
UNIT 3 INTERNATIONAL BANKING

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3.0 OBJECTIVES

After studying this unit you should be able to :

- describe International money transfer mechanism
- explain international syndicated lending arrangements
- explain the different money market instruments
- discuss the prime lending rate and application of yield curves
- discuss international banking risk and capital adequacy requirements.

3.1 INTRODUCTION

If you want to make a payment abroad, you will have to deal through a bank operating on international level. Banks around the world are centres for money transfer business. Dealers in securities or exporters and importers make use of services of international banks. With the growth of MNC's, the importance and role of such banks have increased. Such banks also help the developing countries in their economic development. In this unit, you will learn about international money transfer mechanism and syndicated lending arrangements. You will also learn about different money market instruments, prime lending rate and application of yield curve. At the end of the unit, you will study international banking risk and capital adequacy requirements.

3.2 INTERNATIONAL MONEY TRANSFER MECHANISM

A bank entering in international banking business may enter through one or more of the following organisational forms:

- a) **Correspondent Bank** : A correspondent bank is a bank located elsewhere that provide a service for another bank. A bank which does not have an office in a foreign country maintains a correspondent account with a bank in that country.
- b) **Foreign Branch** : It is a full fledged office of the home bank which operates subject to banking rules of the home and foreign countries.
- c) **Foreign Agencies** : They are like branches, except that they are not authorised to accept ordinary deposits (although they may accept credit balances of customers doing business with them).
- d) **Foreign Subsidiary Bank** : Foreign subsidiary bank is a bank incorporated in a host country and operate under same rules as local domestic banks. In U.S.A., subsidiaries of US banks are called Edge Act or Agreement Corporations.
- e) **Representative Offices** : They are small offices opened up to provide advisory services to banks and customers and to expedite the services of correspondent bank.

Sometimes, a bank may acquire an existing bank in a foreign country.

The overwhelming majority of all payments are effected through a transfer of ownership of demand deposits from payer to payee, by sending instructions to the banks involved via cheques, written transfer orders, phone, telegraphic instructions(wire transfers), or, increasingly linked computer networks. Hence, any person(or a corporate treasurer), making or intending to make payment to someone in another country needs first to obtain ownership (directly or indirectly), of a demand deposit in a bank in a foreign country, which can subsequently be transferred to the foreign recipient (payee) of the funds. Even very large corporations rarely maintain current accounts in foreign countries, because there is no need for it. Major banks maintain demand-deposit accounts with their foreign correspondent banks (overseas). These correspondent banks are chosen to facilitate the business dealings of another bank in another country(or, different location). The correspondent banks are preferably those that are members of the respective national clearing system in the place where they are located. Funds are made available in the current account of the overseas bank with the correspondent bank. The correspondent bank will then make payment to the respective payee after receiving instructions from the overseas bank. For example, assume a Hong Kong based firm Wing On Company, wishes to pay its Singapore supplier S\$ 1 million. The treasurer from Wing On will contact the foreign exchange trader in his bank, The Hang Seng Bank, Hongkong to sell him (Wing On) S\$ 1 Million at a rate of (say), HK\$ 21 per Singapore dollar.

It will then initiate two simultaneous transfer :

- 1) Hang Seng Bank, Hongkong will debit Wing On's current account in Hongkong dollars for HK\$ 21 million and credit that amount to its correspondents bank account.
- 2) Hang Seng Bank will then instruct its correspondent bank in Singapore (one in which it keeps a current account balance), to debit Hang Seng's account and credit the amount to the account of the Singapore company within the banking system of Singapore.

This illustrates the fact that international transactions really involve two simultaneous payments involving each national payment. In our example above, (1) there was a transfer of funds in the Hongkong system from the payer to its bank and (2) a parallel payment within Singapore from the Hongkong bank's account with the Singapore bank to that of the payee. Of course, a receipt of funds would involve two transfers in the opposite direction.

3.2.1 Terms of Accounts

Two terms of accounts are used in international banking:

- a) **Nostro:** This is an account with a correspondent bank abroad in the home currency of that country.
- b) **Vostro:** This is the local currency account of a foreign bank.
Thus, the Nostro account of the account holder is a vostro account for the bank where it is maintained.

The tying-up of expensive funds in nostro accounts (current accounts held in a foreign country) becomes a much more significant phenomenon. Therefore, in an attempt to minimise both the number of correspondent accounts the banks would need to open (at different centers) and the funds tied up in various nostro accounts (and consequently high costs), international banks have a natural tendency to concentrate their accounts in one country, thus using that country's banking system to clear international transactions.

Consider three currencies: The Japanese yen; Malaysian ringgit and the Thai baht; Now, banks from Malaysia and Thailand do not need to hold working balances with each other, as long as they have accounts in Japan.

If Bumiputra Bank in Malaysia want to sell Ringgit for baht which it needs, to make a payment to Bangkok Bank in Thailand. Bumiputra will use its own currency to purchase yen, and simultaneously sell yen for Thai baht in order to make the payment. To effect these two transactions, the following Clearing Transfers are necessary:

- a) An international transfer from Malaysia to Japan, involving the debiting and crediting of accounts in Kuala Lumpur and Tokyo respectively;
- b) A transfer within the clearing system of Japan, involving the debiting and crediting of accounts that Bumiputra and Bangkok Bank maintain with banks in Japan;
- c) An international transfer between Japan and Thailand, involving the debiting of Bangkok Bank's account in Tokyo and a credit to an account in Thailand.

In the end, there is no need for banks to have account relationship anywhere except in Japan. Of course, the greater the number of countries in the system, the greater the saving, if all decide to hold working balances in one country.

The economics of clearing and the pattern of account relationship have also affected foreign exchange trading practices. Today, most foreign exchange is traded against the US dollar. To a certain extent this trend has become enforcing because most institutions hold dollar accounts, most transactions in a given currency will be done against the US dollar. Thus, the market is so active and liquid that traders find it advantageous to go through the dollar, whenever they want to obtain a third currency.

The dollars position is further reinforced by the fact that the US banking system provides opportunities for adjusting cash balances until late in the 'world business day' that begins in mid-Pacific. In short, a country with an efficient market that provides depth, breadth and liquidity is more likely to be where balances are held.

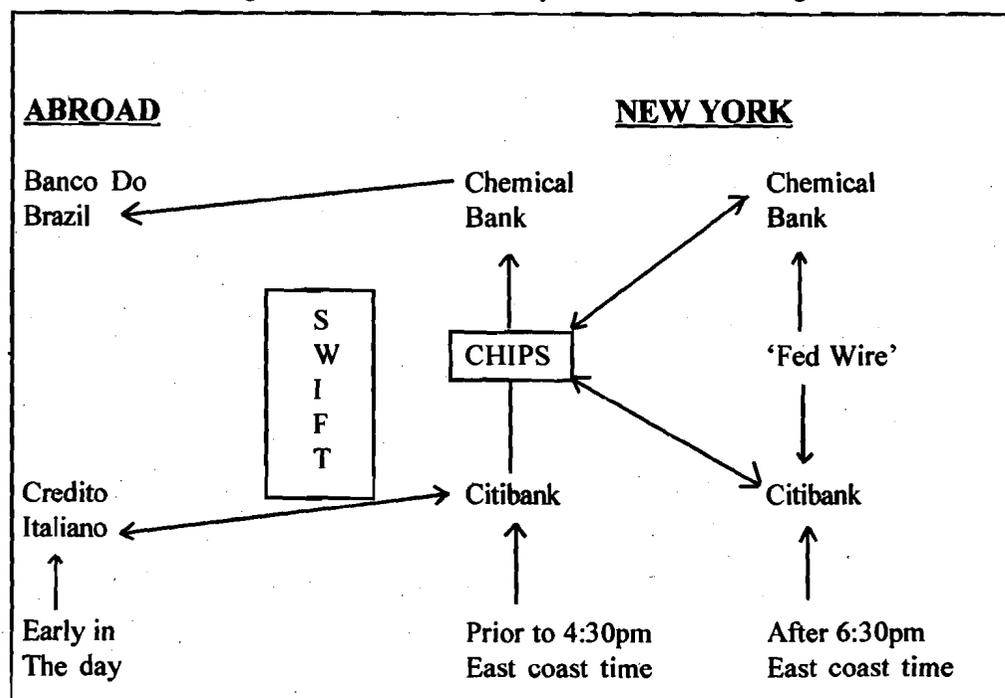
3.2.2 Clearing House Interbank Payments System

Technology is now central to the clearing of transactions. In the United States a computer based Clearing House Interbank Payments System [CHIPS] handles tens of thousands of payments representing transactions worth several hundred billions dollars each day.

CHIPS can be thought of as a sort of international bankers' "play money". During the day, all international banks making dollar payments to one another pass this CHIPS money to one another in lieu of real money. At the end of the day, the game master totals up everybody's CHIPS money to see the net amount that is owed by who and to whom. Thereafter, the "real money" (Federal Funds) is transferred in that amount.

The working of CHIPS can best be explained through an example. Assume an Italian businessman needs to pay US dollars for a shipment of Brazilian coffee. He would contact his local bank - Credito Italiano, to make arrangements for the transfer. Credito Italiano will cable the New York correspondent bank (with whom it has an account relationship), to credit the bank of Brazilian coffee exporter Banco do Brazil. For simplicity, assume that the exporters bank has a correspondent one of the more than 100 CHIPS members, (say) Chemical Bank and importer's bank's correspondent bank is citibank.

Figure 3.1 : International Payments and US Clearing



Steps in the transfer of funds:

- 1) Credito Italiano instructs Citibank - using SWIFT(as discussed), to debit its account and transfer the dollar funds to Chemical Bank "for credit to the account of Banco do Brazil".

- 2) Citibank Debits Credito Italiano's account and transfers funds through CHIPS as discussed below in 3.2.3, it sends the equivalent of an electronic cheque to CHIPS, where Chemical Bank's account is credited the same very day.
- 3) At the end of the day, any debits and credits between Citibank and Chemical Bank are settled by a transfer of "Fed Funds" - i.e., deposits held by member banks at various branches of the Federal Reserve system (counter part of the Central Banking authorities like the Reserve Bank of India).
- 4) Chemical Credits Banco do Brazil's account and notifies the bank through the SWIFT system.

The schematic flow of steps in the transfer of funds is shown in Figure 3.1.

The illustration in the flow chart shows how a hypothetical payment between Credito Italiano and the Banco do Brazil would run through the US Clearing system. Citibank either confirms that Credito Italiano has sufficient funds, or, through authorisation by its officers, extends credit to it. In either case, the computer prompts payment of the appropriate amount to the correspondent bank of the payee's bank.

3.2.3 Society for World-wide Interbank Financial Telecommunications

Society for World-wide Interbank Financial Telecommunication (SWIFT) a specialised non-profit co-operative owned by banks, is the most important private message courier. SWIFT transmits messages in standardised formats and many interbank funds transfer systems (like CHIPS), have been designed to reformat SWIFT messages electronically for execution through the clearing house. Over the years SWIFT has become an integral part of many interbank payment systems. Banks in India are also connected to the SWIFT net work.

SWIFT consists of national data concentration centres, which are connected by leased telephone lines to operating centres in Belgium, the Netherlands and the United States.

Computer terminals at the participating banks are linked to the national concentration centres, with SWIFT, a message can be sent from one bank to another as speedily as with a telex but error free, more securely and at lower cost. SWIFT has largely replaced interbank transfers made by cheque or draft because of the advantage of speed, at the same time providing for immediate verification and authenticity. The system has over a thousand members in several dozen countries, giving essentially global coverage. In essence, SWIFT provides member banks (that would alternatively operate through correspondent banks), the same payment service as that available to a few multinational banks that have an extensive net work of wholly owned affiliates.

In earlier times, the relay mechanism outlined in our example used to be handled by cheque, but now a days a computer based facility merely requires a few entries into the system. Each bank has a code number, all the relevant information about the payment is entered into a computer terminal and the authenticity of the payment is checked. At the end of the day, the CHIPS Clearing House funds get netted out and the real money is paid.

In addition to providing a tabulation for all the member banks of CHIPS at the end of the day, the system also permits members to look at those payment that are "on line" (i.e., in storage, awaiting approval), so that better information on

available funds can be used for the member bank's credit decisions. If a credit officer knows that a certain account will be credited later in the day, he may be willing to grant credit.

Although its operating procedures are highly technical, CHIPS operations have important economic implications:

- 1) The role of the US dollar as a world vehicle currency is influenced by the relative operating efficiency and safety of its payment mechanism.
- 2) Its handling of failures to settle accounts, which have the potential to initiate a chain reaction leading to a worldwide liquidity crisis, makes such occurrences isolated events.
- 3) The specific roles of individual banks in the dollar clearing system have important implications for world-wide correspondent banking relationships and, therefore, market share and profits.

3.3 INTERNATIONAL SYNDICATED LENDING ARRANGEMENTS

The syndicated lending process has emerged as one of the most popular and notable financing instruments in the international financial markets. Compared to other funding techniques, a syndicated credit remains by far the simplest way for different types of borrowers to raise financing from the international markets.

While the technique of syndicated loan has been tried and accepted in various national markets, the Euro market remains by far the biggest source of such credits. Euro market evolved the concept of lending funds for medium-to-long term on "variable" (or floating) interest rate basis, thereby protecting themselves against constantly changing interest rates. This concept soon acquired ready and large acceptance as it ably satisfied both depositors and borrowers. A variable or floating rate loan carrying an interest rate that may move up or down, depending on the movements of an outside standard, such as the rate paid on US Treasury Securities or the ruling LIBOR rate which is the London Interbank Offered Rate. The rate may be specified as LIBOR +1 %. This means that the margin over LIBOR is 1% . This type of variable loan may also be referred to as an adjustable rate loan. The lender can increase or decrease the interest rate on this type of loan at specified intervals e.g.: 3,6 or 9 months intervals, depending upon the arrangement with the borrower. This periodical adjustment is done by the lender to keep pace with changing interest rates on funding sources i.e., deposits.

Euro banks, playing their role of financial intermediaries, could earn their income by way of margins charged. This margin varies according to market forces and, more importantly, according to the creditworthiness of the borrowers.

3.3.1 What is a Loan Syndicate ?

Simply put, it is a highly structured group of financial institutions (primarily banks,), formed by a manager (or a group of co-managers), that lends money on common terms and conditions to a borrower.

Loan syndication typically involves a small group of knowledgeable and well capitalised banks that agree initially to provide the entire loan. These banks can then sell portions of their share of the loan to a much wider range of smaller banks. (They may however prefer to retain their shares if they so desire).

A loan syndication provides borrowers with certainty about the amount and the price of funds, while allowing wide distribution. If many banks are able to share in small parts of different loans, their 'risk' will be more diversified and they will be willing to make more loans. In the Euro market, a borrower may come from one country, with its own regulations and accounting norms, while lenders are from other nations. Much of the risk reduction is performed not only by credit analysis, monitoring and control, but by taking smaller amounts of more diversified assets (loans), and by relying on the monitoring role of the 'lead bank' or banks.

3.3.2 The Syndicate Process

The syndication process commences with an invitation for bids from borrowers. Sophisticated borrowers invite bids from Euro banks by defining important loan parameters e.g., amount, currency preferred, final maturity, grace period and preferred amortisation.

Bids are generally invited on a fully underwritten basis opposed to a best effort basis. As the term indicates, fully underwritten bids convey the commitment of bidders to provide funding, irrespective of the market response. On the other hand, bidders submitting bids on a best effort basis are not confident of raising the finance from the market.

The bid letter will be addressed to the borrower and signed by prospective banks spelling out broadly the terms and conditions on which each bidding bank would be prepared to accept the role as an arranger or lead manager for the syndication arrangement.

Thereafter, the borrower will carefully examine the bid submitted by each bank. Each bank that submitted its bid will be called separately to discuss the terms and conditions submitted in their respective bids. The borrower will not reveal the terms of a bid submitted by one bank to the other bank/s. A strict confidentiality is maintained.

The borrower will then select the bid that suits it most. It must be carefully understood that the criteria for choosing a bid is not dependent on the lowest cost but other factors are equally important. These factors (terms and conditions) would be best understood and appreciated after reviewing all relevant features that are included in a bid format and are integral in tying-up a syndicated credit arrangement.

The principal terms and conditions that are included in a bid format submitted by a bidding bank to a borrower are :

- 1) Borrower : ABC Company Ltd.
- 2) Guarantor (if any) : Unconditional guarantee of another Bank or Parent Company.
- 3) Amount : US\$ 50 million.
- 4) Maturity : 7 years from date of loan agreement.
- 5) Repayments : The loan will be repaid by 8 equal 1/2 -yearly instalments after the grace period.
- 6) Grace Period : 3 years from date of loan agreement.
- 7) Drawdown : The borrower can drawdown the loan amount after

fulfilling conditions precedent to drawdown.

Drawings may be made in tranches of US\$ 5 m. or multiples thereof, by giving 3 clear days notice of drawdown and within 12 months from the date of the loan agreement. Loan amounts undrawn at the end of 12 months will be automatically cancelled.

- 8) Prepayment : The borrower will have the right to prepay all or any part of the outstanding loan amount without any penalty. Such prepayment has to be in minimum amounts of US \$ 5m, or multiples thereof, on any interest roll-over dates by giving a minimum of 30 days notice. Any amounts prepaid will be applied to repayment schedule in inverse order of maturity.
- 9) Interest : The borrower will have an option of choosing interest periods of 3 or 6 month LIBOR. The borrower will pay interest at a rate equal to LIBOR as applicable on US dollars for 3 or 6 month maturities plus a margin of one percent (1%). Interest calculated on the above basis is to be paid at the end of each interest period in arrears, on the basis of 360 days.
- 10) Reference Banks : The loan agreement will specify three banks, two of which will be participants in the loan and whose quotas will be obtained to establish the LIBOR rate to be applied.
- 11) Commitment Fee : The borrower will pay a commitment fee of 1/4% p.a. on undrawn amount of the loan, commencing from the date of the loan agreement. Such fees will be payable semi-annually in arrears calculated on the basis of actual number of days elapsed in a year of 360 days.
- 12) Front-end Fees : The borrower will pay a flat fee of 1/2% of the loan amount for arranging the syndication, execution and documentation. It is payable not later than 30 days from the date of the loan agreement.
- 13) Withholding-Tax : The borrower is to make all payments free and clear of any present or future withholding taxes, duties or other deductions. Should the authorities impose any taxes, the borrower is to make necessary tax payments to the tax authorities and tender the amount to the lenders without any deductions whatsoever.
- 14) Out-of-Pocket expenses : The borrower shall reimburse the lenders all out of pocket expenses incurred in arranging the transaction. Such expenses are to be reimbursed upto an amount of US\$ 30,000 upon relevant billing.
- 15) Agency Fees : The borrower is to pay an agency fee at the rate of US\$ 5,000 per annum on each anniversary of signing of loan agreement.

- 16) Documentation : The loan facility proposed will be subject to exchange of loan documentation satisfactory to all parties. The loan agreement will incorporate various standard clauses currently being incorporated in Euro dollar syndicated loan agreements.
- 17) Jurisdiction : The loan agreement will be governed by the UK laws.
- 18) Information memorandum : The borrower will be required to compile an information memorandum in accordance with the Eurocurrency market practice. While bank will assist the borrower in compiling this document, it will primarily be the responsibility of the borrower to ensure its correctness.
- 19) Use of proceeds : The borrower should state in a precise manner the use for which the proceeds of the loan amount will be applied.
- 20) Validity of Offer : This offer shall remain valid until the close of business hours..., at which date it will expire unless a written in-principle acceptance is received from the borrower.

With a view to appreciate the basic structure of a syndicated credit arrangement, it is very important to get familiarised with the above principal terms and conditions that are generally incorporated in international syndicate lendings. The reader will also understand the fees structure and those costs that are one-time or incurred annually during the life of the loan.

Based on the cost computation and other vital dimensions of the loan deal, the borrower chooses the deal that best suits his requirements. The borrower then awards the mandate to the selected bidder.

The mandate empowers the lead manager (selected bid) to go ahead with the transaction under the terms and conditions, that are defined, settled and conveyed through the mandate.

The mandated bank undertakes two distinct tasks at this stage:

- 1) Formation of a syndicate of banks and,
- 2) Documentation processing

By means of an invitation telex, specifying the terms and conditions of the mandate, the lead manager invites the participation of other banks in the proposed transaction. Procedures for sharing the "Front-End Fees" have also to be specified to enable loan participants to take a view on the returns they can expect from the transaction. This process takes 2-3 weeks.

The syndication process involves the circulation of an Information Memoranda and the negotiations concerning the sharing the fees and the level of participation of other banks interested in the transaction. The Information Memoranda describes the borrowing entity, its formation, ownership and management. A detailed account of the operations, past and present, cash-flows, summary of financial analysis. This document is prepared by the borrower and the lead manager does not take any responsibility for its accuracy.

The Information Memoranda also contains a detailed description of guarantors (if any). Many developing countries or Government owned Corporations carry the guarantee of their respective governments. This section also contains the geographical, political, economic and financial aspects of the guarantor e.g., balance of payment position, external debt etc.

The Loan Agreement : It is the responsibility of the lead manager to draft and conclude the loan agreement. The loan agreement is signed by all participating banks and the borrower.

It describes the basic transaction, the purpose of the loan, maturity, amortisation, drawdown arrangements, interest rate and its determination, various types of fees and their payment, warranties and undertakings, default circumstances, financial covenants, law and jurisdiction and finally the relationship between the "agent bank" and the participating banks.

Signing of a loan agreement does not empower a borrower to drawdown funds. A series of conditions may have to be fulfilled before drawdown can be permitted. These conditions seek to establish the authenticity of the loan transaction in its entirety. Soon after the conditions have been fully complied with, legal advisors of the borrower and lenders examine the documentation and express an opinion to the effect that the agreement is legal, valid and binding on all parties concerned. The lead manager, relying on the legal opinions declares the loan effective.

Check Your Progress A

1 **What is a correspondent bank?**

.....

2 **Explain Nostro and Vostro accounts.**

.....

3 **What is the function of SWIFT?**

.....

4 **Fill in the blanks :**

- i) A correspondent bank provides service for
- ii) Major banks maintain accounts with their correspondent banks.
- iii) Local currency account of a foreign bank is called
- iv) Account with a correspondent bank is known as
- v) Mandated Bank undertakes to (i) Form (ii) Process.

3.4 MONEY MARKET INSTRUMENTS

Besides, international syndicated lending a managements, international money market is the other market segment where international banks have been key players. Money market has been defined as the market for assets (instruments) maturing in less than one year. The most prominent assets traded in this market include Treasury Bills (T-Bills), Commercial Papers (CP's), Bankers Acceptances (BA's) Certificates of Deposits (CD's), and Repurchase Agreements (Repos).

INSTRUMENT	BORROWER	MATURITY	COMMENT
Treasury Bills	Central Govts.	Upto 1 year	Safest and most liquid short-term investment
Commercial Paper	Large Corporates with high credit ratings	30 days-270 days	Negotiable, unsecured promissory notes.
Bankers Acceptance	Bills of exchange guaranteed by commercial banks	up to 180 days	Highest quality investment next to T-Bills.
Certificate of Deposit	Commercial banks	30, 60 or 90 days	Negotiable paper representing term bank deposit; more liquid than straight deposit since they can be sold.
Repurchase Agreements	Banks, and FI's	Overnight to 15 days	High quality usually Govt. security pledged to raise funds, with agreement to repurchase.

The money market serves two primary purposes. First, it provides the means by which the central banking (or Reserve Bank) authorities can implement monetary policy as laid down by them. The open market operations of the central banking authority involve the sale or purchase of government securities, which in turn, control commercial bank reserves, credit expansion and the money supply. For example, if the central bank buys securities from the commercial banks, payment will be credited to the banks' accounts at the central (Reserve) bank. The actual transactions may be through brokers or dealers, but the effect is the same. The additional cash resources thus created allow commercial banks to increase loans, therefore adding to the money supply and encouraging an easing of interest rates in the short term.

The second function of the money market is that of any capital market, to move resources from sectors with surplus funds to those in a deficit position. In the economy in general, the traditionally surplus sector is made up of individuals (household), while deficit sectors contains corporations. Governments are expected to be neutral.

Because the money market is a wholesale market, households tend to supply the savings through intermediation by financial institutions, although some individuals purchase money market paper directly.

On the demand side, corporations and governments issue paper to meet their funding needs, sometimes with terms and maturities to appeal to particular groups of investors. In the money market however, many of the transactions reflect a need by economic sectors to manage their short-term cash flows, as opposed to long-term transfer of funds.

3.4.1 Treasury Bills

Treasury Bills (T-Bills) are issued by a government to finance short-term cash deficiencies for its spending programmes. The purchase price of a T-Bill is lower than its face value i.e., at a discount. By purchasing a T-Bill at one price and redeeming it at a higher price the bill holder is in effect earning interest on a short-term loan to the government.

Most T-Bills have a 91-day term to maturity when issued. Occasionally, bills are issued with at different term e.g. 182 days to 364 days. Most T-Bills are issued by a weekly tender. For a new issue of T-Bills, banks and brokers wishing to purchase a quantity of bills put in a tender price which the central monetary authorities might accept or reject.

T-Bills can be held until maturity (like any other bills), when the bill holder then calls for payment of the debt. Alternatively, T-Bills can be resold before their maturity, and the banks/financial institutions are active in creating a liquid secondary market. The secondary market value of T-Bills in the discount market varies with current interest rates, but will never exceed the face value of the bill itself.

The yields on T-Bills are lower than those on any other marketable securities due to their virtually risk-free nature. The market is very active, and the transaction costs involved in the secondary market are small.

T-Bills are the only government securities always quoted at a discount and traded on a discount basis. Therefore, their bids and offerings distinguish them from other government obligations. A typical quotation for a 6-month bill is given below:

BID	ASKED
8.77	8.69

Note that the bid yield is higher than the asked price. This reflects the price in terms of the discount from par (face value). The larger discount is really a lower rupee (or dollar) price. The difference between the bid and asked price is the "spread" i.e., the profit for the market maker.

T-Bills are not suitable for many small investors, because their denominations range on the higher side. However, T-Bills are good investments for institutional investors like banks for supplementing statutory reserve requirements. If the investor wants to redeem a T-Bill, it is easy to sell that bill to a government dealer at the bid price. If an investor wants to sell a bill, it will usually receive a part of the original discount (which represents interest for the time the T-Bill was owned). For example, assume an investor purchased a Rs. 10,000, 91-days T-Bill at a 6% discount. The discount would have been Rs. 150. If the investor wants to liquidate the bill in 60 days, the proceeds received in the secondary market theoretically will be Rs. 100 higher than the purchase price, representing 2/3rd of the discount.

Only a change in the general interest rates will have an effect on the amount of discount received. An increase in the general level of interest rates will lower the

portion earned, and a decline in rates will increase the portion earned. But, because T-Bills are essentially short-term, changes in general rates have minimal effect on price.

In considering the purchase of T-Bills, the coupon equivalent rate is very important. Coupon equivalent is a computation to help investors compare the yields on T-Bills with those of other investments not sold at a discount. Let us illustrate it with an example. If an investor buys a 10%, Rs. 10,000, one-year certificate of deposit from a bank, at the end of 1 year the investor will have Rs. 11,000. Now, if the investor buys 1 year T-Bill at a 10% rate, the purchase price would be Rs. 9,000 and the proceeds of maturity will be Rs. 10,000. The yield is 11.1%. Therefore, when considering a 10% add-on interest rate as compared to a 10% discount rate, the interest equivalent yield is 11.1%.

The coupon equivalent yield is even more complicated because when T-Bills are bought at a discount, a cheque for the amount of the discount, Rs. 1,000 in this example, is mailed to the investor. If the investor invests the discount amount and earns interest, the additional interest adds to the yield.

The T-Bill yield is called the 'Discount Yield'. This is an annualised yield. The following formula is used to calculate the T-Bill yield:

$$\frac{[(\text{face value} - \text{price}) \times 360] / \text{days to maturity}}{\text{face value}}$$

For example, a Rs. 1,000,000, 91-day T-Bill with a price of Rs. 984, 833.33 would have a T-Bill Yield of 6%, as shown below.

$$\frac{[(\text{Rs. } 1,000,000 - \text{Rs. } 984,833.33) \times 360] / 91}{\text{Rs. } 1,000,000} = 0.06$$
$$= 6.0\%$$

T-Bill quotations can be seen in economic and business newspapers.

3.4.2 Commercial Paper

A corporation that needs long term funds can raise those funds in either the equity or bond market. If, instead, a corporation needs short term funds, it may attempt to acquire those funds via bank borrowing. An alternative to bank borrowings for large corporations with strong credit ratings is Commercial Paper. Commercial Paper (CP) is a short-term unsecured promissory note issued in the open market as an obligation of the issuing entity. The notes are issued in bearer form which can therefore be readily traded. At maturity, the CP issuer pays the amount due to the person presenting the paper.

CP is issued as a series of notes, and each note promises to pay the bearer a stated sum of money at the maturity date. Each note shows:

- a) the name of the issuing company
- b) the amount(value) of the note
- c) the issue date
- d) the maturity date
- e) a certificate of authentication, signed by an authorised signatory of the company (or the company's issuing agent)

Each note will also indicate that the note is negotiable, its bearer is entitled to payment, and that payment will be made (on presentation of the note at maturity through a recognised bank) by the issuer (or issuing agent on behalf of the company).

A CP programme is arranged between the issuer and one or several dealer banks. The programme is for a specified duration and a maximum amount. Within the programme, there is a series of separate issues of CP. The total amount of CP in issue at any time cannot exceed the programmes limit.

CP notes have a short term maturity, typically 1-3 months. They are issued at a discount to face value. The size of the discount reflects the yield to the buyer/ investor. Banks acting as dealers or agents place each issue with investors.

Commercial Paper is unsecured and investors must rely on the promise of the issuers to pay at maturity. Formal credit rating is required prior to the issuance of CP by any entity.

In India it is mandatory for any company embarking on a CP issuance programme to obtain the specified minimum credit rating from any one of the following credit rating agencies:

Rating Agency	Minimum Rating
1. Credit Rating Information Services Of India Ltd.[CRISIL]	P-2
2. The Investment Information and Credit Rating Agency of India Ltd[ICRA]	A-2
3. The Credit Analysis and Research Ltd[CARE]	PR-2
4. Duffs and Phelps Credit Rating	D-2

And other credit rating agency as may be specified by the Reserve Bank of India from time to time. The issuing company must ensure at the time of issuance of the CP that the rating so obtained is current and not more than two months old.

A formal credit rating is not essential for issuing sterling pound or Euro CP, but it does help to attract investors who are often rating sensitive in their investment choices. In the wake of several financial collapses in the late 1980's and early 1990's investors have tended to buy only top rated CP.

In other international and national markets the most commonly used credit rating for CP are those provided by US agencies, Moody's and Standard & Poor's (S&P). These give a credit rating to issue debt securities only on the request from the issuer.

S&P rate CP from A to D, with highest ratings of A1 and A1+.

Moody's rate CP as P1, P2, P3 or 'not prime'.

CP which is given the top rating of A1 by S&P and P1 by Moody's is, therefore, referred to as A1/P1 paper

A1/P1 paper will sell at the finest rates. Some investors will be willing to buy CP which does not have an A1/P1 rating, but will expect a bigger discount on the paper. A1/P1 rated paper can be placed with investors at a cost of between 10

and 25 basis points (0.10%-0.25%) less than the cost for issuers whose paper is rated only A2/P2. The benefit of a higher rating is therefore quite large.

Issuance of CP in foreign markets (other than in India)

A company wishing to issue CP will negotiate a programme with a dealer (or several dealers).

In the US CP market, the specialised dealers are mainly investment banks such as Goldman Sachs, Lehman Brothers, Merrill Lynch and Morgan Stanley. In the Sterling market, the most active dealers are BZW, Lloyds, Midland Montagu and NatWest.

In the Euro CP market, the main dealers are global commercial and investment banks as Citicorp, Deutsche Bank, J.P. Morgan and Lehman Brothers.

A CP programme is for a set term (which can be extended by agreement and for a maximum amount. It is normally for at least Stg. £ 50 million to £ 100 million. For example, a company might arrange a 2-year programme with a dealer to issue CP up to a maximum of Stg £ 150 million. Within this limit, the company can issue CP notes at any time within the 2 years. Issues can be of any acceptable maturities (7 to 364 days in the UK; 1 to 270 days in the US)

A company with a £ 150 million programme might begin by issuing Stg £ 70 million of CP with a maturity of 2 months, and 3 weeks later issue a further £ 80 million with a maturity of 3 months, taking the amount issued up to the limit of the facility .At the end of the second month, £ 70 million issue will be redeemed and the company could, if it desired, issue new paper for a further Stg £ 70 million.

Issuers of CP therefore have the flexibility on maturities and can let out paper to the market as 'tap stock', issuing only as and when they wish to, or when there is a demand in the market for CP so that interest rates are favourable.

Commercial Paper Yields and Prices

The yield at which CP is issued and traded depended on the paper's credit rating, or the perceived creditworthiness of the issuer (if the paper does not have a formal credit rating). CP issued by a top rated 'AAA' rated company will trade at a yield below LIBID . A lower rated company may be traded at up to 100 basis points (1%) above LIBOR. For example, in September 1991, when 1-month LIBOR was 9.75% and 1-Month LIBID was 9.625%, British Aerospace (with a strong investment grade single-A credit rating), was issuing 1-month CP at 9.66% (9 basis points below LIBOR and 3.5 basis point above LIBID).

The price at which CP is sold can be calculated in the same way as the price of bills of exchange. The sale price (P) will be:

$$P = \frac{F}{1 + \frac{R \times D}{365}}$$

- *365 days for sterling and 360 days for US dollars and other currencies.
- F is the face value of the CP (the amount payable at maturity)
- R is the interest rate on the paper as percentage
- D is the number of days to maturity of the CP

Let us take an example. Assume two companies A and B, each issue £ 10 million of CP with a 3-month maturity (91 days). A's CP has an A1/P1 credit rating and was issued at 9.6% B's CP has a lower credit rating and was issued at 10.5%.

A will sell the CP for the price of:

$$\frac{\text{£10 million}}{1 + \frac{(9.6\% \times 91)}{365}} = \frac{\text{£10 million}}{1.023934} = \text{£ 9,766,254}$$

B will sell the CP for the price of:

$$\frac{\text{£10 million}}{1 + \frac{(10.5\% \times 91)}{365}} = \frac{\text{£10 million}}{1.026178} = \text{£ 9,744,898}$$

Issuance of Commercial Paper in India

Non-Banking Companies can issue CP and is regulated by the directives of the Reserve Bank of India in exercise of its powers conferred by Section 45K of the RBI Act 1934.

A company that satisfies the following requirements shall be eligible to issue CP:

- a) The tangible net worth of the company, as per latest audited balance sheet is not less than Rs. 40 million (four crore). Tangible net worth shall mean paid-up capital and free reserves (including balances in the share premium account, capital and debentures redemption reserves and any other reserves not being created for repayment of any future liability or for bad debts or reserves created by revaluation of assets), as per latest audited balance sheet, as reduced by accumulated balance of losses, any balance of deferred revenue expenditure, as also intangible assets.
- b) Working capital (fund based) limits from the banking sector are not less than Rs. 40 million.
- c) The aggregate amount of CP to be issued shall not exceed the working capital (fund based) limits sanctioned by banks to the issuing company. The working capital limit of every company issuing CP shall be correspondingly reduced by the financing bank/s.
- d) Shares of the issuing company are listed on one or more stock exchanges [this stipulation will not apply to a Government company].
- e) The company obtains the specified credit rating from an approved agency by the RBI for the purpose from time to time.
- f) As per the latest audited balance sheet, the company maintains a minimum current ratio of 1.33: 1, based on the classification of current assets and current liabilities as per RBI guidelines.
- g) Minimum and maximum period of CP shall have the same maturity date.
- h) The CP shall be issued for maturities between 3-months and less than 1 year from the date of issue.

- i) Every issue of CP is to be treated as an issue.
- j) There shall be no grace period for the payment of CP. If the maturity date is a holiday, the company shall be liable to make payment on the preceding working day.
- k) The CP may be issued in multiples of Rs 500,000, but the amount to be invested by any single investor shall not be less than Rs. 2,500,000 (face value), provided that the secondary market transaction may be for amounts of Rs. 500,000 or multiples thereof.
- l) The total amount of CP proposed to be issued shall be raised within a period of 2 weeks from the date on which the proposal is taken on record by the financing bank, and may be issued on a single date or in parts on different dates provided that in the latter case, each CP shall have the same maturity date. The financing bank means the bank having the largest share in the working capital limits (under multiple banking arrangements), to the issuing company and through whom the proposal for issuing CP has been forwarded to the RBI for its approval.
- m) A company issuing CP shall bear the expenses of the issue including dealers' fee, rating agency fee and any other relevant charges.
- n) CP may be issued to any person, including individuals, banking companies and other corporate bodies; provided that no CP is issued to a non-resident Indian (NRI) except on a non-repatriation basis and subject to condition that it shall not be transferable.
- o) Every company issuing CP shall submit a proposal with the certificate from the credit rating agency to the financing bank. The financing bank shall scrutinise the proposal and on being satisfied that the eligibility criteria and the terms and conditions stipulated for issuance of CP are complied with.
- p) Every company shall thereafter make arrangements for privately placing the issue and ensure that the proposed issue of CP is completed within a period of two weeks.
- r) No company shall have the issue of CP underwritten or co-accepted (guaranteed) in any manner whatsoever.
- s) On maturity of the CP, the holder of the CP shall present the instrument for payment to the issuing company.

3.4.3 Bankers Acceptance

Banks bills are bills of exchange drawn and payable by a bank. The most common form of a bank bill is a Banker's Acceptance (BA), whereby a bank "accepts" a bill [i.e. guarantees] on behalf of a customer, and promises to pay the bill at maturity. A customer might arrange an Acceptance Credit Facility with its bank. The bank then has agreed to "accept" a bill (or a number of bills) up to an agreed limit fixed for the Acceptance Credit Facility. To take an example, assume Alpha Ltd. arranges to purchase goods from Beta Ltd. for £10,000. Beta agrees to give a 3-month credit to Alpha, provided Alpha arranges to have the transaction (payment at the end of 3 months), guaranteed by its (Alpha's) bank. Alpha then asks its bank to agree to accept the 3 month bill drawn by Beta on Alpha evidencing the payment on maturity of the bill after 3 months. (Beta can also draw a bill directly on Alpha's bank).

The bill together with the shipping documents will then be forwarded by Beta's banks to Alpha's bank, with instructions that the shipping documents should only be handed over to Alpha after the bank (Alpha's) has accepted the bill. Alpha's bank stamps the bill as "ACCEPTED" then signs the bill. The bill is then returned to Beta's bank.

Beta's sale bill has now taken the form of a Bankers Acceptance, which will be paid by Alpha's bank on representation at maturity. On receipt of the accepted bill, Beta (seller of goods), has the option of discounting it at a fine rate (because it bears the guarantee of a bank for payment at maturity), to receive payment before the bill's maturity. A seller having received the accepted bill from the buyer's bank may like to discount the bill and get payment instead of holding the bill till maturity. For example, a company has drawn a bill of exchange on North Bank, which has been accepted (by North Bank). The bill has 61 days to maturity, and is for £90,000. The company asks its own bank, South Bank to discount the bill. South Bank is able to discount the bill in the discount market at a discount rate of 12% per annum, and will charge the customer a commission. Commission is likely to be in the range of 10-25 basis points (0.10 %–0.25 %) of the face value of the bill.

South Bank will discount the bill at the following price (P):

$$\begin{aligned} P &= \text{£}90,000 \times 1 - \frac{(61 \times 12\%)}{365} \\ &= \text{£}90,000 \times (1 - 0.02) = \text{£}90,000 \times 0.98 \\ &= \text{£}88,200 \end{aligned}$$

If commission is 10 basis points or £90 (0.01% of £90,000), the customer will receive £88,110.

The true interest yield to a buyer of a bill is always higher than the discount rate, because the discount rate applies to the face value of the bill, whereas the yield for the bill-buyer relates to the discounted purchase price.

Example : A bank arranges to discount a bill for £500,000 on behalf of a customer. The bill has a maturity of 91 days, and is purchased by a discount house at a discount rate of 10% p.a.

The discount on the bill is $500,000 \times 91/365 \times 10\% = \text{£}487,534.25$ (sale proceeds of the bill)

Now, if the discount house were to hold the bill to maturity, its investment yield would be:

$$\text{Yield (\%)} = \frac{\text{Profit}}{\text{Cost of Investment}} \times \frac{365}{\text{Days to Maturity}}$$

The profit on the investment is the difference between the eventual proceeds from the bill (£500,000) and the purchase cost (£487,534.25). This is the discount on the bill. The yield would therefore be higher than the discount rate of 10%:

$$\begin{aligned} \text{Yield (\%)} &= \frac{\text{£}12,465.75}{\text{£}487,534.25} \times \frac{365}{91} \\ &= 10.26\% \end{aligned}$$

Discount houses are very unlikely to hold bills they purchase until their maturity (unless they have just a very short term to maturity). They will usually seek to sell the bills to customers who want to invest in short term money market securities, such as banks, or other financial institutions and companies.

Their profit comes from selling very large quantities of bills at a higher price. The spread between the rate at which a discount house will buy and sell bills depends on the type of bill (T-bill, bank bill, trade bill-without BA) and the term to maturity. The buy rate will be higher than the sell rate and the spread will be, say, 1/32 of 1% for bank bills with 1 month to maturity and 1/8 of 1% for bank bills with 3 months to maturity. As long as discount houses hold bills, they are at risk to an adverse changes in money-market interest rates.

Example : A discount house buys a bank bill on November 8. The bill, which has a face value of £100,000 and a term of 91 days to maturity, was purchased at a discount rate of 10.5%. The discount house resells the bill to a bank seven days later.

The discount house would have purchased the bill at £97,382. The price at which it resells will depend on the level of money market interest rates on November 15.

Outcome 1: If there is no change in interest rates. The discount house may sell the bill at a discount rate of 10.625 % p.a. (12.5 basis points above its original buy rate). Then the sale price P would have been:

$$P = 100,000 \times \left[\frac{1 - (84 \times 10.625\%)}{365} \right] = £97,555$$

The discount house will have made a profit of £173 (£97,555 – £97,382) on buying and reselling the bill.

Outcome 2 : If interest rates would have fallen by 0.5% in the week ending November 15, the discount house might resell the bill at 10.125% p.a. discount. Its sale price P would have been:

$$P = 100,000 \times \left[\frac{1 - (84 \times 10.125\%)}{365} \right] = £97,670$$

Its total profit would be £288 (£97,670 - £97,382). This is higher than Outcome 1, because the fall in interest rates have benefited the discount house by pushing up bill prices.

Outcome 3 : If interest rates have risen by 0.625%, the discount house might resell the bill at 11.25% p.a. discount. Its sale price P would be:

$$P = £100,000 \times \left[\frac{1 - (84 \times 11.25\%)}{365} \right] = £97,411$$

Its profit would be £29 (£97,411 – £97,382), because the movement in interest rates had been adverse during the time the discount house held on to the bill. To avoid this interest rate risk, discount houses will try to resell bills very quickly after buying them, particularly if they expect an increase in interest rates.

Although the profit on discounting and reselling is quite small for each bill, discount houses are able to trade profitably because of large volume of business the conduct.

A bank may prefer to hold bills in its own portfolio rather than sell them to a discount house, as a money market deal, for further trading by potential investors. An investing bank that has decided to retain a Bankers Acceptance in its portfolio may be able to use it as collateral for a loan at the discount window of the central banking authorities (Reserve Bank). Banks tendering eligible bills for discount with the central banking authorities can re-finance themselves for specified periods. This enables them to re-invest the discounted proceeds for expanding their asset portfolios further.

3.4.4 Certificate of Deposit

A Certificate of Deposit (CD) is a document issued by a bank and in most developed money markets by building and thrifts societies relating to an amount of money which has been deposited with its issuer. The document recognises the obligation of the amount to the bearer (with or without interest) at a future date. The holder of a CD is therefore, entitled to the money on deposit, usually with interest, on the stated maturity date. Payment is obtained by presenting the CD on the appropriate date to a recognised bank, which in turn will present the CD for payment to the bank that issued the CD.

It may be useful to compare CDs with ordinary time (fixed) deposits (TDs). With a TD, an investor places a sum of money with a bank for a stated period of time, and receives interest at a specified rate. At the end of the deposit period, the investor is entitled to withdraw the original sum deposited, plus interest. A pre-mature encashment of the TD will however be possible either without payment of interest or only after payment of very nominal interest (lesser than that payable for the minimum period run). A pre-encashment is very likely to result in a heavy loss of interest to the investor.

A CD, in contrast, is a certificate for a time deposit. It is a bearer security, meaning that its holder is entitled to claim the deposit with interest at the end of the deposit period. Because it is a bearer security, a CD is negotiable and ownership of the CD (and the underlying deposit) is transferred by physical delivery from seller to buyer. It is therefore usual for the original holders of CDs to sell them before maturity, instead of waiting for settlement from the issuing bank at the due date.

CDs can be liquidated at any time at the prevailing market rate in the secondary market. Hence they are an ideal way to invest funds short term while retaining the flexibility to convert into cash at short notice if a need arises at any time.

Issuance of CDs by Banks of India

The scheme for the issuance of CDs by banks was introduced in 1989, under guidelines of the Reserve Bank of India.

- a) CDs can only be issued by scheduled commercial banks excluding regional rural banks.
- b) The amount of CDs permitted to be issued by any scheduled commercial bank is linked to the average aggregate deposits of each bank during a particular period and is usually 1% of that average. The ceiling on the issuance of CDs by each bank is communicated by the Reserve Bank of India to the respective bank from time to time. The minimum amount of a CD should be Rs. 10 million i.e., the minimum deposit that could be accepted from a single subscriber should not be less than Rs. 10 million. The CDs above Rs. 10 million will be in multiples of Rs. 2.5 million (25 lakhs).

- c) CDs can be issued to individuals, corporations, trusts, mutual funds, associations etc. Non-resident Indians may also subscribe to CDs, but only on non-repatriable basis. Such CDs cannot be endorsed to another NRI in the secondary market.
- d) The maturity period of CDs should not be less than 3 months and not more than 1 year.
- e) CDs should be issued at a discount on face value. The issuing bank is free to determine the discount rate.
- f) Banks have to maintain the applicable Cash Reserve Ratio (CRR) and Statutory Liquidity of Reserve (SLR) on the issue price of the CDs.
- g) CDs will be freely transferable by endorsement and delivery but only after 45 days of the date of issue.
- h) Banks cannot grant loans against CDs (as securities). Further more, banks cannot buy-back their own CDs before maturity.
- i) CDs will be in the form of a usance promissory note and will attract stamp duty. There will be no grace period for payment of CDs. If the maturity date happens to be a holiday, the issuing bank will make payment on the immediate preceding working date. Banks should therefore fix the maturity dates such that it does not coincide with a holiday to avoid loss of discount.
- j) Since CDs are freely transferable by endorsement and delivery, banks are required to print CDs on good quality security paper and necessary precaution should be taken to guard against tampering with the instrument. Due to their free transferability, CDs may be presented for payment by the last holder. The question of liability on account of any defect in the chain of endorsements may arise. Banks have been advised to make payment only by crossed cheque.
- k) Banks should not issue duplicate CDs in case of CD is reported lost. The banks should wait for a reasonable period after due date to see whether the CD is presented by any holder.

Issuance of CDs in International Money Markets

Generally, CDs in international money markets pay straight interest, although a depositor can negotiate for interest to be paid in the form of a discount. The discount form enables an investor to buy a CD with a larger face value than he could if the interest were payable at maturity. For example, if he only had US\$ 900,000 he could buy a CD for US\$1 million if the maturity date were in one year's time and the rate approximately 10% p.a. Obviously 10% p.a. discounted CD would command a higher spot price than \$900,000. As a result of the CD being issued at a discount, the bank receives a smaller amount than the face value of the document. But in effect, this is similar to issuing paper at a normal rate of interest. In fact, paper issued at a discount should be easier to handle in the secondary market than CDs bearing an interest rate, as the secondary market operator does not have to worry about accrued interest and to allow for this in his pricing.

A deep secondary market is all important in the organisational set-up of a CD market. Without a well developed secondary market (i.e. with many participants), the CD paper will not be much different than a normal fixed-time deposit.

The main CD markets only operate in the national currencies. For instance, domestic sterling is handled in the London market and domestic US dollars in US money centres, particularly in New York. The exception is the CD in Eurodollars, issued in London by banks established there, including branches of foreign banks. Similar markets are operating in the Far East, although London has the most developed CD market. The introduction of highly negotiable paper such as CD, makes it easier for currency speculators to invest in short positions and possibly gain the benefit of lower interest rates, when they ease as a result of large in-flows in to that currency.

CD prices are on a yield to maturity basis. The following price formula applies:

$$P = \frac{V}{1 + \frac{Y \times D}{365}}$$

P is the sale/purchase price; V is the value of the deposit (which is the sum of the deposit + interest) payable at maturity; Y is the yield required on the CD as a percentage; D is the number of days.

The discount in the price of a CD in the secondary market depends on the interest yield and the term to maturity of the underlying deposit.

Example : A CD is issued for a deposit of £500,000 with a term of maturity of 3-months (91 days). At the end of this term, accumulated interest will be £12,500. The CD was issued to Alpha, which then sells it immediately in the market through its bank at an interest rate of 11% p.a.

The sale price P will be:

$$\begin{aligned} & \frac{\pounds 512,500}{1 + \frac{11\% \times 91}{365}} \\ &= \frac{\pounds 512,500}{1.02742} \\ &= \pounds 498,822 \end{aligned}$$

Note : The higher the yield required by the purchase, the lower the sale price of the CD.

3.4.5 Repurchase Agreements

A Repurchase Agreement (Repo) is the sale of securities by a dealer (generally, a bank) to an investor, combined with a simultaneous agreement by the dealer to buy back the securities at a future date, at the original sale price plus interest. A Repo is basically a short-term secured loan from an investor to a bank (or from one bank to another) with the collateral provided by the securities.

The securities that are sold and purchased (ie. provided as loan collateral) involve high-credit quality securities, such as government treasury notes and bonds. The maturities of the underlying securities must be longer than the term of the Repo. In more developed money markets, securities issued by highly rated corporations are also used as collateral for repo deals. Collateral that is asked for might also be specific, with the customer asking to buy and resell a specific bond.

Most Repo trades are very short-term, typically one week. In US the most common trade is overnight.

A Repo is usually agreed by telephone, and the dealer then sends two written confirmations. One for the initial sale and the second for the future repurchase. A confirmation note will specify the following:

- a) The name and address of the Repo dealer
- b) The dealing date
- c) The settlement date (for the sale or repurchase)
- d) The securities being sold or repurchased, and their nominal value e.g. \$100 million nominal value of 10 1/4% US Treasury notes 2003
- e) The sale price (for the initial sale) or the repurchase price including interest (for the repurchase)
- f) How the securities will be delivered to the customer (for the sale) and where they should be delivered (for the repurchase by the repo bank).

Delivery vs. Payment [DVP] Mechanism

DVP generally requires delivery vs. payment, which is the physical delivery of the bonds (securities) to the customer when the initial rate is made. Payment and physical delivery take some time to arrange, and it is usual for settlement of the initial sale i.e. delivery and settlement to take place one or two days after date of the repo transaction agreement.

If the customer gives payment instructions two business days prior to settlement, and if the transaction is agreed on Monday, the settlement (delivery vs. payment) will take place on Wednesday.

At maturity the securities will be sold back by the customer to the repo dealer at a price that includes interest for the term between the sale and repurchase.

Repo Transaction Mathematics

The quantity of securities sold (i.e. provided as collateral by the seller-borrower) depends upon their market value. There must be sufficient collateral to cover the amount of funds that the seller (borrower) is obtaining. The value of securities is the current market value, plus accrued interest, with a possible downward adjustment to give comfort to the lender that the securities should offer adequate collateral.

Example 1: Able Bank makes a Repo agreement with Baker for \$50 million. Collateral will be provided by 8% US Treasury bonds which have a market value of \$102.50. It is agreed that their value for the purpose of the Repo should be 101, and that the interest rate payable should be 7.5% p.a.

Analysis: The repo transaction will involve the purchase and sale of bonds with a nominal value of \$49.5 million ie. $\frac{\$50 \text{ million}}{101} \times 100$. Able Bank will in effect

borrow \$50 million and provide \$49.5 million of bonds as collateral. At maturity of the repo agreement, Able Bank will pay Baker \$50 million plus interest at 7.5% pa, and Baker will return the securities.

Example 2: An investment company has \$100 million to invest on a Monday and enters into a 7-day repo agreement with a bank. The securities are 9% US Treasury bonds which have a market price of \$96. Accrued interest on these gilt's is 1.1 points. The repo dealer's offer rate is 10.5%. The transaction will be on a DVP basis.

Analysis: The initial trade will be for the sale of a quantity of 9% US Treasury bonds by the bank to the investment company. If 2 days are needed for the settlement, the initial sale will be settled on Wednesday, and for a 7-day Repo, the repurchase will be settled on the Wednesday following.

Since the company wishes to lend \$100 million, the nominal value of the bonds that are provided as collateral will be:

$$P \times \frac{100}{MV + A}$$

P is the amount of money to be lent by the investor

MV is the Market value of the securities

A is the accrued interest on the securities (in points)

The T-bonds provided as collateral will have a nominal value of £103 million (rounded off).

$$\text{£103 million} = \left(\frac{100 \times 101}{96 + 1.1} \right)$$

The repurchase price will be the original sale price plus interest at the Repo rate of 10.5% per annum. Interest will be $10.5\% \times 7/360 \times \100 million (\$204,167). The repurchase price will therefore be \$100,204,167.

The investment company in effect has invested \$100 million for 7 days, against a collateral of \$103 million (nominal value) of US government Treasury bonds, and earned interest at 10.5% p.a.

Reverse Repo

A Reverse Repo is a repurchase agreement in which a dealer buys securities from a customer and at the same time promises to sell them back at a future date at an agree price. Whereas a Repo is a form of money market lending, a Reverse Repo is a form of money market investment.

Price Quotations

A dealer will quote two Repo prices.

- a) The bid price is the price which the dealer is willing to accept in return for purchasing securities and agreeing to sell them back. The bid rate is therefore, the dealer's Reverse Repo rate.
- b) The offer rate is the rate that the dealer is willing to pay to sell and repurchase securities. This is the rate for a Repo, which will be lower than a comparable Reverse Repo.

Example: An investment company telephones a bank that makes a market in Repos and asks for the bank's rate on 7-day Repos on Deutschmarks (DM). The bank gives rates of 7.50 - 7.40%. The investment company then asks for a

7-day repo agreement in which it buys German government securities from the Repo bank to a value of DM 100 million.

The securities that will be used as collateral are 8% Bunds (German Govt. Bonds), which have a market value of DM 102.5 accumulated interest is 1.0.

Analysis: The nominal value of the Bunds to be delivered is:

$$\text{DM 100 million} \times \frac{100}{102.5 + 1.0} = \text{DM 96.6 (DM 97)}$$

These will be delivered in exchange for a payment of DM 100 million by the investment company.

The repo rate is 7.40% pa. At the maturity of the repo, the Bunds will be delivered back to the repo bank in exchange for a payment of DM 100 million plus interest. Interest will be $\text{DM 100 million} \times 7.4\% \times 7/360 = \text{DM 143,889}$. The repurchase price will be DM 100,143,889 .

Why are Repos Used?

Repos offer investors attractive yields on short-term investments, combined with top quality collateral. Repos are attractive securities and any investor is allowed to enter the repo market. At some banks repos have developed from an instrument for short term lower cost borrowings into traded product for making profits. The repo market is driven by these market-making banks (dealers).

Market makers in repos run matched books, using repos to borrow at one rate and reverse repos to lend at a higher rate, taking the spread between the lending and borrowing rates as profit. The market repurchase agreements as an alternate to money market deposits (called the depo market): call money; CDs and CPs as short term investments. Some advantages of Repos for investors and borrowers are listed below:

INVESTOR	BORROWER
a) Very low credit risk.	a) Cheaper finance
b) High quality collateral which is marked-to-market daily	b) Profits from trading in repos
c) Can be tailored to meet the investor's requirements.	
d) Any quantity of surplus funds (above a minimum threshold) can be invested for any period.	

3.5 PRIME LENDING RATE AND LOAN PRICING

The Prime Lending Rate (PLR) is the base rate that banks use in pricing commercial loans to their best and most creditworthy customers. The rate is determined on the basis of the central bank's decision to raise or lower prevailing interest rates for short-term borrowings.

Though some banks charge their best customers more and some less than their best customers more or less than their (i.e. The individual bank's) official prime rate, the PLR tends to become standard across the banking industry when a

major bank moves its PLR up or down. This is because of a strong competitive factor between banks. The PLR is a key interest rate, since loans to less-creditworthy customers are often tied to the PLR.

For example, a triple A rated company (blue chip) may borrow at a prime rate of 8%, but a less-well-established small business may borrow from the same bank at Prime + 2 (or 10%).

3.5.1 Loan Pricing

Two basic approaches to loan pricing are distinguished according to the bank's relationship to the borrower.

i) Spread Pricing

That is pricing over the banks cost of funds and is suitable for prime borrowers. Banks tend to price such loans to be competitive with other sources of funds available to the borrower. For purposes of spread pricing, the cost of bank deposits (and other sources of funding) is conceptually, the transfer price charged by the funds mobilisation function of the bank. To be competitive, the bank may fund the loan with "duration-matched" funds and price it at a mark-up (margin or spread) over the cost of such funds. (i.e. which are applied to match the duration of the loan). The typical cost benchmark for these funds might be the interest rate offered (i.e. paid to investors or depositors), on the banks short-term CD's or perhaps a blended cost based on a 'mix' of the CD rate and call-money rate or funds raised through a Repo deal.

The actual loan rate charged to any particular customer would be determined by the following formula:

$$\begin{array}{rcl}
 \text{Loan Interest Rate} & = & \begin{array}{l} \text{Base or Prime Rate [incl. The Bank's desired profit margin over all the operating and Administration Costs]} \\ \text{+ Default Risk Premium paid by non-Prime-rated borrowers} \\ \text{+ Term-Risk Premium paid by borrowers seeking long-term credit} \end{array}
 \end{array}$$

For example, a medium sized business customer asking for a 3-year loan to purchase equipment might be assessed a loan rate of 14% (consisting of a Prime or base rate of 10% plus 2% for default risk and another 2% for term risk).

Longer term loans are assigned a term-risk premium because lending over a longer period exposes the bank to higher possibilities of loss than a short-term exposure. The risk premiums attached to loans are referred to collectively as markup. Banks can expand the size of their loan portfolios by simply varying their loan rate markups.

ii) Cost-benefit Loan Pricing

While most loans are quoted to customers on the basis of Prime (or LIBOR, or some other money market base rate), banks have developed sophisticated loan pricing techniques, that indicate whether the bank is charging enough for a loan to fully compensate it for all costs and risks involved.

One such system is called cost-benefit loan pricing, which consists of three simple steps: (i) estimate the total revenue the loan will generate under various loan interest rates and fees (ii) estimate the net amount of loanable funds the bank must turn over to the borrower (after deducting any deposits the borrower has placed with the bank and adding reserve requirements on the deposits) and (iii) estimate the before tax yield from the loan by dividing the estimated loan revenue by the net amount of loanable funds the borrower will actually use. For example, a customer requests a Rs.5 million line of credit, but actually uses only Rs.4 million at a contract loan rate of 20% p.a.

The customer is asked to pay a commitment fee of 1% on the unused portion of the credit line. The bank insists that the customer maintain a compensating deposit with the bank equal to 20% of the amount of the credit line actually used and 5% of any unused portion of the line. Deposit reserve requirements are assumed at 10%.

From this information we have the following:

	USED PORTION OF CREDIT LINE	UNUSED PORTION OF CREDIT LINE
Estimated Loan revenue	= Rs.4,000,000 × 0.20	+ Rs.1,000,000 × 0.01
	= Rs.810,000	
Estimated bank funds drawn upon by borrower	= Rs.4,000,000 - $\frac{\text{Compensating Bal. Reqd.}}{(4,000,000 \times 0.20 + 1,000,000 \times 0.05)}$	
	+ $\frac{\text{Deposit Reserve Requirement}}{0.10 (4,000,000 \times 0.20 + 1,000,000 \times 0.05)}$	
	= Rs.3,235,000	
Estimated before tax yield to the bank From the loan	= $\frac{\text{Rs.810,000}}{\text{Rs.3,235,000}}$	= 25.04 %

The bank must decide if this 25.04 % before tax yield is adequate to cover the banks cost of funds, the risks inherent in the loan and the banks desired profit margin (once all costs are considered).

3.6 APPLICATION OF YIELD CURVES IN INVESTMENT AND BORROWING DECISIONS

A yield curve is an explanation of how interest rate differ according to the term-to-maturity of a loan or deposit.

A yield curve is constructed typically from (i) money-market benchmark rates for short-term rates and (ii) government bond yields for longer-term rates.

The term structure of interest rates (or yield curve), shows how interest rates (in any one currency) vary according to the period of the loan (or in the case of floating or variable rate borrowings, the period between each rollover or reset dates).

The normal or upward sloping yield curve

The normal yield curve is upward sloping (sometimes referred to as a classical or positive yield curve).

This means that interest rates are normally higher for long-term loans than for short-term loans. This phenomena suggests that the lender is compensated for tying-up funds for a longer time and the increased credit risk in a longer-term loan. The curve will flatten out for very long term loans(15 to 25 years and beyond).

Investors prefer to place funds in shorter maturities, so that when the investments mature, they can reinvest at expected future higher interest rates. On the other hand, borrowers prefer to borrow for longer maturities so that they can lock-in the current lower interest rates. These factors, which influence the demand and supply, will cause the following results:

In short maturities supply of funds is greater than the demand for funds, while for longer maturities demand for funds is greater than supply. This tends to decrease short term interest rates and push up long term interest rates. This results in a positively sloped yield curve.

The downward sloping or inverse yield curve

Sometimes the yield curve will be downward-sloping or inverse. This occurs when interest rates are higher on short-term loans than on long term loans. One situation when this phenomena generally occurs is when the inflation rate is high and is expected to fall, so that the interest rates are expected to fall eventually. In other words, interest rates are expected to be lower in the future than they are today. In such conditions, investors and borrowers will have the following preferences:

- i) Investors will prefer to place funds in investments of longer maturities to lock-in the current higher interest rates.
- ii) Borrowers would prefer to borrow for short maturities, so that they can borrow at a lower rate when the current borrowing matures.

Thus, in very short maturities supply of funds is less than the demand for funds. While, in longer maturities demand for funds is less than the supply of funds.

Hence, for short maturities, interest rates will tend to increase and for longer maturities, the interest rates will decline. The resulting yield curve will be negatively sloped.

Other Factors: The general belief is that even if market expectations call for future interest rates to remain the same (at today's level), the yield curve would not be flat. It should be slightly sloping upwards, because the market demands a premium for lending for long maturities, compared to short ones. The following factors effect this premium:

- i) The longer the maturities of loans, the higher the credit risk on the borrower.
- ii) Investments of shorter maturities are easy to liquidate than the longer maturities. Thus, longer maturities have a higher liquidity risk.

- iii) The rate for longer maturities should incorporate the effect of interest compounding available in shorter maturities. For example, a one month investment generates income at the end of that month, which can be reinvested, thus compounding the return. Consequently, the longer maturities should compensate the investor by quoting a slightly higher yield to compensate for the foregone reinvestment opportunity available with shorter maturities.

The Figures 3.2 to 3.4 show possible shapes of yield curves under different market expectations and taking into account the premium for longer maturities.

Upward-Sloping Yield Curve: Short-Term Interest Rates are Expected to Increase

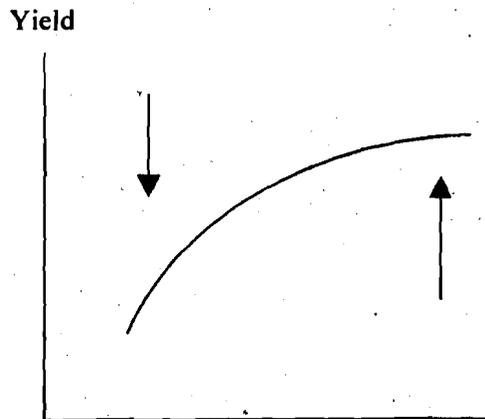


Figure 3.2 : Months to Maturity

Downward-Sloping Yield Curve: Short-Term Interest Rates are Expected to Increase

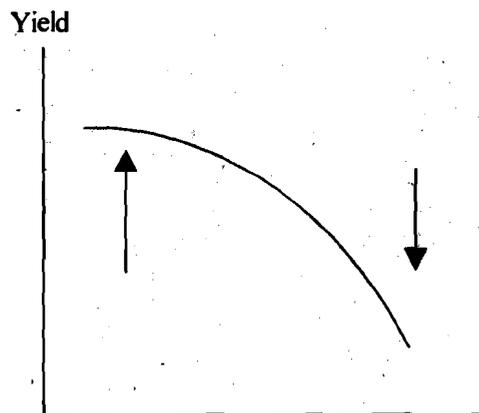


Figure 3.3 : Months to Maturity

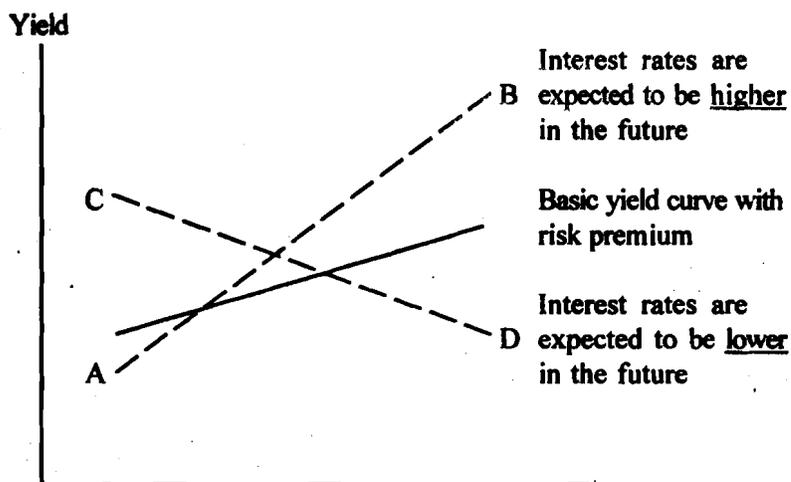


Figure 3.4 : Months to Maturity

Yield Curve and Interest Rate Risk

Interest rate risk is examined because this form of risk usually dominates the other risks associated with holding debt instruments.

Interest rate risk is the risk that evolving market conditions will bring about a change in interest rates.

Since yields on existing instruments must respond to reflect prevailing interest rates, a change in the level of interest rates will mean a change in market values of existing debt instruments. A change in market conditions that leads to an upward or downward shift in the yield curve will influence most debt securities similarly and simultaneously.

Interest rate risk is of great significance to both issuers of debt instruments (borrowers) and holders (investors/lenders) of debt instruments. For issuers, changes in interest rates effect the cost of funds and may effect the return on rate-sensitive assets (i.e. those assets that are sensitive to changes in interest rates during a predetermined period of say, 1,3 or 6 months or longer periods). This is particularly important if the returns (or earnings) from rate-sensitive assets are used to meet (service) interest expense on the issuers (borrowers) liabilities raised by issuing the debt instruments. This is indeed the case of every commercial bank.

Let us note that long term instruments are more price sensitive to changes in interest rates than short term instruments. This point is very important and worth some elaboration. Suppose we have 5 instruments that have maturities of 6 months, 1 year, 2 years, 5 years and 20 years respectively. Now, each instrument is initially priced at par, that is, the yields and the coupons match and each instrument pays a semiannual coupon. Now, consider the effect on the prices of these instruments from a 20 basis point parallel upward shift in the yield curve. (this parallel shift in the yield curve is depicted in the Figure 3.5).

The values of the bonds, before and after the 20 basis point change in yield are calculated by discounting the cash flows that the instruments will provide to their present values. The cash flows are discounted at the instrument's yield. The sum of these present values is then the current market price of the instrument.

The following formula is applied to ascertain the current market price

$$\sum_{t=1}^{m \times T} \frac{CF(t)}{(1+y/m)^t}$$

Cash flows CF(t) are discounted at the rate of y, and then sums these discounted values. The value m denotes the frequency of the payments. If these payments are made annually, then m is 1, if payments are made semiannually, then m is 2; and so on. The frequency of payments is important.

Maturity (Years)	Coupon	Initial Yield(%)	Initial (Price)	New Yield(%)	New Price	Price Change
0.5	7.000	7.000	100.000	7.200	99.903	-0.097
1.0	7.750	7.750	100.000	7.950	99.811	-0.189
2.0	8.250	8.250	100.000	8.450	99.639	-0.361
5.0	8.750	8.750	100.000	8.950	99.208	-0.792
20.0	9.375	9.375	100.000	9.575	98.233	-1.767

Note: The price and price changes are reported per Rs.100 of face (par) value.

Now, consider the column titled price change. Notice that the instrument with 6 month to maturity declined in value by Rs.0.097 for each Rs.100 of face value as a result of the 20 basis point increase in yields, while the bond with 20 years to maturity declined in value by Rs.1.767 for each Rs.100 of face value as a result of the same 20 basis point increase in yields.

The 20 year bond declined in value by more than 18 times as much as the bond with 6 months to maturity. Thus, we see that the longer the maturity, all things being equal, the more price sensitive a debt instrument is to a change in its yield.

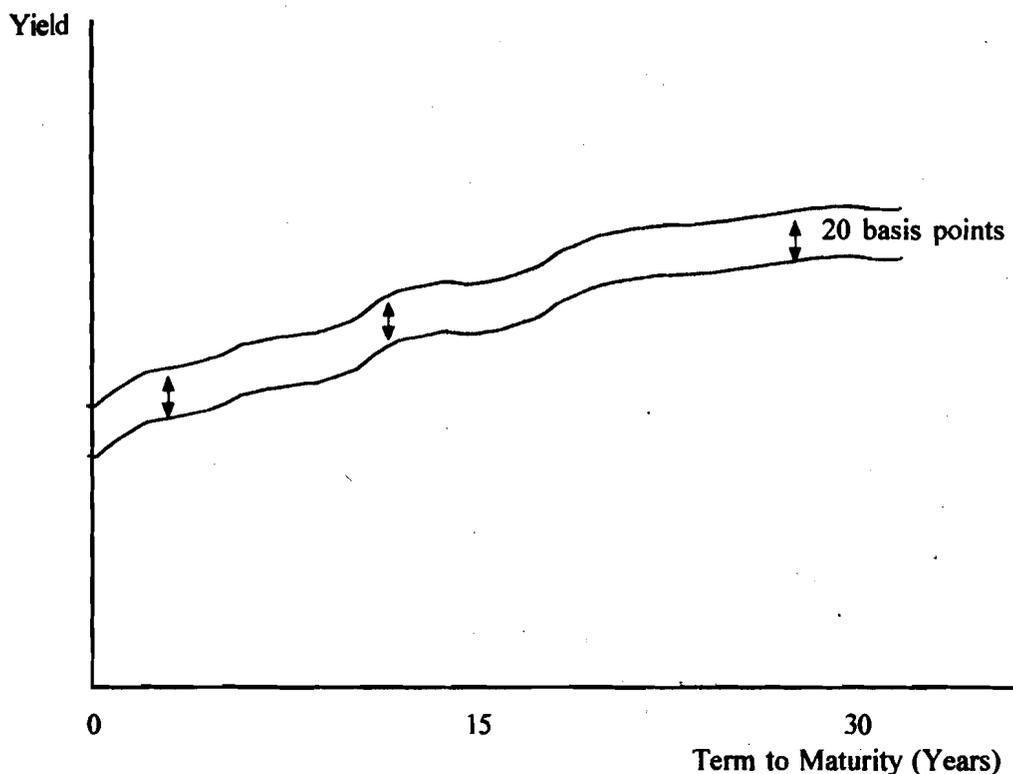


Figure : 3.5 : Parallel Shift in the Yield Curve

The risk of changes in the yield curve is one of the interest rate risks to which a company might be exposed, depending on the maturity mix of its borrowed funds or investments. By choosing a term for borrowing (between roll-over or re-set dates), there is a risk that in retrospect, an alternate choice of maturities would have been cheaper. Let us take an example.

A company wishes to borrow £ 5 million for 3 years and is considering two options.

- i) A variable rate loan with a rollover every 12 months. The interest rate for the first 12 months would be 12 1/2 % pa.
- ii) A variable rate loan with a rollover every 6 months. The interest rate for the first 6 months would be 12 3/4 % pa. (The yield curve is inverse)

During the 3 year term of the loan, the yield curve changes from inverse to positive. Rates are as follows:

After	12-month rate(%)	6-month rate(%)
6 months	n.a.	12 1/4
1 year	12 1/2	12 1/4
1 1/2 years	n.a	12 1/4
2 years	11 1/2	11 1/4
2 1/2 years	n.a.	11 1/4

Interest costs over the 3 year period would be:

Alternate (1). 12 month rollover

$2 \times 12 \frac{1}{4} \% \times \text{£}5 \text{ million}$	1,250,000
$+1 \times 11 \frac{1}{4} \% \times \text{£}5 \text{ million}$	575,000
Total interest cost	<u>1,825,000</u>

Alternate (2). 6-month rollover

$6/12 \times 12 \frac{3}{4} \% \times \text{£}5 \text{ million}$	318,750
$+3 \times 6/12 \times 12 \frac{1}{4} \% \times \text{£}5 \text{ million}$	918,750
$+2 \times 6/12 \times 11 \frac{1}{4} \% \times \text{£}5 \text{ million}$	562,500
	<u>1,800,000</u>

In retrospect, the 6 month rollover option would have been £25,000 cheaper because of a change in the direction of yield curve. For companies borrowing heavily, choosing the best borrowing term could make a difference of several hundred thousands in interest.

3.7 INTERNATIONAL BANKING RISKS AND CAPITAL ADEQUACY REQUIREMENTS

Financial Institutions (including Banking and Non-Banking institutions) have operated in increasingly competitive markets for financial services that have grown through the process of liberalisation and innovation of lending instruments adding on to risk exposures. The 1980's witnessed an escalation of exposure to bad loans (non-performing assets) in the developing countries. There was a crisis in international banking in 1982 because a number of developing countries could not repay their debt to major world banks. These loans jeopardized their profitability and capital, exposing these institutions (and governments) to greater risks. Moreover, differences among industrial countries in the shortage of capital requirements created competitive inequalities among internationally active banks.

A capital requirement, relating the amount of equity and equity-like debt to risk assets (capital/risk assets), is one means of ensuring that a financial institution has a sufficient buffer against loan losses and other threats to its solvency.

Against this background the industrial countries' bank supervisory authorities met in Basel Switzerland, at the Bank of International Settlements (BIS). This bank acts as a central bank for industrialised countries central banks. In 1986 to propose an initial plan to link common minimum-capital requirements for international banks in their credit-risk exposures. The risk exposures include both on-balance sheet (e.g.: loans, overdrafts) as well as off-balance sheet risks (eg: contingent liabilities - guarantees issued, letters of credits opened, Commitments for loans)

In March 1987, the United States and UK reached agreement on a common definition of "capital Adequacy" and in June 1987, Japan joined them. The consensus was subsequently broadened after extensive discussions among the Group of Ten countries, culminating in the 'Basel Accord on Capital Adequacy' in July 1988.

The Accord, sometimes called the BIS requirements, requires a minimum 8% ratio of capital to Risk-Weighted Credit exposures (assets).

The new Capital requirements were phased in gradually and became fully enforceable on January 1, 1993. The 1988 Accord is currently under review and revision. The minimum ratio of capital to risk weighted capital exposure is going to be raised further from 8%.

Application of Capital Adequacy Requirements in India

According to Basel Agreement the implementation of capital adequacy requirements (CAR) in each country is administered by the central banking authorities of the respective country. In India this is administered by the Reserve Bank of India (RBI).

In terms of RBI directives of 22 April, 1992 in RBI notified all banks and financial institutions (inc. NBFC's), that those banks and FI's which have branches abroad, the 8% CAR must be achieved by 31st March 1994. Foreign institutions should achieve this norm by 31st March 1993. Other banks and

institutions should achieve a CAR of 4% by 31st March 1993 and the 8% norm by 31st March 1996.

In Basel the problem was to define what constitutes Bank's Capital. The Capital is defined in two tiers system. The same has been categorised in terms of the Reserve Bank of India directives as follows :

Tier 1 or Core Capital: Tier 1 provides the most permanent and readily available support to a bank against unexpected losses. This tier includes paid-up capital, statutory reserves and other disclosed free reserves, capital reserves representing surplus arising out of sale proceeds of assets will also be reckoned for this purpose. Equity investments in subsidiaries, intangible assets and losses in the current period and those brought forward from previous years, will be deducted from Tier 1 Capital.

Tier 2 or Supplemental Capital: This will consist of:

a) **Undisclosed (secret) Reserves and Cumulative Perpetual Preference Shares**

These often have characteristics similar to equity and disclosed reserves. These elements have the capacity to absorb unexpected losses and can be included as capital, if they represent accumulations of post-tax profits and not encumbered by any known liability and should not be routinely used for absorbing normal loan or operating losses. Cumulative perpetual preference shares should be fully paid up and should not contain clauses which permit redemption by the holder.

b) **Revaluation Reserves**

Arise out of revaluation of assets that are undervalued on the bank's books — typically premises and marketable securities. The extent to which they can be relied upon as a cushion for unexpected losses depends mainly upon the level of certainty that can be placed on estimates of the market values of the relevant assets, the subsequent deterioration in values under difficult market conditions or in a forced sale, tax consequences of revaluation etc. Therefore, it would be prudent to consider revaluation reserves at a discount of 25% when determining their value for inclusion in Tier 2 Capital. Such reserves must be reflected on the face of the balance sheet as revaluation reserves.

c) **General Provisions and Loss Reserves**

If these are not attributable to the actual diminution in value or identifiable potential loss in any specific asset and are available to meet unexpected losses, they can be included in Tier 2 capital. Adequate care must be taken to see that sufficient provisions have been made to meet all known losses and foreseeable potential losses before considering general provisions and loss reserves to be a part of Tier 2 capital general provision/loss reserves will be admitted upto a maximum of 1.25% of weighted risk assets.

d) **Hybrid Debt Capital Instruments**

In this category fall a number of capital instruments which combine certain characteristics of equity and certain characteristics of debt. Each has a particular

feature which can be considered to effect its quality as capital. Where these instruments have a close similarity to equity, in particular when they are able to support losses on an on-going basis, without triggering liquidation, they may be treated as Tier 2 Capital.

e) Subordinated Debt

To be eligible for inclusion in Tier 2 Capital, the instrument should be fully paid-up, unsecured, subordinated to the claims of other creditors, free of restrictive clauses and should not be redeemable at the initiative of the holder or without the consent of the banks' supervisory authorities. They often carry a fixed maturity. As such, as they approach maturity, they should be subjected to progressive discount for inclusion as Tier 2 Capital. Instruments with an initial maturity of less than 5 years or with a remaining maturity of one year should not be included as part of Tier 2 capital. Subordinated debt instruments will be limited to 50% of Tier 1 capital.

In sum and substance in India, Ratio of total capital (sum of tier 1 and tier 2 capital) to total risk assets must be at least 8 per cent, with tier 2 capital limited to 100 per cent of tier 1 capital. And Ratio of core capital (tier 1) to total risk weighted assets must be at least 4 per cent.

Let us take an example to illustrate capital adequacy ratio (CAR).

Calculating Risk-Weighted Assets :

Each asset item on a banks balance sheet and all off-balance sheet (OBS) commitments it has made are each multiplied by a risk-weighting factor designed to reflect its credit risk exposure.

Suppose a bank has Rs.6,000 in total (Tier 1 and Tier 2) Capital and Rs.100,000 in total Assets, and the following on-balance sheet and off-balance sheet items:

On-balance sheet items:

Cash	5,000
Govt. Treasury Securities	20,000
Deposit balances with other banks	5,000
Mortgage loan	5,000
Commercial loans to corporations etc	65,000
Total balance sheet assets (OBS)	100,000

Off-balance sheet items:

Letters of credits issued	10,000
Commitments to customers for credit limits	20,000
Total off-balance sheet (OBS)	30,000

OBS	FACE VALUE	CONVERSION FACTOR	CREDIT EQUIVALENT AMOUNT
Letters Of credits	10,000	× 1.0	= 10,000
Commitments To customers	20,000	× 0.50	= 10,000

(You should distinguish between the "Conversion Factor" and the Risk Weights attached to different assets. The "conversion Factor" is applied to the Off-Balance sheet item (OBS) to place it on an On-Balance sheet basis for purpose of applying the relative 'Weights')

Attaching Risk weights to on & off balance sheet items :

Risk Weight (0%)

Cash	5,000	× 0	= 0
Treasury	20,000	× 0	= 0

Risk Weight (20%)

Balances with banks	5,000		
Stand-by L/C [OBS]	<u>10,000</u>		
	15,000	× 0.20	= 3,000

Risk Weight (50%)

Mortgage Loans	5,000	× 0.50	= 2,500
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Risk Weight (100%)

Corporate Loans	65,000		
Commitments [OBC]	<u>10,000</u>		
	75,000	× 1.00	= 75,000

Total risk weighted assets held by Bank : 80,500

Capital Adequacy Ratio Equals:

Tier 1 + Tier 2

Total Risk Weighted Assets

$$= \frac{6,000}{80,500} \text{ or, } 7.45\%$$

This bank will have to either increase its capital base or reduce the amount of its risk assets, to fall in line with the 8% CAR requirement.

In the above illustration, weights given to each item in the portfolio have been taken as follows:

0%	For cash, govt. securities;
20%	For deposit at Banks;
50%	For mortgage loans;
100%	For commercial/corporate loans;

Check Your Progress B

1 Name the five money market instruments.

.....
.....
.....
.....

2 Define prime lending rate.

.....
.....
.....
.....

3 What is Capital Adequacy Requirement?

.....
.....
.....
.....

4 What items are included in 'Tier 2 capital'?

.....
.....
.....
.....

5 Fill in the Banks

- i) Treasury Bills are issued by
- ii) T.Bills are always quoted at
- iii) Commercial paper is unsecured
- iv) CD may be issued by or a bank.
- v) CAR in India is and for Indian banks.

3.8 LET US SUM UP

International payments are made through correspondent banks. Domestic banks open accounts with foreign banks in foreign currency and foreign banks have accounts in have currency with domestic banks. Most foreign exchange is traded against U.S. dollar. In U.S.A. a computer based clearing house payment system handles payments representing U.S. dollars. SWIFT is a non-profit cooperative of banks that transmits messages in standardised formats. Many interbanks funds transfer systems (like CHIPS) have been designed to reformat SWIFT messages electronically.

Banks have formed loan syndicate. It is highly structured group of financial institutions that lends money on common terms to a borrower. The most used assets traded in money market are Treasury Bills, Commercial Paper, Bankers Acceptances, Certificate of Deposit and Repurchase Agreements. Banks use the prime lending rate in pricing commercial loans to their customers. This rate is determined on the basis of decision of central banks. There are two approaches to loan pricing viz., spread pricing and cost-benefit loan pricing.

How interest rates differ according to term-to-maturity of loan or deposit, is explained with the help of yield curve. It may be "upward" or "downward" sloping curve. Yield on existing instruments must respond to reflect prevailing interest rates, a change in the level interest rates will mean a change in market values of existing debt instruments. A change in market conditions that leads to an upward or downward shift in the yield curve will influence most securities in the same way. Hence interest rate risk is important for both issuer and holder of debt instruments. Capital adequacy requirement is one means of ensuring that a financial institution has a sufficient buffer against loan losses and other threats to its solvency.

3.9 KEY WORDS

Correspondent Bank : A foreign bank in which domestic bank has an account.

CHIPS : Clearing house interbank payment system.

Loan Syndicate : It is a highly structured group of financial institutions.

Treasury Bills: It is an instrument, usually maturity period upto one year, issued by the Central Government to raise a loan.

Commercial Paper : It is a short-term unsecured promissory note issued by a corporation .

Price Lending Rate : It is a base rate that banks use in pricing commercial loans.

CAR : Capital adequacy requirement of ratio between capital and risk assets.

3.10 ANSWERS TO CHECK YOUR PROGRESS

A4 i) Another bank ii) demand deposit iii) Vostro iv) Nostro v) syndicate of banks; (vi) Documents

B5 i) Central Government ii) at a discount iii) Promisory Note iv) a building and Thrift society v) 8 %.

3.11 TERMINAL QUESTIONS/EXERCISES

- 1 Explain the international money transfer mechanism.
- 2 Define a loan syndicate. Explain the syndication process.
- 3 Discuss the meaning and purpose of different money market instruments.
- 4 Explain the two approaches to loan pricing.
- 5 Define yield curve. How is it constructed? How does interest rate risk influence the yield curve?