The Tax Multiplier

To consider tax multiplier let us suppose that the government imposes 'lump sum' taxes. We again start from the relationship

$$Y = C + I + G$$

The consumption function is $C = a + bY_d = a + b\ (Y - T)$. We now assume that $\bar{G}$ and $\bar{I}$ are exogenously determined and their value remains fixed. We start from a situation where the lump sum taxation is $\bar{T}_1$ and corresponding to it, the equilibrium level of national income is Y_1. Then

$$Y_1 = \frac{1}{1-b}\left(a + \bar{I} + \bar{G} - b\bar{T}_1\right)$$

Let us now suppose that lump sum taxation is increased by the government from $\bar{T}_1$ and $\bar{T}_2$. The new equilibrium income level is given by

$$Y_2 = \frac{1}{1-b}\left(a + \bar{I} + \bar{G} - b\bar{T}_2\right)$$

On subtraction, we get

$$Y_2 - Y_1 = \frac{-b}{1-b}\left(\bar{T}_2 - \bar{T}_1\right)$$

or

$$\Delta Y = -\frac{b}{1-b}\Delta T$$

which yields

$$k_T = \frac{\Delta Y}{\Delta T} = -\frac{b}{1-b} \qquad ...(6)$$

which shows that the tax multiplier is negative. It is also less than the government expenditure multiplier. For example, if MPC = $b = 0.75$, government expenditure multiplier can be seen from equation (5) to be 4.

As against this, tax multiplier is $\dfrac{-\frac{3}{4}}{1-\frac{3}{4}} = -3.$

Diagrammatic Depiction. In Figure 12.4 the initial equilibrium level of income is Y_1. The government expenditure $\bar{G}$ and investment $\bar{I}$ are given and constant. The lump sum taxation is given as $\bar{T}_1$. The initial consumption function is $C_1 = a + bY_d = a + b\ (Y - \bar{T}_1)$.

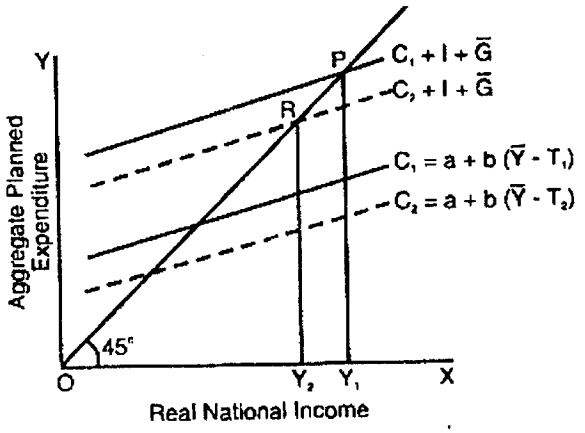

FIG. 12.4. The multiplier effect of lump sum taxation.

Let us now suppose that the lump sum taxation is increased from $\bar{T}_1$ to $\bar{T}_2$. This increase in taxation will reduce disposable income leading to a reduction in consumption at every level of received income. Thus the new consumption function is $C_2 = a + b\,(Y - \bar{T}_2)$ which depicts a downward shift of the consumption function. Since the increase in taxation is $T_2 - T_1 = \Delta T$, the consumption function will shift downward by b (the MPC) times ΔT, *i.e.* by $\Delta T \times$ MPC.

The decline in consumption function will imply an equivalent downward shift in the aggreagate demand curve. The new aggregate demand curve is $C_2 + \bar{I} + \bar{G}$ which cuts the 45° line at point R. The level of income OY_2 corresponding to this point will be the new equilibrium level of income. Thus an increases in taxation by $\Delta T = (T_2 - T_1)$ reduces equilibrium income by $\Delta Y = (Y_2 - Y_1)$ which, as can be seen from the figure, is negative. The ratio $\frac{\Delta Y}{\Delta T}$, as said earlier, represents the tax multiplier.

If the government *transfers* money to people in the form of pension, socail security payments, welfare payments, it has a multiplier effect on income. The multiplier thus obtained is known as the ***transfer multiplier***. The government transfer payments are, in fact, negative taxes and the transfer multiplier itself is equal in magnitude but opposite in sign to the tax multiplier, *i.e.*,

$$k_{TR} = \frac{b}{1-b}$$

Since most of the governments levy taxes and transfer payments at the same time, we can simply define net taxes as taxes minus transfer payments. Then $Y_d = Y - T$ would imply that disposable income is equal to total income minus net taxes. This does away with the requirement of defining a transfer multiplier and we can deal only with a tax multiplier.

Balanced Budget Multiplier

Whenever a government proposes to raise its expenditure, it must decide on the means of financing the expenditure in some way. For example, if the government wishes to increase its expenditure, it must raise resources either through taxation or through borrowings or through some other means. Therefore, it does not make much sense to think of a government-expenditure effect on aggregate demand independent of the possible effects that financing will also have on aggregate demand. To fully analyse the effects of a government policy we must, accordingly, consider the effects of both a change in government expenditure and a corresponding change in financing. The most important means of raising revenue to meet expenditure is through taxation and it is with this that we shall be concerned here. Thus instead of discussing the effects of government expenditure and taxation separately, we shall now be concerned with their joint effects on aggregate demand.

Let us suppose that the government decides to increase its expenditures and also decides to meet this expenditure by imposing an equal amount of lump sum taxes so that its tax revenues increase by the same amount. This is the simplest case as taxation equals expenditure. Thus the government budget is balanced. It might appear at first glance that in this situation there cannot be any effect on aggregate demand as the government expenditure and tax effects appear to cancel out each other. However, this is not so. Even expenditure met out through a balanced budget does have a multiplier effect as we shall show below.

From government expenditure multiplier we know that a change in government expenditure by ΔG changes income by $\Delta Y = \{1 / (1-b)\} \times \Delta G$. On the other hand, a change in taxation by ΔT changes income by $\Delta Y = \{-b/(1-b)\} \times \Delta T$. The total effect of a simultaneous change in government expenditure and taxation on income is simply the sum of these two effects, *i.e.*,

$$\Delta Y = \frac{1}{1-b}\,\Delta G - \frac{b}{1-b}\Delta T$$

Since we have assumed that government budget is balanced, $\Delta G = \Delta T$. Thus in place of ΔT we can write ΔG. Then

$$\Delta Y = \frac{1}{1-b}\Delta G - \frac{b}{1-b}\,\Delta G$$

$$= \left[\frac{1}{1-b} - \frac{b}{1-b}\right]\Delta G = \Delta G$$

or $$\Delta Y = \Delta G \qquad ...(7)$$

i.e., national income increases by the same amount as government expenditure.[1]

The above explanation shows that even when the budget is balanced, there is an expansionary effect as national income increases by the same amount as government expenditure. The net effect on aggregate demand is equal to 1 because

$$\frac{\Delta Y}{\Delta G} + \frac{\Delta Y}{\Delta T} = \frac{1}{1-b} + \frac{-b}{1-b} = 1$$

This is known as the balanced budget multiplier and it has a value 1.

The balanced budget multiplier is the change in the aggregate demand that occurs when government expenditure increases by Re. 1 and tax revenues also increase by Re. 1. The value of this multiplier is 1, *i.e.*, a Re. 1 increase in government expenditure funded by a Re. 1 increase in taxes increases aggregate real output demanded at a given price level by Re. 1.

FOUR-SECTOR MODEL

The Foreign Trade Multiplier

In the case of an open economy we had stated the condition of equilibrium as

$$Y = C + I + G + (X - M)$$

where X stands for exports and M for imports. As the income (output) of a country increases we expect its imports also to increase due to a rise in the demand for imported consumer goods, investment goods (plant and equipment etc.), rise in demand for foreign services (shipping, services of foreign experts etc.). Therefore, the import function indicating the general relationship between the level of national income and the demand for imports is taken as a rising one almost of the same nature as the consumption function. Thus the import function is taken in the form

$$M = q + mY$$

where q is autonomous imports and m is the marginal propensity to import (defined as $\Delta M / \Delta Y$ on lines of the marginal propensity to consume $\Delta C / \Delta Y$). However, no such assumption is required for exports. This is due to the reason that the buyers of exports are, by definition, residents of other countries. Thus the demand for exports is not likely to be directly affected by changes in the exporting country's income.

To simplify the discussion let us omit the government sector. Then $C = a + bY$. Substituting the value of M and C in the equation given above yields

$$Y = a + bY + I + X - (q + mY)$$

which, on solution, gives

$$Y_1 = \frac{1}{1-b+m}(a + I + X - q)$$

If the initial level equilibrium income corresponding to a given level of investment I_1 is Y_1 the above equation yields

$$Y_1 = \frac{1}{1-b+m}(a + I_1 + X - q)$$

Now assume that there is an autonomous increase in investment from I_1 to I_2. Then, the new equilibrium income would be given by

$$Y_2 = \frac{1}{1-b+m}(a + I_2 + X - q)$$

on subtraction, we get

$$(Y_2 - Y_1) = \frac{1}{1-b+m}(I_2 - I_1)$$

or $$\Delta Y = \frac{1}{1-b+m}\Delta I$$

which gives the value of the multiplier as

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1-b+m} \quad ...(8)$$

This is static multiplier similar to relation (1) given earlier but allowing for the effects of foreign trade by including the marginal propensity to import m. Since MPS = 1 – MPC, equation (8) can also be written as

$$\frac{\Delta Y}{\Delta I} = \frac{1}{s+m} \quad ...(9)$$

A similar result is obtained when investment is kept unchanged and exports increased. In that case, we get

$$(Y_2 - Y_1) = \frac{1}{1-b+m}(X_2 - X_1)$$

or

$$\frac{\Delta Y}{\Delta X} = \frac{1}{1-b+m} \quad ...(9a)$$

Since the marginal propensity to import is taken as positive, the value of the multiplier in the open economy considered above is less than the value of the multiplier in a closed economy. For example, suppose that b = marginal propensity to consume = 0.75 then the multiplier in a closed economy would be $k = \frac{1}{1-0.75} = 4$. Now consider an open economy with $b = 0.75$ and m = marginal propensity to import = 0.25. The multiplier for this economy will be $k = \frac{1}{1-0.75+0.25} = 2$. The reduction in the value of the multiplier is due to the reason that some part of rising demand is being channelled off into the purchase of imports. Thus it is not feeding back into income to generate fresh demand – it represents a 'leakage' of demand out of the process.[2]

Diagrammatic Depiction. Diagrammatic depiction of the foreign trade multiplier is easier in the case of the alternative formulation which gives the equilibrium condition as injections = leakages. In terms of the four-sector model, this condition is

$$S + T + M = I + G + X$$

Since we are assuming the absence of government, the above condition can simply be written as

$$S + M = I + X$$

In Figure 12.5, the savings schedule is given as S. Adding import function on to this function yields the total leakages function $S + M$ (since imports are taken as increasing function of income, the vertical distance between $S + M$ curve and S curve is shown as an increasing one). The slope of the $S + M$ schedule is the sum of the marginal propensity to save and import, *i.e.*, $s + m$ or $1 - b + m$. As far as the 'injections' part is concerned, both exports and investment are assumed to be autonomous. The investment function is, therefore, given as a horizontal straight line and the $I + X$ curve is also a straight line.

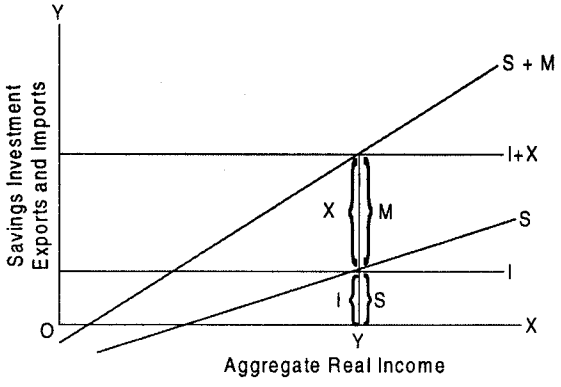

FIG. 12.5. Foreign trade multiplier : Initial equilibrium condition

As can be seen from the figure, total injections equal total leakages at the income level Y, which therefore is the equilibrium level of income. The multiplier is the reciprocal of the slope of $S + M$ curve and, as said earlier, will be the same for an increase in exports or an increase in investment. Therefore

$$\frac{\Delta Y}{\Delta I} = \frac{\Delta Y}{\Delta X} = \frac{1}{1-b+m} = \frac{1}{s+m}$$

Figure 12.5 has been drawn in such a way that $I = S$ and $X = M$ at the equilibrium level of income. However, this is not necessarily the case. If exports exceed imports, saving should exceed investment by an equal amount sufficient to maintain the equation $S + M = I + X$.

The Balance of Payments Effect of a Change in Investment

The equilibrium condition for national income stated as $S + M = I + X$ does not clearly depict the effect of a change in investment on the balance of payments. To show this effect clearly it is useful to express the equilibrium condition of national income in another way. For example, instead of

$$S + M = I + X$$

We write

$$X - M = S - I$$

which implies that the balance of payments on current account equals the difference betweeen saving and domestic investment. To obtain a schedule for $X - M$, we need to subtract the import from the export schedule while to obtain a schedule for $S - I$, we need to subtract the investment from the saving schedule. The two curves thus obtained are depicted in Figure 12.6. The $X - M$ schedule slopes downwards from left to right due to the fact that an upward sloping import schedule is subtracted form a constant level of exports. The downward sloping curve indicates that the balance of payments is positive at low levels of national income and declines as income rises. On the other hand, the $S - I$ schedule is upward sloping because saving increases with national income, while investment remains constant. The intersection of these two curves gives the equilibrium level of national income Y and the balance of payments position. In the figure, the two schedules intersect with zero balance of payments. However, as said earlier, this is not necessary.

Figure 12.6 can be used to examine the effect of a change in any one (or more) of the four schedules (X, M, I, and S) on the balance of payments. Let us suppose that investment increases. This means that the negative term in $S - I$ rises leading to a rightword shift in the $S - I$ curve as shown below. This raises the level of income from Y to Y' and opens up a balance of payments deficit. As can be seen from the figure, the deficit $(X - M)$ is less than an increase in investment $(I' - I)$. A moment's reflection will show that an increase in investment, decrease in savings, increase in imports and decrease in exports all worsen the balance of payments (as they result in a deficit in balance of payments). Movements in the opposite direction help the balance of payments (as they result in a surplus in balance of payments).

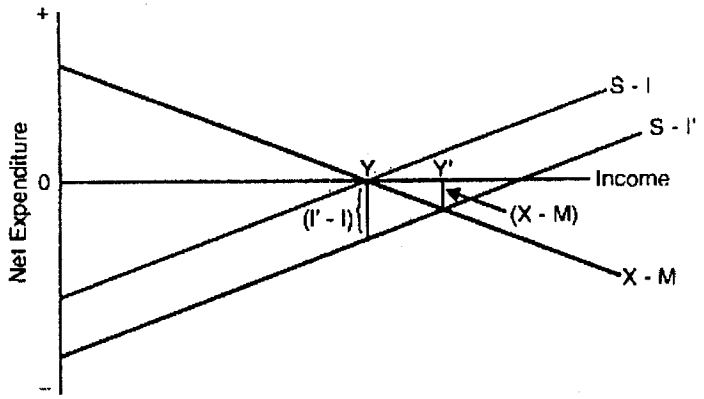

Fig. 12.6. The balance of payments effect of a change in investment.

Exports as a Function of Imports—Foreign Repercussions

We have so far considered only the changes in expenditure occurring within the borders of a single country. However, in many cases, income changes in one country are transmitted abroad through the induced

changes in its imports. This happens particularly in the case of large countries having a large volume of trade with other countries. For example, consider the economy of USA. If income in USA rises, its imports will also rise and this will stimulate an increase in income in the rest of the world. But if incomes of other countries increase so will their imports and a part of these imports will come from the USA itself further pushing up its level of income. *This linkage between countries is known as the* ***repercussion effect.*** To analyse the determination of national income it is necessary to take into account these repercussion effects.

To understand the repercussion effect or international interdependence, let us consider an example. Let us consider two countries — USA and UK. Suppose that investment in USA increases by a certain amount. As a result of the operation of the multiplier, the level of income will increase by some multiple. Since imports are a function of income, imports of USA also increase. Since imports of USA are exports of other countries, exports of other countries also increase (in our example, exports of UK increase). As exports of UK increase, so does the level of income in accordance with the foreign trade multiplier. This increase in income in UK will cause an increase in imports of UK. Some of these imports will be from USA, and hence exports of USA will increase leading to an increase in its level of income. As the income of USA increases, so will imports, and so on, and the whole process will continue in accordacne with the usual multiplier analysis. However, as in the case of the multiplier mechanism, the spending at each stage will be less than at the previous stage and the process will end after a certain period of time.

This brief discussion of foreign repercussion of international interdependence is enough to highlight the fact that all participants in international trade have a vital stake in maintaining orderly and stable trade conditions. This is due to the reason that as nations become more and more closely linked through foreign trade, there is a chance of "international propagation of business cycles."[3] Depression in one country can trigger off depression in other countries. Large economies have a specific role to play in maintaining stable trade conditions as fluctuations in their income levels (and, hence, in imports and exports) can have damaging effects on the smallar economies while the reverse is not likely to be true. For example, imports of the USA from Peru could be crucial for the latter but imports of Peru from USA are not likely to have much effect on the level of economic activity in the USA.

NOTES

1. In terms of geometric series, an equal change in government spending and taxation generate the following changes in national income :
   (*i*) ΔY from an increase in $G = \Delta G + b.\ \Delta G + b^2.\ \Delta G + b^3.\ \Delta G$ ..... $+ b^n.\ \Delta G$ + ...
   (*ii*) ΔY from an increase in $T = -[b.\Delta T + b^2.\Delta T + b^3.\ \Delta T$ + ... $+ b^n.\Delta T$ + ...]
   where b is the marginal propensity to consume.
   Since $\Delta G = \Delta T$, all terms on the right hand side of (*i*) and (*ii*) are the same excepting ΔG.
   Combining the two series for $\Delta G = \Delta T$ gives the result $\Delta Y = \Delta G = \Delta T$.
2. F.S. Brooman, *Macroeconomics* (London: George Allen & Unwin Ltd. 1967), p. 185.
3. Edward Shapiro, *Macroeconomic Analysis,* (Fifth edition, 1989), p. 124.

CHAPTER

13 THE TWO MARKET EQUILIBRIUM—*IS/ LM* MODEL

Product Market Equilibrium— The IS Curve
• Derivation of *IS* Curve • Shifts in the *IS* Curve
Money Market Equilibrium — The LM Curve
• Derivation of *LM* Curve • Shifts in the *LM* Curve
Two Market Equilibrium — The Product and Money Markets
Introduction of Government in the IS - LM Model

In Chapters 11 and 12 we discussed the determination of equilibrium level of national income and changes in it. In this analysis our sole concern was with the behaviour of the product market (the market for goods and services) while the existence of the money market was completely ignored. Thus our unstated assumption was that the money market does not have any effect on the equilibrium level of income. To ensure this, we had assumed that investment is autonomous. However, as our discussion in Chapter 11 clearly brings out, investment depends on the rate of interest which, in turn, depends upon monetary factors. Therefore, a complete model must also integrate the money market into the analysis. This is what the *IS-LM* approach first enunciated by J.R. Hicks in his celebrated article "Mr. Keynes and the Classics: A Suggested Interpretation", seeks to accomplish.[1]

In this chapter we shall integrate the money market with the product market and in doing so we shall address the following issues:

- Equilibrium conditions of income determination give us *IS* curve rather than equilibrium in the economy.
- If there are shifts in investment or consumption (saving) schedule, the entire *IS* curve shifts for maintaining equilibrium in the product market.
- Equilibrium in the money market exists when the demand for money in the Keynesian sense is equal to the supply of money.
- Equilibrium conditions in the money market help us in obtaining the *LM* curve.
- Any change in money supply or money demand functions causes a shift in the *LM* curve
- Intersection of *IS* and *LM* curves gives us a point where product market and money market are in equilibrium. This point indicates both the equilibrium level of income and equilibrium rate of interest.
- Introduction of government in *IS-LM* model alters only equilibrium condition in the product market, while the equilibrium condition in the money market remains the same as in the two sector model.

PRODUCT MARKET EQUILIBRIUM — THE *IS* CURVE

To simplify the analysis we shall first consider a two sector model, *i.e.*, we assume a closed economy without any government spending or taxes. In such an economy, the expenditures on goods and services can exist only in the form of household expenditures on consumer goods and business expenditure on investment goods.

We assume

(I) That consumption (and hence saving) is a function of income.

(II) That investment is endogenous and is a function of rate of interest.

Thus from the aggregate demand and aggregate supply approach we have the following three equations to cover the product market:

$$C = C(Y) \quad \text{(the consumption function)} \quad (1)$$
$$I = I(i) \quad \text{(the investment function)} \quad (2)$$
$$Y = C(Y) + I(i) \quad \text{(the equilibrium condition)} \quad (3)$$

From the saving-investment approach, the three equations covering the product market can be written as

$$S = S(Y) \quad \text{(the saving function)} \quad (4)$$
$$I = I(i) \quad \text{(the investment function)} \quad (5)$$
$$S(Y) = I(i) \quad \text{(the equilibrium condition)} \quad (6)$$

Equations (2) and (5) are the same and indicate that investment is a function of the rate of interest *i*.

As we shall see shortly, ***the equilibrium condition S(Y) = I(i) from (6) or Y – C(Y) = I (i) from (3) gives the IS curve.***

For this purpose, consider Figure 13.1. Quadrant 1 of this figure gives the MEI (marginal efficiency of investment) schedule indicating the inverse relationship between planned investment and the rate of interest. Quadrant 2 shows the necessary condition for an equilibrium level of income— the level of investment determined in quadrant 1 must be matched by an equal amount of saving. To show this fact (*i.e.*, the equality of saving and investment) a 45° line rising form the origin is drawn. Quadrant 3 depicts the saving function which indicates the level of income that is necessary to bring forth the saving determined in quadrant 2. Quadrant 4 shows the product market equilibrium and illustrates the infinite combinations of *Y* and *i* that are possible equilibrium values.

Derivation of *IS* Curve

To consider how the *IS* curve in quadrant 4 has been actually obtained, start from quadrant 1. Let us suppose that the rate of interest is i_0. At this rate of interest, the level of planned investment can be seen to be I_0. From quadrant 2 it can be be seen that for planned saving to be equal to planned investment, planned saving must also be equal to I_0 because of the 45° line $I_0 = S_0$. Thus the level of planned saving is S_0. Quadrant 3 shows that this amount of saving will be forthcoming at an income level of Y_0 as at this level of income the saving level of quadrant 2 intersects the saving function of quadrant 3. Now extend the income level from quadrant 3 downward to quadrant 4, and extend the interest rate from quadrant 1 to quadrant 4, and a product market equilibrium is established. The two extensions intersect at point *B*, which represents one combination of *Y* and *i* in the product market that makes *S* equal to *I* and satisfies the necessary condition for an equilibrium level of income.

Let us now suppose that the rate of interest rises to i_1. At this rate of interest, planned investment can be seen from quadrant 1 as I_1 (at a higher rate of interest, planned investnment declines, as we would expect). From quadrant 2, the amount of saving required to match the new level of investment is found to be S_1 (lower than the previous level). From quadrant 3, it can be seen that this lower level of saving would be forthcoming at a lower level of income Y_1. In quadrant 4 the extensions of the lower income level Y_1 and the increased rate of interest i_1 intersect at point *A*, which represents another combination of *Y* and *i* in the product market that makes *S* equal to *I* and satisfies the necessary condition for an equilibrium level of income.

If we continue with this process of selecting arbitrary interest rates and finding the level of income at which saving is equal to investment indicated by the interest rate, we can trace out a curve called the "*IS* curve" in quadrant 4. Thus the *IS* curve connects all points in the plane that represent possible combinations of *Y* and *i* that make *S* equal to *I* and that give equilibrium income levels. From this discussion we arrive at the following definition of the *IS* curve : ***The IS curve is a graphic representation of the product market equilibrium condition that planned investment be equal to saving, and it shows the level of income that will yield equality of planned investment and saving at different possible interest rates.***[2]

As can be seen from quadrant 4 of Figure 13.1, ***the IS curve slopes downward from left to right, i.e., Y and i vary inversely.*** When interest rates are relatively high, investment spending will be relatively low and thus the level of income would also be low. At lower rates of interest, investment spending will increase leading, in turn, to higher income levels.

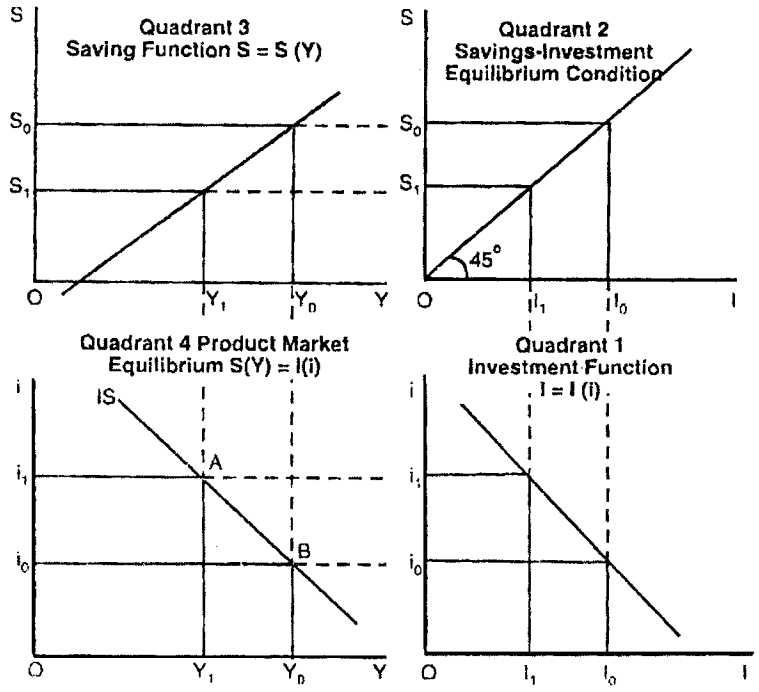

FIG. 13.1. Product market equilibrium: Derivation of *IS* curve

Shifts in the *IS* Curve

Maintenance of product market equilibrium requires the entire IS curve to shift if there are shifts in the investment or consumption (saving) schedules. For example, consider a shift in investment schedule. Let us suppose that expectations or technology changes so as to make investment spending appear more profitable. This will shift the investment schedule of quadrant 1 to the right, indicating that at each rate of interest more investment spending takes place. For equilbrium, the higher level of investment must be matched by a higher level of saving. Since saving increases only if income increases, to maintain equilibrium an increase in autonomous investment must be associated with an increase in income—an increase large enough to generate extra saving in an amount equal to the increase in investment. This shows that an increase in investment means higher income levels at each rate of interest. Therefore, the *IS* curve shifts to the right (from *IS* to IS_1 in Figure 13.2). The shift is horizontal and equal to the amount of the shift in the investment schedule times the multiplier, or, what amounts to the same thing, the reciprocal of the marginal propensity to save.

Shifts in the consumption function (or saving function) also causes a shift in the *IS* schedule. For example, let us suppose that an autonomous upward shift takes place in the consumption function (which is the same as downward shift in the saving function). As a result, the volume of saving at any level of income is reduced. To maintain sufficient saving to offset the investment that takes place at any selected interest rate, the level of income would have to rise. Since product market equilibrium at any selected interest rate could be maintained only with an increase in the level of income, this upward shift in the consumption function (or a downward shift in the saving function) implies a rightward shift in the *IS* schedule. Conversely, a downward shift in the consumption function (or an upward shift in the saving function) will shift the *IS* curve downward and to the left.

MONEY MARKET EQUILIBRIUM — THE *LM* CURVE

Equilibrium in the money market exists when the demand for money is equal to the supply of money.

In Keynesian Theory, the demand for money is split into two parts:

(*i*) The transaction demand (m_1)

(*ii*) The speculative demand (m_2)

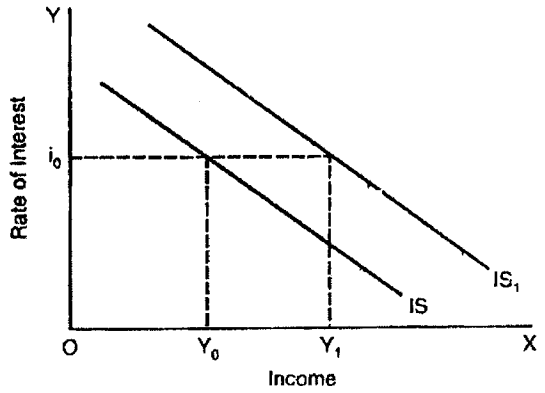

FIG. 13.2. Shifts in *IS* curve

The transactions demand is assumed to be proportional to the level of income and may be represented as

$$m_1 = kY$$

The speculative demand for money is assumed to be an inverse function of the rate of interest, *i.e.*,

$$m_2 = h(i)$$

The total demand for money m_d is then given by

$$m_d = m_1 + m_2$$

or

$$m_d = kY + h(i)$$

The supply of money m_s is determined outside the model and is fixed by the monetary authorities— it is thus exogenous. Thus the supply of money can be written as

$$m_s = m_a$$

where m_a is simply the amount of money that exists, an amount determined by the monetary authorities. Since in equilibrium, demand for money is equal to the supply of money, we get the following three equations to cover the money market:

$$m_d = kY + h(i) \quad \text{(demand for money)} \quad (7)$$

$$m_s = m_a \quad \text{(supply of money)} \quad (8)$$

$$m_d = m_s \quad \text{(equilibrium condition)} \quad (9)$$

The equilibrium condition $m_s = m_d$ or $m_s = kY + h(i)$ gives the *LM* curve. To understand why this is so, consider Figure 13.3. In quadrant 1 of Figure 13.3, the speculative demand for money is shown. Once the rate of interest is known, the amount of money required to satisfy the speculative demand is determined. In quadrant 2, the supply of money fixed by the monetary authorities is given by the straight line connecting the two axes. At the point touching the *Y*-axis (point *A* in the figure), the entire money supply is used up for transactions purposes. At the point touching the *X*-axis (point *B* in the figure), the entire money supply is used up for speculative purposes. Points on the line *AB* indicate different combinations of transactions demand and speculative demand. Once the speculative balances have been determined in quadrant 1, the remainder of the money supply is used up for transactions purposes. With the transactions balances thus determined in quadrant 2, we can find out the level of income in quadrant 3 that these balances will support (function being $m_1 = kY$). Once the level of income is thus known, it can be extended downward in quadrant 4. The point of intersection of this extension with the extension of the interest rate from quadrant 1 to quadrant 4 determines a point of money market equilibrium. Many other points can be traced which depict the money market equilibrium and they can be joined together to trace the *LM* curve.

Derivation of *LM* Curve

To consider how the *LM* curve in quadrant 4 has been actually obtained, start from quadrant 1. Let us suppose that the rate of interest is i_0. At this rate of interest, the public will want to hold m'_2 in speculative balances. Extending the speculative balances up to quadrant 2, the intersection with the money supply line indicates that there is m'_1 money left for meeting transactions. From quadrant 3 we find that m'_1 of transactions balances are consistent with the level of income Y_0. Let us now extend the income level Y_0 to quadrant 4, and

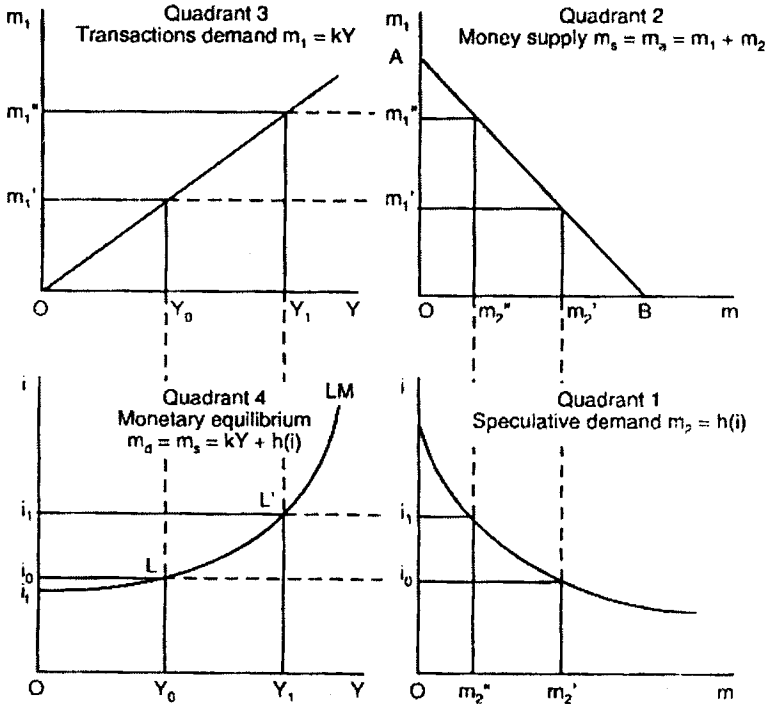

FIG. 13.3. Money market equilibrium: Derivation of *LM* curve

at the same time, extend the interest rate i_0 from quadrant 1. The point of intersection of these two extensions yields point *L*. This point gives one combination of *Y* and *i* at which $m_d = m_s$ or at which there is equilibrium in the money market.

Let us now suppose that the rate of interest rises to i_1. At this rate of interest, the public will want to hold m_2'' of speculative balances. From quadrant 2 it can be seen that money left for transactions purposes is m_1''. This level of transactions balances is consistent with a level of income of Y_1 in quadrant 3. Extending this income level downward to quadrant 4 and, at the same time, extending the interest rate i_1 from quadrant 1 we get the point of intersection of these two extensions as *L'*. This point gives another combination of *Y* and *i* at which $m_d = m_s$ or there is equilibrium in the money market.

If we continue with the process of selecting rates of interest arbitrarily and trace the results through the system, we can construct a curve that shows all possible combinations of *Y* and *i* consistent with equilibrium in the money market. This curve is generally referred to as the "*LM* curve". From this discussion we arrive at the following definition of the *LM* curve: ***The LM curve is a graphic representation of the monetary equilibrium condition, and it specifies the level of income which, for different rates of interest, makes the demand for money equal to the supply of money.***[3]

The *LM* curve has a positive slope, *i.e.*, in the money market *Y* and *i* vary directly. This is due to the reason that when interest rate increases, people would like to hold less of idle balances. Therefore, speculative balances will decline leaving more money for transactions purposes, which when spent increases the level of income. In addition, the *LM* curve has two extremes at which it becomes a straight line. At a very low rate of interest (i_1 in Figure 13.3), the *LM* curve is a horizontal straight line. This is the srtuation of, what is known as, ***liquidity trap*** in macroeconomics. At the other extreme when the interest rate is very high, the demand of idle balances may be reduced to zero. At this point then the speculative demand for money will disappear and all money supply will be used up for transactions purposes. As this money is spent, income grows until resources are fully employed. There can be no further increase in income and the *LM* curve turns vertical at this point indicating zero elasticity with respect to changes in the rate of interest.

Shifts in the *LM* Curve

A change in the money supply or money demand functions will shift the *LM* curve. Let us start from a

position of equilibrium and assume that the money supply increases as the central bank of the country decides to pursue an expansionary monetary policy. Let us suppose that it purchases government securities on the open market. People will trade part of their government securities to the central bank in return for money. This means that the money supply schedule of quadrant 2 in Figure 13.3 shifts to the right and a greater volume of money is avilable for transactions and speculative purposes at all rates of interest. The *LM* curve of quadrant 4 will shift to the right. Thus the level of interest will fall and the levels of investment and income will rise (see Figure 13.4).

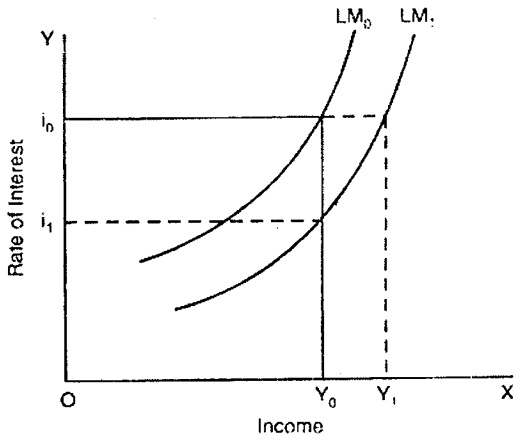

FIG. 13.4. Shifts in the *LM* curve

Let us now consider a change in speculative demand for money resulting from a change in expectations. Let us suppose that investors become accustomed to a low rate of interest and the fear of capital loss that usually accompanies a low rate of interest becomes less poweful. As a result, the curve for speculative demand of money in quadrant 1 of Figure 13.3 will shift toward the left. This means that a greater volume of transactions and therefore income can be supported at all rates of interest. This implies that the *LM* curve shifts to the right and a new equilibrium is established at a lower rate of interest and a higher level of income as shown in Figure 13.4.

TWO MARKET EQUILIBRIUM — THE PRODUCT AND MONEY MARKETS

As shown in Figure 13.1, ***equilibrium between the supply of and demand for goods is possible at all combinations of Y and i indicated by the IS curve. Similarly, as shown in Figure 13.3, equilibrium between the supply of and demand for money is possible at all combinations of Y and i indicated by the LM curve. However, there is only one combination of Y and i at which both the supply of goods equals the demand for goods and the supply of money equals the demand for money. This combination is given by the point of intersection of the IS and LM curves.*** At all other points (*i.e.*, at any other combination of an interest rate and an income level) there is disequilibrium either in the product market or money market or both the markets. ***In Figure 13.5, the point of the two market equilibrium (known as general equilibrium) is the point E which gives the equilibrium level of income as Y_0 and equilibrium rate of interest as i_0.***

To understand why the equilibrium level of income is Y_0 and equilibrium rate of interest is i_0, let us start from a point of disequilibrium. Let us consider the level of income Y_1 and the rate of interest i_1. This yeilds the point E_1 on the *LM* curve indicating that the quantity of money demanded is equal to the quantity of money supplied. However a glance at the *IS* curve shows that it will require a rate of interest i_2 to equate planned investment with the saving that is generated at income level Y_1. Consequently, planned investment exceeds saving at i_1 rate of interest and, as a result, the level of income must rise. As the level of income rises, the quantity of money required for transactions purposes also rises. In order to acquire increased transactions balances, people will have to sell securities. By doing so, they depress bond prices and increase interest rates. This rise in interest rate, in combination with the rise in income, acts to narrow the gap between the rate of interest that equates the demand for and supply of money and the rate of interest that equates planned investement with saving. The process stops at the point of intersection of the *IS* and *LM* curves, where the rate of interest

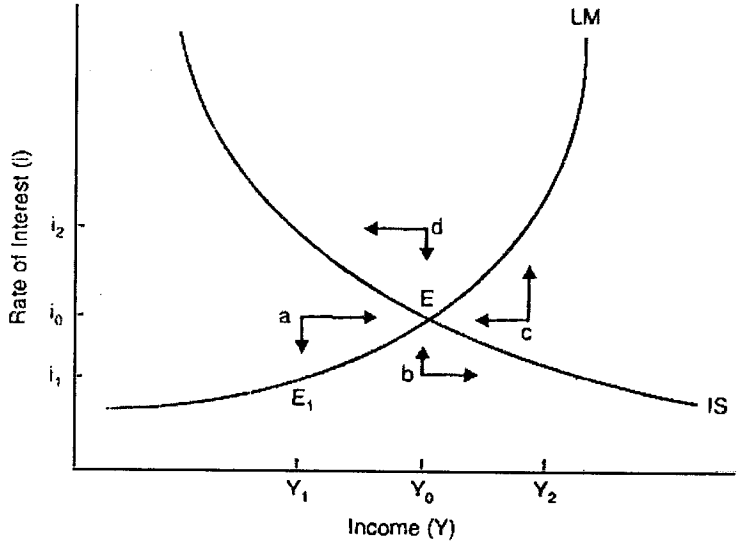

FIG. 13.5. Two market equilibrium: *IS* and *LM* curves combined.

reaches i_0 and the level of income Y_0. At this point, as said earlier, planned investment equals saving, and the demand for money equals the supply of money. The original excess of planned investment over saving is eliminated by the rise in the rate of interest, which reduces planned investment and by the rise in the level of income, which increases the level of saving. Thus there is equilibrium in both the markets— the product market and the money market.

To understand the process of adjustment, two principles must be borne in mind.[4] First, any combination of income and the interest rate that lies below and to the right of the *LM* curve is a point at which the quantity of money demanded exceeds the quantity of money suppplied. Conversely, any point that lies above and to the left of the *LM* curve implies that there is excess supply of money.[5] To understand this, consider the point of equilibrium *E* in Figure 13.5, where the equilibrium rate of interest is i_0 and the equilibrium level of income is Y_0. If the rate of interest is held constant at i_0 while the level of income is increased to Y_2, the quantity of speculative balances demanded will remain unchanged (as there is no change in the interest rate) but the quantity of transactions balances demanded will rise. Thus there will be an excess demand for money (*EDM*) at this point. To meet this demand, people will sell their securities forcing a fall in their prices and an increase in the rate of interest. Thus the rate of interest will be "pulled up" toward the *LM* curve.

The second principle that must be kept in mind is that any combination of i and Y that lies above and to the right of the *IS* curve is a point at which planned investment falls short of saving, or alternatively, there is excess supply of goods (*ESG*)[6]. This means that income tends to decline from such a point. The opposite is the case for points below and to the left of the *IS* curve as planned investment exceeds saving, or alternatively, there is excess demand for goods (*EDG*). To understand this, let us start again from the point of equilibrium *E* where the equilibrium rate of interest is i_0 and the equilibrium level of income is Y_0. Let us keep the income fixed and increase the rate of interest to i_2. This will lower planned investment relative to saving. Therefore, a point which lies above the *IS* curve cannot be a point of product market equilibrium, as the excess of saving over planned investment will cause the level of income to fall (alternatively, when planned investment is lower *vis-a-vis* saving, the firms will respond by reducing the level of output). Fall in the income level (or declining output) is depicted in the figure by leftward-pointing arrow and thus there will be a tendency to come back to the *IS* curve. On the other hand, if interest is kept fixed at i_0 and the level of income is lowered to Y_1, this lower income level would mean lower saving, while the fixed interest rate would keep the planned investment at its original level. Thus we are toward the left of the *IS* curve. Since planned investment now exceeds saving, there will be tendency for income (and hence output) to increase. This is depicted by rightward-pointing arrow in the figure.

The above discussion explains the dynamics of adjustment. It is easy to understand it provided one remembers that the rate of interest tends to move vertically toward the *LM* curve whereas the level of income

tends to move horizontally toward the *IS* curve.[7] Accordingly, the arrows drawn at points *a, b, c,* and *d* in Figure 13.5 indicate the direction of motion.

INTRODUCTION OF GOVERNMENT IN *IS-LM MODEL*

Let us now introduce a third sector—the government sector— to the general equilibrium model considered above. As stated in Chapter 11, introduction of the government requires equality of planned spending with output (*i.e.*, $Y = C + I + G$) or, alternatively, equality of total leakages from the spending stream with total injections into the income stream. Since leakages from the income stream are equal to saving plus taxes while injections are equal to investment plus government spending, the product market equilibrium condition can be stated as $S + T = I + G$. As far as money market is concerned, the equilibrium conditions remains the same as before, *i.e.*, $m_s = m_d$.

For purposes of illustration in Figure 13.6, we assume that government expenditures (G) and taxes (T) are autonomous, *i.e.*, independent of the level of income. Let us first introduce government spending G. The investment curve in quadrant 1 shifts parallel by the amount of autonomous G and becomes $I + G$. This curve when traced through the system via the quadrants 2, 3 and then 4 yields the new *IS* curve IS_1 in quadrant 4. This shows that an increase in spending shifts the *IS* curve to the right (from IS_0 to IS_1). The new IS_1 curve intersects the *LM* curve at point *B* which, therefore, represents the new point of equilibrium. As can be seen from the figure, as a result of government spending, the level of equilibrium income has risen from Y_0 to Y_1 while the equilibrium rate of interest has increased from i_0 to i_1.

It may be noted at this point that the simple government expenditure multiplier would have resulted in a higher level of income (Y' in the figure) but the actual increase in Y is limited by the forces operative in the money market which increase the rate of interest to i_1. Without taxes, the government expenditures must be financed by borrowing from the public. As it sells securities, their prices fall and interest rate rises. This reduces the level of investment *I*. Thus a rise in government spending reduces private spending and the full income expansionary effect of G is not realised as a rise in i chokes off a part of private spending. To prevent a

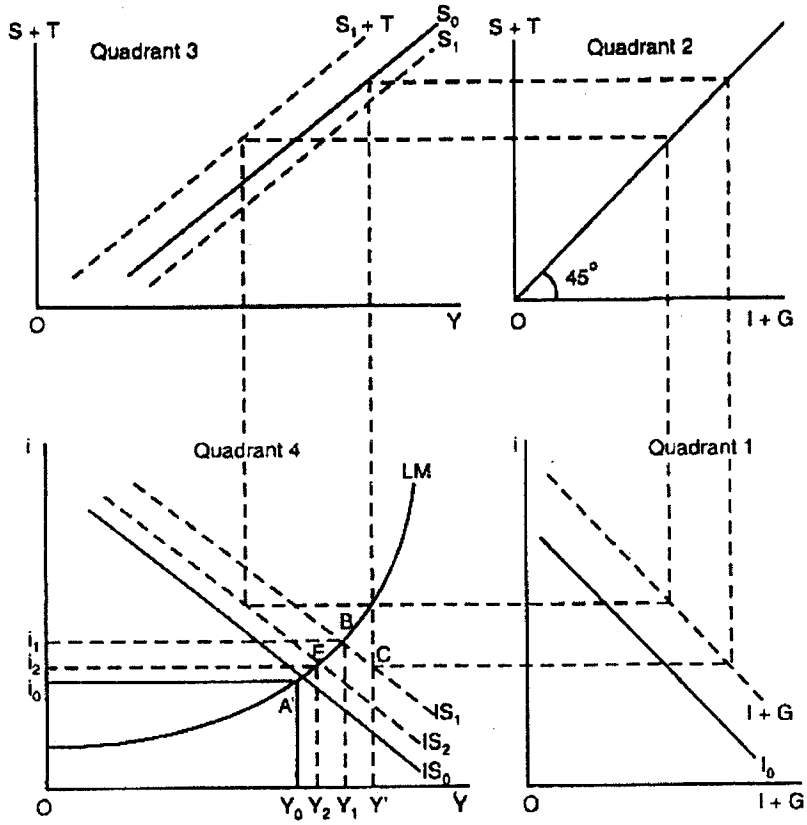

FIG. 13.6. Introduction of Government in the *IS-LM* model

contraction in Y, it is necessary to adopt an expansionary monetary policy so that the *LM* curve shifts to the right and cuts the IS_1 curve at point *C*. This discussion shows that a fiscal policy that is designed to raise the income level through a deficit financed expansion of government spending may not produce the maximum possible rise of income unless it is accompanied by an appropriately expansionary monetary policy.[8]

Let us now consider the imposition of a lump sum tax, the amount of which is just sufficient to ensure a balanced budget. The introduction of the tax will reduce the disposable income shifting the consumption function downward. In addition, the saving function will also shift downward as a part of the tax will come out of saving. Thus, at each and every level of Y, less of S will take place. This is shown by a parallel downward shift of the saving function from S_0 to S_1 in Figure 13.6 . To know the total leakages from the system, we add the amount of tax to the amount of saving at each level of income. This yields the new 'leakage schedule' $S_1 + T$. Now, by selecting various rates of interest and tracing the operation of the system from $I + G$ curve in quadrant 1 to quadrant 2 and then to the intersection with the $S_1 + T$ curve in quadrant 3, we arrive at the new *IS* curve (designated by IS_2 in the quadrant 4 of Figure 13.6).

The new *IS* curve IS_2 intersects the *LM* curve at point *E* which , therefore, is the new point of equilibrium. As can be seen from the figure, the equilibrium level of income falls from Y_1 to Y_2 and, at the same time, the equilibrium rate of interest also falls from i_1 to i_2. While the level of income falls, it does not fall back to the original level Y_0, which existed before the introduction of the government. This is due to the balanced budget multiplier. However, it is no longer possible to state that the balanced budget multiplier is equal to 1 as the introduction of the money market tends to depress it below 1. As income rises, the demand for money rises, creating excess demand in the money market which pushes up the rate of interest. This, in turn, squeezes out some private investment tending to reduce the size of the multiplier effect on income. This feedback effect which appears becuase the money market has been combined with the product market is often referred to as the ***crowding out effect.*** It acts to reduce the size of the multiplier and, as such, it serves as an automatic stabilizer originating in the money market of the economy. Of course, the effects of the tax can be offset by resorting to monetary policy. For example, an increase in the supply of money concurrent with the imposition of the tax could reduce interest rates and thus stimulate investment. As a result, income would not fall at all or as much, depending upon the size of the multiplier. This discussion shows that a fiscal policy designed to produce a rise in income while maintaining a balanced budget will produce the maximum possible income increase only if it is accompanied by an expansionary monetary policy that prevents what otherwise might be a rise in the interest rate and a consequent reduction in private investment spending.[9]

NOTES

1 Published in *Econometrica,* April 1937, pp. 147-59. Reprinted in W. Fellner and B.F. Hailey (eds.), *Readings in the Theory of Income Determination,* (Irwin, 1946), pp. 461-76.

2. Thomas F. Dernberg, *Macroeconomics: Concepts, Theories and Policies* (McGraw-Hill Book Company, 1985), p. 201.
3. *Ibid.,* p. 203.
4. *Ibid.,* p. 206
5. On account of this reason, Dornbusch and Fischer designate the region below the *LM* curve as the *EDM* (excess demand for money) region and the region above the *LM* curve as the *ESM* (excess supply of money) region. See Rudiger Dornbusch and Stanley Fischer, *Macroeconomics* (McGraw-Hill International Book Company, 1994), Figure 4.14, p. 114.
6. Dornbusch and Fischer, *Ibid.,* Figure 4.14, p. 114.
7. Thomas F. Dernberg, *op. cit.*, p. 206.
8. Edward Shapiro, *Macroeconomic Analysis* (Harcourt Brace Jovanovich Inc., Fourth edition, 1978), p. 302.
9. *Ibid.,* p. 302.

CHAPTER

14

INFLATION AND STAGFLATION

Inflation Defined
The Causation of Inflation
• Aggregate Demand Function • Aggregate Supply Function • Shifts in the Aggregate Demand and Aggregate Supply Curves
Demand – Pull Inflation
• Inflationary Gap
Cost – Push Inflation
• Wage Push Inflation • Profit Push Inflation
Demand Pull and Cost Push Inflations: Interrelations
Control of Inflation
• Monetary Measures • Fiscal Measures • Wage Control • Price Control • Indexation
Relationship between Unemployment Rate and Inflation Rate and the Phillips Curve
• Explanations of the Phillips Curve Relationship • Trade-off between Unemployment and Inflation
Stagflation
• Stagflation of the 1970s– An Explanation • Supply Shock and Stagflation • Control of Stagflation

Economists of the monetarist school now aggressively argue that monetary policy can maintain price stability which in turn can contribute to sustainable growth. Price stability is defined as a rate of inflation which is so low that households and businesses ignore it while making everyday decisions. High inflation adversely affects economic growth due to a number of factors : distortion of relative prices which lowers economic efficiency ; redistribution of wealth between debtors and creditors; aversion to long-term contracts; and excessive use of resources for hedging inflation risks. In developing countries, high rates of inflation contribute to the plight of the common man. The RBI publication *Report on Currency and Finance 2003-04* points out that during the 1980s and the 1990s reduction in inflation has materialised across a number of countries, irrespective of their stages of development. The *RBI Report* has put rise and fall in inflation since the World War-II in proper perspective. Extracts from this report provided in Box 14.1 are enlightening.

In the past, inflationary periods have been associated with the periods of war and its aftermath. Since taxation and public borrowings cannot mobilise adequate resources, recourse to inflationary war-finance becomes unavoidable. In this chapter, we propose to discuss the following issues:

- How is inflation defined?
- What is demand pull inflation and what is cost-push inflation?
- What measures can be adopted to control inflation?
- What is the relationship between unemployment rate and inflation rate? How is Phillips curve relevant to understand this relationship?
- What is meant by stagflation? How does supply shock cause stagflation?

INFLATION DEFINED

Since inflation has been for a long time, and probably will remain in future also one of the crucial macroeconomic problems in most of the countries, a large number of economists have attempted to analyse its causes. The purpose of this whole exercise has been to find out measures which will keep it within tolerable limits, without risking occurrence of a recession resulting in widespread unemployment. In most cases the problem has been analysed in the Keynesian framework. Still there are economists, particularly the ones associated with Chicago shcool, who attempt to explain the whole malady in terms of quantity of money. This lack of uniformity in the approach has resulted in a proliferation of the definitions of inflation leading to widespread confusion. We shall, therefore, examine a few representative definitions of inflation before arriving at one which describes the nature of inflation in a scientific manner.

BOX. 14.1. The Death of Inflation

The current phase of low global inflation is comparable with the pre-World War II phenomenon when inflation rates across all regions were quite low. In the post-World War-II period, however, price level showed a clear upward trend, with inflation rates rather than price levels clustering around a stationary level following price shocks. In particular, the collapse of the Bretton Woods arrangement was associated with a surge in inflation during the 1970s. Commodity price shocks, especially oil prices, coupled with expansionary demand management policies, including Vietnam-war related fiscal expansion in the US provided a significant impetus to inflation. The belief that there existed a stable long-run trade-off between inflation and output as well as overestimation of potential output also contributed to the accommodative stance of monetary policies during this period. With inflation in double digits, deliberate disinflation strategies were put in place in a number of advanced economies during the 1980s and these were successful in reducing inflation. In particular, coordinated fiscal and monetary policies were deployed to curtail demand pressures in the economy.

Ongoing improvements in the conduct of monetary policy and other economic reforms helped to reduce inflation further during the 1990s.

Low and stable inflation—called the 'Death of Inflation'—has been accompanied with a relatively higher stability in economic activity and the period has been termed as a NICE—Non-Inflationary Consistently Expansionary—decade (King, 2004). However, low levels of inflation can also be a source of concern. Inflation during 2001-03 had fallen to such low levels in various countries following the global slowdown that it raised concerns of a generalised deflation. Aggressive monetary policy easing, however, prevented a generalised deflation. More recently, with signs of economic recovery, central banks have started withdrawing monetary stimuli in a measured manner.

The world has thus experienced a significant rise and fall in inflation.

Source : Reserve Bank of India, *Report on Currency and Finance, 2003-04* (RBI: Mumbai, 2004).

In the early writings on monetary problems the term inflation has been used to refer to a situation in which the quantity of money expands faster than the growth of output resulting in a continuous price rise. For a long time this concept of inflation based on the quantity theory of money as it is, was widely accepted. In the period of Great Depression of the 1930s and its aftermath, when the limitations of the quantity theory were revealed, economists looked for an alternative approach. Crowther's definition of inflation in Keynesian framework clearly indicates this shift in economic thinking. He has stated : ***"The simplest and most useful definition seems to be that inflation is a state in which the value of money is falling, i.e. prices are rising. Inflation is usually associated with rising activity and employment."***[1]

According to Harry G. Johnson, any definition of inflation in terms of policies which are believed to be responsible for it has serious policy implications. It induces opposition to those policies even in periods when their pursuance may be necessary for overcoming the problems faced by a country.[2] He, therefore, suggests that a simple workable definition is preferable to any one of the defintions which has some policy implications. Most economists these days find themselves in agreement with Harry G. Johnson's views. Accordingly,

Inflation is defined as a sustained and appreciable rise in the general price level.

This definition is simple but one faces a number of problems when an attempt is made to apply it in practice.

One problem is of selection of appropriate price index for estimating the intensity of inflation. A second problem arises when one begins to consider what rate of price rise should be considered as inflationary.

THE CAUSATION OF INFLATION

The identification of the fundamental source of inflation has always been a subject of controversy. If inflation is caused by the excess demand, it is known as demand-pull inflation. When inflation is caused by

the rise in wage rates or monopoly profits, it is known as cost push inflation. Inflation may also be caused by some combination of the two. If an inflation is due to excess demand, more reliance may be placed on monetary and fiscal tools to control it. These measures may, however, be ineffective if growth of monopolies in goods or factor markets had given rise to what is known as cost-push inflation.

For identifying the sources of inflation, we may use aggregate demand and aggregate supply functions.

Aggregate Demand Function

Thomas F. Dernburg defines aggregate demand function as follows: ***"The level of aggregate expenditure associated with different price levels is called the aggregate demand function."***[3]

Aggregate demand function can be easily derived by using *IS-LM* model. Diagrammatically aggregate demand function is known as ***aggregate demand curve.***

Aggregate demand curve AD_1 shown in Fig. 14.1, is negatively sloped. ***The reason for the negative slope of the aggregate demand curve is often called the "Keynes effect". The Keynes effect arises because variations in the price level change the real quantity of money. This, in turn, affects the rate of interest which affects investment and aggregate demand (aggregate expenditure).***

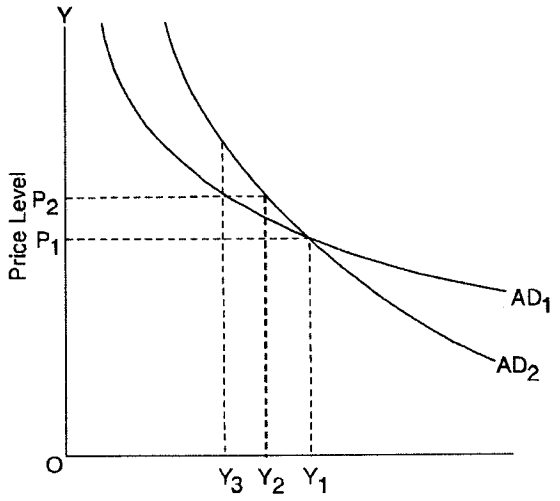

FIG. 14.1. Derivation of Aggregate Demand Curve

There is one more reason for the negative slope of the aggregate demand curve. A rise in the price level results in a reduction of real balances. Wealth holders thus find that their wealth has been reduced and, as a result, they reduce their consumption spending at all levels of income. This is called the "Pigou effect" or "real balance effect." This implies that the consumption function shifts downward which causes a shift to the left of *IS* curve. Hence, aggregate expenditure at price level OP_2 is the still lower amount OY_3. Further, when the "Pigou effect" is added to the "Keynes effect" the aggregate demand curve becomes even flatter. In Figure 14.1 this is clear from the shape of AD_2.

Aggregate Supply Function

The amount of aggregate supply associated with the different price levels is called the aggregate supply function. Diagrammatically aggregate supply function appears as aggregate supply curve which is, in a sense, the summation of the supply curves of all the industries in the economy. The aggregate supply curve slopes upward as shown in Figure 14.2.

Shifts in the Aggregate Demand and Aggregate Supply Curves

For identifying the sources of inflation we may use the two diagrams of Figure 14.3 (*a*) and (*b*). The *X*-axis in both diagrams denotes real national income; the *Y*-axis denotes price level. The aggregate demand curves (D_0, D_1, and D_2) are drawn sloping downward to the right. With an assumption of constant nominal money supply and static price expectations, there cannot be any other form of aggregate demand curve as long as there exists involuntary unemployment. Aggregate supply curves rise upward to the right, but once the full employment ceiling is touched, they become vertical. Shifts in aggregate supply curves are caused by the changes in money

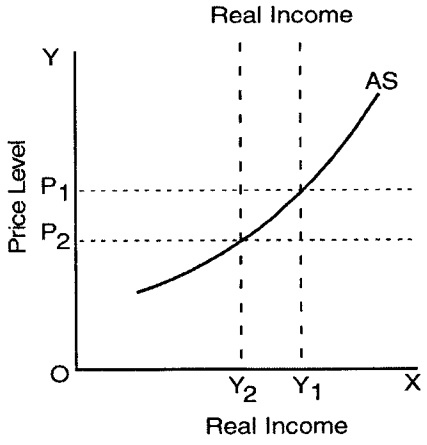

FIG. 14.2. Aggregate Supply Curve

wage rates and money profit margins. Figure 14.3 (*b*) illustrates the case of an economy with the shifting aggregate supply curves.

Let us now consider Figure 14.3 (*a*). We have assumed that at Y_0 level of real national income corresponding to full employment, the aggregate supply function becomes perfectly inelastic. An aggregate demand function D_0 intersecting aggregate supply function S at point A ensures full employment output. The price level remains at P_0. An upward shift in aggregate demand function in the present case will simply raise the price level. It can be seen in the diagram that a rise in aggregate demand indicated by the aggregate demand function D_1 merely raises the price level to P_1, without any impact on real national income. In other words, ***it is only the money income that rises due to upward shift in the aggregate demand function. This is a clear case of what is known as an excess demand inflation.***

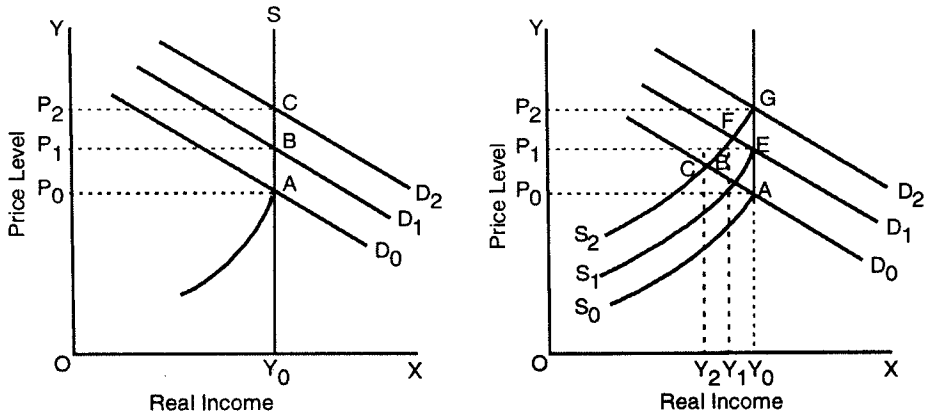

FIG. 14.3. Sources of Inflation

In an imperfectly competitive economy the aggregate supply function cannot be assumed to be stable. Today, whether we like it or not, oligopolies and labour unions have emerged as powerful pressure groups which persistently attempt to increase their incomes. Consequently, the aggregate supply curve moves upward, as from S_0 to S_1 and S_2 in Figure 14.3 (*b*) regardless of the behaviour of aggregate demand. In the case of rising aggregate supply function, the full employment real income is maintainable only at rising price levels. The intersection of original aggregate supply curve S_0 and the aggregate demand curve D_0 had ensured full employment real income at price level P_0. ***When the aggregate supply function moves upward from S_0 to S_1 due to rising costs, full employment level of real income can be maintained only if the price level is raised to OP_1. This is a case of what economists call cost push inflation. An effort to hold prices closer to P_0 will result in a decline in employment and corresponding fall in the level of income.***

DEMAND-PULL INFLATION

The above explanation of the concept of demand inflation is in the Kenyesian framework. But it has to be remembered that it is not the only approach to the theory of demand inflation. Before Keynes, the quantity theorists had developed their own theory of inflation according to which, the price level depends directly and proportionately on the quantity of money. Inflation occurs when quantity of money increases and thus by stabilizing the quantity of money it could be checked by the monetary authorities. The quantity theory of money is, however, defective in the sense that it fails to explain the process whereby an increase in money supply results in an increased money spending at a time when flow of goods remains constant, and thus, bids up prices. This theory fell into disrepute, particularly in the period of Great Depression, due to its unrealistic assumptions. It had treated velocity of money as nearly constant, whereas in reality sharp changes in it were observed.

Keynes, however, did not believe that there is a close tie between the quantity of money and the level of aggregate demand. In his opinion, an economy might experience some inflation with constant supply of money. He argued, let quantity of money remain unchanged when there is a rise in the general price level. In this situation, an increase in the transactions demand for money in response to rising prices will push up interest rate which will eventually reduce investment spending. Nevertheless, the excess demand will not be completely choked off, because a fall in security prices will attract former cash holders whose newly developed interest in security holding will not permit much rise in the rate of interest as needed to remove all of the excess demand.

Keynes also argued that an increase in the supply of money need not always be inflationary. Since his analysis was not bound by the assumption of full employment, he could visualize that in an economy operating at less than full employment, increased demand could have its primary impact on increasing output rather than on raising the price level for a fixed output.

To sum up, ***a rise in aggregate demand indicated by an upward shift in the aggregate demand function may result in a mild increase in the general price level so long the economy is characterised by involuntary unemployment. However, when the economy reaches full employment, any increase in aggregate demand will simply raise the general price level without any impact on real national income.***

Let us now consider Figure 14.4. In this Figure OY_4 represents full employment real income level. So long an economy operates at output levels lower than this level "true inflation" will not occur. In response to an increase in aggregate demand, price level may rise gradually but it will not create serious disorder in the economy. If in some economy, the unemployment rate is very high, the increase in aggregate demand may not have any impact on the general price level. This can be seen in Figure 14.4. An upward shift in the demand function from D_1 to D_2 simply raises the level of output, and thus the price level remains stable at OP_1.

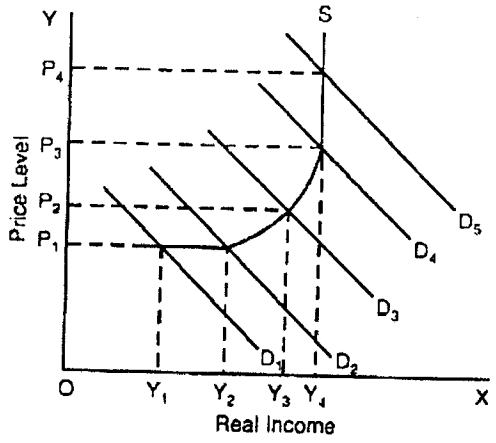

FIG. 14.4. Demand Pull Inflation

Inflationary Gap

Keynes's excess demand inflation analysis is very often presented in terms of the concept of 'inflationary gap'. ***The inflationary gap refers to the amount by which aggregate demand will exceed aggregate output at the full employment level.***

The concept of inflationary gap can be better understood with the help of Figure 14.5. In Figure 14.5, OY_f measures full employment output level. Since the aggregate demand represented by $C+I+G$ is equal to this output, the economy is in equilibrium at full employment. If in this situation somehow aggregate demand schedule shifts upward, the output will not rise and the excess demand which has been created will push up the price level. In Figure 14.5 a rise in government expenditure, *i.e.*, ΔG has created an excess demand measured by *AB*. When the economy operates at full employment level, this excess demand will not be wiped out, as output cannot increase. The differential between the aggregate demand and the aggregate output at full employment, in the present case, is measured by *AB* and we may call it the inflationary gap.

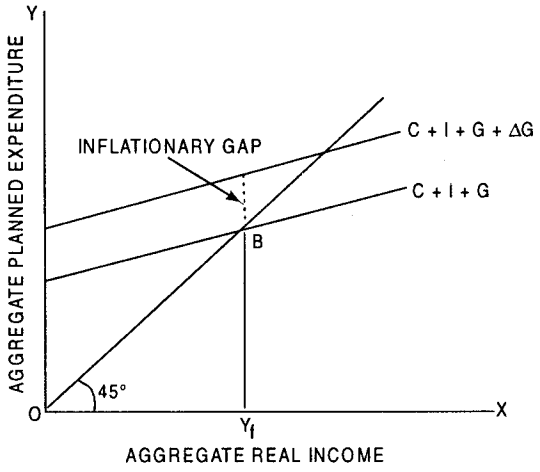

FIG. 14.5. Inflationary Gap

Inflation cannot continue endlessly if the money supply remains constant.

A rise in the general price level is always accompanied by an increase in the transactions demand for money which is met by securing cash balances otherwise used for satisfying speculative demand. As a consequence, the rate of interest rises which in turn reduces the investment spending. In some cases, however, when the prices continue to rise for a long period, and the investors do not anticipate any reduction in them, a rise in the rate of interest may turn out to be a very weak disincentive. But in all other cases, a rise in the interest rate by dampening the enthusiasm of investors reduces their spending, which, through the fall in income will also reduce consumption spending in subsequent periods. Hence, in course of time, the inflationary pressure will be reduced and eventually the process may also come to an end.

COST-PUSH INFLATION

The notion of cost inflation is pretty old. Martin Bronfenbrenner and Franklyn D. Holzman have noted: "Cost inflation has been the layman's instinctive explanation of general price increases since the dawn of the monetary system. We know of no inflationary movement that has not been blamed by some people on profiteers, speculators, hoarders or workers and peasants living beyond their station."[4]

In the past, when the capitalist economy was by and large competitive, neither it was possible for the working class to demand excess wages nor entrepreneurs could extract monopoly profits. Now the capitalist world has undergone significant structural and institutional changes which have created conditions for supply side cost push inflation. There are two principal causes of supply side cost push inflation. One is higher money wages secured by trade unions. This leads to ***wage push inflation***. The other cause is greater profits secured by business firms in monopolistic and oligopolistic markets.

Wage Push Inflation

Wage push inflation refers to a rising price level caused by rising money wage rates.

With the growth of powerful trade unions in both developed and underdeveloped countries, it has become possible for the working class to pressurise the managements of low productivity firms to pay the same wage rate which a high productivity firm pays to its employees. This attempt to overcome wage differentials results in what is commonly known as wage push inflation. The existence of union rivalry for wage increases is also

believed to be an important cause of cost push, but how far unions really succeed in this respect depends much on their degree of control over the supply of labour in the firm or the industry, as the case may be. These examples suggest that increases in money wage rates will cause inflation. However, from this it does not follow that any rise in the money wage rate will cause inflation.

Any increase in money wage rates matched by an increase in labour productivity will not be inflationary. This is a well known fact. But whether increases in money wage rates unmatched by increases in labour productivity necessarily lead to wage push inflation is something ambiguous. Quite often the rise in the money wage rate is not the result of the collective bargaining by the labour unions but is caused by an excess demand for labour. In this situation, the money wage rate would rise even if there were no labour unions. Hence, in a meaningful sense this rise in money wage rate cannot be considered as inflationary. In any case, since the rise in wage rate is caused by an excess demand, the price rise resulting from it cannot be described as wage push inflation. ***The concept of wage push inflation is thus to be confined to increases in labour costs that are the causes and not the result of higher prices.***

Edward Shapiro argues, ***"Wage push inflation can follow only from 'spontaneous' or 'autonomous' upward shifts in the supply function, as opposed to those that are 'induced' by excess demand for labour."***[5] Wage push inflation will not occur in an economy in which labour markets are perfectly competitive. In such a situation, wage rates will vary with the marginal productivity of labour.

Monetarists rule out the possibility of wage push inflation in the long-run. In their opinion, unless an increase in the wage rate is matched by an increase in the supply of money, wage push will not last long, as it will result in larger unemployment rather than inflation and force trade unions to adopt a relatively sober approach.

Profit Push Inflation

When oligopolists and monopolists, in their drive toward larger profits raise prices more than enough to offset any cost increases profit push inflation occurs.

Since existence of imperfectly competitive markets dominated by giant corporations is a prerequisite to profit push inflation, this type of inflation is completely ruled out in a perfectly competitive economy. However, now most economies are dominated by the monopolistic or oligopolistic industries in which a few big corporations control a major part of the supplies of almost everything. Hence, in recent times, possibilities of profit push inflation have increased. The big corporations generally charge administered prices for their products. Others in the market have no choice but to accept them as given. This, as a matter of fact, has left buyers completely at the mercy of monopoly producers whose profits continue to rise in the absence of strong resistance.

This argument is often contested by economists who argue that a monopolist determines only that price which maximises his profits. Therefore, no monopolist will raise his price arbitrarily.

DEMAND PULL AND COST PUSH INFLATIONS: INTERRELATIONS

Often demand pull and cost push inflations are intertwined. However, on account of false dichotomy in inflation theory certain people wrongly believe that an inflation is either demand pull or cost push. In fact, most of the inflationary processes contain some elements of both which sustain each other. As a result, inflationary process once initiated by demand pull factors persists for a long period and the rate of price rise continues increasing. In the West, where trade unions are well organised, workers invariably resist any erosion in their real income. Therefore, once an inflationary process starts due to rise in autonomous spending and the general price level rises, the real wages of workers tend to decline. In this situation, trade unions in their attempt to maintain real wage, demand upward revision in money wages. If they succeed in forcing the management to pay higher wages, the potential gain of the producers due to inflationary price rise is reduced. Producers unable to accept this situation raise prices which again provokes trade unions who demand further increase in money wages.

This is a situation in which money wage rates and the general price level chase each other in an upward spiral. Economists call it a wage-price spiral.

Whether the wage-price spiral will become self-sustained or not will depend on the policies of the monetary and fiscal authorities. If these authorities are committed to maintain full employment, whatever be the cost, then the inflationary process will not come to a halt. This can be understood from Figure 14.6. Given

the aggregate supply curve S_1S and the aggregate demand curve D_1D_1, the full employment level of real income Y_f is obtained. The general price level in this case is at OP_1. At full employment, trade unions generally feel confident about their bargaining power and thus pressurise the management to pay higher wages. Suppose, faced with higher aggregate demand, employers agree to raise money wage rates which causes an upward shift in the aggregate supply curve to S_2S. As a consequence, under stable demand conditions, the general price leves rises to OP_2 and unemployment appears. To eliminate unemployment if the government decides to increase its expenditure, the aggregate demand curve will move upward. The aggregate demand curve D_2D_2 intersects the aggregate supply curve S_2S at a point that it ensures full employment level of real income again but in the process the general price level has risen to OP_3. At this level of prices, the real wages have fallen and the trade unions would again press for higher wages.

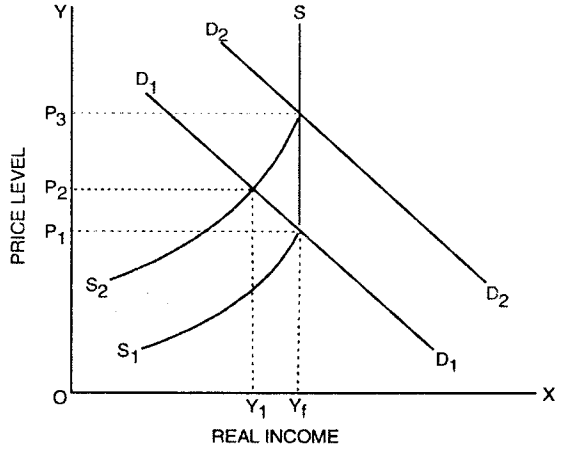

FIG. 14.6. Demand Pull and Cost Push Inflations Intertwined

The wage price spiral would, however, be broken if the government refuses to increase its spending to eliminate unemployment. The falling output and the rising unemployment weakens the bargaining power of the trade unions and strengthens the determination of the management to resist wage demand of workers.

CONTROL OF INFLATION

Most economists today believe that a capitalist society firmly committed to achieve full employment must learn to live with creeping inflation. But their dilemma is that over time creeping inflation has a tendency to acquire a speed which may have disastrous consequences for every one in the society. R. G. Hawtrey has very aptly remarked, ***"If inflation is allowed to gain a footing, it is only likely to get out of control."*** Today when inflation appears to be getting out of control, certain anti-inflationary measures are being adopted. Broadly speaking anti-inflationary measures are five:

(*a*) Monetary measures
(*b*) Fiscal measures
(*c*) Wage control
(*d*) Price control, and
(*e*) Indexation.

Monetary Measures

So long the quantity theory of money had not fallen into disrepute, great reliance was placed on monetary measures to control inflation. Even after the impotence of monetary policy to check depression was proved by Keynes, it was never discarded as an instrument of economic management. Growth of inflation during the post Second World War period has once again revived the confidence in the potency of monetary policy. Anti-inflationary measures of purely monetary nature are now the concern of the central banks.

Now in almost all countries, central banks enjoy extensive powers to introduce various monetary measures to control inflationary price rise. These measures include the bank rate policy, open market operations, variable cash reserve ratio and selective credit controls.

Demonetization is a drastic measure and is generally avoided.

The theory of interest clearly indicates that a rise in rate of interest can check investment spending and thus arrest inflationary rise in price. The central bank by raising its ***bank rate*** (the rate at which it offers lending facilities to the commercial banks), can easily push up market rates of interest and thereby make investment less attractive. This may eventually choke off excess demand and thus cause stabilisation in general price level.

The ***open market operations*** refer to buying and selling of the government securities by the central banks in the money market. During inflation, by offering securities to the people, the central banks attempt to reduce the supply of money. This directly affects the capacity of the commercial banks to create credit.

By raising the ***cash reserve ratio***, the central bank can immediately reduce the amount of credit which commercial banks can create. This undoubtedly is a very effective measure, but due to its alleged harsh and indiscriminate effects, it very often invites criticism.

The ***selective credit control mechanism,*** particularly the consumer credit regulation, is a recent origin in the field of anti-inflationary policy. With the rise of consumerism in the West, people have developed a great craze for durable goods. They borrow heavily to buy automobiles, television, refrigerators and other electrical gadgets. Therefore, regulation of consumer credit proves to be an effective measure to mitigate inflationary pressure.

Fiscal Measures

As a result of the impact of Keynes's *General Theory* together with the work of a generation of economists who thought primarily in the framework provided by him, fiscal policy has come to be recognised as the most powerful instrument of economic stabilisation.

> ***Since government spending has become an important component of the aggregate spending in almost all countries—developed and underdeveloped—by changing its expenditures in relation to its tax receipts, the government can exert a powerful effect on the flow of money, aggregate demand and economic activity.***

During inflation, in order to arrest price rise the government can attempt to ***reduce its spending*** which in practice is not an easy task. Today in their eagerness to maintain full employment, governments in various countries have failed to provide any safeguard against inflation. As a matter of fact, their own indiscretion in spending has created excess demand and thus caused price rise. In this situation, ***the government can reduce pressure on prices by keeping its expenditure within reasonable limits.***

Further, ***by raising tax revenue, a surplus may be generated and the government can use it in an anti-inflationary manner.*** Large tax collections by reducing the disposable income in the hands of households will also bring down the consumption spending which through the operation of reverse multiplier will substantially reduce the aggregate demand. ***Public borrowing*** like taxation can withdraw money from circulation. But effective debt management must prevent inflationary credit expansion as well. The government can realise this objective by repaying bank held debt out of budgetary surplus.

Besides taxation and public expenditure policies, instruments of ***deferred pay and forced loans*** are two other effective anti-inflationary measures.

Wage Control

Perhaps the theory of wage push inflation has been invented by those who want that the working class should bear the brunt of inflation. They suggest that to break wage-price spiral, money wages should not increase as the prices increase. This objective can be achieved by adopting the policy of wage control. Between these extreme measures is a measure known as wage guideposts. If the policy of wage control is effectively implemented, the real income of wage and salary earners declines and thus in a country where wages constitute an important part of the national income, the consumption spending also falls significantly. This policy may or may not wipe out the excess demand completely but it will certainly check further rise in the price level. Therefore, industrialists, merchants and capitalist farmers insist on wage freeze.

Wage freeze policy of the government, however, meets strong resistance from the working class particularly in the countries where trade union movement is strong. The wage freeze policy has another serious implication. Kenneth K. Kurihara draws attention to this aspect when he states that "the whole question of wage policy during inflation is further complicated by the fact that wages are incomes as well as cost, and therefore by the basic fear that a deflationary wage policy may precipitate a train of uncontrollable deflationary movements."[6]

Price Control

The system of price control implies the fixation of maximum prices at which commodities are to be sold. Since the aim of the control authorities is to make commodities available to the people at prices which they can pay, the maximum price for each commodity is set below the market equilibrium price. Once this is done the equilibrium price would no longer be obtainable to the sellers. Under these circumstances, while the quantity demand will expand, the quantity supplied will fall unless the production of the commodity in question is subsidised. If no subsidy is given to the producers, a shortage of the commodity will develop. In other words, the quantity demanded will exceed the quantity supplied at the controlled price. In this system price is not allowed to change so as to allocate the scarce supply amongst the would-be-buyers. Hence, some other methods of allocation are adopted. One possibility is that firms sell their available supplies on first come first served basis. This policy of the sellers will lead to formation of long queues even much before the market opens.

Alternatively, shopkeepers can decide to sell scarce goods at controlled prices only to regular customers who buy a wide range of goods. Obviously these are arbitrary systems of allocation. This arbitrariness, however, can be removed if the central authorities decide to introduce the cumbersome rationing system. The system of price control with or without rationing often gives rise to a black market. The administrative machinery in most of the developing countries unfortunately lacks both capability and commitment to deal with the problem of black market and, as a consequence, a parallel economy develops in these countries.

Indexation

It is now well established that certain sections of the society are far more vulnerable to inflation than others. Their vulnerability to inflation can, however, be reduced by indexation which can be defined as follows: ***Indexation is a method whereby such adjustments in monetary returns are made that are necessary to set off losses in real incomes due to inflation.***

Strictly speaking indexation does not control inflation. But since it prevents any erosion in real incomes, it makes inflation much easier to live with. It is this reason why in certain countries indexation has been adopted particularly in the periods when effective control of inflation has not been easy.

We shall now consider two kinds of contracts, *viz.*, ***wage contracts*** and ***long term loan contracts.*** These contracts are especially affected by inflation and indexation is more common in these two cases.

Indexation of wages. Now in the organised labour markets in many countries, trade unions succeed in getting automatic cost of living adjustment provisions incorporated in wage contracts. These provisions link increases in money wages to increases in the price level and thereby protect workers wholly or in part from the inflation which will otherwise erode their purchasing power. ***Indexation of wages strikes a balance between the advantage of long term wage contracts and the interests of the workers by stabilising real wages over the contract period.***

Since wage bargaining is a time consuming and difficult process, wages are not negotiated every 2-3 months. They are generally settled in the form of 2-3 year contracts. Prices, however, do not remain stable over the terms of these contracts due to inflation. Therefore, some adjustment provisions which will take care of the changes in prices, have to be incorporated in the wage contracts. Broadly, two things can be done. ***One is to index wages to cost of living index and make the necessary periodic adjustments in wage rates. Alternatively, periodic wage increases based on the expected rate of inflation may be scheduled.***

Indexed debt. ***A debt is "indexed (to the price level) when either the interest or the principal or both are adjusted to inflation."***[8] Indexed debts in the form of indexed bonds are sometimes issued by the governments of the countries where inflation rates are both high and uncertain. In such countries, long term borrowings in nominal terms are impossible because lenders are too uncertain about the real value of the interest and the repayments of the principal. Holders of indexed bonds receive interest equal to the stated real interest plus the prevalent rate of inflation. Suppose, rate of real interest which has been agreed upon is 4 per cent and the rate of inflation is 20 per cent, the bond-holder will then receive 24 per cent. This arrangement will compensate the bondholder for inflation. Many economists now argue that governments should issue indexed debts so that savers have at least some risk free investment options.

▮▮▮▮▮ RELATIONSHIP BETWEEN UNEMPLOYMENT RATE AND INFLATION RATE AND THE PHILLIPS CURVE ▮▮▮▮▮

It has been observed that under the conditions of smaller unemployment and tighter labour markets,

organised labour becomes more aggressive and succeeds in getting higher wage increases, while under opposite conditions labour will be less demanding. From this it follows that:

There is an inverse relationship between the rate of wage increase and the rate of unemployment.

This relationship was first stressed by A.W. Phillips in his pioneer work[9]. Now in the theory of inflation it is considered in terms of the "Phillips Curve" so named after A.W. Phillips. ***A Phillips curve show that there is a inverse relationship between the rate of money wage increases and the rate of unemployment of the labour force.***

A Phillips curve may be derived from an economy's data for a period of years by plotting for each year the percentage of money wage rate increase, $\Delta W/W$ (Y-axis) against the percentage of unemployed labour force (X-axis). Such a curve will slope downward to the right. In Figure 14.7 we have shown two hypothetical Phillips curves A and B. Let us assume that actual curve is A. Then in the economy a decline in the rate of unemployment from OU_3 to OU_2, would raise the rate of money wage increase from $(\Delta W/W)_1$ to $(\Delta W/W)_2$. This implies that if wage-push inflation is to be kept under control, the society should be willing to accept a certain amount of unemployment. In Figure 14.7, $(\Delta W/W)_1$ rate of money wage increase is not inflationary, as this is accompanied by a corresponding increase in the productivity of labour. Moreover, OU_1 rate of unemployment is socially acceptable. This means that in this particular economy wage-push inflation can be kept under control by allowing unemployment within a socially acceptable limit.

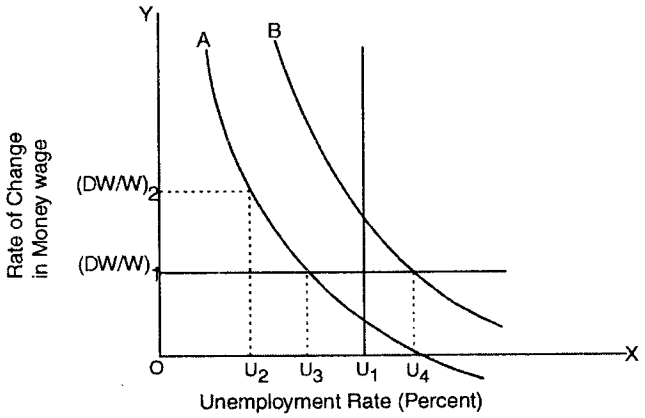

FIG. 14.7. Phillips Curves

According to Phillips, in the case of UK, 2.5 per cent unemployment was needed for holding price stable. This was possible due to the encouraging fact that wages showed a tendency to rise at the same rate as the labour productivity rose. For USA, Samuelson and Solow plotted a similar curve and found that for maintaining price stability in that country, unemployment rate had to be 5.5 per cent. They assumed a 2.5 per cent annual increase in the labour productivity.[10] As compared to the results obtained for UK by Phillips, results obtained by Samuelson and Solow for the USA were certainly disappointing.

Explanations of the Phillips Curve Relationship

The Phillips curve relationship is an empirical phenomenon observed in various bodies of data. But what explains its existence? There are two explanations for this relationship. One explanation is available in terms of the behaviour of organised labour. A second explanation provided by R.G. Lipsey runs in terms of excess demand for labour.

Explanation in terms of the behaviour of organised labour. At present labour is organised as well as unorganised. In the modern sector, the organised labour often has the power to secure far greater increases in wage rates than the increases in productivity. This results in what is now called wage-push inflation. However, the capacity of the organised labour to obtain wage increase varies inversely with the unemployment rate in the labour market. When unemployment rate is low and the labour market is tight, the demand for goods is also buoyant and the producers make good profits. Therefore, in these conditions labour is aggressive and the employers agree to grant "excessive" wage increases. Under the opposite conditions—high unemployment and low profits—employers would resist the demand for even moderate increase in wage rates. Hence, theoretically what is to be expected is an inverse relationship between the rate of wage increase and the rate of unemployment as indicated by the Phillips curve.

Explanation in terms of excess demand for labour. R. G. Lipsey has advanced this explanation.[11] His own explanation is quite involved and we will present his basic arguments in a somewhat simpler form. For this purpose a diagram divided into two parts is used (see Figure14.8). In part A, supply and demand curves for labour have been shown. It may be noted that the demand for and the supply of labour are equal at the wage rate OW_3 which suggests that there is equilibrium in the labour market. This, however, does not mean that there is no unemployment. The equilibrium in labour market implies that the number of unemployed workers is exactly the same as the number of jobs lying vacant. Absence of any unemployment under equilibrium conditions would be possible if frictional unemployment were completely eliminated which is practically impossible.

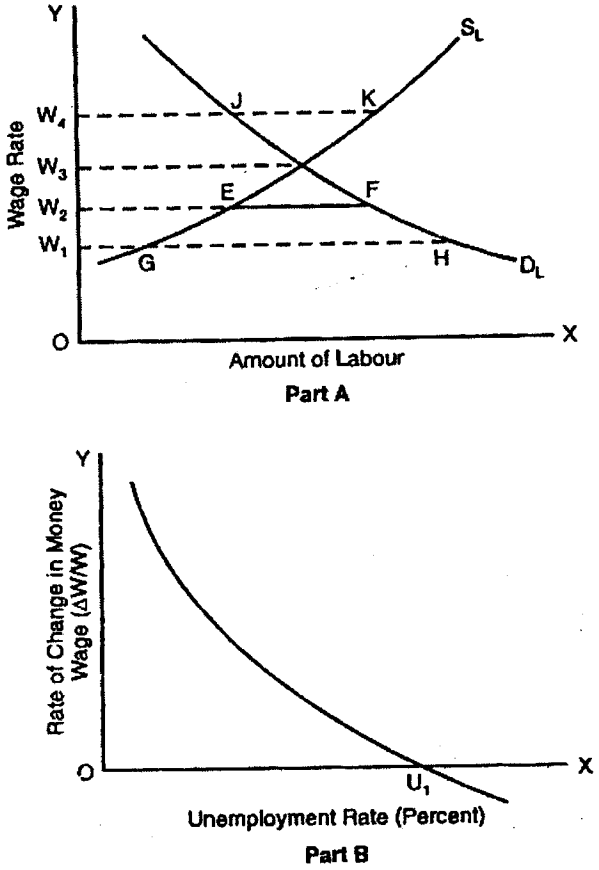

FIG. 14.8. The Labour Market and the Phillips Curve

At a wage rate below the equilibrium wage rate, say OW_2, there is excess demand for labour equal to EF. Similarly at any wage rate higher than the equilibrium wage rate, *e.g.*, OW_4 there is excess supply of labour equal to JK. Considering specifically the cases of excess demand, a basic argument in this approach is that the rate of wage rate increase varies directly with the amount of the excess demand for labour. Therefore, with a wage rate of OW_1 and an excess demand of GH, the increase in wage rates will be more rapid than with a wage rate of OW_2 and the smaller excess demand of EF. From this the conclusion follows that the rate of wage rate increase varies directly with the amount of excess demand.

Another argument in this approach is that the amount of unemployment varies inversely with the amount of excess demand. If we put these relationships together in which the rate of increases in the wage rate varies directly with the amount of excess demand and the rate of unemployment varies inversely with the amount of excess demand, we get the Phillips curve relationship in which the rate of wage increase and the unemployment rate are inversely related.

This is clearly illustrated in Figure 14.8. In part A of this figure, at wage rate OW_3 when there is neither excess demand nor excess supply, the amount of unemployment is such that we get the unemployment rate OU_1 in Part B of the figure. Obviously at this unemployment the rate of wage increase will be zero because there

is neither an excess demand nor an excess supply of labour. At a wage rate lower than OW_3 there is an excess demand for labour which means a lower unemployment rate and also a higher rate of wage increase. Thus there is a movement to a point back up the Phillips curve.

The two explanations of the Phillips curve relationship discussed above are not alternatives. The factors involved in both the explanations often operate simultaneously. We may thus conclude that the tendency of the rate of increase in money wage rates to rise with a falling unemployment rate may thus be explained in terms of the behaviour of the organised labour as well as excess demand for labour.

Trade-off between Unemployment and Inflation

Since wages constitute an important component of production costs, a rise in wage rate normally leads to a rise in prices. But every money wage increase is not inflationary. When wage rate increase is only that much that is required due to an increase in the labour productivity, it does not lead to inflation. ***The Phillips curve relationship as discussed above points out that low unemployment is associated with a rapid wage increase which, in turn, leads to inflation. High unemployment, on the contrary, implies soft labour market in which wages cannot be pushed up easily. Hence, high unemployment does not allow inflationary pressures to build up.***

The Phillips curve thus stressed "the idea of a trade-off between unemployment and inflation. Society, it suggested, can opt for low unemployment, but only at the price of higher rate of inflation. Or it can opt for price stability, but at the cost of a high unemployment rate."[12]

STAGFLATION

Stagflation is a phenomenon characterised by unemployment, lack of growth and inflation. Prior to the 1970s the Western developed countries had never experienced such a situation. In fact, under the influence of Keynes most economists firmly believed that unemployment, economic stagnation and inflation could not occur in an economy simultaneously. But stagflation is now a reality and it has rendered a good deal of Keynesian macroeconomic theory irrelevant even in developed countries. In underdeveloped countries even prior to the 1970s inflation had existed alongwith large unemployment and lack of growth on account of structural rigidities.

During the first half of the 1970s stagflation prevailed in certain developed economies but it assumed the most severe form in the United States. It is this reason why an analysis of the US case becomes important to understand the phenomenon of stagflation in the developed countries. Since the mid 1960s there was increasing instability in the US economy which climaxed in the 1973-75 recession. Double-digit inflation was followed by unemployment of 9 per cent of the labour force. Its worldwide character and the associated bankruptcies and financial disturbances made this episode the most severe post World War II economic crisis. Otto Eckstein describing this situation wrote, "Comparison with normal pattern of economic development reveals the severity of the situation. By the trough of the recession in the spring of 1975, real GNP had fallen 14.5% below the full employment growth path... The process of capital formation, which had already been inadequate in the preceding ten years, was disrupted once more. The rate of real business investment fell at least 25% below the normal path, and declined 13% in a single year. The housing stock, which normally grows by a million and a half units annually grew by only 700,000 units in 1975; relative to the growing population, it will not return to equilibrium for some time."[13] The consumer was the first to feel the severity of the pinch. Since the World War II, for the first time the real volume of consumption fell and the real spendable earnings of a typical American worker declined to the level as prevailed ten years earlier.

Stagflation of the 1970s—An Explanation

There is lack of agreement among economists on the factors which led to the stagflation of the 1970s. ***According to the Keynesians, the monopoly power of the trade unions to raise wages and the large autonomous increase in food and oil prices were the two major factors responsible for both high prices and record level unemployment. The monetarists distinguish carefully between real and monetary influences on the economy and in opposition to the established Keynesian economics emphasize the powerful effects of changes in the quantity of money. In their opinion, the level of employment is determined by the real factors acting in the labour market and, therefore, monetary stimulus applied to relieve unemployment could bring only a temporary benefit before manifesting itself in rising prices.*** Arguing along these lines, the monetarists also suggested that the unemployment inflation trade-off of the Phillips curve relationship was at best a short run phenomenon.

It is now generally agreed that the ***factors mentioned by both the Keynesians and monetarists played an important role in producing stagflation in developed countries during the 1970s.*** However, these factors alone do not explain the phenomenon of stagflation adequately. Accordingly, we turn to the effects of the government policy as an explanatory factor.

At the outset it is necessary to point out the sharp difference of opinion that exists between the monetarists and the Keynesians with regard to the efficiency of the policies of demand management. For the monetarists, active intervention in the form of raising the aggregate spending with the objective of reducing unemployment below the natural rate will lead only to cumulative increase in the price level. The Keynesians, on the contrary, believe that fiscal measures which ensure larger effective demand will result in higher levels of both growth and employment without generating inflationary pressures. This position of the Keynesians seems to be at variance from that of Keynes who "was in favour of a continuously balanced current budget and had no conception of the use of fiscal fine-tuning."[14] However, governments in various developed countries ignored Keynes' approach and employed both budgetary and monetary measures of active demand management for securing an aggregate rate of investment which they considered to be necessary for achieving full employment and prosperity. This view was to a great extent correct.

As to the first aspect of the problem, the common understanding is that the necessary encouragement to investment can be provided by increasing expenditure on public utilities and schemes of public works and through fiscal inducements to private enterprise together with budgetary and monetary management of demand. For this purpose the government's take over of the private industry is not considered necessary. This strategy seeking to achieve full employment and attempting to maintain maximum freedom for the market mechanism when actually adopted by the governments in the developed countries of the West not only proved to be less effective on growth front but also turned out to be more inflationary. This can be easily followed when we consider the second aspect of the problem, that is the short-run and long-run consequences of investment. The effect of investment is two-fold: First, it raises the level of income and employment and second, it increases the capital stock. In this context two points are relevant. First, for maintaining equilibrium it is necessary for investment to increase at an increasing rate so as to fill the widening gap between income and consumption and thus sustain the rising level of full employment income. Secondly, as the capital stock increases the marginal efficiency of capital falls which acts as a disincentive to investment unless the technological change or the decline in the rate of interest are sufficiently strong to offset the effect of the decline in the marginal efficiency of capital. According to Keynes, if continued capital accumulation results in unhindered fall in the marginal efficiency of capital, the economy may move into stationary state. In this situation, fiscal intervention of the government was considered to be necessary. This, however, is a policy prescription designed as a short-run remedy. The western countries during the post World War II period ignored this fact and attempted to turn short-run policy prescription of Keynes' *General Theory of Employment, Interest and Money* into a long-run stimulus to growth.

For about two decades growth continued under the influence of government policy, but the factors that were required to offset the fall in the marginal efficiency of capital and so induce further investment weakened and failed. Hence, the widening gap between consumption and full employment income had to be increasingly filled up by the government expenditure. Gordon A. Fletcher thus argues, "This expenditure was inflationary, both because being unselective it financed much that was 'unproductive' as compared to the incomes it generated, and because it left as residue a rising stock of money to be absorbed in an economy in which real growth was fading."[15] In the developed countries of the West since attempts are continuously made to arrest fall in the marginal efficiency of capital by adopting capital intensive (labour saving) techniques of production, the increasing unemployment becomes difficult to arrest.

Supply Shock and Stagflation

Now it is commonly accepted that ***supply shock is the basic cause of stagflation. The supply shock (decrease in supply) by itself adequately explains the simultaneous existence of inflation, unemployment and stagflation.*** A reduction in supply implies lack of growth and increase in unemployment. It also leads to a rise in the general price level. This is illustrated in Figure 14.9.

Figure 14.9 shows that aggregate demand remaining unchanged, a decrease in aggregate supply due to supply shocks in commodities such as oil and foodgrains will raise the price level from P_0 to P_1 and bring down the output level from Y_0 to Y_1. Obviously this fall in the output level will lead to unemployment which may not be necessarily proportionate to decrease in output.

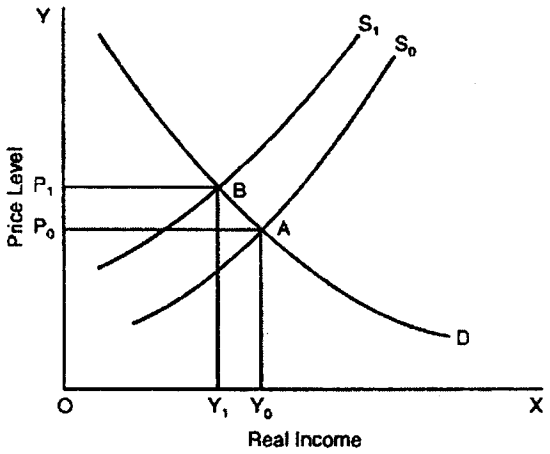

FIG. 14.9. Supply Shock and Stagflation.

Control of Stagflation

It is now generally agreed that although there are some common causes of stagflation, yet each case of stagflation is somewhat unique. Therefore, ***there are no easy cures for stagflation. "The combination of unemployment and inflation is a very delicate matter; if we fight recession, we stimulate inflation and if we fight inflation, we stimulate recession."***[16] Nonetheless, economists have recommended various policy measures to control stagflation.

The Keynesians recommend wage control to moderate price rise. They also suggest a restrictive monetary policy to tone down inflationary pressures. In their opinion, expansionary fiscal policy can be relied upon to increase output (real income) and employment. According to the monetarists, stagflation is a monetary disorder, and can be controlled by reducing the money supply. ***Milton Friedman, the chief exponent of the monetarist school, has suggested that the money supply should be expanded at the same rate at which the output increases. By pursuing this policy it is always possible to avert stagflation.***

NOTES

1. G. Crowther, *An Outiline of Money* (London: The English Language Book Society, 1962), p. 107.
2. Harry G. Johnson, *Monetary Economics,* p. 107.
3. Thomas P. Dernberg. *Macroeconomics* (New York : McGraw-Hill Book Company, 1985), p. 243.
4. Martin Bronfenbrenner and Franklyn D. Holzman, 'A Survey of Inflation Theory', in *Surveys of Economic Theory,* Vol. 1 (London: Macmillan, 1965), p. 64.
5. Edward Shapiro, *Macroeconomic Analysis* (Harcourt Brace Jovanovich Inc., Fourth Edition, 1978), p. 454.
6. Kenneth K. Kurihara, *Monetary Theory and Public Policy* (London, 1965), p.99.
7. William Poole, "The Cost of Wage-Price Controls" in Arthur M. Okun (ed.), *The Battle Against Unemployment* (New York, 1972), p. 236.
8. Rudiger Dornbusch and Stanley Fischer, *Macroeconomics* (McGraw-Hill, Inc., Sixth edition, 1994), p. 523.
9. A. W. Phillips, "Relation between Unemployed and the Rate of Change in Money Wage Rates in the United Kingdom, 1862-1987," *Economica,* Nov. 1958, pp. 283-99.
10. Paul A. Samuelson and R.M. Solow, "Analytical Aspects of Anti-Inflation Policy", *American Economic Review,* May 1960, pp. 177-94.
11. R.G. Lipsey, "The Relation between Unemployment and the Rate of Change of Money Wage Rates: A Further Analysis," *Economica,* Feb. 1960, pp, 1-31, reprinted in R.A. Gordon and L.R. Klein (eds.) *Readings in Business Cycles* (Irwin, 1965) pp. 456-87.
12. Thomas F. Dernburg, *op. cit.,* p. 297.
13. Otto Eckstein, *The Great Recession—With a Postcript on Stagflation* (Amsterdam, 1978), pp. 1-2.
14. Gordon A. Fletcher, *The Keynesian Revolution and Its Critics* (London, 1987), p. 290.
15. *Ibid.,* p. 282.
16. Rendall Hindshaw (ed.), *Stagflation* (New York, 1977), p. 26.

CHAPTER

15 MONETARY AND FISCAL POLICIES

Monetary and fiscal policies are two powerful instruments of economic management. Their necessity arises from the fact that prices in a free market economy are rarely stable, balance of payments is often in disequilibrium and most of the time involuntary unemployment is too much. Apart from these major problems two other problems which a free enterprises economy fails to tackle are inequality in the distribution of income and wealth and sluggish economic growth. The governments in both developed and underdeveloped countries now do not leave solution to these problems entirely on the market forces. They resort to both monetary and fiscal tools to overcome them. In the following discussion we shall expain as to how monetary and fiscal policies work and with what instruments.

In this chapter while discussing role of monetary and fiscal policies as instruments of economic mangement we shall address the following issues:

- Meaning of monetary and fiscal policies.
- Main objectives of monetary and fiscal policies.
- How do monetary and fiscal policies operate for realising given objectives?
- Relative merits and limitations of the main instruments of monetary policy.
- Distinction between automatic stabilizers and discretionary fiscal policy.
- Concept of full employment budget surplus and its limitations as a measure of the thrust of fiscal policy.
- Main instruments of fiscal policy.
- Main problems in relying on fiscal policy to attain given objectives of economic policy.

THE MONETARY POLICY

According to Harry G. Johnson, ***monetary policy is a "policy employing the central bank's control of***

the supply of money as an instrument for acheiving the objective of general economic policy."[1] At times, economists distinguish between ***monetary policy*** and ***credit policy.*** While the former is concerned with changes in the supply of money, the latter is concerned with changes in the supply of credit. As noted by S.B. Gupta, there are the following important points of commonality in the two policies: (1) the same authority, the central bank, administers both kinds of policies, (2) the instruments of control at the aggregate level are the same, and (3) the same forces determine the supply of money as well as the supply of bank credit.[2] Therefore, both the policies are generally clubbed together under a single heading 'monetary policy' and this is the practice we shall also follow in the present chapter. Thus

Objectives of Monetery Policy

By monetary policy we mean the regulation of the money supply and the control of the cost and availability of credit by the central bank of the country through the use of deliberate and discretionary action for achieving the objectives of general economic policy.

The main objectives of monetary policy are:[3]

1. Maximum feasible output
2. High rate of economic growth
3. Fuller employment
4. Price stability
5. Greater equality in the distribution of income and wealth
6. Healthy balance of payments.

Having known the various objectives of the monetary policy we have to understand as to what kind of monetary policy can best serve all the policy objectives. S.B. Gupta feels that the best policy in this respect is a policy of ***'long-run price stability at maximum feasible output'.*** This may be referred to as the policy of ***'long-run neutral money'.*** Gupta opines that ***"when monetary policy is conducted with a view to long-run price stability at maximum feasible output, other goals of economic policy. viz. fuller employment, a high rate of growth, greater equality, and healthy balance of payments are also promoted to the maximum extent."***[4]

The Transmission Mechanism. In the context of the working of the monetary policy an important issue which deserves special attention is as to how the monetary policy achieves its objectives. Thus the question that we now purport to discuss is : how does the monetary policy work, *i.e.*, what is the ***transmission process*** by which a change in money supply brings about a change in aggregate demand and in the level of income and production? There are basically two theories in this regard — the Keynesian theory and the monetarist theory. According to the Keynesian theory, changes in the money supply work their way through the system in a way that does not result in a close and stable linkage between changes in the money supply and changes in the level of income. The monetarists, on the other hand, do see such a close and stable linkage.[5]

The monetary transmission mechanism is the mechanism by which changes in the money supply produce effects that interact with the real sector to create changes in income and in the price level.

In this process two primary mechanisms are belived to be employed :

1. The portfolio mechanism, and
2. The wealth mechanism.

As far as the portfolio mechanism (*i.e.*, the way monetary policy affects the asset portfolios of households and firms) is concerned, there are two major schools of thought:

(*i*) The Keynesian school, and
(*ii*) The monetarist school.

The Keynesian approach treats changes in the market rate of interest that result from changes in the money supply as the significant aspect of the monetary policy. Thus it emphasizes the credit effect. To understand the Keynesian approach we must remember that households can keep their resources in the form of money, financial assets (government securities, corporate shares and bonds etc.) and real assets (plant and equipment, buildings, apartments, land etc.). Let us now suppose that the central bank of the country conducts an open-market purchase and increases the money supply. As a result of this operation, the households increase the quantity of cash balances in their individual portfolios and securities with them are exchanged for the central bank notes. This creates a temporary imbalance of excess cash in the portfolio. To correct this imbalance, the individual households will buy financial assets and this process will continue till the point is reached where

no further substitution of this kind is profitable. As individual households continue to adjust their portfolios by purchasing non-cash financial assets, they drive up the prices of these assets, thereby reducing the market rate of interest. However, this is not the end of the process. Reduced market rates of interest, in turn, will encourage the firms to increase their level of investment (the initial real effect). In response to this increase in investment, aggregate demand will further increase via the investment multiplier. Thus the increases in money supply that resulted from open market purchases by the central bank of the country will finally lead to an increase in aggregate demand in the economy and hence in national income and product via changes in the market rates in interest. Thus the effect of money supply on national income and product operates through the process of portfolio adjustment by individual household and in this portfolio adjustment, the basic role is played by changes in the market rates of interest.

The monetarist approach views the direct change in the money supply as the most relevant aspect of monetary policy. The monetarists trace the effect of changes in the money supply through a portfolio adjustment process much like the one described above but they do not hold the changes in the interest rate as a prerequisite for changes in the demand for goods and services. An increase in money supply can lead directly to an increase in spending on real assets. This is due to the reason that while Keynesians regard money and other financial assets as close substitutes, the monetarists regard money and real assets as close substitutes. According to the monetarists, the households maintain some desired stock of money relative to their income. The monetary policy changes cause the actual stock to differ from the desired stock and the households respond by attempting to return to the desired stock of money balance. In this attempt, they directly change the level of aggregate demand, income and prices. ***Thus, according to the monetarists, as a consequence of an increase in money supply, there is a portfolio adjustment involving a movement out of money directly into goods.*** This is suggested by the following statement of Milton Friedman, the chief protagonist of the monetarist school, ***"The end result need not be a change in interest rate at all; it may be a change in the general price level or in output."***

The wealth mechanism is based on the manner in which changes in the quantity of money affect non-human net wealth and how this in turn affects aggregate demand.[6]

One definition of non-human nominal net wealth W_{NH} is

$$W_{NH} = H + P_V K$$

where H = quantity of nominal high-powered money[7]

$P_V K$ = market or nominal present value of capital stock.

Let us now suppose that the price level falls. As a result, the real value of high-powered money will increase. This increase in the real value of H will produce an increase in the net wealth of households, and since consumption is a function of wealth, consumption increases. The same increases in consumption will result if the central bank increases the quantity of money and the price level remains constant. In terms of the equation given above, increases in H increase $W_{NH,}$, and consumption out of current income increases. Thus, the real balances effect discussed here is one mechanism through which monetary policy can affect aggregate demand by changing non-human wealth.

The other way through which monetary forces can affect non-human wealth—and therefore consumption—in terms of the equation given above is via changes in $P_V K$, *i.e.*, changes in the market value of capital stock. To understand this point, let us suppose that the central bank conducts an open market operation that increases the demand for government securities, thereby raising their prices and lowering their interest rates. This, in turn, intially increases the desirability of equities (common stocks) relative to government bonds, and the prices of equities will rise, causing an increase in $P_V K$. As a result, equity owners will consider themselves wealtheir and consumption expenditures will rise.

Targets of Monetary Policy

To achieve the objectives of monetary policy, the monetary authorities should decide upon certain 'guide variables' or 'target variables' which are in a position to influence the objectives in the desired manner. To serve the purpose well, the chosen guide variable should possess the following qualifications:

1. It should be closely related to the objective and this relation should be well understood and reliably estimable.
2. It should be closely tied to the monetary policy in the sense that changes in its value are substantially determined by changes in monetary policy and promptly follow them.

3. Non-policy influences on it should be relatively small, *i.e.*, small relative to policy influences, and
4. It should be readily observable (and measurable) with little or no time lag.[8]

Traditionally, three variables have served as the 'guides' or 'targets' of monetary policy. They are : (1) money supply, (2) bank credit, and (3) interest rates in the securities market.

As noted earlier, ***while the Keynesian economists have emphasized the interest rate channel, the monetarists have emphasized money supply.*** Some other economists and practical central bankers have recommended bank credit as an appropriate target variable.

INSTRUMENTS OF MONETARY POLICY

The instruments of monetary policy are the following: (1) open market operations, (2) bank rate policy, (3) reserve requirement changes, and (4) selective credit controls.

Open Market Operations

The term open market operations refers to the purchase or sale by the central bank of any securities in which it deals, such as the government securities, bankers' acceptances or foreign exchanges.

Open market opeations which involve buying and selling of securities by the central bank excercise direct influence on the supply of money in circulation and commercial banks' cash reserve. ***When a central bank offers securities for sale, it intends to contract the quantity of money and credit.*** By selling the securities, it not only withdraws a part of money supply, but also manages to reduce commercial banks' cash reserves and thereby their capacity to create credit. This happens because with banking habit developed as it is now, most people keep their savings in banks and when they decide to buy securities offered for sale by the central bank, they withdraw money from their accounts and the cash reserves with banks show a tendency to fall. ***A central bank pursuing expansionary monetary policy will buy securities in the market.*** This will immediately put money into circulation and eventually cash reserve of commercial banks will also increase, pushing up their capacity to create credit.

Bank Rate Policy

Bank rate policy is a very subtle and the oldest method of credit control.

Bank rate refers to the rate of interest at which the central bank rediscounts approved bills of exchange.

The bank rate policy is used as an instrument of credit control with the assumption that market rates of interest invariably respond to changes in bank rate. In a developed money market this kind of relationship between bank rate and market rate of interest actually exists. Therefore, whenever bank rate is raised (this is known as a ***dear money*** policy), other interest rates rise in its response and the borrowing becomes less profitable which quite often results in contraction of credit. A reduction in bank rate (this is known as a ***cheap money*** policy), on the contrary, forces market rates of interest to fall. As this raises the profitability of borrowing, expansion of credit takes place.

The importance of bank rate as an instrument of credit control has declined over the years due to a number of reasons.

In the ***first place***, significant changes have occured in the credit structure over the years as a consequence of which the required flexibility in the money market is now lacking. Under the new conditions, not only saving and investment but also the quantity of money and credit do not show adequate response to changes in the bank rate.

Secondly, with the development of commercial banking on sound lines, most of the modern banks have succeeded in acquring control over massive financial resources. As these banks are financially self-reliant, they rarely approach the central bank for obtaining accomodation. Thus manipulations in bank rate by the central bank fail to excercise necessary control over the lending policy of the commercial banks.

Finally, development of other direct and more effective methods of credit control such as open market operations, changes in the minimum cash reserve requirements of commercial banks, and direct action has caused a decline in bank rate manipulations.

Reserve Requirement Changes

The central bank of a country is empowered to determine within statutory limits, the cash reserve

requirements of the commercial banks. Under this policy, the central bank requires the commercial banks to maintain a stated percentage of their deposits as reserves.

The central bank of a country can regulate the money supply in a country merely by changing the reserve requirement. An increase in the reserve requirement will mean that banks will be required to hold more reserves to support the existing amount of demand deposits. This will reduce the funds available for loans and hence lead to a reduction in credit. For example, let us suppose that the banking system has Rs. 1,000 crore in total reserves and the legal reserve requirement is 16 per cent. Under these conditions, the banking system can support $\frac{\text{Rs. } 1{,}000}{0.16}$ crore or Rs. 6,250 crore of demand deposits. Let us now suppose that the legal reserve requirement is raised to 20 per cent. Under these conditions, the banking system will now be able to support only $\frac{\text{Rs. } 1{,}000}{0.20}$ crore or Rs. 5,000 crore of demand deposits. Conversely, a decline in the reserve requirement will imply that banks are now required to hold less reserves to support the existing amount of demand deposits. This will mean that the banks will now find themselves with excess reserves and this, in turn, will increase their ability to create credit. For example, if the banking system has Rs. 1,000 crore in reserves and Rs. 5,000 crore in demand deposits, there are no excess reserves when the legal reserve requirement is 20 per cent. Now suppose that the reserve requirement is reduced to 16 per cent. Now the amount of legally required reserves is Rs. 800 crore (Rs. 5,000 crore × 0.16). Therefore, the banks have Rs. 200 crore excess reserves and they can use these reserves to create credit and thus increases the money supply. The maximum amount by which money supply can increase is given by the amount of the excess reserves multiplied by the money multiplier or excess reserves multiplied by the money multiplier or excess reserves × 1/reserve requirements = Rs. 200 crore × $\frac{1}{0.16}$ = Rs. 1,250 crore.

Increase in the legal reserve requirement tends to reduce the amount of demand deposits that the banking system can support and therefore decreases the money supply. A decreases in the legal reserve requirement tends to increase the amount of demand deposits that the banking system can support and therefore increases the money supply.

Selective Credit Control

The qualitative methods of credit regulation, also known as the selective credit controls, are distinguishable from quantitative tools of monetary management by the fact that they are directed towards particular uses of credit and not merely to total volume outstanding.

The qualitative methods of credit control operate by means of official regulations issued and enforced by the monetary authorities. They are more direct in their incidence and are quite often felt to involve a greater degree of interference with the market forces. It is perhaps this reason why as a matter of policy, Central banks in various countries have given up reliance on the selective instruments of credit control. However, they continue to be immensely popular in most of the developing countries like India. Important selective credit control measures have been as follows : (*i*) the rationing of credit, (*ii*) direct action, (*iii*) changes in margin requirements, (*iv*) regulation of consumer credit, and (*v*) moral suasion.

SOME PROBLEMS IN MONETARY POLICY

Lags in Monetary Policy. The first problem in the conduct of monetary policy is the fact that there is a substantial lag between the point in time at which the need for an expansionary (or contractionary) monetary policy is felt and the time at which that policy can really alter aggregate demand.

The question of lags (particularly outside lags) is very crucial for the proper conduct of the monetary policy. For example, if lags are short, monetary policy can perhaps be used more effectively as a stabilization tool while if they are long, monetary policy will be that much less successful. In fact, long lags can actually worsen the situation.

Presence of Financial Intermediaries. In addition to the commercial banks, a large number of other institutions also participate in the money and capital markets. These are saving and loan associations, mutual savings banks, development banks, insurance companies, pension funds etc. These institutions are known as financial intermediaries. Over a period of time, the participation of financial intermediaries has increased

considerably. Although these intermediaries cannot create money like commercial banks yet they can affect the money supply indirectly through their actions, over which the central bank has little or no control. For example, if the central bank of country decides to pursue a tight money policy and, accordingly, mops up the excess reserves of the banking sector, the ability to make loans and increase the money supply will be curtailed. However, the banking sector and financial intermediaries can frustrate the attempts of the central bank to restrict money supply by increasing the *velocity of money.*

Contradictions in Objectives. The objectives of monetary policy sometimes contradict each other and it becomes difficult to decide which objective should be pursued by the monetary authorities. This happens particularly in the case of developing countries. For example, economic growth frequently requires that the price level should rise continuously (even if at a low rate) so that the inducement to invest remains. This is all the more necessary in the case of developing countries where the odds against productive investment are quite high and private investors face an acute shortage of resources. However, as it often happens, 'the mild inflationary trends' (or 'funtional rise in prices' as they are often called) tend to get out of control and severe inflationary pressures start building up. Therefore, stability becomes a casualty of economic growth.

Underdeveloped Nature of Money and Capital Markets. The biggest limitation of monetary policy in the context of the developing countries arises from the fact that money and capital markets and financial institutions in them are "highly *unorganised,* often externally *dependent,* and spatially *fragmented.*"[9] This seriously limits the ability of the governments to control monetary variables. Their helpness can be gauged from the fact that they are neither in a position to expand and contract their money supplies nor in a position to raise or lower the costs of borrowing in the private sector.

▮▮▮▮▮ THE FISCAL POLICY ▮▮▮▮▮

Fiscal policy refers to the policy of the government as regards taxation, public borrowing and public expenditure with specific objectives in view. These objective are to produce desirable effects and avoid undesirable effects on the national income, production, employment, and general price level.

The goal in developed countries is to achieve 'economic stability' while in developing countries, the goal is to achieve 'economic development'. Therefore the objectives of fiscal policy are geared towards the achievement of economic stability in developed countries and economic development in developing countries.

The Importance of Fiscal Policy

The importance of fiscal policy as an economic tool was recognised during the period of the Great Depression of the 1930s and as a consequence of the writings of J.M. Keynes. Prior to that it was assumed that the government had a negligible positive role to play in the economy and its activities should remain restricted to the maintenance of law and order and the provisions of certain essential services to the economy. The classical dictum was that, that government is the best that governs the least. However, during the Great Depression of the 1930s it became amply evident that, left on its own, the private sector could not intiate a process of recovery since the incentive to invest was simply not there. Therefore, the government had to step in. Keynes brought out the role of government interference more emphatically when he established that there could be considerable unemployment even at the equilibrium level of national income. To solve the problem of unemployment, interference by the government in one form or the other, is a must. In a situation of rapidly increasing prices, the government has again to step in and try to restrict the total volume of expenditure in the economy. Therefore, whether it is a situation of defaltion or inflation, the responsibility of bringing back economic stability has to be borne by the government. According to Shapiro, the popularity of the fiscal policy since the 1930s is due to the following three factors:

1. The ineffectiveness of monetary policy as a means of overcoming the severe unemployment of the Great Depression.
2. The development of the 'new economics' by Keynes with its emphasis on aggregate demand.
3. The growing importance of government spending and taxation in relation to the economy's total income and output.[10]

Because of the all pervading influence of the Keynesian economics right from the 1940s to late 1960s in developed countries, fiscal policy grew in importance as the unquestioned belief was that the government could raise or lower aggregate demand through appropriately designed deliberate policies to change government purchases, expenditures and taxes. However, in the 1960s and afterward, monetarists led by Milton Friedman

attacked the Keynesian position by arguing that ***increases in government expenditure do not add to total spending but simply supplant or "crowd out" an equal amount of private expenditure.*** A parallel argument was made for decrease in tax rates. Thus, so the monetarists argued, fiscal policy merely substitutes 'government meausres' for 'private measures' leaving aggregate demand unchanged. As a result 'it is ineffective'. However same of the present day economists do not take this criticism of fiscal policy seriously. They believe that fiscal policy is an effective method to alter aggregate demand in a way and a degree that contributes to economic stabilization. Fiscal policy has a still more important role to play in the case of the developing countries which are plagued with chronic unemployment and underemployment of resources (particularly labour) and low rates of investment. In fact, according to Raja. J. Chelliah, ***the goal of fiscal policy in a developing country is the promotion of the highest possible rate of capital formation without inflation.***[11]

ECONOMIC STABILIZATION

These are two forms of fiscal policy responses to instability in an economy :

(*i*) Automatic stabilizers

(*ii*) Discretionary fiscal policy

Automatic Stabilizers

An automatic stabilizer is an expenditure programme or tax law that automatically increases expenditures (or decreases taxes) when an economy enters a recession and automatically decreases expenditures (or increases taxes) when an economy enters a period of inflation.

As is clear from this definition, automatic stabilizers refer to the ***built-in responses*** that are generated in the system without any deliberate action on the part of the government, to correct instability and thus restore economic stability in the economy. Such stabilizers are also known as ***built-in stabilizers.*** The two main automatic stabilizers that are generally discussed in economic literature are (*i*) changes in tax revenues, and (*ii*) unemployment compensation and welfare payments.

1 . Changes in Tax Revenues. As the Gross National Product (GNP) of a country rises, some people who did not have taxable income before become taxable while many tax payers are shifted into higher tax brackets. Thus tax revenues increase with an increases in GNP. This is of course the direction in which tax should move as the national income increase. Conversely, when the GNP falls, some tax payers find their incomes dropping below the taxable level on the one hand, while many tax payers fall into lower tax brackets. Thus tax revenues are reduced as GNP falls. Hence, the tax revenues again move in the direction required for stabilization.

2 . Unemployment Compensation and Welfare Payments. In many developed countries of the West unemployment compensation is paid to workers who are laid off. During recession, as more people become unemployed, unemployment compensation paid by the government to the unemployed automatically increases. This means that consumption expenditures, an important component of aggregate demand, will not fall as far as they otherwise would. During period of boom as business activity expands the number of unemployed people falls and, correspondingly, the unemployment compensation falls. Thus increase in spending is curbed and this is just what we want to see happen. This shows that unemployment compensation has an automatic stabilizing effect on the economy. Various welfare programmes also have the same effect and tend to vary countercyclically — government outlays rising when GNP falls and falling when GNP rises.

The above discussion shows that the existence of automatic stabilizers makes cyclical fluctuations in GNP smaller than they would otherwise be. However, it should be noted that, while built-in stabilizers act to reduce the size of cyclical fluctuations in GNP, they cannot prevent such cycles because the automatic changes in taxes and transfers and *induced* — that is, they occur only if and when GNP changes.

Discretionary Fiscal Policy

Dicretionary fiscal policy implies deliberate changes undertaken by the government of a country in the tax rates and planned outlays in an effort to stabilize the economy. As is clear from this definition, it is the discretionary fiscal policy that is the fiscal policy 'proper' as it entails definite and conscious actions initiated by the government of a country to alter tax rates and its own expenditures. However, two comments are in order on this conventional definition of dicretionary fiscal policy : *First,* on the revenue side, tax rates (or taxation) is not the sole tool in the hands of the government authorities. Two other important tools that have assumed considerable importance over time are (*i*) public borrowing, and (*ii*) forced saving (also known as deficit financing). *Second,* the definition given above is from the point of view of the developed countries where the

prime issue is economic stabilization. However, in the case of the developing countries, the main issue is economic development. Therefore, viewed from the perspective of the developing countries, discretionary fiscal policy would imply deliberate policy actions undertaken by the government on public revenue and public expenditure front to promote the economic development of the country.

INSTRUMENTS OF FISCAL POLICY

The main instruments of fiscal policy are taxation, public borrowings, forced saving (or deficit financing) and public expenditure.

Taxation

Taxation is the most important source of public revenue of both developed and developing countries. In fact, in the case of the latter, the size of government's development programme depends largely on the economic and administrative capacity of its tax system to marshall the necessary resources. On account of this reason, the governments of the developing countries are trying to increase the proportions of national income collected in taxes from 10 to 15 per cent to 30 to 40 per cent levels reached in developed countries like USA, UK, France, Germany, Netherlands etc. Tax revenue is usually considered under two headings : direct taxes on individuals and firms, and indirect (commodity) taxes on goods and services. Direct taxes include taxes on personal income, corporate income tax, and taxes on property and wealth. Indirect or commodity taxes include sales lax, excise duty, and customs duties (import and export duties). While developed countries depend on direct taxes more for their tax revenues, developing countries depend more on the indirect taxes.

Public Borrowing

After taxation, public borrowing is the second most important source of public revenue. It is different in nature from taxes, since all borrowing from the public must be repaid. Repayment will require the raising of resources in future when the time comes. On account of this obligation of repayment, it is customary to regard public borrowing as merely an exercise of 'fund raising' for the government while taxation is the 'income proper'. The governments can raise public debt either in the form of voluntary loan or in the form of compulsory loan. Voluntary loan is secured by the government by issuing various types of bills and securities in the money market. In the usual form of compulsory loan, bonds are issued by the government for periods ranging between five to ten years having tax free interest payment. Employees' contribution to national social security or provident fund is also a form of compulsory lending, since contributions to such funds are compulsory. The money goes to the government and the employee gets his share only on retirement or on the occurrence of certain specified events.

Resort to public borrowing to mobilise resources is a very common practice in all countries as public expenditure is rising at a much faster rate than the income through taxes. In the absence of better alternatives to meet this deficit, the governments are obliged to raise loans.

Forced Saving or Deficit Financing

A new weapon in the armoury of fiscal tools is 'forced saving'. This concept was introduced during the period of Great Depression of the 1930s to help the depressed economies of western Europe to wriggle out of the depths of depression.

The more popular name for it is 'deficit financing'. In developed countries of the West, deficit financing occurs whenever there is an excess of expenditure over current revenue receipts. Therefore, it also includes the coverage of the budgetary gaps through loans. In developing countries like India, deficit financing is tantamount to printing more currency and putting it into circulation. Deficit financing was used during the period of Great Depression in the 1930s to stimulate private investment. The argument was that this phase was characterised by a chronic deficiency in the aggregate demand leading to mass scale unemployment and underutilization of capital equipment and machinery. If, under such circumstances, the governments increased their own expenditures by initiating programmes of public works, there would be an expansion in employment. This expansion in employment would push up the level of consumption in the economy leading to a spurt in investment activity leading, in turn, to a further rise in employment, income and consumption. Thus the cycle of economic recovery will be initiated. It is now being increasingly recognised in advanced countries that deficit financing can be used not only to initiate the process of economic recovery during depression but also to reduce the intensity of the business cycles and to deal with the problem of secular stagnation. These two tasks—reducing the intensity of

business cycles and tackling the problem of secular stagnation—come within the purview of "compensatory fiscal policy."

While deficit financing has been advocated in the Western countries to increase the effective demand during periods of depression, in the developing countries it is advocated to mobilize savings and utilize resources. The total resources that the governments can mobilize from taxation, public borrowing and assistance from abroad are generally insufficient to meet the demands for investment and the gap that thus emerges is filled up through deficit financing.

Public Expenditure

Gone are the days when State was required merely to maintain law and order and leave the whole field of economic activity to the private sector. The Great Depression of the 1930s and the widespread conditions of unemployment proved beyond doubt that, left to itself, the private sector cannot hope to pull out the economy from the low ebb of stagnation. Therefore, State had to participate directly in increasing the level of investment through the creation of various public works programmes. After the Second World War, many underdeveloped countries embarked upon ambitious programmes of economic development. They realised, and quite realistically so, that the private sector does not have either the willingness or the resources to invest in infrastructure such as the laying of railway tracks, power generation, development of communications etc. Their establishment requires heavy investment while returns are low. Therefore, the responsibility of building up the infrastructure of the economy and large capital goods industries has to be borne by the government. This requires massive expansion in public expenditures. Once such investments are undertaken by the government, the private sector also benefits as it gets a conducive environment in which productive activities can be undertaken.

In the modern day world, the State has also to fulfil social obligations like the provision of cheap or free public health services, education, cheap housing facilities etc. Therefore, additional expenditures have to be incurred towards the provision of these facilities. Many developed countries provide monetary assistance to unemployed persons. This is known as unemployment compensation. Pensions to senior citizens are also provided.

Many governments also spend a huge amount of resources for providing subsidies to the farm sector. In developing countries like India while fertilizer subsidies are provided to push up agricultural productivity, food subsidy is provided to ensure regular and cheap supply of foodgrains and other essential consumer goods to the people through the fair price shops. Another popular form of subsidy is export subsidy whose purpose is to help increase export earnings by reducing the prices of export goods in international markets. Substantial public expenditure programmes are also undertaken to develop the backward regions of the economy.

▮▮▮▮▮ SOME PROBLEMS IN FISCAL POLICY ▮▮▮▮▮

Lags in Fiscal Policy. Just like monetary policy, there are lags in fiscal policy. Existence of lags reduces the effectiveness of fiscal policy. At times, fiscal actions taken to stabilize the economy can, due to the existence of lags, actually destabilize the economy. For example, let us suppose that a disturbance in the economy reduces the output below full employment level. Because of lags, it takes time for the fiscal policy to start working. By the time the full effects of the policy are evident, output might have already returned to the full-employment level even without action. But because a fiscal policy action has been taken, output would now rise above the full employment level and then fluctuate around it. Thus a fiscal policy which had actually been undertaken to stabilize the economy has, in fact, made things worse. It has actually destabilized the economy.

Problems in Tax Policy. Tax policy often lacks effectiveness due to following problems:

1. Tax laws in many countries are replete with loopholes, deductions, and special sections that benefit the higher-income groups. Tax reform is always strongly resisted. Thus, the progressive income tax turns out to be proportional one or even a regressive one. In fact, while fixed income group (the salaried class) pays income tax regularly, a large number of prosperous businessmen either go scot free or pay only a very small part of their income as tax (much less than their actual tax liability). They are helped in their efforts by loopholes in tax laws.

2. There is a large non-monetised sector in the developing countries. It is very difficult to assess the income originating in this sector. Even highly skilled tax administrators have found it difficult to evaluate the real income of farmers and other self-employed people, and in including the value of home produced and consumed food in the taxable income of the farmers.

3. In many developing countries, the largest sector is the agricultural sector. However, this is mostly exempt from taxation or is taxed very lightly. Thus a disproportionate share of the burden of taxation has to

be borne by the small monetized or market sector. This reduces the tax base considerably as the majority of large landowners (who possess immense wealth and economic power) are let off very lightly.

4. Anonymity in the ownership of wealth is another serious problem. This may be in the form of Bearer shares in the case of companies, or the system of 'benami' holdings in India. This loophole makes it difficult to tax income derived from capital or wealth in an effective way.

5. As far as the tax enforcement aspect is concerned, perhaps the most severe criticism is the inefficient and corrupt administration in developing countries. As a result, taxes are not strictly enforced resulting in a loss of revenue to the government.

Burden of Public Debt. Because of the necessity to undertake large-scale programmes of economic development, many developing countries have incurred large public debt—both internal and external—as resources generated through taxation and profits of public enterprises have been too inadequate for the purpose. Since all loans have to be repaid after some time and interest payments are to be made regularly till such date the loans are finally paid off, the burden of public debt has increased tremendously over the years. Particularly difficult to tackle has been the problem of external debt. While in the case of internal debt, repayments have to be made in terms of the domestic currency, in the case of external debt, repayments have to be made in terms of foreign currency. This is not possible unless the country earns more foreign exchange through exports. Thus, what is required is an export surplus (surplus of exports over imports). However, because of a number of constraints, the export earnings of developing countries (excluding the group of oil-exporting countries) have lagged much behind imports. This has made the repayment of external debt difficult.

The Dangers of Deficit Financing. As stated earlier, deficit financing can play a useful role during the phase of depression in a developed economy as machinery and capital equipment are already there. What is lacking is 'demand' and this can be created by pumping fresh purchasing power in the economy through deficit financing. However, in developing countries, the problem is of an entirely different nature. In these countries the capital equipment does not exist but has to be built up. Thus while newly created money (as a result of deficit financing) leads to an immediate increase in the purchasing power in the hands of the people, the production of goods does not increase simultaneously. In fact, there is likely to be a considerable time-lag in the generation of extra purchasing power and the availability of additional consumer goods. In the meantime, the level of prices increases. Many economists have argued that a mild inflationary situation is good as it provides incentives to the producers who, in the expectation of increasing profits, are likely to raise the level of production and, in the process, utilize idle capital and labour resources of the economy. In this context, Bronfenbrenner has introduced the concept of 'optimal degree of inflation'. However, the problem is 'where is the optimal degree of inflation reached?' The question is one of fact. In developing countries, the optimal degree of inflation may turn out to be very low—one which raises prices by less than say, 5 per cent per year. The experience of practically all developing countries shows that this limit has been almost always exceeded. Since deficit financing is an easy way of raising money resources, the governments of these countries are making an increasing use of it. This reckless deficit financing has generated serious inflationary pressures in these countries creating a number of problems for the poor sections and the fixed income groups. There is a rapid erosion of income and a diversion of resources into speculative and unproductive activities.

NOTES

1. Harry G. Johnson, "Monetary Theory and Policy", *The American Economic Review*, June 1962, p. 335.
2. S.B. Gupta, *Monetary Economics : Institutions, Theory and Policy* (New Delhi : S. Chand & Company Pvt. Ltd. 1988), p. 356.
3. *Ibid,* P. 337.
4. *Ibid.*, p. 363.
5. Edward Shapiro, *Macroeconomic Analysis* (Harcourt Brace Jovanovich Inc., 1978), p. 505. The spectrum of opinion ranges from the "money does'nt matter" view of the extreme Keynesians to the "only money matters" view of the extreme monetarists. Most of the economists now agree that the real position lies somewhere in between these two extreme positions.
6. Fred R. Glahe, *Macroeconomics : Theory and Policy* (Harcourt Brace Jovanovich Inc., 1977).
7. The quantity of nominal high powered money is the sum of currency, required reserves and excess reserves.
8. S.B. Gupta, *op. cit.*, pp. 366-7.
9. Michael P. Todaro, *Economic Development in the Third World* (Hyderabad : Orient Longman Ltd., 1993), p. 542.
10. Edward Shapiro. *op.cit.*, p. 486.
11. Raja J. Chelliah, *Fiscal Policy in Underdeveloped Countries* (Bombay : George Allen & Unwin (India) Private Ltd. 1969), p. 51.

CHAPTER

16 ISSUES IN ECONOMIC STABILISATION : KEYNESIAN–MONETARIST CONTROVERSY

We have noted in the chapters on economic fluctuations, and inflation and stagflation that there are always certain factors in an economy which keep on destabilising it whereas in the interest of the people there has to be economic growth with high level of employment. Obviously economic stability is a necessary condition for economic prosperity. But economists are not in agreement on the best way to stabilise the economy. Broadly they can be divided into two groups, *viz.*, Keynesians and Monetarists.

In this chapter while analysing the issues in economic stabilisation we shall address the following questions:

- What are the basics of the Keynesian and Monetarist controversy?
- What are the main features of Keynesianism ? Do changes in money supply matter in varying the size of effective demand?
- What do Keynesians mean by liquidity trap? What is its significance in the theory of effective demand ?
- What is the essence of modern monetarism ? What points are considered to be central to monetarism ?
- Under what situations fiscal and monetary policies are effective? An answer to this question can be provided in the *IS/LM* framework.
- What are the central features of supply-side economics ? In what respects does supply-side economics differ from the Keynesian approach?

THE KEYNESIAN—MONETARIST CONTROVERSY

The Keynesian-monetarist controversy has received much attention over the past four decades in macroeconomic analysis. ***Keynesians are macroeconomists whose views about the functioning of the economy are essentially an extension of Keynes's theories,*** as developed particularly in his *The General Theory of Employment, Interest and Money.* In the words of Michael Parkin

> ***"Keynesians regard the economy as being inherently unstable and as requiring active government intervention to achieve stability. They assign a low degree of importance to monetary policy and a high degree of importance to fiscal policy."***[1]

The roots of monetarism are to be found in the writings of Irving Fisher with whom the earlier version of the quantity theory of money is associated. Modern monetarism, however, was developed after World War II by Chicago's Milton Friedman and his numerous colleagues and followers. According to Michael Parkin,

> ***"Monetarists are macroeconomists who assign a high degree of importance to variations in the quantity of money as the main determinant of aggregate demand and who regard the economy as inherently stable."***[2]

▮▮▮▮▮ KEYNESIANISM ▮▮▮▮▮

The Essence of Keynesianism

We have explained in Chapter 9 that ***Keynes's theory has shown that employment/output equilibrium is usually established short of full employment level.*** It can be seen in Figure 9 that with given aggregate demand and aggregate supply functions, *OF* level of employment cannot be realised. Let *OF* be full employment level for a country. If this country desires to wipe out involuntary unemployment, the aggregate demand curve must rise, as a downward shift in the aggregate supply curve can be obtained by increasing the productivity of workers only in the long period. But in an economy plagued with serious unemployment problem, one should not hope to realise any shift in the aggregate supply curve. If the government of the country wishes to wipe out involuntary unemplyment, it must so devise its policies that the aggregate demand curve (*AD*) shifts upwards and cuts the aggregate supply curve (*AS*) at point *G*. This is what Keynes recommended in the conditions of depression that prevailed in most of the developed countries in the 1930s.

Policy for elimination of unemployment must, therefore, concentrate on raising the aggregate demand curve. Since propensity to consume in a society is relatively stable, the aggregate demand curve can be raised only by pushing up the level of investment. This may be achieved either by giving certian concessions to investors in the form of tax relief or by making institutional credit cheap. However, in a recessionary situation these policy measures may not induce investors to raise investment. The government may thus make investments in public projects. In most cases, the fiscal policy induced private investment and an increased government expenditure on development projects together will sufficiently raise effective demand and the economy will move out of the recessionary rut. The level of employment in the economy will also rise.

Keynes had written *The General Theory of Employment, Interest and Money* to explain the malaise of depression and for some time it was thought that his system applied to only recessionary situations. But Keynes's *How to Pay for the War* cleared up the point that his system applied to both deflationary and inflationary periods. Keynes had disagreed with the earlier quantity theorists on the role of money in determining aggregate demand. While quantity theorists had argued that changes in the money supply is the primary factor that determines output and price movements, Keynes was of the view that money is not that important under normal circumstances. In Chapter 21 of *The General Theory of Employment, Interest and Money,* Keynes has developed his theory of money. Keynes accepts the conclusion of the quantity theory with some reservations when he says that changes in the quantity of money will be associated with changes in general price level, though the relationship between the two will not necessarily be of direct proportionality. Moreover, he rejects causal process by which changes in money supply react upon general price level as suggested by the quantity theorists.

According to Keynes, ***an increase in the quantity of money in the first instance will lower the rate of interest.*** Disagreeing with the classical economists, Keynes argued that interest is purely a monetary phenomenon and is determined by the demand for and the supply of money. He pointed out that people hold money for various reasons. ***Their transactions and precautionary demand for money by and large is not interest elastic; it varies primarily with the level of income. The speculative demand for money is, however, influenced largely by the rate of interest.*** Now, if the supply of money in a country is designated by *M,* we may refer to that part of money supply which people hold for transactions and precautionary purposes as M_1 and to that part which people hold for speculative purposes as M_2. Thus $M = M_1 + M_2$. The rate of interest is primarily determined

by the speculative demand for money in relation to the quantity of money available for that purpose. If the quantity of money, which is exogenously determined, increases; it will have no effect on transactions demand until the level of income rises as a consequence of it. Therefore, in the short period, the whole of increase in the quantity of money will be added to the given amount of M_2 and thus the rate of interest will fall unless there is a corresponding increase in the speculative demand for money.

A lowering of the rate of interest normally induces producers to make larger investment. The classical economists have stressed that all investments are interest elastic. To Keynes, this appeared to be a distortion of reality. In his opinion, most investments depend mainly on dynamic factors like technological progress, geographical expansion, opening of new markets and growth of population, as they affect the profit expectations of entrepreneurs. The rate of interest is of course taken into consideration, because it is the cost of borrowing funds with which investments plans are carried out. Now assuming that nothing happens in the economy to change profit expectations of the investors, we can generalise that any reduction in the rate of interest will invariably induce them to make larger investment. In an economy so long as there is unemployment, this increase in effective demand for investment is associated with rising employment and output, and the general price level may not rise at all. This formulation, however, is based on some assumptions which can be stated as follows: First, if besides labour there are some other variable factors of production, their rates of remuneration change in the same proportion as the wage rate. From this it follows that the general level of prices depends partly on the wage rate and partly on the size of employment. Secondly, all the unemployed resources are homogeneous and are as much efficient as the ones already in employment. Finally, so long as unemployment is not completely wiped out, the labour is willing to accept the prevailing rate of remuneration. This implies that production is being organised under the condition of perfectly elastic supply of labour and other factors of production, and the output varies proportionately in response to changes in their employment. Having introduced these simplifying assumptions, Keynes has stated the quantity theory of money as follows:

> ***"an increase in the quantity of money will have no effect whatever on prices, so long as there is any unemployment and that employment will increase in exact proportion to any quantity of money; whilst as soon as full employment is reached, it will thenceforward be the wage unit and prices which will increase in exact proportion to the increase in effective demand."***[3]

The world is, however, much more complex and the analysis based on simplifying assumptions leads up to results which are completely divorced from the reality. It is this reason which motivated Keynes to consider possible complications after he enunciated the quantity theory of money as above. He refers particularly to the following possibilities, which in his opinion, warrant some modification in the formulation of the quantity theory based on simplifying assumptions:

1. "Effective demand will not change in exact proportion to quantity of money.
2. Since resources are not homogeneous, there will be diminishing, and not constant returns, as employment gradually increases.
3. Since resources are not interchangable, some commodities will reach a condition of inelastic supply whilst there are still unemployed resources available for the production of other commodities.
4. The wage unit will tend to rise, before full employment has been reached.
5. The remunerations of the factors entering into marginal cost will not all change in the same proportion."[4]

When all these complications are taken into consideration, it becomes evident that the response of the general price level to the changes in the quantity of money is usually not the same as suggested by the simplified quantity theory of money. According to Keynes, ***all those who are interested in analysing an economy's response to changes in money supply, should first consider the effects of changes in the quantity of money on the effective demand. The increase in effective demand, in his opinion, will not generally spend itself fully in an increase in output and employment when there is unemployment. Both output and prices will rise. Nevertheless, the rate of increase in the general price level is likely to depend upon the severity of unemployment.***

Keynes has thus stated, ***"instead of constant prices in conditions of unemployment, and of prices rising in proportion to the quantity of money in conditions of full employment, we have in fact a condition of prices rising gradually as employment increases."***[5]

IMPACT OF CHANGES IN MONEY SUPPLY ON THE EFFECTIVE DEMAND

Major defect of the quantity theory approach is that it does not assign any explicit role to the rate of interest. Keynes in his theory of prices eminently overcomes this weakness of the neo-classical formulation. According to him, the primary effect of a change in the money supply on effective demand and thus on prices is through its influence on the rate of interest. Introducing a simplifying assumption that there is no other reaction to change in the quantity of money, the quantitative effect on the price level could be derived from the liquidity preference schedule, the investment demand schedule and the investment multiplier. The liquidity preference schedule tells us how the demand for money is functionally related to the rate of interest. Therefore, when the money supply increases, one can easily know from the liquidity preference schedule by how much the rate of interest should fall so as to make its absorption by the willing holders possible. The investment demand schedule tells us how much a given fall in the rate of interest will increase investment. This rise in investment will result in increase in both income and output levels. In the first instance, the national income or the output will increase by the amount of investment but in a subsequent period the income will rise due to increase in consumption spending. The investment multiplier tells us by how much a given increase in investment will increase the national income or the output as a whole.

Extreme Keynesianism

Modern Keynesianism in nutshell implies that a change in money supply has little effect on the level of aggregate demand while a change in government expenditure or in taxes has a large and predictable effect on aggregate demand. An extreme Keynesian asserts that money does not matter.

Modern macroeconomics has shown that there are two circumstances in which a change in money supply will have no effect on aggregate demand. These are:

(*i*) A vertical investement demand curve

(*ii*) A horizontal demand curve for real money.

When the investment demand curve is vertical, investment is perfectly interest inelastic. In this situation interest rates changes resulting from monetary policy measures will have no effect on aggregate demand expenditure. In other words, monetary policy has no useful role to play. A horizontal demand curve for real money implies that people are willing to hold any amount of money at a given rate of interest. This situation is called a ***liquidity trap.***

The significance of the concept of liquidity trap is that at a relatively very low rate of interest, the wealth holders would like to hold their entire assets in the form of money, because at this rate of interest the opportunity cost of holding assets in money form is zero. The phenomenon of liquidity trap shows that once this situation develops, it is not possible for monetary authorities to bring about further decline in the rate of interest by increasing the quantity of money. Hence, their capacity to induce investment and raise employment is exhausted.

Some followers of Keynes consider the concept of liquidity trap as an important contribution of Keynes in the field of monetary theory. However, Keynes himself regarded that the possiblity of the occurence of liquidity trap was remote. His scepticism in this regard was clear when he wrote that "whilst this limiting case might become practically important in future, I know of no example hitherto. Indeed, owing to the unwillingness of most monetary authorities to deal boldly in debts of long terms, there has not been much opportunity for a test. Moreover, if such a situation were to arise, it would mean that the public authority itself could borrow through the banking system on an unlimited scale at a nominal rate of interest."[6] ***Most empirical studies also do not support the view that liquidity trap actually exits.*** Tobin had in an early empirical study found that around an interest rate of 2 per cent per annum liquidity trap existed in the USA, during the early 1930s.[7] Since then the empirical studies of Bronfenbrenner and Mayer, Allan H. Meltzer, R. Teigen and David E.W. Laidler have shown that evidence for the existence of liquidity trap is tenuous. Laidler after reviewing the various empirical studies on liquidity preference remarks, "Now perhaps none of this evidence demonstarates conclusively that the liquidity trap could not exist, but it certainly seems to show that it has never been a factor of particular importance in the economic history of the United States, at least in this century."[8]

Extreme Keynesians, however, still belive that both of the conditions — a vertical investment demand curve and a horizontal demand curve for real money — prevail. Monetary policy will be of little consequence if even one of these two circumstances exists. But for good measure, extreme Keynesians assert that both of these situations do not exist in reality.

MONETARISM

The Roots of Monetarism

Monetarism holds that the money supply is the main determinant of movements in the general price level and nominal GNP.

This approach has been inspired from the earlier versions of the quantity theory of money which emphasised ***propotionality between changes in the supply of money and the changes in the price level.*** Irving Fisher is considered to be the chief exponent of the earlier quantity theory.

The quantity theory of money, as it has been stated by Irving Fisher and others who emphasise proportionality between the changes in the money supply and the changes in the general price level, is based on the following assumptions:

First, the volume of circulating money, *i.e., M* is determined exogenously. This, as a matter of fact, is a common classical assumption and needs no elaboration.

Secondly, relying on Say's law of markets, which precludes any possibility of less than full employment, the quantity theory assumed that the volume of trade, i.e., *T* would remain fixed.

Thirdly, the velocity of money, *i.e., V* is assumed to be institutionally constant on the ground that factors which determine the behaviour of *V,* such as, payments habits, the liquidity preference, the propensity to consume and the development of banking and credit institutions change only very slowly.

Irving Fisher has stated the quantity theory of money in the form of an equation or identity known as the "equation of exchange" given as

$$MV = PT$$

where *M* stands for the quantity of circulating money, *V* stands for transactions velocity of circulation, *P* stands for the price level and *T* stands for the volume of trade. The quantity theory expressed in this form is not a theory of demand for money, but a theory which relates the quantity of money to the aggregate demand for goods and services and thence to price level.

To some economists Fisher's equation constitutes a mere tautology, because they believe that *MV* equals *PT* by definition. They often argue that since *V* is defined as

$$\frac{PT}{M}$$

the formula is not considered to describe an equation but rather an identity.

This criticism, however, is misplaced. The $MV = PT$ identity, if is taken so, can be easily converted into the quantity theory of money under the assumption that *V* and *T* are stable in the short run and that *P* is a dependent variable. With *T* and *V* constant, the assumption that *P* is passive means that *P* changes equi-proportionately in response to changes in *M.* Kenneth Boulding considers Fisher's equation as a powerful tool in the analysis of monetary problems, at the same time he warns that it must be used with great caution. A relaxation of the assumption that *V* is constant, will reduce its usefulness for predicting price movements as a results of changes in *M.* "A rise in the quantity of money will not cause a rise in prices if it is offset either by a decline in *V* or an increase in *T.* The usefulness of the quantity theory as a rough explanation of large changes in the price level lies in the fact that over short periods, at any rate, the possibilities of variation in *V* and *T* are much less than the possibility of variation in *M."*[9]

Modern Monetarism

Modern monetary economics has been developed by Chicago's Milton Friedman after World War II. Working quietly on his version of quantity of theory of money, he alongwith some other economists challenged the Keynesian approach to macroeconomics and emhasised the importance of monetary policy in macroeconomic stabilisation. Friedman's views were given the name "monetarism" by Karl Brunner, another advocate of steady money supply growth rules. Anna J.Schwartz, Alan H.Meltzer, Thomas Mayer and Phillip Cagan are some other architects of modern monetarism. During the 1970s and 1980s monetarism had a large following among economists the world over. According to Samuelson and Nordhaus,

"The monetarist approach postulates that the growth of money determines nominal GNP in the short run and prices in the long run. This analysis operates in the framework of the quantity theory of

prices and relies on the analysis of trends in velocity. Monetarists argue that the velocity of money is relatively stable (or in extreme cases constant). If correct, this is an important insight, for the quantity equation shows that, if V is constant then movements in M will affect PQ (or nominal GNP) proportionally."[10]

Like all serious schools of thought, monetarists are anything but a unified group. Responses of various monetarists to Keynesianism are not exactly the same. However, the following two points are central to monetarism:

1. Money supply growth is the primary determinant of nominal GNP growth. Monetarism holds that nominal aggregate demand is determined largely by changes in the supply of money. Further, the major economic variables such as aggregate output, employment and prices are affected mainly by money rather than fiscal policy. Thus the essence of monetarism is that "only money matters".

Monetarists, belief in primacy of money is based on two central propositions. ***First,*** as Freidman has stated, "There is an extraordinary empirical stability and regularity to such magnitude as income velocity that cannot but impress anyone who works extensively with monetary data." Second, the demand for money is interest inelastic. The second proposition is, however, now discredited and abandoned.

2. Prices and wages are flexible. According to monetarists, because money is the primary determinant of nominal GNP and prices and wages are flexible around potential output, money affects mainly prices. Its effect on real output is only modest and for a short time.

During the 1970s and 1980s monetarism exercised great influence on economic policies world over. ***Monerarists often advocate free markets approach. But their foremost contribution has been their assertion of fixed monetary rules in preference to discretionary fiscal and monetary policies.*** Ignoring the harsh reality of the depression of the 1930s monetarists argue that the private economy is stable and the government policies destabilise it.

Thus the cardinal principle of the monetarist approach is a monetary rule: optimal monetary policies determine a fixed rate at which the supply of money has to grow and this rate of money supply growth is to be held through all economic conditions.

The United States adopted this policy in the late 1970s. This monetarist experiment was successful in containing inflation. However, real GNP stagnated from 1979 to 1982, and unemployment rate rose from under 6 per cent to a peak of 10.5 per cent in 1982. Hence, it was confirmed that money works but not without high cost. Further, in this period the claim of monetarists that velocity of money is relatively stable turned out to be incorrect. Velocity of money was extremely unstable in 1982 in the USA. This implies that the basic assumption of monetarism has doubtful validity.

Now extreme monetarism which advocates constant money supply growth for economic stabilisation does not find many supporters. As a result of statistical investigations, we know that ***both fiscal and monetary actions influence aggregate demand and thus both fiscal and monetary policies are relevant for economic stabilisation.***

EFFECTIVENESS OF MONETARY AND FISCAL POLICIES

IS/LM analysis is a particular Keynesian construction. However, during the 1960s and 1970s all groups attempted to interpret their views within the *IS/LM* framework. We shall also follow this tradition and discuss the effectiveness of the monetary and fiscal policies within the *IS/LM* approach. ***The effectiveness of the fiscal and monetary policies varies according to the elasticity of the IS and LM schedules.***

Elasticity of *LM* and *IS* Schedules

Elasticity of *LM* Schedule. We had derived the *LM* schedule in Figure 13.3 in Chapter 13 assuming a fixed money supply. We noted there that the ***LM schedule has a positive slope with two extreme positions. At a very low rate of interest, the LM curve is a horizontal straight line indicating perfect elasticity.*** In this case the rate of interest has fallen to such a low level that everyone expects it to rise in future. Thus no one would be willing to exchange money for securities and thus all additions to money balances will be hoarded. Thus the demand for speculative balances approaches infinity at this rate of interest. ***The horizontal range of the LM curve is known as liquidity trap or the Keynesian range. It is known as the Keynesian range because,***

in this range monetary policy is totally ineffective and it was the ineffectiveness of the monetary policy that Keynes had emphasized in his analysis. ***At the other extreme, when the rate of interest becomes very high, the LM curve turns vertical indicating perfect inelasticity.*** In Figure 16.1 the *LM* curve turns vertical at interest rate *i'*. At this high rate of interest, the demand for speculative balances becomes zero and money is demanded only for transactions purposes (at a very high rate of interest, people prefer to hold only securities and not idle balances). The verical range of the *LM* curve is known as the ***classical range*** as it is consistent with the classical theory wherein money is demanded only for transactions purposes. ***In the classical range fiscal policy it totally ineffective. In between the Keynesian range and the classical range lies the intermediate range. In this range both the transactions demand and the speculative demand for money exist, depending upon the rate of interest i and the level of income Y.*** The elasticities in the three ranges are shown in Figure 16.1

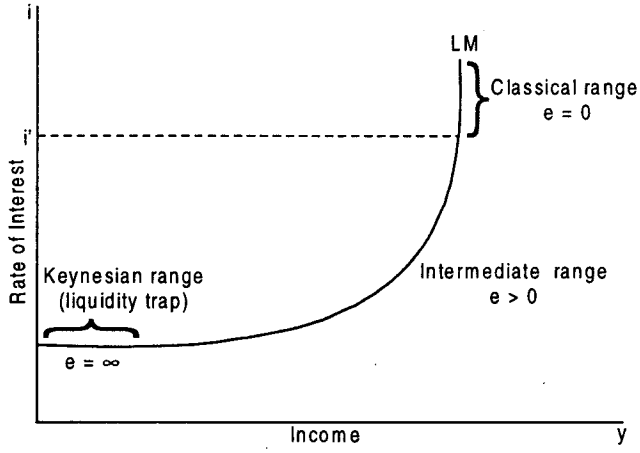

FIG. 16. 1 Elasticity of the *LM* schedule.

Elasticity of *IS* schedule. As far as the elasticity of the *IS* schedule is concerned, it depends upon the responsiveness of investment to changes in the rate of interest and on the magnitude of the multiplier. If the investment spending schedule is perfectly inelastic, indicating that investment is independent of the rate of interest, income will also be independent of the rate of interest. In such a case, the *IS* curve derived in quadrant 4 of Figure 13.1 in Chapter 13 will be vertical (*i.e.,* perfectly inelastic). If, on the other hand, the investment demand schedule shows some elasticity, as is generally expected, the *IS* curve will be more elastic, the lower the marginal propensity to save. This is due to the reason that lower the value of the marginal propensity to save, the higher is the value of multiplier, so that any change in investment, resulting from a fall in the interest rate, will have a greater effect on income.

Fiscal Policy

The effectiveness of fiscal policy under the three different ranges — the Keynesian range, the classical range and the intermediate range — would be clear from a persual of Figure 16.2.

1. In the Keynesian range or the liquidity trap, the fiscal policy is very effective. Let us start from the equilibrium rate of interest i_0 and the equilibrium level of income Y_0 determined by the point of intersection of the *LM* curve and the IS_0 curve. Let us now suppose that either there is an increase in *G* or a reduction in *T* or both so that the *IS* curve shifts from IS_0 to IS_0'. To increase *G* it is necessary to borrow from the public (as the money supply has been held constant.) This is a 'pure' fiscal policy measure. As *G* increases, *Y* increases by the full multiplier times the increase in *G*. This is due to the reason that in the liquidity trap range, rate of interest remains constant and, therefore, investment spending is not affected. In the figure, the increase in *G* causes the level of income to rise from Y_0 to Y_0'. Thus fiscal policy is very effective in the liquidity trap region.

2. In the intermediate range of the *LM* curve, fiscal policy is effective in raising the level of income but not as effective as in the Keynesian range. Let us consider the *IS* curve IS_1 in the intermediate range. The point of intersection of this curve with the *LM* curve gives the equilibrium level of income as OY_1 and the rate of interest i_1. Let us suppose that *G* increases and this increase is again financed by borrowing from the public

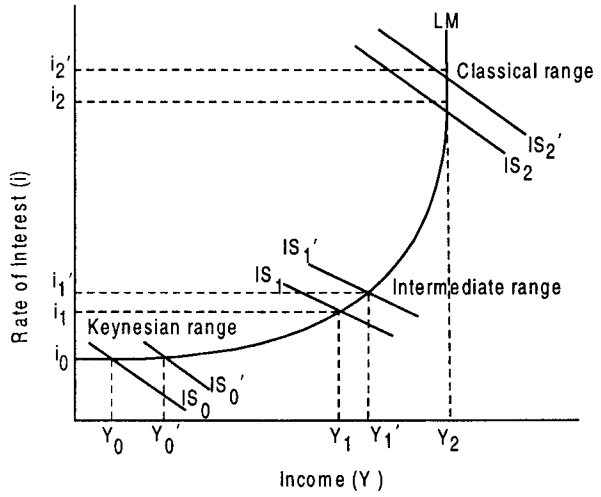

FIG. 16.2. Effectiveness of fiscal policy

(*i.e.* by selling securities). The sale of securities to raise finances will push up the interest rate because people had adjusted to the old rate, i_1, and would insist on a higher rate to part with their speculative balances. Because of this increase in the rate of interest, the level of investment falls, and the expansionary effect of the fiscal policy is therefore partially negated (this would be clear from the fact that the rise in income from Y_1 to Y_1' in the intermediate range is less than the rise in income from Y_0 to Y_0' in the Keynesian range.)

3. In the classical range, the fiscal policy is not effective at all. Consider for example the IS_2 curve which cuts the *LM* curve at the point where the classical range starts. The equilibrium level of income is Y_2 and the equilibrium rate of interest i_2. Let us now suppose that the government wants to increase expenditure. Since the speculative balances at i_2 rate of interest are zero, the only way of financing the government expenditure is to borrow funds from the private sector by increasing the interest rates subsantially so that the return on government securities is greater than the prospective yield on private investment. In fact, the private sector will have to be induced to reduce investment spending in direct proportion to the amount borrowed by the government. Thus any increase in *G* will be matched by an equal reduction in private investment so that the level of income remains unchanged at the level Y_2. Only the rate of interest rises from i_2 to i_2'. The 'crowding out' effect is thus total and the fiscal policy has no effect on the level of income. Thus fiscal policy is completely ineffective in the classical range.

Monetary Policy

The effectiveness of the monetary policy in the three different ranges — The Keynesian range, the intermidiate range and the classical range — would be clear from a persual of Figure 16.3.

1. In the Keynesian range of the *LM* curve, monetary policy is totally ineffective. For example, in Figure 16.3, the *IS* curve is IS_0 which cuts the LM_0 curve in the Keynesian range. The equilibrium level of income determined is Y_0 and the equilibrium rate of interest is i_0. In this liquidity trap region, all increases in the money supply are simply added to the idle money balances (as people withhold all balances in expectation of a rise in the rate of interest). Thus no part of an increase in money supply moves into transactions purposes and, accordingly, there is no effect on the level of income.

2. In the classical range of the *LM* curve monetary policy is completely effective. Consider, for example, the Y_3, i_3 equilibrium defined by the intersection of the IS_2 schedule and the LM_0 schedule. An increase in money supply shifts the *LM* curve from LM_0 to LM_1 increasing the equilibrium level of income from Y_3 to Y_4 and reducing the equilibrium rate of interest from i_3 to i_4. In the classical range, the interest rate is so high that speculative balances are zero and money is held for transactions purposes only. As the monetary authorities purchase securities, they bid up the prices of these securities and reduce the rate of interest. As security prices are bid up and the interest rate is pushed down, investment is stimulated. "Since nobody chooses to hold idle cash, expansion of the money supply will produce a new equilibrium only by reducing the interest rate by whatever amount is necessary to increase the income level sufficiently to absorb the full increase in the money supply in transactions balances."[11] This means that interest rates will continue to fall and that investment will

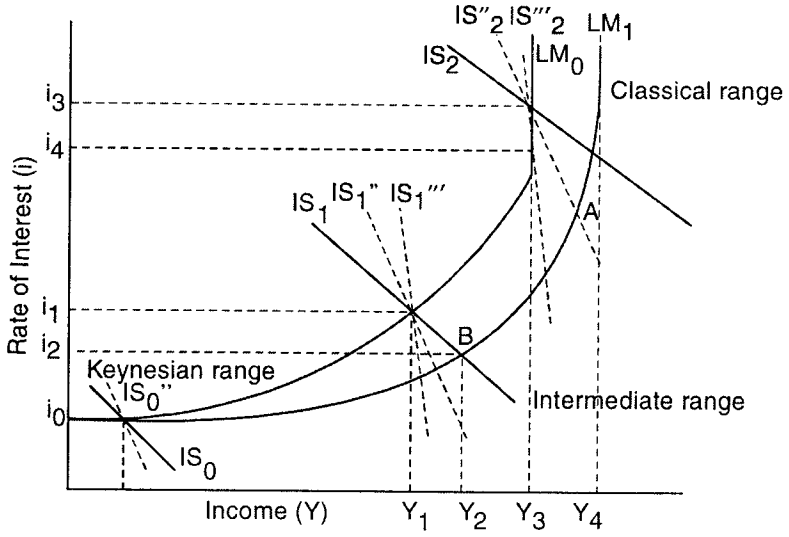

FIG. 16.3. Effectiveness of monetary policy

continue to rise until the idle balances are absorbed. This result is given by the qunatity theory, where $M = kY$ and $\Delta M = k\ \Delta Y$. The change in income is given by $\Delta Y = \Delta M / k$, because all the increase in money supply, ΔM, must be absorbed into transactions balances. Thus in the classical range monetary policy is completely effective.

3. In the intermediate range an increase in money supply raise the level of income but not as much as in the classical range. While in the Keynesian range, the entire increase is absorbed in speculative balances and in the classical range the entire increase is used for transactions pruposes, in the intermediate range, the increase in money supply is absorbed partly in speculative balances and partly in transactions balances. Thus, an increase in money supply succeeds in raising the level of income but by not as much as in the classical range. Consider, for example the point of intersection of IS_1 curve with LM_0 curve which determines the equilibrium level of income as Y_1 and the equilibrium rate of interest as i_1. Let us suppose that the money supply increases leading to a shift in LM curve from LM_0 to LM_1. As can be seen from the figure, the level of income rises from Y_1 to Y_2. In order for the increase in money supply to increase the level of income, it must affect investment through a reduction in the rate of interest. However, a reduction in the rate of interest raises the desire of wealth holders to hold speculative balances. Therefore, although investment increases as a result of a fall in the rate of interest, it does not increase as much as in the classical case (the part of increase in money supply that goes to add to speculative balances is not spent against goods.) Thus although income increases as a result of increase in investment spending, the rise is less as compared with the classical case. The idle balances increase with a fall in the rate of interest, and limit the growth of income by limiting the increase in investment (note in Figure 16.3 that increase in income in the intermediate range, Y_1Y_2 is less than the increase in income in the classical range, Y_3Y_4).

The above discussion may be summed up as follows:

1. ***In the Keynesian range of liquidity trap, the monetary policy is completely ineffective in raising the level of income while in the classical range it is completely effective.***
2. ***As against this, the fiscal policy alone is effecitive in raising the level of income in the Keynesian range but it fails to achieve this purpose in the classical range.***
3. ***In the intermediate range both, the monetary and fiscal policies are partially effective.*** In this range, an expansionary fiscal policy can be expected to raise both the rate of interest and the level of income while an expansionary monetary policy lowers the rate of interest as it raises the level of income.

The Effect of Elasticity

Consider Figure 16.3 again. In this Figure the dotted *IS* curves indicate relatively inelastic schedules. A glance at the figure shows that monetary policy is less effective in the case of these relativity inelastic curves. Consider the classical range first. In this range, the relatively inelastic IS_2'' curve cuts the LM_1 curve at point

A indicating a lower level of income than the income that resulted when the *IS* curve was IS_2. Not only this, even to attain this lower level of income growth, the rate of interest must fall by a substantial amount. If we assume a still more inelastic *IS* curve as the curve IS_2''', no increase in money supply and no reduction in interest rate will be able to raise the income level from Y_3 to Y_4. However, in the case of the Keynesian range (the liquidity trap situation) the elasticity or inelasticity of the *IS* curve is irrelevant. The new *IS* curve IS_0'' which is inelastic *vis-a-vis* the earlier *IS* curve IS_0 continues to yield the same equilibrium level of income Y_0 at unchanged rate of interest i_0. Next turn to the intermediate range. The relativity inelastic *IS* curve IS_1'' will result in a lesser increase in income *vis-a-vis* the earlier curve IS_1 as the new point of intersection *B* implies a lesser income in comparison to Y_2. If the *IS* curve is still more inelastic like the IS_1''' curve, monetary policy can do very little to increase the level of income even in the intermediate range. In such a situation only fiscal policy is effective. Moreover, the effects of an expansionary fiscal policy on income will not be significantly neutralised by adverse monetary effects in this case. A shift in the inelastic *IS* function will raise the rate of interest but this will have little feedback effect on spending. Keynes maintained that the investment schedule (as well as the saving schedule) was interest inelastic. In such a case, the *IS* schedule must also be inelastic, and fiscal policy, which is completely effective in the Keynesian range, would be almost as effective in the intermediate range.

SUPPLY-SIDE ECONOMICS

One approach to macroeconomic policy was extremely popular in the United States during the 1980s. The approach, know as ***supply-side-economics*** had influenced the fiscal policies of the Reagan administration. The roots of the modern supply-side economics can be easily traced into the classical economics, particularly in Say's Law of Markets.

Say's Law of Markets

Say's Law of Markets can be stated as follows:

The very act of production implies an equivalent demand for goods and services, since the aim of each producer must be either to satisfy his own wants directly, or to exchange his output for other commodities. Thus ***"supply creates its own demand" — that is , the production of a supply of goods and services creates an equal demand for these goods and services.***

Say's Law is obvious in a barter economy where goods are exchanged for goods. Supply of a good in such an economy is the direct source of the demand for some other commodity. In a money economy, the operation of the law is not so obvious as the producers offer their wares in exchange for money. However, the classical economists argued that producers want money not as end in itself but for the sake of what it will buy: money is merely a medium of exchange used to avoid the awkwardness of barter. It is a 'veil' which conceals the fact that 'what constitutes the means of payment for commodities is simply commodities?' "The supply of any particular commodity, then, is *ipso facto* a demand for others, and it follows that the mass of goods and services produced in the whole economy is *both* aggregate supply and aggregate demand at the same time. It may happen, of course, that supply exceeds demand in the market for a particular commodity, but this would merely imply a corresponding excess of demand over supply in some other market or markets. It is logically impossible, under Say's Law, for the sum of demands in all markets to be greater or less than the sum of supplies, since they are merely two ways describing the very same thing."[12]

This description of Say's Law of Markets is based on the following simplifying assumptions:

1. Whatever income is received by households is immediately spent on goods and services, thus the average propensity to consume is 1. A corollary to this assumption is that there is no saving and no hoarding of money.
2. The government does not perform any economic function, and thus there is no government expenditure, taxation, subsidies or public borrowing.
3. It is a 'closed' economy, which implies absence of any trade or financial relationship with other economies.

Thus the economy under consideration is a two-sector economy in which economic activity is confined only to what firms and households do. In such an economy the money flows between the firms and the households correspond to the real flows of productive resources and goods and services. Households offer various productive services to firms and in return firms pay for these services in money. Wages, rent, interest and profits are