning of this period. Ultimately, all the excess plant capacity will be used up. And, provision for further replacement of worn-out capital has to be made by fresh investment. The need to replace the worn-out equipment acts as a stimulant to the economy during a depression. During a depression, thus, a stage is reached when the amount of disinvestment turns out to be less than the amount of autonomous investment so that there will be an increase in the net investment expenditure. And once there is an increase in net investment, income, output and expenditure tend to increase in a multiplier fashion with which the accelerator also will join hands. Thus, the interaction to the multiplier and accelerator will lead to a cumulative expansion in the economy. And the cycle will move on the path of prosperity.

In Hicks' opinion, the analysis of the upper turning point of a cycle is not so easy. However, he provides an explanation of the upper turning point by adopting the concept of natural rate of growth as developed by Prof. Harrod. According to Harrod, the natural rate of growth is one which is permitted under the constraint of the increase in population, capital accumulation, development of technology and the given work-leisure preference pattern. This is the production ceiling beyond which the economy cannot afford to expand.

According to Hicks, cycles have weak endings and strong endings. Cycles with weak endings are called free cycles and cycles with strong endings are called constrained cycles. A free cycle with a weak ending takes place when the interaction between the multiplier and the accelerator is not very strong so that economy moves along the path of production ceiling set by the natural rate of growth. In such a cycle, the upper turning point occurs. A constrained cycle, a cycle with a strong ending, takes place when the interaction between the multiplier and the accelerator is strong enough to lead the economy along the path of expansion until the restraint determined by the production ceiling is reached. The course of the expansion phase is constrained by the production ceiling set by the natural rate of growth. No further expansion beyond this ceiling is possible. And when the production ceiling is reached, the expanding force of the multiplier and the accelerator becomes inadequate for the expansion to continue any longer; the most that the expansion path can do is to creep along to the ceiling. But Hicks opines that the economy cannot do so for more than a very limited time, because, "when the path has countered the ceiling, it must (after a little while) bounce off from it, and begin to move in a downward direction" According to Hicks, this downward movement is inevitable because initial burst of autonomous investment

is supposed to be short-lived at this point, the upper turning point is finally and fully reached.

In spite of its various merits, the Hicksian theory of trade cycle suffers from the following weaknesses. Its fundamental shortcoming is that Hicks assumes a fixed value of the multiplier during the fixed phases of the cycles. Here he seems to follow Keynes blindly regarding the stable consumption function. Empirical studies of modern economists, however, reveal that the marginal propensity to consume is not constant in relation to the cyclical changes in income. As the economy passes from one cyclical phase to another, the multiplier changes.

Kaldor points out that the vulnerable point of the Hicksian theory is the use of the crude and misleading acceleration principle. This principle assumes that investment generated by a change in output is some coefficient of the change of output that is independent of the absolute size of the change. In reality, however, the rate of expansion of firms conforms to their financial resources, and they cannot take advantage of the large investment opportunities during the prosperity phase as assumed by Hicks. The Hicksian explanation of the phenomenon of trade cycles was highly mechanical and in the real world, movements do not take place so mechanically as has been depicted by Hicks. Therefore, Hicks' theory is regarded as inadequate as it fails to stress the psychological forces arising from future uncertainty and expectations which play an important part in the dynamic capitalist economy.

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### 5.1.13 GENERAL CONCLUSIONS ON THE THEORIES OF TRADE CYCLE

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From the above survey of the trade cycle theories, it is evident that opinions differ widely about the cause of cycles. According to a large and influential school of thought, trade cycles are mainly due to unwarranted credit expansion. A trade cycle is thus regarded solely as a monetary phenomenon. On the other hand, a majority of economists give various non-monetary, rather than monetary, factors as the real cause of trade cycles. Some like Schumpeter assert that fluctuations in innovative activity are the main causes of cycles. Some stress on psychological factors like waves of optimism and pessimism which cause oscillations in business activity. Some attribute cycles to over-investment. To some others, it is due to over-saving; to others it is due to lack of savings. Some opine that it is the mischief of the varying rates of interest, and some to the varying rate of profits. Economists like Keynes explain that it is due to fluctuations in the marginal efficiency of capital, while present-day economists like Hicks and Samuelson regard it as being due to interactions of the multiplier and the accelerator. However, a large majority of economists are agreed upon the fact that the changes in investment are the most important of the factors causing trade cycles.

In actual fact, however, current opinion among economists tend to describe the trade cycle as a cycle of investment activity. The consumption function being

**Notes**

regarded more or less as a stable phenomenon in the short run, the most variable factor in the economy is investment, which is fluctuating and volatile to a degree, causing cyclical variation. Thus, variations in investment together with variations in induced consumption are the sources of a trade cycle.

Economists are unanimously agreed upon this point. But as to why fluctuations occur in the investment activity is again a controversial point. Various explanations have been advanced on this point. To some economists, it is because of an excessive tendency to save, while to some others, it is due to bursts of invention; some, on the other hand, regard it as phenomenon of excessive accretion to equipment during the period of gestation. Some call it the result of increased profits in a period of rising prices. Economists like Hicks consider it the effect of the accelerator and the multiplier and the interaction of both. While Keynes and his followers regard it as a consequence of fluctuations in the marginal efficiency of capital. Haberler, however, suggests that although there is no common agreement on the determinants of the upper and lower turning points of a cycle, there seems to be considerable harmony in the various operations and explanations about the nature of cumulative process of expansion and contraction.

We may conclude that trade cycles being a complex phenomenon are caused and conditioned by various factors — monetary, non-monetary, exogenous and endogenous — and it is not easy to attribute it to any one single factor. Different cycles at different times are caused by different factors. Every cycle in the economic history of a country is to be analysed individually. Thus, we cannot draw generalisations from a particular factor as the fundamental cause of trade cycles. Thus the trade cycle may be regarded as an unsolved riddle.

**Samuelson Theorem**

The Stolper-Samuelson theorem is a basic theorem in Heckscher-Ohlin type trade theory. It describes a relation between the relative prices of output goods and relative factor rewards, specifically, real wages and real returns to capital.

The theorem states that-under some economic assumptions (constant returns, perfect competition, equality of the number of factors to the number of products)-a rise in the relative price of a good will lead to a rise in the return to that factor which is used most intensively in the production of the good, and conversely, to a fall in the return to the other factor.

**History of the theorem**

It was derived in 1941 from within the framework of the Heckscher-Ohlin model by Wolfgang Stolper and Paul Samuelson,<sup>[1]</sup> but has subsequently been derived in less restricted models. As a term, it is applied to all cases where the effect is seen. Ronald W. Jones and José Scheinkman (1977) show that under very general conditions the factor returns change with output prices as predicted by the theorem. [citation needed] If considering the change in real returns under

increased international trade a robust finding of the theorem is that returns to the scarce factor will go down, *ceteris paribus*. A further robust corollary of the theorem is that a compensation to the scarce-factor exists which will overcome this effect and make increased trade Pareto optimal.

The original Heckscher-Ohlin model was a two factor model with a labour market specified by a single number. Therefore, the early versions of the theorem could make no predictions about the effect on the unskilled labour force in a high income country under trade liberalization. However, more sophisticated models with multiple classes of worker productivity have been shown to produce the Stolper-Samuelson effect within each class of labour: Unskilled workers producing traded goods in a high-skill country will be worse off as international trade increases, because, relative to the world market in the good they produce, an unskilled first world production-line worker is a less abundant factor of production than capital.

The Stolper-Samuelson theorem is closely linked to the factor price equalization theorem, which states that, regardless of international factor mobility, factor prices will tend to equalize across countries that do not differ in technology.

### Derivation

Considering a two-good economy that produces only wheat and cloth, with labour and land being the only factors of production, wheat a land-intensive industry and cloth a labour-intensive one, and assuming that the price of each product equals its marginal cost, the theorem can be derived.

The price of cloth should be:

$$(1) P(C) = ar + bw,$$

with  $P(C)$  standing for the price of cloth,  $r$  standing for rent paid to landowners,  $w$  for wage levels and  $a$  and  $b$  respectively standing for the amount of land and labour used.

Similarly, the price of wheat would be:

$$(2) P(W) = cr + dw$$

with  $P(W)$  standing for the price of wheat,  $r$  and  $w$  for rent and wages, and  $c$  and  $d$  for the respective amount of land and labour used.

If, then, cloth experiences a rise in its price, at least one of its factors must also become more expensive, for equation 1 to hold true, since the relative amounts of labour and land are not affected by changing prices. It can be assumed that it would be labour, the intensively used factor in the production of cloth, that would rise.

When wages rise, rent must fall, in order for equation 2 to hold true. But a fall in rent also affects equation 1. For it to still hold true, then, the rise in wages must be more than proportional to the rise in cloth prices.



**Notes**

A rise in the price of a product, then, will more than proportionally raise the return to the most intensively used factor, and a fall on the return to the less intensively used factor.

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#### **5.1.14 MEASURES OF ECONOMIC STABILISATION**

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Economic stabilisation is one of the main remedies to effectively control or eliminate the periodic trade cycles which plague capitalist economy. Economic stabilisation, it should be noted, is not merely confined to a single individual sector of an economy but embraces all its facts. In order to ensure economic stability, a number of economic measures have to be devised and implemented.

In modern times, a programme of economic stabilisation is usually directed towards the attainment of three objectives: (i) controlling or moderating cyclical fluctuations; (ii) encouraging and sustaining economic growth at full employment level; and (iii) maintaining the value of money through price stabilisation. Thus, the goal of economic stability can be easily resolved into the twin objectives of sustained full employment and the achievement of a degree of price stability.

The following instruments are used to attain the objectives of economic stabilisation, particularly control of trade cycles, relative price stability and attainment of economic growth: (1) Monetary policy; (2) Fiscal policy; and (3) Direct controls.

##### **Monetary Policy**

The most commonly advocated policy of solving the problem of fluctuations is monetary policy. Monetary policy pertains to banking and credit, availability of loans to firms and households, interest rates, public debt and its management, and monetary management. However, the fundamental problem of monetary policy in relation to trade cycles is to control and regulate the volume of credit in such a way as to attain economic stability. During a depression, credit must be expanded and during an inflationary boom, its flow must be checked.

Monetary management is the function of the commercial banking system, and through it, its effects are primarily exerted on the economy as a whole. Monetary management directly affects the volume of cash reserves of banks, regulates the supply of money and credit in the economy, thereby influencing the structure of interest rates and availability of credit. Both these factors affect the components of aggregate demand (consumption plus investment) and the flow of expenditures in the economy. It is obvious that an expansion in bank credit causes an increasing flow of expenditure (in terms of money) and contraction in bank credit reduces it.

In the armoury of the central bank, there are quantitative as well as qualitative weapons to control the credit-creating activity of the banking system. They are bank rate, open market operations and reserve ratios. These are interrelated to

tools which operate on the reserves of member banks which influence the ability and willingness of the banks to expand credit. Selective credit controls are applied to regulate the extension of credit for particular purposes.

We shall now briefly discuss the implications of these weapons.

### Bank Rate Policy

Due to various reasons, the bank rate policy is relatively an ineffective weapon of credit control. However, from the viewpoint of contracyclical monetary policy, bank rate policy is usually interpreted as an evidence of monetary authority's judgement regarding the contribution of the current flow of money and bank credit to general economic stability. That is to say, a rise in the bank rate indicates that the central bank considers that liquidity in the banking system possesses an inflationary potential. It implies that the flow of money and credit is very much in excess of the actual productive capacity of the economy and therefore, a restraint on the expansion of money supply through dear money policy is desirable. On the other hand, a reduction in the bank rate is generally interpreted as an evidence of a shift in the direction of monetary policy towards a cheap and expansive money policy. A reduction in bank rate then is more significant as a symbol of an easy money policy than anything else. However, the bank rate is most effective as an instrument of restraint.

**Effectiveness of Bank Rate Policy in Expansion:** According to Estey, the following difficulties usually arise in the way of an effective discount policy in expansion:

1. During high prosperity, the demand for credit by businessmen may be interest-inelastic.
2. The rising of bank rate and a consequent rise in the market rates of interest may attract loanable funds from the financial intermediaries in the money market and assist in counteracting undesired effects.
3. Though the quantity of money may be controlled by the banking system, the velocity of its circulation is not directly under the influence of banks. Banking policy may determine how much credit there should be but it is the trade which decides how much and how fast it will be used. Thus, if the velocity of the movement is contrary to the volume of credit, banking policy will be rendered ineffective.
4. There is also the difficulty of proper timing in the application of banking policy. Brakes must be applied at the right time and in the right quarter. If they are applied too soon, they must bring expansion to an end with factors of production not fully employed. And when applied too late, there might be a runaway monetary expansion and inflation, completely out of control.



**Notes**

**Open Market Operations:** The technique of open market operations refers to the purchase and sale of securities by the central bank. A selling operation reduces commercial banks' reserves and their lending power. However, because of the need to maintain the government securities market, the central bank is completely free to sell government securities when and in what amounts it wishes in order to influence commercial banks' reserve position. Thus, when a large public debt is outstanding, by expanding the securities market, monetary policy and management of the public debt become inseparably intertwined.

**Reserve Ratios:** The monetary authorities have at their disposal another most effective way of influencing reserves and activities of commercial banks and that weapon is a change in cash reserve ratios. Changes in the reserve ratios become effective at a pre-announced date. Their immediate effect is to alter the liquidity position in the banking system. When the cash reserve ratio is raised commercial banks find their existing level of cash reserves inadequate to cover deposits and have to raise funds by disposing liquid assets in the monetary market. The reverse will be the case when the reserve ratio is lowered. Thus, changes in the reserve ratios can influence directly the cash volume and the lending capacity of the banks.

It appears that the bank rate policy, open market operations and changes in reserve ratios exert their influence on the cost, volume and availability of bank reserves through reserves, on the money supply.

**Selective Controls:** Selective controls or qualitative credit control is used to divert the flow of credit into and out of particular segments of the credit market. Selective controls aim at influencing the purpose of borrowing. They regulate the extension of credit for particular purposes. The rationale for the use of selective controls is that credit may be deemed excessive in some sectors at a time when a general credit control would be contrary to the maintenance of economic stability.

It goes without saying that these various means of credit controls are to be co-ordinated to achieve the goal of economic stability.

**Effectiveness of Monetary Control:** Monetary policy is much more effective in curbing a boom than in helping to bring the economy out of a depressionary state. It has long been recognised that monetary management can always contract the money supply sufficiently to end any boom, but it has little capacity to end a contraction. This is because the actions of monetary management do not directly enter the income-expenditure stream as the most effective contracyclical weapon, for their first impact is on the asset structure of financial institutions, and in this process of altering the assets structure, rate of interest, volume of credit and the income-expenditure flow may be altered. All these operate more significantly in restraining the income stream during expansion than in inducing an increase during contraction. However, the greatest advantage of monetary policy is its flexibility. Monetary management makes decisions about the rate of change

in the money supply that are consistent with economic stability and growth on a judgement of given quantitative and qualitative evidences.

But, whether this point of monetary policy will prove its effectiveness or not depends on its exact timing. Manipulation of bank rate and open market dealings by the central bank should be reasonably effective if applied quickly and continuously in preventing booms from developing and consequently, into a depression.

To sum up, monetary policy is a necessary part of the stabilisation programme but it alone is not sufficient to achieve the desired goal. Monetary policy, if used as a tool of economic stabilisation, in many ways, serves as a complement of fiscal policy. It is strong, whereas fiscal policy is weak. It is flexible and capable of quick alternations to suit the measure of pressures of the time and needs. However, it is to be co-ordinated with fiscal policy. A wrong monetary policy may seriously endanger and even destroy the effectiveness of fiscal policy. Thus, monetary policy and fiscal policy, each reinforcing and supplementing the other, are the essential elements in devising an economic stabilisation programme.

### **Fiscal Policy**

Today, foremost among the techniques of stabilisation is fiscal policy. Fiscal policy as a tool of economic stability, however, has received its due importance under the influence of Keynesian economies only since the depression years of the 1930s.

The term “fiscal policy” embraces the tax and expenditure policies of the government. Thus, fiscal policy operates through the control of government expenditures and tax receipts. It encompasses two separate but related decisions: public expenditures and level and structure of taxes. The amount of public outlay, the inducement and effects of taxation and the relation between expenditure and revenue exert a significant impact upon the free enterprise economy.

Broadly speaking, the taxation policy of the government relates to the programme of curbing private spending. The expenditure policy, on the other hand, deals with the channels by which government spending on new goods and services directly add to aggregate demand and indirectly income through the secondary spending which takes place on account of the multiplier effect. Taxation, on the other hand, operates to reduce the level of private spending (on both consumption and investment) by reducing the disposable income and the resulting savings in the community. Hence, under the budgetary phenomenon, public expenditure and revenue can be combined in various ways to achieve the desired stimulating or deflationary effect on aggregate demand.

Thus, fiscal policy has quantitative as well as qualitative aspect changes in tax rates, the structure of taxation and its incidence influence the volume and direction of private spending in economy. Similarly, changes in government's

## Notes

expenditures and its structure of allocations will also have quantitative and redistributive effects on time, consumption and aggregate demand of the community. As a matter of fact, all government spending is an inducement to increase the aggregate demand (both volume and components) and has an inflationary bias in the sense that it releases funds for the private economy which are then available for use in trade and business. Similarly, a reduction in government spending has a deflationary bias and it reduces the aggregate demand (its volume and relative components in which the expenditure is curtailed). Thus, the composition of public expenditures and public revenue not only help to mould the economic structure of the country but also exert certain effects on the economy.

For maximum effectiveness, fiscal policy should be planned on both long-run and short-run basis. Long-run fiscal policy obviously is concerned with the long-run trends in government income and spendings. Within the framework of such a long-range plan of fiscal operations, the budget can be made to vary cyclically in order to moderate the short-run economic fluctuations.

Basically two sets of techniques can be employed for planning the desired flexibility in the relation between tax revenue and expenditure: (1) built-in flexibility or automatic stabilisers, and (2) discretionary action.

*Built-in Flexibility:* The operation of a fiscal policy is always confronted with the problem of timing and forecast. A fiscal policy administrator has always to face the question: When to do what? But it is a very difficult and complex question to answer. Thus, in order to minimise the difficulties that arise from uncertainties of forecasting and timing of fiscal operations, an automatic stabiliser programme is often advocated. Automatic stabiliser programme implies that in a given framework of expenditure and revenue relation in a budgetary policy, there exist factors which provide automatically corrective influences on movements in national income, employment, etc. This is what is called built-in flexibility. It refers to a passive budgetary policy. The essence of built-in flexibility is that (i) with a given set of tax rates tax yields will vary directly with national income, and (ii) there are certain lines of government expenditures which tend to vary inversely with movements in national income. Thus, when the national income rises, the existing structure of taxes and expenditures tend to automatically increase public revenue relative to expenditure, and to increase expenditures relative to revenue when the national income falls. These changes tend to mitigate or offset inflation or depression at least partially. Thus, a progressive tax structure seems to be the best automatic stabiliser.

Likewise, certain kinds of government expenditure schemes like unemployment compensation programmes, government subsidies or price-support programmes also offset changes in income by varying inversely with movements in national income.

However, automatic stabilisers are not a panacea for economic fluctuations, since they operate only as a partial offset to changes in national income, but provide

a force to reverse the direction of the change in the income. They slow down the rate of decline in aggregate income but contain no provision for restoring income to its former level. Thus, they should be recognised as a very useful device of fiscal operations but not the only device. Simultaneously, there should be scope for discretionary policies as the circumstances will call for.

*Discretionary Action:* Quite often, it becomes absolutely necessary to have fiscal operations with a tool kit of discretionary policies consisting of measures for putting into effect with a minimum delay, the changes in government expenditures. This calls for a skeleton of public works projects providing for administrative discretion to employ them and the funds to put them into effect. It calls for a budgetary manipulation an active budget policy constituting flexible tax rates and expenditures. There can be three ways of discretionary changes in tax rates and expenditures: changing expenditure with constant tax rates; changing tax rates and constant expenditure; and a combination of changing tax rates and changing expenditures.

In general, the first method is probably superior to the second during a depression. That is to say, to increase expenditures with the level of taxes remaining unchanged is useful in pushing up the aggregate spending and effective demand in the economy. However, the second method will prove to be superior to the first during an inflation. That is to say, inflation could be checked effectively by increasing the tax rates with a given expenditure programme. But it is easy to see that the third method is much more effective during inflation as well as deflation than the other two. Inflation would, of course, be more effectively curbed when taxes are enhanced and public expenditure is also simultaneously reduced. Similarly, during a depression, the spending rate of private economy will be quickly lifted up if taxes are reduced simultaneously with the increasing public expenditure.

However, the main difficulty with most discretionary policies is their proper timing. Delay in discretion and implementation will aggravate the problem and the programme may not prove to be effective in solving the problems. Thus, many economists fear that discretionary government actions are likely to do more harm than good, owing to the uncertainty of government actions and the political pressures to favour vested interests. That is why reliance on built-in stabilisers, as far as possible, has been advocated.

### **Direct Controls**

Broadly speaking, direct controls are imposed by government which expressly forbid or restricts certain kinds of investment or economic activity. Sometimes, direct government controls over prices and wages as a measure against inflation have been advocated and implemented. During World War II, price-wage controls were employed in conjunction with consumer rationing and materials allocation to curb generalised total excess demand and to direct productive resources into channels desired by the government. Monetary-fiscal controls may be used to curb

**Notes**

excess demand in general but direct controls can be more useful when they are applied to specific scarcity areas.

Direct controls have the following advantages:

1. They can be introduced or changed quickly and easily: hence the effects of these can be rapid.
2. Direct controls can be more discriminatory than monetary and fiscal controls.
3. There can be variation in the intensity of the operations of controls from time to time in different sectors.

In a peace-time economy, however, there are serious philosophical and political objections to direct economic controls as a stabilisation device. Objections have been raised to such controls on the following counts:

1. Direct controls suppress individual initiative and enterprise.
2. They tend to inhibit innovations, such as new techniques of production, new products, etc.
3. Direct controls may breed or induce speculation which may have destabilising effects. For instance, if it is expected that a commodity X, say steel, is to be rationed because of scarcity, people may try to hoard large stocks of it, which aggravates its shortage. It, thus, encourages the creation of artificial scarcity through large-scale hoardings.
4. Direct controls need a cumbersome, honest and efficient administrative organisation if they are to work effectively.
5. Gross disturbances reappear as soon as controls are removed.

In short, direct controls are to be used only in extraordinary circumstances like emergencies, but not in a peace-time economy.

A large part of modern monetary economics is characterised as having two views, the monetarist and the Keynesian or fiscalist. In a broad sense, “monetarism” and “Keynesianism” have emerged as two alternative schools of thoughts expressing their distinct views on the role of money in the economy and significance of monetary as well as fiscal policies as stabilisation devices.

In essence, monetarism stresses that:

1. Money only matters, or money matters much.
2. Monetary policy is superior to fiscal policy as a stabilisation device.



Fiscalism or Keynesianism, on the other hand, emphasises that:

1. Money does not matter much.
2. Fiscal policy is superior to monetary policy as a stabilisation device.

Because of the strong differences in their views there has been a heated controversy and unending debate between the monetarist and the Keynesian schools.

The monetarist school is represented by many eminent economists like Milton Friedman, Karl Brunner, Allan Meltzer, David Fand, David Laidler, Mieselman, Anna Schwartz among others. The Keynesian or fiscalist school, on the other hand, is represented by equally prominent economists like James Tobin, G. Ackley, Paul Samuelson, Lawrence Klein, A. Okun, Franco Modigliani among others.

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### 5.1.15 MONETARISM

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The term “monetarism” was, coined by Karl Brunner to represent typical monetarist ideas on the relationship between money supply, prices and output, as a counter-revolution to “the Keynesian Revolution.” Prof. Milton Friedman, the champion of monetarism, however, identifies monetarism, with the quantity theory of money and suggests that monetarism is not a new development but an old wine in a new bottle.

Monetarism fundamentally traces the importance of money as determinant of nominal GNP in the short run and prices in the long run. It also seeks to establish the honour of monetary policy as an effective stabilising tool of macroeconomic management.

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### 5.1.16 GENESIS OF MONETARISM

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The age-old quantity theory of money lies at the root of monetarism. There are four stages to the development of the monetarism based on the quantity theory of money:

1. the transactions version of the quantity theory of money;
2. the income velocity version of the quantity theory of money;
3. the cash-balances approach to the quantity theory; and
4. the modern/monetarist approach to the quantity theory of money.

The quantity theory of money in different versions have been expressed in terms of different forms of quantity equations stressing different variables in the framework of analysis.

## Notes

The respective quantity equations are:

(1) Fisherian equation:

$$MV = PT$$

(2) Income velocity equation:

$$MV = Py$$

In these two equations:

$M$  = the stock of money

$P$  = the price level

$T$  = the volume of all transactions

$V$  = the velocity of circulation

$Y$  = the real national income.

(3) Marshallian — Cambridge Cash-balances equation:

$$M = k Py$$

where,  $M$ ,  $P$  and  $y$  are as defined above.

$k$  = the cash balances on the demand for money measured as the ratio of money stock to income *i.e.*, the desired proportion of real income held in cash.

In these equations, assuming

$T$  or  $y$  and  $V$  or  $k$  to be constant, it is commonly proved that changes in  $M$  reflect proportional changes in  $P$ .

Thus, supply of money should be checked on the monetary policy to maintain the price stability.

The Fisherian and Cambridge versions seemed as the basis of the quantity theory of money to provide substance of the monetarist view up to 1929 — in stressing the role of money and monetary policy.

During the period of Great Depression in 1930s with the publication of Keynes' *General Theory* in 1936, the quantity theory of money and the corresponding monetarist view came under severe attack. The major criticisms were levelled against the basic issues, such as:

- the failure of monetary policy to stimulate the economy from the depression;
- the assumption of full employment;
- the constancy of  $V$  or  $k$ ;



- the stability of the market and the private sector business;
- the policy towards government non-intervention.

### Friedman's Approach

The modern/monetarist approach to the quantity theory of money is led by Milton Friedman, by publishing an article "The Quantity Theory of Money: A Restatement" in his edited book *Studies in the Quantity Theory of Money*, in the year 1956.

In essence, Friedman's restatement of the quantity theory of money is a further extension and improvement over the mainstream of the cash-balances approach.

Friedman states that the quantity theory of money is essentially a theory of the demand for money. In his view, the demand for money is related to economic variables in a stable and predictable manner.

We may state a simplified form of Friedman's concept of the demand for money function as under:

$$Md = \frac{M}{P} = f(Y_p, z, r, \frac{\Delta P}{P} u)$$

where,

$$Md = \text{the demand for real money balances} = \frac{M}{P}$$

$Y_p$  = Permanent income

$z$  = the ratio of non-human wealth to total wealth

$r$  = the rate of interest

$\frac{\Delta P}{P}$  = rate of change in the price level

$u$  = other variables that determine the utility of money thereby affecting its demand.

Empirical findings of the monetarists suggest that:

1. The rate of interest plays a minor role in determining the demand for money.
2. The demand for money is a stable (not constant) function of income.

As such, most monetarists tend to focus the impact of changes in money supply on the changes in prices and real income rather than rate of interest as major and important macro-economic and policy variables.

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### 5.1.17 OTHER ASPECTS OF FRIEDMAN'S CONTRIBUTION IN MONETARIST DOCTRINE

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Milton Friedman has made a remarkable contribution to our understanding of the following major issues in monetary theory:

1. The impulse problem.
2. Inflation-unemployment trade-off.
3. The stability of the private sector.
4. The relevance of allocative detail for the analysis of aggregate behaviour.
5. The concept of monetary rule.

In discussing the impulse problem, Friedman argued that it is necessary to distinguish between monetary growth and monetary acceleration. Monetary acceleration has its influence on employment and output. Monetary growth affects the average inflation rate.

Friedman argues that a larger inflation cannot permanently lower unemployment, as is amply supported by worldwide evidence. He however, admitted that there can be a temporary trade-off between unemployment and inflation but cannot be a permanent phenomenon. He thus refuted the Phillips hypothesis in the long run.

Friedman holds that the dynamic structure of the private sector in a modern economy is basically stable, as it can absorb shocks and transforms them into a stabilising motion. He, thus, did not side with the Keynesian view that the private sector economy is inherently unstable.

It seems Friedman and other monetarists do not feel the need for allocative detail in explaining and predicting short-term changes in income. In their view, it is enough to know that changes in nominal income are basically induced by the changes in the stock of money. The monetarists, however, deem it necessary to focus a greater attention on the behaviour of the market for real cash balances. General price level is distinguished from the structure of the relative prices. The quantity of money affects the general price level. The relative prices are, however, determined by the conditions of related markets in each sector.

As such, the monetarists have preferred small-scale econometric models for their empirical studies. Keynesians, on the other hand, usually tend to prefer large-scale model providing details of various sections of aggregate behaviour. There is also an unending controversy between the two groups as to whether small model is better or large model in econometric analysis.

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### 5.1.18 MAJOR MONETARIST PROPOSITIONS

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It is instructive to note the following main postulates and propositions stated by the monetarists:

1. Monetary variables — especially, the growth rate of the stock of money have a strong influence in determining the behaviour of nominal and real GNP in the short-run.
2. The effects of changes in the money supply on the behaviour of GNP take place with long and variable lags ranging between 6 months to 2 years.
3. Rapid growth of money supply in excess of the long-run growth of real output just cannot be offset by continuous adjustments in income velocity or short-run adjustments in output. It takes 2 to 3 years for money growth to have its full impact on the price level.
4. Inflation may primarily be attributed to a growth in the money supply in excess of the real income growth. Inflation is always and everywhere a monetary phenomenon.
5. A high inflation rate cannot permanently lower unemployment rate. The Phillips curve hypothesis is thus invalid in the long run.
6. There are two effects of rapid monetary growth on the rate of interest. First, the liquidity effect, lowering the nominal interest rates initially. Then, there is price expectation effect causing the nominal interest rates to rise eventually.

Rapid growth of money supply also causes high nominal interest rates on account of the Fisher effect.

7. The major cause of economic fluctuations lies in inappropriate and untimely government actions rather than private sector instability in a market system (as is assumed by Keynes).

Private sector is essentially stable. Economic fluctuations may, therefore, be attributed to erratic money supply growth.

8. Monetary aggregate rather than rate of interest is more important policy variable in the course of monetary management by the central bank.
9. Discretionary monetary policy meant for 'fine-tuning' of the economy in effect results into destabilisation of the economy. Therefore, it is better to adopt a monetary rule — *i.e.*, to have a constant rate of growth of money supply at all times.
10. Fiscal policy is largely ineffective in the process of demand management, unless its course of action implies a change in the stock of money.

## Notes

Ostensibly, in achieving stabilisation goal. Monetary policy is far superior to fiscal policy.

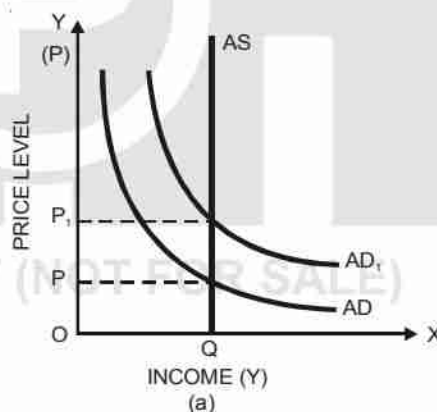
11. Excessive public sector borrowing requirements forced by the expanding public sector or increased government spending has 'crowding out effect' which results into the lowering of investments in the private sector and augmenting the rate of unemployment further.

### 5.1.19 KEYNESIAN VS. MONETARIST

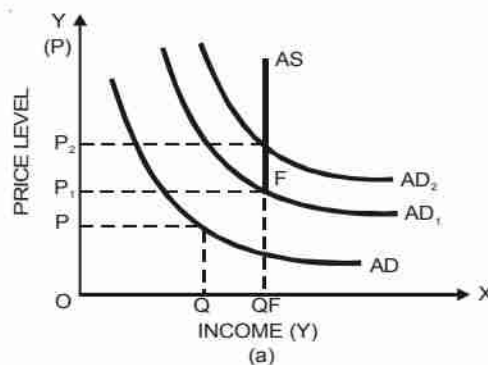
Regarding the working of a money economy, a controversy is persistent among the Keynesian and monetarist groups.

The monetarists hold that the aggregate demand is relatively elastic, while the aggregate supply is inelastic in relation to the expansion of money supply and price level. The monetarists draw the aggregate supply as a vertical straight line, implying that the changes in the quantity of money (M) produce no effect on the level of employment or real output.

Apparently, at a given level of real income on output (aggregate supply being fixed), a rise in M leads to an increase in the aggregate demand, and a corresponding rise in the price level. This argument is clarified in terms of Fig. 5.1.3 given below:



**Fig. 5.1.3(a) Monetarist View**



**Fig. 5.1.3(b) The Keynesian View**

In Fig. 5.1.3(a), when the aggregate demand curve ( $AD$ ) shifts up as  $AD_1$  corresponding an increase in  $M$ ,  $AS$  remaining fixed, price level rises from  $P$  to  $P_1$ . The level of real income remains unchanged at  $OQ$ . The monetarists opine that variations in money income and expenditure ( $MV$ ) in the economy are primarily due to variations in the money supply ( $M$ ). In their opinion, the velocity of circulation ( $v$ ) and the demand for money remains stable phenomena, as their determinants are slow in variation. They, thus, hold that “inflation is always and everywhere a monetary phenomena” which implies that as long as there is a sufficient monetary flow to keep the pace, prices will tend to rise. In their view, an increase in the money supply cannot have any lasting effect on the real working of the economy. It will just cause only prices to rise. They, therefore, suggest that if inflation is to be contained or avoided, the growth of the money supply should be reduced to the minimum.

Keynesians, on the other hand, believe that the aggregate supply is relatively more elastic, even greater than the elasticity of the aggregate demand to the price level. Thus, when the money supply ( $M$ ) or the government spending ( $G$ ) increases through deficit financing or otherwise, it will produce a healthy effect on the level of employment and output, as unutilised resources would be activated into productive uses till the economy reaches the full employment level. Fig. 5.1.3(b) clarifies this argument.

In Fig. 5.1.3(b)  $AS$  is the aggregate supply curve which becomes a vertical line only at point  $F$ . While  $AD$  is the aggregate demand curve, which intersects with  $AS$  to determine the price level  $P$ , real output is  $OQ$ . Here, the aggregate real income or output is  $OQ_1$ . When the aggregate demand curve shifts to  $AD_1$  on account of a change in  $M$  and particularly due to a change in  $G$ , the new price level is rising only less proportionately, as there is a simultaneous increase in real income up to  $OQ_1P$ . According to Keynesians, this general price rise from  $P$  to  $P_1$  is reflation and not inflation. To them, “inflation is a post full employment phenomenon.” Thus when the money supply ( $M$ ) expands further after this point of output, when the  $AS$  curve becomes vertical, increase in the aggregate demand  $AD_2$  reflects a proportionate rise in price level from  $P_1$  to  $P_2$ .

The following issues have been turned out by this controversy between the Keynesians and the monetarists:

1. According to the monetarists the value of interest rates in affecting expenditure is more significant than in affecting the demand for money. Keynesians hold the opposite view that the role of interest rates in affecting the demand for money is more important than influence on expenditures in the economy.
2. Monetarists, hold that there is no empirical evidence or cause for the volatility of the demand for money. Keynesians, on the other hand, recognise the possibility of the volatility of demand for money.

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3. Monetarists also point out that changes in the money supply take place because the monetary authority, the Central Bank, allows them. Hence, they argue that the Central Bank should control the money supply and also set out a plan of long-term targets for monetary growth, as a rule, and avoid a discretionary monetary policy. Keynesians, however, stress the possibility of endogenous changes in the money supply.

In short, both the groups of economists agree on the issue that an increase in money supply contains a dual effect, partly on real output, and partly on prices, but they have a difference of opinion about the relative importance of these two effects, and their outcomes in the economy. Keynesians argue that the main effect comes through  $MV$  and not just  $M$ . Again, there will be growth of output maybe exceeding the rate of increase in prices. Monetarists, on the other hand, believe that the main effect comes through  $M$ , and there may be some rise in the output initially, but soon the prices will zoom, leaving production at its original level.

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### 5.1.20 SUMMARY

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Cyclical fluctuations are wave-like changes in economic activity characterised by recurring phases of expansion and contraction.

Trade cycle in economics refers to the wave-like fluctuations in the aggregate economic activity, particularly in employment, output and income. In other words, trade cycles are ups and downs in economic activity. A trade cycle is defined in various ways by different economists.

A trade cycle is commonly divided into four well-defined and inter-related recurring phases: 1. Prosperity phase — expansion or the upswing. 2. Recessionary phase — a turn from prosperity to depression (or upper turning point). 3. Depressionary phase — contraction or downswing and 4. Revival or recovery phase.

Prosperity is a state of affairs in which the real income consumed, real income produced and level of employment are high or rising and there are no idle resources or unemployed workers or very few of either.

Recession relates to a turning point rather than a phase. It lasts relatively for a shorter period of time. It marks the point at which the forces that make for contraction finally win over the forces of expansion. Liquidation in the stock market, repayment of bank loans and the decline of prices are its outward symptoms.

A business cycle is a complex phenomenon which embraces the entire economic system. It can scarcely be traced to any single cause. Normally, a business cycle is caused and conditioned by a number of factors,

Economic stabilisation is one of the main remedies to effectively control or eliminate the periodic trade cycles which plague capitalist economy. Economic

stabilisation, it should be noted, is not merely confined to a single individual sector of an economy but embraces all its facts. In order to ensure economic stability, a number of economic measures have to be devised and implemented.

Bank rate policy is usually interpreted as an evidence of monetary authority's judgement regarding the contribution of the current flow of money and bank credit to general economic stability.

Selective controls or qualitative credit control is used to divert the flow of credit into and out of particular segments of the credit market. Selective controls aim at influencing the purpose of borrowing. They regulate the extension of credit for particular purposes.

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### 5.1.21 SELF ASSESSMENT QUESTIONS

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- Q.1. What is Trade cycle?
- Q.2. State the features of a Trade Cycle.
- Q.3. Discuss the various phases of a Trade Cycle.
- Q.4. Explain the Purely Monetary Theory.
- Q.5. Discuss the Monetary Over-Investment Theory.
- Q.6. Explain Non-Monetary Over-Investment Theory.
- Q.7. Discuss the under-Consumption (Or Over-Saving) Theory
- Q.8. Write note on: The Psychological Theory.
- Q.9. Explain the Innovation Theory.
- Q.10. Write note on: Keynes' MEC Theory.
- Q.11. Explain Hicks' Theory of Trade Cycles..
- Q.12. Discuss the measures of Economic Stabilization.
- Q.13. Write note on: Monetarism.
- Q.14. Discuss the major Monetarist Propositions.
- Q.15. Explain Keynesian vs. Monetarist.





### 5.1.22 Key Terms

1. **Business Cycle:** The periodic fluctuations in economic activity characterized by alternating periods of expansion (boom) and contraction (recession or depression). The business cycle represents the natural rhythm of economic growth and contraction in market economies.
2. **Expansion:** A phase of the business cycle characterized by rising output, employment, and income levels. During an expansion, economic activity typically accelerates, leading to increased consumer and business confidence.
3. **Peak:** The highest point of economic activity during an expansionary phase. At the peak, the economy operates at or near full capacity, with low unemployment and high levels of production and spending.
4. **Contraction:** A phase of the business cycle characterized by declining output, employment, and income levels. Contractionary periods are associated with falling consumer and business confidence, leading to decreased spending and investment.
5. **Recession:** A significant and prolonged downturn in economic activity, typically characterized by falling GDP, rising unemployment, and declining consumer and business spending. A recession is often defined as two consecutive quarters of negative GDP growth.
6. **Depression:** A severe and prolonged recession characterized by deep and widespread economic hardship, including high unemployment, widespread business failures, and significant declines in output and investment.
7. **Trough:** The lowest point of economic activity during a contractionary phase. At the trough, the economy reaches its lowest levels of output and employment before beginning to recover.
8. **Recovery:** A phase of the business cycle following a contraction, characterized by rising output, employment, and income levels. During a recovery, economic activity begins to pick up, and confidence returns, leading to increased spending and investment.
9. **Leading Indicators:** Economic indicators that tend to change before the overall economy. Leading indicators, such as stock prices, consumer confidence, and business investment, are used to forecast future economic trends and predict the onset of recessions or recoveries.



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