Directorate of Distance & Continuing Education

Manonmaniam Sundaranar University

Tirunelveli- 627 012, Tamil Nadu.

B.A. ECONOMICS
(Second Year)

MACRO ECONOMICS - II

(JMEC41)

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UNIT – I

IS-LM MODEL

1.1. INTRODUCTION

The IS-LM model is used to determine the level of output in an economy. The level of output is one of the most important indicators of the economic wellbeing of a country. This model brings together the goods market and money market to establish simultaneous equilibrium in both. The goods market is in equilibrium when investments equate with savings hence IS and the money market is in equilibrium when the demand for money (liquidity) equates with the money supply, hence LM. At the intersection of IS and LM curves, equilibrium rate of interest and income level are determined. The monetary policy is used to raise the level of income in the economy and to stabilize the price level. As prices are assumed to be constant in the IS-LM model, monetary policy seeks to work on the output and income. The monetary policy changes the level of money supply in the economy, shifts the LM curve and causes disequilibrium which is then corrected by movement in the rate of interest and income level. The process by which monetary shocks lead to the expansion of aggregate demand is called the monetary transmission mechanism. There are two broad steps involved in this process. The first occurs when changes in money supply result in portfolio disequilibrium and in the other step, changes in interest rate due to portfolio adjustment affect aggregate demand and output. There are many factors on which the efficacy of monetary policy in achieving the desired goal depends, like, slope of IS curve, bank lending behavior, slope of LM curve, liquidity trap situation, classical assumptions, etc. Also, there are situations which can make monetary transmission mechanism weaker.

Let us analyse in detail the transmission mechanism of monetary policy in the IS-LM model.

1.2. The LM Curve and Monetary Policy in IS-LM Model

The LM curve shows different combinations of the interest rate and output where the money market is in equilibrium. It is that condition in the money market where the demand for money (Liquidity preference) is equal to the supply of money (M). According to the liquidity preferences theory of Keynes,

the supply and demand for real money balances determine the rate of interest which prevails in the economy. It assumes that the money supply is exogenous and determined by the central banking authority and is therefore fixed. The model identifies that people can hold money for transactionary, precautionary and speculative purposes. The demand for transactions and precautionary balances is assumed to have a positive relationship with income. The demand for speculative balances depends on the current level of the interest rate and has a negative relationship with the rate of interest. The direct relationship between the demand for money and income level implies that the LM curve is upward sloping. The slope of the LM curve is determined by the income sensitivity and the interest responsiveness of the demand for money. The higher income responsiveness and the smaller interest responsiveness of the demand for money result in a steeper LM curve. As the LM curve represents the money market, it is used as a monetary policy tool. The monetary policy which influences the supply of money shifts the LM curve. When money supply increases, interest rate goes down resulting in a downward shift of the LM curve. However, adjustment does not end here because in the IS-LM framework, both goods and money market have to be in equilibrium. So, there is further adjustment in goods market which affects the interest rate and income level. It is extensively believed that monetary policy is a key economic management tool. However, critics' point that there is a feeble link between the money supply and aggregate demand and it is difficult to control money supply.

1.3. The Transmission Mechanism of Monetary Policy

The money market adjusts relatively rapidly than the goods market. This is because the money market adjustment occurs through change in market interest rate where bonds and other assets are bought and sold. The quick interest rate adjustment allows money market to always be in a state of equilibrium. This postulation implies that when we are on the LM curve, any departure from the equilibrium in the money market is almost instantaneously eliminated by an appropriate change in the rate of interest. The goods market, on the other hand, adjusts relatively slowly because firms have to change their production schedules, which takes time. By altering the

supply of money using monetary policy, policymakers manipulate the base money (reserves) which is then transmitted into a broader money supply via the money multiplier mechanisms. The monetary transmission mechanism describes how monetary policy changes (in terms of nominal money stock or nominal interest rate) influence real variables such as aggregate output and employment. The transmission mechanism of monetary policy to the real economy is through different channels with varying time duration. The significance of each channel varies through time. There is a variety of empirical evidences on the significance of different channels. The interest rate channel is the standard Keynesian channel of monetary transmission. Specific channels of monetary transmission operate through their effect on interest rates, exchange rates, bank lending, equity and real estate prices and balance sheets.

1.3.1. Key assumptions of MTM

The liabilities of the central bank of the country includes both components of the monetary base i.e. currency and bank reserves. Hence, the central banking authority controls the monetary base. Indeed, monetary policy is set in action when the central bank changes the monetary base through its open market sale or purchase of government securities thereby aiming to increase or decrease the monetary base.

a. The channels of monetary transmission

Mishkin (1995) has described several channels through which changes in monetary policy instruments (nominal money stock or the short-term nominal interest rate), impact real variables such as aggregate output and employment.

b. Interest Rate Channel

According to the traditional Keynesian interest rate channel, a policy-prompted increase in the short-term nominal interest rate at first causes an increase in longer-term nominal interest rates, as the arbitrage activity washes away the difference in risk-adjusted expected returns on debt instruments of various maturities. This is what the expectations hypothesis of the term structure predicts. When nominal prices adjust slowly, these movements in nominal interest rates get translated into the movement in real

interest rates as well. Firms, cut back on their investment expenditures looking at the fact that their real cost of borrowing over all prospects has increased. Also, households facing higher real cost of borrowing hold back on their purchases of homes, automobiles, and other consumer durables. Aggregate output and level of employment fall. This interest rate channel lies at the core of the traditional Keynesian textbook IS-LM model. However, there is evidence that monetary policy through interest rate channel has somewhat asymmetric response on rate structure i.e., the lending rate adjusts more quickly to monetary tightening than to loosening. In addition, the swiftness of adjustment of deposit and lending rates to changes in the policy rate has varied through years. The success of monetary expansion through interest rate channel depends on many factors like, how much responsive or sensitive demand is to change in liquidity as well as the crowding out effect on private sector credit of a monetary expansion.

c. Asset Price Channel

Monetarists argue instead that monetary policy actions impact prices simultaneously across a wide variety of markets for financial assets and durable goods, but especially in the markets for equities and realty, and that those movements in asset price are significant enough in generating important wealth effects that impact, through spending, output and employment. Two diverse credit channels, the bank lending channel and the balance sheet channel, also allow the effects of monetary policy actions to disseminate through the real economy.

d. Credit Channel

The credit channel operates through the varying the availability of credit in the economy. This channel functions through two channels, bank lending channel and balance sheet channel.

e. Bank Lending Channel

Theories and models based on the bank lending channel underline the fact that for many banks, chiefly small banks, deposits represent the primary source of funds for lending and that for many firms, principally small firms, bank's loan represent the principal source of funds for investment. Hence, an open market sale of securities that at first causes a reduction in the supply of

bank reserves and then to a shrinkage in bank deposits, requires banks that are especially reliant on deposits, to cut back on their lending and firms that are especially dependent on bank loans to cut back on their investment spending. Financial market imperfections faced by individual banks and firms thereby add, in the aggregate, to the fall in output and employment that follows a monetary contraction.

f. Balance Sheet Channel

The balance-sheet reflects the position of net worth and credit worthiness of a firm. This channel functions through the net worth of firms, with the effects of adverse selection and moral hazard. A decline in the net worth of the firm reduces the value of indemnity offered for getting loans. This in turn raises the catastrophic effects of adverse selection and reduces lending for investment spending purposes. Lower net worth also results in the issue of moral hazard because business owners having lower equity stake in the firm will have a larger incentive to take part in risky projects. This leads to smaller lending and investment in the economy.

g. Exchange Rate Channel

According to Mishkin (2006), a rise in the supply of money (M) causes the domestic real interest rate (r) to fall. Therefore, assets which are quoted in domestic currency become less attractive than assets denominated in foreign currency, bringing about depreciation in the domestic currency. The depreciation of the domestic currency makes domestic goods relatively cheaper than foreign goods, thereby causing net export (NX) and output to rise. So, this channel functions through its effect on net exports component of aggregate demand. So, the exchange rate channel brings about changes in capital flows and resulting appreciation/depreciation of currency thereby affecting trade balance and demand. Monetary policy decision is generally conditioned by maintaining a balance between growth and inflation, assessing the outlook for growth-inflation and macroeconomic risks in a forward-looking context. At times, a phase of expansionary monetary policy raises growth but triggers inflation thereby threatening the sustainability of the achieved growth. So, there can be periods of rising inflation and falling growth below its potential arising from several sources such as the lagged impact of

policy stimulus from earlier phases and adverse supply shocks, both internal and external, which may persist.

Thus, the monetary transmission mechanism explains in steps how monetary policy affects aggregate demand. The transmission mechanism is featured by long, variable and unpredictable time lags. Thus, it is difficult to predict the precise effect of monetary policy movements on the economy and price level. In the IS-LM framework, we assume prices to remain constant and all adjustment will be through changes in interest rate and income. When the central bank initiates the monetary expansion by raising the money supply, the interest rate falls at the current national income level. This is because at the prevailing interest rate, there is an excess supply of money and the interest rate has to fall to stimulate an increased demand for money.

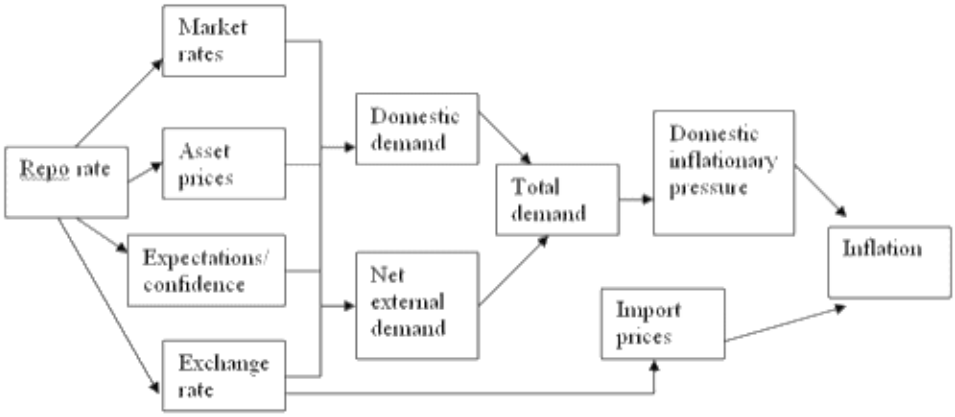

Fig.1.1. The Monetary transmission through change in repo rate

The interest rate continues to drop until the demand for money is again equated with the increased money supply and money market equilibrium is re-established. This also involves adjustment in the goods market as we are talking about the effects of monetary policy in IS-LM framework. The adjustment occurs in the form of upward movement along the new LM curve which causes an increase in interest rate and income level.

1.4. Factors Which Determine the Effectiveness of Monetary Policy in IS-LM Model

In the IS-LM model, the monetary policy aims to expand the income and output level in the economy. The output is targeted in the second step of monetary transmission mechanism, where the change in interest rate influence aggregate demand and output. It must be noted here that not just

investment but consumption expenditure is also influenced by the change in interest rate. But we do not isolate the effect of interest rate changes on consumption and investment, rather we will analyse the effect of interest rate changes on aggregate spending. There are many factors which determine how effective the monetary policy is going to be in affecting the equilibrium income and output in an economy. Some of the factors are listed below:

1. Monetary policy multiplier

The monetary policy multiplier shows the effects of changes in real money supply on the equilibrium level of income, keeping the fiscal policy unchanged. When there is an increase in the real money supply, the income will rise by the amount of monetary policy multiplier. The higher the multiplier, more will be the expansionary or contractionary effect of a money supply changes.

2. Slope of IS curve

Another important factor on which the effectiveness of a monetary policy in the IS-LM model depends is the slope of IS curve. A steep IS implies that investment is not very sensitive to the changes in interest rate, so a larger increase in interest rate is required in order to raise the aggregate spending and income in the economy. Thus, steeper the IS curve less expansionary the monetary policy will be. As IS curve is steeper, aggregate spending is less sensitive to changes in interest rate and income rises by a small amount in response to a monetary expansion.

3. Slope of LM curve

The slope of LM curve depends upon interest rate and income sensitivity of demand for real money balances. A steep LM curve implies that interest responsiveness of demand for money is lower while income sensitivity is higher. In such a case monetary policy is quite effective in influencing output. On the other hand, a flatter LM curve corresponds to high-interest rate sensitivity to demand for money and causes lesser increase in income and output.

4. Lending behaviour of banks

For monetary policy to be effective, an important factor is the lending behaviour of banks. When interest rates drop as a result of monetary

expansion, this encourages investment spending by the firms in the economy because of lower cost of investment. For financing investment expenditures, firms approach banks. But it may be possible that banks may not be willing to lend due to prevalent pessimism in the market. If the banks will not lend, this will eliminate an important link in our monetary transmission mechanism, thereby it will significantly affect the investments and will not lead to the rise in output. That is the reason why sometimes monetary expansion has only limited impact on the economy.

5. Development of money markets

The most important factor on which the effectiveness of monetary policy depends is the extent to which the financial markets are developed in the economy. This is an important pre-condition for the monetary policy initiated through the open market purchase and sale of bonds to successfully affect the aggregate demand.

6. The prevalence of informal credit sector

Given the large share of informal financial sector, the success of RBI's monetary policy in influencing the output through interest rate channel seems bleak. So, there exists a number of factors such as the degree of monetization of the economy, the extent to which households borrow from the formal financial system which affect the monetary authority's ability to influence demand conditions through its policy instruments.

7. The fiscal policy stance

The effectiveness of monetary expansion relies on the fiscal policy stance taken by the government at the same time in the economy. Sometimes, government finances its spending (i.e. deficits) through borrowing from central bank, which in turn print new currency to finance government deficits. This is called as monetizing deficits. This leads to only higher inflation in the economy with no positive effect on output and demand. Apart from the above there are many factors like how fast lending rates change in response to policy rates, the state of development of financial markets, the available monetary policy instruments, the fiscal stance and the degree of openness, on which the achievement of each channel depends.

1.5. Investment and Interest Rate

1.5.1. Introduction

Investment in simple words is the purchase of stocks, bonds, plant and machinery, buildings etc. The investment which does not generate any output and is a mere transfer of ownership, is called financial investment. Therefore, financial investment in shares is not included in the economic definition of investment. The real investment on the other hand adds to the capital stock and creates productive capacity. It leads to an increase in the level of income, employment and production by raising the stock of goods. Apart from financial and real investment, there are other basis also to distinguish between different types of investments. The level of investment in the economy is sensitive to changes in the prevailing interest rate. Generally, when interest rates are high, investment decreases and vice-versa. The Keynesian theory of investment gives importance to the role of interest rates in investment decisions. Changes in interest rates affect the level of planned investment undertaken in the economy. A fall in interest rates decreases the cost of investment relative to the potential yield and as a result planned capital investment projects on the margin become worthwhile and investment rises. A firm will only invest if the discounted yield exceeds the cost of the project. The inverse relationship between the investment and the rate of interest is represented by the marginal efficiency of capital investment (MEC) curve. Not just the rate of interest but other factors also affect the expected profitability of an investment project like, expectations, costs, technical change, etc.

Let us analyse in detail the meaning, different types and determinants of investment spending.

1.5.2.Investment

Investment is an increase in the capital stock such as buying a factory or machine or in simple words it is the addition to the productive capacity. The decision of firms and individuals about how much investment to make depends on interest rates and marginal efficiency of capital. If interest rates are high then it makes it expensive to borrow money and leads to a fall in investment. This is because investment is often financed through borrowing. Also, when interest rates are high it becomes more attractive to save money.

Investment is often financed out of retained profit. Thus, high interest rate means that saving money in a bank is more attractive than investment. Marginal efficiency of capital in simple words is the expected profit rate from investment. The investment decision is a marginal benefit-marginal cost decision, where the marginal cost is the interest rate (i) that must be paid for borrowed funds and marginal benefit derived from investment is the expected rate of return (r). Any investment decision will be made by comparing these cost and benefit. An investment is made if the expected rate of return exceeds the interest rate (r > i). Investments are not made when interest rate exceeds the expected rate of return (r < i). When the marginal benefit is exactly equal to marginal cost, then this will be an individual's decision to invest or not according to the need.

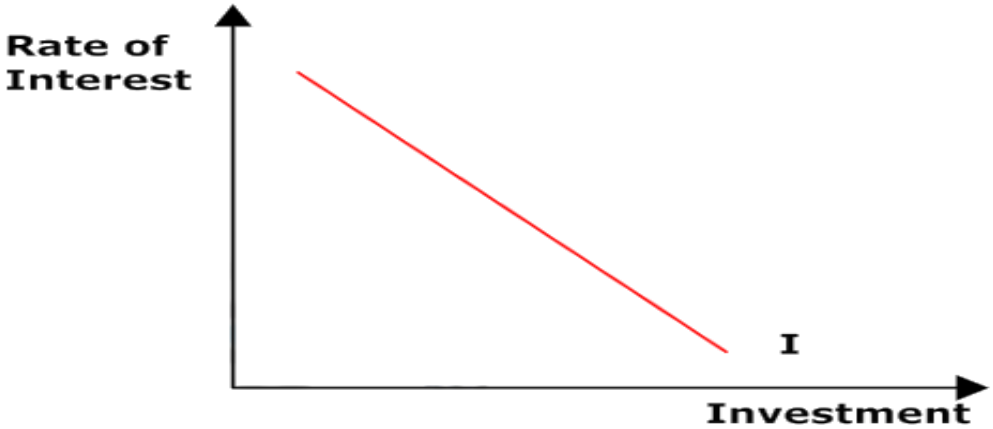

Fig.1.2. Investment Function

Investment is inversely related to interest rate as shown by the downward sloping investment curve. Any change in rate of interest will lead to a movement along the investment curve raising or lowering it. If there is a change in any other factor apart from interest rate like, cost, expectations, technology etc., this will lead to shift in the investment demand curve.

Investment can be distinguished:

1. Planned Investment and Unplanned investment

The planned or intended or voluntary investment is undertaken by a firm in order to achieve certain predefined targets. It leads to an increase the existing stock of capital through addition to inventories or installation of an additional machine. This type of investment may be motivated by larger sales or by favourable market conditions. The unplanned or unintended or

involuntary investment on the other hand is that part of investment which is not anticipated or intended by the firm. It takes place when the planning does not go well with the real-world situations. When the unplanned investment is equal to zero, the realized investment will be equal to the planned investment. But the actual or the realized investment may not be equal to the planned investment. So, the realized investment is equal to the sum of planned and unplanned investment.

Thus, Actual investment = Planned investment + Unplanned investment

2. Financial Investment and Real Investment

The financial investment can be in the form of deposits into the bank, purchase of existing shares, debentures, bonds in the secondary market, etc. All such investments lead to the transfer of ownership rights from one person to another and do not create anything new. It does not add to the real capital stock in the economy. From the economy point of view there is no investment as these leave the stock of economy's real capital unchanged. The real investment on the other hand leads to the creation of additional productive capacity in the economy. The examples of real investment include, establishment of a new factory on a workshop, acquisition of new plant & machinery, purchase of a new building for official or personal use. Real investment has significance for the economy also as this raises the capital stock and in turn the income. It is important to note that when individual purchases new shares of a company, this financial investment will represent the real investment, because that would create a new capital asset.

3. Gross Investment and Net Investment

The gross investment is whatever additions are made to the capital stock of the economy. This can take the form of expenditure on new fixed capital assets (e.g. houses, machinery, factories etc.) or change in inventories over a given period of time. However, a part of the new capital is used to replace the depreciated capital goods, so the gross investment is not the net addition to the capital stock. The expenditure that a firm incurs to replace the depreciated capital during the year is called the replacement investment. The net investment is obtained after deducting this replacement investment from the gross investment.

Thus, Net investment = Gross investment – Replacement investment

Or

Gross investment = Net investment + Replacement investment

4. Autonomous Investment and Induced Investment:

This classification of investment is based on the determinants of investment. The investment is said to be autonomous if the amount of investment is unaffected by the level of income or the market rate of interest. This investment depends upon certain socio-economic and political factors. On the other hand, investment that depends upon the profit or income expectations of the entrepreneurs is called the induced investment. There can be many factors like prices, wages and interest changes which affect profits and thereby induce the investment level in the economy. An increase in the level of income causes an increase in the level of employment and thus an increased demand for the consumer goods. This, in turn leads to an increase in investment. While the investment is inversely related to the rate of interest. This is because interest rate is the cost of investment, higher interest rates, discourages investment.

1.5.3. Determinants of Investment

Investment and production decisions are taken by the firms by considering their profitability. These decisions are influenced by the expectations that entrepreneurs form about future revenue and cost streams which allow them to make guesses about what their profits might be. Investment decisions thus depend on whether the productive asset being purchased delivers a positive return above the cost. There are two main determinants which influence the decision of a firm or individual to invest in a new project:

1. The Market Rate of Interest:

Whenever an entrepreneur decides to invest in a capital good, he either borrows funds from the market for which he has to pay the market rate of interest or uses his own resources to finance the investment for which he sacrifices the interest rate which he could have earned on by lending his funds. So, the rate of interest is the price of investment. A higher price in the form of high interest rate will discourage investment.

2. The Marginal Efficiency of Capital:

The marginal efficiency of capital is a technical ratio which tells by how much investing in capital increases output. It can also be considered as the expected rate of return on capital investment. Specifically, it refers to the annual percentage yield earned by the last additional unit of capital. The investment decisions are based on the comparison of MEC with the market rate of interest. If the marginal efficiency of capital was 5% and interest rates were 3%, then it is worth borrowing at 3% to get an expected increase in output of 5%. However, if the marginal efficiency of capital is less than interest rates it is not worth investing.

Marginal efficiency of capital is in turn determined by two factors:

i) The Supply Price of Capital: Asset The supply price of an asset is the price at which a capital asset is acquired. This purchase price of the asset is called as supply price or the replacement cost by Keynes. At this price new capital asset is supplied or purchased.

ii) Prospective Yield of the Investment/ Capital Asset: Prospective yield is the expected flow of income from the investment during its lifetime. It is calculated by deducting the supply price of the capital asset from the expected income from the use of the asset during its working lifetime. Whenever a capital asset is purchased, its total working life and its return remain uncertain. Therefore, the entrepreneur has to make a careful estimate of the expected life of capital asset as well as the flow of income during its lifetime. As the capital asset is expected to be used for a number of years, its annual return in each period is added to get the return during its economic life. This annual net return expected from an asset is termed as 'annuity'. Present value of these annuities is obtained by discounting each annuity for the number of years it is expected to be used from the present. The discount rate used is the expected yield from the asset and it is calculated by doing compound interest calculations in reverse. So, prospective yield is a "series of annuities let us say Q1, Q2, … Qn". These are future flows of cash associated with an investment which the entrepreneur "expects to obtain from selling its output". The current value of a future cash flow is called its present value (PV).

The general formula for present value of a cash flow to be received at the end of period n is: Pt = Pt+n / (1 + i) n

Where Pt can be thought of as the purchase price, Pt+n can be considered as the net future yield on the asset n years from now and i is the rate of discount or yield rate. In the situation where the expected cash flows of varying size are distributed across several different time periods, the present value of a flow at time t, Pt can be written as:

Pt = Pt+1/ (1 + i) + Pt+2/ (1 + i)2 + Pt+3/ (1 + i)3 + … + Pt+n/ (1 + i) n.

In this equation Pt is the total discounted present value of the future streams of incomes expected from the investment in the capital good during its lifetime. The terms on the right-hand side of the equation represent the present value of the expected income flow expected at the end of each year. Firms are faced with different investment options with different revenue and cost outlay profiles over time. So, a firm should undertake an investment project only is the cost of a capital asset is less than the total present value of the prospective yield. If the cost of the asset exceeds the present value of the yields, then it is worthless to undertake investment.

1.5.4. Marginal Efficiency of Capital (MEC)

Keynes defined the Marginal Efficiency of Capital as being equal to that rate of discount which would make the present value of the series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price. The rate of discount he was referring to is also known as the internal rate of return of a project. The internal rate of return is the interest rate that would discount future income and cost outlays such that the net present value was zero. We can calculate the present value of a capital asset by discounting the value of its future flows. The net present value is the present value of the revenue to be received minus the present value of the costs of the capital investment. A positive net present value implies that investment earns a positive rate of return while a negative present value means that the investment is worthless.

Consider the investment on an equipment which is expected to be used for 5 years. In the current year, the firm has to spend $10,000 to purchase the equipment. If there is no scrap value for the equipment after year 5, what

will be the internal rate of return of this investment? The present value of the cost is $10,000 incurred in the current year. If we add up the cash flows in each of these years, the dollar sums of the cash returns turn out to be $15,000. But the dollar amounts cannot be compared across time periods because of the impact of compounding. Internal rate of return is nothing but the marginal efficiency of capital that we compare with the market rate of interest to decide the viability and profitability of any investment project. The market rate of interest remains almost stable but MEC is volatile. Firms seek to invest in those projects which yield higher MEC. MEC schedule relates MEC to alternative levels of investment of a firm. Suppose there are three investment projects A, B and C available with the firm with different MEC. Project A has an IRR (or MEC) of 10 per cent, while Project B has an MEC of 8 per cent and Project C has an MEC of 5 per cent. If the market rate of interest is currently 9 per cent, then the firm would only be interested in investing in Project A, which means that its capital expenditure in the current planning period will be limited to Project A. If the market interest rate drops to below 8 per cent, then it will be profitable to borrow sufficient funds (or use retained earnings) and invest in both Project A and Project B. As a consequence, total investment will rise. The firm will expand investment to Project C if the market rate of interest drops below 5 per cent. The downward sloping MEC curve shown in figure shows he inverse relation between Investment and MEC.

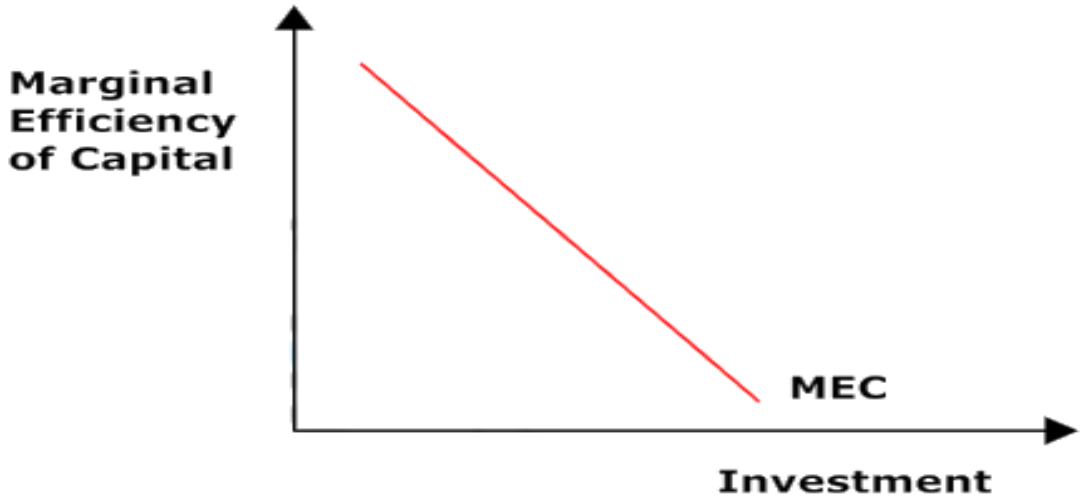

Fig.1.3. MEC curve

There is an inverse relation between MEC and investment because: (a) More investment leads to higher output, this will intensify competition among the producers driving down the prices. As prices fall, prospective yield from capital asset declines. (b) Increase in investment raises the price of capital assets, this means that the supply price of capital assets rises, consequently MEC falls.

Shifts in the Marginal Efficiency of Capital

Any change in MEC leads to a movement along the MEC curve but we should also consider the crucial role of expectations and other factors firms might consider when forming expectations of future returns.

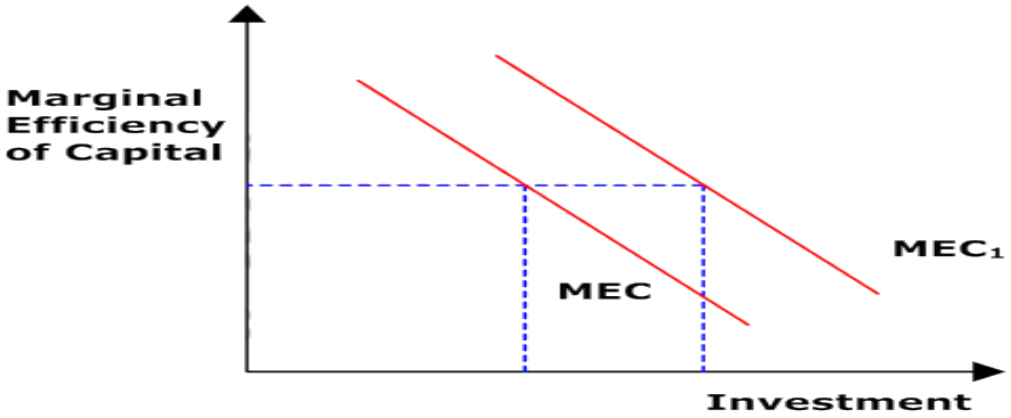

Fig.1.4. Shift in MEC curve

Conversely, if pessimism prevails, a fall in business confidence would cause a fall in expected rates of return on capital investment projects. The MEC curve shifts to the left and causes a fall in planned investment at each rate of interest.

1.5.5. MEC and Rate of Interest

The simple investment model, which says that higher market rate of interest leads to lower total investment is based on the assumption that all other things are equal. But Marginal Efficiency of Capital plays an important role in determining the investment. It is based on the comparison between the demand-side (expected revenue) and the supply-side (the replacement cost). In a growing economy, the analysis of investment only on the basis of interest rate could be misleading. It is possible that at times aggregate demand conditions are improving even when the market rate of interest rises. The increased aggregate demand will improve the revenue cash flows over time

and increase the marginal efficiency of capital for each project. This implies that investment will not fall even when the market rate of interest is high because the IRR or MEC of each project is increasing. Thus, investment would not be very responsive to changes in the market rate of interest, especially when the economy was in recession or boom, this is because expectations formed by entrepreneurs affect their MEC calculations. When the economy is in recession, entrepreneurs would become pessimistic and this would negatively impact their assessment of the future returns from different projects. Even with substantial excess productive capacity, firms are unlikely to expand the capital stock even if new investment projects become cheaper as the central bank cuts the market interest rate to stimulate demand. The extreme optimism that typically accompanies a boom also would reduce the sensitivity of investment to changes in the market rate of interest. With high expected returns, firms will be prepared to pay higher borrowing costs. Optimism can be shown by a rightward shift of the MEC curve, which would raise investment at a given market rate of interest. If entrepreneurs became excessively pessimistic then the MEC curve would shift leftwards and fewer investment projects would be deemed profitable at a given market rate of interest even if the technical aspects of the equipment were unchanged. This implies that investment is a very subjective act and responsive to how firms felt about the economy. In short, the profitability of any investment project is assessed by comparing its MEC with the market rate of interest. If Marginal Efficiency of Capital is higher than r then only any investment will be made.

1.6. Money Demand, Money supply and the Interest Rate:

Money has two important functions: primarily it acts as a medium of exchange and secondarily it is a store of value. The demand of money also comes from its these functions and hence individuals and businesses wish to hold money in cash and in the form of assets (that can be substituted for money).

Classical economists considered money as a means of payment or medium of exchange i.e. making payments for their purchase of goods and services and vice versa. In other words, they want to keep money for transactions purposes

only. Keynes in his theory on the other hand used a new term "liquidity" for the demand of money. According to him there are three motives which lead to the demand for money in an economy: (1) the transactions demand (2) the precautionary demand, and (3) the speculative demand. In short, he laid stress on the store of value function of money. Let us now discuss and compare both the theories in detail:

1.6.1. Classical Approach (or) The Quantity theory of Money:

The Classical theory laid emphasis on money as a medium of exchange, that is, money as a means of buying goods and services. So, every transaction which involves purchase of goods, services, raw materials, assets, require payment of money and hence will be included in this approach. But this approach considers certain assumptions:

1) Money according to classical model is neutral. For example, real variables such as the real interest rate are not affected by nominal money supply.

2) Neither output nor employment are affected by money and nor does money have any role in determining them.

The classical economists inherited their views from the quantity theory of money. They calculate the demand for money in terms of the average price level Times the volume of transactions in the economy because money acts as a medium of exchange and facilitates the exchange of goods and services.

The equation they follow is: MV=PT

Where M is the total quantity of money, V is the Transaction velocity of circulation of money, P is the average price level, T volume of transaction undertaken in an economy. Here PT is the demand for money which, in turn depends upon the volume of transactions to be undertaken in the economy, and MV represents the supply of money which is given and in equilibrium equals the demand for money. Thus, its underlying assumption is that people hold money to buy goods.

3) V is constant because it depends on the pattern of the receipts and payments.

4) T is constant because GDP is determined in the real sector, with factors such as the size of labor force and capital stock.

5) Money supply is a stock, that is, M The Fisher's Identity,

Therefore, is MV = Money Supply

PT = Money Demand And, Hence Money Supply is always equal to money demand.

1.6.2. Keynesian approach or the General theory

J.M. Keynes in his theory laid stress on the second function of money that is, the store of value. He emphasized the role of the other factors such as rate of interest, expectations regarding future interest rate; prices and incorporated them explicitly in his analysis of demand for money. Keynes used the term "liquidity preference". It defines the requirement of a person to hold cash balances but the question is how much a person should hold in the form of ready cash and how much can he lend. According to him, money is an asset and people want to hold it for three reasons:

(1) the transactions demand, (2) the precautionary demand, and (3) the speculative demand.

(1) The Transaction Demand for Money:

The transactions motive is related to the demand for money to settle the current transactions of individuals and business firms. People hold cash to bridge the gap between the expenditure and the receipt of income. As it is known the receipt and the incomes do not coincide, their lies a gap. Incomes are received weekly or monthly while the expenditure goes on day basis. A certain amount of ready money, therefore, is kept in hand to make current payments. This generally depends upon the individual's income, the interval at which the income is received and the methods of payments prevailing in the society. The business also needs to have a proportion of their resources in the form of money in order to meet daily needs of various kinds. They need money to pay for raw materials and transport, to pay wages and salaries and to meet all other current expenses incurred by any business firm. The money which they need to keep ready for transaction purpose is defined by the level of turnover (i.e., the volume of trade of the firm in question) of the business. The greater the turnover, the larger, in general, will be the amount of money needed to kept spare for current expenses. The money demand for transaction motive arises primarily because of the use of money as a medium of exchange. The transaction motive of holding money is affected according to Keynesian

by two important factors namely: 1) Rate of interest (which was initially taken as inelastic by Keynesian) 2) Level of Income.

(2) The Precautionary Demand for Money:

The Precautionary motive refers to providing for contingencies such as sudden expenditures and unforeseen opportunities of advantageous purchases. Both individuals and business keep some amount of cash in reserve to meet such unexpected needs. Individuals hold some cash to provide for illness, accidents, unemployment and other such unforeseen contingencies. Similarly, businessmen have to keep some cash in reserve to face the unfavorable conditions or to gain from unexpected deals. Money under the precautionary motive is the money kept in reserve like water kept in reserve in a water tank. Again, the precautionary demand for money is directly proportional to the level of income, and business activity, opportunities for unexpected profitable deals, the cost of holding liquid assets in bank reserves, etc.

It is also inversely related to high interest rates. This is expressed by the function: L2=f (Y, r).

Now we combine L1 and L2. Moreover, the interest elasticity of transaction or Precautionary demand is ignored. Thus: M1 = L1+ L2 + M1 (Y).

(3) The Speculative Demand for Money:

The speculative motive is to hold one's resources in liquid form in order to take advantage of market movements regarding the future changes in the rate of interest (by investing in bonds). The basic idea of holding money for speculative motive was a new one propounded by Keynesian. Here also money serves its secondary function, that of store of value. The cash under speculative motive is used to make speculative gains by trading in bonds whose prices fluctuate. The speculative motive of holding money is affected according to Keynesian by primarily the Level of Income. Let's discuss this in detail: Under speculative motive there is an inverse relation between interest rates and the amount of money held. That is if bond prices are expected to rise (that the rate of interest is expected to fall), individuals will buy bonds to sell. If, however, bond prices are expected to fall (the rate of interest is expected to rise), individuals will sell bonds to avoid capital losses The reason

for this inverse correlation is that, at a lower rate of interest less is lost by not lending money or investing it(or by holding on to money), while at a higher current rate of interest holders of cash balance would lose more by not lending or investing. This is shown in following figure: Along X-axis we represent the speculative demand for money and along the X-axis the current rate of interest The liquidity preference curve LP is a downward sloping towards the right signifying that the higher the rate of interest, the lower the demand for money for speculative motive, and vice versa.

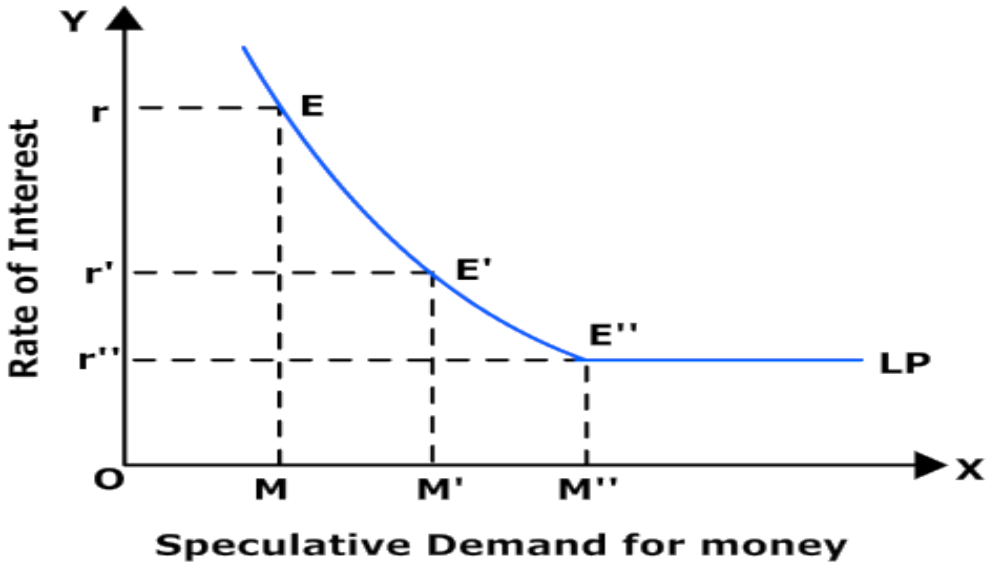

Fig.1.5.

This can also be worked out with the help of the equation V = R/r, Where V is the value of a bond, R is the return on the bond, and r is the market rate of interest.

1.7. Derivation of IS and LM Curve

The equilibrium in goods market and we learnt about the IS curve. According to Keynesian analysis the demand and supply of money has an important role to play in determining the rate of interest. To introduce the concept of equilibrium in the money market and the LM curve. Thereafter in the following we will bring the IS and LM curves together to determine simultaneous equilibrium in goods and asset markets. First, we will discuss the asset and money markets in this module and understand how the rate of interest is determined.

The IS curve represents all those combinations of interest rate (i) and income

(Y) at which the goods market clears. In other words, all points on IS curve are points of goods market equilibrium. The condition for goods market equilibrium in a simple two sector economy is Y = C + I

I = Y-C

I = S

Thus, at all points on the IS curve, planned investment is equal to planned savings. Hence, the name IS curve.

Let us understand the derivation of IS curve using Figure 1.6.

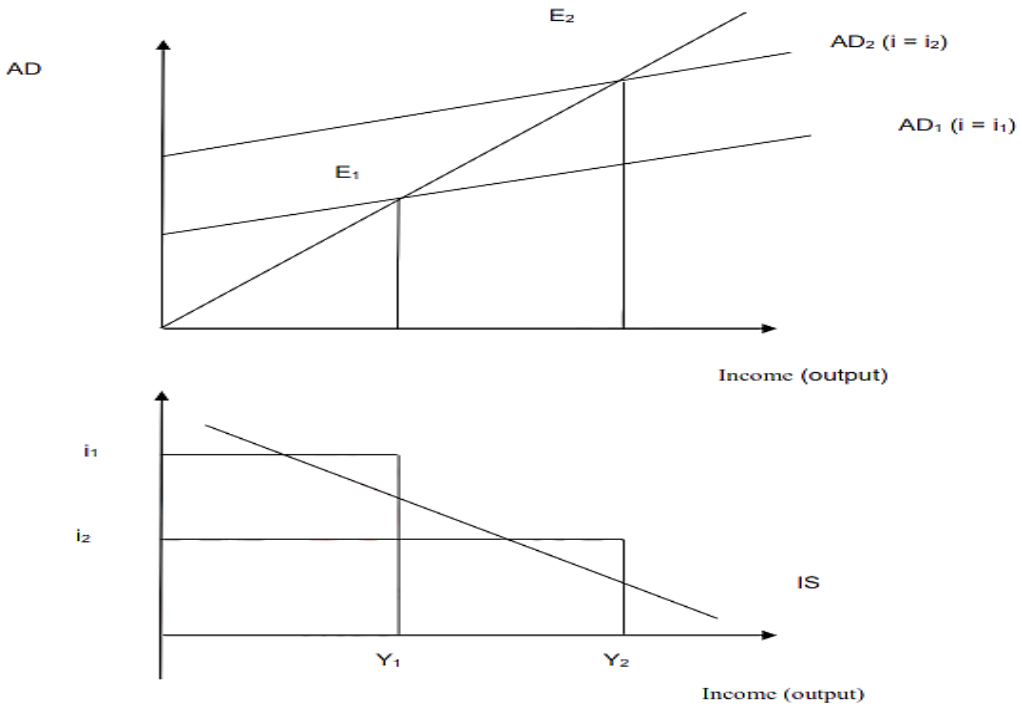

Fig.1.6. IS Curve

The upper panel of the figure shows the equilibrium in the goods market where AD is equal to AS (**45°** line). The initial equilibrium is at E_1. Suppose there is a fall in interest rate from initial rate i_1 to i_2. As a result of fall in interest rates, aggregate demand (AD) increases and the AD curve shifts upwards from AD_1 to AD_2. Consequently, the income level increases from Y_1 to Y_2. Joining together all such equilibrium combinations (i_1, Y_1) and (i_2, Y_2) give a downward sloping IS curve. The IS curve can also be derived arithmetically using the following relations: C = a + bY

$I = c - d_i$,

where c and d are positive

At equilibrium,

$Y = C + I$

$Y = a + bY + c - d_i$

$Y(1-b) = a + c - d_i$

$di = (a+c)- (1-b) Y$

$i = (a+c)/d - (1-b)/d Y$

This provides the equation of the IS curve.

1.7.1. IS curve: Slope and Shifts

Slope of IS curve:

IS curve being downward sloping. The downward sloping curve can also be seen intuitively. A rise in interest rate will result in fall in AD. This will take the economy away from equilibrium in goods market. In order to ensure that the goods market remains in equilibrium at higher interest rates, the supply of goods must fall so that AD is equal to AS. Thus, a rise in interest rates consistent with a fall in output results in a downward sloping IS curve. Let us now see the factors that determine the extent of steepness of IS curve. As we will see in later modules, the slope of this curve will be an important factor determining the effectiveness of government's monetary and fiscal policies. The slope of IS curve depends on two things: interest elasticity of investment (d) and the marginal propensity to save (1-b). IS curve will be flatter (steeper) the higher (lower) is the interest elasticity of investment (d) and/or lower (higher) is propensity to save (1-b). Since the interest elasticity of investment (d) is in the denominator of slope, the higher d translates into flatter IS curve. Intuitively, when investment is highly sensitive to interest rates then a small change in interest rate leads to a large shift in AD curve, resulting in large change in income and hence a flatter IS curve. A lower propensity to save implies a higher multiplier and hence larger change in income and a flatter IS curve.

Shift of IS curve

The position of IS curve depends on the intercept, given by (a+c)/d. Thus, if autonomous component of aggregate demand increases, the intercept rises and IS curve shifts to the right. IS curve will shift to the right (left) when there is an increase (decrease) in autonomous expenditure such as investment expenditure. A rise in autonomous government expenditure in a

3-sector model will have the same effect and the IS curve will again shift to right. The IS curve will also shift to right (left) when taxes are reduced (increased). An increase in taxes reduces disposable income and lowers household consumption, leading to lower aggregate demand. Hence the AD curve shifts downward so that the new equilibrium of goods market is at a lower income level. At the unchanged interest rates if there is lower income, this implies a shift in the IS curve to the left.

1.8. LM curve

Derivation of LM curve:

We will now derive the LM curve which is based on equilibrium in the money market (Figure 1.7.), i.e. when demand for money and supply of money is equal. At the income level, Y_1, the money demand curve is M_d (Y_1). The rate of interest is i_1. At this interest rate and income level (i_1, Y_1), the money market is in equilibrium. This gives the first point (E_1) on the LM curve. Suppose there is an increase in income from Y_1 to Y_2. Due to the increase in income, demand for money increases (as money demand is positively related to income) at each rate of interest, so the money demand curve shifts rightward to Md (Y_2). Once the money demand curve shifts there is money market disequilibrium at E_1as there is excess demand for money (demand for money is higher because income is higher, but money supply is the same at M_S). So, interest rates rise (remember money demand is negatively related to interest rate) to eliminate the excess demand and the process continues till once again money demand and money supply are equal. The interest income combinations (i_1, Y_1) and (i_2, Y_2) give us two points on the LM curve ($E_1$and E_2). Joining all such points (E_1, E_2 and E_3) which give interest rate-income combinations for which the money market is in equilibrium yields a positively sloping LM curve.

The LM curve is positively sloping as an increase in income increases money demand at a given interest rate. But the money supply is fixed by monetary authorities. In such a situation, there would be excess demand for money. To equate money demand and money supply, the rate of interest would have to rise to reduce the excess demand for money. Hence, an increase in income is followed by an increase in interest rate to maintain money market equilibrium, resulting in an upward sloping LM curve. We now turn our

attention to the position (and shifts) in LM curve as well as degree of steepness of LM curve in the next two sub-sections.

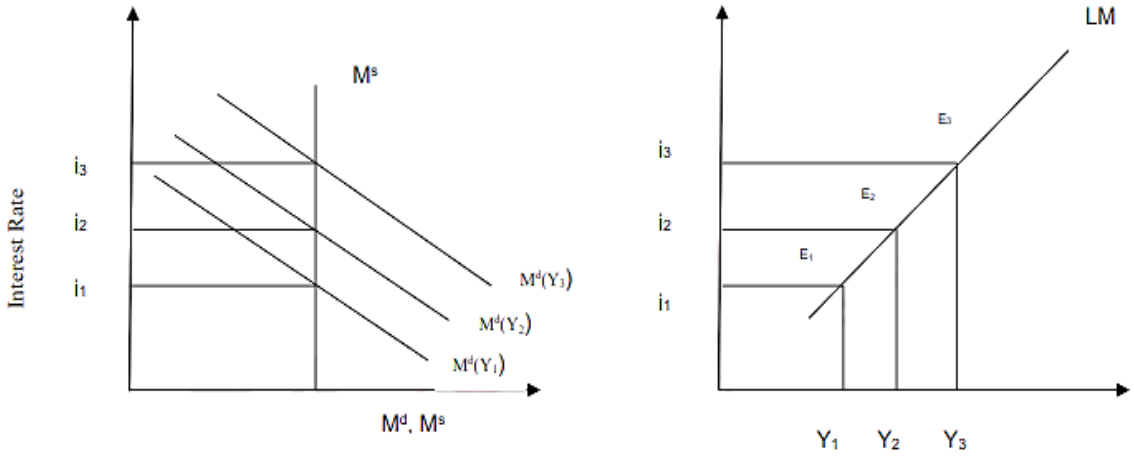

Fig.1.7. Derivation of LM Curve

Shifts in LM curve

The LM curve shifts when there is a change in the supply of money.

Increase in Money Supply:

This is demonstrated in Figure 1.8. The money market equilibrium is initially established at the intersection of money supply curve(M_1^s) and money demand curve ($M^d(Y_1)$). The equilibrium rate of interest is i_1. The combination i_1, Y_1 gives one such point on LM_1 curve. When there is an increase in money supply by the monetary authorities, the Money supply curve shifts rightward from $M_1^{\ s}$ to $M_2^{\ s}$. As money supply increases, the new equilibrium between new money supply curve and original money demand curve is established at a lower interest rate (i_2). The income level has not changed but remains at Y_1. The new equilibrium interest income combination (i_2 and Y_1) is attained at a lower curve LM_2. Thus, the LM curve shifts to the right as money supply increases.

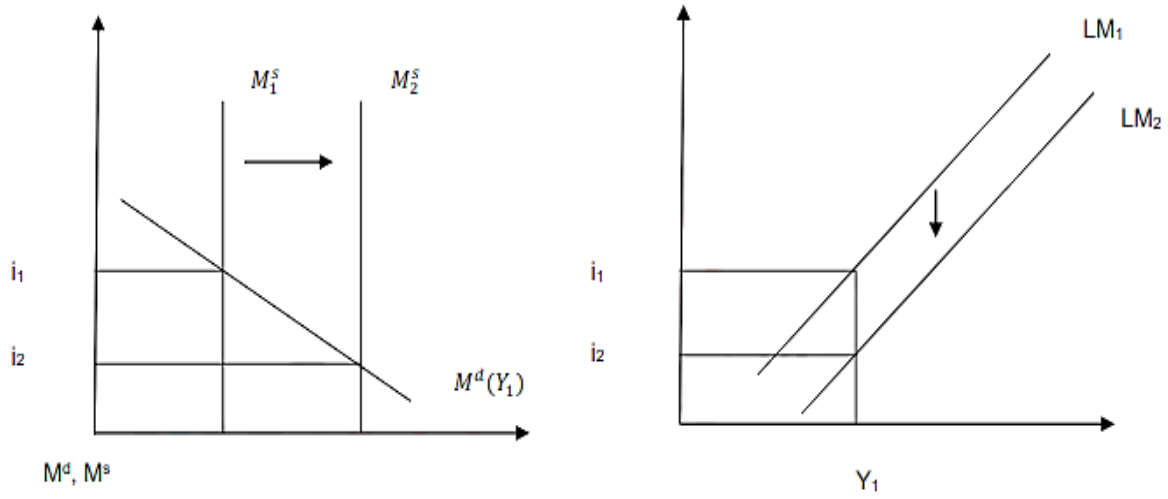

Fig.1.8. Shift in LM Curve due to increase money supply

Exogenous shift in money demand will have opposite effects to that of change in money supply. So, an exogenous rise in money demand (for example, because people face a higher value on liquidity) with money supply remaining the same will cause LM to shift to the left.

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UNIT - II

BUSINESS CYCLES

2.1. Introduction

Theory of Business Cycles was initially put forward by Joseph Schumpeter in his work, Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process in 1939. Initially, this theory did not generate the interest it deserved. Perhaps, that was due to the fact that J.M. Keynes's General Theory that had preceded it occupied centre stage in the macroeconomic discourse at that time. As we examine the literature today, we find that a large body of empirical work has been done on business cycles especially in the context of developed market economies, e.g., the OECD countries.

Business cycles or Trade cycles refer to the continuous fluctuations in economic activity in the economy as a whole. Fluctuations in economic activity are a feature of every economy and pose a persistent problem in the short run normally. These short-term fluctuations in economic activity, which are reflected in output and employment levels, are called trade cycles. So, we can say, business cycle is an alternate expansion and contraction in overall business activities. It is regular fluctuations in income, output and employment which tend to be self-reinforcing or cumulative. It refers to wave like fluctuations and is invariably start in the industrial sector and then spread itself over the other sectors of the economy quickly because in modern economy, the different sectors are interrelated. In short business cycle or trade cycles are the ups and downs in economic activities. So, business cycles, boom in one period and slump in the subsequent period, in economic activities are essentially continuous features of the economic development of a country. Business cycles influence business decisions tremendously and set the trends for future business. As we know there are five phases of business cycles namely, Depression, Recovery, Prosperity, Boom and Recession. As the name suggests, the period of prosperity opens up new and lager opportunities for investment, employment, and production and promotes business in the economy.

2.2. Phases of Business Cycles:

Business cycles have shown different phases the study of which is useful for the proper understanding of market. In general, there are two phases of business cycle and that is prosperity and depression. But there are some stages in between two. These are:

- Expansion or boom or upswing or prosperity of business activities.
- Peak of boom or upper turning point.
- Recession or contraction or downswing or depression.
- Trough, the bottom of depression or lower turning point.

These phases are shown in the following figure.

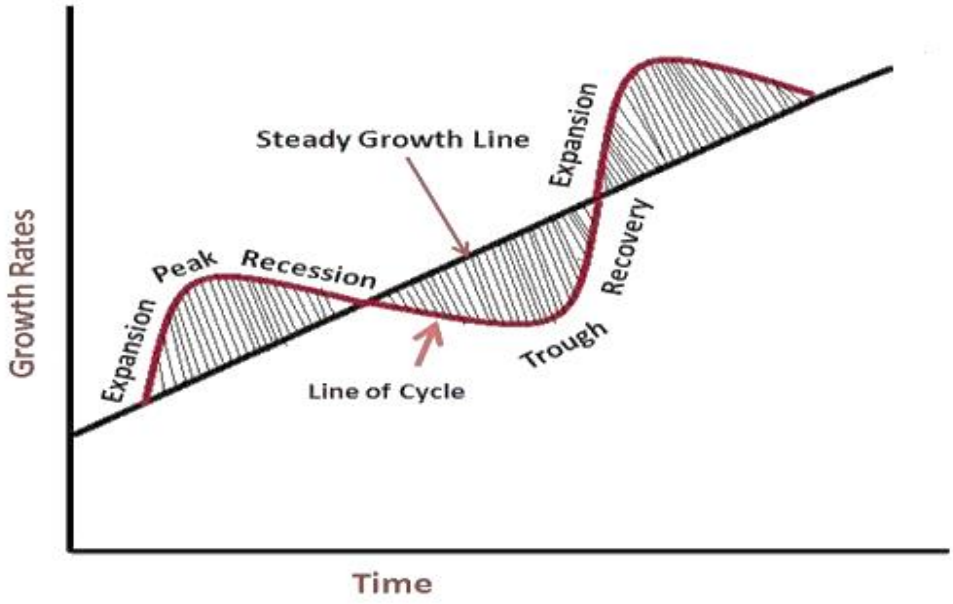

Fig.2.1. Business Cycles

As it is shown here, with the revival of economic activities the economy moves into the expansion phase, but after reaching peak point, contraction or recession or downswing starts. When the recession gathered momentum, it is called depression and that downswing continues till the lowest turning point which is also called trough. After that economy start recovering it ultimately tries to enter into an expansion phase and the process is continuous.

Now we discuss the various phases of business cycles as under:

1. Expansion and Boom:

The various characteristics of economy in its expansion phase are increase in output, increase in investment, increase in employment, increase in aggregate demand, and increase in sales, increase in profits, increase in wholesale and

retail prices, increase in per capita output and rise in standard of living. There is absence of involuntary unemployment but structural and frictional unemployment prevails in the economy. So, when expansion gathered momentum, we have prosperity in the economy and in this phase gap between potential Gross National Product and actual Gross National Product (GNP) is zero. It means in this phase level of production is at maximum. So, in prosperity phase there is a high level of effective demand, employment and income. People enjoy a high standard of living also. In the later stages of prosperity, it may happen sometimes that banks start reducing credit or profit expectations change adversely and trader become doubtful about future state of the economy. However different economists have different views regarding the possible reasons for the end of boom phase and start of downswing in economic activity. Some have argued that the contraction in bank credit may cause downswing and in the eyes of others, sudden collapse of expected rate of profit is a major cause of downswing.

2. Recession and Depression:

In this phase, economic activities slide down their normal level. In this phase not only output decreases but the level of employment also reduces and the result of this there is fall in GNP also. Depression is a just contrast of prosperity, as there is presence of involuntary unemployment in the economy, output and trade declines, profit and wages fall as a result income also, decline in investment and aggregate demand. In depression phase there is fall in interest rates also and with low rate of interest people demand for money holding increases. All construction activities come to an end. Durable consumer goods and capital goods industries are hit badly. In short, all economic activities touch the bottom.

3. Trough and Recovery:

When economic activities touch the bottom level, the phase of trough is reached. It is a phase where capital stock is allowed to depreciation even without replacement. Technology advancement makes the capital goods obsolete. In this situation if a bank starts expanding credit facilities for the advancement of technology, new types of machines and other capital goods then it brings a recovery in the economy. In this phase, some firm's plans

investment, some going for renovation programmes and some undertakes both. This step will generate construction activities in both capital and consumer goods sector. As a result, factor of production fully utilized wages and other input prices move upward. Thought it may not in a uniform rate but in increasing trend. So, when this process gathered momentum, economy again enters into the phase of recovery and then expansion. Thus, the business cycle going on.

2.3. Types of Business Cycle

Following the writings of Prof. James Arthur and Schumpeter, we can classify business cycle into three types based on the underlying time period of existence of the cycle as follows:

- Short Kitchin Cycle (very short or minor period of the cycle, approximately 40 months duration)
- Longer Juglar cycle (major cycles, composed of three minor cycles and of the duration of 10 years or so)
- Very long Kondratief Wave (very long waves of cycle, made up of six major cycles and takes more than 60 years to run its course of duration)

2.4. Macro-Economic Variables and Business Cycles

There is no single cause or set of causes that may result in a business cycle. According to Schumpeter, each cycle is unique and unlike the others preceding it. To find the actual cause leading to it therefore, each cycle has to be analyzed separately. In fact, Schumpeter compares business cycles to humans. Each individual is different from others and there is no single cause that could explain, e.g., why humans die. As such, the question why business cycles occur, has been explored by many, but there is still no definitive answer to it.

There are two kinds of economic factors that are considered in any economic analysis: internal and external. Simply put, the factors that act from within a firm or business are called internal factors while those that act from outside are called external factors. The focus of most economic analyses remains confined to the internal factors and by and large external factors are treated as given. So, the role of external fluctuations is often ignored. Yet, it is the

external factors and the economic fluctuations they because that are the subject matter of the theory of business cycles. In fact, it is changes in the external factors that are believed to largely account for cyclical fluctuations. These external factors could be economic, such as change in tax rates or in interest rates; or they could be non-economic, such as wars or natural calamities.

2.5. Theories of Business Cycle

A business cycle is a complex phenomenon which is common to every economic system. Several theories of business cycles have been propounded from time to time to explain the causes of trade cycle. In order to analyses the problem of trade cycle, it is essential to review the important theories of trade cycle.

2.5.1. Classical Theory and Business Cycles

The traditional business cycle theorists take into consideration the monetary and credit system of an economy to analyze business cycles. Therefore, theories developed by these traditional theorists are called monetary theory of business cycle. The monetary theory states that the business cycle is a result of changes in monetary and credit market conditions. Hawtrey, the main supporter of this theory, advocated that business cycles are the continuous phases of inflation and deflation. According to him, changes in an economy take place due to changes in the flow of money.

For example, when there is increase in money supply, there would be increase in prices, profits, and total output. This results in the growth of an economy. On the other hand, a fall in money supply would result in decrease in prices, profit, and total output, which would lead to decline of an economy. Apart from this, Hawtrey also advocated that the main factor that influences the flow of money is credit mechanism. In economy, the banking system plays an important role in increasing money flow by providing credit.

An economy shows growth when the volume of bank credit increases. This increase in the growth continues till the volume of bank credit increases. Banks offer credit facilities to individuals or organizations due to the fact that

banks find it profitable to provide credit on easy terms.

The easy availability of funds from banks helps organizations to perform various business activities. This leads to increase in various investment opportunities, which further results in deepening and widening of capital. Apart from this, credit provided by banks on easy terms helps organizations to expand their production. When an organization increases its production, the supply of its products also increases to a certain limit.

After that, the rate of increase in demand of products in market is higher than the rate of increase in supply. Consequently, the prices of products increase. Therefore, credit expansion helps in expansion of economy. On the contrary, the economic condition is reversed when the bank starts withdrawing credit from market or stop lending money.

This is because of the reason that the cash reserves of bank are washed-out due to the following reasons:

a. Increase in loans and advance provided by banks

b. Reduction in inflow of deposits

c. Withdrawal of deposits for better investment opportunities

When banks stop providing credit, it reduces investment by businessmen. This leads to the decrease in the demand for consumer and capital goods, prices, and consumption. This marks the symptoms of recession.

Some of the points on which the pure monetary theory is criticized are as follows:

a. Regards business cycle as monetary phenomenon that is not true. Apart from monetary factors, several non-monetary factors, such as new investment demands, cost structure, and expectations of businessmen, can also produce changes in economic activities.

b. Describes only expansion and recession phases and fails to explain the intermediary phases of business cycles.

c. Assumes that businessmen are more sensitive to the interest rates that is not true rather they are more concerned about the future opportunities.

2.5.2. Hawtrey's Monetary Theory of Business cycles:

Hawtrey was of opinion that in depression monetary factors play a critical role. The main factor affecting the flow of money and money supply is the credit position by the bank. He made the classical quantity theory of money as the basis of his trade cycle theory. According to him, both monetary and non-monetary factors also affect trade. His theory is basically the product of supply of money and expansion of credit. This expansion of credit and other money supply instrument create a cumulative process of expansion which in return increase aggregate demand.

This theory is based upon the following beliefs:

- Consumer's total expenditure comprises expenditure on consumption and investment.
- Consumer's total outlay is the total money income of community.
- Stock market is very sensitive.
- Bank credit plays an important role in money supply.

When the process of expansion starts with the credit creation process and money supply, then economy easily attains a boom phase. During boom, bank realizes that they have reduced their results due to over credit creation which is dangerous. Expansion of credit is stopped which set the downward tendencies in motion. It is a common phenomenon that when there is no credit expansion in the economy then there is no prosperity. Heavy shortage of bank reserve occurs due to drainage of cash from the banking system. Then this phase converted into depression due to shortage of money supply in the economy. In simple words we can say that with the decline in effective demand, depression phase starts. According to this theory the only cause of fluctuations in business is due to instability of bank credit. So, it can be concluded that Hawtrey's theory of business cycle is basically depend upon the money supply, bank credits and rate of interests. Criticism of the theory i. Hawtrey neglected the role of non-monetary factors like prosperous agriculture, inventions, rate of profit and stock of capital. ii. It only concentrates on supply of money. iii. Increase in interest rates is not only due to economic prosperity but also due to other factors. iv. Over-emphasis on the

role of wholesalers. v. Too much confidence in monetary policy. vi. Neglect the role of expectations. vii. Incomplete theory of trade cycles.

2.5.3. Von Hayek Business Cycle:

Monetary over-investment theory focuses mainly on the imbalance between actual and desired investments. According to this theory, the actual investment is much higher than the desired investment. This theory was given by Hayek. According to him, the investment and consumption patterns of an economy should match with each other to bring the economy in equilibrium. For stabilizing this equilibrium, the voluntary savings should be equal to actual investment in an economy.

In an economy, generally, the total investment is distributed among industries in such a way that each industry produces products to a limit, so that its demand and supply are equal. This implies that the investment at every level and for every product in the whole economy is equal. As a result, there would be no expansion and contraction and the economy would always be in equilibrium.

According to this theory, changes in economic conditions would occur only when the money supply and investment-saving relations show fluctuations. The investment-saving relations are affected when there is an increase in investment opportunities and voluntary savings are constant. Investment opportunities increase due to several reasons, such as low interest rates, increased marginal efficiency of capital, and increase in expectations of businessmen. Apart from this, when banks start supporting industries for investment by lending money at lower rates, it results in an increase in investment. This may result in the condition of overinvestment mainly in capital good industries. In such a case, investment and savings increase, but the consumption remains unaffected as there is no change in consumer goods industries.

Consequently, profit increases with increase in investment opportunities, which further results in an increase in the demand for various products and services. The demand for products and services exceeds the supply of products and services. This leads to inflation in the economy, which reduces

the purchasing power of individuals. Therefore, with decrease in the purchasing power of individuals, the real demand for products does not increase at the same rate at which the investment increases. The real investment is done at the cost of real consumption.

The balance between the investment and consumer demand is disturbed. As a result, it is difficult to maintain the current rate of investment. The demand of consumer goods would be dependent on the income of individuals. An increase in the income level would result in the increase of consumer goods. However, the increase in consumer goods is more than the increase in capital goods. Therefore, people would invest in consumer goods rather than in capital goods. Consequently, the demand for bank credit also increases. However, the bankers are not ready to lend money because of the demand for funds from consumer and capital goods industry both. This leads to recession in the economy. As a result, economic activities, such as employment, investment, savings, consumption, and prices of goods and services, start declining.

Some of the limitations of monetary over-investment theory are as follows:

a. Assumes that when the market rate of interest is lower than the natural market rate of interest, the bank credit flows to the capital goods industry. This is applicable only in the situation of full employment. However, business cycles are the part of an economy and can take place under improper utilization of resources.

b. Considers interest rate as the most important factor that affects investment. However, there are several factors, such as capital goods cost and businessmen expectations, which can influence investment.

c. Focuses on balance between consumer goods and investment, which is not much required.

2.5.4. Schumpeter Innovation Theory of Business Cycle:

The innovation theory of business cycle is invented by an American Economist Joseph Schumpeter. According to this theory, the main causes of business cycles are over innovations. He takes the meaning of innovation as the introduction and application of such techniques which can help in increasing

production by exploiting the existing resources not by discoveries or inventions. Innovations are always inspired Y profits. Whenever innovations are introduced, it results into profitability then shared by other producers and result into decline in profitability. Then it further leads to a new innovation and generate profits.

Schumpeter has classified innovation in following categories:

- ♣ Introduction of new type of product.
- ♣ The introduction of new technique of production.
- ♣ Discovery of new markets.
- ♣ Finding new sources of raw material.
- ♣ Changing or improving the old source of raw material for better productivity.
- ♣ Introduction of new method to the management.

Once innovation is introduced, producer has to manage the market for the product. According to Schumpeter, innovations lead to short waves. The money market and banks also play significant role in innovation theory. He also explains the up-swing and the down-swing of the business cycle with the help of innovations. The upswing wave starts with the profitable innovations when a new raw material, new technology takes place, it will result higher profit to the producer. They progress and reach to peak position with the help of credit facilities given by banks or other financial institutions. Once boom position is reached, market flooded with multiple products and as a result there is decline in profitability. Again, after some time, new inventions are taking place and wave of recovery starts. He assumes the stoppage of innovations and lack of innovation by the entrepreneur as the main reason of recession in the economy.

This theory has also suffered some criticism:

♣ Innovation fails to explain the period of boom and depression.

♣ Innovation may be major factor of investment and economic activities but not the complete process of trade cycle.

♣ This theory is based on the assumption that every new innovation is financed by the banks and other credit institutions but this cannot be taken as granted because banks finance only short-term loans and investments.

2.5.5. Samuelson's Model of Business Cycles

Samuelson's model of business cycles has integrated the theory of Multiplier with the principle of Acceleration. The dynamic model shows how the two interact with each other to cause fluctuations in economic activity. Investment is the most volatile component of national income and therefore the main cause of cyclical movements in an economy. The fluctuations in investment are amplified due to interaction of multiplier and accelerator. When an autonomous increase in investment or any other component of aggregate demand occurs, it raises income by some larger amount, depending on the value of the multiplier. According to Keynesian economics any new investment expenditure e.g., on construction of a road or installing a new machinery generates several times as much income as the expenditure itself. This is a result of increasing employment and earnings. Those who get paid to build the road or work on the new machine will spend most of their earnings in the economy. Their expenditures will become income for others, who will in their turn spend most of what they receive, and so on… This relationship is known as the investment multiplier. On its own, it cannot produce cyclical movements in the economy; it merely makes for a speedy movement in the upward direction (or downward direction in case of an initial fall in investment expenditure). When the accelerator principle is added to the above mechanism of multiplier, it makes in for cyclical oscillations in the economy. The increase in incomes lead to an increase in consumption demand. The extent of this increase would depend on the marginal propensity to consume. This increase in consumption would create further demand for investment in the absence of any excess production capacity. The increase in national income thus stimulates investment via increase in consumption demand. The accelerator principle says that small changes in consumer spending can cause big percentage changes in investment. It assumes that the capital-output ratio tends to remain constant. The new induced or derived investment will stimulate a further multiplier process, thus producing additional incomes, again leading to more demand for consumer goods, further increases in investment and income and so on. In this manner the Multiplier and the Accelerator interact with each other and make the income grow at a rate much

faster than expected. Output in a time period t(Y_t) in a closed economy comprises of autonomous government spending (G_t), induced private consumption spending (C_t) and induced private investment (I_t).

$Y_t = G_t + C_t + I_t$ ----------(1)

$C_t = C_\alpha + \alpha Y_{t-1}$ ---------- (C_α is autonomous consumption and α is marginal propensity to consume)

$I_t = \beta (C_t - C_{t-1})$ ----------(β is the acceleration and I_t is the autonomous investment) Substituting for C_t and I_t in (1) gives

$Y_t = A + \alpha Y_{t-1} + \alpha \beta (Y_{t-1} - Y_{t-2})$ ----------($A=G_t+C_\alpha+I_\alpha$ represents autonomous spending)

Multiplier= 1/1-α with different values for α and β, different pattern of fluctuation result. Samuelson has demarcated four different regions for different values of α and β.

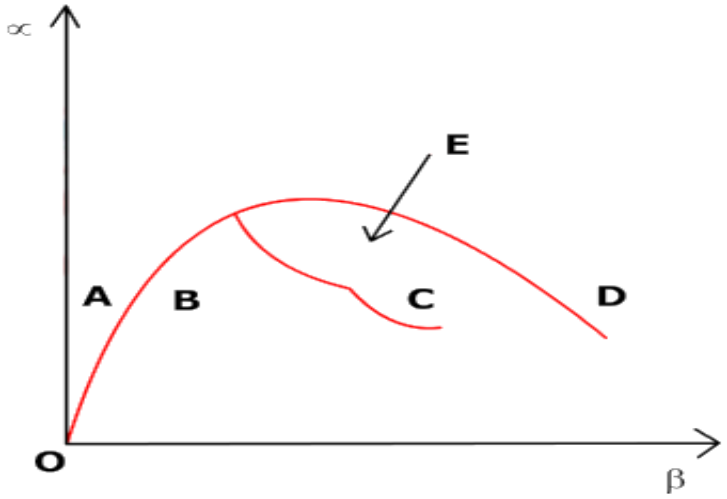

Fig.2.2. Samuelson's Business Cycle

If the two values lie in region A, there will be pure multiplier effect leading to a gradual increase in income approaching an asymptotic level consequent upon a single impulse of expenditure. Region B represents the values corresponding to dampened fluctuations, C to an ever increasing or explosive fluctuations. D represents the magnitudes corresponding to ever increasing growth rates taking income to infinite levels. The curve E represent the special case where $\alpha\beta = 1$ and any change in autonomous spending produces fluctuations of a constant amplitude. Probable values of α and β in a realistic situation are such as to place the economy in region B indicating successive dampened oscillations.

2.5.6. Hicks Business Cycle Theory

Hick's theory of business cycles is also based on the multiplier-accelerator interaction but it departs from the Samuelson's version in two important ways. First is the synthesis of growth factors with the cycle inducing forces. He has maintained that autonomous investment increases at a constant percentage rate due to technological progress, innovations and population growth. With further assumptions of a stable multiplier and accelerator, the equilibrium income and output will also grow at the same percentage. External shocks leading to induced investment pushes the economy off the equilibrium path and leads to business cycles via the multiplier-accelerator interaction. The second important point of departure is in the introduction of ceilings and floors to the movements of output and income. He has chosen certain values of the multiplier and accelerator that he believes to be representative of the real world. He maintained that the values of MPC and accelerator in regions A and D identified by Samuelson needs to be totally ignored as they produce non-oscillatory growth which contradicts the actual growth paths observed. Similarly, the constant amplitude cycle also has a low probability since it can happen only under the unique situation of the product of MPC and accelerator being one. Of the two cases of dampening and explosive cycles that remain, Hicks also rules out dampening cycles for the reason that it presumes disappearance of fluctuations overtime which is again contrary to historical experience. Explosive cycles are also not borne out by historical data but these can be made realistic by introducing limits on the amplitude of the cycle to keep it within bounds. The upper limit on cyclical movements comes from the full utilization of available labor and capital resources. At such point there can be no increase in employment and, therefore, no rise in consumer demands the operation of the accelerator would cease. This halt in demand, together with lack of new capital, would stop new investment and workers start to be laid off, taking the process into reverse. While the upper limit of the cyclical swings would be the point of full employment or full capacity; the lower limit is more difficult to define. It would be established when the forces making for long-term economic growth begin to operate. The limit to disinvestment is set by

the depreciation of the capital stock. As the existing capital wears out, the capital stock will fall below the level required to produce current output. An expansion of business activity for replacement investment will make for a revival. The rise in the level of activity in the capital-goods industries will cause, by the multiplier, a further rise in output. Thus, the upswing of a cycle stops when it meets the upper limit; and the downswing stops at the lower limit, resulting in continuous cyclical movements with an overall upward trend—a pattern corresponding to the one found in history.

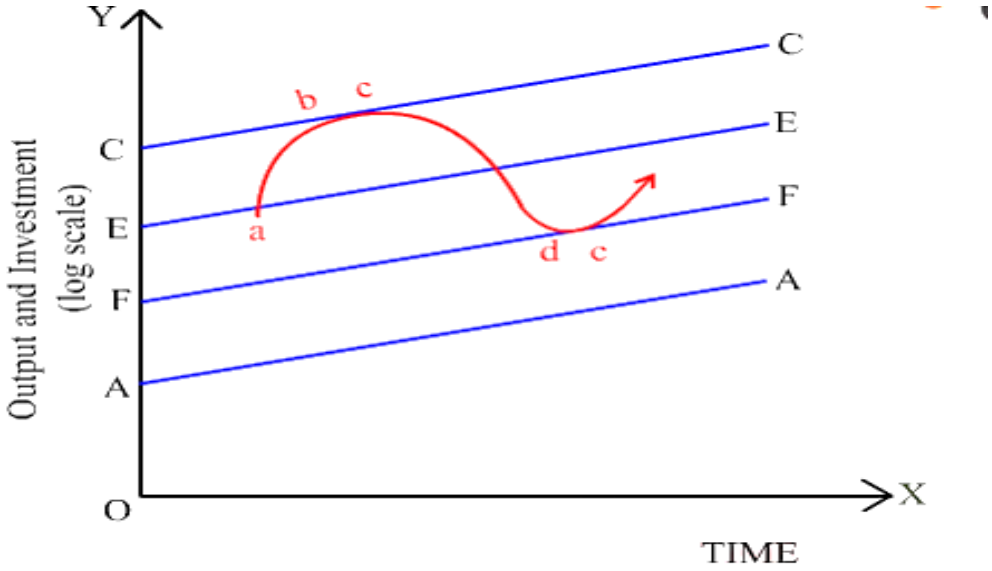

Fig.2.3. Hicks Theory

Figure 2.3. illustrates the working of the Hicks theory. The vertical axis gives investment and income on a logarithmic scale. AA represents the growing autonomous investment; FF gives the floor and CC gives the ceiling. Both floor and ceiling are growing overtime due to operation of growth factors in the economy. EE represents the equilibrium growth path given autonomous investment and magnitudes of multiplier and accelerator. To start with, the economy is at a point an along the equilibrium path. Now suppose an invention takes place leading to an outburst of induced investment. The working of multiplier-accelerator as explained above causes a big divergence and takes the economy to point b where it hits the ceiling. It may crawl along the ceiling for a while due to lag between output and induced investment. At this point the accelerator ceases to operate and multiplier in itself is inadequate to sustain an increasing output. Income starts to fall, induced investment also declines. The accelerator principle undergoes a

transformation and the accelerator starts to work in the reverse direction. Once the downfall has started, it will not stop along the equilibrium path EE. The explosive forces will push the economy to the floor. The recovery will not immediately start due to existing excess capacities. Once excess capacities are utilized to a reasonable extent, new investment for replacement starts initiating the revival and the system once again starts to move in the upward direction above the ceiling through the combined effect of multiplier and accelerator.

2.5.7. Kaldor Theory of Trade Cycle

Kaldor's theory of the trade cycle is a comparatively simple and neat theory built directly on Keynes' saving-investment analysis. Keynes theory of the determination of the level of income did not take into consideration the theory of the fluctuations of income.

Assumptions:

1. In his trade cycle theory Kaldor does not make use of the acceleration principle in a rigid form. In his model, investment is related directly to the level of income and inversely to the stock of capital. This approach breaks the unrealistic, inflexible dependence of investment to changes in output that is implied by the rigid acceleration principle. Kaldor introduces a new variable that plays a major role in a cyclical change in saving and investment and this variable is the capital stock (K) in the in economy.

Saving is a direct function of the capital stock, for any level of income, the greater the capital stock, the larger is the amount of saving. As against this, investment is an inverse function of the capital stock. It means that for any given level of income, the greater the capital stock, the smaller is the amount of investment.

In Kaldor's theory we trace out how the changes in capital stock alter the equilibrium situations. In other words, instead of the investment function incorporating the strict acceleration principle $I_t = I_a + W (Y_{t-1} - Y_{t-2})$, this approach gives us an investment function. Which is

$$I_t = I_a + hY_{t-1} - jK_t$$

where K is the stock of capital at the beginning of the period t and h and j are

constants. The above equation simply means that if income (Y) increases while the capital stock (K) remains constant investment will rise to increase the capital stock. If, on the other hand the capital stock increases while income remains constant investment will fall as the desired stock of capital has been reached.

2. Kaldor's model assumes that the process of change in the business activity is related to the differences between ex-ante saving and investment in the economy. If S > 1, then savings are more than investments and there is a decline in consumer spending which through multiplier will bring a fall in income and business activity. If, on the opposite, 1 > S, match the income rises due to increased spending. Thus, a discrepancy between ex-ante saving and investment induces a chain of reactions till the equilibrium level of income is restored. Kaldor, thus, makes both S and 1 depend upon Income (Y) and stock of capital (K). Specifically,

$$I = I\ (Y, K)$$

$$S = S(Y, K)$$

Both S and I are usually related to the level of income except in case of deep depression or extreme inflation, so that $\Delta I/\Delta Y$ and $\Delta S/\Delta Y$ are normally greater than zero. The behaviour S and I in relation to the stock of capital, however shows that saving is related positively with the accumulation of the stock of capital, while investment generally bears an inverse relationship with the stock of capital. Kaldor proposes that the fluctuations in the economic system can be traced to the movements of the variables I, S, Y and K. If we suppose that S and I functions are linear then, there are two possibilities about fluctuations in income.

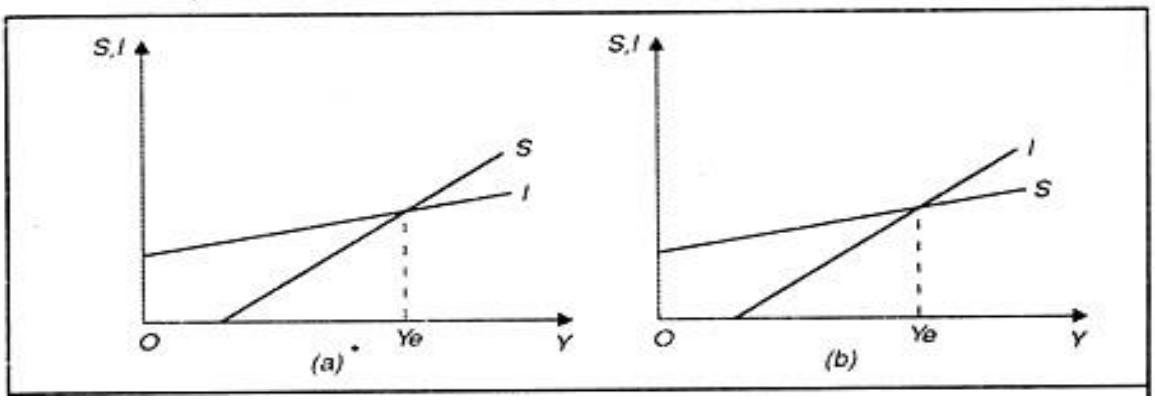

Fig.2.4. Stable and Unstable Position

The first possibility is shown in Fig. 2.4(a) where the equilibrium is Y_e income level. When we assume linear S and I functions, there is a single equilibrium position and any disturbance that results in a shift in either function or both would tend to be followed by a movement to a new equilibrium position. This prevailing model shows more stability than appears to be in the real world.

In part (b) there is again a single equilibrium position but it is unstable one. Any disturbance producing a movement above Y means that 1 > S and that the income level may rise without limit. Any disturbance leading to a movement below $Y>Y_e$ a movement below $Y > Y_e$ means S > I and that the income level would collapse to zero. Part B gives us greater instability than the real-world shows.

Kaldor's trade cycle model is unique in nature. He has neither used the acceleration principle nor the monetary factors in explaining the turning points of the trade cycle. He has used the existence of non-linear S and I function along with the income distribution mechanism to demonstrate the generation of a business cycle.

2.5.8. Keynesian theory of Business cycles

In his theory of business cycles, Keynes advocated that the total demand helps in the determination of various economic factors, such as income, employment, and output. The total demand refers to the demand of consumer and capital goods.

In such a case, total investment and expenditure on products and services is more, the level of production would increase. When the level of production increases, it results in the increase of employment opportunities and income level. However, if the total demand is low, the level of production would also be less.

Consequently, the income, output and investment would also be low. Therefore, changes in income and output level are produced by changes in total demand. The total demand is further affected by changes in the demand of investment, which depends on the rate of interest and expected rate of profit.

Keynes referred expected rate of profit as the marginal efficiency of capital. Expected rate of profit is the difference between the expected revenue

generated by the capital employed and the cost incurred to employ that capital.

In case, the expected rate of profit is greater than the current rate of interest, then the investors would invest more. On the other hand, the marginal efficiency of capital is determined by expected return from capital goods and cost involved in the replacement of capital goods.

Marginal efficiency of a capital increases due to new inventions or innovations in economic factors, such as product, production technique, investment option, assuming that prices would rise in future. On the other hand, it decreases due to various reasons, such as decrease in prices, increase in costs, and inefficiency of the production process.

According to Keynes theory, in the expansion phase of business cycle, investors are positive about economic conditions, thus, they overestimate the rate of return from an investment. The rate of return increases until the full employment condition is not achieved.

When the economy is on the path of achieving full employment, this phase is termed as boom phase. In the boom phase, investors are not able to diagnose the fall in marginal efficiency of capital and even do not consider the rate of interest. As a result, the profit from investments starts Calling due to the increase in the cost of investment and production of goods and services. This situation results in the contraction or recession in economy.

This is because the rate of decrease in the marginal efficiency of capital is more than that of current rate of interest. In addition, in this situation, investment opportunities shrink. Banks are not also able to provide credit because of the lack of funds.

Current rate of interest is higher that encourages people to save rather than invest. As a result, the demand for consumer and capital goods decreases. Further, the income and employment level decreases and economy reach to the phase of depression.

Keynes has proposed three types of propensities to understand business cycles. These are propensity to save, propensity to consume, and propensity of marginal efficiency of capital. He has also developed a concept of multiplier that represents changes in income level produced by the changes in

investment.

Keynes also advocated that the expansion of business cycle occurs due to increase in marginal efficiency of capital. This encourages investors (including individuals and organizations) to invest. Organizations replace their capital goods and start production.

As a result, the income of individuals increases, which further increases the rate of consumption. This increases the profit of organizations, which finally lead to an increase in the total income and investment level of an economy. This marks the recovery phase of an economy.

Some points of criticism of Keynes theory are as follows:

a. Fails to explain the recurrence of business cycles.

b. Ignores the accelerator's role to describe business cycles. However, a business cycle can be explained property with the help of multiplier acceleration interaction.

c. Offers only a systematic framework for business cycles, not the whole concept.

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UNIT – III

MONETARY POLICY

3.1. Introduction

Monetary policy is the policy used by the central bank to regulate the supply of money in the economy. The central bank of India that is Reserve bank of India plays the controlling authority here. This is a tool used to control even the inflation and the interest rates to ensure price stability and trust in the currency of a nation. The goals of monetary policy also include the contribution to the economic growth and stability, to lower unemployment rates and to maintain stability in the exchange rates with the currencies of other nations. The best monetary policy is termed as the optimal monetary policy for which optimal inflation rate should be applicable in a nation. Monetary policies are generally of two types:

1) Expansionary Policy: This type of policy increases the total supply of money in the economy. This was traditionally used to remove unemployment during recessionary period by lowering the interest rates having the belief that easy credit will help business expand.

2) Contractionary Policy: This policy increases or expands the money supply but at a pace less even less than the normal and in certain cases even shrinks it. It is intended to slow inflation and to avoid the resulting distortion of asset values.

Monetary Policy uses the following tactical approaches to maintain financial stability:

1. Money Supply:

This practice involves the money supply by buying and selling government bonds. These are also known as open market operations as the central bank make purchases and sales of government bonds in public markets. These involve generally the short-term bonds.

2. Money Demand:

This practice plays on the rule that the demand is dependent on the price. The price is the interest rate to be paid by the borrower. Therefore, through this rule the central bank keeps on altering the interest rates to regulate the economy and bring in stability.

3. Banking Risk:

This practice manages the risk within the banking system. In this it specifies the reserve requirements of the banks than those reserves may be with the central bank or with the commercial banks only. They regulate the economy under this approach through the reserve ratios. To primary tools are Cash reserve ratio and statutory reserve ratio. The following three approaches namely open market operations, regulating interest rate and reserve ratios are the normal methods used by the reserve bank of India to ensure adequate supply of money in the economy with price stability. These are further detailed in the upcoming sections of this paper.

3.2. Meaning and Objectives of Monetary Policy:

Monetary Policy refers to the mechanism through which the monetary authority regulates the supply of money in the economy by using instruments such as that of interest rates to maintain the price stability and achieve better economic growth. This monetary authority is generally the central bank of the country. RBI (Reserve Bank of India) is the central bank of India.

3.3. Objectives of Monetary Policy:

Beside price stability monetary policy accomplish the following tasks as well:

1) Full employment: Full employment is a situation favorable for any economy not only because it increases output but also for the credit standing of a nation. Monetary policy helps achieving this target.

2) Price stability: Another main objective of monetary policy is the price stability. Price stability is promoted to reduce the fluctuations in prices as these fluctuations in prices bring uncertainty and instability in the economy. The focus of monetary policy is to facilitate the environment which is favorable to the economic development to run the projects swiftly along with maintaining the stability.

3) Economic Growth: Economic growth is a situation where real GDP of a nation that is the per capita income of the nation increases over a period of time. Monetary policy aims at it.

4) Balance of Payment: This objective of monetary policy tries to achieve the equilibrium between the exports and the imports.

5) Expansion of bank credit: One another important function of RBI is the

controlled expansion of credit to commercial banks according to their seasonal requirements without affecting the output.

6) Fixed Investment: This objective of RBI focuses on the productivity of investments by having a control on non-essential fixed investment.

7) Promote Efficiency: RBI tries to increase the efficiency in the financial system by regulating and deregulating interest rates, ease operational constraints, introduce money market instruments, etc.

8) Restriction of inventories and stocks: Excess stocking of inventories is not beneficial for any economy as it may make the stock outdated over a period of time and hence may lead to a loss. To avoid this kind of problem the central bank carries out this special function of regulating the economic inventories.

9) Reducing the rigidity: RBI bring flexibility in the operations which provide autonomy. It maintains its control on all the areas where prudence is required in the financial system.

3.4. Instruments of Monetary Policy:

The instruments of monetary policy are of two types:

A) Quantitative or general or indirect: They are meant to regulate the quantity of credit in the economy through commercial banks. The various instruments used under this are bank ate operations, open market operations and changing reserve requirements.

B) Qualitative or selective or direct: They are meant to regulate the type of credit from the central bank to the commercial banks. They include changing margin requirements and regulation of consumer credit. Both these methods are discussed here forth:

A) Quantitative or general or indirect:

I). Bank rate Policy:

Bank rate is the rate at which the central bank rediscounts the government securities such as that of bills of exchange and other government securities held by the commercial banks. This goes this way when the central bank wants to control the inflationary situation in the economy it raises the bank rate. This way the demand of credit from the commercial banks reduces which reduces the spare money in the hands of general public, which corrects

the inflationary pressure. Similarly, when deflationary pressure is corrected by reducing the bank rates, economy is brought back to the equilibrium.

II). Open Market Operations:

It refers to sale and purchase of securities from the commercial banks by the central bank to regulate the economy. The reserve bank starts selling the securities held for the same to commercial banks, when the prices start rising, this way money is extracted from circulating in the economy and kept with the central bank as reserves. Similarly, when recessionary forces start in the economy, the central bank starts purchasing securities from the commercial banks to induce more money in the economy.

III). Changes in Reserve Ratios:

This is suggested by Keynes. This method says that every bank is required to keep certain reserves with them as well as with the central bank from the total deposits in the form of reserve fund. When prices rise, the central bank raise the reserve ratios as well, now as more money is in the form it reduces the money in circulation and hence economy moves towards the equilibrium. In the opposite, when the reserve ratio is lowered, the reserve with the commercial banks is reduced but their lending ratio increases which in turn bring more money in circulation. Equilibrium is achieved.

IV). Selective Credit Controls:

Selective credit controls are used to regulate certain specific types of credit for particular purposes. They can be in the form of margin requirements as if there is specific speculative activity in the economy in particular sector in certain commodities, the RBI raise the margin requirement on them to reduce the investment in that particular commodity. Similarly, it reduces the margin on commodities which it wants to encourage investment in.

B. Qualitative Instruments or Measures:

RBI also makes use of certain qualitative or selective instruments to control and regulate the flow of credit into particular industries or sector of the economy (Encouraging productive and socially desirable sectors and discouraging unproductive and socially undesirable sector).

The important instruments of qualitative instruments are:

1. Fixation of Margin,

2. Regulation of Consumer Credit,
3. Direct Action,
4. Moral persuasion and publicity
5. Control through Directives
6. Rationing of Credit

1) **Fixation of Margin:** The bank gives loan on the basis of tangible security or collateral security. The RBI fixes the minimum marginal requirements on loan for purchasing or carrying securities. Market value of the security and the amount lent by the bank against security is called Margin requirement. If the Central bank fixes a margin of 20% then, on a security of 10,000, the bank will lend Rs. 8,000 only. If the central bank is to restrict credit to socially undesirable sector, it may raise the margin to25%. In that case bank will be able to lend Rs. 7,500 only. In case the central bank desires to expand credit to socially desirable channels it may lower margin to 10%.
2) **Regulation of Consumer Credit:** Regulation of Consumer Credit aims at regulating the demand for consumer durables like Refrigerator, TV set, Laptop, Computer, etc. (Or in order to facilitate their demand-either minimum down payment is raised or maximum period of repayment is lowered in order to curb their demand for these goods, reverse measures are taken.
3) **Direct Action:** Direct action refers more or less, a corrective measure against those commercial banks who fails to toe the line of the central bank monetary policy. It may refuse to rediscount their bills of exchange or grant them other financial accommodation, or come to their rescue in their crisis hour. However commercial banks can ill-afford to earn the wealth of the central bank and be its defaulter.
4) **Moral Persuasion and Publicity:** As a leader of commercial banks, the central bank persuades them to follow a particular monetary policy in the face of prevailing situation of the economy. In view of the vast statutory powers of the central bank, the commercial banks due heard to what the former says. Another way of moral pressure is the use of publicity medium. It influences the credit policies of the commercial banks to sensitize the

people regarding the economic and monetary condition of the country. It publishes weekly or monthly or quarterly statements of the assets and liabilities of the commercial banks as well as reviews of credit and business conditions, reports on its own activities, money market and banking conditions etc. for the benefit of general public.

5) **Control through Directives:** Banks are directed by the central bank to be liberal in granting credit to the priority sectors, like agriculture, power, infrastructure, housing education, etc. rather than less priority sectors.
6) **Rationing of Credit:** Rationing of Credit is practiced to check credit flow to speculative activities by allotting credit quota for diverse business activities. The banks are not allowed to exceed quota limits at the time of granting loans. These various tools can be used for formulating a proper monetary policy to influence levels of aggregate output, employment and prices in the economy. In times of recession or depression (slow down of business) expansionary monetary policy or what is called easy money policy is adopted (i.e., by lowering bank rate, purchase of the securities in the open market, lowering the cash reserve ratio, reducing the restrictions on selective instruments) which raises aggregate demand and thus stimulates the economy and helps the recovery of the economy from depression. On the other hand, in times of inflation and over expansion of the economy (during business upswing), contractionary monetary policy or clear monetary policy (i.e, by increasing bank rate, by sale of securities in the open market, raising the cash reserve ratio, increasing the restrictions on selective instruments) is adopted to control inflation and achieve price stability in the economy.

3.5. Definition of Money:

Money is derived from a Latin word, Moneta, which was another name of Goddess Juno in Roman history. The term money refers to an object that is accepted as a mode for the transaction of goods and services in general and repayment of debts in a particular country or socio-economic framework. In simple words, money can be defined as a medium for transaction of goods and services. Robertson has defined money as “Anything which is widely accepted in payment for goods, or in discharge of other kinds of obligations.”

Money can be in various forms, such as notes, coins, credit and debit cards, and bank checks. Traditionally, economists considered four main functions of money, which are a medium of exchange, a measure of value, a standard of deferred payment, and a store of value.

3.6. Functions of Money:

Money performs four specific functions, each of which obviates one of the difficulties of pure barter. These functions are to serve as 1) a medium of exchange 2) a unit of value 3) a standard of deferred payments and 4) a store of value. The first two are called the primary functions of money. The last two are called the derivative or secondary functions because they are derived from the primary functions.

1. Money as a Medium of Exchange:

One of the unique functions and in fact an essential and primary distinguishing characteristic of money is that it is anything generally acceptable as a means of payment in the settlement of all transactions, including debt. It is a commonly used medium of exchange or means of transferring generalized purchasing power. It is a device to permit people to exchange goods and services without need for conversion into anything before being spent. Hence, ATM cards, property, gold, FDRs are not money. However, faith or belief or confidence in its general acceptability is very important. The assets which are generally acceptable in exchange may vary from one country to another or from one period to another within the same country.

Money saves time and energy and allows people to buy what they want, how much, at the best bargain or terms, at the time they think best. By economizing on the use of scarce real resources, money promotes transactional or operational efficiency. In addition, it promotes allocational efficiency by making it possible to exploit potential gains from specialization in trade and production. It also leads to emergence of specialized markets in all types of goods and services. By giving freedom of choice to individuals as a bearer of options, it thereby promotes economic welfare. By separating the act of sale and purchase, it replaces bilateral trading with multilateral trading leading to specialization and division of labor. As one moves from a barter

exchange economy to one of monetary exchange, the length of transaction period and the total trading cost decrease. The use of money for similar transactions also enhances competition. A monetary economy eliminates the problem of double coincidence of wants.

2. Money as a unit of account / unit of value / standard / measure of value:

This is the second primary function of money where the monetary unit is the unit in terms of which the value of all goods and services are measured and expressed. It therefore helps in determining the price or the number of monetary units each good or service would exchange for, making it possible to compare prices and have relative prices. It simplifies the problem of measuring the exchange value of commodities and makes accounting of national income, costs, profits assets and liabilities possible. It permits rational economic calculations and transmits economic information about market preferences of consumers to producers and makes possible specialization and division of labor. Unlike physical units which are inter temporally and inter regionally constant, the value of money is inversely related to the price level and hence does not remain constant in terms of the goods and services you can buy with it, making money a poor unit of account.

3. Money as a standard of deferred payment or unit of contract:

Money serves as the standard or unit in terms of which deferred or future payments like interest, rent, salaries, pensions etc. are stated. This is concomitant with the first two functions because the person who pays cash later quotes money price as a unit of account. These contracts are for the payment of principal and interest on debt where future payments are stated in terms of monetary units. Money is a satisfactory standard of deferred payment if and only if its purchasing power, that is, the value of money remains constant.

4. Money as a store of value:

This function is also concomitant with the other functions and since money as a medium of exchange, separates the act of sales and purchase, the two are made at different points of time, i.e. you can sell now, get money, store that money and purchase later. What you store is generalized power that can

be used any time. This is particularly relevant in a money using economy where income and expenditure are discontinuous i.e. wages, interest, salary etc. are got at one point of time and spent over the month till the next receipt. Therefore, money is stored in the form of generalizing purchasing power. As a store of value, money scores over physical assets which may involve storage costs, deteriorate or become obsolescent or have transaction or brokerage costs since they are not acceptable in exchange for goods and services. Money is also a good store of value because it is perfectly liquid.

3.7. Classical Dichotomy

The classical dichotomy refers to the idea that in an economy there coexists two kinds of variables- real and nominal. Real variables, like output and employment, are independent of monetary variables. In this view, the primary function of money is to act as a medium of exchange for the transactions to take place in an economy. This conception of money rests on "real analysis", which describes an ideal-type economy as a system of barter between rational utility-maximizing individuals. Hence is just a medium of exchange. Thus, a social "vehicle" that has no efficacy other than to overcome transaction costs concerning the inconveniences of barter, which result from the absence of a double coincidence of wants, a core disadvantage of barter system of trade. The classical dichotomy is an important interpretation of the quantity theory of money, which is given by the formula MV = PY, where M stands for the money stock, V is the velocity of money circulation, P is the price level, and Y is the level of income. the nominal output (PY) should be equal to the nominal money supply. Exogenous changes in the money supply (M) ultimately condition the price level for a given level of economic activity. If an economic system is at full employment, the only effect of increases in the money supply is a proportionate increase in the domestic price level, which gives rise to a depreciation of its currency's exchange rate. The direction of causality runs therefore from an exogenous money supply to the price level. This is interrelated with the natural interest rate theory, according to which when output is at full employment there is a market determined interest rate level at which the market clears. Exogenous changes in the supply of money are

what shift market rates of interest. This is the process by which discrepancies between market rates and the natural rate of interest are generated. A market rate of interest below the natural interest rate occurs when investment exceeds savings. Firms will demand more credit for investing. The result is an excess of investment over savings. If the economy is at the full-employment position, defined by the natural rate of interest, a cumulative process of inflation unfolds. The rise in the price of consumption goods leads to a decrease in consumption; involuntary savings rise until the excess of investment over savings is eventually eliminated. If market rates of interest are above the natural rate of interest, by contrast, savings exceed investment and a cumulative process of deflation ensues. In conclusion, the classical dichotomy implies that real variables and monetary variables are independent of each other. From a heterodox perspective, by contrast, both kinds of variables are explained by the relationship established between the central bank, bank lending, and entrepreneurs' "animal spirits" every time effective demand is deemed profitable, reversing thereby the causality of the quantity-theory-of-money formula.

3.8. Keynes' Theory of the Demand for Money

At the outset, two interrelated questions need to be separated. (i) Why is money demanded? And (ii) what are the key determinants of the demand for money? The answer to the first question is that though money does not earn any income unlike other competing non-money financial assets, its holders enjoy a convenience yield of a non-pecuniary nature because money has the unique characteristic of being generally acceptable as a means of payment and so being perfectly liquid.

Keynes attributed three motives to the demand for money (1) Transaction (2) precautionary (3) Speculative.

The transaction motive gives rise to the transaction demand for money or cash by the public for making current transactions in a money exchange economy where money is a medium of exchange. The precautionary motive or demand to hold money is to meet unforeseen contingencies or uncertainties of all kinds requiring sudden expenditure. The speculative motive gives rise to the

speculative demand for money or cash over and above that demanded due to the other two motives in the face of interest earning bonds and other financial assets. Holders of speculative balances or cash may anticipate such fall in future bond prices that the loss of foregone interest earnings look relatively smaller and they switch into bonds when the anticipated fall in bond prices have been realized. Keynes also distinguished between active and idle balances. The active balances are balances used as a means of payments in national income generating transactions. The rest are called idle balances.

Determinants of the Demand for Money

Keynes made the demand for money a function of two variables namely Income (Y) and the rate of interest (r). Keynes retained the influence of the Cambridge approach to the demand for money under which Md is hypothesized to be a function of Y. However, this explained only the transaction demand and the precautionary demand for money. It is through the speculative demand for money that he made the demand for money a declining function of the rate of interest which is a purely monetary phenomenon and the sole carrier of monetary influences in the economy.

The speculative demand for money arises from the speculative motive for holding money. Keynes assumed that perpetual bonds are the only non-money financial asset in the economy, which competes with money in the asset portfolio of the public. Though money does not earn any interest income, but its capital value in terms of itself is always fixed while bond holders get interest income. Which however can be wiped out if the bond prices fall in future. The bond price is an inverse function of the rate of interest. When bond prices change the bond holders are subject to capital gains and losses (per year) and they also get a rate of interest (per year). The market rate of interest is given to the individual at the time of making investment in bonds, but as the future rate of interest or bond prices change, there will be expected capital gain or loss which will have to be anticipated. There are two kinds of speculators: Bulls, who expect the bond prices to rise in the future, invest all their idle cash into bonds while Bears, expect the bond prices to fall, and hence move out of bonds into cash if their expected capital losses on bonds exceed interest income from bond holding. They therefore minimize their

losses. Thus, the speculative demand for money arises only from bears who build up their cash balances to move into bonds when the bond prices have fallen as expected or when they come to expect that bond prices will rise in the future.

In the Keynesian model all these expectations are assumed to be held with certainty, but it assumes that individual asset holder's portfolios are pure, not diversified, the bulls are entirely into bonds and the bears are entirely into cash. However, to move to the aggregate speculative demand for money, Keynes assumed that different asset holders have different interest rate expectations. Thus, at a very high rate of interest or a very low price of bonds all may be bulls. Then the speculative demand for money will be equal to zero. However, at a lower rate of interest or higher price of bonds some bulls will become bears and a positive demand for speculative balances will emerge. At a still higher rate of interest and a lower bond price, some more bulls will become bears and the speculative demand for money will be higher. This shows that the speculative demand curve for money with respect to the bond rate of interest will be downward sloping. There is also the possibility of the existence of a liquidity trap, when at a very low rate of interest the speculative demand for money becomes perfectly elastic and at this rate of interest all asset holders will become bears preferring to hold only cash, no bonds. No amount of increase in money supply can lower the interest rate further.

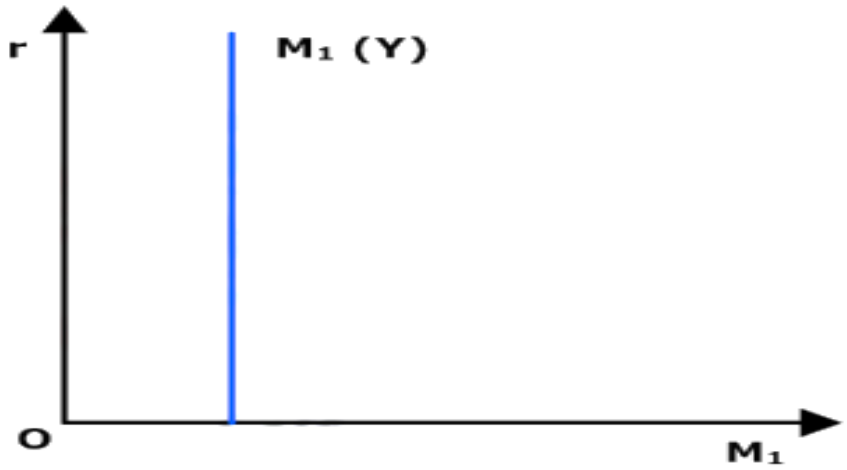

Figure 3.1. Demand for Money

The Keynes's Theory of the demand for money can be summed up as

$$Md = L1 (Y) + L2 (r)$$

Here L1 (Y) represents the transactions and precautionary demand for money which are an increasing function of the level of money income. L2 (r) represents the speculative demand for money which is a declining function of the rate of interest. And this relation is not assumed to be linear.

Some critics argue against this additive form of the demand function and have argued that even though money may be one asset, the motive to hold it may be many, and the transaction and precautionary demand may be interest elastic, while the speculative demand may also be a function of total assets, wealth or income along with the rate of interest. This gives the revised form of the Keynesian demand function for money. Md = L (Y, r). It is hypothesized that Md is an increasing function of Y and a declining function of r.

3.9. IS-LM Model and Monetary Policy

IS-LM model can be used to show the effect of expansionary and tight monetary policies. A change in money supply causes a shift in the LM curve; expansion in money supply shifts it to the right and decrease in money supply shifts it to the left.

Suppose the economy is in grip of recession, the Government (through its Central Bank) adopts the expansionary monetary policy to lift the economy out of recession. Thus, it takes measures to increase the money supply in the economy. The increase in money supply, state of liquidity preference or demand for money remaining unchanged, will lead to the fall in rate of interest.

At a lower interest there will be more investment by businessmen. More investment will cause aggregate demand and income to rise. This implies that with expansion in money supply LM curve will shift to the right as is shown in Fig. 3.2.

As a result, the economy will move from equilibrium point E to D and with this the rate of interest will fall from r_1 to r_2 and national income will increase from Y_1 to Y_2. Thus, IS-LM model shows that expansion in money supply lowers interest rate and raises income.

We have also indicated what is called monetary transmission mechanism,

that is, how IS-LM curve model shows the expansion in money supply leads to the increase in aggregate demand for goods and services. We have thus seen that increase in money supply lowers the rate of interest which then stimulates more investment demand. Increase in investment demand through multiplier process leads to a greater increase in aggregate demand and national income.

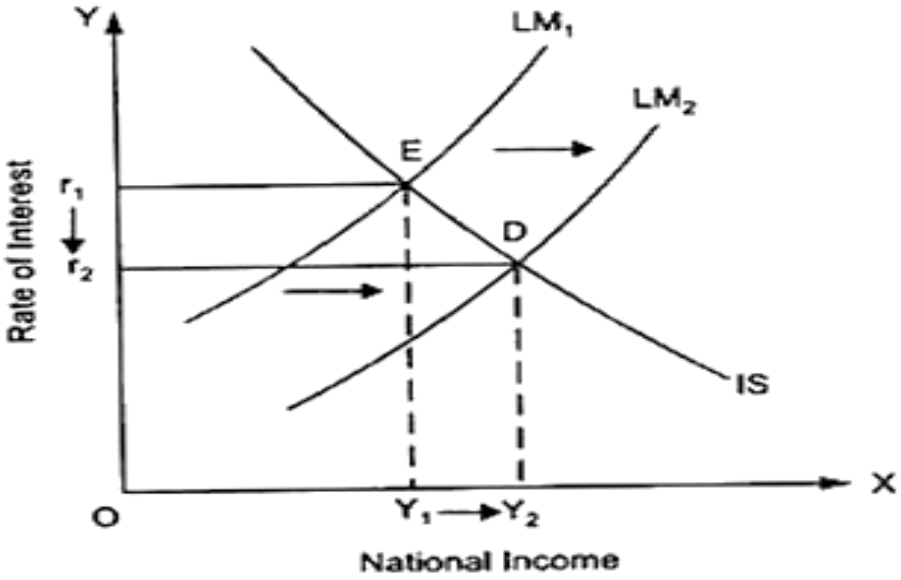

Fig.3.2. Effect of Expansion in Money supply on Interest Rate and Income

If the economy suffers from inflation, the Government will like to check it. Then its Central Bank should adopt tight or contractionary monetary policy. To control inflation the Central Bank of a country can reduce money supply through open market operations by selling bonds or government securities in the open market and in return gets currency funds from those who buy the bonds. In this way liquidity in the banking system can be reduced.

To reduce money supply for fighting inflation the Central Bank can also raise cash reserve ratio of the banks. The higher cash reserve ratio implies that the banks have to keep more cash reserve with the Central Bank. As a result, the cash reserves with the banks fall which force them to contract credit. With this money supply in the economy declines.

Thus, IS-LM model can be used to show that reduction in money supply will cause a leftward shift in LM curve and will lead to the rise in interest rate and fall in the level of income. The rise in interest rate which will cause reduction in investment demand and consumption demand and help in controlling

inflation. This is shown in Fig. 3.3.

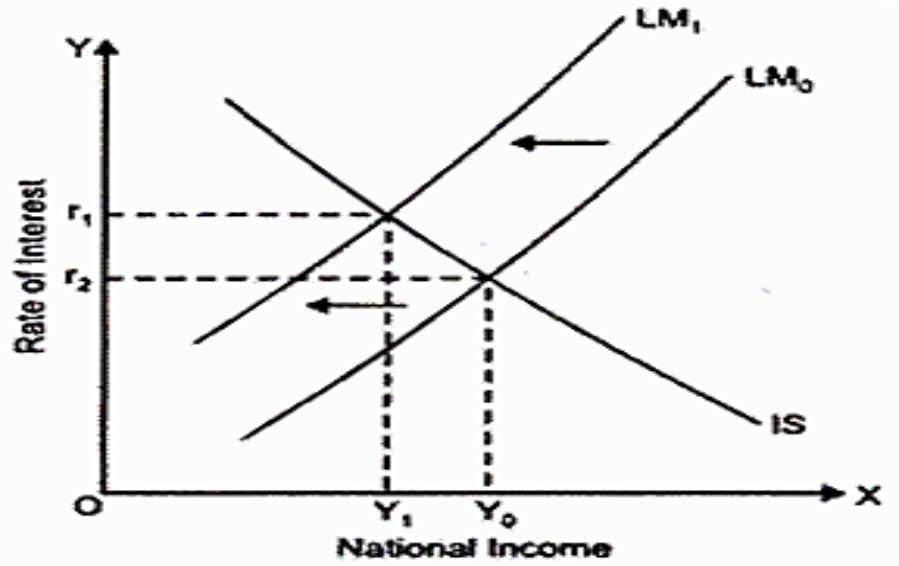

Fig.3.3. Contractionary Monetary Policy to Fight Inflation

3.10. Critique of the IS-LM Curve Model:

The IS-LM model succeeds in integrating and synthesizing fiscal with monetary policies, and theory of income determination with the theory of money. But the IS-LM curve model is not without limitations. Firstly, it is based on the assumption that the rate of interest is quite flexible, that is, free to vary and not rigidly fixed by the Central Bank of a country.

Secondly, the model is also based upon the assumption that investment is interest-elastic, that is, investment varies with the rate of interest. If investment is interest-inelastic, then the IS-LM curve model breaks down since the required adjustments do not occur.

Thirdly, Don Patinkin and Milton Friedman have criticized the IS-LM curve model as being too artificial and over-simplified. In their view, division of the economy into two sectors monetary and real is artificial and unrealistic.

Further, Patinkin has pointed out that the IS-LM curve model has ignored the possibility of changes in the price level of commodities. According to him, the various economic variables such as supply of money, propensity to consume or save, investment and the demand for money not only influence the rate of interest and the level of national income but also the prices of commodities and services.

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UNIT - IV

FISCAL POLICY

4.1. Introduction

Fiscal policy and monetary policy are two important instruments of the macroeconomic policy of a government. They play a useful role in attaining macroeconomic objectives of economic growth, full employment, price stability and distributive justice. Fiscal policy comprises a mix of budgetary instruments that the government uses to target particular macroeconomic objectives. The revenue raised from taxes and non-tax sources are used to pay for government activities and expenditure decisions to help achieve the goals of the government. Monetary policy refers to changes in the interest rates and money supply which is under the control of the central bank of India (Reserve Bank of India), which is an autonomous institution outside the government. However, fiscal policy is directly under the control of the government, subject to legislative control. Monetary and fiscal policies are important instruments available to a government that influences the economic activities at the macroeconomic level and also ensure smooth functioning of the economy. These two policies are interdependent on each other. According to G.K.Shaw, “any decision to change the level, composition or timing of government expenditure or to vary the burden, the structure or frequency of tax payments is fiscal policy”. Fiscal policy is composed of tax policy, expenditure policy, investment and disinvestment strategies and debt management. It is an important constituent of the overall economic framework of a country and is therefore intimately linked with its general economic policy strategy. This module examines the scope of fiscal policy in the economic framework of the country and its economic objectives.

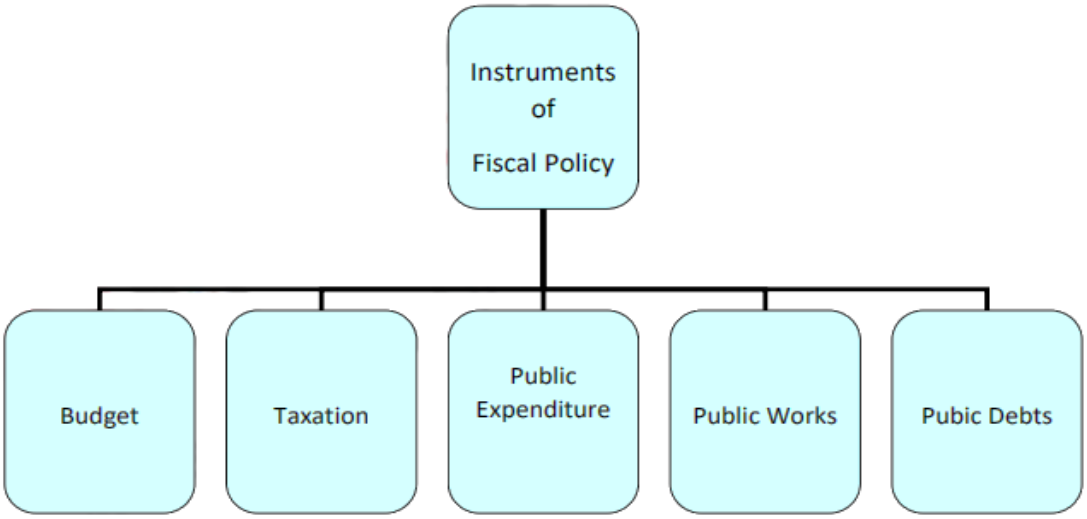
4.2. Definition of Fiscal Policy

Fiscal policy is a policy of government. It relates to raising of government revenue and incurring of government expenditure. Government formulates a budgetary policy for the purpose of deciding upon its revenue generation and expenditure. Fiscal policy has to decide on the extent and form of flow of expenditure from the government to the economy and from the economy back to the government. So, in broad term fiscal policy refers to "that segment of

national economic policy, which is primarily concerned with the receipts and expenditure of central government." In other words, fiscal policy refers to the policy of the government with regard to taxation, public expenditure and public borrowing.

4.3. Instrument of Fiscal Policy

Fiscal policy is based on a fundamental idea that it can influence the total level of aggregate spending which further influence the income of the economy, corporate bodies and individuals. There are five major instruments of fiscal policy which are used to maintain stability and economic growth of an economy. They are given below:



Budget: The government budget or the revenue and expenditure process of the government (either balanced or unbalanced) can be used effectively to maintain stability and economic growth.

Taxation: It is also a powerful instrument of fiscal policy by means of which the government can directly affect disposable income of the people and hence aggregate demand of the economy. The government can encourage or discourage economic growth and can combat inflationary and deflationary tendencies of the economy by applying suitable tax policies.

Public Expenditure: Public expenditure is that expenditure incurred by the government to satisfy those common wants which the people in their individual capacity are unable to satisfy efficiently. It thus tends to satisfy collective social wants. The appropriate variation in public expenditure can have more direct effect upon the level of economic activity than even taxes. It

will have a multiple effect upon income, employment and output. Hence by increasing or decreasing public expenditure the fluctuations in economic activities can be checked effectively.

Public Works: Keynes in his book "General Theory of Employment, Interest and Money" highlighted public works program as the most significant anti-depression device. There are two main forms of expenditure i.e., public works and Transfer payments. Public works include expansion of roads, rail ways, hospitals, parks, irrigation, transport and communications etc. Transfer payments include interest on public debt, subsidies, pension, relief payment, social security benefits etc. All these activities affect the level of income and employment in an economy.

Public Debt: Public borrowing or public debt is nothing but loans taken by the government (both from internal and external sources) when current revenues fall short of public expenditures. The instruments of public borrowing are in the form of various types of government bonds and securities. Public debt is a very powerful instrument to fight against deflation. It also brings about economic stability and full employment in an economy. By means of public debt the government can meet unprecedented expenses during War, natural calamities and associated relief and rehabilitation works. In developing economies, it is the most important source of development finance. It is thus clear that by using different fiscal instruments (depending upon circumstances) the fundamental macroeconomic goals like price stability, full employment and economic growth can be achieved effectively.

4.4. Objectives of Fiscal Policy

The government's involvement in macroeconomic co-ordination with the objective of stabilizing the economy is crucial. Fiscal policy is comprised of mix of budgetary instruments which refer to the use of taxation and non-tax revenues and government expenditure to influence the aggregate level of economic activities at the macroeconomic level. It aims to achieve economic objectives with soundness of public finance. The objectives of fiscal policy are more or less same in developed and underdeveloped economies. According to Heller "the objectives of tax and budgetary policy in underdeveloped countries

are to promote investment, to maintain stability and to reduce extreme inequalities in wealth and income". These objectives are not different from the objectives of fiscal policy in developed economies that are economic growth, stability and optimum income distribution. The major objectives of fiscal policy are as follows:

1. To mobilize resources for sustainable economic growth.
2. To achieve the target of full employment.
3. To restrain price instability in order to ensure economic stability; and
4. To achieve equitable distribution of income and wealth.

4.5. Classical and Keynesian theory of Fiscal Policy

Classical and Keynesian are two economic schools of thought that take a very different approach to study of monetary policy, government spending and consumer behaviour. Classical economics has its origins in the book The Wealth of Nations by Adam Smith in 1776. Classical economic theory believes in Lassiez-faire or free market. It believes that markets will work efficiently if there is little to no government intervention. It lays stress on the fact that individuals acting in their own self-interest will lead to efficient working of the economy as a whole. As such, government spending in not a major part of classical theory. The major assumption of this model is that we tend towards full employment of available resources. Freely fluctuating prices in the three major macro markets (goods, labour and money) ensure this. Classical economists focus on long term solutions for economic problems. This model was popular before the Great Depression. John Maynard Keynes developed this theory after the classical model failed to explain the Great Depression. Keynesian economists believe that free market economies are unstable. They rely on government intervention to make the economy work efficiently. Demand becomes a much bigger driving force and supply will adjust to demand, in a way "Demand creates its own supply". According to Keynes, wages and prices are rigid. This model gives no reason to believe in full employment and lays stress on immediate solution to economic problems.

Distinguish Between Classical and Keynesian theory of Fiscal Policy

	Classical	Keynes
1.	Full Employment (of all resources)	Underemployment Equilibrium (except at full employment)
2.	Automatic Mechanism: (a) Wage-Price Flexibility (b) Say's Law (Supply creates its own demand) (c) Natural Rate of Interest	No Automatic Mechanism: (a) Downward rigidity of prices (Below FE) (b) Demand pulls Supply (No Say's Law) (c) ROI is determined by Savings and Investment
3.	Dichotomy between real and monetary factors (neutrality of money). Thus, Monetary Policy is ineffective. (No Monetary Policy)	No Dichotomy. Money is non-neutral. It affects all real things (like rate of interest). Monetary Policy is effective.
4.	Balanced Budget Tax: leakage = Injection: Expenditure (No Fiscal Policy)	Deficit Budget (Fiscal Policy is effective) Injection > Leakages

4.6. Fiscal Expansion

In this section we will examine the impact of fiscal policy. Fiscal policy refers to policies related to changes in government expenditure (G) and/or revenues, i.e. taxes (T). Let us first consider the impact of fiscal expansion caused by an increase in G. It was seen in the previous module that a fiscal expansion causes a rightward shift in the IS curve. Thus, an increase in G will shift the IS curve to the right (from IS_1 to IS_2) as shown in Figure 4.1. The new equilibrium is reached at point E_2 where the interest rates and income are higher than at original equilibrium E_1. So expansionary fiscal policy raises income and boosts employment. But the interest rate rises as there is an increase in the transactions demand for money with the increase in income

of households, while money supply is unchanged (the LM curve does not shift). This increase in the interest rate reduces private investment as investment demand is negatively related to the rate of interest. In Figure 4.1, note, if the interest rate had remained unchanged ati1after the shift in IS from IS_1 to IS_2, then income would have expanded to its maximum possible level, Y_{max}. The rise in interest rate from i_1 to i_2 choked off investment by the amount Y2Ymax. This dampening of private investment due to expansionary fiscal policy is known as the crowding out effect. Another way of conducting expansionary fiscal policy could be by reducing the tax rate. This would also shift the IS curve to the right, similar to the shift demonstrated in Figure. In this case too, income would rise from Y_1 to Y_2 and so would the interest rate fromi_1 to i_2 resulting in crowding out.

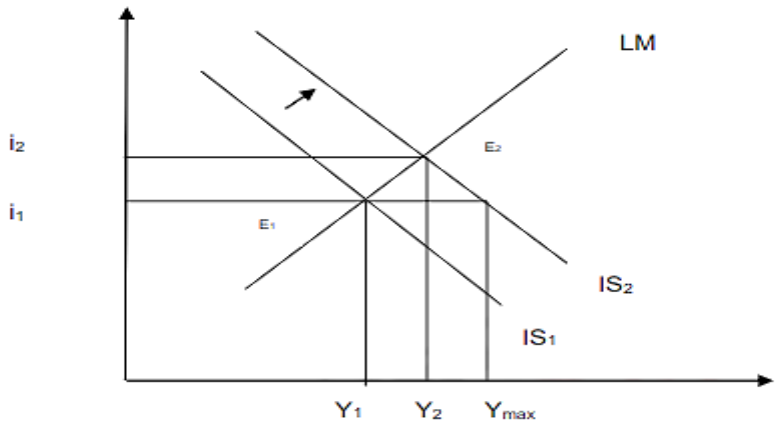


Fig.4.1. Expansionary Fiscal Policy

Just as crowding out takes place, it has been argued that 'crowding in' is also possible. For instance, in developing economics public expenditure may bring about improvement in infrastructure and thereby, foster private investment despite higher interest rates, owing to the presence of complementarity between public and private investment. In such cases private investment may be crowded in. Contrary to fiscal expansion, an attempt to reduce budget deficits or fiscal consolidation policies leads to a decline in output and interest rate in the short run. Due to rising budget deficits, governments in many developing countries find it difficult to manage the size of public debt. The problem can be quite profound especially if the budget deficit is driven largely

by unproductive expenditure rather than productive investment. In this case rising interest cost of debt could make public debt unmanageable. Generally, a low debt to GDP ratio indicates that public debt is sustainable. However, if debt-GDP ratio is extremely high, governments may choose to finance expenditure by borrowing from the central bank. In this case, the assets and correspondingly the liabilities of the central bank (or high-powered money) increase, so this option amounts to financing public expenditure by 'printing money'. This is also referred to as deficit financing or monetization of government debt. However, the creation of money without backing by adequate productive resources may add to inflationary pressures in the economy especially in the medium term.

4.7. IS-LM Model and 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 a contractionary fiscal policy by reducing its expenditure or/and increasing taxes. This shifts the IS curve to the left.

Figure 4.2. 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 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_1 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.

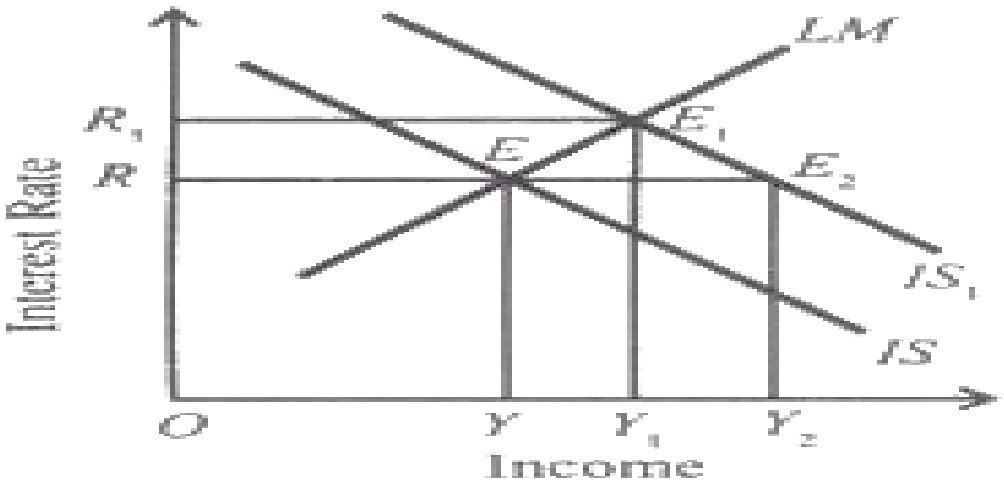


Fig.4.2.

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 is less effective when the LM curve is steeper. 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 curve than with the steeper LM curve.

This is shown in Figure 4.3. where the IS_1 curve intersects the flatter LM_F curve at point E_2 which produces OY_2 income and OR_2 interest rate. On the other hand, it intersects the steeper LMs curve at E_1 which determines OY_1 income and OR_1interest rate. In the case of the steeper curve LMs, the increase in income 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.

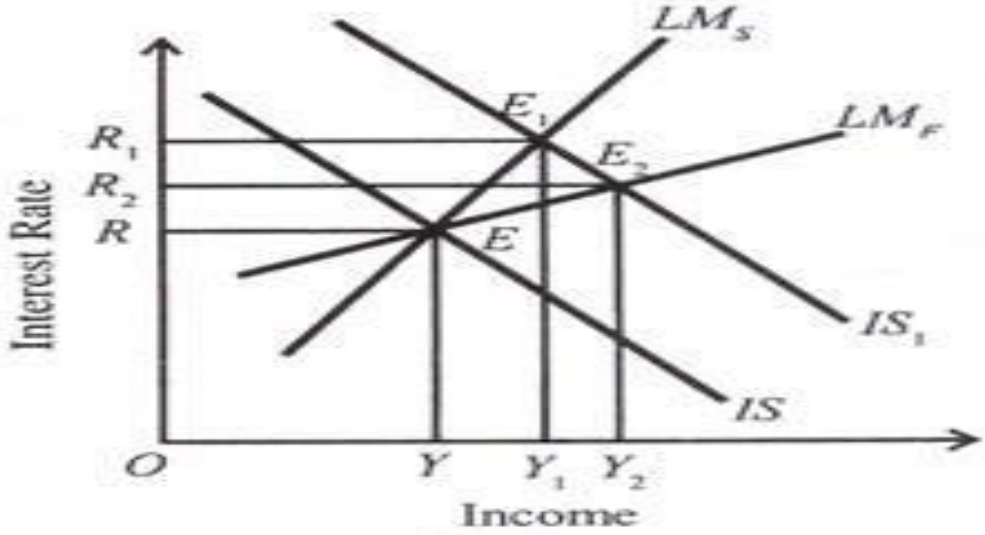


Fig.4.3.

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 LMs.

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 4.4. where the level of income remains unchanged. When the IS curve shifts upwards 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. 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 4.5. 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 IS_1, income rises by the full multiplier of the increase in government expenditure. It rises to OK, but there is no change in interest rate.

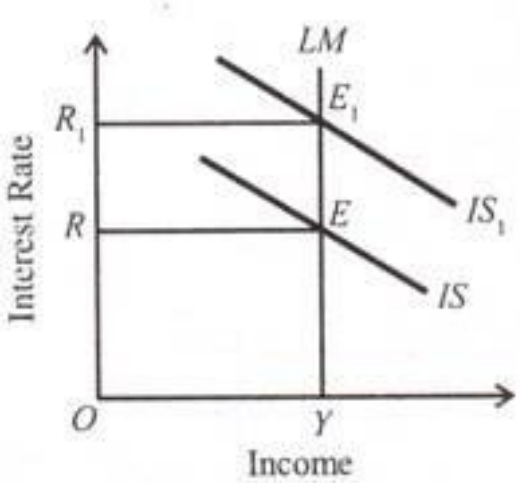


Fig.4.4

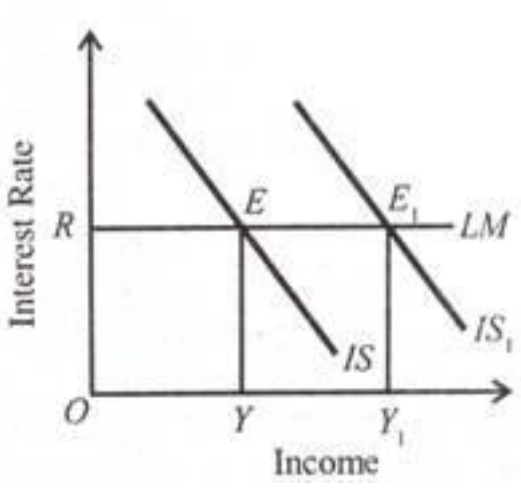


Fig.4.5.

Fiscal policy is completely ineffective, if the IS curve is horizontal. A horizontal IS curve means that investment expenditure is perfectly interest elastic. This is depicted in Figure 4.6. 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.

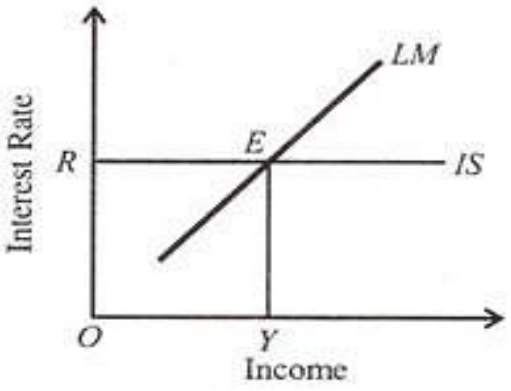


Fig.4.6.

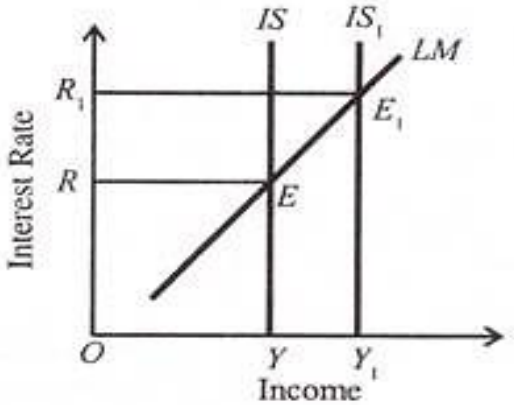


Fig.4.7.

On the other extreme is the vertical IS curve which makes fiscal policy highly effective. This is because government expenditure perfectly interest inelastic. An increase in government expenditure shifts the IS curve to the right to E_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 4.7. This makes fiscal policy highly effective.

4.8. Three Range Analysis

Fiscal policy is explained in Figure 4.8. 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 IS_X curve intersects the LM curve. The normal case has already been explained in Figure 4.5. 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 a 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:

The normal case having been explained in Figure 4.8, now in the classical range, the LM curve is perfectly inelastic and the IS_5 curve intersects it at E so that the interest rate is OR_3 and the income level is OY_5. When the government expenditure increases for an expansionary fiscal policy, the IS_5 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 all effective in the classical range.

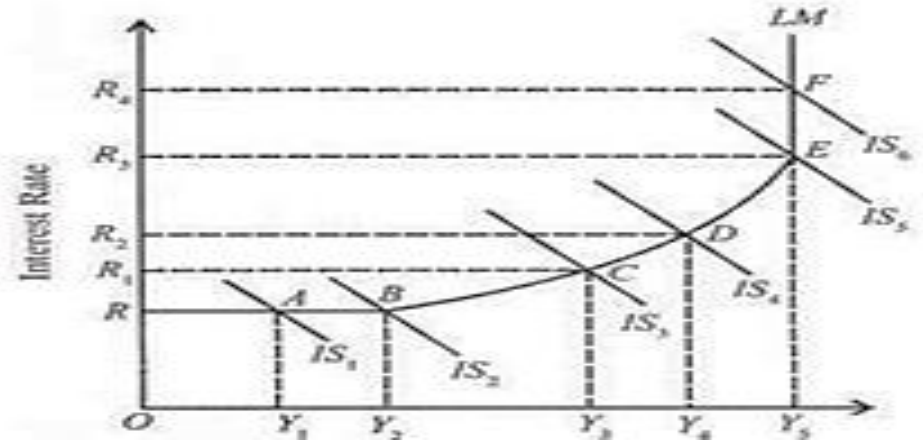


Fig.4.8.

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 the level of income. With the increase in the government expenditure, the IS_3 curve shifts upward to the right from IS_3 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 is 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."

4.9. 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 monetary and fiscal policies are effective.

This 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.

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UNIT – V

SUPPLY SIDE ECONOMICS

5.1. Introduction

Supply side economics is a relatively new term which came into use in the mid-1970s as a result of the failure of Keynesian demand side policies in the US economy which led to stagflation. The term is new but its basic principles are to be found in the works of the classical economists. According to J.B. Say, supply creates its own demand. The very act of supplying goods implies a demand for them. If there is an imbalance between demand and supply, it is corrected automatically by changes in prices and wages and the economy always tends toward full employment.

The main emphasis of the classical economists was on economic growth for which they advocated non-interference with the market mechanism. It was the "invisible hand" which led to the maximisation of national wealth. They believed that entrepreneurs, investors and producers were the prime movers on which the economy depended. It was the increase in the supplies of capital and labour and increase in their productivities that determined growth. Of course, free trade and capital movements internationally were instrumental in a faster growth rate of the economy.

5.2. Role of Expectations in Macroeconomics

Expectations about future values of macroeconomic variables play an important role in macroeconomics in the determination of output and employment. Economic agents such as households, business firms and government take decisions on the basis of current as well as expected future values of the relevant variables. For this we have two theories of expectations, Adaptive expectations and rational expectations. While the latter is much superior to the former, it also has certain limitations. Let us now discuss in detail the role of expectations, adaptive and rational expectations hypothesis and various applications of REH.

Expectations play a major role in economics in general and in macroeconomics in particular. Expectations about future values of macroeconomic variables play a significant role in determination of output

and employment. Most of the macroeconomic relationships are based on expectations. It can be seen from the simple Keynesian IS-LM model, permanent income hypothesis, natural rate hypothesis and many others.

1. Expectations in Keynesian IS-LM framework:

The IS curve is very volatile and it shifts by large amount if firm change the investment expenditure. But this shift will not affect the aggregate demand if LM curve is vertical line. It will only lead to change in rate of interest but if LM is not steep then a shift in IS will cause fluctuations in aggregate demand originating in private sector. The shape of IS and LM curves is based on expectations that are formed for those variables which determine them. The firm's expectation about the future profitability of investment project will lead to highly volatile IS curve. Expectations also play a role in determining the shape of LM curve. The demand for money curve partially arises from demand for speculative balances. This depends upon the notion of some normal rate of interest which the individual expects to prevail in the future. So, if the current rate of interest is higher than normal rate then demand for money will be low and demand for bonds will be more and vice-versa. When the rate of interest is at its irreducible critical minimum level, below which it will not be expected to fall, then individuals will always hold liquid cash. The shape of LM curve thus depends on expected rate of return. It implies that in the Keynesian analysis expectations play a dual role: i) Bring volatility in profitability of investment project, which causes shift in IS curve. ii) Develop expectations about the future rate of interest and critical rate of interest which lead to horizontal LM curve.

2. Expectations and Permanent Income Hypothesis:

The consumption expenditure of individual does not depend upon current income as given by Keynesian theory but it depends upon the permanent income. Permanent income is calculated on the basis of individual's expectations about the future income. So, actual value of consumption in any period depends on the permanent or expected income. Consumption expenditure will increase as a result of change in income but only after assessing that the change in income is permanent not just transitory. If the change in actual income does not change the expected

income, then consumption expenditure will be unchanged. This implies that the process of multiplier given by Keynes will not work if the consumption expenditure is determined by permanent income which in turn is based on expectations.

3. Expectations and the Natural Rate of Unemployment:

Workers while deciding the supply of labour takes into account the number of wages they will be getting. As workers are interested not only in the nominal wage but the real wage too, they form expectations about general price level. Based on this expectation if real wage is high, they will supply more labour or vice-versa. Thus, supply of labour depends upon money illusion which implies that workers can correctly foresee the change in prices. The above analysis justifies the significance of expectations and calls for a testable theory in order to estimate the economic variables. The problem with expectation is the scarcity of available data on expectation. Even if the collection of data does begin, it would take a number of years before a large amount of data is available. This poses a challenge in devising an appropriate theory on expectations. Despite these shortcomings, there are two prominent theories which have been built on expectations:

1. Adaptive expectations hypothesis.
2. Rational expectations hypothesis.

However, we will mainly focus more on rational expectations hypothesis.

1. Adaptive Expectations Hypothesis:

Adaptive expectation hypothesis postulates that people adapt their expectations on the basis of past behaviour. A person will change his expectation on any variable by some fraction of difference between the variable's actual value last period and its expected value last period. The adaptive expectation can be represented by the following equation:

$$Y_t^{\,e} - Y_{t-1}^{\,e} = \alpha\,[Y_{t-1} - Y_{t-1}^{\,e}]$$

Where $\alpha < 1$

This hypothesis does not predict the exact amount by which the individual will raise or lower its expectation. It predicts that if $Y_{t-1} > Y_{t-1}^{\,e}$, then individual will raise expectation and vice-versa.

Adaptive expectation hypothesis is characterised by:

1. Gradual process: Expectation formation is a gradual process. It takes some time for people to adapt to their expectations. They catch up to changes in variables eventually.

2. A general theory: Adaptive expectation theory is not peculiar to specific variable like inflation, rate of interest, rate of growth of income etc. It is a general theory and holds for all variables.

3. It relates the expected or unobserved variable to actual or observable variable. This implies that expectation of any variable can be written as a function of past value of actual variable. The coefficient attached to each lagged value is less than 1 and it declines as the length of lag increases. This implies that the most recent observation dominates the expectation formation.

A major shortcoming of adaptive expectation hypothesis is that it postulates that the agent does not take into account all the available information while making expectations and always under predict or over predict. It means that agent ignores information which could enable him to improve accuracy of expectation. If the variable, about which expectation is being formed, is continuously rising or falling then adaptive expectation is less than the variable itself if variable is rising and vice-versa. This behaviour leads to a systematic pattern in the forecasting error. Therefore, adaptive expectation assumes a sub-optimal behaviour on the part of agency forming expectations.

2. Rational expectations hypothesis:

In simple terms, the rational expectations are the expectations which people make (as consumers as well as producers) by keeping in mind all the information about all the parameters over a period of time. In case of rational expectations, the mean of expectational error is assumed to be zero. Hence, in the rational expectations equilibrium, markets clear themselves and neither the monetary policy nor the fiscal policy changes have any effect on output. Thus, the models based on rational expectations predict the irrelevance of the policy. Lucas model, however, discusses some transitory deviations from full employment and these deviations are the result of expectational errors. They are said to be transitory as they last only as long

as the errors last and the errors cannot stay forever. Therefore, these deviations are eliminated as the errors are eliminated.

5.3. Rational Expectations and Policy Ineffectiveness:

In case of rational expectations, people make decisions by using all the information and any deviations from the natural rate of unemployment can only occur as a result of surprises or say, the unforeseeable and unpredictable events. Any systematic policy can be fully anticipated and hence neutralized through the price responses. Thus, according to Sragent and Wallace (1976) the changes in output can be made only through befooling the people for some time. This can be understood through the Lucas' aggregate supply and aggregate demand function. The aggregate demand is function of expected real interest rate i.e. the nominal interest rate (R_t) and the expected change in general price level ($E_{t-1}\ p_{t+1} - E_{t-1}\ p_t$).

During 1950s, Herbert. A. Simon and John Muth were jointly working on the solution to inventory management and production for a production firm, but with two opposing approaches. Simon, used the doctrine of "bounded rationality" which meant a person's limited ability to in making appropriate decisions, whereas, Muth propagated the idea of rational expectations. J.Muth's work lied between the relationship between expectations and reality. Expectations, as simply explained is what people can estimate of a variable in its future based on some set of information available them about it. It then relies on the fact how accurate their expectations were how to they revise their expectations and how very it adjusted with the actual value of the variable in future. For example, prices, if people base their information set on previous year's data in inflation and price movements, and if say, prices have been growing steadily over the years, people, thus make expectations about the price in future to also move in the same trend and hence, rise steadily in the future. This very concept of basing the expectation son lagged information is the concept of adaptive expectations and is the sheer opposite of what rational expectation is. Another example of formulation of expectation is found in well-known Cobweb model, wherein, the model describes the movement of the agriculture prices based on lagged prices in agriculture (w was given by

Nerlove, 1958). Another example is the dynamic hyperinflation model, Cagan model (1956), in which velocity of money is inversely dependent on the expected inflation and expected inflation is function of past inflations. His model has the property that an increase in the expected inflation, will lead to increase in velocity of money and when velocity rises, prices will rise. With rise in prices, as expected inflation is function of past inflation, the rise in prices will further increase expectations about the inflation in future and hence a vicious circle of expected inflation, velocity of money and prices has been explained in Cagan model. In simple terms, the rational expectations are the expectations which people make (as consumers as well as producers) by keeping in mind all the information about all the parameters over a period of time. In case of rational expectations, the mean of expectational error is assumed to be zero. Hence, in the rational expectations equilibrium, markets clear themselves and neither the monetary policy nor the fiscal policy changes have any effect on output. Thus, the models based on rational expectations predict the irrelevance of the policy. Lucas model, however, discusses some transitory deviations from full employment and these deviations are the result of expectational errors. They are said to be transitory as they last only as long as the errors last and the errors cannot stay forever. Therefore, these deviations are eliminated as the errors are eliminated. J.Muth suggested that economists are often interested in how expectations might change in certain circumstances, which means if an event occurs, what impact will it have on the expected value of the variable. To this he said, economists should not be satisfied with the fixed expectation formulas that do not allow for change when, the structure of the system changes. If underlying economic system changes, it will be wise to expect that there will be change in the way economic actors make their expectations. Hence, Muth suggested, what rational, should be done in a given economic system. Muth's insight was that it was possible to require economic agents to form expectations of economic variables by using the very model that actually determines these variables. The Rational Expectation Hypothesis is the most popular approach to modelling expectations in mainstream economics. The REH can be viewed as an attempt to provide neoclassical economics with a theory of expectations and beliefs

formation that is a priori consistent with the optimization hypothesis. We owe its original formulation to Muth (1961) who suggests that expectations should be modelled in a way that allows them to change endogenously when the structure of the system alters. According to Muth, the Rational Expectation Hypothesis implies that economic agents´ subjective expectations are, on average, equal to the true values of the variables. In other words, it is only the average of economic agents´ forecasts that will be equal to the mathematical expectation of the variable. Thus, the forecast of a given individual may not coincide with the latter. A capsule characterization of rational expectations contains the following themes: (1) In equilibrium (a steady state in dynamic terms), expectations are "correct" in the sense that individuals make no systematic forecast errors; (2) Individuals use all available information (as defined by the researcher) in forming forecasts; (3) Expectations vary with changes in government policy; and (4) Individuals know "the model" and thus can predict as well as the economist manipulating the model.' One of the most important principles of the new classical macroeconomics is the rational expectations hypothesis. The Ratex hypothesis, as it is called, holds that economic agent (individuals, firms, etc.) form expectations of the future values of economic variables like prices, incomes, etc. by using all the economic information available to them. The new classical economists use Ratex to explain the Phillips curve in the inflation theory. According to them, rational expectations are not based on past rates of inflation but on the current state of the economy and policies being followed by the government. Workers and firms base their information on various forecasts made by specialists and agencies, and government announcements and reports. On the basis of such current information, they predict the rate of information. Generally, such forecasts are wrong and what the government says is also not correct. So, workers and firms base their expectations on imperfect information. It is thus on the basis of imperfect information that workers and firms make predictions which will frequently be incorrect. But such errors in predictions are random which make predictions about inflation either too low or too high. Any discrepancy between the actual and expected rate of inflation is only in the nature of random error. Thus, there is no possibility for the actual rate of

unemployment to differ from the natural rate even temporarily. When people act rationally, they know that past increases in prices and the rate of change in prices have invariably been accompanied by equal proportional changes in the quantity of money. When people act on this knowledge, it leads to the conclusion that there is no tradeoff between inflation and unemployment either in the short run or in the long run and the new classical Phillips curve is vertical at the equilibrium or natural rate of unemployment. The new classical short-run vertical Phillips curve is shown in Fig. 5.1. as PC at the natural unemployment rate UN. If people under predict the rate of inflation (expected inflation rate is less than the actual rate), they will believe that aggregate demand has increased. Fig. 5.1. As a result, output and employment rise. This shifts the short- run Phillips curve PC to the left as PC_1 because unemployment temporarily falls to U_1 below the natural rate U_N. If, on the other hand, people over-predict the rate of inflation (expected inflation rate is more than the actual rate), they will believe that aggregate demand has fallen, and output and employment fall. This shifts the short- run Phillips carve PC to the right as PC_2 because unemployment temporarily rises to U_2, above the natural rate U_N. But the actual position of the short-run Phillips curve on the average will be PC at the natural unemployment rate U_N. The new classical economists also explain the downward sloping short-run Phillips curve. Such a curve arises when people are not able to correctly predict about real wages. The new classical Phillips curve is vertical at the natural rate of unemployment shown as PC in Fig. 5.1.

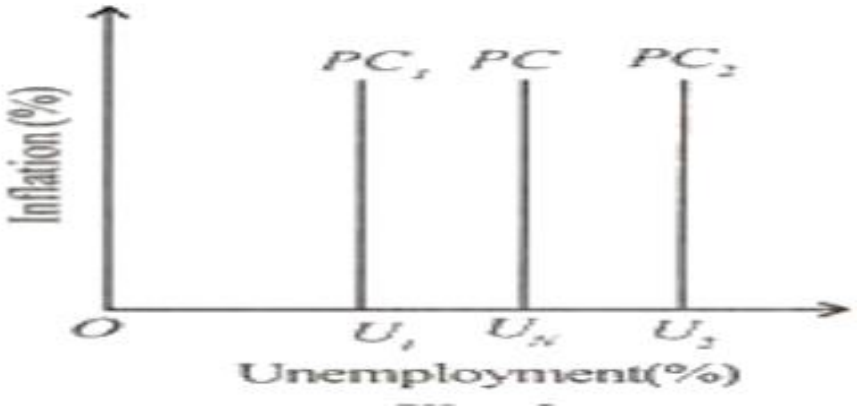

Fig.5.1

This is the true Phillips curve. To explain the downward sloping Phillips curve,

called the apparent Phillips curve, we start at point A on the PC curve when the unemployment rate is 3% and the inflation rate is 4%. In order to reduce unemployment, the monetary authority unexpectedly increases the money supply to stimulate the economy. According to the Ratex hypothesis, firms have better information about prices in their own industry than about the general level of prices. They mistakenly think that the increase in prices is due to the increase in demand for their products. As a result, they employ more workers in order to increase output. Unemployment falls to 2%. The workers also mistake the rise in prices as related to their own industry. But wages rise as the demand for labour increases and workers think that the increase in money wages is an increase in real wages when the inflation rate rises to 6%. Thus, the economy moves upward from point A to B. But soon workers and firms find that the increase in prices and wages is prevalent in most industries. Firms find that their costs have increased. Workers realize that their real wages have fallen due to rise in inflation rate to 6% and they press for increase in wages. But firms do not employ more workers. So, the economy moves from point B to A which is the actual position of the short run Phillips curve. In such a situation, workers over-predict the 4% rate of inflation. Employment will fall as workers believe that their real wages are lower than they actually are. So, they work less. Output falls as firms believe that the relative prices of their products have fallen. With fall in employment and output, the economy moves from point A to C due to an unanticipated fall in wages and prices. Thus, points B, A, C trace out a downward-sloping apparent short run Phillips curve PC_1 (in Fig. 2.2) of the new classical macroeconomics when people under-predict real wages and relative prices. But the true short-run Phillips curve of the new classical is always vertical like the PC curve.

The Lucas Critique Lucas was very critical of the econometric based macro-economic models used for policy evaluation in the sixties. In this respect he made an argument (Lucas, 1976), popularly known as the 'Lucas Critique', in which he stated that a well specified economic model has two kinds of parameters. These are the structural parameters such as time preference, the tendencies of risk aversion, the parameters of production functions etc.;

which are likely to remain stable over time. These parameters actually do not change with the change in policy stances. Then there is a second set of parameters which unlike the structural parameters quickly respond to the policy changes e.g. during recession people respond very quickly if they expect a strong counter-cyclical monetary policy. The first set of parameters are called the 'deep parameters' and the second set is known as the expectational parameters. Lucas says that the models based on the interaction of IS and LM curves are faulty in their methodology as with monetary and fiscal changes, the slope as well as the positions of the IS and LM curves change with the complex interaction of deep and expectational parameters. Since the IS-LM approach ignores these interactions, therefore, the results of these models cannot be relied upon. Lucas emphasizes on understanding the micro-foundations of the macroeconomics in order to have a deep analysis of macro-economic policy. The micro-economic analysis tells us the dynamics of any macro-economic policy and how the expectations are formed. Understanding these dynamics is very important for a deeper probe of macroeconomic policy and its effects. Lucas therefore says that the expectations should not be treated as exogenous but as endogenous to the model that they influence.

5.4. New Classical School

The New Classical school of thought is built largely on the Neo-classical school. The New Classical School emphasizes the importance of microeconomics and models based on that behavior. Economists like Robert Lucas, Thomas Sargent, Robert Barro, Edward Prescott, and Neil Wallace characterize this school of thought. They believed with the notion of "Rational Expectations", i.e., economic agents act rationally in their own self-interest to maximize their welfare or profits. They endorsed the wage-price flexibility assumption, and hence believed that market will always clear. The two main issues that are usually discussed in new classical school are rational expectations and real business cycles. Rational expectation hypothesis, given by Robert Lucas, modeled agents as rational and forward looking. Any policy change will be ineffective, i.e. economic agents would anticipate inflation and adjust to higher price levels before the start of the monetary expansion, that

could boost employment and output. Only unanticipated monetary policy could increase employment, and no central bank could systematically use monetary policy for expansion without economic agents catching on and anticipating price changes before they could have a simulative impact (Sargent and Wallace, 1975). Real business cycle theory (RBC theory) assumes that business cycle fluctuations can be accounted for by real shocks, rather than nominal shocks. RBC theory sees business cycle fluctuations as an efficient tool in response to the exogenous changes in the real economic variables. They do not represent a failure to market clearance, but the best solution to the structure of the economy. They reject the Keynesian views of government intervention to smoothen out economic short-term fluctuations, and argued that government should concentrate on long-run structural policy changes.

5.5. New Keynesian School

The New Keynesian School attempts to add microeconomic foundations to traditional Keynesian economic theories. This school of thought includes economists like George Akerlof, David Romer, Olivier Blanchard, and Greg Mankiw. They do not believe that markets clear, but explain why the market fail to clear. They argue that wages and prices are neither rigid nor flexible. They adjust slowly to the shocks. Due to “menu costs”, “aggregate demand externalities”, and “coordination failure”, wages and prices adjust slowly, and even sometimes sticky. Menu costs are the cost to the firm for changing prices and wages. If it is costly for the firm to change the prices they charge and the wages they pay, both wages and price will adjust slowly. Hence, economy wide wage level and price level will not be flexible to adjust to the period of shocks. Aggregate demand externalities include the impact of one firm’s price change on the demand for all other firm’s product. When one firm lowers the price it charges, it lowers the economy wide average price level, raising the real money balances, and hence the demand for other firms rises. Thus, it is a positive externality to other firms, and hence they are reluctant to reduce their prices, making prices and wages sticky. The problem of coordination failure arises because the leaders, who set the prices, are unable to anticipate the actions

of other firms. Similarly, labour unions, which set wages, are unable to see the benefits to other labour unions. As a result, leaders fail to come to an inferior outcome over a preferred outcome, making economy wide average price level and wages are sticky.

5.6. The Lucas Critique

Lucas was very critical of the econometric based macro-economic models used for policy evaluation in the sixties. In this respect he made an argument (Lucas, 1976), popularly known as the 'Lucas Critique', in which he stated that a well specified economic model has two kinds of parameters. These are the structural parameters such as time preference, the tendencies of risk aversion, the parameters of production functions etc.; which are likely to remain stable over time. These parameters actually do not change with the change in policy stances. Then there is a second set of parameters which unlike the structural parameters quickly respond to the policy changes e.g. during recession people respond very quickly if they expect a strong counter-cyclical monetary policy. The first set of parameters are called the 'deep parameters' and the second set is known as the 'expectational parameters'. Lucas says that the models based on the interaction of IS and LM curves are faulty in their methodology as with monetary and fiscal changes, the slope as well as the positions of the IS and LM curves change with the complex interaction of deep and expectational parameters. Since the IS-LM approach ignores these interactions, therefore, the results of these models cannot be relied upon. Lucas emphasizes on understanding the micro-foundations of the macroeconomics in order to have a deep analysis of macro-economic policy. The micro-economic analysis tells us the dynamics of any macro-economic policy and how the expectations are formed. Understanding these dynamics is very important for a deeper probe of macroeconomic policy and its effects. Lucas therefore says that the expectations should not be treated as exogenous but as endogenous to the model that they influence.

5.7. Policy Prescriptions of Supply-Side Economics:

1. The Laffer Curve: Tax Rate Vs. Tax Revenue:

The most popular aspect of supply-side economics is the Laffer curve named after its originator Prof. Arthur Laffer. The Laffer curve depicts the relation between tax rate and tax revenue. It is based on the assumption that a cut in the marginal rate of tax will increase the incentives to work, save and invest. This tax cut, in turn, will increase the tax revenue. The Laffer curve shows two extremes of tax rates: A 0% tax rate and a 100% tax rate.

Both yield no tax revenue. If the tax rate is 0%, no revenue will be raised. If the tax rate is 100%, people will have no incentive to work, save and invest at all because the whole income will go to the government. Thus, the tax revenue will again be zero. As the tax rate increases from 0% to 100%, tax revenue correspondingly rises from zero to some maximum level and then starts declining to zero. Thus, the optimum tax rate is somewhere between the two extremes.

Figure 5.2.shows the Laffer curve where the tax rate (0%) is taken on the horizontal axis and the tax revenue on the vertical axis. As the tax rate is raised above zero, the tax revenue starts increasing. The Laffer curve is upward sloping. At the relatively low tax rate, it is upward sloping. At the relatively low tax rate T_1, the tax revenue is R_1.

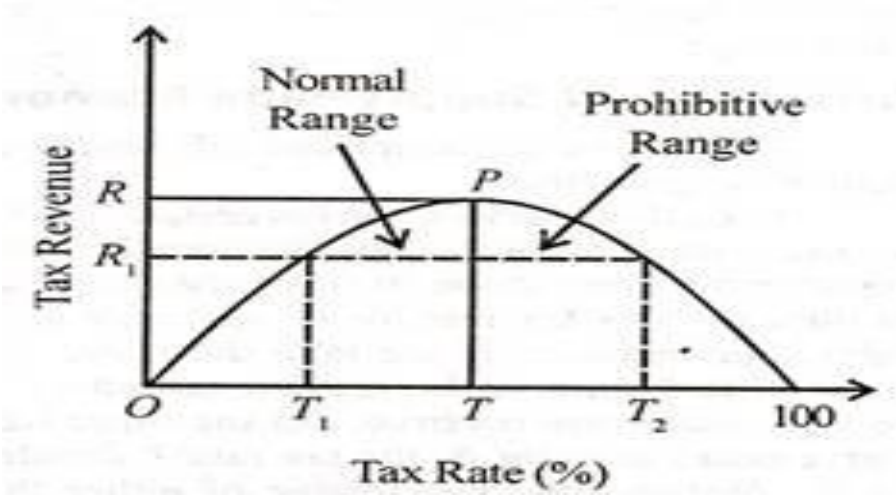

Fig.5.2.

As the tax rate rises to T, the tax revenue continues to increase and the curve reaches the peak, P where the tax revenue R is the maximum. Thereafter, further rise in the tax rate will reduce revenue to the government. Thus, T is

the optimum rate of tax.

According to Laffer, "Except for the optimum rate, there are always two tax rates that yield the same revenue." In the figure, the revenue R_1 at the high tax rate T_2 is the same as the revenue collected at the low tax rate T_1. If the government wishes to maximise tax revenue, it will choose the optimum tax rate T.

An important feature of the Laffer curve is that it has a normal range and a prohibitive range. The normal range is to the left of the optimum tax rate T and the prohibitive range is to its right. In the normal range, increases in the tax rate bring more revenue to the government.

But in the prohibitive range, when the tax rate becomes high, it reduces the incentives to work, save and invest. Consequently, the fall in output more than offsets the rise in tax rate. When the tax rate reaches 100%, the revenue falls to zero because no one will bother to work.

Thus, high tax rate stifles economic growth and results in high unemployment. Therefore, a reduction in the tax rate will actually increase revenue by encouraging the incentives to work, save and invest. People not only produce and earn more but also switch money out of low-yielding "tax shelters" and untaxed "underground" economy into more productive and socially desirable investment. The result would be higher employment and economic growth leading to high tax revenue.

2. Reduction in Government Spending:

To achieve full employment, low inflation and high growth rate of the economy, the supply-side economists emphasise reduction in government expenditure accompanied by tax cuts. They are against monetization of budget deficit which the Keynesians advocate.

But the reduction in government expenditure should be more than or equal to tax cuts so that savings increase to finance larger investments. This will increase employment, income and growth rate of the economy.

3. Monetary Policy:

Another plank of supply-side policy is to have restrained monetary expansion in order to keep the inflation rate low.

4. Increased Depreciation:

To encourage more investment, supply-siders suggest increased investment allowance and/or higher depreciation on buildings, machines vehicles, and other capital goods.

5. Reduction in Welfare Benefits:

To reduce unemployment, supply-side economists emphasise reduction in welfare benefits, especially unemployment allowance. This will encourage workers to accept jobs at lower wages, thereby reducing unemployment in the economy.

6. Reducing Trade Union Power:

Supply-siders also advocate reduction in the power of trade unions through legislation which will make the labour market more competitive. Trade unions raise wages above the competitive level which the employers cannot afford. Thus, they destroy jobs and increase unemployment. When the government restricts union power, unemployment and cost-inflation are reduced.

7. Deregulation and Privatisation:

Deregulation and privatisation are important supply-side policies. They are used to encourage more competition within the economy. Removal of public sector monopolies and sale of public sector enterprises and transfer of public utilities in private hands lead to increase in productive efficiency, wider consumer choice and lower prices.

8. Free Trade and Capital Movements:

Free trade and free capital movements among countries are another policy measure of supply-siders. The removal of exchange controls and free inflow and outflow of both short- term and long-term capital lead to the maximisation of output and growth by widening markets and checking monopolies.

5.8. Criticisms of Supply-side Economics:

The above prescriptions of supply-side economics have been criticised by economists on the following grounds:

1. Laffer Curve Controversial:

The Laffer curve is an interesting but a controversial concept. No one

knows with certainty either the location of the optimum point or the exact shape of this curve. The curve may peak at 40% or 90% tax rate, or it may peak in-between these rates.

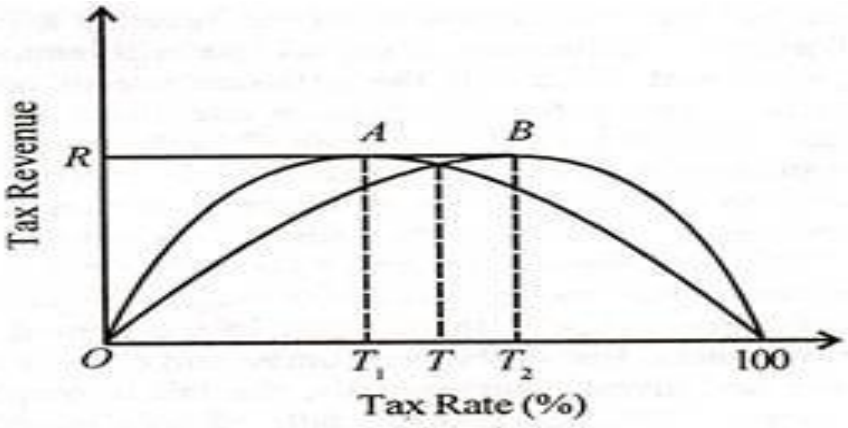

Fig.5.3.

For instance, if we take the curve which peaks at point A in Figure 5.3., the present tax rate-T should be cut to T_1 to maximise revenue. On the other hand, if another curve peaks at point B, the tax rate T should be increased to T_2. Without the knowledge of either the peak or the shape of the curve, it is not possible to know the effect of reducing (or increasing) the tax rate or tax revenue and economic activity. In fact, nobody knows the exact shape of the Laffer curve or the relationship between tax rate and tax revenue.

2. Tax Cuts do not bring High Growth Rate:

Economists do not agree that cutting tax rates will lead to high growth rate and more tax revenue. They point out that high growth rate generates higher incomes which, in turn, generate higher tax revenue. Therefore, it is not reduction in tax rates that leads to the high growth rate of the economy.

3. Tax Cuts do not measure Work Effort:

It is not possible to measure work effort specifically as a result of tax cut. No doubt, increased work effort leads to higher incomes and to increase in tax revenue. But the increased tax revenue may not be sufficient to compensate the government for the decrease in revenue due to the lower tax rate. Moreover, it is possible that people may work less when their disposable income increases with the lower tax rate.

4. Tax Cuts do not affect Target Incomes:

Critics argue that some persons have 'target' real income. When taxes

are reduced, they will work less and have more leisure to maintain their target income.

5. State Intervention Necessary:

Supply-siders have been criticised for their policy of non-intervention by the state. But there are many contradictions in the working of the capitalist system which cannot sustain balanced growth of the economy. When the economy reaches full employment, a number of distortions and imbalances develop which fail to maintain full employment. Therefore, state intervention is necessary to remove them.

6. Supply-side Policies fail to bring Social Justice:

Supply-side economists emphasise reduction in social spending, subsidies, grants and budget deficit with reduction in taxes. But such a policy has actually led to huge budget deficits in the United States. Further, the policy of reducing social spending, subsidies and grants adversely affects the poor and unemployed and fails to bring social justice.

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