SECTORAL DEMAND FUNCTIONS: CONSUMPTION AND INVESTMENT

Chapter Outlines.....

- Cross Section Data And Trends
- Consumption Function Theories

  A) Keynesian Consumption Function

  B) Duesenberry's Relative Income Hypothesis

  C) Friedman's Permanent Income Hypothesis

  D) Ando-Modigliani Life Cycle Hypothesis
- Marginal Efficiency Of Capital (MEC)
- Marginal Efficiency Of Investment (MEI)
- Relation Between The MEC (Capital Stock) And The MEI (Investment)
- Stability And Slope of I S Curve
- Fiscal Policy And Investment

BACKGROUND CROSS SECTION DATA AND TRENDS

Consumer expenditure runs about 65 percent of GNP in the United States; so any analysis of the factors determining the level of GNP must be concerned with consumer expenditure at some point. Analytically, in 1936 Keynes made the consumption function the basic element in the income-expenditure approach to the determination of national income. We have seen in Part II that the consumption function is the principal building block in multiplier analysis.

The short-run consumption function that Keynes introduced is shown in Fig. 11.1, which plots real consumer expenditure c against real income y. This function reflects the observation that as incomes increase people tend to spend a decreasing percentage of income. The slope of a line from the origin to a point on the consumption function gives the average propensity to consume (APC), or the c/y ratio at that point. The slope of the consumption function itself is the

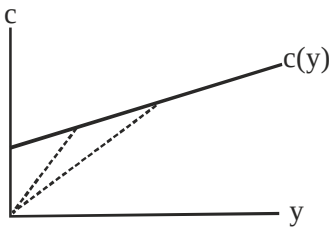

Figure-11.1 Keynes' Consumption function

Marginal Propensity to consumer *(MPC)* , Using the notation of Part II, if C = *c (y), MPC = c'*. From the graph it should be clear that the marginal propensity to consume is less than the average propensity to consume. If the ratio *c/y* falls as income rises, the ratio of the increment to c to the increment to *y,c'*, must be smaller than *c/ y.* Keynes saw this as the behaviour of consumer expenditure in the short run over the duration of a business cycle. He reasoned that as income falls relative to recent levels, people will protect consumption standards by not cutting consumption proportionally to the drop in income, and conversely as income rises, consumption will not rise proportionally.

The same kind of reasoning can also be applied to cross-sectional budget studies. Given a social standard of consumption, one would expect the proportion of income saved to rise as income rises. In the late 1930s cross-sectional budget studies were examined to see if Keynes' assumption that "rich people save proportionally more" was borne out. In general, these budget studies seemed to verify the theory.

Acceptance of the theory that MPC<APC, so that as income rises c/y falls, led to the formation of the stagnation thesis around 1940. It was observed that if consumption followed this pattern, the ratio of consumption demand to income would decrease as

income grew. The problem for fiscal policy that the stagnation thesis poses can be seen as follows. If is the condition for equilibrium growth of real output y, and there is no reason to assume that i/y will rise as the economy grows, then g/y must increase to balance the c/y drop to maintain full-employment demand as y grows. In other words, unless government spending increases at a faster rate than income, the economy will not grow but will stagnate.

During World War II, as government purchases soared, the economy did expand rapidly. However, many economists, following the stagnation thesis, feared that when the war ended and government spending was reduced, the economy would plunge back into depression. Yet precisely the opposite occurred. Private demand increased sharply when the war ended, causing inflation rather than recession. Why did this happened? One plausible explanation is that during the war people had earned large increases in income but consumer expenditure was curbed by rationing. Consumers put their excess funds, the savings "forced" by rationing, into assets in the form of government bonds. When the war ended, people had an excess stock of assets that they converted into increased consumption demand. This phenomenon suggests that assets, as well as level of income, have something to do with consumption. In other words, for a given level of income, consumption may also be a function of assets or wealth.

In 1946 Simon Kuznets published study of consumption and saving behavior dating back to the Civil War. Kuznets' data pointed out two important things about consumption behaviour. First, it appeared that on average over the long run the ratio of consumer expenditure to income, c/y or APC, showed no downward trend, so the marginal propensity to consume equaled the average propensity to consume as income grew along trend. This meant that along trend the c= c(y) function was a straight line passing through the origin, as shown in Figure 11.2, Kuznets' and c/y ratio was below the long-run average occurred during boom periods, and years with c/y above the average occurred during periods of economic slump.

This meant that the c/y ratio varied inversely with income during cyclical fluctuations, so that for the short period corresponding to a business cycle empirical

studies would show consumption as a function of income to have a slope like that of the short-run functions of Figure 11.2 rather than the long-run function.

Thus by the late 1940s it was clear that a theory of consumption must account for three observed phenomena:

1. Cross-sectional budget studies show s/y increasing as y rises, so that in cross sections of the population, *MPC<APC.*
2. Business cycle, or short-run, data show that the c/y ratio is smaller than average during boom periods and greater than average.during slumps, so that in the short run, as income fluctuates, *MPC<APC.*

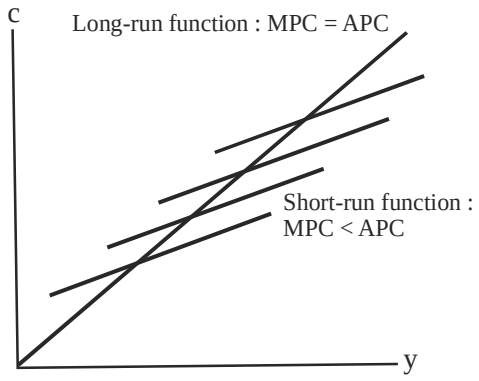

Fig. 11.2 Long sun and short run Consumption function

3. Long-run trend data show no tendency for the c/y ratio to change over the long run, so that as income grows along trend.

In addition, a theory of consumption should be able to explain the apparent effect of wealth on consumption that was observed after World War II.

THEORIES OF THE CONSUMPTION FUNCTION KEYNES' CONSUMPTION FUNCTION: THE ABSOLUTE INCOME HYPOTHESIS

Keynes in his General Theory postulated that aggregate consumption is function of aggregate current disposable income. The relation between consumption and income is based on his Fundamental Psychological Law of Consumption which states that when income increases consumption expenditure also increases but a smaller amount.

The Keynesian consumption function is written as:

$$C = a + cY \qquad a > 0 \qquad 0 < c < 1$$

Where a is the intercept, a constant which measures consumption at a zero level of disposal income; c is the marginal propensity to consume (MPC), and Y is the disposal income.

The above relation that consumption is a function of current disposable income whether linear or non-linear, is called the absolute income hypothesis. This consumption function has the following properties.

1. As income increases, average propensity to consume *(APC = C/Y)* falls.
2. The marginal propensity to consume (MPC) is positive but less than unity ($0 < c < 1$) so that higher income leads to higher consumption.
3. The consumption expenditure increases (or decreases) with increase (or decrease) in income but non-proportionally. This non-proportional consumption function implies that in the short-run average and marginal propensities do not coincide *(APC > MPC)*.

4. This consumption function is explained in Fig. 12.1 where C = a + cY is the consumption function. At point E_0 on the C curve the income level is OY, At this point, *APC* > *MPC* where *APC* = OC_1/OY_1, and *MPC* = $\Delta C/\Delta Y = ER/RE_a$. This shows disproportional consumption function. The intercept a shows the level of consumption corresponding to a zero level of income. At income level OY_0. Where the curve C intersects the 45º line, point E_0, represents *APC* $(=OC_0/OY_0)$. Below the income level OY_0, consumption is more than income. In this range, APC>1. Above the income level OY_0, consumption increases less than proportionately with income so that APC declines and it is Eless than one.

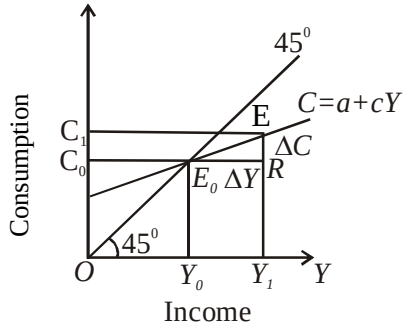

Fig 12.1

Empirical Studies

Keynes put forth this hypothesis on the basis of "knowledge of human nature" and "detailed facts of experience". His followers in a number of empirical studies based on cross-section budget figures and short-run time series data in the late 1930s and mid 1940 confirmed his hypothesis. They found that families with higher income levels consumed more which confirms that MPC is greater than zero (c>0), but by less than the increase in income (c<1). They also found that families with higher income levels saved more and so consumed a smaller proportion of income which confirms that APC falls as income rises.

The Consumption Puzzle

Keynes' assertion that the APC falls as income rises led some Keynesians to

formulate the secular stagnation thesis around 1940. According to these economists, as income grew in the economy, households would save more and consume less. As a result, aggregate demand would fall short of output. If the government spending was not increased at faster rate than income, the economy would lapse into stagnation. But after World War II, the American economy experienced inflation rather than stagnation even when the government expenditures were reduced below 1941 level in constant dollars. The Keynesian consumption function had been proved wrong. This was due to the conversion of government bonds into liquid assets after the War by the households in order to meet their pent up demand for consumer goods.

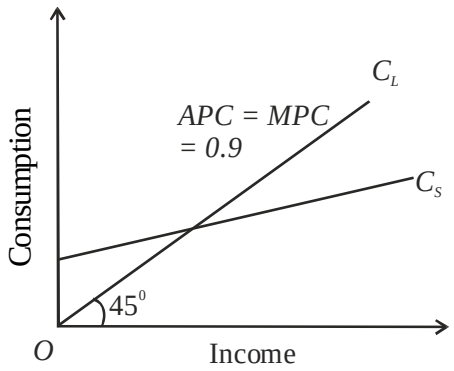

Fig 12.2

In 1946, Kuznets studied the consumption and income data for the United States during the period 1969-1938 and estimated the consumption function for this period as 0.9.[1] Further, he arrived at two conclusions': *one*, over the long-run, on the average, the APC did not show any downward trend so that the *MPC* equaled the *APC* as income increased long a long-run trend. This means that the consumption function is a straight line through the origin, as shown by the C_L line in Fig. 12.2, and *two*, the years in which the APC was below the long-run average were boom periods, and the years in which the APC was above the long-run average were of slump periods. This implies that in the short-run as income changes over the business cycle, the MPC is less than the APC, as shown by the CS curve in Fig. 12.2. These findings were later verified by Goldsmith in 1955 who found the long-run consumption function to be stable at 0.87,2

Thus these two studies revealed that for the short-run time series, the consumption function is not-proportional, *APC > MPC* and for the long-run time series, the consumption function is proportional, *APC=MPC.* The failure of the secular stagnation hypothesis and the findings of Kuznets and Goldsmith were a puzzle to the economists which is known as the consumption puzzle. Figure 12.2 illustrates this puzzle where there are two consumption functions. C_S is the Keynesian consumption function which is non-proportional *(APC>MPC)* and based on the short-run time series data. C_L is the long-run proportional consumption function *(APC=MPC)* based on long-run time series data. Over the year, economists have been engaged in solving this puzzle by reconciling the two consumption functions.

We study below few important theories which try to reconcile the two consumption functions.

THE DRIFT THEORY OF CONSUMPTION

One of the first attempts to reconcile the short-run and long-run consumption functions was by Arhur Smithies[3] and James Tobin[4], They tested Keynes' absolute income hypothesis in separate studies and came to the conclusion that the short-run relationship between consumption and income is non-proportional but the time series data show the long-run relationship to be proportional.

The latter consumption-income behaviour results through an upward shift or "drift" in the Tobin discuss the following factors:

1. **Asset Holdings.** Tobin introduced asset holdings in the budget studies of negro and white families to test this hypothesis. He came to the conclusion that the increase in the asset holdings of families tends to increase their propensity to consume thereby leading to an upward shift in their consumption function.

2. **New Products.** Since the end of the Second World War, a variety of new household consumer goods have come into existence at a rapid rate. The introduction of new products tends to shift the consumption function upward.

3. **Urbanization.** Since the post-War period, there has been an increased tendency toward urbanization. This movement of population from rural to urban areas has tended to shift the consumption function upward because the propensity to consume of the urban wage earners is higher than that of the farm workers.

4. **Age Distribution.** There has been a continuous increase in the percentage of old people in the total population over the long-run. Though the old people do not earn but they do consume commodities. Consequently, the increase in their numbers has tended to shift the consumption function upward.

5. **Decline in Saving Motive.** The growth of social security system which makes automatic saving and guarantees income during illness. Unemployment disability and old age has increased the propensity to consume.

6. **Consumer Credit.** The increasing availability and convenience of short-term consumer credit shifts the consumption function upward. The greater ease of buying consumer goods with credit cards, debit cards, use of ATMs and cheques, and availability of installment buying causes an upward shift in the consumption function.

7. **Expectation of Income Increasing.** Average real wages of workers have increased and they expect them to rise in the future. These cause an upward shift in the consumption function. Those who expect higher future earnings tend to reduce their savings or even borrow to increase their present consumption. The consumption drift theory is explained in Fig. 12.3 where C_L is the log-run consumption function which shows the proportional relationship between consumption and income as we move along it. C_{S1} and C_{S2} are the short-run consumption functions which cut the long-run consumption function C_L at points A and B. But due to the factors mentioned above, they tend to "drift" upward from point A to point B along the C_L curve. Each point such as A and B on the C_L curve represents an average of all the values of factors included in the corresponding short-run functions, C_{S1} and C_{S2} respectively and the long-run function, C_L, connecting all the average values. But the movement along the dotted portion of the short-run consumption functions, CS1 and CS2 would cause consumption not to increase in proportion to the increase in income.

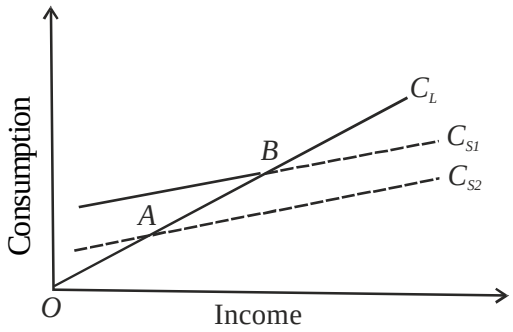

Fig 12.3

Criticisms:

The great merit of this theory is that it lays stress on factors other than in income which affect the consumer behaviour. In this sense, it represents a major advance in the theory of the consumption function. However, it has its shortcomings.

1. The theory does not tell the rate of upward drift along the CL curve. It appears to be a matter of chance.
2. It is just a coincidence if the factors explained above cause the consumption function to increase proportionately with increase in income so that the average of the values in the short-run consumption function equals a fixed proportion of income.
3. According to Duesenberry, all the factors mentioned as causes of the upward shift are not likely to have sufficient force to change the consumption-savings relationship to such an extent as to cause the drift.
4. Duesenberry also points out that many of the factors such as decline in saving motive would lead to a secular fall in the consumption function. Such saving plans as life insurance and pension programs tend to increase savings and decrease the consumption function. Moreover, people want more supplementary savings to meet post-retirement needs which tend to decrease their current consumption.

THE RELATIVE INCOME HYPOTHESIS

The Relative Income Hypothesis of James Duesenberry is based on the rejection of the two fundamental assumptions of the consumption theory of Keynes. Duesenberry states that (1) every individual's consumption behaviour is not independent but interdependent of the behaviour of every other individual, and (2) that consumption relations are irreversible and not reversible in time.

In formulating his theory of the consumption function, Duesenberry writes; "A real understanding of the problem of consumer behaviour must begin with a full recognition of the social character of consumption patterns," By the "social character of consumption patterns" he means the tendency in human beings not only, "to keep up with the Joneses" but also to surpass the Joneses. Joneses refers to rich neighbours. In other words, the tendency is to strive constantly towards a higher consumption level and to emulate the consumption patterns of one's rich neighbours and associates. Thus, consumers' preferences are independent. It is, however, differences in relative incomes that determine the consumption expenditures in a community. A rich person will have a lower APC because he will need a smaller portion of his income to maintain his consumption pattern. On the other hand, a relatively poor man will have a higher APC because he tries to keep up with the consumption standards of his neighbours or associates. This provides the explanation of the constancy of the long-run APC because lower and higher APCS would balance out in the aggregate. Thus even if the absolute size of income in a country increases, the APC for the economy as a whole at the higher absolute level of income would be constant. But when income decreases, consumption does not fall in the same proportion because of the Ratchet Effect.

The Ratchet Effect

The second part of the Duesenberry theory is the "past peak of income". hypothesis which explains the short-run fluctuations in the consumption function and refutes the Keynesian assumption that consumption relations irreversible. The hypothesis states that during a period of prosperity, consumption will increase and gradually adjust itself to a higher level. Once people reach a particular peak income level and become accustomed

to this standard of living, they are not prepared to reduce their consumption pattern during a recession. As income falls, consumption declines but proportionately less than the decrease in income because the consumer dissaves to sustain consumption. On the other hand, when income increases during the recovery period, consumption rises gradually with a rapid increase in saving. Economists call this the Ratchet Effect.

Duesenberry combines his two related hypothesis in the following form:

$$\frac{C_t}{Y_t} = a - c\,\frac{Y_t}{Y_0}$$

Where C and Y are consumption and income respectively, t refers to the current period and the subscript (*0*) refers to the previous peak, a is constant relating to the positive autonomous consumption and c is the consumption function. In this equation, the consumption-income ratio in the current period (C_1/Y_1) is regarded as function of Y_1/Y_0, that is, the ration of current income to the previous peak income. If this ratio is constant, as in periods of steadily rising income, the current consumption income ratio is constant. During recession when current income (Y_1) falls below the previous peak income (Y0) the current consumption income ratio (C_1/Y_1) will increase.

The relative income hypothesis is explained graphically in Fig. 12.4 where C_L is the long-run consumption function and C_{S1} and C_{L2} are the short-run consumption functions. Suppose income is at the peak level of O_{Y1} where E_1Y_1 is consumption. Now income falls to OY_0 Since people are used to the standard of living at OY_1 level of income, they will not reduce their consumption to E_0/Y_0 level, but reduce it as little as possible by reducing their current saving. Thus they move backward along the C_{S1} curve to point C_1 and be at C_1Y_0 level of consumption. When the period of recovery starts, income rises to the previous peak level of OY_0. But consumption increases slowly from C_1 to

E_1 along the C_{S1} curve because consumers will just restore their previous level of savings. If income continues to increase to OY_2 level, consumers will move upward along the C_L curve from E_1 and E_2 on the new short-run consumption function C_{S1}. If another recession occurs at OY_2 level of income, consumption will decline along the C_{S2} consumption function toward C_2 point and income will be reduced to OY_1 level. But during recovery over the long-run, consumption will rise along the steeper C_L path till it reaches the short-run consumption function C_{S1}.

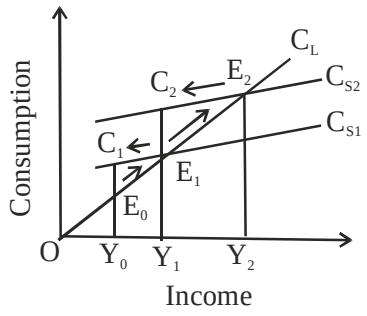

Fig 12.4

This is because when income increases beyond its present level OY_1, the APC becomes constant over the long-run. The short-run consumption function shifts upward from Cs_1 to Cs_2 but consumers move along the C_L curve from E1 to E_2. But when income falls, consumers move backward from E_2 to C_2 on the Cs_2 curve. These upward and downward movements from C_1 and C_2 points along the C_L curve give the appearance of a ratchet. This is the ratchet effect. The short-run consumption function ratchets upward when income increases in the long run but it does not shift down to the earlier level when income declines. Thus the ratchet effect will develop whenever there is a cyclical decline or recovery in income.

Its Criticisms

Although the Duesenberry theory reconciles the apparent contradictions between budget studies and short-term and long-term time series studies, yet it is not without its deficiencies.

1. **No Proportional Increase in Consumption.** The relative income hypothesis assumes a proportional increase in income and consumption. But increases in income along the full employment level do not always lead to proportional increases in the consumption.

2. No Direct Relation between Consumption and Income. This hypothesis assumes the relation between consumption and income to be direct. But this has not been borne out by experience. Recessions do not always lead to decline in consumption, as was the case during the recessions of 1948-49 and 1974-75.

3. **Distribution of Income not Unchanged.** This theory is based on the assumption that the distribution of income remains almost unchanged with the change in the aggregate level of income. If with increases in income, a redistribution occurs towards greater equality, the APC of all persons belonging to the relatively poor and relatively rich families will tend to be reduced. Thus the consumption function will not shift upward from C_{S1} to C_{S2} when income increases.

4. Reversible Consumer Behaviour. According to Micheal Events, "The consumer behaviour is slowly reversible over time, instead of being truly irreversible. Then previous peak income would have less effect on current consumption, the greater the elapsed time from the last peak." Even if we know how a consumer spent his previous peak income, it is not possible to know how he would spend it now.

5. Neglects other Factors. The hypothesis is based on the assumption that changes in consumer's expenditure are related to his previous peak income. The theory is weak in that it neglects other factors that influence consumer spending such as asset holdings, urbanization, changes in age-composition, the appearance of new consumer goods, etc.

6. Consumer Preferences do not Depend on Others. Another unrealistic assumption of the theory is that consumer preferences are interdependent whereby a consumer's expenditure is related to the consumption patterns of his rich neighbour. But this may not always be true. George Katona's' empirical study has revealed that expectations and attitudes play n important role in consumer spending. According to him, income expectations based on levels of aspirations and the attitudes toward asset holdings affect consumer spending behaviour more than demonstration effect.

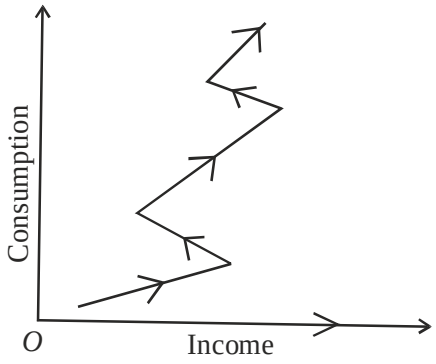

Fig 12.5

7. Reverse Lightning Bolt Effects. Smith and Jackson have criticized Duesenberry's empirical evidence that the recovery in income after recession is not caused by ratchet effect. Rather, the consumption experience of consumer is similar to the reverse lightning bolt effect. That is why the consumer gradually increases his consumption due to his inconsistent habit stability with the increase in his income after recession. This is shown in Fig. 12.5 where the levels of consumption with the increments in income have been shown by arrows as reverse lightning bolt takes place.

THE PERMANENT INCOME HYPOTHESIS

Another solution to the apparent contradiction between the proportional long-run and non-proportional short-run consumption function is Friedman's permanent income hypothesis. Friedman rejects the use of "current income" as the determinant of consumption expenditure and instead divides both consumption and income into "permanent" and "transitory" components, so that

$$Ym \text{ or } Y = Y_P + Y_t \qquad \ldots(1)$$

And $$C = C_P + C_t \qquad \ldots(2)$$

Where P refers to permanent, t refers to transitory, Y to income and C to consumption. Permanent income is defined as "the amount a consumer unit could consume (or believes that it could) while maintain its wealth intact. "I is the main income of a family unit which in turn depends on its time-horizon and farsightedness." includes non-

human wealth that it owns, the personal attributes of earners in the unit.. the attributes of the economic activity of the earners such as the occupation followed, the location of economic activity, and so on."

Y being the consumer's measured income or current income, it can be larger or smaller than his permanent income in any period. Such differences between measured and permanent income are due to the transitory component of income (Y_1). Transitory income may rise or fall with windfall gains or losses and cyclical variations. If the transitory income is positive due to windfall gain, the measured income will rise above the permanent income. If the transitory income is negative due to theft, the measured income falls below the permanent income. The transitory income can also be zero in which case measured income equals permanent income.

Permanent consumption is defined as "the value of the services that it is planned to consume during the period in question." Measured consumption is also divided into permanent consumption (C_p) and transitory consumption (C_t). measured consumption (or current consumption) may deviate from or equal permanent consumption depending on whether the transitory consumption is positive, negative or zero, Permanent consumption (C_p) is a multiple (k) of permanent income, Y_p.

$$CP = kY_P$$

And $$k = f(r, w, u)$$

Therefore, $$C_P = k(r, w, u)\ Y_P \qquad \ldots(3)$$

where k is a function of the rate of interest (r), the ratio of property and non-property income to total wealth or national wealth (w), and the consumer's propensity to consume (u). This equation tells that over the long period consumption increases in proportion to the change in YP. This is attributable to a constant k($=C_p/Y_p$) which is independent of the size of income. Thus k is the permanent and average propensity to consume and *APC = MPC*.

Friedman analysis the offsetting forces which lead to this result. To take the rate of interest (r), there has been a secular decline in it since the 1920s. This tends to raise the value of k. But there has been a long-run decline in the ratio of property

and non-property income to national wealth (*w*) which tends to reduce the value of *k*. The propensity to consume has been influenced by three factors. First, there has been a sharp decline in the farm population which has tended to increase consumption with urbanization. This has led to increase of *k*. Second, there has been a sharp decline in the size of families. It has led to increase in saving and reduction in consumption thereby reducing the value of *k*. Third, larger provision by the state for social security. This has reduced the need for keeping more in savings. It has increased the tendency to consume more resulting in the rise in the value of *k*. The overall effect of these off-setting forces is to raise consumption in proportion to change in the permanent income component.

Therefore, there is a proportional relation between permanent income and consumption.

$$C_P = kY_P \qquad \ldots(4)$$

where k is the coefficient of proportionality in which APC and MPC are endogenous and it depends upon the above mentioned factors. In other words, it is that proportion of fixed income which is consumed. Now take permanent income which is based on time series. Friedman believes that permanent income depends partly on current income and partly on previous period's income. This can be measured as

$$Y_{PT} = aY_t + (1 - a)\, Y_{t-1} \qquad \ldots (5)$$

where Y = permanent income in the current period, Yt = current income in the current period, Y_{t-1} = previous period's income, a = ratio of change in income between current period (*t*) and previous period (t–1).

This equation tells that permanent income is the sum of current period's income (Y_t) and previous periods income (Y_{t-1}) and the ratio of income change between the two (a). If the current income increases at once, there will be small increase in permanent income. For the permanent income to increase, income will have to be raised continuously for many years. Then only people will think that it has increased.

By integrating equations (4) and (5), short-run and long-run consumption function can be explained as

$$Ct = kY_{pt} = kaY_t + k\ (1 - a)\ Y_{t-1} \quad \ldots(6)$$

where C_t = current period consumption, *ka* = short-run MPC, *k* = long run *MPC* and $k\ (1\text{-}a)\ Y_{t-1}$ is the intercept of short run consumption function.

According to Friedman, *k* and *ka* are different from one another and k > ka. Further, k = 1 and ka = 0.

Equation (6) tells that consumption depends both on previous income and current income. Previous income is important for consumption because it helps in forecasting the future income of people.

Its Assumptions

Given these, Friedman gives a series of assumptions concerning the relationships between permanent and transitory components of income and consumption.

1. There is no correlation between transitory income and permanent income.

2. There is no correlation between permanent and transitory consumption.

3. There is no correlation between transitory consumption and transitory income.

4. Only differences in permanent income affect consumption systematically.

Explanation of the Theory

These assumptions give the explanation of the cross-section results of Friedman's theory that the short-run consumption function is linear and non-proportional, i.e. *APC>MPC* and the long-run consumption function is linear and proportional, i.e., *APC = MPC*. Figure 12.6 explains the permanent income hypothesis of Friedman where C_L, is the long-run consumption function which represents the long-run proportional relationship between consumption and income of an individual where *APC = MPC*. C_S is the non-proportional short-run consumption function where measured income includes

both permanent and transitory components. At OY income level where C_S and C_L curves coincide at point E., permanent income and measured income are identical and so are permanent and measured consumption as shown by YE.

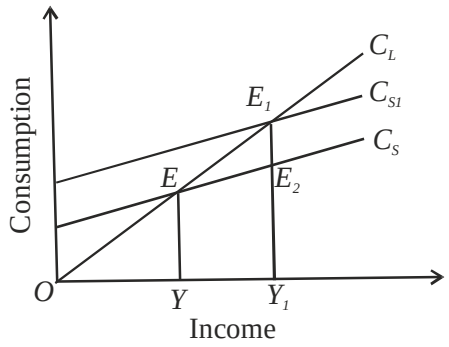

Fig 12.6

At point E, the transitory factors are non-existent. If the consumer's income increases to OY_1, he will increase his consumption consistent with the rise in his income. For this, he will move along the C_S curve to E_2 where his measured income in the short-run is OY_1 and measured consumption in Y_1E_2. The reason for this movement from E to E_2 is that during the short-run the consumer does not expect the rise in income to be permanent, so APC falls as income increases. But if the OY_1 income level becomes permanent, the consumer will also increase his consumption permanently. Now his short-run consumption function will shift upward from C_S to C_{S1} and intersect the long-run consumption function C_L at point E_1. Thus the consumer will consume Y_1E_1 at OY1 income level. Since he knows that the increase in his income OY1 is permanent, he will adjust his consumption Y1E1 accordingly on the long-run consumption function C_L at E_1 where *APC = MPC*.

Its Criticisms

This theory has been criticized on the following counts:

1. **Correlation between Temporary Income and Consumption.** Friedman's assumption that there is no correlation between transitory components of consumption and income is unrealistic. This assumption implies that with the increase or decrease

in the measured income of the household, there is neither any increase or decrease in his consumption, because he either saves or dissaves accordingly. But this is contrary to actual consumer behaviour. A person who has a windfall gain does not deposit the entire amount in his bank account but enjoys the whole or part of it on his current consumption. Similarly, a person who has lost his purse would definitely cut or postpone his present consumption rather than rush to the bank to withdraw the same amount of money to meet his requirements.

2. **APC of all Income Groups not Equal.** Friedman's hypothesis states that the APC of all families, whether rich or poor, is the same in the long-run. But this is against the ordinary observed behaviour of households. It is an established fact that low-income families do not have the capacities to save the same fraction of their incomes as the high income families. This is not only due to their meager incomes but their tendency to prefer present consumption to future consumption in order to meet their unfulfilled wants. Therefore, the consumption of low-income families is higher relative to their incomes while the saving of high-income families is higher relative to their incomes. Even in the case of persons at the same level of permanent income, the level of saving differs and so does consumption.

3. **Use of Various terms Confusing.** Friedman's use of the terms "permanent", "transitory", and "measured" have tended to confuse the theory. He concept of measured income improperly mixes together permanent and transitory income on the one hand, and permanent and transitory consumption on the other.

4. **No Distinction between Human and Non-human Wealth.** Another weakness of the permanent income hypothesis is that Friedman does not make any distinction between human and non-human wealth and includes income from both in a single term in the empirical analysis of his theory.

Conclusion. Despite these weaknesses, "it can be fairly said", according to Micheal Evans, "that the evidence supports this theory and that Friedman's formulation has reshaped and redirected much of the research on the consumption function."

THE LIFE CYCLE HYPOTHESIS

Ando and Modigliani have formulated a consumption function which is known as

the Life Cycle Hypothesis. According to this hypothesis, consumption is a function of lifetime expected income of the consumer. The consumption of the individual consumer depends on the resources available to him, the rate of return on capital, the spending plan, and the age at which the plan is made. The present value of his resources includes income from assets or wealth or property' and from current and expected labour income. Thus his total resources consist of his income and wealth.

Its Assumptions

The life cycle hypothesis is based on the following assumptions:

1. There is no change in the price level during the life of the consumer.
2. The rate of interest paid on assets is zero.
3. The consumer does not inherit any assets and his net assets are the result of his own savings.
4. His current savings result in future consumption.
5. He intends to consume his total lifetime earnings plus current assets.
6. He does not plan any bequests.
7. There is certainty about his present and future flow of income
8. The consumer has a definite conscious vision of life expectancy.
9. He is aware of the future emergencies, opportunities and social pressures which will impinge upon his consumption spending.
10. The consumer is rational.

Its explanation

Given these assumptions, the aim of the consumer is to maximize his utility over his lifetime which will, in turn, depend on the total resources available to him during his life time. Given the life-span of n individual, his consumption is proportional to these resources. But the proportion of resources that the consumer plans to spend will depend on whether the spending plan is formulated during the early or later year of his life. As a

rule, an individual's average income is relatively low at the beginning of his life and also at the end of his life. This is because in the early years of his life, he has little assets (wealth) and during the late years his labour-income is low. It is, however, in the middle of his life that his income, both from assets and labour, is high. As a result, the consumption level of the individual throughout his life is somewhat constant or slightly increasing, shown as the CC_1 curve in Fig. 12.7, the Y_0YY_1 curve shows the individual consumer's income stream during his lifetime T. During the early period of his life represented by T_1 in the figure., he borrows or dissaves CY_0B amount of money to keep his consumption level CB which is almost constant. In the middle years of his life represented by T_1T_2, he saves BSY amount to repay his debt and for the future. In the last years of his life represented by T_2T, he dissaves SC_1Y_1 amount.

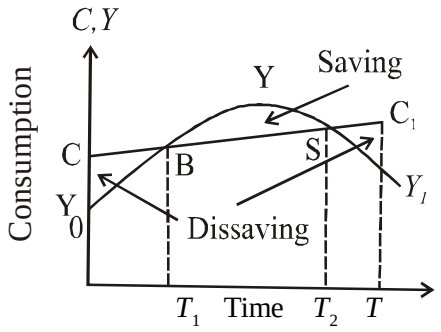

Fig 12.7

According to this theory, consumption is function of lifetime expected income of the consumer which depends on his resources. In some resources, his current income (Y_t) present value of his future expected labour income (Y^e_{1t}) and present value of assets (A_t)

The consumption function can be expressed as :

$$C_t = f(V_t) \quad \ldots (1)$$

where V = total resources at time t.

and $V_t = f(Y_t + Y^e_{Lt} + A_t)$ …(2)

By substituting equation (2) in (1) and making (2) linear and weighted average of different income groups, the aggregate consumption function is

$$C_1 = \alpha_1 Y_1 + \alpha_2 Y_1 + \alpha_3 A_1 \quad \ldots(3)$$

Where $\alpha 1$ = MPC of current income, α_2 MPC of expected labour income; and α_3 = MPC of assets or wealth.

Nc $\frac{C_t}{Y_t} \alpha_1 + \alpha_1 \frac{Y^e}{Y_t} + \alpha_1 \frac{A_t}{Y_t}$

APC is constant in the long-run because a portion of labour income in current income and the ratio of total assets to current income are constant when the economy grows. On the basis of the life cycle hypothesis, Ando and Modigliani make a number of studies in order to formulate the short-run and long-run consumption functions. A cross-section study revealed that more persons in the low-income groups were at low income level because they were at the end period of their lives. Thus their APC was high. On the other hand, more than average persons belonging to the high-income groups were at high income levels because they were in the middle years of their lives. Thus their APC was relatively low. On the whole, the APC was falling as income rose thereby showing *APC* > *MPC*. The observed Data for the U.S revealed the APC to be constant at 0.7 over the long-run.

The Ando-Modigliani short-run consumption function is shown by the C_S curve in Fig. 12.8. At any given point of time, the C_S curve can be considered as a constant and during short-run Income fluctuation, when wealth remains fairly constant, it looks like the Keynesian consumption function. But its intercept will change as a result of accumulation of wealth (assets) through savings. As wealth increases overtime, the non-proportional short-run consumption function C_S shifts upward to C_{S1} to trace out the long run proportional consumption function. The long-run consumption function is C_L, showing a constant APC as income grows along the trend. It is a straight line passing through the origin. The APC is constant over time because the share of labour income in total income and the ratio of wealth (assets) to total income are constant as the economy

grows along the trend.

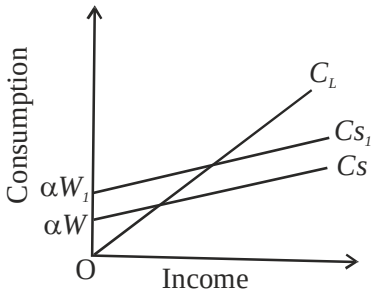

Fig 12.8

Its Implications

1. The life cycle hypothesis solves the consumption puzzle. According to this hypothesis, the short-run consumption would be non-proportional as in the short-run time series estimates. Its intercept (αW) in Fig. 12.6 measures the effect of wealth and the life cycle consumption function looks like the Keynesian consumption function as C_S in the figure But it holds only in the short run when wealth is constant. As wealth grows (αW_1), this consumption function shifts upward as CS1. The shifting of the Cs to C_{S1} traces out the long-run consumption function C_L. This is consistent with the evidence from long-run time series data that the long-run consumption function is proportional. The slope of the C_L curve shows that the average propensity to consume does not fall as income increases. In this way, Audo-Modigliani solved the consumption puzzle.

2. The life cycle hypothesis reveals that savings change over the life time of a consumer. If a consumer starts his life in adulthood with no wealth, will save and accumulate wealth during his working years. But during retirement, he will save and run down his wealth. Thus the life cycle hypothesis implies that the consumer wants smooth and uninterrupted consumption over his lifetime. During working years, he saves and when retires, he dissaves.

3. The life cycle hypothesis also implies that a high -*income family consumes a smaller proportion of his income* than a low-income family. In its peak earning years,

its income is more than its consumption and its APC is the lowest. But in the case of a low-income family and a retiree family, the APC is high.

Its Criticisms

The life cycle hypothesis is not free from certain criticisms.

1. **Plan for Lifetime Consumption Unrealistic.** The contention of Ando and Modigliani that a consumer plans his consumption over his lifetime is unrealistic because a consumer concentrates more on the present rather than on the future which is uncertain.
2. **Consumption not directly related to Assets.** The life cycle hypothesis pre-supposes that consumption is directly related to the assets of an individual. As assets increase, his consumption increases and vice versa. This is also unwarranted because an individual may reduce his consumption to have larger assets.
3. **Consumption depends on Attitude.** Consumption depends upon one's attitude towards life. Given the same income and assets, one person may consume more than the other.
4. **Consumer not Rational and Knowledgeable.** The hypothesis assumes that the consumer is rational and has full knowledge about his income and future litetime. This is unrealistic because no consumer is fully rational and knowledgeable.
5. **Estimation of Variables not Possible.** This theory depends on many variables such as current income, value of assets, future expected labour income, etc., the estimation of so many variables is very difficult and not possible constraints for a consumer. Even if he possesses a definite and conscious vision of future income, he may have little opportunity for borrowing in the capital market on the basis of expected future income. As a result, consumption may response more to changes in current income than predicted on the basis of the life cycle hypothesis.

Conclusion. Despite these, the life cycle hypothesis is superior to the other hypotheses on consumption function because it includes not only wealth as a

variable in the consumption function but also explains why APC> MPC in the short-run and APC is constant in the long-run.

SUMMARY

1. Consumption function is the name for the general income consumption relationship.

2. When real income is increased, aggregate consumption is also increased but not of same proportion.

3. Consumption is a function of income :

   [(c= f(y)]

4. Average propensity to consume is a relationship between total consumption and total income in a given period of time:

   $$APC = \frac{c}{y}$$

5. Marginal propensity to consume is mere mental change in consumption as a result [illegible] nent in income. MPC is ratio of change in consumption to ch $MPC = \frac{\Delta C}{\Delta Y}$.

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

6. General equation for linear consumption function is

   C = C +cy

7. $MPS = \frac{\Delta S}{\Delta Y}$ pensity to save is the ratio of change in saving to change in

   $$MPS \frac{\Delta S}{\Delta Y}$$

8. Decrease in marginal efficiency of capital can be avoided if level of consumption can be increased with the rise in income.

9. Keynesian consumption hypothesis is known as absolute income hypothesis.

10. Consumption function is concerned with the expenditure which consumer incurs on purchase of commodities as well as services at various income levels.

11. Consumption expenditure of community depends on - total income which will be spent on consumption, interest rate and post savings.

12. Absolute income hypothesis is that individual consumer determines what fraction of current income he will devote to consumption on the value of Absolute level of that income.

13. Relative income hypothesis rests on habitual social behaviour and attitude.

14. According to Milton Friedman's the permanent income hypothesis, consumer consider income be well received in future as well.

15. Life cycle hypothesis views individuals, instead, planning consumption and savings over long period of time with the intention of allocating their consumption in best possible manners over entire life period.

QUESTIONS

1. What difference is generally noticed between the short run and long run behaviour of the consumption function? How do you explain these differences?

2. Explain Keynes Absolute Income Hypothesis. Discuss the evidence that support and that do not support his hypothesis.

3. Explain fully the consumption puzzle.

4. What is the Relative Income hypothesis for explaining the aggregate consumption behaviour? Is it an improvement on the Absolute Income Hypothesis of Consumption?
5. Discuss critically Friedman's Permanent Income Hypothesis of Consumption.
6. Examine critically the Life Cycle Consumption Hypothesis.
7. Discuss the Drift theory of consumption.

DETERMINANTS OF THE LEVEL OF INVESTMENT

Introduction

Our concern in this chapter is to analyze of capital and investment and study relationship between capital budgeting and rates of investment. If at any point of situation actual stock equalizes profit maximizing stock, an excess of the latter over former will appear subsequently only if market rate of interest declines or if MEC Schedule shifts upward. Either variation will produce positive rates of net investment. For short-run analysis indicated rates of net investment may remain unchanged. However in the long-run, rise in stock of capital resulting from net investment will depress MEI Schedules. This long-run result considers that growth in stock of capital produces a movement along on MEC Schedule which slopes downward. However, net investment spending rates actual stock of capital to profit maximizing level indicated by a given market rates of interest and a MEC Schedule, which may have shifted and thus there will be shift in MEI Schedule and also a change in rate of net investment. Now, it is understood the mechanics by which variation in profit maximizing capital stock are translated into variation in investment rate. We will concentrate on factors that produce shifts in or movement along MEC Schedule and thus produce change in profit maximizing capital stock.

DETERMINANTS OF THE LEVEL OF INVESTMENT

Marginal Efficiency of Capital (MEC)

The marginal efficiency of capital is the highest rate of return expected from an additional unit of a capital asset over its cost. In the words of Kurihara, "It is the ratio between the prospective yield of additional capital goods and their supply price. "The

prospective yield is the aggregate net return from an asset during its life time, while the supply price is the cost of producing this asset. If the supply price of a capital asset is Rs. 20,000 and its annual yield is Rs. 2,000 the marginal efficiency of this asset is $\frac{2000}{20000} x 100 = 10$ percent. Thus the marginal efficiency of capital (MEC) is the *percentage of profit expected from a given investment on a capital asset.*

Keynes relates the prospective yield of a capital asset to its supply price and defines the *MEC* as "equal to the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital assets during its life just equal to its supply price."[1]

Symbolically, this can be expressed as:

$$S_P = \frac{R_1}{(1+i)^1} + \frac{R_2}{(1+i)^2} + \frac{R_n}{(1+i)^n}$$

Where SP is the supply price or the cost of the capital asset; R_1, R_2… and R_n are the prospective yields or the series of expected annual returns from the capital asset in the years, 1, 2…. And *n*, and i is the rate of discount which makes the capital asset exactly equal to the present value of the expected yield from it. This i is the *MEC* or the rate of discount which equates the two sides of the equation. If the supply price of a new capital asset is Rs. 1,000 and its life is two years, it is expected to yield Rs. 550 in the first year and Rs. 605 in the second year. Its MEC is 10 per cent which equates the supply price to the expected yields of this capital asset.

Thus

$$(S_P)\,\text{Rs.}1000 = \frac{550}{(1.10)} + \frac{605}{(1.10)^2} = \text{Rs.}\,500 + 500$$

In equation (1), the term $\frac{R_1}{(1+i)}$ is the present value (PV) of the capital

Asset. The present value is "the value of payments to be received in the future." It depends on the rate of interest at which it is discounted.

Suppose we expect to receive Rs. 100 from a machine in a year's time and the rate of interest is 5 percent. The present value of this machine is

$$\frac{R_1}{(1+1)} = \frac{100}{(1.05)} = \text{Rs. } 95.24$$

If we expect Rs. 100 from the machine after two years then its present value is

$$\frac{100}{(1.05)^2.} = \text{Rs.}90.70$$

The present value of a capital asset is inversely related to the rate of interest. The lower the rate of interest, the higher is the present value, and vice versa. For instance, if the rate of interest is 5 per cent, *PV* of an asset of Rs. 100 for one year will be Rs. 95.24; at 7 per cent interest rate, it will be Rs. 93.45; and at 10 per cent interest rate, it will be Rs. 90.91.

The relation between the present value and the rate of interest is shown in Figure 13.1, where the rate of interest is taken on the horizontal axis while the present value of the project on the vertical axis. The curve PR shows the inverse relation between present value and rate of interest. If the cu $\frac{R_1}{1+1} = \frac{100}{(1.05)} = \text{Rs. } 95.24$ the present value of the project is P_1. On the other hand, a highe l lead to a lower present value P_2 and when the present value curve *(PR)* cuts the horizontal axis at point *(Z)*, the net present value becomes zero.

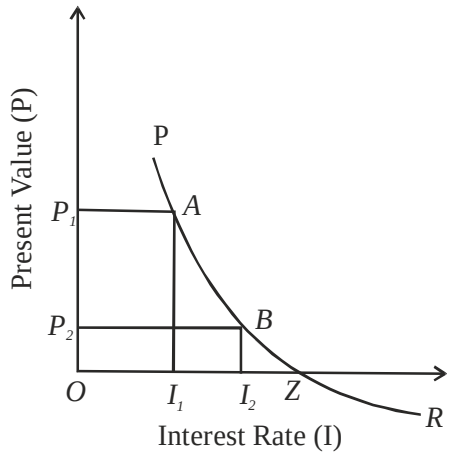

Fig. 13.1

As a matter of fact, the MEC is the expected rate of return over cost of a new capital asset. In order to find out whether it is worthwhile to purchase a capital asset, it is essential to compare the present value of the capital asset with its cost or supply price. If the present value of a capital asset exceeds its cost of buying, it pays to buy it. On the contrary, if its present value is less than its cost, it is not worthwhile investing in this capital asset.

The same results can be had by comparing the *MEC* with the market rate of interest. If the *MEC* of a capital asset is higher than the market rate of interest at which it is borrowed, it pays to purchase the capital asset, and vice versa. If the market interest rate equals the *MEC* of the capital asset, the firm is said to possess the optimum capital stock. If the *MEC* is higher than the rate of interest, there will be a tendency to borrow funds in order to invest in new capital assets. If the *MEC* is lower than the rate of interest, no firm will borrow to invest in capital assets. Thus the equilibrium condition for a firm to hold the optimum capital stock is where the *MEC* equals the interest rate. Any disequilibrium between the *MEC* and the rate of interest can be removed by changing the capital stock, and hence the *MEC* or by changing the rate of interest or both. Since the stock of capital changes slowly, therefore, changes in the rate of interest are more important for bringing equilibrium. The above arguments which have been applied to a firm are equally applicable to the economy. Figure 13.2 shows the *MEC* curve of n economy. It has a negative slope (from left to right downward) which indicates that the higher the *MEC*, the smaller the capital stock. Or, as the capital stock increase, the *MEC* falls This is because of the operation of the law of diminishing returns in production. As a result, the marginal physical productivity of capital and the marginal revenue fall. In the figure, when the capital stock is OK_1, the *MEC* is Or_1 As the capital increases from OK_1 to OK_2 the MEC falls from Or_1 to Or_2. The net addition to the capital stock K_1K_2 represents the net investment in the economy.

Further, to reach the optimum (desired) capital stock in the economy, the *MEC* must equal the rate of interest. If, as shown in the figure, the existing capital stock is OK_1, the *MEC* is Or_1 and the rate of interest is at Or_2. Everyone in the economy will borrow funds and invest in capital assets.

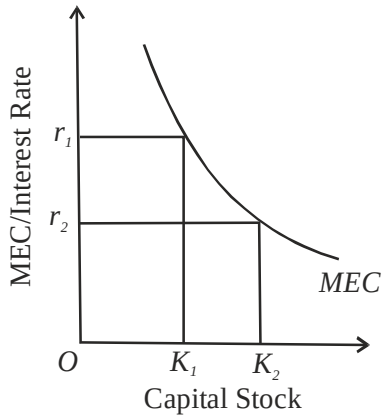

Fig. 13.2

This is because MEC *(Or_1)* is higher than the rate of interest (at Or_2). This will continue till the MEC *(Or_1)* comes down to the level of the interest rate (at Or_2). When the *MEC* equals the rate of interest, the economy reaches the level of optimum capital stock. The fall in the *MEC* is due to the increase in the actual capital stock from OK_1 to the optimum (desired) capital stock OK_2. The increase in the firm's capital stock by K_1K_2 is the net investment of the firm. But it is the rate of interest which determines the size of the optimum capital stock in the economy. And it is the *MEC* which relates the amount of desired capital stock to the rate of interest. Thus the negative slope of the *MEC* curve indicates that as the rate of interest falls the optimum stock of capital increases.

Marginal Efficiency of Investment (MEI)

The marginal efficiency of investment is the rate of return expected from a given investment on a capital asset after covering all its costs, except the rate of interest. Like the *MEC*, it is the rate which equates the supply price of a capital asset to its prospective yield. The investment on an asset will be made depending upon the interest rate involved in getting funds from the market. If the rate of interest is high, investment is at low level. Low rate of interest leads to an increase in investment. Thus the *MEI* relates investment to the rate of interest. The *MEI* schedule shows the amount of investment demanded

at various rates of interest. That is why, it is also called the investment demand schedule or curve which has a negative slope, as shown in Fig. 13 (A). At Or_1 rate of interest, investment is OI^1. As the rate of interest falls to Or_2, investment increases to OI^{11}.

To what extent the fall in the interest rate will increase investment depends upon the elasticity of the investment demand curve or the *MEI* curve. The less elastic is the MEI curve, the lower is the increase in investment as a result of fall in the rate of interest, and vice versa.

In Figure 13.3, the vertical axis measures the interest rate and the *MEI* and the horizontal axis measures the amount of investment. The *MEI* and MEI_1 are the investment demand curves. The *MEI* curve is Panel (A) is less elastic to investment which increases by I^1I^{11} This is less than the increase in investment I_1I_2 shown in Panel (B) where the MEI_1 curve is elastic. Thus given the shape and position of the *MEI* curve, a fall in the interest rate will increase the volume of investment.

On the other hand, given the rate of interest, the higher the *MEI*, the larger shall be the volume of investment. The higher marginal efficiency of investment implies that the MEI curve shifts to the right. When the existing capital assets wear out, they are replaced by new ones and the level of investment increases. But the amount of induced investment depends on the existing level of total purchasing. So more induced investment occurs when the total purchasing is higher. The higher total purchasing tends to shift the *MEI* to the right indicating that more inducement to investment takes place at a given level of interest rate. This is explained in Figure 13.4, where MEI_1 and MEI_2 curves indicate two different levels of total purchasing in the economy. Let us suppose that the MEI_1 curve indicates that at Rs. 200 crores of total purchasing, OI_1 (Rs. 20 crores) investment occurs at Or_1 interest rate. If total purchasing rises to Rs. 500 crores, the MEI_1 curve shifts to the right as MEI_2 and the level of induced investment increases to OI_2 (Rs. 50 crores) at the same interest rate Or_1.

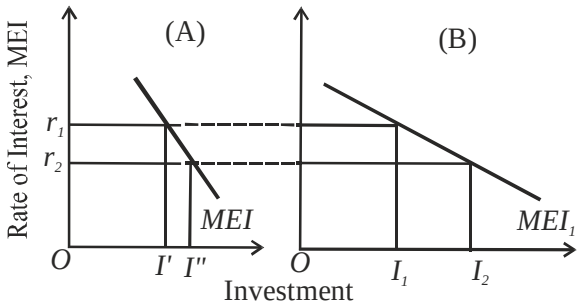

Fig. 13.3

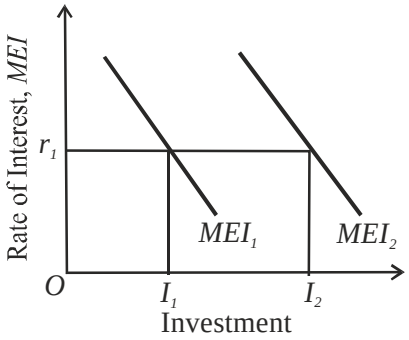

Fig. 13.4

Relation between the MEC (Capital Stock) and the MEI (Investment)

Professor Lerner pointed out as early as in 1946 that Keynes erred not only descriptively but also analytically by failure to distinguish between the marginal efficiency of capital *(MEC)* and the marginal efficiency of investment *(MEI)*. Following Lerner[2], Gardner Ackley[3] and some other economists have clearly defined and distinguished between the two concepts.

The *MEC* is based on a given supply price for capital, and the *MEI* on induced changes in this price. The *MEC* shows the rate of return on all successive units of capital without regard to the existing stock of capital. On the other hand, the *MEI* shows the rate

of return on only units of capital over and above the existing stock of capital. In the

MEC, the capital stock is taken on the horizontal axis of a diagram, while in the MEI the amount of investment is taken horizontally on the X-axis. The former is a 'stock' concept, and the latter is a 'flow' concept. The *MEC* determines the optimum capital stock in an economy at each level of interest rate. The *MEI* determines the net investment of the economy at each interest rate, given the capital stock. The net investment is the addition to the existing capital stock whereby the actual capital stock increases. Investment will, therefore, continue to be made in the economy till the optimum capital stock is reached. The amount of investment to be made to attain the optimum capital stock in the economy will depend upon the law of production under which the capital goods industry is operating under which the capital goods industry is operating. Under the law of constant costs, the supply curve of capital will be perfectly elastic, and the rate of investment per time period is determined as shown in figure 13.5.

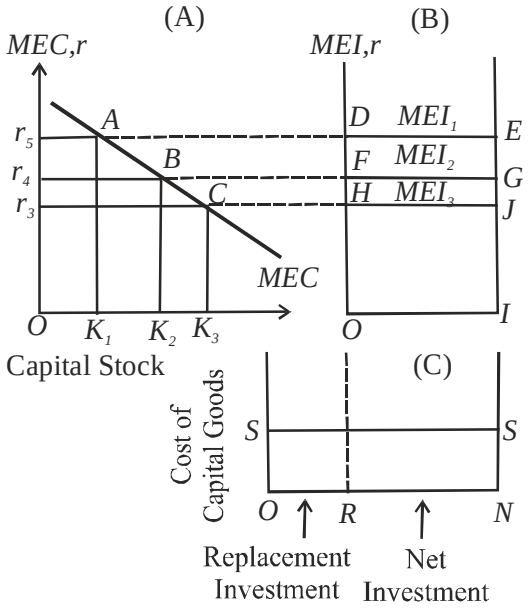

Fig. 13.5

Panel (A) of the figure shows the *MEC* curve relating the optimum capital stock to different interest rates. Panel (C) of the figure shows a perfectly elastic supply curve SS of the capital goods industry, given the gross investment of *ON*. Out of this *ON*

gross investment, the replacement investment is *OR* which is assumed to be constant, s shown by the dotted vertical line from point R. Thus the net investment rate per time period available for capital goods industry is *RN*. Panel (B) shows MEI curves relating the rate of investment to each market rate of interest. The MEI curves are horizontal (or perfectly elastic) because the supply curve of capital is perfectly elastic.

Given these, take point A on the *MEC* curve in Panel (A) of the figure where the interest rate equals the *MEC*. It is the equilibrium point where the optimum capital stock OK_1 is determined. If the rate of interest falls to Or_3 and equals the *MEC* at point *C*, OK_3 becomes the optimum or desired capital stock. Now OK_1 is the actual capital stock. So there is a gap between the actual and the desired capital stock equal to K_1K_3. This can be filled by increasing net investment in the capital goods industry. The rate of available net investment is *OI* in Panel (B) or *RN* in Panel *(C)* which is the capacity level of the capital goods industry.

Investment in capital goods industry can be increased on the basis of the *MEI* of the industry. When the capital stock is OK_1, the *MEI* curve is *DEI* in panel (B). When investment is made at interest rates below Or_5 the capital stock will increase per time period. Thus in period 1 when net investment is made at OI rate, the MEI curve is FGI, and the capital stock increases to OK_2 from OK_1. In period 2, with the same rate of investment *OI*, when the *MEI* curve is *HJI*, and the capital stock increases to OK_3.Thus when the rate of interest is Or_3 and equals the *MEC* at point C in Panel (A), the economy attains the optimum level of capital stock where the actual and the desired capital stock are equal. Just as a fall in the interest rate with no shift in the *MEC* curve raises the optimum stock of capital from its initial level, so an upward shift of the *MEC* curve with no change in the rate of interest will have the same result.

If the capital goods industry is operating under the law of increasing costs, its supply curve will be upward sloping which produces the downward sloping *MEI* curve. This is because the cost of capital goods increases as the rate of net investment increases. What will be rate of net investment in this situation to bring the equilibrium of the actual capital stock with the desired capital stock? This is explained with the help of Figure 13.6 (A), (B) and (C) Panels which show the *MEC* curve, the MEI curve and the rising supply curve of capital respectively.

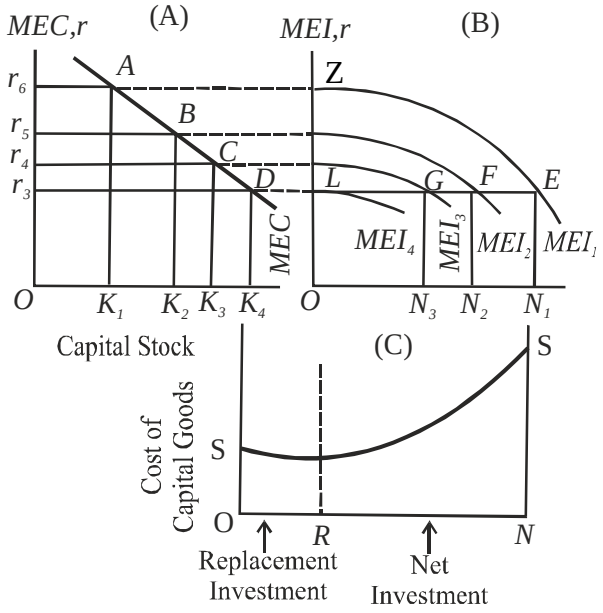

Fig. 13.6

In Panel (A), the equilibrium point for the capital goods industry is A where the interest rate Or_6 and the *MEC* are equal, and OK_1 optimum stock of capital is determined. Here net investment is zero because the actual capital stock equals the desired capital stock of the economy. This is shown by the MEI_1, curve at point Z in Panel (B) of the figure. If the rate of interest falls to Or_3, the desired capital stock will be OK_4 and OK_1 becomes the actual capital stock. Thus K_1K_4 is the gap between the actual capital stock and the desired capital stock. To bring equilibrium between the two capital stocks, net investment will have to be made,

The rate of net investment will be determined by the equality of the *MEI* with the reduced interest rate Or_3 in each period and so increase the capital stock. Starting from point Z on the MEI_1 curve when the rate of interest is Or_6, the rate of investment is zero. As the rate of net investment increases, the prices of capital goods rise and the rate of return on investment in these goods continues to fall till it equals the interest rate Or_3 of the desired capital stock. The MEI_1 curve equals the Or_3 interest rate at point *E* in Panel (B). Thus in period I, ON_1 rate of net investment increases the capital stock from OK_1 to OK_2, in Panel (A).

This increase in the capital stock by K_1K_2 reduces the *MEC* to point B on the curve *MEC*. Since the rate of interest is Or_3, the capital stock can be increased further. It depends upon the rate of net investment which is determined by the MEI_2 curve at point *F*. So in period 2, the rate of net investment is ON_2 which raises the capital stock to OK_3 from OK_2. This increase in the capital stock by K_2K_3 further reduces the *MEC* to point *C*. The rate of investment in period 3 as determined by the MEI_3 curve corresponding to the level of *MEC* at point *C* is ON_3 which raises the capital stock to the level of *MEC* at point *C* is ON_3 which raises the capital stock to reach the optimum level OK_4, the *MEC* equals the rate of interest Or_3 and the corresponding *MEI* curve is MEI_4 which shows zero net investment at point *L*. "The rate of net investment spending per time period depends on how steep the downward slope of the MEI curve is (or its elasticity), and this in turn depends on how steep the upward slope (or the elasticity) of the supply curve of capital goods is. If the supply curve slopes sharply upward, the rate of investment spending will fall sharply downward with respect to the rate of interest. In any event, the capital stock will grow to the new optimum level, but its rate of growth will be slower the steeper the *MEI* curve."[4] We have seen above that it is the growth in the capital stock from the actual to the desired level that influences the rate of net investment. This is shown as a downward movement along the *MEC* curve. On the other hand, it is the flow of net investment that adjusts the actual capital stock toward its optimum level along each *MEI* curve with every fall in the rate of interest.

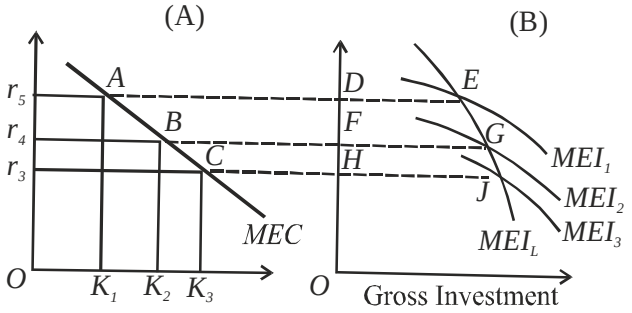

Fig. 13.7

Now what will be the investment demand in the short-run and the long run? Assuming the replacement investment to be given, the increase in the stock of capital and in the rate of net investment relating to fall in the interest rate in each period, as depicted by the *MEC* curve and the MEI_1 curve in Figure 13.7(A) and (B), relate to the long-run. If the replacement investment increases with the increase in the capital stock, then the MEI curves relating to each level of the rate of interest are the short-run curves, and the log-run *MEI* curve will be as shown in Figure 9. The *MEC* curve, in Panel (A) of the figure relates to the long-run. The curves MEI_1, MEI_2 and MEI_3 are the short-run *MEI* curves. As the rate of interest falls in each period, the capital stock gradually increases from OK_1 to OK_2 and finally to OK_3. This is because the rate of replacement investment increases from *DE* to *FG* and to *HJ*. The points E, G and J where the net investment is zero at each level of interest rate are joined to form the long run *MEI* curve MEI_L.

SUMMARY

1. Investment does not include total stock of capital goods but net additions made in a specific time period.

2. Investment expenditure not only affects magnitude of aggregate demand but also determine directly productive capacity of the economy.

3. Investment is a flow of expenditure over a given period of time on new fixed capital goods. Alternatively, it is purchase of newly created assets like bonds or expenditure on assets already in existence.

4. Level of output, employment and income in an economy depends upon effective demand which in turn depends on consumption and investment.

5. Investment implies real investment which will lead to an increase in demand for human resources leading to an increase in employment.

6. Investment may be several types like public or private ex-ante and export gross and net investment, autonomous and induced investment.

QUESTIONS

1. Define Investment function? What are the types of investment? Differentiate between Induced and autonomous investment.
2. Explain the concept of Capital Budgeting? Explain in details its types and method of appraisal. Justify your analysis with suitable numerical illustrations.
3. Explain payback period and its method of Calculation?
4. Explain Marginal Efficiency of investment?
5. Elaborate the mutual relationship between rate of investment ad stock of capital?
6. Explain marginal efficiency of capital with appropriate derivation. Analyze it critically?

STABILITY AND THE SLOPE OF THE IS CURVE

The product market equilibrium condition

$$y = c[(y) - t(y)] + I(r) + g \qquad \text{....i}$$

The slope of the IS curve was obtained by differentiating (i) to obtain

$$dy = c'(1 - t')\,dy + z'\,dr \qquad \text{... ii}$$

and

$$\frac{dr}{dy_{is}} = \frac{1 - c'(1 - t')}{I'}$$

as the IS slope. Since c' (1 - t') the marginal propensity to consume out of GNP, is less than one - perhaps 0.6 - the numerator of (ii) is positive and, with i' < 0, the slope of the IS curve of Part II was necessarily negative.

With $II = I(r,y)$. the product market equilibrium condition becomes

$$y = [c(y - t(y)] + I(r,y) + g \qquad \text{...iii}$$

Differentiation of this expression gives us

$$Dy = c'(1-t')dy + \frac{di}{dr}dr + \frac{d}{dy}dy \qquad \text{...iv}$$

So that the slope of the IS curve is now given by

$$\frac{dr}{dy} \mid Is = \frac{1 - c'(1 - t')}{\frac{di}{dr}} - \frac{di}{dy} \qquad \text{.....(v)}$$

Since $\partial i / \partial y$ is positive, the numerator of (v) is smaller than that of (ii) and the slope of the IS curve is flatter. If the sum (c'(1 - t') + $\partial i / \partial y$ is greater than one, the numerator of (v) would be negative, and the IS curve would be positively sloped.

Since c' (1 - t') is the MPC out of GNP, and $\partial i / \partial y$ is the marginal propensity to invest out of GNP, their sum can be called the marginal utility to spend out of GNP. It gives the increase in expenditure, or induced by a given increase in GNP. If the marginal propensity is greater than one, a $1 billion increase in GNP leads to an in planned expenditures of more than 1 billion, the I$ curve is positively sloped, and the economy can become unstable. This can be seen by looking at the multiplier chain of Chapter 3 as follows. In the part II model with I = I(r), and r held constant by an accommodating monetary policy shifting LM. An exogenous g increase gave rise to a y increase of

$$dy = dg\left[1 + c'(1+t') + \left[c'(1-t')\right]^2 + ...\right]$$

Since c' (1 - r') is less than one, this sequence converges; [c'(1 - t')] approaches zero as n gets large. But now the sequence is

$$dy = dg\left[1 + c'(1+t') + \frac{di}{dy}\right] + \left[C'(1-t') + \frac{di}{dy}\right]$$

If the marginal propensity to spend is less than unity the multiplier still converges to 1/[1 -c'(1-t') = $\partial i / \partial y$]. But if it is greater than one, the terms in brackets get larger and larger as the exponent *n* increases. A given *dg* increase leads to a greater increase in spending, which leads to a greater increase in income, so the economy is stable only if the interest rate increases that come from holding M constant during this process choke off investment enough to stop this upward spiral.

Fortunately, it seems from empirical evidence that the economy is stable: the IS curve in fact has a negative slope. The empirical estimates discussed in Chapter 10 suggest that the long-run marginal propensity to consume is equal to *c/y,* which is about 65 percent of *GNP*. Thus *c'(1-t')* might be about 0.65. If the elasticity of investment demand with respect to output is unity, as suggested earlier in this chapter, then

$$1 = \frac{di}{dy}\frac{y}{i}$$

So that

$$\frac{di}{dy} = \frac{i}{y}$$

And we can measure $\partial i / \partial y$ by the investment–GNP ratio of about 0.15,. Thus, the marginal propensity to spend might be about 0.80 (=0.65+0.15), and the IS curve is negatively sloped.

FISCAL POLICY AND INVESTMENT

Investment was a function only of the interest rate, I–*i(r)*, we saw that while an increase in government purchases raises both y and r, it reduced the level of investment since I', or $\partial i / \partial y$, is negative. Now that we have expanded the investment function to *I = i(r,y)*, the effect of an increase in government purchases on investment is no longer unambiguous. What are the conditions under which an increase in government spending will lead to an increase in investment?

Graphically, we can locate in the *r,y* space the sets of *r,y* points lying on trade-off lines - isoinvestment lines, conceptually similar to indifference curves - which hold investment at a constant level as *r* and *y* change. Two such lines are shown by $i_o i_o$ and $i_1 i_1$ in Figure 14.1. The slope of the ii lines can be obtained by differentiating the investment function I = *i(r,y)*, holding I constant:

$$di = O = \frac{di}{dr} dr + \frac{di}{dy} dy \qquad \Rightarrow di = O = \frac{\partial i}{\partial r} dr = \frac{\partial i}{\partial y} dy$$

So that

$$\left.\frac{dr}{dy}\right|_{ii} = -\frac{\frac{di}{dy}}{\frac{di}{dr}}$$

Since $\partial i / \partial y > 0$ and $\partial i / \partial r < 0$, we know that the slope of these *ii* lines is positive. An increase in investment is indicated by a movement rightward across the ii

map - an increase in y with r held constant raises i since $\partial i / \partial y > 0$.

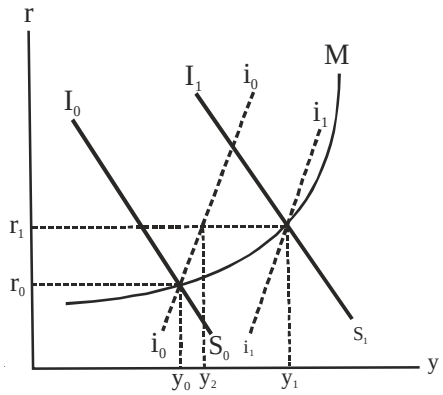

Figure 14.1
Effect of an increase in government spending on investment.

The rule which we can now state just by inspection of Figure 14.1 is that if at an initial equilibrium ($y_0 r_0$) the $i_o i_o$ line is steeper than the *LM* curve, an upward shift of the IS curve due to an expansionary fiscal policy will lead to a higher level of investment. In Figure 14.1 the shift of IS from $I_0 S_0$ to $I_1 S_1$ due to an expansionary fiscal-policy action moves demand side equilibrium from r_0, y_0 to r_1, y_1. Since the *ii* curve was steeper at r_0, y_0 than the LM curve, the new equilibrium is on an ii curve, $i_1 i_1$, that gives a higher level of investment than at the original equilibrium. The reader convince himself that the reverse is true if the ii curve is flatter than LM at the initial equilibrium.

In general, if an expansionary fiscal policy step is take when the economy is slack and the initial equilibrium point lies along the relatively flat part of the LM curve, the movement from r_0, y_0 to r_1, y_1.will involve a large increase in y relative to r, and thus is likely to increase *i*. But if the expansion begins in the relatively steep part of the *LM* curve, the *r* increase will be large relative to the *y* increase, and investment is more likely to fall.

BUSINESS CYCLES AND MACRO- ECONOMIC POLICY

CHAPTER OUTLINES.....

- Introduction
- Business Cycle
- Samuelson's Model Of Business Cycle
- Hicks's Theory Of Business Cycle
- Goodwin's Trade Cycle Model
- Kaldor's Theory

INTRODUCTION

Economic activity is subject to periodical fluctuations. Fluctuations which occurs in cyclical fashions in any business activity are called trade cycles or business cycles. In the words of Shapiro, business cycle are movements which occur in economic activity over years. There are four phases of trade cycles depression, recovery, boom and recession.

Earlier theories of business cycles those are associated with the name of Jevons, Hawtrey, Pigou, Hopson, Hayek, Schumpeter and others. There were not adequate to explain full concept of trade cycles. Thus, modern economists have developed some new theories of trade cycles.

MEANING

Business cycle or trade cycle is a part of the capitalist system. It refers to the phenomenon of cyclical booms and depressions. In a business cycle, there are wave-

like fluctuations in aggregate employment, income, and output and price level. The term business cycle has been defined in various ways by different economists. Prof. Haberler's definition is very simple:"The business cycle in the general sense may be defined as an alternation of periods of prosperity and depression of good and bad trade." Keynes' definition in his *Treatise of Money* is more explicit: "A trade cycle is composed of periods of good trade characterized by rising prices and low unemployment percentage, altering with periods of bad trade characterized by falling prices and high unemployment percentages." Gordon's definition is precise: "Business cycles consist of recurring alternation of expansion and contraction in aggregate economic activity, the alternating movements in each direction being self-reinforcing and pervading virtually, all parts of the economy." The most acceptable definition is by Estey: "Cyclical fluctuations are characterized by alternating waves of expansion and contraction. They do not have a fixed rhythm, but they are cycles in that the phases of contraction and expansion recur frequently and in fairly similar patterns."

TYPES OF BUSINESS CYCLES

Business cycles are usually classified as under:

(1) **The Short Kitchin Cycle.** It is also known as the minor cycle which is of approximately 40 months duration. It is famous after the name of the British economist Joseph Kitchain, who made a distinction between a major and a minor cycle in 1923. He came to the conclusion on the basic of his research that a major cycle is composed of two or three minor cycles of 40 months.

(2) T**he Long Jugler Cycle.** This cycle is also known as the major cycle. It is defined "as the fluctuation of business activity between successive crises."In 1862 Clement Jugler, French economist showed that periods of prosperity, crisis and liquidation followed each other always in the same order. Later economists have come to the conclusion that a Jugler cycle's duration is on the average nine and a half years.

(3) **The very long Kondratieff Cycle.** In 1925, N.D. Kondratieff, the Russian economist, came to the conclusion that there are longer waves of cycles of more than 50 years duration, made of six Jugler cycles. A very long cycles has come to be known s the Kondratieff wave.

(4) **Building Cycles.** Another type of cycle relates to the construction of buildings which is of fairly regular duration. Its duration is twice that of the major cycles and is on an average of 18 years' duration. Such cycles are associated with the names of Warren and Pearson.

(5) **Kuznets Cycle.** Simon Kuznets, propounded a new type of cycle , the secular swing of 16-22 years which is so pronounced that it dwarfs the 7 to 11 years cycle into relative insignificance. This has come to be known as the Kuznets Cycle.

CHARACTERISTICS OF BUSINESS CYCLES

Business cycles possess the following characteristics:

1. Cyclical fluctuations are wave-like movements
2. Fluctuations are recurrent in nature
3. They are non-periodic or irregular. In other words, the peaks and troughs do not occur at regular intervals.
4. They occur in such aggregate variables as output, income, employment and prices.
5. These variables move at about the same time in the same direction but at different rates.
6. The durable goods industries experience relatively wide fluctuations in output and employment but relatively small fluctuations in prices. On the other hand, nondurable goods industries experience relatively wide fluctuations in prices but relatively small fluctuations in output and employment.
7. Business cycles are not seasonal fluctuations such as upswings in retail trade during Diwali or Christmas.
8. They are not secular trends such as long-run growth or decline in economic activity.
9. Upswings and downswings are cumulative in their effects.

Thus business cycles are recurrent fluctuations in aggregate employment, income output and price level.

PHASES OF A BUSINESS CYCLE

A typical cycle is generally divided into four phases: (1) expansion or prosperity or the upswing; (2) recession or upper-turning point; (3) contraction or depression or downswing; and (4) revival or recovery or lower-turning point. These phases are recurrent and uniform in the case of different cycles. But no phase has definite periodicity or time interval. As pointed out by Pigou, cycles may not be twins but they are of the same family. Like families they have common characteristics that are capable of description. Starting at the trough or low point, a cycle passes through a recovery and prosperity phase, rises to a peak, declines through a recession and depression phase and reaches a trough. This is shown in Figure 15.1 where E is the equilibrium position. We describe below these characteristics of a business cycle.

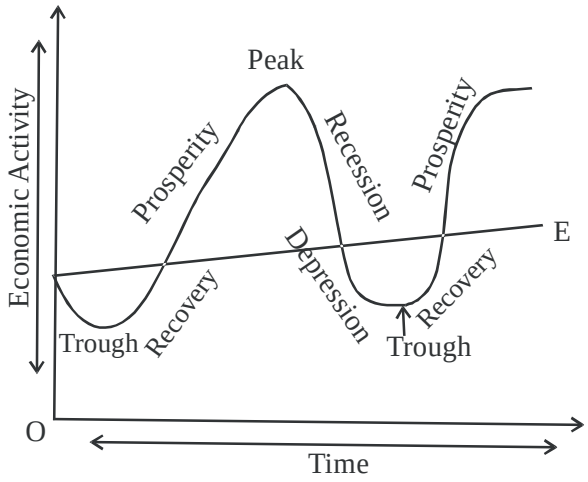

Fig. 15.1

Revival/Recovery : We start from a situation when depression has lasted for some time at the revival phase or the lower turning point starts.

We start from a situation when depression has lasted for some time and the revival phase or the lower-turning point starts. The "originating forces" or "starters" may be exogenous or endogenous forces. Suppose the semi-durable goods wear out which necessitate their replacement in the economy. It leads to increased demand. To meet this increased demand, investment and employment increase. Industry begins to revive. Revival also starts in related capital goods industries. Once begun, the process of revival becomes cumulative. As a result, the levels of employment, income and output rise steadily in the economy. In the early stages of the revival phase, there is considerable excess or idle capacity in the economy so that output increases without a proportionate increase in total costs. But as time goes on, output becomes less elastic; bottlenecks appear with rising costs, deliveries are more difficult and plants may have to be expanded. Under these conditions, prices rise. Profits increase. Business expectations improve. Optimism prevails. Investment is encouraged which tends to raise the demand for bank loans. It leads to credit expansion. Thus the cumulative process of increase in investment, employment, output, income and prices feeds upon itself and becomes self-reinforcing. Ultimately, revival enters the prosperity phase.

Prosperity

In the prosperity phase, demand, output, employment and income are at a high level. They tend to raise prices. But wages, salaries, interest rates, rentals and taxes do not rise in proportion to the rise in prices. The gap between prices and costs increases the margin of profit. The increase of profit and the prospect of its continuance commonly cause a rapid rise in stock market values. The economy is engulfed in waves of optimism. Larger profit expectations further increase investment which is helped by liberal bank credit. Such investments are mostly in fixed capital, plant, equipment and machinery. They lead to considerable expansion in economic activity by increasing the demand for consumer goods and further raising the price level. This encourages retailers, wholesalers and manufacturers to add to inventories. In this way, the expansionary process becomes cumulative and self-reinforcing until the economy reaches a very high level of production, known as the peak or boom.

The peak or prosperity may lead the economy to over full employment and to inflationary rise in prices. It is symptom of the end of the prosperity phase and the beginning of the recession. The seeds of recession are contained in the boom in the form

of strains in the economic structure which act as brakes to the expansionary path. They are: (i) scarcities of labour, raw materials, etc. leading to rise in costs relative to prices; (ii) rise in the rate of interest due to scarcity of capital; and (iii) failure of consumption to rise due to rising prices and stable propensity to consume when incomes increase. The first factor brings a decline in profit margins. The second makes investments costly and along with the first, lowers business expectations. The third factor leads to the piling up of inventories indicating that sales (or consumption)lag behind production. These forces become cumulative and self-reinforcing, Entrepreneurs, businessmen and traders become over cautious ad over optimism gives way to pessimism. This is the beginning of the upper turning point.

Recession

Recession starts when there is a downward descend from the 'peak' which is of a short duration. It marks the turning period during which the forces that make for contraction finally win over the forces of expansion. Its outward signs are liquidation in the stock market, strain in the banking system and some liquidation of bank loans. And the beginning of the decline of prices. As a result, profit margins decline further because costs start overtaking prices. Some firms close down. Others reduce production and try to sell out accumulated stocks. Investment, employment, income and demand decline. This process becomes cumulative.

Recession may be mild or severe. The latter might lead to a sudden explosive situation emanating from the banking system or the stock exchange, and a panic or crisis occurs. "When a crisis, and more particularly a panic, does occur, it seems to be associated with a collapse of confidence and sudden demands for liquidity. This crisis of nerves may itself be occasioned by some spectacular and unexpected failure. A firm or a bank, or a corporation announces its inability to meet its debts. This announcement weakens other firms and banks at a time when ominous signs of distress are appearing in the economic structure; moreover, it sets off a wave of fright that culminates in a general run on financial institutions" …Such was the experience of the United States in 1873, in 1893, in 1907 and recently in 2008. In the words of M.W. Lee, "A recession, once started, tends to build upon itself much as forest fire, once under way, tends to create its own draft and give internal impetus to its destructive ability."[2]

Depression Recession merges into depression when there is a general decline in economic activity. There is considerable reduction in the production of goods and services, employment, income, demand and prices. The general decline in economic activity leads to a fall in bank deposits. Credit expansion stops because the business community is not willing to borrow. Bank rate falls considerably. According to Professor Estey, "This fall in active purchasing power is the fundamental background of the fall in prices, that despite the general reduction of output, characterizes the depression." Thus a depression is characterized by mass unemployment; general fall in prices, profits, wages, interest rate, consumption, expenditure, investment, bank deposits and loans; factories close down; and construction of all types of capital goods, buildings, etc. comes to a standstill. These forces are cumulative and self-reinforcing and the economy is at the trough.

The trough or depression may be short-lived or it may continue at the bottom for considerable time. But sooner or later limiting forces are set in motion which ultimately tend to bring the contraction phase to end and pave the way for the revival. A cycle is thus complete.

CAUSES OF BUSINESS CYCLE

During the last several hundred years, philosophers, economists, stock brokers and men in the street have tried to give various causes of business cycles. Some attribute them to monetary and non-monetary factors while others to psychological factors. Samuelson attributes business cycles to external and internal factors which we explain below:

External Factors

The external factors emphasize the causes of business cycles in the fluctuations of something outside the economic system. Such external factors are sunspots, wars, revolutions, political events, gold discoveries, growth rate of population, migrations, discoveries and innovations. These outside factors change the level of national income by affecting either the investment or consumption component of aggregate demand. For example, a drought that destroys many crops due to sunspots may reduce the quantity of goods produced in the country and adversely affect both consumption and investment.

An innovation by opening the door to new markets, raw materials, products and production processes encourages new investments in plant and equipment. Inventions of railroads, electricity, telephone, automobiles, TVs, computers, etc. have led to the burst of investments in both capital and consumer goods from time to time. Discoveries of gold, oil and natural resources have led to large scale investments. Similarly, population expansion and migrations are the causes of huge investments in both housing and other infrastructure and consumer durables. All the above noted external factors have been responsible for booms in business cycles from time to time.

Internal Factors

The internal factors relate to "mechanisms within the economic system itself which will give rise to self-generating business cycles, so that every expansion will breed recession and contraction, and every contraction will in turn breed revival and expansion, in a quasi-regular, repeating, and never-ending chain." Haberler divides the internal factors into monetary and non-monetary which we briefly explain.

1. **Bank Credit.** Hawtrey, Friedman and other monetarists regard business cycles as "a purely monetary phenomenon". According to Hawtrey, cyclical fluctuations are caused by expansion and contraction of bank credit. These in, turn, lead to changes in the demand for money on the part of producers and traders. Bank credit is the principal means of payment. Credit is expanded or reduced by the banks by lowering or raising the rate of interest or by purchasing and selling of securities to traders. This increases or decreases the supply of money in the economy. An increase in the money supply brings about prosperity and a decrease in the money supply leads to depression.

2. **Over Saving or Under-Consumption**. According to economists like Hobson, Foster and Douglas, business cycles are caused by over-saving or under-consumption. They argue that wide disparities of income and wealth lead to depression in the country. The rich people are not able to spend their entire income. So they save more and invest more in producing consumer goods. On the other hand, the poor people have low incomes or wages. As a result, their demand for consumer goods is low which means that there is under-consumption. According to Hobson, over saving leads to production of consumer goods in large quantities and to a boom. But under-consumption on the part of the workers due to low wages brings a fall in the demand for consumer goods.

Tocks pile up at the current level of prices. These, in turn, lead to a fall in the prices of consumer goods and in the income of the producers. As a result, depression sets in.

3. **Over-Investment.** Hayek, Spiethoff, Cassel and Robertson find the root cause of business cycles in over-investment. According to Hayek, it is bank loans which lead to over-investment in capital goods industries relative to consumer goods industries that ultimately brings depression in the economy. When the total money supply exceeds the amount of voluntary savings, it leads to increase in the investment activity and ultimately to a boom. But banks cannot continue to give credit for long due to the shortage of voluntary savings. As a result, production will decline which will bring about a depression. Thus it is over-investment in the capital goods industries which is the cause of a boom and a depression.

4. **Competition.** According to Chapman, the main cause of business cycles is the existence of competition in an economy which leads to over-production and ultimately to a crisis (depression). Under competitive conditions, firms produce in anticipation of demand the profit motive attracts new firms. Production increases and boom starts. Competition and profits lead to overproduction and glut of commodities in the market and to fall in prices. On the other hand, the race to produce more and profit more on the part of producers increases the demand for factors of production. Competition among producers to hire more factors raises their prices. Thus costs rise which raise the prices of products. Demand falls and there is glut of commodities which eventually leads to fall in prices and to a depression.

5. **Psychological Causes.** According to Pigou, the alternating waves of "over optimism" and "over pessimism" are the sole causes of the industrial fluctuations. He traces cyclical fluctuations to the tendency of businessmen to react excessively to the changing conditions of the economy. It is this tendency that causes alternating periods of over-production and under-production. Errors of optimism and pessimism are interacting forces. As soon as the business community discovers that it has made an error of optimism, it tries to correct it by making errors of pessimism. Each phase of the cycle produces a state of psychology which produces forces that bring about reversal of that psychology and in turn another reversal. These alternating waves of over-optimism (over-production) an over-pessimism (under-production), as a result of these reversals, are the main causes of business cycles.

6. **Innovations.** According to Schumpeter, innovations in the structure of an economy are the source of economic fluctuations. To him, "the cause of depression is prosperity." The boom consists in the carrying out of innovations in the industrial and commercial fields. The cyclical upswing is set in motion when an innovator starts making investment in his innovation of a new product. This enables him to make profit. Soon other entrepreneurs adopt this new product in "swarm-like clusters". Innovations in one field induce innovations in related fields. There is large increase in the output of new products. Consequently, money incomes and prices rise and help to create a cumulative expansion in the economy. Over optimism adds further to the boom. When there is glut of new products in the market, their prices fall, and profit margins of entrepreneurs are reduced. Banks ask for repayment of loans. The quantity of money is reduced and prices fall further. Some entrepreneurs cut down production and others are forced into liquidation. Thus the economy enters into depression.

7. **Marginal Efficiency of Capital (MEC).** According to Keynes, the cycle consists primarily of fluctuations in the rate of investment. And Fluctuations in the rate of investment are caused mainly by fluctuations in the MEC. The MEC depends on the supply price of capital assets and their prospective yield. The supply price of capital assets being stable in the short-run, the MEC is determined by the prospective yield of Capital assets. The prospective yield in turn, depends on business expectations. Fluctuations in the rte of investment are also caused by fluctuations in the rate of interest. But it is fluctuations in the MEC which are the principal cause of cyclical fluctuations.

8. Conclusion. To conclude with Samuelson, business cycles are caused both by external and internal factors. The economic system responds to fluctuations in external factors according to its internal factors, and vice versa.

EFFECTS OF BUSINESS CYCLES

Business cycles have both good and bad effects depending upon whether the economy is passing through a phase of prosperity or depression.

In the *Prosperity* Phase, "the real income consumed, real income produced and the levels of employment are high or rising and there are no idle or unemployed workers or very few of either." There is general increase in economic activity; aggregate output, demand, employment and income are at a high level. Prices are rising. Profits are

increasing Stock markets are rapidly reaching new heights. Investments are increasing with liberal bank credit. This entire process is cumulative and self-reinforcing.

But different sections of the society are affected differently during the prosperity phase. The landless, factory and agricultural workers and middle classes suffer because their wages and salaries are more or less fixed but the prices of commodities rise continuously. They become more poor. On the other hand, businessmen, traders, industrialists, real estate holders, speculators, landlords, shareholders and others with variable incomes gain. Thus the rich become richer and the poor poorer.

The social effects are also bad. Lured by profit, there is hoarding, black-marketing, adulteration, production of substandard goods, speculation, etc. Corruption spreads in every walk of life. When the economy is nearing the full employment level of resources, the ill-effects on production start appearing. Rising prices of raw materials and increase in wages raise costs of production. As a result, profit margins decline. There is prices in interest rates due to scarcity of capital which makes investment costly. These two factors lower business expectations. Lastly, the demand for consumer goods does not rise due to inflationary rise in prices. This leads to piling up of inventories (stocks) with producers and traders. Thus sales lag behind production. There is decline is prices. Producers, businessmen and traders become pessimists and the recession starts.

During recession, profit margins decline further because costs start rising more than prices. Some firms close down. Others reduce production and try to sell accumulated stocks. Investment, output, employment, income, demand and prices decline further. This process becomes cumulative and recession merges into depression.

During a depression, there is mass unemployment. Prices, profits and wages are at their lowest levels. Demand for goods and services is the minimum. Investment, bank deposits and bank loans are negligible. Construction of all types of capital goods, buildings, etc. is at a standstill. There is mass unemployment in the economy. The government revenues from direct and indirect taxes decline. The real burden of the debt increases. The economic development of the country suffers.

Theories of Business cycles

SAMUELSON'S MODEL OF BUSINESS CYCLE

Prof. Samuelson constructed a multiplier-accelerator model assuming one period lag and different values for the MPC (α) and the accelerator (β) that result in changes in the level of income pertaining to five different types of fluctuations.

The Samuelson model is

$$Yt = Gt+Ct+1t \text{ - (1)}$$

Where Yt is national income Y at time t which is the sum of government expenditure Gt, consumption expenditure Ct and induced investment It.

$$Ct = \alpha \qquad \ldots(2)^{**}$$

$$It = \beta(C_t^{t-1} - C_{t-1}) \qquad \ldots(3)$$

Substituting equation (2) in (3) we have,

$$I_t = \beta(\alpha Y_{t-1} - \alpha Y_{t-2}) \qquad \ldots.(4)$$

$$I_t = \beta\alpha Yt\text{-}1 - \beta\alpha Y_{t-2} \qquad \ldots.(5)$$

$$G_t = 1$$

Substituting equations (2), (4) and (5) in (1) we have

$$Y_t = I + \alpha Y_{t-1} + \beta\alpha Y_{t-1} - \beta\alpha Y_{t-2} \qquad \ldots(6)$$

$$= I + \alpha(Y^{t-1} + \beta\alpha Y_{t-1}) - \beta\alpha Y_{t-2}$$

$$= I + \alpha(I + \beta)\ Y_{t-1} - \beta\alpha Y_{t-2} \qquad \ldots(8)$$

According to Samuelson, "If we know the national income for two periods, the national income for the following period can be simply derived by taking a weighted sum. The weights depend, of course, upon the values chosen for the marginal propensity to consume and for the relation (i.e. accelerator)". Assuming the value of the marginal propensity to consume to be greater than zero and less than on ($0< \alpha <1$) and of the accelerator greater than zero ($\beta > 0$). Samuelson explains five types of cyclical fluctuations which are summarized in the Table 1.

Table 1. Samuelson's Interaction Model

Case	Values	Behaviour of the Cycle
1	$\alpha = 0.5,\ \beta = 0$	Cycleless Path
2	$\alpha = 0.5,\ \beta = 1$	Damped Fluctuations
3	$\alpha = 0.5,\ \beta = 2$	Fluctuations of Constant Amplitude
4	$\alpha = 0.5,\ \beta = 3$	Explosive cycles
5	$\alpha = 0.5,\ \beta = 4$	Cycleless Explosive Path

Case 1: Samuelson's case 1 shows a cycleless path because it is based only on the multiplier effect, the accelerator playing no part in it. This is shown in Fig. 16.1(A).

Case 2 shows a damped cyclical path fluctuating around the static multiplier level and gradually subsiding to that level, as shown in Fig. 16.1(B).

Case 3 depicts cycles of constant amplitude repeating themselves around the multiplier level. This case is depicted in Fig 16.1(C).

Case 4 reveals anti-damped or explosive cycles, see Fig. 16.1(D)

Case 5 relates to a cycleless explosive upward path eventually approaching a compound interest rate of growth, as shown in Fig. 16.1 (E)

Of the five cases explained above, only three cases 2, 3 and 4 are cyclical in nature. But they can be reduced to two because case 3 pertaining to cycles of constant amplitude has not been experienced. So far as case 2 of damped cycles is concerned

these cycles have been occurring irregularly in a milder form over last half century. Generally, cycles in the post-World War II period have been relatively damped compared to those in the inter-World War II period. They are the result of "such disturbances - which may be called erratic shocks - arising from exogenous factors, such as wars, changes in crops, inventions and so on 'which' might be expected to come along with fair persistence." But it is not possible to measure their magnitude.

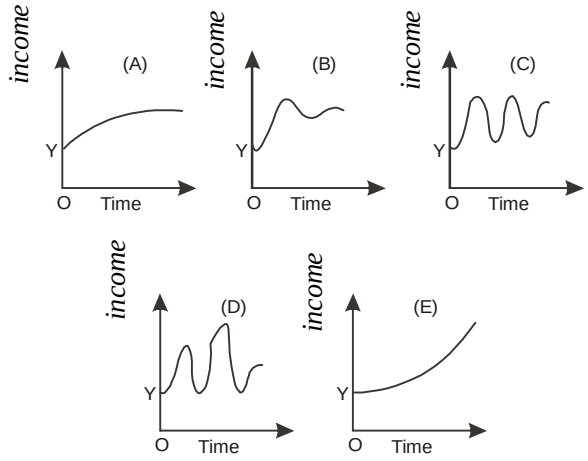

Fig. 16.1

Case 4 of explosive cycles has not been found in the past, its absence being the result of endogenous economic factors that limit the swings. Hicks has, however, built a model of the trade cycle assuming values that would make for explosive cycles kept in check by ceilings and floors.

Critical Appraisal of the Model

The interaction of the multiplier and the accelerator has the merit of raising national income at a much faster rate than by either the multiplier or the accelerator alone. It serves as a useful tool not only explaining business cycles but also as a guide to stabilization policy. As pointed out by Prof. Kurihara, "It is in conjunction with the multiplier analysis based on the concept of marginal propensity to consume (being less than one) that the acceleration principle serves as a useful tool of business cycle analysis and a helpful guide to business cycle policy." The multiplier and the accelerator combined together produce cyclical fluctuations. The greater the value of the accelerator

(β), the greater is the chance of an explosive cycle. The greater the value of the multiplier, the greater the chance of a cycleless path.

Limitations

Despite these apparent uses of the multiplier-accelerator interaction, this analysis has its limitations:

(1) Samuelson is silent about the length of the period in the different cycles explained by him.

(2) This model assumes that the marginal propensity to consume (α) and the accelerator (β) are constants, but in reality they change with the level of income so that this is applicable only to the study of small fluctuations.

(3) The cycles explained in this model oscillate about a stationary level in a trendless economy. This is not realistic because an economy is not trendless but it is in a process of growth. This has led Hicks to formulate his theory of the trade cycle in a growing economy.

(4) According to Duesenberry, it presents a mechanical explanation of the trade cycle because it is based on the multiplier-accelerator interaction in rigid form.

(5) It ignores the effects of monetary changes upon business cycles.

Hicks's Theory of Business Cycle

J.R. Hicks in his book *A Contribution to the Theory of the Trade Cycle* builds his theory of business cycle around the principle of the multiplier-accelerator interaction. To him, "the theory of the acceleration and the theory of the multiplier are the two sides of the theory of fluctuations." Unlike Samuelson's model, it is concerned with the problem of growth and of a moving equilibrium.

Ingredients of the theory

The ingredients of Hicks's theory of trade cycle are warranted rate of growth, consumption function, autonomous investment, an induced investment function, and multiplier-accelerator relation.

The warranted rate of growth is the rate which will sustain itself. It is consistent with saving-investment equilibrium. The economy is said to be growing at the warranted rate when real investment and real saving are taking place at the same rate. According to Hicks, it is the multiplier-accelerator interaction which weaves the path of economic fluctuations around the warranted growth rate.

The consumption function takes the form $Ct - \alpha Y_{t-1}$. Consumption in period t is regarded as a function of income *(Y)* of the previous period *(t-1)*. The consumption lags behind income, and the multiplier is treated as a lagged relation.

The autonomous investment is independent of changes in the level of output. Hence it is not related to the growth of the economy.

The Induced Investment, on the other hand, is dependent on changes in the level of output. Hence it is a function of the growth rate of the economy. In the Hicksian theory, the accelerator is based on induced investment which along with the multiplier brings about a *upturn*. The accelerator is defined by Hicks as the ratio of induced investment to the increase in income. Given constant values of the multiplier and the accelerator, it is the 'leverage effect' that is responsible for economic fluctuations.

Assumptions of the Theory

The Hicksian theory of trade cycle is based on the following assumptions:

(1) Hicks assumes a progressive economy in which autonomous investment increases at a constant rate so that the system remains in a moving equilibrium.

(2) The saving and investment coefficients are disturbed overtime in such a way that an upward displacement from equilibrium path leads to a lagged movement away from equilibrium.

(3) Hicks assume constant values for the multiplier and the accelerator.

(4) The economy cannot expand beyond the full employment level of output. Thus "the full employment ceiling" acts as a direct restraint on the upward expansion of the economy.

(5) The working of the accelerator in the downswing provides an indirect

restraint on the downward movement of the economy. The rate of decrease in the accelerator is limited by the rate of depreciation in the downswing.

(6) The relation between the multiplier and accelerator is treated in a lagged manner, since consumption and induced investment are assumed to operate with a time lag.

(7) It is assumed that the average capital-output ratio (v) is greater than unity and that gross investment does not fall below zero. Thus the cycles are inherently explosive but are contained by ceilings and floors of the economy.

The Hicksian Theory

Hicks explain his theory of the trade cycle in terms of Fig. 16.2. Line *AA* shows the path of *autonomous* investment growing at a constant rate. *EE* is the equilibrium level of output which depends on *AA* and is deduced from it by the application of the multiplier accelerator interaction to it. Line *FF* is the full employment ceiling level above the equilibrium path EE and is growing at the constant rate of autonomous investment. LL is the lower equilibrium path of output representing the floor or 'slump equilibrium line'.

Hicks begins from a cycle less situation P_O on the equilibrium path *EE* when an increase in the rate of autonomous investment leads to an upward movement in income. As a result, the growth of output and income propelled by the combined operation of the multiplier and accelerator moves the economy on to the upward expansion path from P_O to P_1. According to Hicks, this upswing phase relates to the standard cycle which will lead to an explosive situation because of the given values of the multiplier and the accelerator. But this does not happen because of the upper limit or ceiling set by the full employment level *FF*. Hicks writes in this connection: "I shall follow Keynes in assuming that there is some point at which output becomes inelastic in response to an increase in effective demand." Thus certain bottlenecks of supply emerge which prevent output from reaching the peak and instead encounter the ceiling at P1.When the economy hits the full employment ceiling at P_1, it will creep along the ceiling for a period of time to P_2 and the downward swing will not start immediately. The economy will move along the ceiling from P_1 to P_2 depending upon the time period of the investment lag. The

greater the investment lag, the more the economy will move along the ceiling path. Since income at this level is decreasing relative to the previous stage of the cycle, there is a decreased amount of investment. This much of investment is insufficient to keep the economy at the ceiling level, and then the downturn starts.

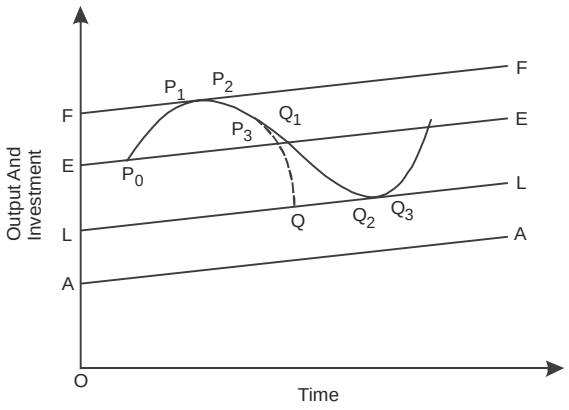

Fig. 16.2

During the downswing, "the multiplier accelerator mechanism sets in reverse, falling investment reducing income, reduced income reducing investment, and so on, progressively. If the accelerator worked continuously, output would plunge downward below the equilibrium level EE, and because of explosive tendencies, to a greater extent than it rose above it." The fall in output in this case might be a steep one, as shown by P_2P_3Q. But in the downswing, the accelerator does not work so swiftly as in the upswing. If the slump is severe, induced investment will quickly fall to zero and the value of the accelerator becomes zero. The rate of decrease in investment is limited by the rate of depreciation. Thus the total amount of investment in the economy is equal to autonomous investment minus the constant rate of depreciation. Since autonomous investment is taking place, the fall in output is much gradual and the slump much longer than the boom, as indicated by Q1Q2. At Q2, the slump reaches the bottom or floor provided by the LL line. The economy does not turn upward immediately from Q2 but will move along the slump equilibrium line to Q3 because of the existence of excess capacity in the economy. Finally, when all excess capacity is exhausted, autonomous

investment will cause income to rise which will in turn lead to an increase in induced investment so that the accelerator is triggered off which along with the multiplier moves the economy toward the ceiling again. It is in this way that the cyclical process will be repeated in the economy.

Its Criticisms

The Hicksian theory of the business cycle has been severely criticized by Duesenberry, Smithies and others on the following grounds:

1. **Value of Multiplier not Constant.** Hicks model assumes that the value of the multiplier remains constant during the different phases of the trade cycle. This is based on the Keynesian stable consumption function. But this is not a realistic assumption, as Friedman has proved on the basis of empirical evidence that the marginal propensity to consume does not remain stable in relation to cyclical changes in income. Thus the value of the multiplier changes with different phases of the cycle.

2. **Value of Accelerator not Constant**. Hicks has also been criticized for assuming a constant value of the accelerator during the different phases of the cycle. The constancy of the accelerator presupposes a constant capital-output ratio. These are unrealistic assumptions because the capital output ratio is itself subject to change due to technological factors, the nature and composition of investment, the gestation period of capital goods, etc. Lundberg, therefore, suggests that the assumption of constancy in accelerator should be abandoned for a realistic approach to the understanding of trade cycles.[11]

3. **Autonomous Investment not Continuous.** Hicks assume that autonomous investment continues throughout the different phases of the cycle at a steady pace. This is unrealistic because financial crisis in a slump may reduce autonomous investment below its normal level. Further, it is also possible, as pointed out by Schumpeter, that autonomous investment may itself be subject to fluctuations

due to a technological innovation.

4. **Growth not Dependent only on changes in Autonomous Investment.** Another weakness of the Hicksian model is that growth is made dependent upon changes in autonomous investment. It is a burst of autonomous investment from the equilibrium path that leads to growth. According to Prof. Smithies, the source of growth should lie within the system. In imputing growth to an unexplained extraneous factor, Hicks has failed to provide a complete explanation of the cycle.

5. **Distinction between Autonomous and Induced Investment not Feasible.** Critics like Duesenberry and Lundberg point out that Hicks's distinction between autonomous and induced investment is not feasible in practice. As pointed out by Lundberg, every investment is autonomous in the short run and a major amount of autonomous investment becomes induced in the long run. It is also possible that part of a particular investment may be autonomous and a part induced, as in the case of machinery. Hence, this distinction between autonomous and induced investment is of doubtful validity in practice.

6. **Ceiling fails to explain adequately the onset of Depression.** Hicks has been criticized for his explanation of the ceiling or the upper limit of the cycle. According to Duesenberry, the ceiling fails to explain adequately the onset of depression. It may at best check growth and not cause a depression. Shortage of resources cannot bring a sudden decline in investment and thus cause a depression. The recession of 1953-54 in America was not caused by shortage of resources. Further, as admitted by Hicks himself, depression may start even before reaching the full employment ceiling due to monetary factors.

7. **Explanation of Floor and Lower Turning Point not Convincing.** Hicks's explanation of the floor and of the lower turning point is not convincing. According to Hicks, it autonomous investment that brings a gradual movement towards the floor and it is again increase in autonomous investment at the bottom that leads to the lower turning point. Harrod doubts the contention that autonomous investment would be increasing at the bottom of the depression. Depression

may retard rather than encourage autonomous investment. Further, Hicks's contention that revival would start with the exhaustion of excess capacity has not been proved by empirical evidence. Rendings Fels's study of the American business cycles in the 19th century has revealed that the revival was not due to the exhaustion of excess capacity. Rather in certain cases, revival started even when there was excess capacity.

8. **Full Employment level not Independent of Output Path**. Another criticism leveled against Hicks's model is that the full employment ceiling. As defined by Hicks, it is independent of the path of output. According to Dernburg and McDougall, the full employment level depends on the magnitude of the resources that are available to the country. The capital stock is one of the resources. When the capital stock is increasing during any period, the ceiling is raised. "Since the rate at which output increases determines the rate at which capital stock changes, the ceiling level of output will differ depending on the time path of output."

9. **Explosive Cycle not Realistic**. Hicks assumes in his model that the average capital-output ratio (v) is greater than unity for a time lag of one year or less. Thus explosive cycles are inherent in his model. But empirical evidence shows that the response of investment to a change in output (v) is spread over many periods. As a result, there have been damped cycles rather than explosive cycles.

10. **Mechanical Explanation of Trade Cycle.** Another serious limitation of the theory is that it presents a mechanical explanation of the trade cycle. This is because the theory is based on the multiplier-accelerator interaction in rigid form, according to Kaldor and Duesenberry. Thus it is a mechanical sort of explanation in which human judgement, business expectations and decisions play little or no part. Investment plays a leading role based on formula rather than on judgment.

11. **Contraction Phase not longer than Expansion Phase.** Hicks has been criticized for asserting that the contraction phase is longer than expansion phase of trade cycle. But the actual behaviour of the postwar cycles has shown that

the expansionary phase of the business cycle is much longer than the contractionary phase.

Conclusion : Despite these apparent weaknesses of the Hicksian model, it is superior to all the earlier theories in satisfactorily explaining the turning points of the business cycle. To conclude with Dernburg and McDougall, "The Hicks's model serves as a useful framework of analysis which, with modification, yields a fairly good picture of cyclical fluctuation within a framework of growth. It serves especially to emphasize that in a capitalist economy characterized by substantial amounts of durable equipment, a period of contraction inevitably follows expansion. Hicks's model also pinpoints the fact that in the absence of technical progress and other powerful growth factors, the economy will tend to languish in depression for long periods of time." The model is at best suggestive.

Goodwin's Trade Cycle Model

Goodwin's presents a non-linear model of trade cycle as against Hicks' linear model.

Features of the Model

The main features of Goodwin's model are:

(a) A linear consumption function $C = \alpha Y + C_0$ where α = consumption-income ratio, C_0 = autonomous consumption.

(b) Net investment *(I)* is equal to the rate of change in capital stock which is the result of adjustment between actual capital, K and desired capital, *K* and $K = \beta Y + \alpha$ where β is the accelerator.

(c) Desired capital K is proportional to output, Y.

(d) Net investment changes due to a change in output which in turn, changes the level of desired capital. As a result, the accelerator which is non-linear brings a change in output via net investment.

Goodwin shows three possibilities for net investment:

(1) When $K^{-} > K$, there will be increase in the rate of net investment which will shift the economy to full capacity output for capital goods industries.

(2) When $K = K$, this situation is maintained by meeting the replacement demand and by keeping net investment as zero, *i.e.*, $I = O$.

(3) When $K > K$, the adjustment takes place with the scrappage rate, K_2.

Cyclical Path

To explain the cyclical path of Goodwin's model, we start with K = K- situation where the equilibrium level of output Y = ------ (C_0 + I) and 1–α

I = α is the technological growth factor.

These take the system along an equilibrium path. This path is similar to the Hicksian line *EE*. The Hicksian path relates to a steady increase in autonomous investment while Goodwin's path relates to a rise in desired capital resulting from a continuous technical change. Any divergence from this equilibrium path will not bring the economy toward it and there will be continuous fluctuations around it.

Take $K > K$, the desired capital stock being more than the actual capital, investment increases and the propelling forces of multiplier and accelerator will push the system in the upward direction. During this phase of expansion, given the constant rate of depreciation, net investment increases in proportion to the change in output. As the accelerator of Goodwin's model is non-linear, the increase in net investment is not related to the increase in output but to the difference between the actual stock *(K)* and the desired capital stock *(K)*. This difference is determined by the rate of change in output. This investment relationship being continuous, investment is immediately pushed to the extreme position. Thus expansion reaches a situation

Where I the rate of capital goods capacity output. This restricts the increase in output and the accelerator becomes discontinuous. During the expansion phase $K > K$ but at the peak $K = K$ which is due to a decline in the rate of autonomous investment. Once the desired capital *K* exceeds the actual capital stock *K*, the desired capital K will be equal to the scrappage or replacement rate K_2. This leads to a fall in the desired

capital K and in the rate of autonomous investment. Thus the contraction path of the system starts. During the contraction phase when $K > \bar{K}$, gap between the two is to be met by the scrappage rate K_2. Simultaneously, the desired capital $\bar{K}$ continues to rise by the technological growth factor. The gap between K and $\bar{K}$ is being closed by the gradual elimination of excess capacity through failure to replace and the steady occurrence of capital-using innovations. In this way, the contraction path pushes the economic system to the lowest extreme point of $I = -K_2$. When the economy reaches the lower turning point of $K = \bar{K}$, the level of desired capital $\bar{K}$ is to be raised. This is possible by stimulating the constant technical growth factor. When $K > \bar{K}$, the expansion again starts. So long as the technical progress continues, the economy cannot remain at the lower turning point. In fact, fast technical progress will expand the economy soon. As against, the Hicksian model, the Goodwin's cycle does not creep along the floor or the ceiling level. Rather, it jumps from these levels. Both boom and recession bring contraction and recovery of their own. If the growth factor does not exist in technological change, there will be autonomous investment in the capital stock. Consequently, the economy will remain stuck in the contraction phase for a long time instead of expanding. Because it takes more time for capital to depreciate than in capital formation. In such a situation there will be one-sided formation of trade cycles, as shown in Figure 16.3. In the beginning of the expansion phase, $\bar{K}$ increases to *OA* level and K also rises and equals it. When $K = \bar{K}$, contraction or downswing starts, $\bar{K}$ is reduced to OB level and K also declines and equal $\bar{K}$. There being no technological change in the growth factor, it takes more time for K to equal $\bar{K}$.

There are two features of the Goodwin cycle in figure 16.3 (1) In the expansion phase, $K > \bar{K}$ and in the contraction phase, $K > \bar{K}$. (2) At the peak of each cycle, the common level of K is OA which is smaller than the OB level of K at the trough and shows more time for K to equal $\bar{K}$. This is clear from the dotted horizontal lines at *OA* level in the upper portion and the dotted horizontal lines at *OB* level in the lower portion of Figure 16.4.

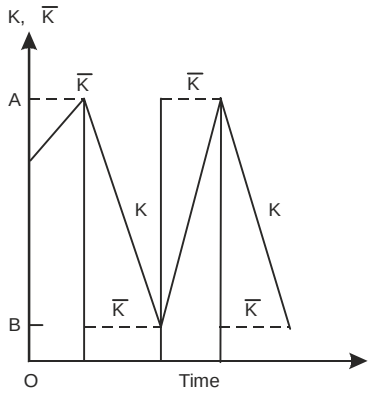

Fig. 16.3

On the other hand, if the growth factor for technological progress is included, $\bar{K}$ continues to increase with each cycle and it takes long time for K to equal $\bar{K}$ in the expansion phase. When the downswing starts, there being no growth factor the contraction phase becomes shorter. Thus the presence and absence of technological growth factor make the subsequent peaks and troughs at the higher level than the earlier peaks and troughs in the Goodwin cycle. These are shown as upper and lower dotted lines in Figure 16.4.

In the figure aa line shows the technological growth factor which is similar to the Hicksian EE line where $K=\bar{K}=a$. The upper and lower limits of $\bar{K}$ have been shown by the dotted lines. P represents peaks and T as troughs where $K = \bar{K}$. The contraction paths *PT* become shorter than the expansion paths, *TP*.

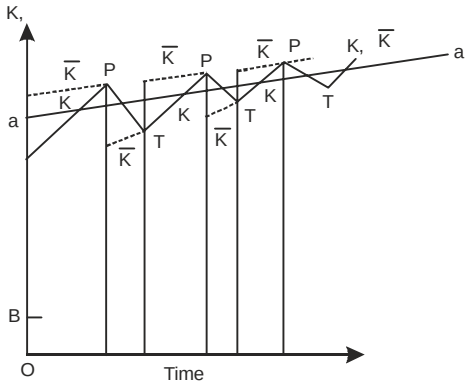

Fig. 16.4

Its Criticisms

The following are the weaknesses of Goodwin's model.

1. **Unrealistic.** The Goodwin model is unrealistic on two counts. First, it shows that the recessionary phase is longer than the expansionary phase of the cycle, as shown in Figure 16.4 Second, the desired stock of capital becomes constant at the peak, as shown by the dotted lines in Figure 16.4.

2. **Empirically Wrong.** The Goodwin model shows that when the economy reaches the peak and the trough, it at once takes a downturn and upturn respectively. This is empirically wrong because both recession and recovery are slow processes. As Hicks has also pointed out that the economy creeps along the upper and lower ceilings.

3. **Conclusion.** Despite these limitations, according to Prof. Allen, "The advantage of Goodwin's model is that the non-linear element is built in; the resulting oscillation maintains itself without any dependence on outside factors or on particular initial (or historical) conditions."

Differences between Goodwin and Hicks Models

Goodwin's model is different from Hicks' model on the following points:

1. The Hicksian model shows only how cycles take place. But Goodwin's model traces the time path of a realistic cycle.

2. The Hicks model is linear which becomes non-linear when the ceiling and floor of a cycle meet. But Goodwin's model is throughout non-linear.

3. Hicks combine growth and cycle in his model and keep growth dependent on autonomous investment. According to Goodwin, growth depends on technological change which continuously increases the productive capacity of the economy.

4. The equilibrium path *EE* of Hicks is based on continuous increase in autonomous investment. But Goodwin's growth path aa is based on the increase in desired capital *K* which is the result of continuous technological changes.

Kaldor's Theory

In the model of the trade cycle developed by Nicholas Kaldor, consumption (or saving) is a function of income while investment is directly related to income and inversely related to stock of the capital. In other words, the investment demand function is of the capital-adjustment type. Kaldor's theory of trade cycle appeared in 1940, barely four years after the publication of Keynes' book. The General Theory of Employment, Interest and Money." Although Keynes devoted Chapter 22 of the General Theory to "Notes on the Trade Cycle," he did not develop any full-fledged theory of the trade cycle because his chief concern was to develop an alternative theory of income and employment which could replace the classical theory of income an employment. Kaldor's theory is a very simple and neat discussion of trade cycle based on the Keynesian saving-investment analysis.

Kaldor's trade cycle theory is simply an extension of the income determination model where the saving supply function was of the form $S = -a+SY$ and the investment demand function was of the form $I = \bar{I}_A + eY$. The model of equilibrium income determination discussed in that chapter has been shown in Fig. 16.5. The stability condition required there was that the marginal propensity to invest (MPI) should be less than the marginal propensity to save (MPS), i.e., MPI < MPS. In other words, the slope of the investment demand function should be less than the slope of the saving supply function. This means that for the stability of equilibrium, the investment demand function must intersect the saving supply function from above. If the MPI > MPS, i.e., if the investment demand function intersects the saving supply function from below, the resulting equilibrium will be unstable. Part A and Part B of Fig. 16.5 show the stable and unstable equilibrium positions. In both the situations, the equilibrium income is Ye corresponding to which the planned saving equals the planned investment.

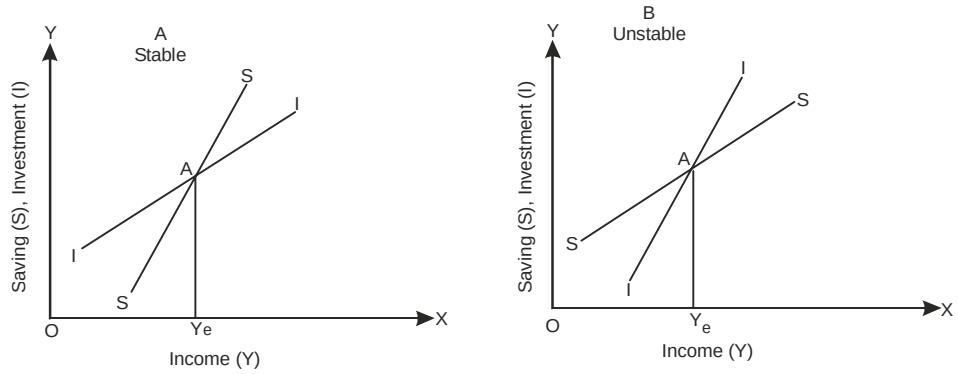

Fig. 16.5

In Fig. 16.5 the saving supply and investment demand functions are linear. From the point of view of trade cycle theory, these offer very little as in either case - stable or unstable equilibrium - trade cycle will not occur while in the real world cyclical fluctuations have certainly occurred. For his business cycle analysis, Kaldor takes the non-linear saving and investment functions. According to Kaldor, the saving supply and the investment demand functions cannot both be linear over the entire range of changes in the income which take place during the course of business cycle.

Dividing the full trade cycle into relatively low, normal and relatively high income phases, the marginal propensity to invest will not be the same during all the three phases. The linear investment demand function, however, makes us believe that it will be uniform. During the course of business cycle, the non linear investment demand function will behave in such a manner that the MPI or the slope of the investment function will be relatively low at both relatively low and relatevely high levels of income. To put differently, the investment demand function is likely to be income inelastic at low income levels due to the presence of excess plant capacity in the economy. It is also likely to be so at very high levels of incomes due to the high construction costs and the high cost and increasing difficulty of borrowing funds.

According to Kaldor, the non-linear investment demand function has the shape as

shown in Fig. 16.6. Like the investment demand function, the saving supply function is also non-linear with the MPS varying corresponding to different income ranges. Thus, during the course of the trade cycle both for the relatively low and relatively high levels of income the MPS and, therefore, the slope of the saving supply function will be high. Figure 16.6B shows such a saving supply function. In other words, the saving supply function is income -elastic both at very low and very high levels of income. The saving supply function behaves so because when income is very low, people try to maintain their former high standard of living to which they are accustomed with the result that a further fall in their income is accompanied by almost the full amount of

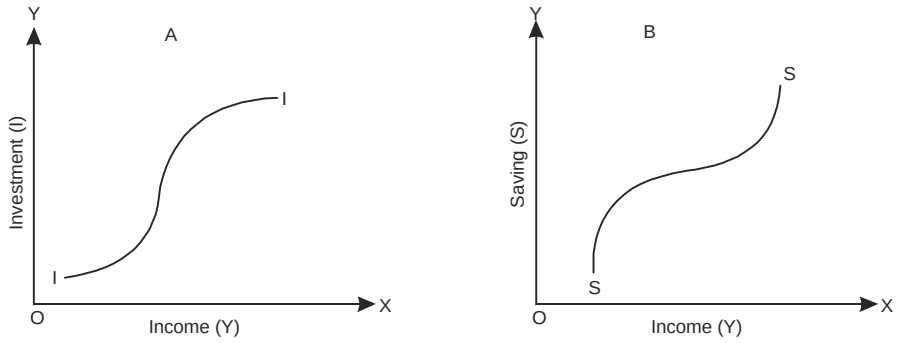

Fig. 16.6

Fall in savings. When income is very high, further increases in income are accompanied by a very large proportional increase in savings because people expect these high levels of income to be transitory. Consequently, they do not increase their consumption at all or at any rate increase it very insignificantly. Thus, the saving supply function has a steep slope both at relatively low and at relatively high levels of income.

By combining the investment demand and saving supply functions of Fig. 16.6 A and Figure 16.6B into a single diagram as shown in Fig. 16.7 we obtain multiple equilibria, both stable and unstable. At equilibrium points A and B, the slope of the saving supply function is higher than the slope of the investment demand function. Consequently, the marginal propensity to save s greater than the marginal propensity to

invest i.e., MPS > MPI. Accordingly, the equilibrium points A and B which correspond to relatively low and relatively high levels of national income are points of stable equilibrium and Y_A and Y_B are stable income levels. Below Y_A and between Y_B and Y_C levels of income investment is greater than saving i.e., $I > S$. consequently, income rises until it reaches Y_A or Y_C. At income levels ranging between Y_A and Y_B or above Y_C levels of income saving exceeds investment, i.e., S>I. Consequently, the corresponding income Y_B is unstable income. If income is between Y_C and Y_B, it will rise to Y_C and if it is between Y_B and Y_A, it will fall to Y_A. In other words, if the level of income is even slightly disturbed from Y_B, it will never tend back to Y_B. Moving farther away from Y_B, it will move either toward Y_C or toward Y_A stabilizing itself at either of these two stable income levels depending on the direction of disturbance or fluctuation. The economy will attain stability only either at some particular high level of income, such as Y_C, or at some particular low level of income, such as Y_A.

Fig. 16.7 does not, however, explain anything about the occurrence of the trade cycle composed of the alternating contractions and

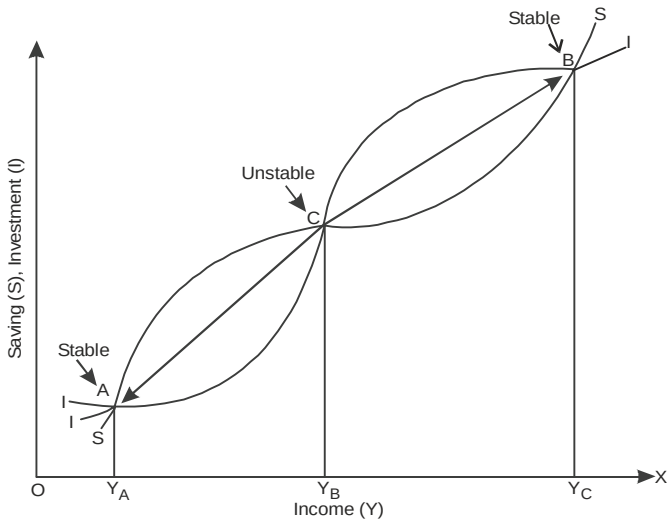

Fig. 16.7

expansions. It shows nothing more than the two positions of stable equilibrium towards either of which income will tend to move. According to Kaldor, "the key to the explanation of the trade cycle is to be found in the fact that each of these two positions is stable only in the short period; that as activity continues at either one of these levels. Forces gradually accumulate which sooner or later will render that particular position unstable." If we can show that stable equilibrium at B becomes unstable over time forcing a movement towards A and vice versa we can move ahead to show the generation of the trade cycle.

Fig. 16.7 shows that both the saving and investment vary as income changes during the course of trade cycle. However, apart from income, saving an investment are also affected by another variable. According to Kaldor, the capital stock in the economy also causes cyclical changes in saving and investment. Saving is a direct function of the capital stock such that higher the capital stock higher is the amount of saving & vice versa . In view is income function of the capital stock,such that for any level of income higher the capital stock, smaller is the amount of investment and vice versa.

According to Kaldor, the investment and saving curves drawn in Fig. 16.7 are short-run curves which shift over time. At the high level of income, investment will increase more rapidly. Consequently, the economy's capital stock will continue to grow. After sometime, however, additions to capital stock will cause a downward shift in the investment demand curve. Saving supply curve will shift upward at high levels of income over time. This statement is similar to the view held by the under-consumptionists. The saving supply curve will shift upward at high levels of income because purchases of consumer durables will not increase as income increases. Fig. 16.8 shows changes the in the equilibrium position as the capital stock of the economy changes over time.

In Fig. 16.8, stage I corresponds to Fig. 16.7. We assume, to begin with, that the economy is initially in equilibrium at point B at relatively high or above normal level of income. Corresponding to this high level of equilibrium income, investment is correspondingly high. Higher the rate of investment, more rapid is the increase in economy's total capital stock. It was explained in the Chapter 21 that as the capital stock grows, ceteris paribus, the marginal efficiency of capital falls causing a downward shift in the marginal efficiency of investment schedule which in terms of Fig. 16.8 means

a downward shift in the investment curve. At the same time an increase in economy's capital stock, which is an increase in the economy's wealth, shifts upward the saving curve. The upward shift in the saving supply curve and a downward shift in the investment demand curve gradually shift the position of B to the left and that of C to the right bringing the two points closer to one another as shown in Stage 2 in Fig. 16.8. Eventually, as a result of the gradual upward and downward shifts in the saving and investment curves respectively these curves become tangential and points B and C coincide as shown in Stage 3 diagram of Fig. 16.8.

Both to the right and the left of the point of tangency between the investment demand and saving supply curves, saving is greater than investment, i.e., I. Consequently, the equilibrium at the B,C position in Stage 3 is unstable in a downward direction. Since deflationary pressures are at work, the economy will move downward from this unstable equilibrium position toward point A which shows the stable equilibrium position corresponding to very low level of income. At this low level of income, there will be the problem of excess plant capacity. Consequently, the entire capital stock which has depreciated will not be replaced. Thus, gross investment will be smaller than depreciation and, therefore, capital stock will decrease tending to shift the investment demand curve II upward. On the other hand at low income the saving supply curve SS will either fall (as consumer durables wear out causing demand for their replacement and as the demand increases for buying more new consumer durable goods) or flatten out. These shifts in the II and SS curves will tend to move point C closer to point A as shown

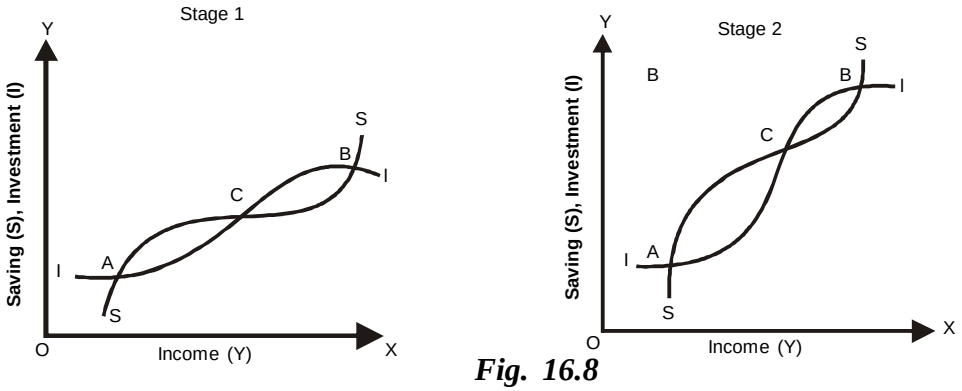

Fig. 16.8

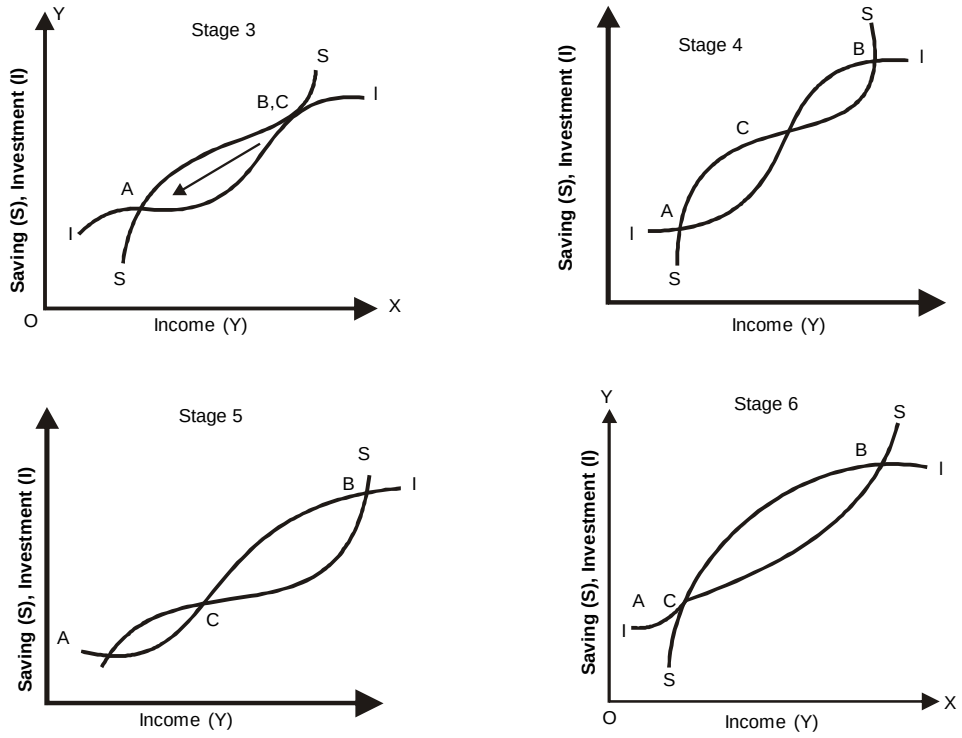

Fig. 16.8

in stage 5 in Fig. 16.8 Eventually, points C and A will coincide as shown in Stage 6 in Fig. 16.8. Since both to the right and left of the point of tangency between the II and SS curves, shown by the position A, C, investment is greater than saving i.e., $I > S$, inflationary pressures are at work in the economy. Consequently, the economy will move upward toward point B. This process in which the economy moves downward and upward between points A and B can continue in definitely. Fig. 16.8 shows one complete trade cycle. The cycles generated by this mechanism will not necessarily be of the same length nor will expansions and contractions be necessarily symmetrical. These characteristics will depend on the slopes of and rate at which the II and *SS* curves shift. It is also possible that no trade cycle will occur.

Kaldor's theory is simple to understand and is quite ingenious. The cyclical process explained by Kaldor is self-generating. The upward movement to high levels of income generates forces which produce a downward movement to low levels of income and vice versa. These cycle generating forces - changes in the average propensity to save and increase and decrease in the capital stock - are inherent in the economic process. In other words, these forces are endogenous. In Kaldor's model, the non-linearities of the investment demand and saving supply functions which are due to excess capacity, the high costs of construction and the high cost and increased difficulty of borrowing funds are of crucial importance in explaining the trade cycle.

Kaldor's theory does not employ the acceleration principle in order to explain the cycle. In Kaldor's model, investment is related directly to the level of income and inversely to the amount of economy's capital stock. This approach does away with the unrealistic and inflexible tying of investment to changes in income which is implied in the rigid acceleration principle, retaining all the same the basic idea of the acceleration principle. Kaldor's model, which employs the investment demand function of the type $I_t = I_a = e\ Y_{t-1} - h\ K_t$ incorporating the capital stock adjustment principle, does not make any direct reference to the rate of change of income and output over the successive periods. Although the model retains the link between changes in the aggregate output and investment but it has been done in such a way as to avoid some of the weaknesses of the rigid acceleration principle.

SUMMARY

1. Economic activity is subject to periodical fluctuation of, fluctuation which occurs in a cyclical fashion in any business activity are called trade cycles or business cycles.

2. Samuelson's model of business cycle relates to three sector closed system and its income equation is expressed as

$$Y_t + C_T + I_t$$

Where Y_T = National income at time t, C_t = Consumption expenditure, I_t = induced investment, G_t = Government expenditure.

3. Hicks developed his theory of trade cycle by combining principles of multiplier and accelerator - which he has borrowed from Keynes and has integrated the concepts of autonomous and induced investment a distinction originally made by Roy Harrod in his growth theory.

4. Kaldor's model of business cycle is based on the Keynesian idea of saving and investment. Kaldor thinks inequality between ex - antes saving and ex- antes investment which creates cyclical movements and considers influence of capital stock as investment decisions. Further, he thinks demand for capital goods to levels of income and not to rate of its change.

5. Prof. Von Hayek has developed a theory of trade cycle in terms of monetary over investment and consequent over production. In his opinion, there is natural or equilibrium rate of interest at which demand for loanable funds is equivalent to supply of funds through voluntary savings. At the same time, there is market rate of interest based upon demand and supply of loanable funds in market.

6. According to Hawtrey basic cause of trade cycle is a expansion and contraction of money in a country. In his opinion, change is the rate of interest cause changes in borrowing from banks and thus changes in supply of money which results changes in demand for commodities and services and variations in business activity.

QUESTIONS

1. Define trade cycle and its phrase. Explain monetary theories of trade cycle.
2. Discuss Kaldor's theory of business cycle. Point out its limitations?
3. Examine modern business cycle theory of kaldor ?
4. What is the meaning of business cycle? Examine Kaldor's model of business cycles.

5. Critically examine Kaldor's theory of business cycles.
6. Critically examine Hick's theory of business cycles.
7. The growth path of an economy is characterized by cyclical fluctuations. Discuss or Elucidate?
8. In Hicks business cycle theory the multiplier the accelerator and the warranted rate of growth of income play a crucial role. Elucidate?
9. Discuss Samuelson's model of business cycle.

EFFECTIVENESS OF MONETARY AND FISCAL POLICY

- Introduction
- monetary policy
- Fiscal policy
- The synthesist view: three range analysis
- Effects of IS curve on monetary and fiscal policy
- Monetary-fiscal mix

INTRODUCTION

The relative effectiveness of monetary and fiscal policy has been the subject of controversy among economists. The monetarists regard monetary policy more effective than fiscal policy for economic stabilization. On the other hand, the Keynesians hold the opposite view. In between these two extreme views are the synthesists who advocate the middle path. Before we discuss them, we study the effectiveness of monetary and fiscal policy in terms of shape of the IS curve and the *LM* curve. The IS curve represents fiscal policy and the LM curve monetary policy.

MONETARY POLICY

The government influences investment, employment, output and income through monetary policy. This is done by increasing or decreasing the money supply by the monetary authority. When the money supply is increased, it is an expansionary monetary policy. This is shown by shifting the LM curve to the right. When the money supply is decreased, it is a contractionary monetary policy. This is shown by shifting the LM curve to the left.

Fig.17.1 illustrates an expansionary monetary policy with given LM and IS curves. Suppose the economy is in equilibrium at point *E* with *OY* income and OR interest rate. An increase in the money supply by the monetary authority shifts the *LM* curve to the right to LM_1, given the IS curve. This reduces the interest rate from *OR* to *OR1* thereby increasing investment and national income. Thus the national income rises from *OY* to OY_1.

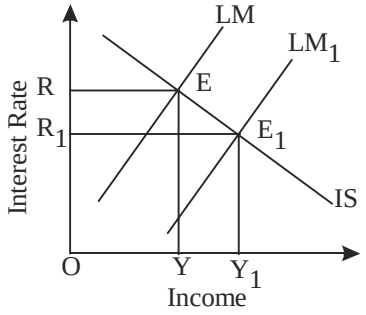

Fig. 17.1

But the relative effectiveness of monetary policy depends on the shape of the *LM* curve and the IS curve. Monetary *Policy is more effective if the LM curve is steeper.* A steeper LM curve means that the demand for money is less interest elastic. The less interest elastic is the demand for money, the larger is the fall in interest rate when the money supply is increased. This is because when the demand for money is less elastic to a change in interest rate, an increase in the money supply is more powerful in the bringing about a large fall in interest rate. A large fall in the interest rate leads to a higher increase in investment and in national income. This is depicted in Figure 17.2 where E is the original equilibrium position of the economy with *OR* interest rate and *OY* income. When the steep LM_1 curve shifts to the right to LM_S, the new equilibrium is set at *E2*. As a result, the interest rate falls from *OR* to OR_2 and income rises from *OY* to OY_2. On the other hand, the flatter is the *LM curve, the less effective is monetary policy*.

A flatter LM curve means that the demand for money is more interest elastic. The more interest elastic is the demand for money, the smaller is the fall in interest rate when the money supply is increased. A small fall in the interest rate leads to a smaller increase in investment and income. In Figure 17.2, *E* is the original equilibrium position with *OR* interest rate and *OY* income. When the flatter LM_2 curve shifts to the rights LM_1 the new equilibrium is established at E_1 which produces OR1 interest rate and OY_1 income level. In this case, the fall in interest rate to OR_1 is less than OR_2 of the steeper LMs curve and the increase in income OY1 is also less than OY_2 of the steeper curve. This shows that monetary policy is less effective in the case of the flatter *LM* curve and more effective in the case of the steeper curve.

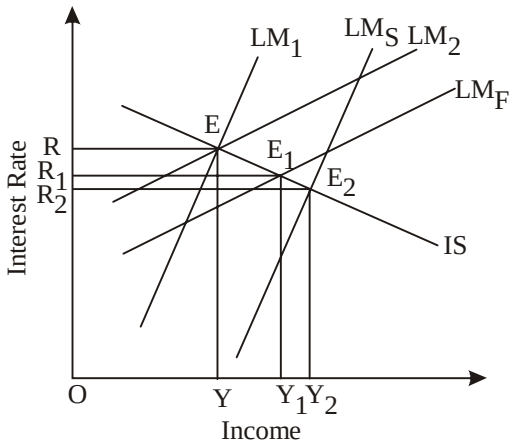

Fig. 17.2

If the *LM curve is horizontal, monetary policy is completely ineffective* because the demand for money is perfectly interest elastic. This is the case of "liquidity trap" shown in Figure 17.3, where the increase in the money supply has no effect on the interest rate *OR* and the income level *OY*.

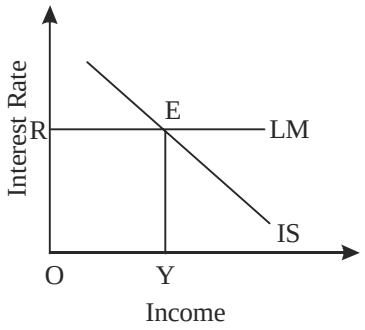

Fig. 17.3

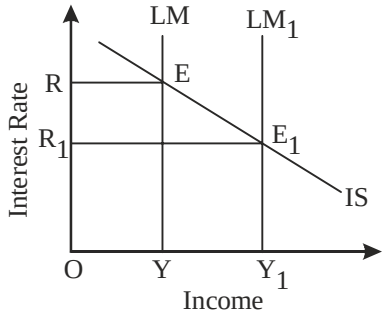

Fig. 17.4

On the other hand, if the *LM curve is vertical, monetary policy is highly effective* because the demand for money is perfectly interest inelastic. Figure 17.4 shows that when the vertical *LM* curve shifts to the right to LM_1 with the increase in the money supply, the interest rate falls from *OR* to OR_1 which has no effect on the demand for money and the entire increase in the money supply has the effect of raising the income level from *OY* to OY_1.

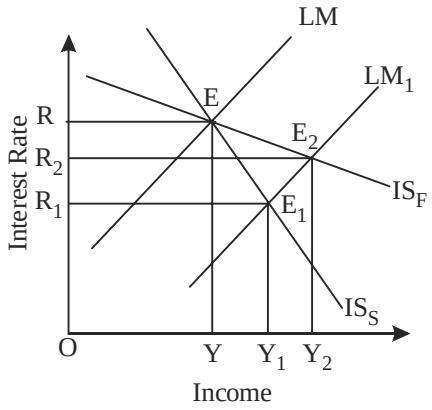

Fig. 17.5

Now take the slope of the IS curve. The *flatter is the IS curve, the more effective is the monetary policy.* The flatter IS curve means that the investment expenditure is highly interest elastic. When an increase in the money supply lowers the interest rate even slightly, private investment also increases, by a large amount, thereby

raising income much. This is depicted in Figure 17.5 where the original equilibrium is at point E with *OR* interest rate and *OY* income level.

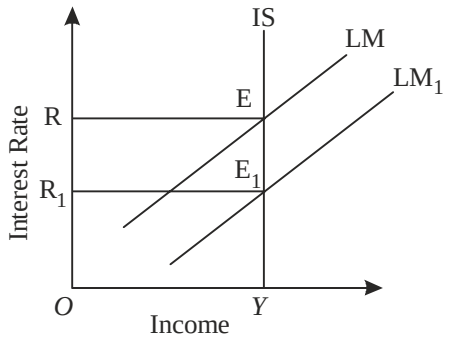

Fig. 17.6

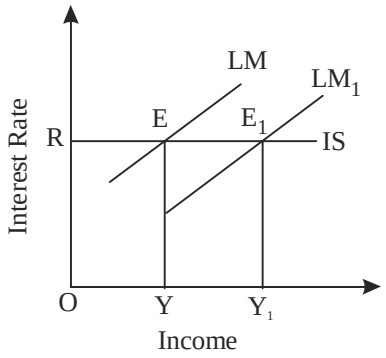

Fig. 17.7

When the *LM* curve shifts to the right to LM_1 with the increase in money supply, it intersects the flatter curve IS_F at E_2 which produces OR_2 interest rate and OY_2 income. If we compare this equilibrium position E_2 with the E_1 position where the curve IS_S is steeper, the interest rate OR_1 and the income level OY_1 are lower than the interest rate an income level of the flatter ISF curve. This shows that when the money supply is increased, a small fall in the rate of interest leads to a large rise in private investment which raises income more (By YY2) with the flatter IS curve as compared to the steep IS curve (by YY1) thus making monetary policy more effective.

If the IS *curve is vertical, monetary policy is completely ineffective* because investment expenditure is completely interest inelastic. With the increase in the money supply the LM curve shifts to the right to LM_1 in Figure 17.6, the interest rate falls from *OR* to OR_1 but investment being completely interest inelastic, the income remains unchanged at *OY.* On the other hand, if the IS curve is horizontal, monetary policy is highly effective because investment expenditure is perfectly interest elastic. Figure 17.7 shows that with the increase in the money supply, the *LM* curve shift to LM_1. But even with no change in the interest rate *OR*, there is a large change in income from *OY* to OY_1. This makes monetary policy highly effective.

FISCAL POLICY

The government also influences investment, employment, output and income in the economy through fiscal policy. For an expansionary fiscal policy, the government increases its expenditure or/and reduces taxes. This shifts the IS curve to the right. The government follows contractionary fiscal policy by reducing its expenditure or/and increasing taxes, this shift the IS curve to the left.

Figure 17.8 illustrates an expansionary fiscal policy with given IS and *LM* curves. Suppose the economy is in equilibrium at point *E* with *OR* interest rate and *OY* income. An increase in government spending or a decrease in taxes shifts the IS curve upwards to IS_1 which intersects the *LM* curve at E_1. This raises the national income from *OY* to OY_1. The rise in the national income increases the demand for money, given the fixed money supply. This, in turn, raises the interest rate from *OR* to OR_1. The increase in the interest rate tends to reduce private investment expenditure at the same time when the government expenditure is being increased. If the interest rate had not changed with the increase in government expenditure, income would have risen to OY_2 level. But the actual increase in income has been less by Y_2Y_1 due to the increase in the interest rate to OR_1 which has reduced private investment expenditure. The opposite happens in a contractionary fiscal policy.

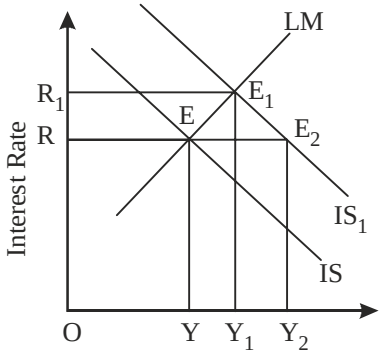

Fig. 17.8

The relative effectiveness of fiscal policy depends on the slope of the LM curve and the IS curve. Fiscal policy is more effective, the flatter is the LM curve and the

steeper is the IS curve . When the IS curve shifts upwards to IS_1 with the increase in government expenditure, its impact on the national income is more with the flatter LM_F curve than with the steeper LM_S curve. This is shown in Figure 17.9 where the IS_1 curve intersects the flatter LM_F curve at point E2 which produces OY_2 income and OR_2 interest rate. On the other hand, it intersects the steeper LM_S curve at E1 which determines OY_1 income and OR_1 interest rate. In the case of the steeper curve LM_S, the increase in come to OY_1 leads to a large rise in the demand for money which raises the interest rate to a very high level OR_1. The large increase in the interest rate reduces private investment despite increase in government expenditure which ultimately brings a small rise in income OY_1. But in the case of the flatter curve LM_F, the rise in the interest rate to OR_2 is relatively small. Consequently, it reduces private investment to a lesser degree and its net effect on national income is relatively large. Thus the increase in national income with the flatter curve LM_F is more ($YY_2 > YY_1$) as compared with the steeper curve LM_S.

Fiscal policy is completely ineffective, if the LM curve is vertical. It means that the demand for money is perfectly interest inelastic. This is shown in Figure 17.10 where the level of income remains unchanged. When the IS curve shifts upward to IS_1, only the interest rate rises from OR to OR_1 and increase in government expenditure does not affect national income at all. It remains constant at OY.

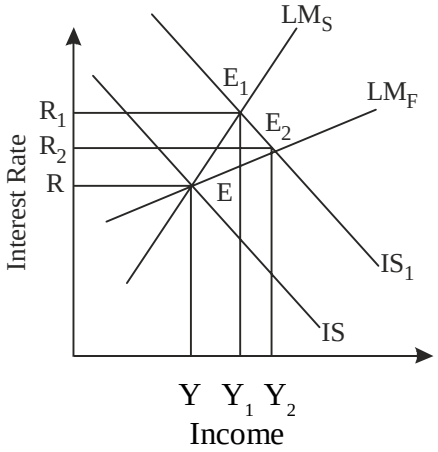

Fig. 17.9

At the other extreme is the perfectly horizontal LM curve where fiscal policy is fully

effective. This situation implies that the demand for money is perfectly interest elastic. This is shown in Figure 17.11 where the horizontal LM curve is intersected by the IS curve at E which produces OR interest rate and OY income. When the IS curve shifts to the right to IS1, income rises by the full multiplier of the increase in government expenditure. It rises to OY1 but there is no change in interest rate.

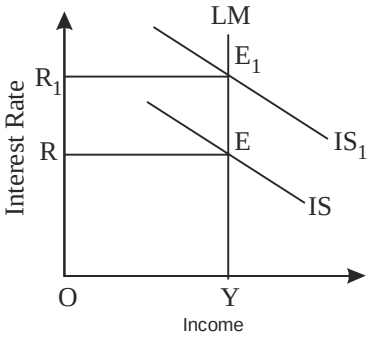

Fig. 17.10

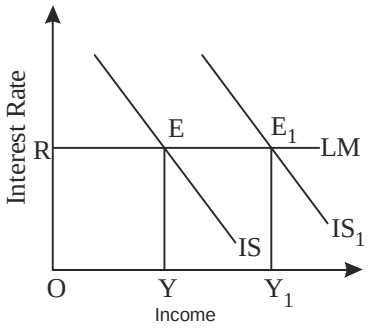

Fig. 17.11

Now take the slope of the IS curve. The steeper is the IS curve, the more effective is fiscal policy. The flatter is the IS curve, the less effective is fiscal policy. These two cases are illustrate in Figure 17.12 where E is the original equilibrium point with OR interest rate and OY income level.

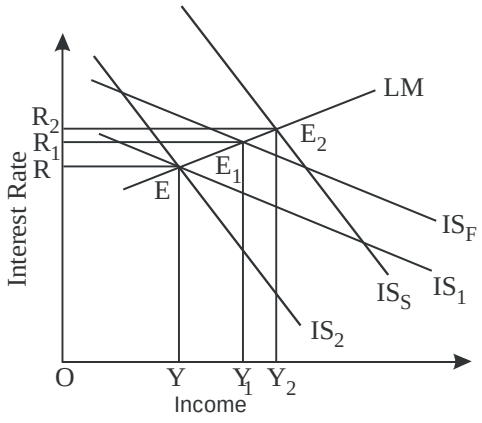

Fig. 17.12

The increase in government expenditure shifts the flatter curve IS1 to ISF so that the new equilibrium with LM curve at point E1 produces OR1 interest rate at OY1 income level. Similarly, the steeper curve IS_2 is shifted to IS_S with the increase in government expenditure and the new equilibrium with LM curve at point E_2 lead to OR_2 interest rate and OY_2 income level. The figure shows that the national income increases more with the shifting of the steeper IS curve than in the case of the flatter IS curve. It rises by YY_2 in the case of the steeper curve IS_S and by YY_1 in the case of the flatter curve IS_F. This is because investment expenditure is less interest-elastic, when the IS curve is stepper. The increase in the interest rate to OR_2 reduces very little private investment with the result that the rise in income is greater. It is YY_2. On the other hand, the increase in income is smaller in the case of the flatter IS curve. It is YY_1. This is because investment expenditure is more interest-elastic. The increase in the interest rate to OR_1 reduces large private investment so that the rise in income is smaller. Thus fiscal policy is more effective, the steeper is the IS curve and is less effective in the case of the flatter IS curve.

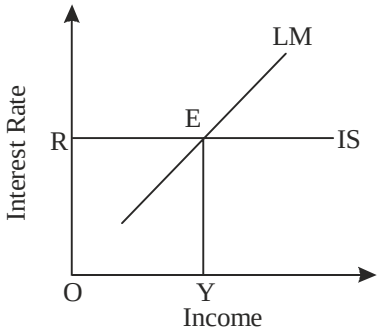

Fig. 17.13

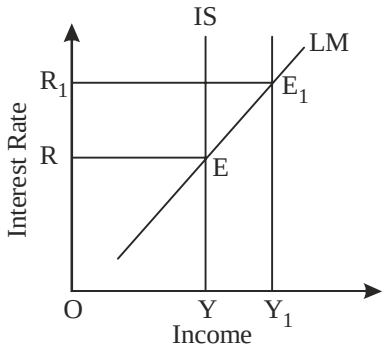

Fig. 17.14

Fiscal policy is completely ineffective, if the IS curve is horizontal. An horizontal IS curve means that investment expenditure is perfectly interest elastic. This is depicted in Figure 17.13 where LM curve intersects the IS curve at E. An increase in government expenditure has no effect on the interest rate OR and hence on the income level OY. Such a situation is not likely to be in practice. On the other extreme is the vertical IS curve which makes fiscal policy highly effective. This is because government expenditure

is perfectly interest inelastic. An increase in government expenditure shifts the IS curve to the right to IS_1, raises the interest rate to $OR_1$and income to OY_1 by the full multiplier of the increase in government expenditure, as shown in Figure 17.14. This makes fiscal policy highly effective.

THE SYNTHESIST VIEW: THREE RANGE ANALYSIS

Economists have explained the effectiveness of monetary and fiscal policies in three ranges in order to reconcile the extremes of the Keynesian and monetarist (or classical) views. The LM curve slopes upward to the right and has three segments, as shown in Figure 17.15. Starting from the left it is perfectly elastic, from R_1 to A. This segment is known as "the Keynesian range", reflecting the "liquidity trap". At the other extreme to the right, the LM curve is perfectly inelastic, from E to LM_2. This segment of the curve is known as "the classical range," because the classical believed that money is held only for transactions purposes and nothing is held for speculative purposes. In between these two segments of the curve is "the intermediate range". The Keynesian range represents the fiscalist or Keynesian view, the classical range the monetarist view, and the intermediate range the synthesist view.

We take expansionary monetary and fiscal policies in order to explain their effectiveness which depend upon the extent to which they affect the level of income and the rate of interest in the Keynesian, the classical and the intermediate ranges. They, in turn, are determined by the responsiveness of the demand for money to changes in the interest rate.

MONETARY POLICY

Monetary policy is explained in Figure 17.15 where the three-range LM curves LM_1 and LM_2 are shown with three IS curves. The LM_2 curve emerges after an increase in the money supply.

The Keynesian Range

First consider the Keynesian range where the LM curve is perfectly elastic. This is the Keynesian liquidity trap situation in which the LM curve is horizontal from R_1 to

A, and the interest rate cannot fall below OR_1. An increase in the money supply shifts the LM curve from LM_1 to LM_2. This shift in the curve has no effect on the rate of interest. Consequently, investment is not affected at all so that the level of income remains unchanged at OY_1. This is because at a very low rate of interest such as OR1, people prefer to keep money in cash rather than in bonds (or securities) in the hope of converting it into bonds when the interest rate rises. Thus under the Keynesian assumption of the liquidity trap, the horizontal portion of the LM curve is not affected by an increase in the money supply. The IS curve intersects the LM curve in the flat range at A with little effect on the interest rate, investment and income. Monetary policy is, therefore, totally ineffective in the Keynesian range.

The Classical or Monetarist Range

Consider the classical range where LM curve is perfectly inelastic. In the classical range, the system is in equilibrium at D where the IS_3 curve intersects the LM1 curve and the interest rate is OR_5 and income level OY_4. Suppose the central bank adopts an expansionary monetary policy whereby it increases the money supply by open market operations. The increase in money supply shifts the LM_1 curve to the right to LM_2 position. As a result, the income level increases from OY_4 to OY_5 and the interest rate falls from OR_5 to OR_4, when the IS_3 curve crosses the LM_2 curve at E.

The increase in the income level and fall in the interest rate as a result of the increase in the money supply is based on the classical assumption that money is primarily a medium of exchange. When the central bank buys securities in the market, the security prices are bid up and the rate of interest falls. The wealth holders then find other assets more attractive than securities. They, therefore, invest the increased cash holdings in new or existing capital investments which, in turn, raise the level of income. But as long as wealth holders possess more money balances than are required for transactions purposes, they will continue to compete for earning assets. Consequently, the interest rate will continue to fall and investment will continue to rise until the excess money balances are absorbed in such transactions. Ultimately, the equilibrium level of income rises by the full amount of the increase in the money supply. Thus the monetary policy is highly effective in the classical range when the economy is at high levels of income and interest rate and utilizes the entire increase in the money supply for transactions purposes thereby raising national

income by the full increase in the money supply.

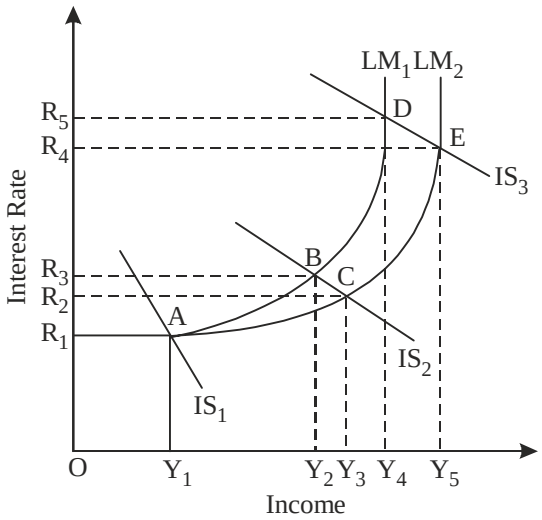

Fig. 15

Fig. 17.15

The Intermediate Range

Now consider the intermediate range when the initial equilibrium is at B where the IS_2 curve intersects the LM_1 curve, and the income level is OY_2 and the interest rate is OR_3. The increase in the money supply shifts the LM_1 curve to LM_2 position. As a result, the new equilibrium is established at point C where the IS_2 curve crosses the LM_2 curve. It shows that with the increase in the money supply, the rate of interest falls from OR_3 to OR_2 and the income level rises from OY_2 to OY_3. In the intermediate range, the increase in income by Y_2Y_3 is less than that I the classical range, ($Y_2Y_3 < Y_4Y_5$). This is because in the classical case the entire increase in the money supply is absorbed for transactions purposes. But in the intermediate case, the increased money supply is partly absorbed for speculative purposes and partly for transactions purposes. That which is held for speculative purposes is not invested by wealth holders and remains with them in the form of idle balances. This has the effect of raising the income level by less than the increase in the money supply. Thus in the intermediate range

monetary policy is less effective than in the classical range.

FISCAL POLICY

Fiscal policy is explained in Figure 17.16 in which the three range LM curve is taken along with six IS curves that arise after increase in government expenditure in the case of the Keynesian, intermediate and classical ranges.

The Keynesian Range

Consider first the Keynesian range when the initial equilibrium is at A where the IS1 curve intersects the LM curve. Suppose the government expenditure is increased. This brings about new equilibrium at B where the IS_2 curve cuts the LM curve. Consequently, the income level rises from OY_1 to OY_2 with the interest rate unchanged at OR. The increase in income in the Keynesian case is equal to the full multiplier times the increase in government expenditure. This is because with fixed money supply at low levels of interest rate and income, there is lot of idle money with the wealth holders. This can be used to finance higher transactions without raising the interest rate. When the interest rate does not raise the level of investment remains the same as before and the increase in income is equal to the full multiplier times the increase in government expenditure. Thus in the Keynesian range, the fiscal policy is very effective.

The Classical or Monetarist Range

In the classical range, the LM curve is perfectly inelastic and the IS5 curve intersects it at E so that the interest rate is OR3 and the income level is OY_5. When the government expenditure increases for an expansionary fiscal policy, the IS5 curve shifts upward to IS_6. As a result, the IS_6 curve crosses the LM curve at F and the interest rate rises to OR_4 with income remaining unchanged at OY_5. This is because the classical case relates to a fully employed economy where the increase in government expenditure has the effect of raising the interest rate which reduces private investment. Since the increase in government expenditure exactly equals the reduction in the private investment, there is no effect on the level of income which remains constant at OY_5. Thus fiscal policy is not at al effective in the classical range.

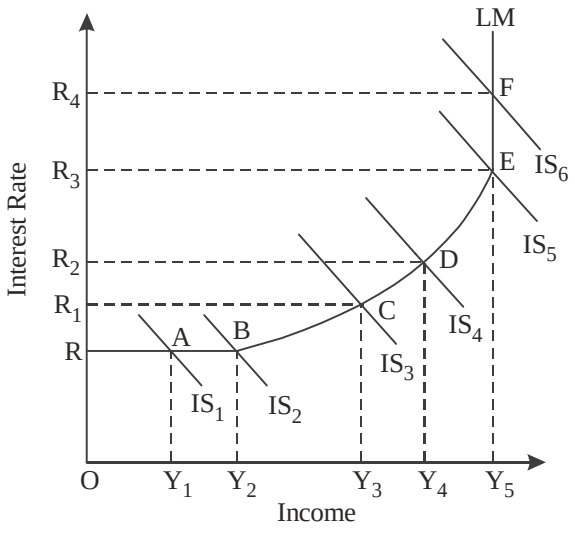

Fig. 17.16

The Intermediate Range

In the intermediate range, the initial equilibrium is at C where the IS_3 curve intersects the LM curve. Here OR_1 is the interest rate with OY_3 income level. With the increase in the government expenditure. The IS_3 curve shifts upward to the right to IS_4 and the new equilibrium between IS_4 and LM curves is established at point D. As a result, the increase in government expenditure raises the income level from OY_3 to OY_4 and the interest rate from OR_1 to OR_2. The increase in both the income level and the interest rate in the intermediate range is due to two reasons. First the increase in income resulting from a rise in government expenditure occurs because additional money balances are available for transactions purposes. Second, given a fixed money supply, a part of available transactions are held as idle balances by wealth holders which raise the interest rate. As a result of the rise in the interest rate, investment falls and the fiscal policy is not so effective as in the Keynesian range. In general, fiscal policy will be more effective the closer equilibrium is to the Keynesian range and less effective the closer equilibrium is to the classical range.

Effects of Elasticities of IS Curve on Monetary and Fiscal Polities

The Elasticities of the IS curve affect monetary and fiscal policies in a slightly different way. This is explained in terms of Figure 17.17. In the Keynesian range, monetary policy is ineffective whether the IS curve is elastic or inelastic. On the other hand, fiscal policy is only effective when the IS curve is elastic or inelastic. The elastic curve ISF shifts to ISF_1 and income rises from OY_1 to OY_2 in Figure 17.17. The same result follows in the case of the shifting of an inelastic IS curve (not shown in figure).

In the classical range, fiscal policy is ineffective whether the IS curve is elastic (IS_{F2}) or inelastic (IS_{S2}). But monetary policy is effective under both the elastic and inelastic curves. Income rises from OY_3 to OY_6, as shown in Figure 17.17.

In the intermediate range, monetary policy is less effective when the ISS_1 curve is inelastic because the rise in income in this case is Y_2Y_3 whereas in the case of the elastic curve ISF_1, it is more effective, the rise in income being Y_2Y_5 ($>Y_2Y_3$). But fiscal policy is more effective, whether the IS curve is elastic or inelastic. The shifting of the inelastic curve IS_{S1} to IS_{SO} shows the increase in income from OY_3 to OY_4.

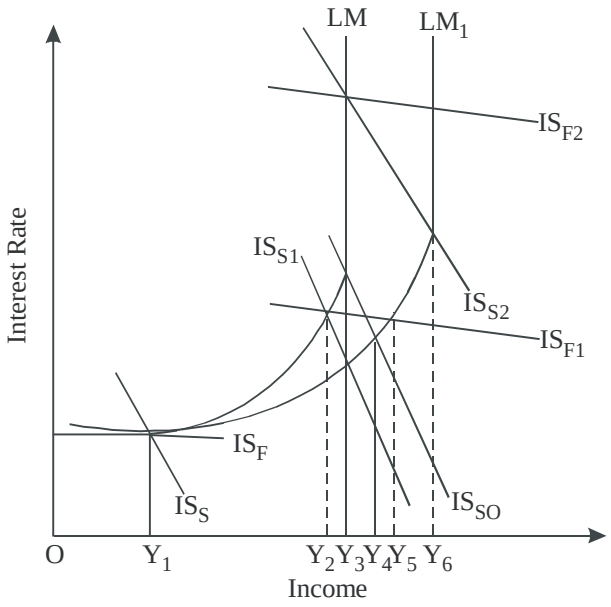

Fig. 17.17

Conclusion

The relative effectiveness of monetary and fiscal policy depends upon the shape of the IS and LM curves and the economy's initial position. If the economy is in the Keynesian range, monetary policy is ineffective and fiscal policy is highly effective. On the other hand, in the classical range, monetary policy is effective and fiscal policy is ineffective. But in the intermediate range both monetry and fiscal policies are effective. The case bridges the gap between the Keynesian and classical views. In this range, the elasticities of the IS and LM curves are neither highly interest elastic nor highly interest inelastic. In fact, in the intermediate range, the effectiveness of monetary and fiscal policies depends largely on the elasticities of the IS curve. If the IS curve is inelastic, fiscal policy is more effective than monetary policy. On the other hand, if the IS curve is elastic, monetary policy is more effective than fiscal policy. Thus for a complete effectiveness of both monetary and fiscal policies the best course is to have a monetary-fiscal mix.

MONETARY-FISCAL MIX

Consider a situation where an expansionary mix of monetary-fiscal policies is adopted to achieve full employment in the economy. This is illustrated in Figure 17.18 where the economy is in the initial situation at A on the basis of the interaction of IS_1 and LM_1 curves. This situation depicts OR_2 interest rate and OY_1 income level. Now an expansionary fiscal policy is adopted n the form of increase in government expenditure or decrease in taxes. This shifts the curve IS_1 to IS_2. This will have the effect of raising the interest rate further to OR_3 if an expansionary monetary policy is not adopted simultaneously. So in order to reduce the interest rate and encourage investment for achieving full employment, the monetary authority increases the money supply through open market purchase of securities. This tends to shift the curve LM_1 to the right in the position of LM_2 curve. Now fiscal policy has led to the new IS_2 curve and monetary policy to the LM_2 curve. Both the

curves intersect at B whereby the interest rate is lowered to OR_1 and the level of income rises to the full employment level OY_F.

Let us take another situation when the economy is at the full employment level of income OYF, where the IS curve intersects the LM curve at point E in Figure 17.19. But due to some reasons, the economy's growth rate has slowed down. In order to overcome this, more investment is required to be made in the economy. For this, the monetary authority increases the money supply which leads to the shifting of the curve LM to the right to LM1. The LM1 curve intersects the IS curve at point E1 which lowers the interest rate to OR1 and raises the income level to OY1. But the rise in national income being higher than the full employment income level, this policy is inflationary. Therefore, the economy requires a change in the monetary-fiscal policy mix.

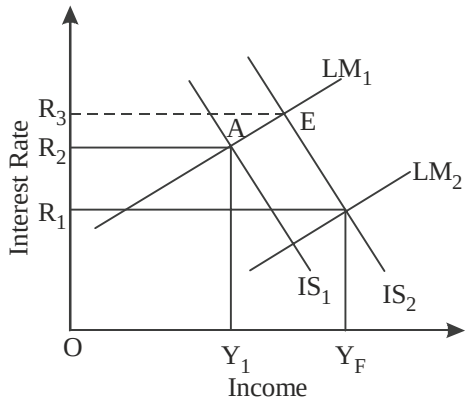

Fig. 17.18

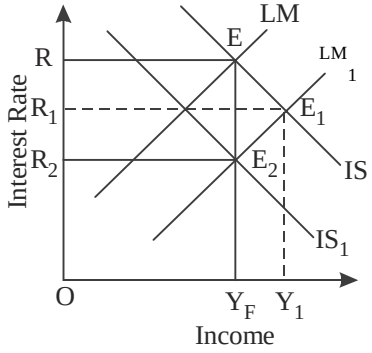

Fig. 17.19

For this, the expansionary monetary policy should be combined with a restrictive fiscal policy. Accordingly, the government reduces its investment expenditure or/and increases taxes so that the IS curve shifts to the left to IS_1. Now the IS_1 curve intersects the LM_1 curve at point E_2 so that the new equilibrium is established at a lower interest rate OR_2 and income level OY_F which is the full employment income level. This level can be maintained by the present monetary-fiscal policy mix because the lower interest

rate would keep large investment spending in the economy and reduced government expenditure or high taxes would control inflation.

SUMMARY

1. The government influences investment, employment, output and income through monetary policy. This is done by increasing or decreasing the money supply by the monetary authority.
2. The government also influences investment, employment, output and income in the economy through fiscal policy.
3. In the Keynesian range, monetary policy is ineffective and fiscal policy is highly effective.
4. On the other hand, in the classical range, monetary policy is effective and fiscal policy is ineffective.

QUESTIONS

1. Examine the effectiveness of monetary and fiscal policies in terms of the IS and LM functions.
2. Explain the extent of effectiveness of monetary and fiscal polices in counteracting recessionary forces.
3. How would you reconcile the extremes of the Keynesian and classical views on the effectiveness of monetary and fiscal policies ?
4. Explain the monetary - fiscal mix to achieve and maintain full employment.

MONETARY POLICY IN A DEVELOPING COUNTRY

Monetary policy can be best defined as a policy "which influences the public's stock of Money substitutes, or the public's demand for such assets, or both - that is, policy which influences the public's liquidity position." Before the advent of the Great Depression in Europe in the 1930s, monetary policy was generally regarded as an effective instrument of economic policy. It was believed that gentle nudges by the Central Bank of the country were enough to avert both inflation and severe depression. The Great Depression shattered this belief as monetary policy failed to prevent prosperity from breaking down after 1928 and to restore prosperity (via 'reflecting' prices) in the 1930s. The failure of the monetary policy to control the inflationary conditions in the Second World war (and after the period of the Second World War) further spelt its doom. Instead fiscal policy was given the pride of place. The theoretical justification for this shift-over from monetary to fiscal policy was provided by Keynes. The Developing countries also found it useful to place greater emphasis on fiscal policy as it acted more directly on economic activities as compared to the monetary policy and was also more efficacious in controlling booms and depressions. The underdeveloped nature of money and capital markets in these countries was another reason for the low priority accorded to the monetary policy.

In the recent years, there has been a revitalization of monetary policy and the economists are increasingly recognizing its role in realizing the objectives of price stability and full employment. The fact is that these objectives cannot e achieved merely by resorting to fiscal measures. Monetary measures are also important. Therefore, fiscal policy must be used in conjunction with monetary policy if maximum benefits have to b derived As regards the efficacy of the monetary policy to promote economic growth even now skepticism is pervasive.

OBJECTIVES OF MONETARY POLICY

In developing countries the primary objective of economic policies is economic growth. Other objectives which are often mentioned along with growth are expected to be realized with it. Rarely decision-makers take note of the fact that there may be a possible conflict between economic growth and other objectives. Monetary policy in developing countries thus aims at a higher rate of growth, and in order to relies this objective it works on four principal economic instruments: (1) The interest rate structure; (2) The aggregate supply of money; (3) The supply of credit; and (4) The financial institutional framework.

The Interest Rate Structure

The rate of interest was regarded in economic literature for a long period of time as the factor determining investment. A low rate of interest was supposed to promote investment while a high rate of interest was supposed to discourage it. Therefore, the monetary policy was designated the task of lowering the interest rate if expansion of investment was desired. The onset of the Great Depression of the 1930s made it amply clear that tinkering with the interest rate was totally inadequate to push up investment (and as a corollary development). The interest rate was pulled down to very low levels, ad yet there were no borrowers. The investment just refused to pick up. In the post-war years in Europe, interest rate was pushed up to very high levels in a bid to control the investment boom but again the policy failed. Expansion of investment continued. These experiences proved to economists beyond doubt that there are many factors determining the level of investment and the interest rate is just one of them.

Effectiveness of interest rate policy in a developing country is still less than that in a developed country. The assumption of a direct linkage between lower interest rates, higher investment and expanded output does not hold good in developing countries on account of a number of structural and institutional factors. For example, the developing countries have an underdeveloped capital market, bill market and general discount market; the asset structure of banks is not rationalized; there is no willing and effective cooperation (and coordination of operations) between the commercial banks and the Central bank, etc. Moreover, since the extent of monetization and the spread of the banking system is limited in these countries, monetary policy can succeed in controlling

interest rates only over a small portion of the economy. A substantial number of people like small and marginal farmers, agricultural labourers, small-scale entrepreneurs, small traders, etc., have to fall back upon local moneylenders who constitute the usurious money market. Obviously the Central Bank's monetary policy has no control over this amorphous unorganized segment of the money market.

This brief analysis reveals the limits of interest rate policy in a developing economy. Yet it can be of some use for encouraging public and private investment. For example, a low interest rate structure can help the government in obtaining resources at cheap rates for executing its plans. It can also encourage businessmen to expand their production activities. Therefore, a 'cheap money policy' is sometimes advocated for developing countries. However, a note of caution must e struck here. The private businessmen can use cheap money policy for investing in unproductive and speculative activities like the purchase of gold, jewellery, food stocks, land, etc. Therefore, if cheap money policy is to be used, it must be accompanied by physical controls and qualitative credit controls.

In the recent past the authoritarian regimes in some larger and most industrially advanced Latin American countries like Brazil and Argentina have followed an expansionary monetary policy resulting in negative 'real' interest rates (i.e., inflation rates exceeding interest rates), high profits and expanded investment with a view to realize a high rate of industrial output growth. However, the success which these countries see to have achieved is particularly due to depressed labour cost and not because of the inducement provided by the negative 'real' interest rates. In some other Latin American countries the policy of negative 'real' interest rates has failed miserably due to severe structural supply constraints. The constraints include the absence of essential intermediate products. Licensing restrictions, poor management, bureaucratic rigidities, and an overall lack of interdependence with in the industrial sector. In these countries, the interest rate policy has often led to creation of an excess demand situation which in turn pushed up the general price level worsening inflation.

The Supply of Money

In the case of a developed country, the chief aim of monetary policy is to ensure stability. Therefore, a balance between demand for and supply of money has to be maintained in a sense that both keep pace together. This can only be done by taking a 'dynamic view' of stability. Money supply should be allowed to exceed the demand for it by a certain percentage, but it should only lead to small increases in prices and not inflationary conditions. Such a policy would have the following favourable effects on the economy: (i) the small increase in prices acts as an incentive to private entrepreneurs to invest; (ii) since developing countries are characterized by unemployment and underemployment of resources, additional money supply creates demand for them (thus resources which would have otherwise remained unutilized or underutilized are now fully utilized); (iii) development of a large sector which continues to be non-monetized is possible only if it is monetized. For this purpose, the supply of money should be increased at regular intervals at some desirable rate; and (iv) as the economy of the country undergoes a structural change, the desire for more liquid assets also increases. Therefore, the supply of money must be correspondingly increased.

This shows that developing countries cannot escape from the necessity of allowing money supply to increase at a somewhat higher rate than the demand for money. However, in their desire to push up economic growth through this means, they should not forget the fact that the price rise should not become inflationary. Once it does, controlling it becomes very difficult and more often than not, the economy is thrown into the whirlwind of an inflationary spiral with all its dangerous consequences. The experience of most of the developing countries shows that they have failed to draw the line of the 'safe price rise' and are now engulfed in deep crises emanating from inflationary rise in prices. In their bid to 'create resources' for development, they have carried the process of deficit financing a bit too far.

The Supply of Credit

This is the major responsibility of the central bank of a developing country. It should ensure adequate provision of credit for productive activities and curb its undue

expansion. The former is necessary for maintaining and promoting the productive activities in the economy while the latter is necessary to control the inflationary conditions in the economy. As far as the requirement for credit is concerned, the demand of the agricultural sector is very great. For a long period of time, there was no institutional credit agency operating in the agricultural sector of the developing countries and the agriculturists had to depend solely on the moneylenders who charged exorbitant rates of interest and exploited them in numerous other ways. Therefore, the governments of these countries have now to bear the responsibility of freeing the agriculturists from the moneylenders. At the same time, credit has to be provided for adopting new techniques of production, purchasing agricultural implements, etc., in a bid to boost up agricultural production and productivity.

Because of the underdeveloped money and capital markets in developing countries, industries also face problems in raising finances. Therefore, the governments of these countries have established special banks to look after the needs of industries. These are known as development banks. These banks provide medium-term and long-term funds for the establishment of new industrial enterprises. During recent decades, a number of development banks have been set up in developing countries and their role in promoting industrial development is fast increasing.

The governments of the developing countries have not only to ensure adequate credit for promoting productive activities, they have also to ensure that inflationary pressures are kept under check. This can only be accomplished if credit expansion is kept under control. For instance, if inflationary pressures tend to become strong, effective credit squeeze measures should be adopted by the central bank of the country borrowing in the private sector. The biggest sector of the economy is the agricultural sector which is unorganized and depends for its loan requirements, to a large extent, on local moneylenders and is thus practically outside the ambit of the banking system. In many small developing countries, commercial banks are merely overseas branches of major private banking institutions in developed countries. Therefore, their orientation is more towards external and less towards internal monetary situations .

The second limitation of monetary policy stems from the fact that its objectives are not quite clear and sometimes contradict each other in the context of the developing

countries. For example, economic growth and stability are often mentioned together as the objectives of monetary policy. 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 'functional 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. The economic and social costs of this policy are very heavy as income inequalities increase making rich richer and the poor poorer.

The techniques of control adopted by the monetary authorities are less effective in the developing countries as compared to the developed countries. As stated earlier, the bank rate fails to restrict credit expansion since the interest rate structure in the economy is not sensitive to the bank rate. The limited expanse of the money and capital markets rustics the ability of the open market operations to control credit. The variable reserves ratio policy has a greater chance of success as compared to the bank rate policy and open market operations since the central bank can, through this measure, immobilize a part of the assets of the commercial banks and thus restrict their power to expand credit. However, in many developing countries, commercial banks hold excess reserves and even if the central bank raises the minimum reserve requirements their capacity to expand credit is not restricted. In some developing countries a substantial part of the banking sector is in the hands of the branches of foreign banks which can rely on resources from abroad. Because of the limited success of quantitative credit control measures, the developing countries are now placing excessive emphasis on qualitative credit control measures. These measures have been frequently adopted to restrict the hoarding of food grains, sugar, oilseeds, etc. in India but they have not been successful in accomplishing much. The reasons are not far to seek. Firstly, there is no check on the 'actual use' of the credit. Frequently, loans taken for productive purpose are diverted to unproductive purposes. Secondly huge stocks are accumulated by the large farmers themselves. These stocks never come to the market. Selective credit controls can, at the most, help in restricting the hoarding by traders but not if hoarding takes place at the place of production itself.

Since we have discussed the role of development banks in this chapter, albeit briefly, it would be in the order of things if we examine their actual performance in the developing countries. According to V.V. Bhatt, the broad consensus with regard to the performance of these banks in the developing countries is as under: "(a) they have, by and large, provided finance to well established and well-entrenched business houses; (b) they have failed to play the expected, catalytic role of promoting new entrepreneurs and new enterprises; (c) they do not have much impact on the promotion of small-medium enterprises; (d) they have failed to mobilize domestic resources on their own by establishing the necessary links with the banks, the social security institutions and the other financial institutions and (e) their profit performance on the whole was good till 1973; however, since then, it has not been as good. " This shows that the development banks in the developing countries have not tried to play an 'innovative banking role' as was expected of them. Thus, charges Bhatt, instead of integrating the capital market, the development banks have tended to fragment it further.

To sum up, organization of finance can be efficiently managed through adequately developed monetary and banking institutions. If a country skillfully manages it, it would succeed in accelerating the growth process. A financial chaos, on the contrary, many hinder development. Charles P. Kindleberger and Bruce Herrick, however do not think that financial skill can make much positive contribution to economic growth. They have stated, "The range in which financial skill can accelerate the growth process will differ from situation to situation, but may, on the average, not be very wide. No more than anyone else can a central banker make a silk purse out of a sow's ear. It is easy in many but not in all circumstances for the governor of the central bank or a minister of finance to upset a sound situation through elementary errors, but it is hard to correct supply rigidities or social tensions through the interest rate.

Fiscal Policy in Developing Countries

Fiscal policy refers to the policy of the government as regards taxation, public borrowing and public expenditure with specific objectives in view. These objectives 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.

Importance of Fiscal Policy

The importance of fiscal policy as an economic tool was recognized 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 provision 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 initiate 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 this 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 deflation or inflation, the responsibility of bringing back economic stability has to be borne by the government.

Since the role of the fiscal policy was first realized in the context of the conditions of depression that prevailed in developed countries, it was natural that in the early Keynesian era. Whole attention was concentrated on the problems of short-run economic stability and on counteracting cyclical fluctuations. With the development of the growth models particularly the Harrod-Domar model the conditions of long-run equilibrium in a dynamic economy came to be increasingly discussed. For example, the condition of a long run equilibrium under the Harrod-Domar Model is that Gn = Gw = Gt i.e., the natural rate of growth, the warranted rate of growth and the actual rate of growth should be equal to one another. In a developed economy, the possibility is that Gw (which is equal to the reciprocal of the accelerator coefficient multiplied by average propensity to save) would be higher than G and G. This possibility arises because in a developed

economy, the average propensity to save (s= S/Y) is high. Therefore, the remedy would be to lower the ratio of savings to national income. If Ga > Gw1 the opposite policy of curtailing consumption (or increasing savings) would be required. Therefore in a developed economy, s has to be moved up or down according to circumstance.1 Since in a developed country, Gw is generally greater than Gn and Gt the problem is to reduce s, i.e., increase the level of consumption.

Fiscal Policy in Developing Countries

In developing countries, the requirements of fiscal policy are just the opposite. In these countries, because of the general poverty of the masses, the marginal propensity to consume is very high. Therefore, the ratio of savings to national income is very small. It is because of the low volume of savings in these countries that the rate of investment also remains low and there is a huge amount of under-employment. In terms of the Harrod-Domar model, Gw falls chronically short of Gn. There is not only disguised unemployment, but also conditions of chronic secular inflation. Obviously, under such circumstances the government must direct its efforts to solving the twin problems of under-employment and inflation. As noted by Chelliah, the goal of fiscal policy in a developing country may be said to be the promotion of the highest possible rate of capital formation without inflation.

OBJECTIVES OF FISCAL POLICY IN DEVELOPING COUNTRIES

The above discussion clearly brings out the importance of fiscal policy in the context of the developing countries. The objectives can now be stated as under:

Increasing the Rate of Investment

Since the level of employment and income are low in developing countries and there is a huge mass of underemployed people, the fiscal policy must aim at increasing the rate of capital formation. This implies that the rate of investment has to be pushed up to a sufficiently high degree. This can be done by pushing up the incremental saving ratio and by restricting actual and potential consumption. As far as the latter is concerned, the governments of developing countries shall have to exercise direct physical controls on the availability and use of certain consumption goods (especially non-essential goods) and control the demonstration effect of

advanced countries operating on the consumption level of developing countries. As far as rising the incremental saving ratio is concerned, the most effective measure is raising the governmental income through taxation and public borrowing. Income from taxes can be increased either by raising the rates of the existing taxes or by imposing new taxes.

The difficulty in raising additional resources through taxation in developing countries is that the levels of income are very low and only a small number of the people have the ability to pay taxes. Therefore, the scope of imposing direct taxes (like income tax) is not much. As the government continues to increase the rates of these taxes, the limit to the ability to pay soon appears. It is not possible to go beyond this limit without causing hardships to the tax-payers and without adversely affecting the level of private investment. Therefore, of necessity, the governments of the developing countries have to resort increasingly to indirect taxes. As long as these taxes are imposed on luxury goods, they do not cause much hardships as such goods are purchased by the elite class. However, luxury goods have an elastic demand and if their prices continuously increase, their demand is likely to fall considerably. If this happened, an increase in the rate of tax may not be accompanied by any rise in the public income (in some cases, it may actually fall). If the government has to be sure about the tax revenue, it must tax essential consumer goods since their demad is inelastic. However, this policy is likely to impinge hard on the poor classes of people since they must purchase these goods whatever the price. This shows that raising additional resources through taxation is not an easy task and many difficult choices have to be made.

The governments of developing countries have used the measure of public borrowing also for raising resources. This measure has its limitations because the level of income of the people is low and only a small number of people are able to save.

In addition to these measures the governments can use the surpluses of public utilities and public enterprises for investment. However, this is possible only if remunerative prices are charged for their products/services. Frequently public enterprises, railways, ports, postal and telegraph systems, irrigation works etc. not only fail to cover depreciation

and interest on their capital but also suffer operating deficits. Users of the services are subsidized at the expenses of the taxpayers. Although this is not always wrong the subsidies raise questions of equity and often displace other government expenditures that would contribute more to development. As emphasized by Richard Goode, "there is a strong presumption in favour of prices that will cover full cost, including capital cost, and in many cases return a surplus to finance expansion of the enterprises."

The experience of many developing countries is that resources generated in all the above ways frequently fall short of the requirements for investment. Accordingly, the governments have to indulge in deficit financing (which means 'creation of money').

Encouraging a Socially Optimum pattern of Investment

The developing countries can use fiscal policy measures to direct investments in those fields which are most desirable from the point of view of the society. The most desirable fields' will differ from country to country. Many developing countries possess a totally inadequate transportation and communications system. Railway tracks and roads, telegraph and telephone systems, power plants, electricity generation, etc. are very insufficient and as long as these are not provided on a fairly large scale, the economy cannot be put on the path of economic development. Therefore, from the point of view of these countries, the socially optimum investment should be in the economic and social overheads. Large developing countries like India that have vast potentialities of industrial development, must also undertake large-scale investments in basic and capital-goods industries. Accordingly, these industries must also come under the category of socially optimum investment. This is so because basic and capital-goods industries form the basis of large-scale industrialization programmes.

Reducing Inequalities in Income

There are extreme inequalities in income and wealth in developing countries. While the majority of the people struggle hard to make both ends meet, a small number of people possess huge money and financial resources and control the reins of the economy. For instance, in India about one-third of the population is below the poverty line which is defined as a line just enough to ensure subsistence level while some 20 to 25 large business houses exercise effective controls on the industrial economy of the

country. A welfare State committed to social equality and economic justice, cannot allow such inequalities. In this regard, fiscal policy can play an important role. For example, the tax policy can be designed in such a way that the overall tax structure is highly progressive. The rich sections of the population should be compelled to contribute substantially more in the form of taxes than the poorer sections. The lowest stratum of the society should not be taxed at all. The indirect taxes should be heavy on luxury goods (which are consumed only by the elite class) and light on goods of mass consumption. As far as public expenditure is concerned, the government can undertake programmes of medical-care for poor, ensure free education to poor children, provide free housing-sites to poor landless labourers, etc. Thus, by a judicious mixing of tax policies and public expenditure policies, the governments of developing countries succeed in reducing the economic inequalities. However, because of corruption, tax evasion and political conveniences of joining hands with the rich, it is frequently not possible to accomplish much in this direction. There are economic limits also on making the tax structure too progressive as such a tax structure is likely to affect adversely the ability and willingness of the private sector to invest.

Reducing Unemployment and Underemployment

Fiscal policy can be used as a measure to tackle the problem of unemployment and under-employment in developing countries. Public expenditure programme can play a specific role in this regard. For example, it is a known fact that a large number of rural people remain unemployed and/or under-employed during off seasons (i.e., when there is no work on land). A public works programme of constructing school buildings, hospital building, roads, earthen dams, irrigation canals, etc. can be undertaken during these periods to give employment to such people. Public works programmes have been initiated by a number of developing countries. The Government of India made a start in this direction by adopting the Rural Works Programme (RWP) in the Third Plan. This was followed by a number of similar programmes like the Crash Scheme for Rural Employment, Employment Guarantee Scheme, Pilot Intensive Rural Employment Project, Food for Work Programme, National Rural Employment Programme (NREP),Jawahar Rozgar Yojana (JRY), Employment Assurance Scheme (EAS), Jawahar Gram Samridhi Yojana (JGSY), Swarnajayanti Gram Swarojgar Yojana (SGSY), Swarna Jayanti Shahri Rozgar Yojana (SISRY) etc. The objective of these programmes has been to generate

additional gainful employment for the unemployed and under-employed persons in the rural areas, to create productive community assets for direct and continuing benefits to the poverty groups and for strengthening the rural, economic and social infrastructure and bring about a general improvement in the overall quality of life in the rural areas. The overriding objective, of course, has been provision of wage employment to rural poor.

Controlling Inflationary Tendencies

Because of the need to implement large-scale industrialization programmes in the face of paucity of resources, the developing countries are often led to depend more and more on deficit financing. This creates inflationary conditions as supply of goods fails to increase sufficiently to nullify the increase in demand. Consequently, it becomes necessary to implement fiscal measures to control (or reduce) the level of demand and encourage the production of goods (especially mass consumption goods). The level of demand can be reduced by raising the level of taxation. For increasing the supply of goods, tax incentives to industries can be granted and, if necessary, protection to essential consumer goods industries can be given.

CHAPTER OUTLINES

- The Prior Saving Approach
- Financial System And Economic Development
- Inflation And Growth: The Empirical Evidence
- The Inflationary Experience

THE PRIOR SAVING APPROACH

In classical theory saving and investment are one and the same thing. All saving finds investment outlets through variations in the rate of interest. Investment and the development process are led by savings. It is this classical view of the development process that underlies such phrases in the development literature as the 'mobilization of savings for development' and also underlies the policy recommendation of high interest rates to encourage voluntary saving. Lewis's influential model of the development process, where classical model stressing the importance for development of reinvesting the capitalist surplus.

The level of saving and the ratio of saving to national income in developing countries are likely to be a function of many variables affecting the ability and willingness to save. The main determinants of the capacity or ability to save are the average level of per capita income, the rate of growth of income, the distribution of income between rich and poor and the age composition of the population (or dependency ratio). In turn, the willingness to save depends mainly on monetary factors such as the rate of interest, the range and availability of financial institutions and assets (financial deepening), and the rate of inflation. Differences in cultural attitudes towards saving may also be important, but are not easily measured.

THE CAPACITY TO SAVE

Income is the major determinant of the capacity or the ability to save. It was Keynes who first introduced into economics the idea of the consumption function (and therefore savings function), making consumption and saving primarily a function of income rather than a function of the rate of interest as in classical theory. Saving as a function of income is known as the Keynesian absolute income hypothesis. We can derive the savings ratio as a function of the level of per capita income (PCY) in the following way; if we write the Keynesian savings function as S = - a0 + b0 (Y) and divide by the population level (N) we have :

$$SIN = - a_1 + b_1 (Y/N)$$

(14.1)

Then to obtain an expression for the savings ratio, multiply (14.1) by N and divided by Y:

$$SIY = - b_1 - a_1 (Y/N)- 1$$

(14.2)

The Keynesian absolute income hypothesis therefore predicts that savings per head (SIN) is a linear (but non-proportional) function of income per head (Y/N),

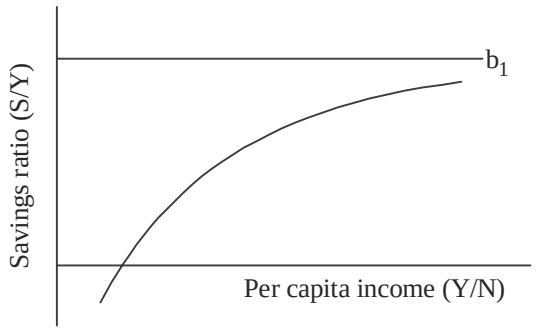

Fig. 18.1 The Keynesian absolute income hypothesis

and that the savings ratio (SIY) is a hyperbolic function of the level of income per head; that is, that the savings ratio will rise with the level of per capita income but at a decreasing rate. As $Y/N \rightarrow \infty$, $S/Y \rightarrow$ to the asymptote b1. This is shown in Figure 18.1.

The data on the savings ratio in table 18.1 suggest this type of relation, as already discussed. The savings ratio is lower in poor countries than in richer countries, but the ratio does not continue rising linearly (for ever) as PCY rises. It increases at a diminishing rate and then levels off. Indeed, there is even some indication that it starts falling at high levels of income, as we shall see when we come to examine the empirical evidence.

The reason why the savings ratio should rise as per capita income increases and then level off is not clear-cut. It is as if saving is a luxury good in the early stages of development but then loses its appeal. Part of the reason may be purely 'statistical,' arising from the way saving is normally defined in developing countries as the difference between investment and foreign capital inflows. As investment expenditure becomes more faithfully and accurately recorded as development proceeds (as per capita income rise) the savings ratio is also shown to increase. But there are also a number of economic factors that probably play a contributory role in explaining the relation. One is the growth of the money economy. As money replaces barter for transactions, the public will wish to hold a higher proportion of their income in the form of money, which they can do only by giving up command over real resources. This hypothesis is supported by what we know about the income elasticity of demand for money in developing countries, which exceeds unity.

A second possible explanation is that population growth decreases with increases in the level of per capita income, so that population growth absorbs household saving to a lesser and lesser extent. Another plausible hypothesis is that in the early stages of development the distribution of income, both personal and functional, grows more unequal but at a decreasing rate. If higher-income groups have higher propensities to save than lower-income groups, and profit earners have a higher propensity to save than wage earners, the savings ratio will be positively related to the degree of inequality in income distribution (personal income distribution) and to the share of profits in total income (functional income distribution). Some evidence of the widening distribution of income in the early stages of development was given in Chapter - 3.

A second major determinant of the capacity of a country to save is the growth of income as suggested by the life-cycle hypothesis of saving. The basis of the hypothesis, as originally formulated by Modigliani and Bromberg (1954), is that individual and households attempt to spread out consumption evenly over their lifetime so that decisions to save are assumed to be a function of total lifetime earnings and the stage reached in the earnings cycle. A typical pattern of behaviour would be dissaving in youth, positive saving in middle-age and dissaving in retirement. Consider now the effect of income growth within this framework. If income is rising over time, this means that the life earnings and consumption of each successive age group will be higher than the preceding one. If each successive age group is aiming for a higher level of consumption in retirement, the volume of saving of the active households will exceed the dissaving of the currently retired households with a lower level of lifetime consumption. The saving ratio will then tend to rise with the rate of growth of income because the higher the growth rate, the greater the gap between the target consumption level of the current generation of working households and the dissaving of retired people from a less prosperous generation. Thus countries with higher growth rates might be expected to have at least higher personal savings ratios than countries with lower growth rates.

But income growth comprises two components; the growth of income per head (PCY) and the growth of population. Income growth due to population growth will affect the savings ratio according to how population growth affects the ratio of active to non-active households. Thus a third major determinant of the savings ratio is the dependency ratio. If population growth rises suddenly this will lead to a higher ratio of young dependants who consume but do not produce and this will tend to reduce saving. Equally, however, if population growth slows for a long period this will lead to a higher ratio of retired people who also consume but do not produce. Thus, both high and low population growth may be associated with a low savings ratio. To test the life-cycle hypothesis of saving it is best to relate the savings ratio to the growth of per capita income and to include the age structure of the population, or dependency ratio, as a separate variable (see Hussein and thirlwall, 1999)

Finally, we have already mentioned the distribution of income as a determinant of the capacity to save. If the propensity to save of the rich is higher than that of the poor, the

aggregate savings ratio will be positively related to the degree of inequality both in the personal income distribution (between individuals), and also in the functional distribution (between wages and profits) on the assumption that the propensity to save out of profits is higher than out of wages. It will be remembered from Chapter 5 that in Lewis's model of development with unlimited supplies of labour, it is not the absolute level of per capita income that is the prime determinant of the savings ratio but the size of the capitalist surplus and the distribution of income between entrepreneurial profits and other income. According to Lewis (1955): 'if we ask why the less developed countries save so little the answer is not because they are so poor but because their capitalist sector is so small.' Lewis also expressed the view that no nation is so poor that it could not save and invest at least 12 per cent of its national income if it so wished. Investment as a proportion of national income is not small because of an incapacity to save but because the surplus generated in developing countries is used to maintain 'unproductive hoards of retainers' and for conspicuous consumption in general.

Empirical Studies

There have been four major recent studies of the determinants of saving across countries which include all or some of the variables discussed above, and also other variables measuring the willingness to save that we will discuss later. These are Edwards (1966); Masson, Bayoumi and Samiei (1998); Hussein and Thirlwall (1999); and Loayza, Schmidt-Hebbel and Serven (2000). Edwards takes panel data for 36 countries over the period 1970-92, distinguishing between private and government savings. Masson et al. use panel data for 21 developed countries (1971-93) and 40 less developed countries (1982-93) to explain the ratio of private saving to GDP. Hussein and Thirlwall take 62 countries over the period 1967-95, taking the domestic savings ratio as the dependent variable. Finally, Loayza et.al. use a data set of 160 countries from 1964-94 taking four different measures of private saving (all highly correlated). All the studies find the level and growth of per capita income highly significant as determinants of inter country differences in the savings ratio. Masson et.al. and Hussein and Thirlwall use a non-linear specification for the level of PCY, as discussed above, and find it more significant than the linear specification, thus supporting the shape of the curve in Figure 18.1. Indeed, in the Masson study, a quadratic term for PCY is used so that the savings ratio is first assumed to rise and then fall. For both developed and developing countries the quadratic term turned out to be significantly negative

with the savings ratio peaking at 60 percent of the US level of PCY. The Loayza et.al. study does separate analyses of developing countries and OECD countries and finds the impact of PCY on the savings ratio larger in developing countries than in developed countries, which is also evidence of non-linearity. For the sample as a whole, the authors find that a 10 per cent difference in PCY is associated with a 0.47 percentage point difference in the savings ratio. The authors conclude that 'policies that spur development are an indirect but most effective way to raise saving' and 'successful growth policies may be able to set in motion a virtuous cycle of saving, capital accumulation and growth'. The question is how to get this cumulative process started of rising income, more saving, faster growth, leading to more saving, etc. Monetary and fiscal policies, and the sophistication of the financial system, are likely to play an important part in this process. This leads us on to the topic of the willingness to save and the role of the financial system in promoting saving and allocating resources in the most efficient manner. All of the studies mentioned above include financial variables in their equations.

THE WILLINGNESS TO SAVE

Saving represents an inter-temporal choice between consumption today and consumption tomorrow. It might be expected, therefore, that the price of present consumption, namely the real rate of interest, will affect saving positively. The higher the rate of interest, the greater the amount of saving. This assumed positive relation also reflects the classical idea of the rate of interest as the reward for waiting, and lies behind the financial liberalization programmes in developing countries which seek to raise the real interest rate in order to maximize saving, investment and growth. For the last 30 years or so there has been extensive testing of the financial liberalization hypothesis, and the role of the interest rate, in promoting saving, with mixed and largely inconclusive results. Perhaps this is not surprising since the financial liberalization argument largely refers to financial saving, but financial saving is only one component of total saving. If interest rates rise, financial saving may rise but at the expense of other assets, leaving total saving unchanged (see Warman and Thirlwall, 1994). It is also standard theory that any price change has both income and substitution effects. The substitution effect promotes saving, but the income effect reduces saving and the two effects may cancel each other out.

Probably a more important determinant of the willingness to save is the existence of financial institutions and the range and availability of financial assets to suit savers. There is no single measure that can capture those institutional determinants of the willingness to save. The number, proximity and diversity of financial institutions serving the different needs of savers could be important. Equally, the volume and range of financial assets might matter as a measure of financial deepening. Such measures include: money and quasi-money as a percentage of GDP; money and quasi-money growth, and quasi-liquid liabilities as a percentage of GDP; Domestic credit provided by the banking system as a percentage of GDP is also a measure of financial deepening, but the effect on saving is ambiguous. On the one hand, if bank credit finances investment and growth, this will have a positive effect on saving. On the other hand, an increase in bank credit will relax a liquidity constraint on consumption resulting in a decline in saving.

Finally, the rate of inflation can be expected to affect the willingness to save, but the effect is ambiguous. On the one hand, inflation acts as a tax on money balance holdings. If individuals wish to restore the real value of their money balance holdings (the so-called real balance effect), saving will rise with the rate of inflation. On the other hand, it is natural to expect individuals to avoid the tax if it becomes burdensome in relation to the convenience of holding money. Even if private saving does increase, however, total saving may not increase if the government fully consumes the proceeds of the inflation tax. Inflation will also redistribute income from wages to profits within the private sector if the wage-price coefficient is less than unity. This will increase saving if the propensity to save out of profit is higher than out of wages (as discussed already), but this process can last only as long as there is money illusion and workers do not bid for wage increase to match price increases. The most likely relation between inflation and the savings ratio is an inverted U-shape (quadratic function) showing saving rising with mild inflation and then falling as inflation becomes excessive. This type of non-linear relation is also suggested by the evidence available on the relation between inflation and growth (see later).

The evidence that we have from the four studies cited above (and others) is that financial variables matter for the performance of saving, but financial deepening and credit availability are much more significant than interest rates. Edwards, and Masson et. al., find that the level of financial development is an important determinant of private saving. Huusein and Thirlwall experiment with different measures of financial deepening and find a strong

positive relation between the domestic savings ratio of countries and the ratio of quasi-liquid liabilities for the banking system to GDP. Loayza et.al., take the ratio of M2 money to GNP as a measure of financial deepening but find it only weakly significant. More interesting, they find that both higher interest rates and larger private domestic credit flows exert a negative effect on the private savings ratio. The authors conclude 'these results provide a bleaker

Table 18.2 Interest Sensitivity of Saving under alternative scenarios

Country Groupings	**Initial Real Interest rate**		
Low Income	**3%**	**4%**	**5%**
Average for group	0.3121	0.306	0.300
Average for 10 poorest	0.177	0.174	0.171
Lower-middle-income	0.532	0.522	0.512
Upper-middle-income	0.560	0.549	0.539
High Income	0.584	0.573	0.562

NOTE :

1. The data refer to the change (in percentage points) in the saving rate owing to a 1 percentage point increase in the real interest rate. For example, in high-income countries with a real interest rate of 3 per cent, a 1 percentage point rise in the real interest rate would raise the saving rate by nearly two-thirds of a percentage point 90.584 of percentage point),. At higher baseline levels of the real interest rate, the saving response diminishes slightly.

Source: M.Ogaki, J.D. Osty and C.M. Reinhart, 'Saving Behaviour in Low and Middle Income Developing Countries', IMF Staff Papers, March 1996.

The overall conclusion would be that while financial variables may not be as important as income variables in determining savings behaviour, economic development itself is dependent on the sophistication of the financial system, and there is evidence that saving

may be more responsive to interest rates when the level of income rises above subsistence. Research on this topic by Ogaki, Ostry and Reinhart (1996) is reported in Table 18.2

It appears that saving is very unresponsive to interest rates in low-income countries where there is little margin of income over subsistence needs, but its responsiveness increases as consumption rises above subsistence needs and people can exercise choice about increasing their present or future consumption.

This leads us to the extensive topic of financial systems, financial policy and economic development.

FINANCIAL SYSTEMS AND ECONOMIC DEVELOPMENT

One of the characteristic features of developing countries is that large sections of the economy are either non-monetized or transactions take place outside the formal financial sector. In other words, the economies of developing countries have a large sector where money is not used as the primary means of exchange, as well as having a large informal financial sector or unorganized money market. This has a number of consequences that are not conducive to development:

If transactions take the form of barter, this is both costly in time and wasteful of resources. Sellers must spend time and effort finding buyers who have things they want. Money as a means of exchange avoids the problem of the double coincidence of wants. In this sense money is a resource and its introduction into an economy can be highly productive.

INFLATION AND GROWTH: THE EMPIRICAL EVIDENCE

The discussion above suggests that the relation between inflation and growth is likely to be non-liner, with growth positively related to inflation up to a certain rate of inflation and then negatively related as the disadvantages of inflation outweigh the advantages. This is in line with recent empirical evidence from large data sets across developing and developed countries.

A study by Bruno (1995) at the World Bank, taking pooled annual observations for 127 countries over the years 1960-92, produced the pattern depicted in Figure 18.2. Inflation and growth are positively related up to 5 per cent inflation, and then 'diminishing returns' to inflation set in. Inflation and growth are strongly negative once inflation rises above 30 per cent.

A study by Sarel (1996) at the IMF has produced a similar result. He takes 87 countries over the period 1970-90 and divides the observations into twelve inflation groupings using the inflation rate of group 6 as the standard of reference. He then estimates the effect that differential inflation has on the growth rate in the other groups. The results are shown in Figure 18.3. It can be seen that inflation has a generally positive effect on growth up to group 7, with inflation averaging 8 per cent. Thereafter, inflation and growth are negatively.

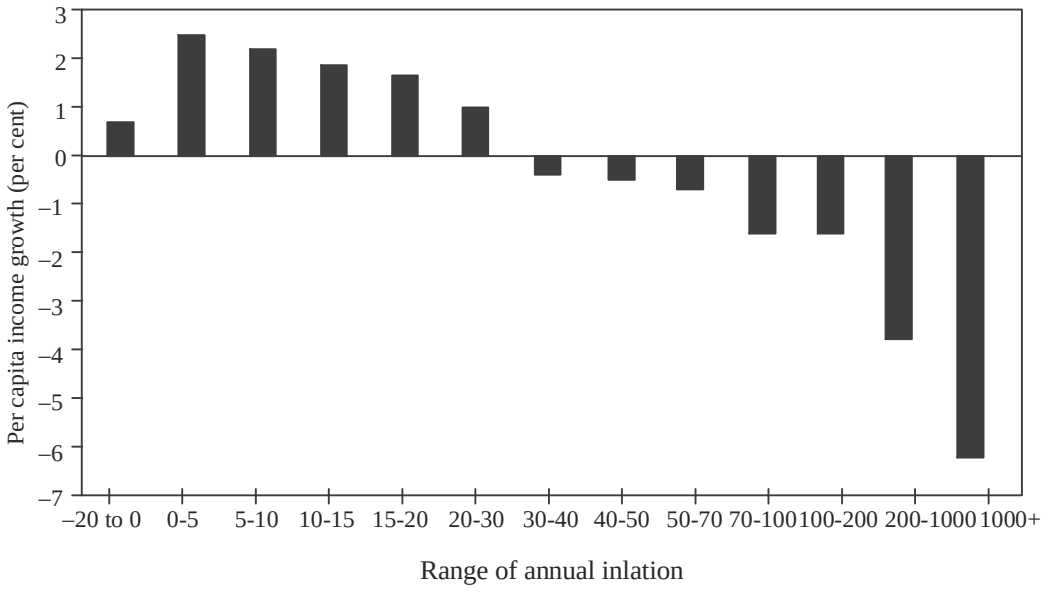

Fig 18.2 Inflation and per capita income growth, 1960-92
(pooled annual observations, 127 countries.

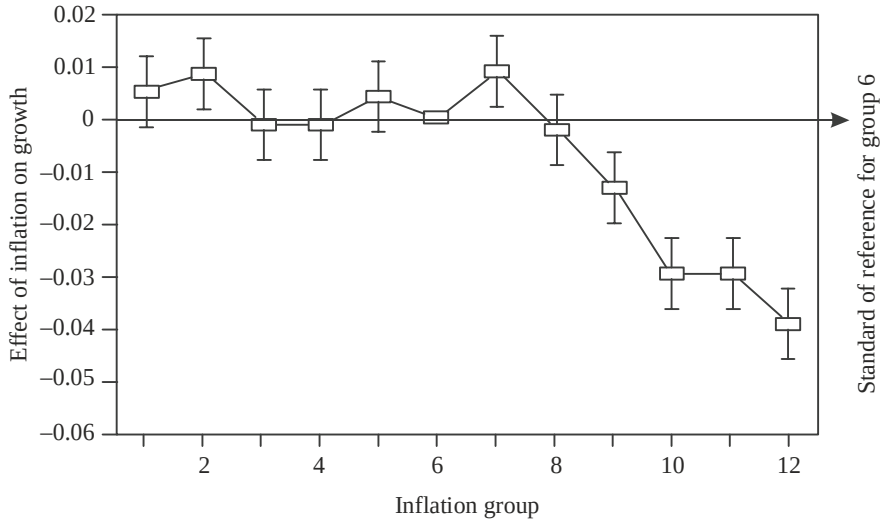

Fig. 18.3. Effects of different inflation rates on growth

related. When inflation is very high (in group 12) the difference in the effect of inflation on growth compared with group 6 is close to 4 percentage points (holding all other factors constant).

Ghosh and Phillips (1998), also at the IMF, show the growth of GDP to be highest in the range of inflation 3-5 per cent for developed countries, and in the range 5-10 per cent for developing countries (no doubt reflecting greater structural inflation).

Evidence of non-linearity between inflation and growth is also found by Stanners (1993) in a study of nine countries over the period 1948-86 and 44 countries over the period 1980-88. First he divides the 44 countries into four groups according to the rate of inflation and shows that the highest growth occurred in the second group of countries , with an average rate of inflation of 8.2 percent. He then takes a scatter of342 points for nine countries over 38 years and shows a positive correlation between inflation and growth up to 8 per cent.

Thee recent results support early work by the present author (Thirlwall and Barton 1971; Thirlwall, 1974) which also showed a non-linear relation between inflation and the savings ratio and inflation and the investment ratio.

It is not surprising from this evidence that Temple (2000) concludes his survey of inflation by saying 'since there is not yet robust evidence that moderate inflation has an adverse impact on growth, any case for price stability which relies on a positive growth effect should continue to be regarded with considerable suspicion'. Similarly, Levine and Zervos (1993), in a review of studies of the macro-determinants of growth, conclude that 'given the uncharacteristically unified view among economists and policy analysts that countries with high inflation rates should adopt policies that lower inflation in order to promote economic prosperity, the inability to find simple cross-country regressions supporting this contention is both surprising an troubling'. Indeed we can be more categorical and say that there is no scientific evidence to suggest that a necessary condition for faster growth is that inflation should be as low as possible. The evidence suggests that mild inflation, up to 5-8 per cent, is positively beneficial for growth. After that, however, the effects of inflation can be seriously damaging.

THE INFLATIONARY EXPERIENCE

Having discussed the advantages of inflation and warned of the dangers of excessive inflation, the fact is that the inflationary experience of most developing countries outside Latin America, at least until the recent past, has been relatively mild. It is a myth that developing countries have been typically prone to high rates of inflation. Out of a sample of 48 developing countries over the period 1958-68, 38 recorded average rates of inflation of less than 6 per cent per annum (see Thirlwall, 1974, p. 35 and Appendix I). Historically, most developing countries have been very financially conservative.

From the mild-1970s, however, there was a marked acceleration of inflation world-wide, and this continued into the 1980s and 1990 in many countries. The average rate of inflation in developed and developing countries over the period 1990-2002 is shown in Fig 18.3. There is a wide variety of experience between countries, but on balance the developing countries have been more prone to inflation than the developed countries. In the developed countries, the average rate of inflation has been less than 10 per cent, whereas in the low and middle-income countries it has averaged well over 20 per cent,

even excluding the higher inflation countries (with rates over 100 per cent) and the inflation-prone countries of Latin America. In Latin America, inflation has been endemic for many years, almost from the start of the industrialization process, and we conclude this chapter with a brief discussion of the Latin American experience and of the 'structuralist-monetarist' controversy over the causes of rapid inflation.

SUMMARY

1. According to classical economist, all saving finds investment outlets through variations in the rate of interest. Investment and the development process are led by savings.
2. The level of saving and the ratio of saving to national income in developing countries are likely to be a function of many variables affecting the ability and willingness to save.
3. The main determinants of the capacity or ability to save are the average level of per capita income, the rate of growth of income, the distribution of income between rich and poor and the age composition of the population.
4. The willingness to save depends mainly on monetary factors such as the rate of interest, the range and availability of financial institutions and assets (financial deepening), and the rate of inflation.

QUESTIONS

1. Explain the concept of Prior saving approach.
2. What are the determinants of ability to save and willingness to save?
3. Discuss the advantages and disadvantages of inflation.
