UNIT 4 FUNCTIONS OF MONEY*

Structure

4.0 OBJECTIVES

After going through this unit, you would be in a position to

- explain the concept and functions of money;
- illustrate the measures of money supply in India;
- explain the concept of *hot money*; and
- demonstrate how banks create credit under the *fractional reserve* banking system.

4.1 INTRODUCTION

Ordinarily, money is spoken about in terms of income or wealth. For instance, a person may say that he has a lot of money (that is, wealth) or he made of lot of money in the previous year (that is, income). But, economists use the term 'money' in a more technical sense. In economics, money is the stock of assets which is used to pay for things or for transaction purposes. It is a medium of exchange; for example, cash in the hands of public (any currency – rupee, dollar, yen, etc.).

What led to the evolution of money or paper money? Going back to the 'barter system', such a trade is simply inconvenient and it also requires a double coincidence of wants which is not always possible. Hence, a better and easier method of facilitating transactions had to evolve. The evolution of commodity money is not surprising as people readily accept commodities having some intrinsic value. In the past, commodities such as gold were used as money. Such type of money having an intrinsic value (for example, gold can be used as jewelry) is called *'commodity money'*. During the late nineteenth century *gold standard* was commonly prevalent across the world. Under the gold standard, gold or paper money redeemable for gold was used as a medium of exchange.

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But what led to the development of fiat money? It is surprising as people value an intrinsically useless commodity such as paper. The inconvenience of carrying around bags of gold and weighing it every time a transaction is conducted led to the development of 'fiat money'. Gold has to be checked for purity and weight whenever an exchange is made. Alternatively, the government can issue gold coins of known purity and weight to be used for transactions. As a next step, these gold coins are replaced by gold certificates, or paper bills which the public can redeem for gold. Even such a gold backing becomes irrelevant in the end as everyone values paper money and does not care to redeem it for gold. Hence, fiat money evolved because of social convenience of using it. Paper money or fiat money has no intrinsic value but government decree or fiat establishes paper currency as money.

In this unit we will discuss the functions of money and measurement of money supply. Also, we will learn about the hot money, and its effect on the domestic economy. Then we will learn about the money multiplier. The monetary base increases manifold over time, which increases the money stock in a multiplicative manner in the economy.

4.2 FUNCTIONS OF MONEY

Broadly, the functions of money are as follows:

Store of Value

Money is a store of value as it can be saved and spent in the future. In other words, it can be used to carry forward the purchasing power into the future. However, it is not a perfect store of value. If the prices are rising, the purchasing power of money declines.

Unit of Account

Money is similar to a yardstick or a measuring rod. Prices of all commodities are quoted in monetary terms. Even though resource allocation is based on relative prices, that is, price of one commodity versus another, prices are not quoted in relative terms. We do not see price of a computer expressed in terms of prices of onions, for instance. Hence, money plays a very important role of measuring economic transactions.

Medium of Exchange

As pointed out earlier, money is the medium which facilitates exchange of goods and services in an economy. It is the economy's most liquid asset as it can be easily used for buying goods and services. An asset is said to be liquid if it can be used immediately, conveniently and cheaply for making payments.

Standard of Deferred Payment

Money is also a standard of deferred payment as the amount to be repaid in the case of loans are specified in monetary terms. But due to erosion in the purchasing power of money due to increasing price level, sometimes, the loan is indexed such that the amount to be repaid is related to the expected price level or the rate of inflation.

4.3 MEASURES OF MONEY SUPPLY

How is the quantity of money, or the money supply, in the economy measured? As per the definition of money, the quantity of money is the stock of assets used for transactions in the economy. Such a stock can be measured easily in simple economies with commodity money in prevalence. In this case, the quantity of money is the number of units of the commodity used as money. In complex economies, various assets such as cash, chequeing account deposits, etc. are used for transactions. Therefore, various assets can be included in money supply. Currency is included and so are demand deposits (e.g., deposits in the current account). Cheques or debit cards against current account or saving account can be used as conveniently as money. Since many assets qualify for inclusion in the money stock, there are various measures of money supply depending on which assets are included.

There are four measures of money supply in India: M1, M2, M3 and M4. We start with the most liquid measure of money supply, M1. It includes the liquid claims which can be used directly, instantly and without restrictions to make payments. Hence, it is closer to the definition of money as a means of payment. The liquidity decreases as we move to other monetary aggregates, viz., M2, M3 and M4 in that order. Hence, M4 is the least liquid measure of money supply. We define each of the above-mentioned measures below.

M1= CU + DD + OD = Currency held by the public (Coins and notes in circulation) + Demand Deposits in Banks + Other Deposits in RBI

Demand deposits are those deposits which the account holders can withdraw any time (e.g., current account deposits). Saving deposits are not included in demand deposits because they are subject to withdrawal restrictions. Other deposits with the RBI include demand deposits of public financial institutions, demand deposits of foreign central banks and financial institutions like IMF, World Bank, etc.

M2 = M1 + Saving Deposits of Post Office Saving Banks

M3 = M1 + Net Time Deposits of Banks

M4 = M3 + Total Deposits of Post Office Savings Organization (excluding National Saving Certificates or NSC)

Here, M1 is also known as ‘narrow money’. Saving deposits of post offices do not serve the medium of exchange function of money as they do not have cheque facility. Hence, they are not included in M1. Similarly, fixed deposits are not included in M1. You should note that M3 is known as ‘broad money’ since it includes time deposits as well. For macroeconomic policy formulations, the RBI takes into account M3 measure of money supply. Interest bearing bank account deposits which cannot be withdrawn prior to the maturity date are known as ‘time deposits’. Banks receive more money as time deposits compared to demand deposits.

In addition to the above, there is another measure of money supply, that is, **M0.** The M0 is also known by several other names such as 'monetary base', 'central bank money', 'high-powered money' and 'reserve money'.

Reserve Money (M0) = Currency in Circulation + Bankers' Deposits with the RBI + Other Deposits with the RBI

= Net RBI credit to the government + RBI credit to the commercial sector + RBI's claims on banks + RBI's net foreign assets + Government's currency liabilities to the public – RBI's net non- monetary liabilities

You should note that M0 includes all currency in circulation, whether by the public or by the banking system. On the other hand, M1 includes currency held by the public. The amount of money held by the banking system is much larger than the money held by the public. Thus M0 is considerably larger than M1.

Check Your Progress 1

1. What led to the invention of paper money?

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2. What are the functions of money?

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3. What are the measures of money supply in India?

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4. Are debit cards counted in measurement of money? What about credit cards?

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4.4 HOT MONEY

The term *hot money* is used to describe money which quickly moves from one country to another in search of speculative gains. There is inflow of funds or hot money in an economy if the interest rates in the economy are higher than the Rest of the World. But such movements of funds are very volatile and they quickly leave the economy if better returns are discovered in other countries. You should note that Foreign Direct Investment (FDI) is not hot money, as it is meant for long term investment. Traditionally, short term bank deposits were used by investors to park hot money in other economies. In these days, with financial globalization, Foreign Portfolio Investment or Foreign Institutional Investment (FII) could be an example of hot money.

Hot money usually originates in capital-rich countries having low interest rates; and destinations are economies with high interest rates or yield. Emerging economies such as India, Brazil, China, Malaysia, etc. are recipients of hot money inflows. These economies have high rates of return on investment because of which they attract hot money inflows. India is considered a 'safe heaven' and continues to be recipient of foreign capital inflows.

Although hot money positively affects consumption in the recipient country, inflow of hot money has some negative repercussions as well. Since these are basically short-run sudden inflows of capital, it may create inflationary pressures in these economies. Hot money affects the exchange rate of the economy. Inflow of hot money appreciates the exchange rate or increases the value of the currency. On the other hand, outflow of funds depreciates the exchange rate. Hot money flows are very volatile subjecting the recipient countries to instability. These flows lead to volatile stock markets and large fluctuations in exchange rates.

Quick withdrawal of hot money from banks may also trigger a banking crisis. Many believe that one of the causes of the 1997 East Asian Financial crisis was sudden outflow of hot money. South Korea, Thailand and Indonesia were most affected by this crisis. Having accumulated large amounts of short term foreign debt which is a type of hot money, the exchange rate and asset prices in these economies collapsed when capital started flowing out due to various factors.

4.5 CREDIT CREATION BY BANKING SYSTEM

This section discusses an important role of the banking system that is the creation of credit. An understanding of this role of banks can be made by taking a look at the balance sheet of a bank (see Table 4.1 below).

Table 4.1 Balance Sheet of a Bank

Assets	***Liabilities***
Reserves	Chequable Deposits
Loans	

People deposit funds in the chequeing accounts with banks. Such funds can be withdrawn anytime with the help of cheques. Hence, the value of chequable deposits is written on the liabilities side of the banks' balance sheet. On the assets side, we have loans and reserves. Some funds are held by banks as reserves, partially as cash and partially with the central bank. These reserves are held for several reasons. Taking any day, some people may deposits cash in their accounts whereas others may withdraw cash. This outflow and inflow may not be equal, making it important for banks to keep some cash on hand. Reserves are also held for inter-bank clearing purposes.

In addition, banks are required to hold a certain fraction of their demand and time liabilities in the form of cash balances with the central bank**.** Such a system is known as the *fractional reserve banking system*. That is, only a fraction of the bank deposits are backed by actual cash on hand and are available for withdrawal. The fractional reserve banking system is the underlying basis for creation of credit or expansion of money supply in the economy. Since all depositors do not rush to withdraw their money at once and outflow of funds is supported or filled by inflow of funds, banks need to keep only a fraction of deposits as cash and they can loan out the rest. It makes credit expansion possible.

The overall money supply in the economy is the outcome of the behaviour of banks, public and the central bank. As already discussed in the preceding section, the overall money supply (M) in the economy is the sum of currency (CU) plus demand deposits (DD). That is

$M = CU + DD$ …(4.1)

Let us assume that the currency-deposit ratio is 'c' such that,

$c = CU/DD$ or, $CU = c\ DD$

Substituting the above value in (4.1) we obtain the overall money supply as

$M = c\ DD + DD = (1 + c)DD$ …(4.2)

The central bank controls the overall money supply by controlling the Monetray Base or High Powered Money 'H'. The high powered money consists of currency plus reserves 'R'. That is,

$H = CU + R$ …(4.3)

Let us assume that the reserve-deposit ratio is 'r' such that,

$r = R/DD$

Hence, high powered money is given by,

$H = (c + r)DD$ …(4.4)

The highpowered money and the overall money supply are linked by the money multiplier. The money multiplier is the ratio of the stock of money to the stock of high powered money.

That is, $M = \frac{(1+c)}{(c+r)} H \equiv mm\ H$

Here, "mm" is the money multiplier which is given by

$$mm = \frac{(1+c)}{(c+r)} \qquad \ldots(4.5)$$

Hence, the money multiplier is determined by the behaviour of the public and the banks. There are two behaviuoural ratios which determine the money multiplier: c and r. Smaller the 'r', the larger the money multiplier. Smaller the 'c', larger the money multiplier. This implies that if less money is held as currency or as reserves, more is available with banks for expanding credit. The money multiplier is larger than 1. Both 'c' and 'r' lie between 0 and 1. If c = 0, people hold no currency. If c = 1, people hold only currency and banks have no role to play. The currency deposit ratio depends on the costs of holding cash. If cash is easily available through ATMs, less currency is held by public on average. The reserve-deposit ratio includes both the required reserves and excess reserves. Required reserves are those which banks are required to hold statutorily with the central bank. Reserves in excess of required reserves are known as excess reserves which banks can hold as cash on hand with themselves or as balances with the central bank. These excess reserves are used to meet currency and clearing drains as already discussed before.

An increase in H leads to a more than proportionate increase in overall money supply. A given increase in H results in multiple expansion of credit, deposits and money. For this reason, H is called High-powered money or monetary base. It is through the operation of the money multiplier effect that banks create credit in the economy. An example will illustrate the money multiplier process. Suppose that the public comes to possess ΔH= 60 millions. This can occur if the central bank buys bonds from the public through open market operations. Assume that c = 0.5 and r = 0.1. Now, people keep 20 million as currency and deposit the rest 40 million in the banks. The banks keep 4 million as reserves (r = 0.1) and lend out 36 million.

This forms the first round of credit creation as banks lend out 36 million. The public again holds only 12 million as currency and deposit the rest 24 million in banks since the currency-deposit ratio is 0.5. Now banks again keep 10 per cent as reserves, that is, 2.4 million. And the rest 21.6 million is loaned out. This forms the second round of credit creation. Again, the public 7.2 million in cash and 14.4 million as deposits with banks and the process goes on. In this manner, there are successive rounds of creation of deposit, credit and money. With each round, the size of deposit, credit and money becomes smaller and smaller. Each series of expansion of credit, deposit and money is an infinite series which can be summed up. The rounds of expansion of deposits are 40, 24, 14.4….and the rounds of expansion of bank credit are 36, 21.6, 12.96…and so on. The expansion of money supply is given by,

$$\Delta M = \frac{(1+c)}{(c+r)} \Delta H = 2.5 * 60 = 150 \text{ million}$$

Hence, an injection of 60 million of H leads to money supply expansion by 150 million.

Check Your Progress 2

1. X is an economy with no financial innovation. In this country, the Central Bank requires the commercial banks to keep 100 per cent of their deposits as reserves. Calculate the money multiplier for this economy.

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2. "The overall money supply in the economy is the outcome of the behaviour of banks, public and the central bank". Prove this statement by deriving the money multiplier.

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4.6 LET US SUM UP

In this unit we learnt that money is the stock of assets which is used for transaction purposes. It serves three broad functions: medium of exchange, store of value and unit of account. The money supply is made up of currency and demand deposits. Broader measures of money supply also include saving deposits and time deposits as well as some interest earning assets. The overall money supply in the economy is a multiple of the monetary base or the high powered money. It is the fractional reserve banking system which forms the basis of credit creation by the banks.

4.7 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1. See Section 4.1

2. See Sections 4.1 and 4.2

3. See Section 4.3

4. Credit cards are not counted in the economy's money stock because they are a means of deferring payment rather than making payments. When the credit card holder clears all his dues, his chequeing account is used to write a cheque. This chequeing account balance is a part of the economy's money stock.

Debit cards however are used to make payments. It allows the user instant access to his bank account. Such account balances behind debit cards are a part of the stock of money.

Check Your Progress 2

1. Money multiplier is equal to 1.

2. See Section 4.5.

UNIT 5 DEMAND FOR MONEY*

Structure

5.0 OBJECTIVES

After going through this unit, you would be in a position to

- explain the relationship between money supply and prices;
- distinguish between Fisher's approach and Cambridge approach to Quantity Theory of Money (QTM);
- explain the Keynesian theory of Demand for Money; and
- illustrate how money market equilibrium is determined.

5.1 INTRODUCTION

In this unit we will discuss the relationship between money supply and general prices, which is mainly dealt by the two approaches of the Quantity Theory of Money, viz., Fisher's approach and Cambridge approach. Both the approaches suggest that an increase in money supply results in proportionate increase in the price level. In the end of this unit we will discuss the demand for money and money market equilibrium. People hold money because it has purchasing power; its ability to buy goods and services. We notice that a person usually holds certain amount of money capable of buying certain goods and services. This amount varies across persons depending upon his income, preferences, interest rate, etc. Hence, the demand for money is the demand for real balances or (M/P).

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When there is an increase in the general price level (P), nominal money balances (M) has to be increased in proportion to the rise in the price level *ceteris paribus*, to keep real balances constant.

5.2 QUANTITY THEORY OF MONEY: FISHER'S APPROACH

The Quantity Theory of Money is a classical theory which states that the price level is proportional to the quantity of money in the economy. Classical economists including Fisher emphasized the function of money as a medium of exchange. People hold money to carry on the transactions, that is, to buy goods and services. The value of such transactions is equal to PT, where P is the price of a typical transaction and T is the volume of transaction of goods and services. The value of 'PT' must be identical to the value of money flow used to buy goods and services. The value of money flow is equal to the nominal quantity of money supply 'M' (fixed by the central bank) multiplied by V, where V is the transaction velocity of money or the number of times the money stock turns over per year in order to finance the flow of transactions. That means it is the rate of circulation of money or the number of times the currency notes change hands in a given time period. Hence, the Fisher equation of exchange can be written as

$$MV = P \qquad \ldots (5.1)$$

Let us take an example. Suppose that 60 units of good Z is sold at the rate of Rs. 5 per unit in a given year. Then the value of transactions 'PT' is equal to Rs. 300 per year. If money supply (M) equals Rs.100, then the velocity V comes out to be 3 times per year. That is, in order for 300 rupees of transactions to take place per year with 100 rupees of money, each rupee must change hands thrice a year. The quantity equation is an identity, that is, the equality is maintained. If M increases and V is constant, then either the price (P) or transactions (T) must increase.

Since the volume of transactions is difficult to measure, economists also use a different version of Quantity Theory by replacing T with Y, the real total output or income. In this format, the quantity equation can be written as

$$MV = PY \qquad \ldots (5.2)$$

The income velocity of money is the number of times the money stock turns over per year in order to finance the annual income flow. Fisher argued that V depends on the payment technology and the payment habits of people in society. According to Fisher and other quantity theorists, "the equilibrium level of velocity was determined by such institutional factors and could be regarded as fixed in the short run". The Classical economists also assumed that output Y is fixed. If V and Y are assumed to be constant, the quantity equation is written as

$$M\bar{V} = P\bar{Y} \qquad \ldots (5.3)$$

Hence, there exists a proportional relationship between exogenous money supply and price level. The Quantity Theory of Money suggests that change in money supply causes a proportionate change in the price level. This is the basic result of the Quantity Theory of money which can be summarized as: "the quantity of money determines the price level". This result can also be shown by expressing the quantity equation in percentage terms as shown below.

$$\%\text{ change in } M + \%\text{ change in } V = \%\text{ change in } P + \%\text{ change in } Y \quad \ldots (5.4)$$

Here, the central bank controls the percentage change in money supply. Percentage change in velocity is zero as velocity is assumed to be constant. Percentage change in price level is the inflation rate. Percentage change in output depends on growth in factors of production and technological progress which are assumed to be given. Hence, money supply growth determines the inflation rate (as % change in Y is assumed to be zero).

Check Your Progress 1

1. How does ATM facility affect the velocity of money?

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2. If V increases, what happens to the money demand curve?

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5.3 QUANTITY THEORY OF MONEY: CAMBRIDGE APPROACH

A variant of the Quantity Theory of Money is the Cambridge Approach named after Cambridge economists, Marshall and Pigou. They showed that there is a proportionate relationship between the quantity of money and the aggregate price level. Marshall's focus was on the optimal amount of money that an individual holds. People hold money to meet transaction needs and also for precautionary motives. But holding money has an opportunity cost of lost income if the money

were to be invested in assets such as bonds which earn interest. So "money will be held in so far as the yield in terms of convenience and security outweighs the income lost from not investing in productive activity".

What is the optimal amount of money held by the public? These Cambridge economists assumed that the demand for real money balances is proportional to income. That is,

$$\left(\frac{M}{P}\right)_d = kY \qquad \ldots (5.5)$$

Here, k is the fraction of income that people wish to hold as cash balances. It is assumed to be constant. Now, at equilibrium, money demand is equal to money supply.

That is,

$$\left(\frac{M}{P}\right)_d = \frac{M}{P} \qquad \ldots (5.6)$$

By equating (5.5) and (5.6), we find that $\frac{M}{P} = kY$

Or, $M\left(\frac{1}{k}\right) = PY$ … (5.7)

You should note that equation (5.7) is equivalent to $MV = PY$, where $V = \frac{1}{k}$.

Thus, we see that the Fisher's equation and the Cambridge version are equivalent. Here, k is the money demand parameter and V is the velocity of money. If people hold more money for each unit of income, V is small. Alternatively, if people hold less money for each unit of income V is large, as money changes hands very frequently. We observe that k and V are the two sides of the same coin. Like the Fisher's Approach where V is assumed to be fixed, k is also assumed to be stable in the short run.

The above discussion draws parallels between the Fisher's approach and the Cambridge approach to the Quantity Theory of Money. Both the approaches arrive at the same conclusion. However, in the Cambridge approach, the Quantity Theory is seen from the perspective of demand for money. This approach derives the proportionate relationship between quantity of money and price level by assuming k and Y to be constant.

The Fisher's approach, on the other hand, emphasizes on the supply of money. It takes us through the channels by which money affects the price level. Let us assume that the quantity of money doubles. It results in excess of money supply over demand for money. People try to get rid of excess cash balances or reduce their money holdings to optimal proportion of their income. The excess money is

put into consumption and investment increasing the demand for commodities. This causes increase in prices. If output Y is constant and k is constant, the price level also doubles until the new equilibrium is attained. At this point, nominal income (PY) as well as money demand doubles.

Check Your Progress 2

1. Discuss the Quantity Theory of Money. Are the two approaches – Cambridge and Fischer's – essentially the same? What are the differences?

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2. Derive the quantity equation using the money demand function.

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5.4 KEYNESIAN THEORY OF DEMAND FOR MONEY

According to Keynes, demand for money is the preference for liquidity or the public's desire to hold cash and other forms of ready money like non-interest earning deposits. Depending on his 'liquidity preference', an individual decides how much of his resources or income should be held in the form of liquid money and how much in the form of other assets. But what drives liquidity preference in any individual given that bonds or assets yield returns whereas liquid money does not? According to the Keynesian view, there are three reasons which create demand for money or preference for liquidity. They are transaction demand for money, precautionary demand for money and speculative demand for money.

5.4.1 Transaction Demand

It is unlikely that an individual receives money at the same instant he needs to make a payment. Usually, one receives money at the end of the month but the expenses are scattered over the month. Lack of such coordination between receipts and expenditure gives rise to the transaction demand for money.

The transaction demand for money varies directly with income. A person with low income will incur low expenses and thus have low transaction demand. On the other hand, a person with high income has high transaction demand as she spends more on transactions. Such a demand for money also depends on the trade-off between holding cash balances and holding assets such as bonds which are interest earning. Holding real money balances has an opportunity cost, that is, the interest foregone. If the interest rates are high, the opportunity cost of holding money is high. Hence, the transaction demand for money is low.

Thus, the transaction demand for money falls with rise in the rate of interest. Since, money is held in the form of currency or chequable deposits for transaction purposes, the transaction demand corresponds with the M1 measure of money supply (see Unit 4). It also corresponds with the *medium of exchange* function of money.

5.4.2 Precautionary Demand

People also hold money to guard against uncertainties. Future receipts and payments are uncertain. Hence, money is held to act as a buffer stock to meet unforeseen expenses that may arise in future. For example, families may hoard cash to meet a medical emergency which may arise without warning.

The precautionary demand for money is relevant to M1 although it can explain savings accounts which are part of M2.

5.4.3 Speculative Demand

The speculative demand for money relates to the function of money as a *store of value*. In a portfolio of assets, an investor prefers to keep those assets which yield high returns. But returns are subject to uncertainties and assets are risky. In such a scenario, it is wise for the investor to have a diversified portfolio wherein some money is also held to safeguard against capital losses as prices of some assets behave in an uncertain manner. Even money is not a completely risk-free or safe asset. The real value of money depends on the inflation rate which is uncertain. But the values of equities are more uncertain than the inflation rates which explains why money is a relatively safer asset. This attribute of money creates speculative demand for money. Essentially, it is the risk-averse behavior of individuals which generates speculative demand for money. Higher the riskiness of the returns on other assets, higher is the speculative demand for money. And higher the expected return on other assets, lower is the speculative demand for money. In a flight towards safe assets, which assets are held? Is it the currency and demand deposits? Or time deposits and saving deposits. Investors prefer time and saving deposits as they have higher returns. These are part of M2 and M3. Hence, the speculative demand for money corresponds with M2 and M3 measure of money supply.

We learn from the above discussion that speculative demand for money is inversely related to the current rate of interest. If the current rate of interest is low, the speculative demand for money is high as the opportunity cost of holding money is low.

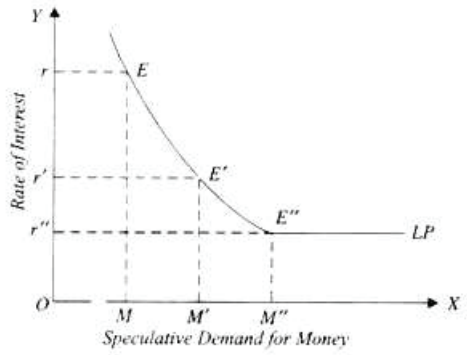

Fig. 5.1: Liquidity Preference Curve

Fig. 5.1 shows the speculative demand for money as a declining function of the interest rate. The 'liquidity preference' curve or LP curve is downward sloping implying that demand for liquidity or speculative demand for money is low at high rates of interest (and vice versa). However, if the rate of interest is very low (at r''), people are willing to hold whatever amount of money is supplied to them. Such a region is called the Liquidity Trap region, which can be shown as the E″LP in the Fig. 5.1. The LP curve is perfectly elastic at r'' indicating 'absolute liquidity preference' (see the horizontal portion of the LP curve). In the liquidity trap region, monetary policy is completely ineffective as any increase in money supply results in no change in interest rates or investment.

Check Your Progress 3

1. What is Keynesian theory of demand for money?

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2. Derive the liquidity preference curve.

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3. How do credit cards affect the demand for money?

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5.5 DETERMINATION OF EQUILIBRIUM INTEREST RATE

We found in the previous section that demand for money comes from transaction, precautionary and speculative motives. The total demand for money is the sum of money demand arising from all three motives. The transaction and precautionary demand for money depends on the income level and not on the interest rate, whereas the speculative demand for money depends on the interest rate. Hence, money demand is an increasing function of income (or transactions), but decreasing function of interest rate due to the speculative nature of demand. Let demand for money be denoted by M_d, income by Y and rate of interest by r. Now the money demand function is given by

$$M_d = L(Y, r) \quad \ldots (5.8)$$

The M_d curve is drawn for a given level of nominal income. It depicts the tradeoff between the demand for money and the rate of interest.

The money supply M_s is determined by the central bank. At equilibrium, money supply is equal to money demand. That is,

$M_s = M_d$, or

$$M_s = L(Y, r) \quad \ldots (5.9)$$

The money market equilibrium is depicted in Fig. 5.2 below. The demand for money is negatively sloped and the supply of money is fixed by the central bank. At r^*, demand for money is equal to the supply of money. At this interest rate, given a level of nominal income, people are willing to hold an amount of money equal to the existing money supply. At interest rates below r^*, demand for money exceeds the money supply. Thus, interest rate has to rise so that demand for money decreases in order to equate money supply The rise in the rate of interest leads to increase in the demand for bonds and decrease in the money demand. At interest rates above r^*, the money supply exceeds the demand for money.

Thus, interest rate has to decline so that demand for money increases, and equilibrium between demand for and supply of money is achieved.

Any divergence from r^* tends to autocorrect itself through the mechanism of money supply and money demand.

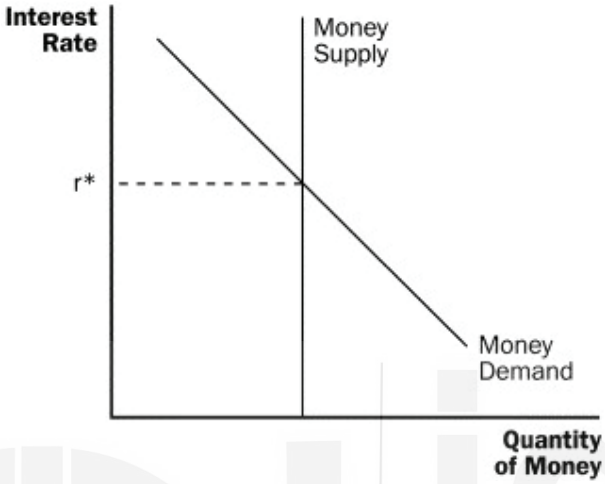

Fig. 5.2: Money Market Equilibrium

We now examine how changes in nominal income or money supply affect the money market equilibrium. For a given interest rate r_1, increase in nominal income shifts the money demand curve to the right, which is shown in Fig. 5.3 below. That means M_1 shifts to MD_2. At r_1 interest rate with the new demand curve MD_2 there is excess demand for money. This leads to increase in the interest rate r_2 establishing the new equilibrium at given money supply.

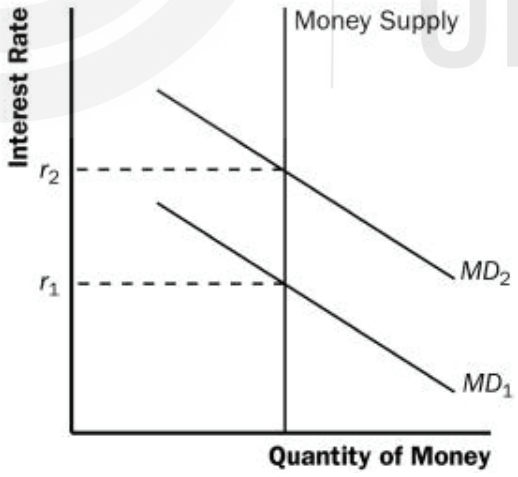

Fig. 5.3: Effect of Increase in Nominal Income

The changes in monetary policy of an economy affect money supply. With given money demand, an increase in money supply shifts the money supply curve to the right from $MS_1$to MS_2 as presented in Fig. 5.4.

At the initial interest rate r_1 with the new money supply MS_2 there is excess supply of money. This leads to fall in the interest rate to attain the new equilibrium at r_3 , where MS_2 and MD intersect each other.

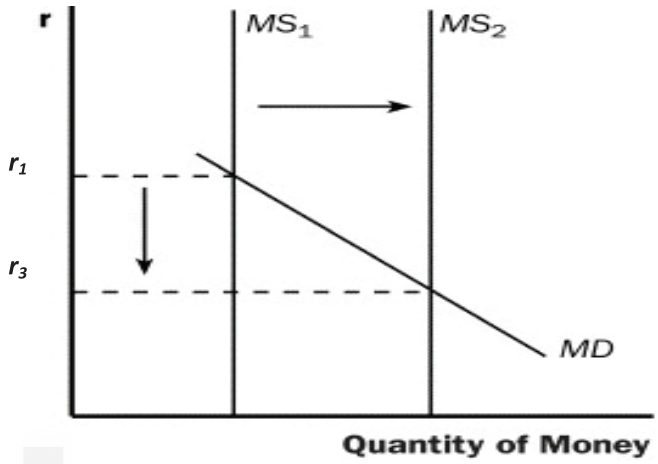

Fig. 5.4: Effect of Increase in Money Supply

Check Your Progress 4

1. Explain how equilibrium is attained in the money market. How does an increase in nominal income affect the money market equilibrium? How does an increase in money supply affect the money market equilibrium?

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2. Given that M_d = Y (0.35 – i) and Y = 60,000
   a) Find the demand for money when the interest rate is 10 per cent.
   b) If Y decreases by 50 per cent, what happens to money demand in percentage terms?

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3. Given that M_d = Y (0.25 – i), $M_s = 20$ and Y = 100.
   a) Find the equilibrium interest rate.
   b) At what level should the money supply be set if the central bank wants to increase interest rate by 10 per cent?

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5.6 LET US SUM UP

In this unit we learnt the relationship between money supply and price level through the two approaches of the Quantity Theory of Money, viz., Fisher's approach and Cambridge approach. The basic conclusion of these approaches is the same: an increase in money supply results in proportionate increase in the price level. Also, we learnt about the money demand. There are three motives for people to hold money, viz., transaction motive, precautionary motive, and speculative motive. Money demand function is a decreasing function of interest rate and it is constructed for a given income level. Money supply is fixed by the central bank. Intersection of money demand and money supply results in equilibrium in the money market. An increase in nominal income increases the interest rate, while an increase in money supply decreases the interest rate.

5.7 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1. The average money holding decreases, *k* decreases and V increases.
2. It shifts rightward.

Check Your Progress 2

1. Refer to Sections 5.2 and 5.3
2. Refer to Section 5.3

Check Your Progress 3

1. Refer to Section 5.4.
2. Use Fig. 5.1 for the explanation.
3. People using credit cards can make the payments (or clear all their bills) at the end of the month rather than each time they undertake a transaction. Hence, credit cards reduce the average money holdings, thereby reducing the demand for money.

Check Your Progress 4

1. Refer to Section 5.5 and use Fig. 5.2, Fig. 5.3, and Fig. 5.4.

2. (a)15000

   (b) Money demand also decreases by 50 per cent.

3. (a) we have M_d = Y (0.25 – i), $M_s = 20$ and Y = 100.

   As per the equilibrium condition, 100 (0.25– i) = 20.

   Thus, i = (25 – 20)/100 = 5 per cent.

   (b) For the equilibrium interest rate to be doubled from 5 % to 10%, money supply should be reduced from 20 to 15.

   100 (0.25 – 0.1) = 20 + x. So x = (15 – 20) = – 5.

UNIT 6 MONETARY POLICY*

Structure

6.0 OBJECTIVES

After going through this unit, you should be in a position to

- describe the role of a central bank;
- explain the types of monetary policy pursued by central banks;
- identify the objectives of monetary policy; and
- explain the various tools or instruments of conducting monetary policy.

6.1 INTRODUCTION

In Unit 5, we learnt how an increase in money supply leads to a decrease in the rate of interest. Decrease in interest rate leads to increase in investment, which in turn leads to increase in aggregate demand, and growth in the GDP of the economy. A very low rate of interest however would discourage people from keeping their savings in financial institutions such as banks. The concept of 'liquidity trap', as we discussed in Unit 5, may operate at a very low rate of interest. On the other hand, a high rate of interest will increase the cost of borrowing (thus cost of production), thereby reducing the demand for credit, which in turn will reduce the level of investment and economic growth.

Further, looking from the supply side, adequate supply of money facilitates smooth functioning of the economy while excessive money supply may lead to inflation. Thus, from a monetary policy perspective, it is important to decide upon the quantity of money to be supplied since it has repercussions on the rate of interest which affects the goods market and aggregate demand. It also has implications on price stability and inflation. In this Unit we will discuss why and how the supply of money and demand for credit are managed in an economy.

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Demand for and supply of money are regulated by certain monetary authority, usually the Central Bank of the country. The Central Bank of a country, as you know by now, has several functions to perform. Traditional functions of a central bank such as the 'bankers' bank' (i.e., the apex bank of a country) and 'lender of last resort' still applies. However, many more functions pertaining to stabilization of the economy and overall development of the country have come up. In India, the Reserve Bank of India (RBI) is the apex bank of the country to monitor and regulate the supply of money and demand for credit. In doing so, the RBI like other central banks takes into account factors such as economic growth, price stability, easy access to credit, and smooth functioning of the economy. Monetary policy is carried out by changing several policy instruments as we will learn later in the Unit. According to the RBI, it has the following functions:

(i) Formulation of monetary policy;

(ii) Regulation and supervision of the banking and non-banking financial institutions;

(iii) Regulation of money, foreign exchange and government securities markets as also certain financial derivatives;

(iv) Debt and cash management for Central and State Governments;

(v) Management of foreign exchange reserves;

(vi) Foreign exchange management – current and capital account management;

(vii) Banker to banks;

(viii) Banker to the Central and State Governments;

(ix) Monitoring of the payment and settlement systems;

(x) Currency management;

(xi) Developmental role; and

(xii) Undertaking research and collection of statistics.

Along with structural changes of the economy over time, monetary management of the economy has become very important. The RBI designs and implements the regulatory policy framework for banking and non-banking financial institutions with the aim of providing people access to the banking system, protecting depositors' interest, and maintaining the overall health of the financial system. Along with these, management of public debt, management of foreign exchange rate and foreign exchange reserve, determination of interest rate, maintenance of inflation rate, and facilitation of high economic growth have become quite complex.

6.2 OBJECTIVES OF MONETARY POLICY

Monetary policy is a mechanism through which the supply of and demand for money in an economy are regulated. Such regulations on supply of and demand for money are expected to fulfill the objectives of monetary policy. We will discuss about the objectives or goals of monetary policy in this Unit.

You should note that there is a difference between *objectives* and *targets* of monetary policy. Objectives of monetary policy indicate the direction in which the policy variables should be aimed at, viz., reducing inflation, achieving full employment, realizing higher economic growth. On the other hand, targets of monetary policy are the variables targeted such as money supply, bank credit, and short term interest rates through the instruments of monetary policy.

A central bank could have a single objective or multiple objectives to follow. The primary objective of most central banks today is price stability. Price stability does not mean that there should not be any price rise in an economy. Rather the objective is to have moderate inflation. Very often, many countries, have come up with monetary policy that targets inflation rate. Such inflation targeting is followed in India also (we will discuss about inflation in detail in the next two units). Inflation targeting was introduced for the first time in 1990 in New Zealand.

Subsequently many countries such as Canada, United Kingdom, Sweden, Australia, Chile, Poland, etc. adopted inflation targeting as the objective of monetary policy during the 1990s. India formally changed the RBI Act and adopted inflation targeting in 2016. Accordingly, the target variable for monetary policy in India is an inflation rate of 4 per cent. The RBI formulates monetary policy in such a manner that inflation rate remains in the range of 2 per cent to 4 per cent per annum.

Prior to 2016, since 1998, India pursued multiple indicators as objectives of monetary policy. Under this approach the RBI considered a number of target variables such as money, credit, output, trade, capital flows, fiscal deficit, inflation rate and exchange rate. We elaborate on some of the major goals of monetary policy in an economy, so that you get an idea of their importance.

1. Higher Economic Growth

An important objective of the monetary policy is to realize high economic growth. Economic growth leads to higher per capita income and higher standard of living for people. As pointed out earlier, higher investment is crucial for accelerating economic growth. An expansionary monetary policy decreases the rate of interest and increases investment and output, thus increasing the rate of growth of the economy.

2. Full Employment Level

Another important objective of an economy is provision of employment to people. We observe that unemployment of resources, including human resources, exists in an economy. Further, during recessionary periods, the level of unemployment increases. Thus there is a need to formulate policies that generates employment and takes the country towards full employment. At full employment level of output or potential output, all the factors of production (including labor) are fully employed. However, this does not imply that there is no unemployment. Essentially, full employment is associated with a positive rate of unemployment due to people switching jobs. Such an output is also called full-capacity output. Monetary policy can help in realization of full-capacity output by influencing aggregate demand.

3. Price Stability

Price stability, as mentioned earlier, does not mean that prices should remain constant; it means that the price increase should be moderate. The objective of price stability may be in conflict with other objectives such as economic growth and full employment. Any increase in aggregate demand via an expansionary monetary policy is typically inflationary. If there is shortfall in aggregate demand, there could be a tendency towards deflation in the economy. Monetary policy should aim to avoid both inflationary and deflationary situations.

4. Exchange Rate Stability

Monetary policy could affect the balance of payments of an economy via the interest rate channel. Interest rate plays an important role in foreign investment in the economy. If there is a decline in the rate of interest, it may result in capital outflows. Consequently, the demand for foreign currency increases and this results in the depreciation of domestic currency. Depreciation of currency may have several consequences – value of domestic currency declines in terms of foreign currency; foreign goods become more expensive; and import of essential commodities such as raw materials and inputs may decline which results in decrease in GDP. As domestic goods and services become cheaper in terms of foreign currency (due to depreciation), exports of the country may increase which improves the balance of payments position. The final outcome however depends on several factors such as elasticity of imports and exports, and global economic environment (recession, wars, global price levels, etc.).

Check Your Progress 1

1. What are the various objectives of monetary policy?

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2. Explain the importance of monetary policy in view of the conflicting objectives of an economy.

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6.3 INSTRUMENTS OF MONETARY POLICY

The instruments of monetary policy to control credit are divided into two categories, viz., Quantitative and Qualitative. Quantitative measures are non-discriminatory in nature, say for example, when a certain interest rate is set by the central bank of a country, that rate applies to the banking system of the country as a whole. In contrast, Qualitative / Selective measures vary from one section of society to the other.

6.3.1 Quantitative Instruments

The important quantitative credit control instruments of the monetary policy are as follows:

- Repo Rate
- Bank Rate
- Open Market Operations
- Change in Minimum Reserve Ratio
- Change in Liquidity Ratio

a) Repo Rate

The most noticed and significant instrument of monetary policy is the repo rate. It is the rate at which commercial banks borrow money from the RBI on submission of collateral such as securities. Similarly, commercial banks can deposit their excess reserves in the central bank for which the 'reverse repo rate' is applicable. The repo rate is periodically decided by the RBI. Other rates, such as reverse repo rate, bank rate, and marginal standing facility (MSF) rate get automatically adjusted as a fixed percentage above repo rate.

The RBI uses repo rate to manage inflation, economic growth and balance of payments. When inflation rate is high, the RBI can increase repo rate so that interest rates increase, leading to decline in aggregate demand. On the other hand, the RBI can decrease repo rate when economic growth is sluggish.

The banks are allowed to borrow from RBI at repo rate under the Liquidity Adjustment Facility (LAF). Deposit of excess liquidity with RBI is also made under the LAF. This arrangement helps the bank to manage liquidity pressure and resolve short term cash shortages. In addition to the LAF, the RBI has 'Marginal Standing Facility' (MSF), which facilitates provision of overnight loans to commercial banks. The objective is to meet unanticipated shocks such as large scale withdrawal of cash by customers. The MSF thus receives a penal interest rate above the repo rate.

b) Bank Rate

Bank rate is the rate of interest at which the central bank provides loans to commercial banks and other financial institutions.

Increase in bank rate has the effect of increasing the rate of interest in the economy. Similarly, decrease in bank rate lowers the rate of interest in the economy. Higher bank rate lowers the extent of credit creation in the economy which leads to a decline in aggregate demand and hence lower prices. On the other hand, in a recessionary phase a lower bank rate is proposed.

It is difficult to predict the impact on change in bank rate on bank borrowings. This is because bank rate itself is not the key lending rate, though is does form the basis for the multiplicity of RBI's lending rates charged for different types of advances. The impact of change in bank rate on bank's borrowings depends on various factors such as (a) the degree of bank's dependence on borrowed reserves, (b) the sensitivity of the banks' demand for borrowed reserves to the differential between their lending rates and borrowing rates (c) the extent to which other rates of interest have already changed or change subsequently (d) the state of the demand for loans and the supply of funds from other sources, etc. Banks are not discouraged from borrowing in the face of higher bank rates if the market interest rates are high such that banks expect higher returns from borrowed funds.

There is a subtle difference between repo rate and bank rate. Financial institutions can borrow from the RBI at the bank rate without submission of any collateral. On the other hand repo rate is charged for re-purchase of securities issued by the RBI. Further, bank rate is higher than repo rate.

c) Open Market Operations

The central bank exercises control over the money supply through sale and purchase of government securities. The term 'open market operations' (OMO) refers to the sale/purchase of government securities by the central bank to/from the public and banks. While purchase of government securities in open market increases the high powered money (H), an open market sale of government securities decreases H by an equal amount.

Following the change in 'H', the usual money multiplier (mm) (see Section 4.5, Unit 4) process leads to change in money supply (M). In order to follow a contractionary monetary policy to check inflation, the central bank decreases money supply by selling securities. In a situation of falling prices, the central bank buys securities for increasing the money supply in the economy. Such an expansionary monetary policy helps in boosting aggregate demand and reviving the economy from recession.

Open market operations are flexible and reversible in time. Hence, it is considered to be an efficient instrument of monetary control. Moreover, unlike bank rate and reserve requirements, it is free from 'announcement effects' as no prior public announcement has to be made to conduct these operations. The direct effect on H is immediate and the amount of H created or destroyed is precisely determinable. There are indirect effects also such as interest rate changes.

Purchase and sale of securities in the open market by the central bank or the monetary authority is popularly known as open market operations. In order to contract the credit in the economy, the central bank sells securities in the open market. This leads to fall in aggregate demand and reduction in price level. Whereas, when credit is to be expanded, there is purchase of securities by the central bank in the open market. This leads to increase in aggregate demand and production levels in the economy.

d) Cash Reserve Ratio

A certain fraction of total assets is always kept by banks as cash partially to comply with the statutory reserve requirements and partially for meeting day-to-day cash payments. Cash is held as 'cash on hand' and as cash balances with the central bank. These are known as cash reserves of banks which are classified as 'required reserves' and 'excess reserves'.

Banks are statutorily required to hold cash balances with the central bank. In India, the RBI has the power to impose statutorily 'cash reserve ratio' (CRR) on banks anywhere between 3-15 per cent of the net demand and time liabilities. A higher CRR implies lower liquidity in the system. Thus when the central bank plans to increase liquidity in the economy, it decreases the CRR and vice versa.

Cash Reserve Ratio varies across countries. For example, in 2019, it is as high as 45 per cent in Brazil and as low as 1 per cent in the European Union. In India, as on April 2019, the CRR was 4 per cent. Further, CRR varies over time for the same country, depending upon the economic environment.

Banks also hold excess reserves, apart from required reserves. These are held in excess of required reserves. These excess reserves are used to meet the currency drains, i.e., the net withdrawal of currency by depositors, and clearing drains which is the net loss of cash due to cross clearing of cheques among banks. Large part of excess reserves is held as cash on hand, remaining small part is held as excess balances with the RBI.

By varying the reserve requirements, the RBI uses the CRR as a tool of controlling money supply. When CRR is raised, banks hold larger cash balances with the RBI. Since reserves are a part of 'H' or high powered money, this essentially means that a part of H is withdrawn from the public equaling the amount of additional reserves impounded. On the other hand, lowering of CRR amounts to a virtual increase in H, which results in an increase in money supply 'M'. In this manner, the CRR serves as an instrument of monetary control. In case of inflation, CRR is increased, thus decreasing the lending ability of banks. Alternately, by lowering the CRR, credit expansion by banks increases.

e) Statutory Liquidity Ratio

Besides CRR, banks are also required to meet the statutory liquidity ratio (SLR) requirements. The RBI Act stipulates that banks are required to hold a certain fraction of their demand and time liabilities in the form of "liquid assets in their own vault".

This is called the "Statutory Liquidity Ratio". Liquid assets include cash, gold and approved securities, mainly the government securities. Banks prefer government securities as they earn interest income. The central bank uses SLR to check the money supply in the economy. Increasing SLR decreases liquidity in the economy and vice-versa. As on July2019, the SLR rate in India is 18.75 per cent. However, CRR is more actively used by the RBI to manage liquidity in the economy.

6.3.2 Qualitative Instruments

Qualitative instruments may not lead to changes in volume of money in the economy. These policy instruments are used for discriminating between different uses of credit. Thus these instruments are used for regulating credit for specific purposes. Some of the instruments are as follows:

a) Selective Credit Control

Selective Credit Control relates to qualitative method of credit control by the central banks. The central bank can take steps to channelize credit to priority sectors. Similarly, it can impose restrictive measures on credit to certain sectors. In India, such controls have been used to check speculative hoarding of essential commodities such as food grains to check their price rise. When credit flow for purchasing and holding such stocks is restricted, traders increase the market supply of these commodities and their prices do not increase as much. Hence, selective credit controls help in moderation of inflation. You will find several examples of selective credit control in the Indian case. Credit extended to agricultural sector and small scale industries are instances of selective credit control.

b) Margin Requirements

The margin refers to that part of the loan amount which the bank does not finance. For example, if you approach a bank for financing a loan towards purchase of a house, the bank will not provide loan for the full amount – it may provide loan for about 80 to 85 per cent of the purchase value. An implication of the above is that 15 to 20 per cent of the purchase value should be financed from own funds.

A higher margin on loan discourages borrowing. By changing the margin requirements, the central bank can encourage credit flow to certain sectors while restricting it to others. For instance, in order to encourage priority lending to certain sectors, the government may reduce margin requirements.

c) Credit Rationing

In order to restrict credit to certain sectors, the central bank may ration credit by putting certain limit on the amount the bank can lend to particular sector or section of society. Through rationing of credit, the central bank can perform the following tasks:

- It can decline loan to a particular commercial bank
- It can ask commercial banks to extend certain percentage of credit to priority areas such as agriculture or small scale enterprises.

d) Moral Suasion

Central bank persuades other banks to comply with its policy stance through discussions, letters and speeches. This is known as moral suasion. Moral suasion can be employed for both qualitative and quantitative credit control. RBI can urge banks to keep a large fraction of their assets in the form of government securities. It can also discourage banks from borrowing excessively during inflationary periods. These measures help control money supply. Moral suasion is also used for controlling the distribution of bank credit.

e) Direct Action

Sometimes, the RBI can directly take action against a bank which is not following its directives and conforming to the broad monetary policy goals. For example, the RBI may refuse rediscount facilities to such banks or it may charge a penal rate over and above the bank rate.

Central banks use a mix of different tools for monetary control. Bank rate, reserve requirements, open market operations and selective credit controls measures should be adopted simultaneously.

Check Your Progress 2

1. Distinguish between bank rate and repo rate.

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2. What is meant by Liquidity Adjustment Facility?

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3. Distinguish between quantitative and qualitative measures of credit control.

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6.4 MONETARY POLICY IN INDIA

The policy targets and instruments of the RBI have changed over the years in line with domestic requirements and global structural changes. In the beginning years, the Indian economy was in the early stage of development. Thus, there was a strong need for building infrastructure and enhancing production capacity. During this phase fiscal policy (use of government revenue and expenditure) was found to be more important than monetary policy.

In an effort to incur more public expenditure, the government usually ran into very high levels of fiscal deficit. These deficits were financed by ad hoc treasury bills or borrowings from public sector banks. Such a method of financing the deficits was very often inflationary; more so during the 1980s. In order to curb this tendency, the monetary policy framework changed in 1986 to target the growth in money supply, particularly M3. After the economic reforms of 1991, the RBI's role underwent a significant change. Steps were taken to curb the monetization of fiscal deficit. Say for example, by 1997 the ad-hoc treasury bills were completely phased out. However, monetization of fiscal deficit continued through primary issue of public debt in auctions. In order to stop these methods of deficit financing, in 2006, the RBI was not allowed to subscribe to the primary issue of public debt. Since 2016, as mentioned earlier, the sole objective of monetary policy in India is inflation targeting, at 4 per cent per annum, with a tolerance band of 2 per cent.

In April 1999, on the recommendations of the Narasimham Committee (second committee), Interim Liquidity Adjustment Facility (ILAF) was introduced. Repo and reverse repo rates emerged as the primary policy rates of the RBI and the significance of CRR and SLR as instruments of RBI to manage liquidity got reduced. However, the ILAF suffered from non-existence of a ceiling rate and no unique policy rate. Hence, since May 2011 the repo rate has become the only independently varying rate under the Revised Liquidity Adjustment Framework (RLAF).

In 2016, inflation targeting became the sole objective of monetary policy in India. The Monetary Policy Framework Agreement (MPFA) was signed between the Government of India (GOI) and the RBI to regulate inflation and bring it below 4 percent in financial year 2016-17.

In case of failure on the part of the RBI to comply with the above targets, it is accountable to the government, and suggest reasons and remedies to achieve the same in future by a specified date.

6.5 QUANTITATIVE EASING

As you have learnt from Unit 5, when the rate of interest is very close to zero, the economy enters the liquidity trap region. There could be situations where the interest rate is low, and the economy is passing through a recession. In such a situation, there is little scope for further reduction in interest rate; else the economy would go on to a liquidity trap state. Here, monetary policy is ineffective and the central bank measures to increase money supply fails. People are willing to hold whatever amount of money is supplied to them, which leads to low level of saving in the economy. As a result of low level saving, the level of investment is low. As you will see in Unit 9, due to low level of investment, there is a decline in aggregate demand.

In order to circumvent the problem of low interest rate and consequent liquidity trap syndrome, many central banks resort to a different strategy to boost economic activity. Here, aggregate demand stops responding to very low interest rates and consequently, a different policy is sought. Money is directly pumped into the financial system through a process known as 'quantitative easing', which is also known as *asset purchase scheme*. Instead of printing money, the central bank creates electronic money, which is used to purchase bonds and securities from financial institutions such as banks. When the banks get more liquidity than what they require as reserves, they make a profit by lending out the excess reserves.

With quantitative easing, there is an increase in the demand for bonds and securities. The market price of these bonds increases, which is likely to activate the bond market and stock markets. With the increase in stock prices, there is a perception among people that their income and wealth has increased. This is like to boost aggregate demand through increase in consumption expenditure. Further, increase in bond prices means a decline in their yields. Lower yields decrease the cost of borrowing for business which in turn leads to increase in spending and expands economic activity. This is likely to accelerate investment in the economy. Banks and financial institutions have more usable funds (due to injection of funds by the central bank) resulting in increased lending and boosting business investment and economic activity. When the economy recovers, the central bank sells these assets and sterilizes the cash it receives from the sales. So there is no additional money remaining in the system.

The goal of quantitative easing is to inject liquidity into the banking system, so that banks can lend money to boost economic activity. Quantitative easing aims to increase aggregate demand while keeping inflation within target bounds. However, there is a danger of increased inflation through this process.

Amidst the 2008 financial crisis, policy makers were looking for ways for stabilizing the world economy. One response which emerged in the UK and the US was 'quantitative easing'.

Both US Federal Reserve and the Bank of England adopted 'quantitative easing' in the aftermath of this crisis. Japan's central bank first tried 'quantitative easing' to control deflation in the Japanese economy in the 1990s.

Check Your Progress 3

1. Bring out the major changes in monetary policy framework in India.

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2. Explain how 'quantitative easing' works.

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3. What is the primary objective of monetary policy in India?

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6.6 LET US SUM UP

Monetary policy pertains to management of the supply of money and demand for credits. The objective of such controls is to achieve certain goals set for the economy. The objectives of monetary policy are attained through certain policy instruments. The policy instruments could be quantitative or qualitative in nature. The quantitative tools are repo rate, bank rate, open market operations, reserve requirements, etc. The qualitative tools are selective credit controls, moral suasion, etc. In a liquidity trap like situation, however, the usual instruments do not work. Hence, central banks can adopt quantitative easing which injects liquidity in the banking system and lowers the lending rates of banks.

6.7 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1. The various objectives of monetary policy could be price stability, higher economic growth, full employment and stable exchange rate. See Section 6.2 for details.
2. Refer to Sections 6.2 and answer. You should point out how various objectives conflict with one another. You may consider the impact of decrease in interest rate on various objectives – in what directions it influences economic growth, unemployment, price stability and balance of payments.

Check Your Progress 2

1. Repo rate is the rate of interest charged by the central bank on commercial bank for short term borrowings against submission of collateral. Bank rate is the rate of interest charged by the central bank on commercial bank borrowings. Bank rate is higher than repo rate.
2. Short term borrowings (in case of shortage of liquidity) and deposits (in case of excess reserves) by commercial banks with the RBI are arranged through the Liquidity Adjustment Facility (LAF).
3. Quantitative measures affect money supply; qualitative measures do not. Quantitative measures are universal; qualitative measures are sector specific. Refer to Section 6.3 for details.

Check Your Progress 3

1. Refer to Section 6.4 and answer.
2. Refer to Section 6.5 and answer.
3. Inflation targeting.