UNIT-IV

MONEY AND BANKING

CHAPTER 7

MONEY AND BANKING

Money plays an important role in the economic system — we see the use of money at every step of life — indeed it would be hard to imagine life without money! The main function of money in an economic system is to facilitate the exchange of goods and services, i.e. to lessen the time and effort required to carry on trade.

Imagine Robinson Crusoe living alone on an island. He produces all the goods and services he requires for his consumption. Of what use is money to him? He cannot eat it, wear it or use it to exchange goods and services with others — remember he is alone on the island.

Now suppose that he is joined on the island by ten of his friends. All eleven of them would be engaged in the production of the goods and services they require for their consumption. It is likely that each one of them would be proficient in the production of one particular good and only average in the production of the others. It would be advantageous to the group as a whole if each one specialised in the production of the good or service in which he or she was most proficient. This specialisation would result in a supply of goods and services of the best possible quality under the circumstances.

The need would then arise for each one to exchange his or her good or service for the goods and services of the others. How would they exchange the goods and services? The simplest possible method would be to directly exchange one commodity for another. This exchange of 'goods for goods' is called *barter exchange*. In the above limited context of exchange between only eleven people, barter exchange could take place with minimum loss of time and effort. Let us call this economy the *C-C economy*, i.e. commodity for commodity exchange economy.

As the group becomes larger and larger, problems begin to emerge with this direct exchange of goods for goods. The larger the group, the greater will be the *trading costs* of barter exchange. Trading costs are nothing but the cost of engaging in trade. There are two components of trading costs. One is the *search cost* – the physical cost of

searching for a person willing and prepared for the exchange of goods (it can be thought of as the *opportunity cost* of not producing more goods in the time spent searching, or it may be thought of as the cost of the deterioration in the good and its adverse effect on its desirability during the time spent searching). The second component is the *disutility* of waiting as perceived by the individual during the search period. More time and effort will have to be spent in searching for the person who both needs the good you have more than anything else and has the good that you need more than anything else, simply because there are now more people to canvass. The longer you spend searching for such a person, the greater will be the search cost.

A possible solution to this problem would be to use a commonly accepted good as the medium of exchange. The medium of exchange has to be commonly accepted in order to facilitate exchange. This will reduce the trading cost substantially by removing the necessity of simultaneously finding the preferred buyer with the preferred commodity. This simultaneous fulfilment of mutual wants by buyers and sellers is known as *double coincidence of wants*. It is the difficulty of coming across double coincidence of wants that makes direct barter (direct exchange of goods for goods) inefficient in large groups. In the past many communities have used articles such as seashells, pearls, precious stones, livestock, etc. as medium of exchange.

However, even this system will not reduce to the maximum possible extent the difficulties and costs of commodity exchange. This is because barter has certain inherent deficiencies as will be discussed later in this chapter.

The main purpose of money is then to enable trade to be carried on as cheaply as possible in order to enable the maximum degree of specialisation and therefore, the maximum amount of productivity. Modern economies are highly specialised in their respective field. There is specialisation of firms, of businesses, of regions, of types of capital, etc. Such specialisation allows the utilisation of each person to the best of his or her ability and skill, each region to the maximum advantage, and the use of large amounts of specialised capital to reap economies of scale. The fruits of this are high standards of living and productivity. All this specialisation will not be possible without an equally highly developed system of exchange and trade, i.e. the use of money.

Barter Exchange

Prior to the introduction of money as it is known today, trade was carried out by barter, i.e. exchange of goods for goods[1]. Due to the wasteful nature of barter, the amount of trade that could be carried out by this method of exchange was limited. The utility gained from trade would be outweighed by the utility lost in the

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[1] The following three sections draw on materials from "The Economics of Money and Banking" by Stephen M. Goldfeld and Lester V. Chandler, Harper and Row, 8th Edition, New York, 1981.

process of making the trade. The following will explain the difficulties involved in barter exchange.

The *first* main drawback of barter is the absence of a common unit in terms of which can be measured the values of goods and services. The value of a good or service means the amount of other goods and services with which it can be exchanged for in the market. The lack of a common unit meant that no proper accounting system was possible. The value of each good and service would have to be expressed not just as one quantity but in as many quantities as there are kinds and qualities of other goods and services in the market. If there were 1000 goods and services in the market, then the value of each would have to be expressed in terms of 999 others.

Secondly, under barter there was the lack of 'double coincidence of wants'. It would be a rare occasion when the owner of some goods or services could find someone else who both wanted the former's good or service more than anything else and possessed that good or service that our trader wanted more than anything else. Consider a situation where a person desires to exchange his cow for a bullock cart. His problem is that he has to find a provider of a bullock cart – either new or pre-existing – that matches the required specifications, who wants exactly the kind of cow that the person is offering. This type of chance, discovery of a bullock cart provider would be a rare occurrence. The person would most

likely have to make some intermediate transactions – cow for horse, horse for boat, boat for sheep and finally sheep for the desired bullock cart; or he would have to accept something less desirable than the bullock cart.

Thirdly, the barter system lacks any satisfactory unit to engage in contracts involving future payments. Contracts requiring future payments are commonplace in any exchange economy – we enter into agreements regarding wages, salaries, interests, rents etc. and other prices extending over a period of time. In a barter economy future payments would have to be stated in terms of specific goods or services. This leads to the following problems:

- There could be disagreement regarding the quality of the goods or services to be repaid.
- There could be disagreement regarding which specific commodity would be used for repayment.
- The risk exists that the commodity to be repaid could increase or decrease markedly in value over the duration of the contract, thus benefiting the creditor or the debtor respectively.

Fourthly, the barter system does not provide for any method of storing generalised purchasing power. People can store purchasing power for future use by holding stocks of certain commodities to be exchanged for other commodities later. This holding of stocks of certain commodities is subject to certain problems such as costly storage, deterioration or appreciation in

the value of the stored commodity, or difficulty in quickly disposing of the commodity without loss if the owner wants to buy something else.

Due to the above four disadvantages of the barter system, the exchange process tends to be highly inefficient. It was to overcome these difficulties that money, as we understand it today, was invented by society. This was necessitated by the increasing scale of industrialisation and commercialisation, which warranted the monetisation of transactions.

Functions of Money

Money performs four specific functions, each of which overcomes the difficulties of barter. The functions of money are to serve as: (1) a unit of value, (2) a medium of exchange, (3) a standard of deferred payments and (4) a store of value.

Money as a Unit of Value

The first function of money is to be a unit of value or a unit of account. The monetary unit is the unit in terms of which the value of all goods and services is measured and expressed. The value of each good or service is expressed as a *price*, which is the number of monetary units for which the good or service can be exchanged. If the price of a pen is Rs.10 then a pen can be had in exchange for ten monetary units (where the monetary unit in this case is the rupee).

Measuring values in monetary units helps in measuring the exchange values of commodities. If a pen is worth Rs.10 and a notebook is worth Rs.20 then a notebook is worth two pens. Further, accounting is simplified, as all items will be recorded in terms of monetary units that can be added and subtracted.

Money is a useful measuring rod of value only if the value of money itself remains constant. This is similar to saying that a scale is a useful measure of length only if the length of the scale itself is constant. The value of money is linked to its purchasing power. Purchasing power is the inverse of the average or general level of prices as measured by the consumer price index etc. As the general price level increases, a unit of money can purchase a lesser amount of goods and services – so the value or purchasing power of money declines. So, money will be a useful unit of value only as long as its own value or purchasing power remains constant.

Money as a Medium of Exchange

Money also acts as a medium of exchange or as a medium of payments. This function of money is served by anything that is generally accepted by people in exchange for goods and services. 'Anything' has been quite a variety of things across places and times. Some of the things that have served as money are – clay, cowry shells, tortoise shells, cattle, pigs, horses, sheep, tea, tobacco, wool, salt, wine, boats, iron, copper, brass, silver, gold, bronze, nickel, paper, leather, playing cards, debts of individuals, debts of banks, debts of governments, etc.

Money will then reduce the time and energy spent in barter. The person who owned a cow can now simply sell it to

the person who offers the most money for it and then buy the bullock cart from another person who offers him the best bargain. Ultimately, all trade may be considered barter – one good or service is traded for another good or service – either directly, or indirectly with money acting as the intermediary. However, by acting as an intermediary, money increases the ease of trade.

Money is also called a *bearer of options* or *generalised purchasing power*. This indicates the freedom of choice that the use of money offers. The owner of the cow need not procure goods and services from those to whom he sold his cow. He can use the money to buy the things he wants most, from those who offer him the best bargain (not necessarily those who bought his cow), at the time he considers most advantageous (not necessarily immediately). Again, this function can only be performed properly if the value of money remains constant.

Money as a Standard of Deferred Payments

If money performs the previous two functions then it may also perform the function of being the unit in terms of which deferred or future payments are stated. Examples of situations where future payments are to be made are pensions, principal and interest on debt, salaries etc. As long as money maintains a constant value through time, it will overcome the problems associated with making future payments with specific commodities.

Money as a Store of Value

If money becomes a unit of value and a means of payment then it may also perform the function of serving as a store of value. The holders of money are holders of generalised purchasing power that can be spent through time. They know that it will be accepted at any time for any good or service and is thus a store of value. This function will be performed well as long as money retains a constant purchasing power.

It may be noted that any asset other than money may also perform the function of store of value, for example, bonds, land, houses, etc. These assets have the advantage that, unlike money, they yield income and may appreciate in value over time. However, they are subject to the following: (1) they may involve storage costs, (2) they may not be *liquid* in the sense that they could not be quickly converted into money without loss of value, and (3) they may depreciate in value. A person may choose to store value in any form depending on considerations of income, safety and liquidity.

Definitions of Money

After considering the functions of money, we must now decide what things are to be considered as money, i.e. we must define what money is. The various types of definitions of money are as follows:

Legal Definitions of Money

The statement that 'money is what the law says it is' would sum up such a definition. A thing will have general

acceptability if the law proclaims it as money. It may be further endowed with *legal tender* power, i.e. it has the legal power to discharge debts, and a creditor who refuses, it is not legally entitled to receive anything else in payment of an existing debt.

Currency, being legal tender, is also called *fiat money* because it serves as money on the fiat (order) of the government. This is not true of deposit money. Demand deposits of banks are *fiduciary money* because they are accepted as money on the basis of the trust that their issuer commands. A person can however legally refuse to take payment through cheques because there is no guarantee that a cheque will be honoured by the issuer's bank. A cheque is an instrument that instructs the bank to transfer funds from the cheque issuer's account to the cheque receiver.

However, legal definitions of money are not the only determinants of what things serve as money. For example, people may not prefer legal tender in payment and refuse to sell goods and services to those offering it. On the contrary, things that are not legally defined as money for example, cheques may be generally acceptable as a means of payment. Today, credit cards can also be placed in this category.

Functional Definitions of Money

By functional definition, money will include all things that perform the four functions that money does. Two of the functions of money, i.e. a unit of value and standard of deferred payment will not help narrow down the list of things that are included in money. For example, houses could be a unit of value and a standard of deferred payment, but are houses money? They are not, because they are not generally acceptable in payment of debt and for goods and services.

It is commonly accepted that anything that is generally acceptable in payment of debt and as payment for goods and services should be included in the money supply. If a good is in fact generally acceptable in payment and generally used as a medium of payment, it is money, no matter what its legal status may be. In India, the money supply includes coins and paper money, which are together known as *currency*, and deposit money. Currency is generally acceptable and is endowed with legal tender status.

Deposits are moneys accepted by various agencies from others to be held under stipulated terms and conditions. The deposits accepted by banks and post offices only are considered as constituents of alternative measures of money supply.

Narrow vs. Broad Definitions of Money

The narrow definition of money is based upon its medium of payments function. The broad definition of money tried to extend the money category to include some other things that have a high degree of *'moneyness'* and are widely used as a store of value. Thus, also included in broad money would be time and savings deposits at banks and post offices. These financial assets have a

high degree of moneyness or liquidity but are not generally acceptable in payment. We shall see some examples of narrow and broad definitions of money later in the chapter.

Classifications of Money

Money can be classified based on the relationship between the face value of money and the value of money as a commodity (or intrinsic value). The classifications are as follows:

Full-bodied Money: Full-bodied money is money whose value as a commodity for non-monetary purposes is as great as its face value as money. Most of the earlier commodity moneys for e.g. gold, silver, cattle etc. were as valuable for non-monetary purposes as they were for monetary uses. The main full bodied monies in modern economies have been the coins of the standard metal when the economy was on a metallic standard: gold coins in a gold standard, silver coins in a silver standard and gold as well as silver coins when the country was on a bimetallic standard.

Representative Full-bodied Money: This type of money is usually made of paper. It is equivalent to a circulating warehouse receipt for full-bodied coins or their equivalent in bullion. The paper money itself has no value as a commodity, it is after all just a piece of paper, but it represents in circulation an amount of money with a commodity value equal to the value of the money. The advantage of this type of money is that it is convenient to engage in trade which requires large sums of money (imagine carrying huge sacks of gold coins in the case of full-bodied money!).

Credit Money: This refers to money, whose value as money is greater than the commodity value of the material from in which the money is made. How can it maintain a higher value as money than its commodity value? This is done by limiting the quantity of money by preventing the free and unlimited transformation of the commodity into money. The government will fix the quantity of the particular type of money to be issued and buy only as much of the money material as needed for the purpose. The remainder of the supply of that commodity is left for non-monetary purposes. This remaining supply may be so large relative to the demands for non-monetary uses that the market value of the commodity will fall below the value of the money.

Credit money is of various forms:

1. *Token coins*: All our coins (Rs.5, Rs.2, Re.1, 50p, 25p, 20p, 10p, and 5p) are token coins in the sense that their value as money is far above the value of the metal contained in them. If you melt a five rupee coin and sell the metal in the market place you would be extremely lucky to get Rs.5 for it!

2. *Representative Token Money*: This is usually of the form of paper, which is in effect a circulating warehouse receipt for token coins or an equivalent amount of bullion that is backing it. The coin or bullion backing the representative token money is worth less as a commodity than as money, thus making it credit money. For example, if Rs.10000 worth of

representative token money is circulated as paper money in the economy, then Rs.10000 worth of token coins will back it. However, the commodity value of the token coins will be less than Rs.10000, and so will be the value of the bullion if instead of token coins, bullion was backing the representative token money.

3. *Circulating promissory Currency (notes) issued by Central Banks*: This is the greatest part of modern currency, and includes all currency notes in India issued by the Reserve Bank of India. If you look at any note you will see a legend – 'I promise to pay the bearer the sum of Rs. 'X'' — signed by the Governor of the RBI. This is nothing but a circulating promissory note issued by the RBI.

4. *Deposits at Banks*: These deposits in banks e.g. savings deposits, are claims of creditors against banks which can be transferred from one person to another by means of cheques. Since the bank does not back all the chequable deposits it has with an equivalent amount of financial assets or money, these chequable deposits are credit money. We will study how banks may keep less than 100% reserves backing their chequable deposits later in the chapter.

Indian Monetary System

India is at present on the paper currency standard. This standard is also referred to as the managed currency standard.

The term monetary standard refers to the type of standard money used in the economy. The standard money is that legal money in which the government of the country discharges its obligations. The monetary standard is thus synonymous with the standard money adopted by the country's monetary authority. Since India's monetary authority, the Reserve Bank of India (RBI) has adopted a standard currency made of paper, India is on a paper currency standard.

Paper currency is the main currency of the country. It has an unlimited legal tender, i.e. it can be used to settle debts and make payments up to an unlimited amount. For making smaller payments, coins made of cheap and light metals are used. These coins are limited legal tender since they can be used to make payments and settle debts only up to a limited amount. It would be inconvenient to settle a debt of Rs.1000 with 50p. coins!

RBI has the sole right to issue currency notes, other than the one rupee note in the country. The Government of India under the Indian Coinage Act issues the one rupee note and all coins. Though the Government issues the one rupee note and coins, the responsibility for putting them in circulation rests with the RBI.

The system governing note issue in India is the Minimum Reserve System. Paper currency is not convertible into the precious metal (gold) that is backing it; hence the currency is said to be *inconvertible.*

Money Supply

Having defined money we may now list out the things that serve as money.[2] Then, the money supply, i.e. the total stock of moneys of various kinds at any particular point of time can be computed. By repeated measurements at different points of time we may get a time series of the total stock of money. By analysing this time series in conjunction with time series of other economic variables such as incomes, wages, prices, employment, etc. we can hope to understand the effect of money on the other variables in the economy.

It is important to note two things regarding any measure of money supply. First, the supply of money is a stock variable, i.e. it does not have any time dimension – it refers to the total amount of money at any particular point of time. It is not a flow variable in the sense of income, which refers to a rate per unit time, i.e. so many rupees *per year.*

Second, the stock of money always refers to the stock of money held by the public. This is always smaller than the total stock of money in existence. The term 'public' includes all economic units — households, firms, etc. except the producers of money, i.e. the government and the banking system. The banking system includes the Reserve Bank of India and all the banks that accept demand deposits. The reason for such a distinction is to separate the producers or suppliers of money from the holders or demanders of it. This separation is required for monetary analysis.

Measurement of Money Supply

This is an empirical matter. It involves defining various measures of money supply and computing their values. The Reserve Bank of India has been publishing data on four alternative measures of money supply namely, M1, M2, M3 and M4. These are defined as follows:

$$M1 = C + DD + OD$$

C is currency held by the public. It consists of paper currency as well as coins. DD is the 'demand deposits' in banks. Only the net demand deposits of banks are included in money supply because the part of demand deposits that represents inter-bank deposits held by one bank with another does not constitute demand deposits held by the public. Since money supply is defined as money held by the public, we must net out the inter-bank deposits to arrive at net demand deposits in banks.

OD is 'other deposits' with the RBI. These are the deposits held by the RBI of all economic units except the government and banks. OD includes demand deposits of Public Financial Institutions (like IDBI, etc.), foreign central banks and governments, the IMF, the World Bank, etc.

M2 = M1 + savings deposits with post office savings banks

M3 = M1 + net time deposits of banks

M4 = M3 + total deposits with post office savings organisation (excluding National Savings Certificates)

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[2] The following sections draw on material from "Monetary Economics : Institutions, Theory and Policy," by Suraj B. Gupta, 1982.

M1 and M2 are measures of *narrow money*. M3 and M4 are measures of *broad money*. M3 is most widely used measure of money supply. It is also called aggregate monetary resources of the society.

The RBI views the four measures of money stock as representing different degrees of liquidity, with M1 being the most liquid and M4 being the least liquid. Liquidity means the ability to convert an asset into money quickly and without loss of value.

Having defined the measures of money supply, we shall investigate what determines the actual amount of money stock at any point of time, and changes in the money stock over time. Money supply will change if the magnitude of any of its constituents changes. Changes in C, DD and net time deposits of banks cause changes in money stock as measured by M3. We will go into money supply and changes in money supply after looking at the commercial banking system and the Central Bank, as these two are key players in determining the changes in the quantum of money supply.

BANKING

Commercial Banks

Banking is defined as the accepting, for the purpose of lending, or investment of deposits, money from the public, repayable on demand or otherwise and withdrawable by cheque, draft, order or otherwise.

Thus the two essential functions that make banks as Financial Institutions (FIs) are accepting chequable deposits from the public and lending.

Acceptance of chequable deposits is a necessary, but not sufficient condition for FI to be a bank. For example, post office savings banks are not banks in this sense of the term even though they accept deposits from the public. This is because they do not perform the other essential function of lending.

Similarly, lending alone does not make FI a bank. For example, many FIs like LIC, UTI, and IDBI, etc. lend to others but they are not banks in this sense of the term, as they do not accept chequable deposits.

The main *functions* that commercial banks perform are:

1. Acceptance of deposits

The bank accepts three types of deposits from the public.

- *Current Account Deposits*: Deposits in current accounts are payable on demand. They can be drawn upon by cheque without any restriction. These accounts are usually maintained by businesses and are used for making business payments. No interest is paid on these deposits. However, the banks offer various services to the account holders for a nominal charge, the most important being the cheque facility. Only when the ownership of these deposits has been so transferred, the medium of exchange or means of payment function of these deposits gets completed. Banks keep regular accounts of all transactions made in a particular account and submit statements of the same to the account-holder at regular intervals.

- *Fixed/Term Deposits*: These are deposits for a fixed term (period of time) varying from a few days to a few years. They are not payable on demand and do not enjoy chequing facilities. The moneys deposited in such accounts become payable only on the maturity of the fixed period for which the deposit was initially made. Interest is paid on these deposits and the rate of interest rises with the term of the deposits.

  A variant of fixed deposits are recurring deposits. In these accounts, a depositor makes a regular deposit of an agreed sum over an agreed period e.g. Rs.100 per month for 5 years. Interest is paid on the deposits in these accounts.

- *Savings Account Deposits*: These deposits combine the features of both current account deposits and fixed deposits. They are payable on demand and also withdrawable by cheque, but with certain restrictions on the number of cheques issued in a period of time. Interest is paid on the deposits in these accounts but the interest paid on savings account deposits is less than that of the fixed deposits.

  In monetary analysis deposits are classified into two types: demand deposits and time deposits. Demand deposits are payable on demand either through cheque or otherwise. Only demand deposits may serve as a medium of exchange, because their ownership can be transferred from person to person through cheques. All other deposits that are not payable on demand are called time deposits.

All current account deposits are demand deposits and all term deposits are time deposits. The classification of savings deposits is not as straightforward because they combine features of both demand and time deposits. The Reserve Bank of India distinguishes between the demand liability portion of savings deposits (which are included under demand deposits) and the time liability portion of savings deposits (that are included under time deposits). The rule to decide which part of the savings deposits comes under which category is: 'the average of the monthly minimum balances in the savings accounts on which interest is being paid shall be regarded as a time liability and the excess over the said amount shall be regarded as a demand liability.'

2. Giving Loans

The deposits received by the bank are not allowed to lie idle by the bank. After keeping a certain portion of the deposits as reserves, the bank gives the balance to borrowers in the form of loans and advances. The different types of loans and advances made by banks are as follows:

- *Cash Credit* – In this arrangement, an eligible borrower is first sanctioned a credit limit upto which he may borrow from the bank. This credit limit is determined by the bank's estimation of the borrower's creditworthiness. However, actual utilisation of credit by the customer

depends upon his *withdrawing power*. The withdrawing power depends on the value of the borrower's current assets, which comprise mainly stocks of goods – raw materials, semi-manufactured or finished goods, and bills receivable (dues) from others. The borrower has to submit a stock statement of his assets to the bank showing evidence of on-going trade and production activity; and acting as a legal document in possession of the bank, to be used in case of default. The borrower has to pay interest on the 'drawn' or utilised portion of the credit only.

- *Demand Loans* - A demand loan is one that can be recalled on demand. It has no stated maturity. The entire loan amount is paid in lump sum by crediting it to the loan account of the borrower. Thus, the entire loan amount becomes chargeable to interest. Security brokers and others whose credit needs fluctuate day to day usually take these loans. The security against these loans may be personal, financial assets or goods.

- *Short-term Loans* – Short-term loans may be given as personal loans, loans to finance working capital or as priority sector advances. These loans are secured loans, i.e. they are loans made against some security. The whole amount of the term loan sanctioned is paid in lump sum by crediting it to the loan account of the borrower. Thus, the entire loan amount becomes chargeable to interest. The

repayment is made as scheduled, either in one instalment at the end of the loan, or in a number of instalments over the period of the loan.

In addition, commercial banks extend the following facilities when they are requested by their customers.

3. Overdrafts

An overdraft is an advance given by allowing a customer to overdraw his current account upto an agreed limit. The security for overdrafts is usually financial assets of the account holder such as shares, debentures, life insurance policies etc. Overdraft is a temporary facility and the rate of interest charged on the amount of credit used is lower than that on cash credit because the risk involved and service cost of such credit is less – it is easier to liquify financial assets than physical assets.

4. Discounting Bills of Exchange

A bill of exchange is a document acknowledging an amount of money owed in consideration for goods received. For example, if A buys goods from B, he may not pay B immediately. He may give B a bill of exchange, stating the amount of money owed and the time when the debt has to be settled. If B wants the money immediately, he will present the bill of exchange to the bank for *discounting*. The bank will deduct a commission and pay the present value of the bill to B. Upon maturity of the bill; the bank will secure payment from A.

5. Investment of funds

The banks invest their surplus funds in three types of securities – Government securities, other approved securities, and other securities.

Government securities are securities of both the Central and State governments such as treasury bills, national savings certificates etc.

Other approved securities are securities approved under the provisions of the Banking Regulation Act, 1949. These include securities of State sponsored bodies like electricity boards, housing boards, debentures of Land Development Banks, units of UTI, shares of Regional Rural Banks etc.

Part of the banks' investment in government securities and other approved securities are mandatory under the provisions of the Statutory Liquidity Ratio requirement of the RBI. However, banks hold excess investments in these securities because banks can borrow against these securities from RBI and others, or sell these securities in the open market to meet their need for cash. Banks hold them even though the return from them is lower than that on loans and advances because they are more liquid.

6. Agency Functions of the Bank

The bank performs certain agency functions for its customers in return for a commission. The agency services provided by the banks are:

  (i) Transfer of funds – the bank provides facility for cheap and easy remittance of funds from place to place via instruments such as the demand drafts, mail transfers, telegraphic transfers, etc.

  (ii) *Collection of funds* – the bank undertakes to collect funds on behalf of its customers through instruments such as cheques, demand drafts, bills, hundis, etc.

 (iii) Purchase and sale of shares and securities on behalf of customers.

 (iv) Collection of dividends and interest on shares and debentures on behalf of customers.

  (v) Payment of bills and insurance premia as per customer's directions.

 (vi) Acting as executors and trustees of wills.

 (vii) Provision of income tax consultancy and acceptance of income tax payments of customers.

(viii) Acting as correspondent, agent or representative of customers as well as securing documentation for air and sea passage.

7. Miscellaneous Functions

  (i) Purchase and sale of foreign exchange.

  (ii) Issuance of travellers' cheques and gift cheques.

 (iii) Safe custody of valuable goods in lockers.

 (iv) Underwriting activities (agreeing to partly or fully purchase the whole or the unsold portion respectively of new issue of securities) and private placement of securities (selling securities not through the open market, but privately to selected entities).
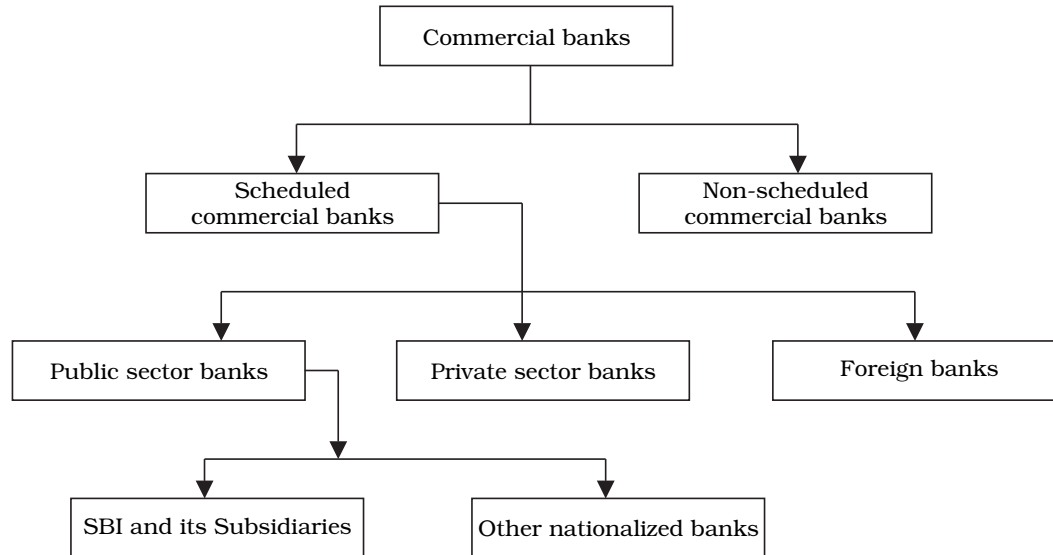
Fig. 7.1: *Schematic Classification of Commercial Banks*

As is evident from the above list, banks provide a wide range of services to their customers.

Under the present economic liberalisation, commercial banks are urged to assume certain roles which are usually outside the purview of typical commercial banking such as development banking, insurance in addition to commercial banking practices.

Figure 7.1 gives a schematic classification of commercial banks.

The Central Bank

The central bank is the apex institution of a country's monetary system. The design and the control of the country's monetary policy is its main responsibility. As pointed out earlier, India's central bank is the Reserve Bank of India.

The Central Bank performs the following functions:

1. Currency Authority

The Central Bank is the sole authority for the issue of currency in the country. All the currency issued by the Central Bank is its monetary liability. This means that the Central Bank is obliged to back the currency with assets of equal value. These assets usually consist of gold coin, gold bullion, foreign securities, and the domestic government's local currency securities.

The country's Central Government is usually authorized to borrow money from the Central Bank. The government does this, by selling local currency securities to the Central Bank. The effect of this is to increase the supply of money in the economy. When the Central Bank acquires these securities, it issues currency. This authority of the government gives it flexibility to *monetize* its debt. Monetizing the government's

debt (called public debt) is the process of converting its debt (whether existing or new), which is a non-monetary liability, into Central Bank currency, which is a monetary liability.

Putting and withdrawing currency into and from circulation are also the job of its banking department. For example, when the government incurs a deficit in its budget, it borrows from the Central Bank. This is done by selling treasury bills to the Central Bank, the latter paying for the bills by drawing down its stock of currency or printing currency against equal transfer of the said securities. The government spends the new currency and puts it into circulation.

2. Banker to the Government

The Central Bank acts as a banker to the government – both Central as well as State governments. It carries out all the banking business of the government, and the government keeps its cash balances on current account with the Central Bank.

As the banker to the government, the Central Bank accepts receipts and makes payments for the government, and carries out exchange, remittance and other banking operations. The Central Bank also provides short-term credit to the government, so that the government can meet any shortfalls in receipts over disbursements. The government borrows money by selling treasury bills to the Central Bank. The government carries on short term borrowing by selling ad-hoc treasury bills to the Central Bank.

As the government's banker, the Central Bank also has the responsibility of managing the public debt. This means that the Central Bank has to manage all new issues of government loans (by advising the government on the quantum, timing and terms of such loans), services the public debt outstanding (by making sure that interest is paid on time and maturing bills are retired by repaying the principal) and nurtures the market for government securities (by ensuring that the market functions smoothly, with adequate supply of all maturities of existing bills and has enough liquidity to pick up the new issues of bills).

The Central Bank also advises the government on banking and financial matters.

3. Bankers' Bank and Supervisor

(Lender of the last report) As the banker to banks, the Central Bank holds a part of the cash reserves of banks, lends them short-term funds and provides them with centralised clearing and remittance facilities. The banks are required to deposit a stipulated ratio of their net total liabilities (the CRR) with the Central Bank. The purpose of this stipulation is to use these reserves as an instrument of monetary and credit control. In addition to this, the bank holds excess reserves with the Central Bank to meet any clearing drains due to settlement with other banks or net withdrawals by their account holders. The pool of funds with the Central Bank serves as a source from which it

can make advances to banks temporarily in need of funds, acting in its capacity as lender of last resort. However, the banks in temporary need of funds are supposed to approach other sources first like the call money market and then only approach the Central Bank.

The Central Bank supervises, regulates and controls the commercial banks. The regulation of banks may be related to their licensing, branch expansion, liquidity of assets, management, amalgamation (merging of banks) and liquidation (the winding up of banks). The control is exercised by periodic inspection of banks and the returns filed by them.

4. Controller of Money Supply and Credit

The Central Bank controls the money supply and credit in the best interests of the economy. The bank does this by taking recourse to various instruments. Generally they are categorised as quantitative and qualitative instruments. Let us first deal with the instruments of quantitative control, i.e. those that affect only the quantity of the particular variable:

1. *Bank Rate Policy*: The bank rate is the rate at which the central bank lends funds as a 'lender of last resort' to banks, against approved securities or eligible bills of exchange. The effect of a change in the bank rate is to change the cost of securing funds from the central bank. An increase in the bank rate increases the costs of securing funds and of borrowing reserves from the central bank. This will reduce the ability of banks to create credit and thus to increase the money supply. A rise in the bank rate will then cause the banks to increase the rates at which they lend. This will then discourage businessmen and others from taking loans, thus reducing the volume of credit. A decrease in the bank rate will have the opposite effect. In actual practise however, the effectiveness of bank rate policy will depend on (a) the degree of banks' dependence on borrowed reserves (positive relationship), (b) the sensitivity of banks' demand for borrowed funds to the differential between the banks lending rate and their borrowing rate (positive relationship), (c) the extent to which other rates of interest in the market change and (d) the state of supply of and demand for funds from other sources.

2. *Open Market Operations*: OMO is the buying and selling of government securities by the Central Bank from/to the public and banks on its own account. It does not matter whether the securities are bought from or sold to the public or banks because ultimately the amounts will be deposited in or transferred from some bank. The sale of government securities to banks will have the effect of reducing their reserves. When the bank gives the Central Bank a cheque for the securities, the

Central Bank collects the amount by reducing the bank's reserves by the particular amount. This directly reduces the bank's ability to give credit and therefore decrease the money supply in the economy. When the Central Bank buys securities from the banks it gives the banks a cheque drawn on itself in payment for the securities. When the cheque clears, the Central Bank increases the reserves of the bank by the particular amount. This directly increases the bank's ability to give credit and thus increase the money supply. Successful conduct of OMO as a tool of monetary policy requires first that a well functioning securities market exists. If banks regularly and routinely resort to keeping excess reserves then the utility of such a policy will be doubtful. In developed countries like the US, banks are not affected by the OMO because they buy securities with excess reserves and when they sell securities, the amount realised is added to the excess reserves. In such a situation, OMO becomes a ineffective tool.

3. *Varying Reserve Requirements:* Banks are obliged to maintain reserves with the Central Bank on two accounts. One is the Cash Reserve Ratio or CRR and the other is the SLR or Statutory Liquidity Ratio. Under CRR the banks are required to deposit with the Central Bank a percentage of their net demand and time liabilities. Varying the CRR is a tool of monetary and

credit control. An increase in the CRR has the effect of reducing the banks excess reserves and thus curtails their ability to give credit. Reducing the CRR has the effect of increasing the bank's excess reserves, which increases its power to give credit.

The SLR requires the banks to maintain a specified percentage of their net total demand and time liabilities in the form of designated liquid assets which may be (a) excess reserves (b) unencumbered (are not acting as security for loans from the Central Bank) government and other approved securities (securities whose repayment is guaranteed by the government) and (c) current account balances with other banks. Varying the SLR affects the freedom of banks to sell government securities or borrow against them from the Central Bank. This affects their freedom to increase the quantum of credit and therefore the money supply. Increasing the SLR reduces the ability of banks to give credit and vice versa.

We now deal with instruments of *qualitative credit control*, which deal with the allocation of credit between alternative uses.

1. *Imposing margin requirement on secured loans*: A margin is the difference between the amount of the loan and market value of the security offered by the borrower against the loan. If the margin imposed by the Central Bank is 40%, then the bank is allowed to give a loan only up to 60% of the value of the security. By altering the

margin requirements, the Central Bank can alter the amount of loans made against securities by the banks. The advantages of this instrument are manifold. High margin requirements discourage speculative activities with bank credit and therefore divert resources from unproductive speculative activities to productive investments. By reducing speculative activities, there is reduction in the fluctuation of prices in the market price of securities.

2. *Moral Suasion*: This is a combination of persuasion and pressure that the Central Bank applies on the other banks in order to get them to fall in line with its policy. This is exercised through discussions, letters, speeches and hints to banks. The Central Bank frequently announces its policy position and urges the banks to fall in line. Moral suasion can be used both for quantitative as well as qualitative credit control.

3. *Selective Credit Controls (SCCs)*: These can be applied in both a positive as well as a negative manner. Application in a positive manner would mean using measures to channel credit to particular sectors, usually the priority sectors. Application in a negative manner would mean using measures to restrict the flow of credit to particular sectors.

Banks and Monetary Policy: A Recent Scenario

In the present Indian macroeconomic scenario, structural adjustment programme of the economy has had implications on the monetary policy of the government. One important component of such policy has been the gradual downward adjustment of the structure of interest rates in favour of a lower interest rate regime. The apparent reason is that the interest rates in India are too high, and given the low inflation rate recently, the real interest rates are therefore too high. The effect of this is to dampen investment. One suspects that the real reason for the government's decision to lower interest rates is the fact that the interest and repayment obligations on government debt are fast reaching unsustainable levels. The government is reaching a stage where it has to borrow not for productive activities or to finance developmental works, but rather to pay off old debts. Where it has to borrow to repay past principal is not that dangerous a state of affairs. Where it has to borrow to meet interest obligations on past debt is a calamitous state of public finances. The effect of lower interest rates is beneficial to the state of public finances. The government can 'retire' costly old debt and replace with cheaper new debt, and it can reduce the interest burden of its debt. The added advantage of low interest rate regime is that it boosts investment.

The Government has also gone in for reform of the Banking System in a big way, in line with the structural adjustment programme. The main thrust of the reforms as per the

recommendations of the Narasimhan Committee Reports, 1991 and 1998 was to reduce the excessively high CRR and SLR (to increase the banks capability to create credit), reduce and ultimately deregulate the interest rates, give more autonomy to the operational functioning of the banks to increase their efficiency, allow foreign private banks to set up branches or subsidiaries in India and reduce the directed, subsidized credit to priority sectors (to allow banks to allocate credit on commercial rather than developmental criteria).

SUMMARY

- The main function of money in an economic system is to facilitate the exchange of goods and services, that is, to lessen the time and effort required to carry on trade.
- The exchange of 'goods for goods' is called barter exchange.
- Barter becomes unwieldy as groups become larger. A possible solution is the use of a commonly accepted good as a medium of exchange.
- Barter suffers from four main drawbacks, each of which is overcome by a specific function of money.
- Money may be defined using legal definitions or functional definitions.
- Money may be classified based on the relationship between the value of the money as money, and the value of money as a commodity.
- India follows a managed paper currency standard with a minimum reserve system of note issue.
- Money supply is the total stock of moneys of various kinds at any particular point of time.
- Banking is defined as the accepting, for the purpose of lending, or investment of deposits, money from the public, repayable on demand or otherwise and withdrawable by cheque, draft, order or otherwise.
- Two essential functions of a bank are accepting deposits and giving loans.
- The Central Bank is the apex institution of a country's monetary system. The design and control of the country's monetary policy is its main responsibility.

EXERCISES

1. What is the main function of money in an economic system?
2. What is barter?
3. What are the drawbacks of barter?
4. How does the use of money overcome the drawbacks of barter?
5. How can money be defined?
6. How can money be classified?
7. What monetary system does India follow?
8. What is money supply?
9. What are the various money stock measures?
10. What is banking?
11. What are the functions of commercial banks?
12. What are the functions of central banks?

APPENDIX 7.1: THEORY OF LIQUIDITY PREFERENCE

In this chapter, we have studied only the supply of money. We may round off the discussion on money by introducing the theory of demand for money, from the Keynesian perspective. The Keynesian theory of the demand for money (liquidity preference) is as follows. Keynes believed that people demand money for three reasons or 'motives'.

1. Transactions Motive

The reason for transactions demand is as follows. Money is needed to carry out ordinary day-to-day transactions. This is the medium of exchange function of money. The need to hold monetary balances arises because people in general do not have synchronized receipts and expenditures patterns. In other words, the amount of money individuals receive at any point of time may not be equal to the amount of payments that have to be made at that point of time. For example, an individual may receive a monthly salary but have to pay the milkman every week. As a result he will have to hold cash balances in order to pay the milkman every week. If the amount that a person receives at every point of time equalled the amount that he paid out at each point of time then there would be no need to hold money balances for transactions.

The amount of transaction balances a person must hold increases proportionately with the money volume of transactions. Among all the transactions made, only some of them will be in final goods and services. If we assume that the ratio of GNP to the volume of all transactions as some constant, then we have the amount of money balances that the public as a whole wishes to hold for transactions purposes depending on the level of income.

Further, the amount of transactions balances required varies proportionately with the price level P at which the output is sold. Twice as much money is required to purchase a commodity that costs Rs.100 as was required to purchase the same commodity when its price is Rs.50. The same is true for the economy wide total of purchases PY, where Y is real GNP.

The transactions demand may be expressed in equation form as

$M_t = k(PY)$

Where,

M_t = transactions demand for money

k   = constant of proportionality

P   = price level

Y   = real GNP

If we assume that a change in the price level causes a proportionate change in the quantity of transactions balances required, we may rewrite the equation as:

$$M_t = Pk(Y)$$

To convert the demand for nominal balances into real balances we divide throughout by P to get

$$\frac{M_t}{P} = k(Y)$$

where $\frac{M_t}{P}$ is the demand for real balances for transactions purposes.

2. Precautionary Motive

The precautionary demand for money arises because of uncertainty regarding future receipts and expenditures. Precautionary balances enable people to meet unanticipated increases in expenditures or unanticipated reductions or delays in receipts.

Demand for precautionary balances varies directly with income. An individual can and will need to keep aside more money for this purpose as his income increases. Since both transactions demand and precautionary demand are functions of income, they may be combined so that the equation $\frac{M_t}{P} = k(Y)$ can be used to denote the demand for both (real) transactions and precautionary balances.

3. Speculative Motive

The speculative demand for money arises from the speculative motive for holding money. In the Keynesian world, a person who buys bonds is speculating that the interest rate will not rise appreciably during the period in which he intends to hold the bond. The uncertainty regarding the future interest rate causes people to hold money for speculative purposes. There is a negative relationship between the interest rate and the market price of a bond, or for that matter any debt security.

People who buy bonds expect the interest rate to fall and the prices of bonds to rise. In other words, they regard the present interest rate as 'high' and the present bond prices as 'low'. Those who switch from bonds to money have opposite expectations.

Now, people who view the current interest rate as too 'high' or too 'low' obviously have some notion in their minds of the 'normal' rate of interest, with which they compare the current rate of interest. Given this notion of the 'normal' rate of interest, at any point of time people will decide that the current rate of interest is higher than, lower than or equal to the normal rate of interest.

If people view the current rate of interest as too high, they will expect the rate to drop as it returns to the normal rate. At the current high rate, people will therefore, hold bonds instead of money. They will therefore, not only currently enjoy the high rate of return provided by the bonds, but will also expect capital gains as the bond prices rise and the interest rate falls to normal.

On the other hand if people view the current interest rate as low, then they will expect it to rise and bond prices to fall, as the interest rate returns to the normal rate. They will therefore hold money rather than bonds. The interest lost as a result of holding money will be small in comparison to the prospective capital losses if the interest rate does indeed rise. Thus, holding idle money is the safer policy.

Thus, we can conclude that the demand for speculative balances varies inversely with the interest rate. We may write the equation for speculative demand for money as:

$$M_{sp} = P.h(r)$$

Where,

M_{sp} = demand for nominal speculative balances

P   = price level

$h(r)$ = function of r (M_{sp} is an inverse function of r)

Dividing throughout by P we get the demand for real speculative balances:

$$m_{sp} = \frac{M_{sp}}{P} = h(r)$$

We may show the relationship between m_{sp} and r in diagrammatically in Fig. A7.1.

The higher the market interest rate, the lower will be the amount of real balances that people will maintain for speculative purposes. At some high interest rate r_0, the curve shows that people will hold no money in speculative balances. This is because all people believe that the interest rate is so high that it can only fall. At this interest rate,
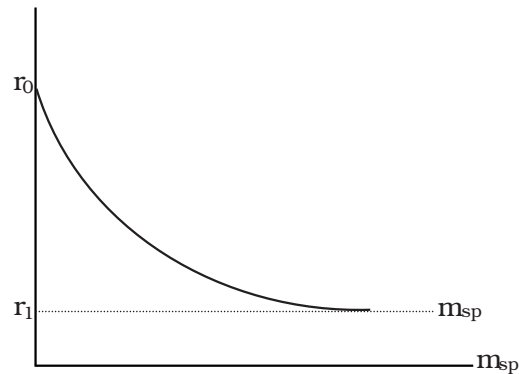

Fig A7.1: *Relationship between Interest Rate and Real Balances*

no one prefers money to bonds.

At the other end of the curve, speculative demand becomes perfectly elastic with respect to interest rate (the curve becomes parallel to the X-axis), i.e. a small proportional change in the interest rate causes an infinitely larger change (in the opposite direction) in the quantum of speculative balances demanded.

This is because all people believe that the interest rate is so low that it cannot go any lower – it can only rise. To hold bonds at this interest rate is to take the almost certain risk of a capital loss as the interest rates rise and the bond prices fall. Thus, all people hold money, and no bonds at this interest rate. This section of the curve (where it becomes perfectly interest elastic) is called the *liquidity trap*. It is in this section of the curve that increases in money supply, since it goes entirely into speculative balances, cannot affect the interest rate.

The Total Demand for Money (liquidity preference)

The total demand for money expressed in real terms is the sum of the transactions demand, the precautionary demand and the speculative demand. It may be written as:

$$m_d = k(Y) + h(r)$$

For any given price level, we know from k what m_t will be for every level of Y; and we know from h what m_{sp} will be for every level of r.

From k and h we know what the total demand for money will be for every combination of Y and r. This may be represented diagrammatically in Fig A7.2.

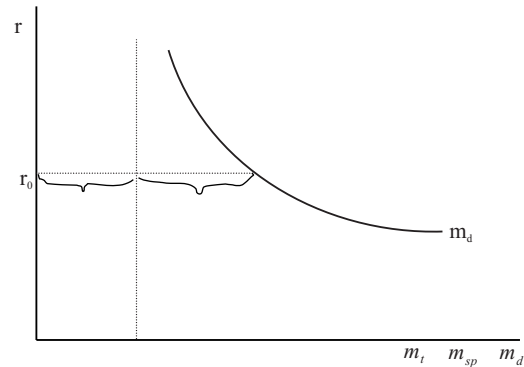The curve m_d is the liquidity preference curve. It shows the demand

Fig A7.2 : *Liquidity Preference Curve.*

for money at different rates of interest. At the rate of interest r_0 the demand for transactions and precautionary balances is m_t and the demand for speculative balances is m_{sp}.

APPENDIX 7.2 : MONETARY EQUILIBRIUM AND THE INTEREST RATE

The equilibrium interest rate is determined by the interaction of the curves representing the supply of money and the demand for money. Assume the supply of money, i.e. the money stock to be some given constant amount. Given the money supply and the income level, there will be some interest rate at which the sum of the transactions, precautionary and speculative demands for money will be just equal to the supply of money. The interest rate that equates the supply of money with the demand for money is called the *equilibrium interest rate*. At that rate, there will be monetary

equilibrium with the supply of money (m_s) being equal to the demand for money. This may be represented diagrammatically in Fig A7.3 below :
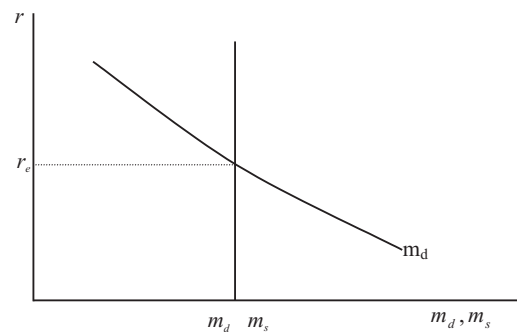

Fig A7.3 : Equilibrium Rate of Interest

The supply of money curve is a vertical straight line because it is a constant, and is independent of the rate of interest. The money market is in equilibrium at interest rate r_e because the supply of money equals the demand for money.

Altering the money supply will affect the interest rate. Consider the effect of an increase in the money supply from m_s to m_{s1}. We can portray the effect of this diagrammatically in fig A7.4. The effect of an increase in the money supply is to cause a decrease in the interest rates from r_0 to r_1. However this will occur only if the money supply increase takes place the region of the demand for money curve that does not correspond to the liquidity trap. If money supply increases over the section of the curve where the liquidity trap operates, then all the additional liquidity created by the money
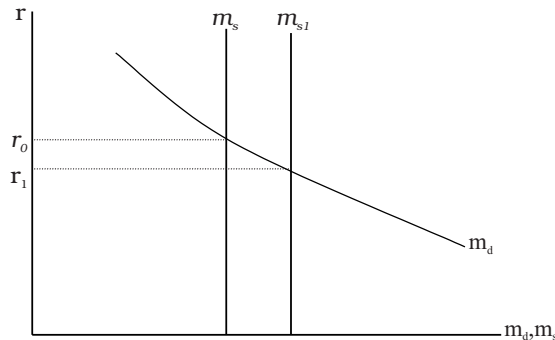

Fig A7.4 : *Rate of Interest and Changes in Money Supply*

supply increase is 'trapped' in the speculative balances and does not affect interest rate.

Decreasing the money supply will have the opposite effect of increasing the rate of interest. This can happen when the economy is not in the liquidity trap as well.

APPENDIX 7.3 : BALANCE SHEET OF COMMERCIAL BANKS

Commercial banks are *financial intermediaries.* They deal in financial assets and money. A look at the consolidated balance sheet for all commercial banks reflects their heavy involvement in dealing with financial assets.

A glance at the table shows that banks raise the bulk of their funds by selling deposits, and their assets comprise mainly of: (a) bank credit consisting of loans, advances, and bills discounted and purchased, (b) investments and (c) cash. A brief explanation of the assets and liabilities of banks follows:

Liabilities

1. Capital and Reserves: Capital and reserves constitute the owned funds of the banks. Paid up capital is the amount of share capital contributed by the owners, i.e. the shareholders of the banks. Reserves are the retained earnings or undistributed profits of the banks. The purpose of accumulating reserves is to improve the banks' capital position so as to better meet unforeseen

Table A.7.1 Consolidated Balance Sheet of Indian Commercial Banks as on March 31, 2002

Item	Amount (Rs. in Crores)	% to Total
Liabilities		
1. Capital	21497.18	1.40
2. Reserves and surplus	62648.94	4.08
3. Deposits	1202767.43	78.33
4. Borrowings	107178.82	6.98
5. Other liabilities	141420.76	9.21
Total Liabilities	1535513.13	100.00
Assets		
1. Cash and balances with RBI	86760.51	5.65
2. Balances with banks and money at call and short notice	117518.25	7.65
3. Investments	588058.29	38.30
4. Loans and advances	645743.04	42.05
5. Fixed assets	20083.30	1.31
6. Other assets	77349.74	5.04
Total Assets	1535513.13	100.00

liabilities and unexpected losses. The owned funds of banks usually constitute a small source of their funds. This is because their business is in other peoples' money!

2. Borrowings: Banks as a whole borrow from the RBI, IDBI, NABARD and from other Non-Banking Financial Institutions like UTI, GIC and its subsidiaries, and the ICICI, which are allowed to lend in the inter bank call money market. Individual banks borrow from each other, from the call money market and from other sources also.

Assets

1. Cash: This item includes cash in hand and balances with other banks including the RBI. Banks hold balances with the RBI under the cash reserve ratio, which is a mandatory requirement. Such reserves are called statutory reserves. Besides these, banks voluntarily hold extra reserves to meet daily withdrawals of cash by their account holders.

2. Money at call at short notice: This consists of money lent to other banks, stock brokers and other financial institutions for short periods of time varying from 1 day to 14 days. Banks lend their surplus cash in such a manner in order to earn interest without putting undue strain on their liquidity position.

3. Bills: These may be inland or foreign, depending upon where the party is, from whom the bank has to collect payment. In business, it is customary to make payments through a bill, which is nothing but a document acknowledging that payment has to be made of a certain amount at a certain time for goods received. The person who issues the bill is the debtor and the person who accepts the bill is the creditor. If the creditor wants the amount immediately he may get the bill discounted by a bank, i.e. the bank deducts a commission and pays the creditor the amount. Thereafter the bank collects the amount from the debtor. Thus, during the pendency of the bill, it is an asset of the bank.

The table illustrates the nature of business turned out by the scheduled commercial banks and this will make us understand the relative positions of liabilities and assets in banking business.

APPENDIX 7.4 : CREDIT CREATION AND MULTIPLE EXPANSION OF DEPOSITS

We are now in a position to look at increases in the supply of money as a result of the increase in one of the components of money, namely, deposits with the bank. Increases in deposits with the bank, i.e. DD happens through the process of credit creation and multiple expansion of deposits.

To analyse the basic economics of credit creation, we may make some simplifying assumptions. This will help in understanding the process without getting too mired in detail. The key simplifying assumptions are as follows:

1. Banks accept targeting the demand deposits.
2. All banks face the same cash reserve requirement of nearly 10%.
3. Banks have no desire to hold excess reserves.

4. The public do not alter its currency holdings, i.e. there is no extra-normal cash drain from the banking system due to net withdrawals by account holders.

These four assumptions would explain the link between the quantity of bank deposits and the quantity of reserves. As we will see, the volume of deposits can change only if the volume of reserves held by banks change.

The RBI determines the quantity of reserves, specifically by two policies. The first policy is for RBI to lend reserves to the banks. These reserves are called *borrowed reserves* or *borrowings.* When the RBI increases its loans to banks then reserves

increase, and when RBI reduces the loans, reserves decrease.

The second way the RBI can alter the quantity of reserves is through *open market operations.* Open market operations is the buying and selling of securities by the RBI in the open market. When RBI purchases securities it does so by writing a cheque on itself. The seller of the security deposits the cheque with a bank and the bank passes along with the cheque to the RBI for payment. Payment is made by adding the amount to the banks reserve account at the RBI. In other words, by purchasing securities the RBI simply create reserves. The RBI can reduce reserves by simply selling securities. The RBI, as the seller of the securities receives a cheque drawn on some bank. When it clears the cheque it reduces the reserve account of the bank by the cheque amount, thus reducing total reserves.

Consider now that the RBI purchases securities from an individual worth Rs.1000 and the individual deposits the cheque with bank A. We will now trace the effects of this action.

Deposit Expansion at the First Bank

As a result of RBI's security purchase, bank A finds itself with an additional Rs.1000 of demand deposits. Furthermore, after it has presented the cheque drawn on the RBI to the RBI, bank A will be credited with Rs.1000 of reserves. This will cause an alteration of the T-account (an account showing changes in the balance sheet) as below:

The bank has to keep 10% of Rs.1000, i.e. Rs.100 as reserves under cash reserve requirement. The remaining Rs.900 is excess reserves, which the bank does not want by assumption. The bank would like to convert these excess reserves into an earning asset. It may do this by purchasing securities or by making a loan. Let us suppose that the bank chooses to make a loan. When the bank makes a loan, it opens an account in the name of the borrower for the amount of the loan. Thus, when the bank lends, it creates a demand deposit. Since demand deposits are included in the definition of money, *the bank is creating money.*

The amount of money the bank can safely lend is the amount of its excess reserves. This means that bank A can lend Rs.900 and create an equivalent amount of deposits. The recipient of the loan will most likely spend it and the funds will ultimately get deposited in another bank. This will affect its T-account as follows.

Thus, bank A has adjusted to its original Rs.1000 deposit by adding Rs.100 to reserves and Rs.900 to

Bank A			
Change in Assets		*Change in Liabilities*	
Cash reserves	+Rs.1000	Demand deposits	+Rs.1000
Required reserves	+Rs.100		
Excess reserves	+Rs.900		

earning assets in the form of loans. The bank's excess reserves have been eliminated and the bank is satisfied.

Have all the effects of the initial deposit worked themselves out? Definitely not! There is still the matter of the Rs.900 deposited in another bank by the borrower. We have to trace the effects of this deposit. Following exactly the same steps and same logic as before, we have:

```
                          Bank A
Change in Assets                    Change in Liabilities
Cash reserves          +Rs.100      Demand deposits      +Rs.1000
Loans                  +Rs.900
Required reserves  +Rs.100
Excess reserves      Rs.0
```

Assume that he borrower deposited the Rs.900 in bank B. then bank B's T-account will alter as follows.

Bank B will want to make profitable use of its excess reserves and decides

```
                          Bank B
Change in Assets                    Change in Liabilities
Cash reserves          +Rs.900      Demand deposits      +Rs.900
Required reserves  +Rs.90
Excess reserves    + Rs.810
```

to make loans worth Rs.810. After it makes the loan, it will have converted Rs.810 of excess reserves into earning assets. The T-account will now be as follows.

```
                          Bank B
Change in assets                    Change in Liabilities
Cash reserves           +Rs.90      Demand deposits      +Rs.900
Loans              +Rs.810
Required reserves  +Rs.90
Excess reserves       Rs.0
```

The loans made by bank B were made to someone, and that someone spent the amount and it ultimately got deposited in a demand deposit account in another bank. That bank would then have a deposit of Rs.810, required reserves of Rs.81 (being 10% of Rs.810) and excess reserves of Rs.729. This Rs.729 can be used to acquire earning assets simply continuing this sequence.

The pattern of the sequence is as follows. At each step the bank sets aside 10% of the newly acquired deposits in the form of required reserves and uses the remaining 90%, its excess reserves to acquire earning assets. As the number of such cycles increases, the total quantity of assets and demand deposit accounts in the banking system

increase, although it is evident that at each succeeding cycle, the increase is 10% smaller than in the previous one. The need to set aside 10% of each addition to deposits in the form of required reserves ultimately limits the size of the expansion.

The deposit expansion process can is summarised in Table A7.2.

The cycles cease when all excess reserves have been converted into required reserves. At that point, as per the table, demand deposits (and therefore money) have increased by Rs.10000, required reserves have increased by Rs.1000 and loans (credit created) has increased by Rs.9000.

Note that the total increase in demand deposits is the sum of the increases in each of the individual cycles. That is, we have to add 1000 + 900 + 810 + ... where each term is 0.9 times the preceding term. This amounts to finding the sum of a geometric series of the form $a + ar + ar^2 + ar^3 + ...$ where in our example, $a = 1000$ and $r = 0.9$. The formula for the sum of a geometric progression is $a/(1-r)$. Computing the value for our example we get $1000/(1 - 0.9) = 10000$, as shown in the table.

As we can see, demand deposits have increased by a tenfold multiple of the initial increase in reserves.

The transfer of funds between banks that goes on in each cycle helps explain why banks try to attract deposits away from other banks. The bank that succeeds in drawing reserves away from other banks can increase

Table A7.2 : The process of Credit Creation and Deposit Expansion
(All figures are in rupees)

Bank name	Additional deposits (Rs.)	Additional loans (Rs.)	Additional required reserves (Rs.)
	(money increase)	(credit increase)	
A	1000.00	900.00	100.00
B	900.00	810.00	90.00
C	810.00	729.00	81.00
D	729.00	656.10	72.90
E	656.10	590.49	65.61
F	590.49	531.44	59.05
G	531.44	478.30	53.14
–	–	–	–
–	–	–	–
and so on	–	–	–
Total	10000.00	9000.00	1000.00

its own lending power. An important point to be noted is that the terms 'multiple deposit expansion' and 'credit creation' refer to the banking system as a whole and not to an individual bank. For an individual bank, after setting aside the required reserves, it may create deposits and loans only with the remaining amount, which is a sub multiple of the initial deposit. In other words, all the banks taken together are able to create demand deposits and credit several times larger than the initial deposit.