

TREASURY MANAGEMENT



INDIAN INSTITUTE OF BANKING & FINANCE
KOHINOOR CITY, COMMERCIAL-II, TOWER-1, 2ND & 3RD FLOOR,
KIROL ROAD, OFF-L.B.S. MARG, KURLA-WEST,
MUMBAI-400070

Established on 30th April 1928

MISSION

- To develop professionally qualified and competent bankers and finance professionals primarily through a process of education, training, examination, consultancy/counselling and continuing professional development programs.

VISION

- To be premier Institute for developing and nurturing competent professionals in banking and finance field.

OBJECTIVES

- To facilitate study of theory and practice of banking and finance.
- To test and certify attainment of competence in the profession of banking and finance.
- To collect, analyse and provide information needed by professionals in banking and finance.
- To promote continuous professional development.
- To promote and undertake research relating to Operations, Products, Instruments, Processes, etc., in banking and finance and to encourage innovation and creativity among finance professionals so that they could face competition and succeed.

COMMITTED TO PROFESSIONAL EXCELLENCE

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TREASURY MANAGEMENT

Second Edition (2018)



Indian Institute of Banking & Finance





MACMILLAN

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FOREWORD

The Mission of the Institute is to develop professionally qualified and competent bankers and finance professionals primarily through a process of education, training, examination, counseling and continuing professional development programs. In line with the Mission, the Institute has been offering a bouquet of courses for capacity building of the banking personnel. These courses are contemporary and supported by appropriate pedagogical tools for making the distance learning wholesome.

The Institute publishes a dedicated courseware for almost every paper/subject it offers. The Institute is also committed to revise and update the syllabus and courseware from time to time, to ensure that the course content/coverage is appropriate and is in line with the syllabus prescribed for the subject concerned.

The flagship courses/examinations offered by the Institute are JAIIB, CAIIB and the Diploma in Banking & Finance (DB&F). The CAIIB syllabus offers two compulsory papers viz., Advanced Bank Management and Bank Financial Management. As regards the third paper in CAIIB, candidates have the option to choose one out of the eleven optional papers that are offered as electives. The electives cover the entire gamut of specialized domains in a bank. The electives currently being offered are Human Resources Management, Risk Management, Treasury Management, Retail Banking, International Banking, Corporate Banking, Co-operative Banking, Information Technology, Rural Banking, Financial Advising and Central Banking.

While the compulsory papers provide the breadth of banking, the electives provide the depth. As the current format of CAIIB underscores the fact that current day banking requires general as well as domain specific knowledge, banks will therefore find the CAIIB qualified professionals possess cutting edge knowledge.

The present book on one of the elective subjects namely Treasury Management has now been updated. The book should, however, not be considered as the only source of information/reading material while preparing for the examination due to the rapid changes witnessed in all the areas affecting banking and finance. The students have to keep themselves abreast with the current developments by referring to economic dailies, articles, books and government publications/websites etc. Questions will be based on the recent developments related to the syllabus, but may not have appeared in the book.

The courseware on Treasury Management has been updated and vetted with the help of Subject Matter Experts (SMEs) drawn from the field. The Institute acknowledges with gratitude the valuable services rendered by the SMEs in updating/vetting the courseware.

We welcome suggestions for improvement of the courseware.

Mumbai
2018

Dr. J N Misra
Chief Executive Officer

Treasury Management

First Published (2010)

Compiled from various publications of Indian Institute of Banking & Finance and other relevant articles/books with contribution by Mr. N V Chalapathi Rao under guidance of Dr. R Bhaskaran,
Former, CEO, IIBF

2018

Book updated by:

Mr. Ramesh Krishnan

Vetted by:

Mr. N V Chalapathi Rao

Recommended Reading

The Institute has prepared comprehensive courseware in the form of study kits to facilitate preparation for the examination without intervention of the teacher. An attempt has been made to cover fully the syllabus prescribed for the subject and the presentation of topics may not always be in the same sequence as given in the syllabus. Candidates are also expected to take note of all the latest developments relating to the subject covered in the syllabus by referring to Financial Papers, Economic Journals, Latest Books, Publications and relevant websites.

CAIIB Subjects

Objective of the Examination: To provide advanced knowledge in banking subjects for better decision making.

Question Paper Pattern: Objective Type – Multiple Choice Questions

Eligibility: 1. Membership of the Institute

2. Pass in JAIIB examination of the Institute.

Revised Structure: CAIIB Examination is structured with 2 compulsory papers and 11 elective papers as given below.

I. COMPULSORY PAPERS

1. Advanced Bank Management
2. Bank Financial Management

II. OPTIONAL PAPERS (Candidates to choose any one)

1. Corporate Banking
2. Rural Banking
3. International Banking
4. Retail Banking
5. Co-operative Banking
6. Financial Advising
7. Human Resources Management
8. Information Technology
9. Risk Management
10. Central Banking
11. Treasury Management

TREASURY MANAGEMENT

SYLLABUS

Module A: An Overview

1. Financial Markets
2. Treasury
3. Objectives of Treasury
4. Structure and Organization
5. Functions of a Treasurer
6. Responsibility of a Treasurer

Module B: Treasury Operations

1. Liquidity Management-CRR/CCIL/RTGS
2. Objectives, Sources and Deployment
3. Internal Control, Netting
4. Cost centre/Profit centre, Integrated treasury, Planning & control, Risk analysis
5. Treasury Instruments

Module C: Treasury & International Banking

1. Global scenario and treasury operations
2. Exchange rate mechanism
3. Dealing and trading operations: Control and orderly conduct, Moral and ethical codes, Checks and balances
4. Revaluation: Mark to market and profit calculations, VaR (Value at risk)
5. Components of multi-currency balance sheet

Module D: Risk Management

1. Treasury and investment policy
2. Structure: Front office, Back office and Mid office
3. Accounting, valuation and exposure norms
4. Role of information technology in treasury management
5. Regulation and compliance
6. Internal & external audit

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MODULE – A

AN OVERVIEW

Units

- 1.** Financial Markets
- 2.** Treasury
- 3.** Scope and Functions of Treasury Management



FINANCIAL MARKETS

STRUCTURE

- 1.0 Objective
- 1.1 An Overview of Markets and Functions
- 1.2 Roles and Functions of Participants in the Financial Market

Let Us Sum Up

Keywords

Check Your Progress

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1.0 OBJECTIVE

To provide basic insights into various financial markets like capital, debt, derivatives and foreign exchange markets.

1.1 AN OVERVIEW OF MARKETS AND FUNCTIONS

1.1-1 Financial Markets are markets, which facilitate the raising of funds and investment of surplus assets. These markets also facilitate managing of various risks. Based on the nature of instruments traded and availability of access, the financial markets can be divided into different sub-types as under:

1. Capital market
2. Debt market
3. Foreign exchange markets
4. Insurance markets, which facilitate handling of various risks
5. Commodity Market
6. Mutual Fund Markets, and
7. Money market

Financial markets are regulated markets. Currently there are a number of regulators of these markets in India. The regulator for Capital Market is Securities and Exchange Board of India (SEBI). SEBI also regulates Mutual Funds, though mutual funds also have formed a self-regulatory authority in the form of Association of Mutual Funds of India (AMFI) which is an industry body of mutual funds.

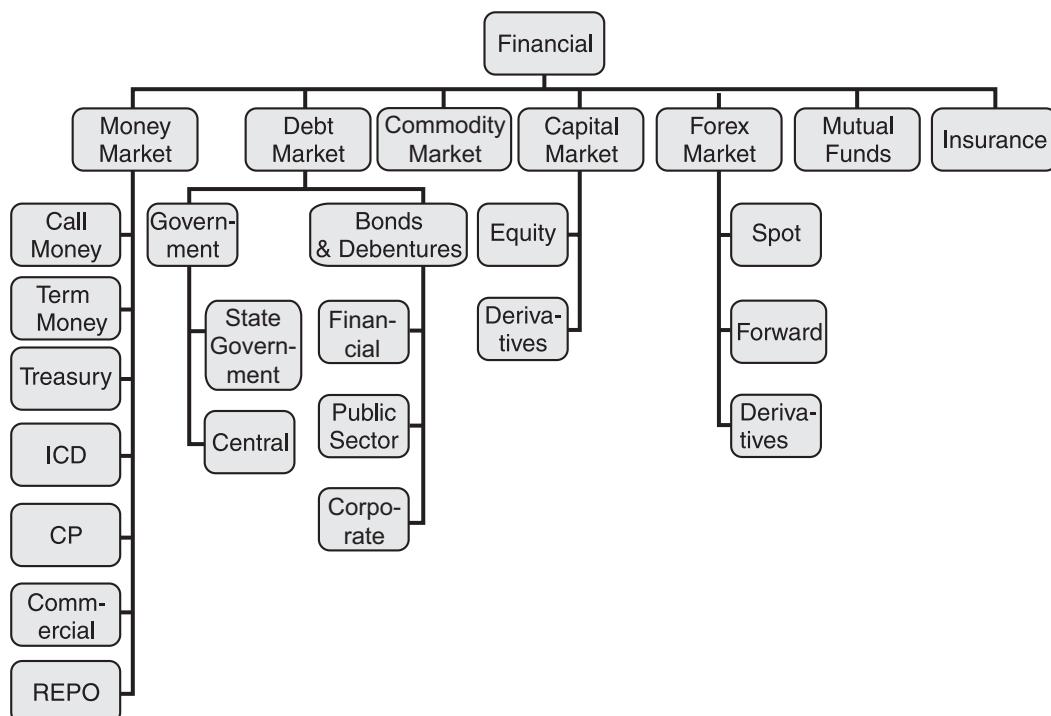


Figure 1: Financial Markets

Banks, Foreign Exchange Market and Money Markets are regulated by the Reserve Bank of India (RBI). Insurance Regulatory Authority of India (IRDA) regulates insurance companies. The derivative market is not an exclusive market. Derivatives include financial derivatives and commodity derivatives. Financial derivatives are regulated by the Reserve Bank of India while the commodity markets, which came under the purview of Forward Market Commission (FMC) earlier, is now regulated by SEBI after the merger of FMC with SEBI on 28th September, 2015 following the fraud at the National Spot Exchange Limited in 2013. Two Self-Regulatory Bodies provide a governance structure in India: The Fixed Income, Money Market and Derivatives Association of India (FIMMDA) is the SRO comprising of all Public and Private Sector Banks, Foreign Banks, Primary Dealers, Financial Institutions and Insurance Companies who operate in the debt market. Twenty one Public Sector Banks, twenty three Private Sector Banks, thirty four Foreign Banks, seven Primary Dealers, six Financial Institutions and fifteen Insurance Companies are currently the members of FIMMDA. FEDAI was set up in 1958 as an Association of banks dealing in foreign exchange in India (typically called Authorised Dealers ADs) as a self-regulatory body and is incorporated under Section 25 of The Companies Act, 1956. Its major activities include framing of rules governing the conduct of inter-bank foreign exchange business among banks vis-à-vis public and liaison with RBI for reforms and development of forex market. Foreign Exchange Dealers Association of India (FEDAI) is the SRO comprising of 21 Public Sector Banks, 45 Foreign Banks, 20 Private Banks and 17 Co-operative banks, financial institutions and others totaling 101 members as of July 2017. Markets can be classified in terms of access. Accordingly, **primary market** is the financial market for the initial issue and placement of equity and debt securities while **secondary market** is the market where shares & debt securities and derivatives are traded. In the case of primary market, unlike the secondary market, no organized stock exchanges are necessary. The primary market is facilitated by many intermediaries like arrangers, issue managers, issuing bank, registrars, book runners, etc., who intermediate between investors and an issuer. Issue managing, advising and underwriting are activities which earn a fee or commission. The primary market for Central Government Securities is now underwritten by Primary Dealers and any devolvement in issuances is taken up by the PDs as per their underwriting commitments. RBI no longer takes up any devolvement on its book, as proscribed under the Fiscal Responsibility and Budget Management (FRBM) Act, 2003.

The **secondary market** (also called aftermarket) is the market for trading of equity and debt instruments. This market can be in the form of Over The Counter (OTC) where the transaction takes place between two parties directly and or organised stock exchanges. In the secondary market, securities are sold by and transferred from one investor to another. The efficiency and price discovery in the financial market is enhanced when the secondary market is highly liquid and transparent. The eligibility of stocks and bonds for trading, and the functioning of stock exchanges in the secondary market is regulated by SEBI (Securities & Exchange Board of India). Most stock exchanges in India have been demutualized. These stock exchanges have also established robust trading systems and settlement practices.

Stockbrokers are the intermediaries between the stock exchanges and the investors. Nowadays, thanks to IT driven trading platforms, trading systems and electronic form of holding of shares (demat), investors are able to trade in the market directly but through broking houses. Stock brokers deal with many clients and many relatively small transactions. This can be contrasted with the primary markets and initial public offerings, which can be seen as the wholesale side of the capital market. Issue of securities and bonds in the primary market is also governed by guidelines issued by SEBI.

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There are a number of investor protection oriented practices introduced by SEBI which have to be adhered to and complied by Issuers.

Overview of the markets:

1.1-2 Capital Market – The **capital market** is the market wherein long-term loans and equity capital are raised and traded. Companies, Government, Banks and Financial Institutions raise funds for their long-term uses through the capital market. In terms of instruments and practices, the capital market can be broadly classified into the stock market and the bond market. Shares, debentures and bonds are issued and traded in the capital market. Companies issue these instruments in the primary market. The instruments can be traded in the secondary market. Equity, company and stock exchange related issues are regulated by Securities and Exchange Board of India (SEBI). Bond market, more particularly G-Sec market, and financial institutions-related issues are regulated by Reserve Bank of India.

Capital market consists of (i) **Stock markets**, which facilitate equity investment, and buying and selling of shares of companies listed on the stock exchanges and (ii) **Debt markets**, which deal with issue of debt contracts and the buying and selling of bonds and debentures.

Capital market also consists of derivatives market. This market is also known as Futures & Options (F&O) market and trades in options and futures contracts. A **derivative market** is a market which could either be an OTC or exchange driven market. Derivatives are instruments developed on the price movement and volatility of an underlying equity, bond or financial contract. Derivative contract specifies the right or obligation to receive or deliver cash on a future date, based on some future event such as the targeted price of an underlying security or the performance of an index. These contracts are useful in providing hedge or risk cover for interest rate changes or change in prices of equity instruments. Derivatives market is also a place for speculative trades and is a growing market. The derivative (commodity and financial derivatives) markets follow a set of rules and practices. Though the commodity and derivative exchanges are organized on the pattern of stock exchanges, there are substantial differences in the way trade and settlement takes place.

1.1-3 The **money market** is a general term for the markets in which banks lend to and borrow money or money equivalent from each other, trade in securities/treasury bills and financial instruments such as Certificates of Deposit (CDs) or enter into agreements such as Repos and Reverse Repos. The market normally trades in instruments with maturities up to one year. It provides short to medium term liquidity in the global financial system. Money market functions either on an OTC (over the counter) or screen based system. Non-bank entities like Mutual Funds and Financial Institutions also operate in the money market in instruments like CD, CP, CBLO and T Bills, but in Call and Notice Money markets, only Banks and Primary Dealers are allowed to participate.

1.1-4 The **foreign exchange markets** are those markets wherein the currencies of various countries are traded. Since a foreign currency cannot be used to settle a transaction within a particular country, trade between countries and counterparties in different countries must be settled in accepted currencies. To achieve this objective, currencies must be traded. The place or process where the currencies of various countries are traded in the market, as if they are commodities, is known as the foreign exchange market. This market is usually highly liquid particularly in the G7 currencies (USD, JPY, EUR, CHF, GBP, CAD, and AUD). The liquidity of the market is high as major international banks continually provide the market with both bid (buy) and ask (sell) prices.

Major foreign exchange trading centers are located in New York, Tokyo, London, Hong Kong, Singapore, Paris and Frankfurt. The foreign exchange market is open 24 hours per day throughout the week (closing worldwide Friday afternoon till Sunday). Due to geographical differences, it is seen that if the European Market is closed, the Asian Market or US will be open. Because of this all world currencies are continuously on trade. Traders can react to news when it breaks, rather than waiting for the market to open, as is the case with most other domestic markets.

The price of a currency in the foreign exchange is primarily a function of demand and supply. Yet there are a number of factors like inflation, interest rates, public debt, political stability and economic performance, terms of trade and current deficit etc. that could affect the price of a currency. Thus, in the foreign exchange markets, fluctuations in the currency exchange rate occur continuously due to developments in the world economy or the national economies. This is in contrast to the equity market where a stock may lose or gain value by 5% or more, and reasons for this may become apparent when a newspaper report that forecasts for that company has been revised upward or downward, or if a key executive has resigned, etc. Of late, the credit rating companies publish country ratings which play a role in the currency prices. Yet often the reason for the fluctuation in currency prices may not be immediately known at all.

1.1-5 Insurance markets – The insurance companies have the need to maintain funds which are invested in the market. These investments are made in approved securities and deposit funds with banks. As such the insurance companies are part of the money markets also. The Insurance companies and mutual funds were allowed as lenders in the interbank call money market, but now only Banks and Primary Dealers can participate in Call Money market. Over and above this, **insurance market** has a crucial role to play in as much as it provides certain risk management tools to the corporates and financial markets. Absence of such risk mitigants could affect the efficiency of the financial market. Insurance companies are broadly divided into two categories, Life Insurance Companies and General Insurance Companies. Insurance industry in India is regulated by Insurance Regulatory and Development Authority of India (IRDA).

1.1-6 Mutual Funds – Individuals can invest in the stock and bond market. They can have trading accounts with broking houses and undertake their transactions. However, as the stock market and other financial markets are complex, all individuals may not be able to access the equity and other markets with ease and efficiency. A mutual fund is a pool of money managed by a professional Fund Manager. A Mutual fund offers an appropriate platform to the individuals to access the market through a plethora of schemes. A mutual fund operates through its Asset Management Company (AMC) which employs skilled fund managers to operate in the market and manage the corpus fund. A mutual fund is a trust that collects money from a number of investors who share a common investment objective and invests the same in equities, bonds, money market instruments and/or other securities. And the income/gain generated from this collective investment is distributed proportionately amongst the investors after deducting applicable expenses and levies, by calculating a scheme's "Net Asset Value" or NAV. Simply put, the money pooled in by a large number of investors is what makes up a Mutual Fund. The AMC can launch a variety of schemes with different types of direct plans (in which the investor invests directly) and regular plans (in which the investor invests through brokers) and accepts subscription from investors. The money collected in mutual funds is invested by professional fund managers in line with the scheme's stated objective. In return, the fund house charges a small

fee which is deducted from the investment. The fees charged by mutual funds are regulated and are subject to certain limits specified by the Securities and Exchange Board of India (SEBI). A mutual fund scheme can be classified into open-ended scheme or close-ended scheme depending on its maturity period. An open-ended fund or scheme is one that is available for subscription and repurchase on a continuous basis. These schemes do not have a fixed maturity period. On the other hand, a close-ended fund or scheme has a stipulated maturity period, e.g., 3–5 years. The fund is open for subscription only during a specified period at the time of launch of the scheme. Investors can invest in the scheme at the time of the new fund offer and thereafter they can buy or sell the units of the scheme on the stock exchanges where the units are listed. In order to provide an exit route to the investors, some close-ended funds give an option of selling back the units to the mutual fund through periodic repurchase at NAV related prices. SEBI Regulations stipulate that at least one of the two exit routes is provided to the investor, i.e., either repurchase facility or through listing on stock exchanges. Mutual funds have started the process of disintermediation and they have competed reasonably well with banks in mobilizing resources towards units of mutual funds. Mutual funds offer multiple product choices for investment across the financial spectrum and cater to all types of investor needs. Of late, SEBI has also permitted mutual funds to launch Real Estate Mutual Fund Schemes and Infrastructure Debt Fund schemes. Mutual Funds are increasingly being favoured by individuals, partnership firms, trusts, banks, financial institutions and corporates for investment. This is clear from the fact that the Assets Under management (AUM) of the Indian Mutual Fund Industry have grown from ₹3.26 trillion as on 31st March 2007 to ₹21.41 trillion as on 31st October, 2017, more than six and half fold increase in a span of about 10 and half years.

1.2 ROLES AND FUNCTIONS OF PARTICIPANTS IN THE FINANCIAL MARKET

Given the number of sub markets in the financial system, the players in the market are also large in number. Each participant to the market approaches it for investment and/or risk management purposes. The varying requirement of the market players and access results in providing depth to the market.

1.2-1 Banks – Banks participate in the capital market and money market. Within the capital market, banks take active part in bond markets. Banks may invest in equity and mutual funds as a part of their fund management. Banks take active trading interest in the bond market and have certain exposures to the equity market also. Banks also participate in the market as clearing houses.

1.2-2 Primary Dealers (PDs) – Primary dealers are entities established for the purpose of market-making in government securities. PDs deal in government securities both in primary and secondary markets. Their basic responsibility is to provide two-way quotes and act as market makers for government securities and strengthen the government securities market. In doing so they operate in other markets as well. After the introduction of Fiscal Responsibility and Budget Management (FRBM) Act, the RBI has stopped taking devolvement of government debt issuances on themselves. The PDs are mandated to underwrite all central government debt issuances and take up devolvement, if any, in such issuances.

1.2-3 Financial Institutions (FIs) – FIs provide/lend long-term funds for industry and agriculture. FIs raise their resources through long-term bonds from financial system and borrowings from

international financial institutions like International Finance Corporation (IFC), Asian Development Bank (ADB) International Development Association (IDA), International Bank for Reconstruction and Development (IBRD), etc.

1.2-4 Stock Exchanges – A stock exchange is a place where securities are traded. It is duly approved by the Regulators to provide sale and purchase of securities by “open cry” or “online” on behalf of investors through brokers. The stock exchanges provide clearing house facilities for netting of payments and securities delivery. Such clearing houses guarantee all payments and deliveries. Securities traded in stock exchanges include equities, debt, and derivatives. Currently, in India, only dematerialized securities are allowed to be traded on the stock exchanges. Settlement in securities account is made by depositories through participants’ accounts. It is essential that stock exchanges are corporatized and demutualized so that there can be greater transparency in the trades and better governance in markets.

1.2-5 Brokers – Only brokers approved by Capital Market Regulator can operate on stock exchange. Brokers perform the job of intermediating between buyers and seller of securities. They help in building up order book, price discovery, and are responsible for a contract being honored. For their services, brokers earn a fee known as brokerage. Brokers operate in the Foreign Exchange Markets also. Their role is limited to bringing together a buyer and seller at a disclosed price for a disclosed quantum of foreign currency and are not permitted to involve in settlement process of the deals brokered by them. The accreditation of foreign exchange brokers is done by FEDAI and ADs/ members deal with only accredited brokers.

1.2-6 Investment Bankers (Merchant Bankers) – These are agencies/organizations regulated and licensed by SEBI, the Capital Markets Regulator. Merchant bankers arrange raising of funds through equity and debt route and assist companies in completing various formalities like filling of the prescribed documents, filing of prospectus and other compliances with the Regulators. They advise the issuing company on book building, pricing of issue, arranging registrars, bankers to the issue and other support services. They can underwrite the issue and also function as issue managers. They may also buy and sell on their account. As per regulatory stipulations, such own account business should be separately booked and confined to scripts where insider information is not available to the investment/merchant banker. Investment/Merchant banking can be an exclusive business. A bank can also undertake these activities.

1.2-7 Foreign Institutional Investors (FIIs) – FIIs are foreign based funds authorised by Capital Market Regulator to invest in home countries’ equity and debt market through stock exchanges. They are allowed to repatriate sale proceeds of their holdings, provided sales have been made through an authorised stock exchange and taxes have been paid. FIIs enjoy *de-facto* capital account convertibility. FII operations provide depth to equity and debt markets and result in increased turnover. In India, these activities have brought in technological advancements and foreign funds in equity and debt market.

1.2-8 Custodians – Custodians are organizations which are allowed to hold securities on behalf of customers and carry out operations on their behalf. They handle both funds and securities of Qualified Institutional Buyers (QIBs) including FIIs. Custodians are supervised by the Capital Market Regulator. In view of their position and as they handle the payment and settlements, banks are able to play the role of custodians effectively. Thus most banks perform the role of custodians.

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1.2-9 Depositories – Depositories hold securities in demat (electronic) form; maintain accounts of depository participants who, in turn, maintain accounts of their customers. On instructions of stock exchange clearing house, supported by documentation, a depository transfers securities from sellers' to buyers' accounts in electronic form. Depositories are important for ensuring efficiency in the market. They facilitate lending against securities and ensure avoidance of settlement risk or bad delivery. National Securities Depository Limited (NSDL) and Central Depository Services Limited (CDSL) are the two major depositories that provide dematerialized holding of securities by the investors.

Depositories have an important role to play in ensuring smooth delivery of securities. To an extent, depositories ensure a process similar to Delivery Versus Payment (DVP) in the equity market.

Let Us Sum Up

The financial markets comprise capital markets, money market, foreign exchange market, mutual funds market, insurance markets and debt market. The markets are further classified into primary and secondary markets. Capital markets also consist of stock markets and bond markets. Derivatives market operates in all these markets. Derivatives market can be either OTC or exchange driven. Foreign exchange market is the place where currencies of various countries are traded. Insurance market provides certain risk management tools to the corporates. Mutual funds offer appropriate platform to individuals to access equity and other markets with ease and efficiency. Each participant in the market has a specific role to perform.

Keywords

Stock market, primary and secondary markets, derivatives market, money market, foreign exchange market, insurance market, mutual funds, primary dealers, stock exchanges, brokers, investment bankers, foreign institutional investors, custodians and depositories.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What does AMFI, the self-regulatory agency for Mutual Funds in India stand for?
 - (a) Association of Mutual Funds in India.
 - (b) Actual Money Funding Institute.
 - (c) All Mutual Funds Institute.
 - (d) Any Mutual Fund Information.
2. What are the characteristics of 'Primary Market'?
 - (a) It is a market where prime banks participate.
 - (b) It is a financial market for initial issue and placement of equity and debt.
 - (c) It is a market for trading of equities and debt instruments.
 - (d) It is a primary market where zero instruments are traded.

3. What is the difference between close-ended and open-ended mutual funds?
 - (a) Close-ended schemes do not attract charges while open-ended funds are subject to levy of charges.
 - (b) Close ended schemes are traded in capital markets while open ended schemes are traded in exchanges.
 - (c) Close ended schemes are traded in the secondary markets while the mutual funds themselves provide daily selling and buying prices for open – ended schemes.
 - (d) Close ended schemes provide tax immunity while open ended schemes are always tax planning schemes.
4. Who are ‘Primary Dealers’?
 - (a) Expert dealers in foreign exchange trading.
 - (b) The accredited foreign exchange dealers.
 - (c) Chief Dealer in dealing of a bank.
 - (d) Entities established for the purpose of market making in G-secs.

Answers

1. (a) 2. (b) 3. (c) 4. (d)



TREASURY

STRUCTURE

2.0 Objective

2.1 Introduction

Let Us Sum Up

Keywords

Check Your Progress

2.0 OBJECTIVE

To provide information on definition and composition of treasury and to introduce to the reader the basic functions of treasury.

2.1 INTRODUCTION

Traditionally, the role of the Treasury in Indian banks was limited to ensuring the maintenance of the RBI-stipulated norms for Cash Reserve Ratio (CRR) – which mandates that a minimum proportion of defined liabilities known as net Demand and Time Liabilities (NDTL) be kept as deposit with the central bank and Statutory Liquidity Ratio (SLR) – which obliges banks to invest a specified percentage of their liabilities in notified securities issued by the Government of India and State Governments or guaranteed by them. Activity in foreign exchange was confined to meeting merchants' and customers' requirements for imports, exports, remittances and deposits. Furthermore, Indian Money Market was characterised by the imperfections arising from administered interest rates. The Money Market, therefore, hardly reflected the position of true liquidity in the system. Following the recommendations of the Committee to Review the Working of Monetary System (1985: Chairman Shri Sukhamoy Chakravarty) and the Working Group on Money Market (1987: Chairman: Shri N. Vaghul) RBI had initiated various measures to reform the money market and to develop the necessary institutional infrastructure and instruments needed to widen and deepen the money market. To start with, Discount and Finance House of India Ltd (DFHI) was set up to provide to the market participants an institutional mechanism (in the form of a market maker) to meet their liquidity requirements by dealing in short term money market instruments like Call and Notice Money, treasury bills, bills rediscounting, etc. Further, steps such as increasing the number of instruments by introducing Commercial Paper (CP) and Certificate of Deposits (CD) greatly contributed to the development of money market. To enable price discovery, cap on call money interest rate was removed in stages, and completely withdrawn in May 1989. Non-banking institutions such as Life Insurance Corporation, All India Financial Institutions, Mutual Funds, etc, were, over a period, allowed to enter the call money market but only as lenders. While the reported misuse of Ready-Forward (Repos) transactions by some of the market participants had resulted in its partial ban for some time, the instrument was subsequently re-introduced with necessary safeguards to prevent its misuse and an improved SGL transfer procedure facilitated its effective monitoring. The introduction of Delivery Versus Payment (DVP) system for securities settlement at Public Debt Offices substantially reduced the counter party risk in security transfers and this also infused confidence in the introduction of repos and expansion of the list of repo-able securities. 'Repos' is presently an important instrument in the money market. It may be noted that DFHI was amalgamated with SBI Gilts Limited in 2004 and the new company is known as SBI DFHI Limited. SBI DFHI Limited now acts as a Primary Dealer to support the book building process in Primary Auctions of Government securities and to provide the necessary depth and liquidity to the Secondary market in Government Securities.

The deregulation of financial markets began with the shift to market – determined interest and exchange rates and moved ahead with the freeing of bank deposit and lending rates. The RBI began using monetary intervention tools such as repos and open market operations (OMOs) to manage liquidity in the financial system and make the determination of interest rates on government securities more transparent and competitive by holding auctions. With the result, unlike earlier, their yields

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got aligned with those in the rest of the market. In fact, they function effectively as benchmark or reference yields on other securities.

Post-liberalization, deregulation and financial market reforms, a vibrant bond market has evolved in the country. This has enhanced the relative importance of investments and the investment portfolio in the balance sheets of banks. Investments are now viewed as an alternative to credit, the historical source of profits for banks. Further, being tradable assets, they offer both interest spread as well as capital appreciation. Just like equity prices and foreign exchange markets, interest rates (yields) on debt instruments are determined through the interplay of various economic, financial (liquidity, inflation, government's/RBI's policies, growth, forex demand and supply, domestic interest rates vis-à-vis global, etc.) and political (local and international) factors and events. Given this, as in the case of equities and forex rates, bond yields can (and do) vary from moment to moment. The reflection of these changes in spot interest rates has seen the fluctuations in security prices – as indeed those of all bonds, whether government or non-government.

Similarly, the rupee's exchange rate has become volatile. There is sufficient fluctuation in both intraday and inter-day prices, enabling one to earn trading profits on buying and selling the currency. The forward market in India is another potential source of profits as, more often than not, it deviates from interest parity conditions. Cross-currency (dollar/yen, sterling/dollar, dollar/Swiss franc) trading opportunities are, of course, older and have come to life in Indian banks after liberalization.

The volatility in interest rates (yields) is the major reason for the transformation of bank treasuries from mere CRR and SLR – keepers to a profit centre. Downward and upward movements in gilt yields offer ample opportunities for the bank to trade in the underlying securities and earn profits. An active treasury can arbitrage' (earns profits without risk) by borrowing cheap (money market/forex market) and investing in money, forex and bond markets at higher rates to earn a spread. Bank treasuries deal with the customers enabling them to execute their transactions in financial markets. Apart from trade execution, in such situations, the bank is, in effect, 'lending' its balance sheet so that counterparty risk for both the customer and the deal counterparty is overcome. Another key (modern) function of the treasury is asset-liability management and hedging (i.e. insulating) the bank's balance sheet from interest and exchange rate fluctuations. This involves reordering the maturity and interest rate patterns of assets and liabilities, either through direct portfolio actions or derivatives (e.g. swaps and futures), to minimize or eliminate the risks arising from mismatches between the two sides of the balance sheet. The sources of profits of treasury are:

- (a) **Investments**, where the bank strives to earn a higher yield than its cost of funds. An example is buying a corporate bond yielding 7% and maturing in three years, financed by deposits costing 6%.
- (b) **Spreads** between yields on money market assets and money market funding. The bank may, for instance, borrow short-term for 5% and deploy in commercial paper with returns of 6%.
- (c) **Arbitrage** is using the price/interest rate differential in two markets on similar risk asset class to earn a profit. For example, a buy/sell swap in the forex market, where the bank converts its rupee funds into a dollar deposit, earns LIBOR linked interest and gets back rupee on deposit maturity. This generates a risk-free profit ("arbitrage"), if LIBOR linked interest plus the forward premium on dollar/rupee is more than the domestic interest rate at which the resource is funded.

- (d) **Relative Value.** This is a form of arbitrage in which the bank exploits anomalies in market prices. The bank may have an ‘AAA’ bond, which yields only 6%, compared to another with the same rating and maturity, but of a different issuer, which offers 6.5%. It is worthwhile to sell the first bond and invest in the second and improve the yield by 50 bps without any incremental risk, as both bonds have the same credit quality. In such transactions, there is the possibility of price loss in the first bond which can be offset by the higher yield on the latter. A treasurer will have to do such arbitrages judiciously.
- (e) **Proprietary Trading.** In this, the focus is entirely on short-term, as opposed to investment which is long term. The aim is to earn trading profits from movements in security and currency prices during a day or a few days of trading. These are mostly directional trades. Under this, a dealer may buy (say) 9.81% Government of India security 2017 at ₹116.50 at a yield of 8.40% in anticipation of the yield falling to 7.70%, on fundamental (or technical) grounds. If this happens, the bond appreciates and the bank exits the position with a profit.
Forex trading is also directional, involving, for example, buying dollar/yen in the expectation that the dollar will appreciate, or selling euro/dollar hoping that the euro will decline.
- (f) **Customer Services.** Bank treasuries offer their products and services to customers/non-banking customers. The income of banks from these activities comprises fees for and/or margins on trade execution. Profits would be higher on structured (i.e., non-standard) transactions compared to plain vanilla (e.g., a straightforward buy sell USD/INR) deals.
- (g) **Transfer Pricing:** In order to measure branch profitability in a scientific manner, the Treasury assumes the role of a central depository for accumulating all resources raised by branches and allocating resources to needy branches. To this end, it operates a transfer pricing mechanism, so that the branches and Treasury operate as profit centres.

Treasuries could also be involved in investment banking where their responsibility covers trade execution on behalf of the bank’s clients in the cash or derivatives markets. These may generate good margins, depending on the complexity and skills required to design and put through customized structures in the market.

Let Us Sum Up

Traditionally, the role of treasury in Indian banks was limited to ensuring the maintenance of CRR and SLR. However, subsequent to liberalization, the volatility in interest rates (yields) is the major reason for the transformation of treasuries from mere CRR/SLR keepers to profit centres. Treasuries have started taking advantage of spreads, arbitrage, relative values and making investments. Proprietary trading has become an important characteristic of modern treasuries. Treasuries are now operating the Transfer Pricing mechanism among branches.

Keywords

Investments, spreads, arbitrage, relative value and proprietary trading

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What greatly reduced the counter party risk in trading in government securities?
 - (a) Introduction of Delivery versus Payment (DVP) for securities settlement at Public Debt Offices.
 - (b) Fixing caps for each counter party in trading.
 - (c) Providing government guarantee to the players in the market.
 - (d) Moral suasion by Reserve Bank of India.
2. Which one is monetary intervention tool used by Reserve Bank of India?
 - (a) Organized money overview.
 - (b) Open Market Operations (OMO).
 - (c) Open Micro Operations.
 - (d) Online Market Oversight.
3. What is the underlying principle in treasuries undertaking arbitrage transactions?
 - (a) Acceptance of deals by counterparty banks.
 - (b) Reciprocal arrangements with counter parties.
 - (c) Opportunities where LIBOR plus forward premium on USD/INR is more than domestic interest rates.
 - (d) Regulatory approvals.
4. 9.81% GOI 2021 with an yield of 8.40% was bought for 116.50. When the yield falls to 7.70%, what will happen to the price of the bond?
 - (a) Bond price is insensitive to yield movements.
 - (b) Bond price falls.
 - (c) Bond price does not change.
 - (d) Bond price rises.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
3**

SCOPE AND FUNCTIONS OF TREASURY MANAGEMENT

STRUCTURE

- 3.0** Objective
- 3.1** Nature of Treasury Assets and Liabilities
- 3.2** Liability Products/Instruments
- 3.3** Objectives of the Treasury
- 3.4** Organisational Structure
- 3.5** Functions of a Treasurer
- 3.6** Responsibilities of a Treasurer

Let Us Sum Up

Keywords

Check Your Progress

3.0 OBJECTIVE

To provide information on treasury assets and liabilities, on treasury products, to discuss domestic treasury, foreign exchange market, derivatives, organizational structure of Treasury, basic treasury functions and responsibilities of a treasurer.

3.1 NATURE OF TREASURY ASSETS AND LIABILITIES

Bank's balance sheet consists of treasury assets and liabilities on the one hand and non-treasury assets and liabilities on the other. There is a clear distinction between the two groups.

In general, if a specific asset or liability is created through a transaction in the inter-bank market, bond market, capital market or forex market, and/or can be assigned or negotiated, it becomes a part of the treasury portfolio of the bank. Treasury assets are marketable or tradable subject to meeting legal obligations such as payment of applicable stamp duty, etc. Another characteristic of treasury assets is that they are likely to lose or gain value on the movement of market and should therefore (and often are required to) be marked to market.

An example of a treasury asset/liability which is created by corporate/treasury actions/decisions on funding/deployment, but is not tradable, is the Inter-bank Participation Certificate. Loans and advances are specific contractual agreements between the bank and its borrowers, and do not form a part of the treasury assets, although these are obligations to the bank. Some of the loan/assets can, however, be securitized and sold in the market. If a bank was to take a position in such securitised debts, it would become part of treasury activity. On the other hand, an investment in **G-Secs** can be traded in the market. It is, therefore, a treasury asset. An illustrative list of (domestic) treasury assets is as follows:

- G-Secs (T-bills, Central and State Government Securities)
- Commercial Paper
- Certificates of Deposit
- SLR Bonds
- Non-SLR Bonds
- Pass Through Certificates
- Equity Shares
- REPO
- Bills rediscounted
- CBLO lendings
- Call Lendings
- The following are examples of treasury liabilities:
- Call/Notice/Term Money Borrowings
- Certificates of Deposit (issuing Bank)
- Tier II Capital Bonds (if issued by the bank)
- Reverse Repo
- CBLO Borrowings

Treasury liabilities are distinguished from other liabilities by the fact that they are borrowings from the money (or debt) market. Deposits (current and savings accounts and fixed deposits) are

not treasury liabilities, but categorized under Branch liabilities. Treasury liabilities are also termed “Purchased Funds” in a broad sense as they are raised on need-based situation and mostly under discretionary/dynamic pricing.

List of Bank's Treasury Products

A. Domestic Treasury

1. Asset Products/Instruments
 - Call/Notice Money Lending
 - Term Money Lending/Inter-bank Deposits
 - Investment in CDs
 - Commercial Paper
 - Inter-bank Participation Certificates
 - Derivative Usance Promissory Notes/Bankers' or Corporate Acceptances
 - Repos/CBLO – backed lending through CCIL
 - SLR Bonds (notified as such by the RBI)
 - (a) Issued by the Government of India as securities and T-bills
 - (b) Issued by State Governments
 - (c) Guaranteed by Government of India
 - (d) Guaranteed by State Governments
 - Bonds (issued by)
 - (a) Financial Institutions
 - (b) Banks/NBFCs (Tier II Capital)
 - (c) Corporates
 - (d) State-level Enterprises
 - (e) Infrastructure Projects
 - Asset-backed Securities (PTCs) or Collateralized Debt Obligations (CDO)
 - Private Placements
 - Floating Rate Bonds
 - Tax-free Bonds
 - Preference Shares
 - Listed/Unlisted Equity
 - Mutual Funds
 - Investment in Subsidiaries/Joint Ventures

3.2 LIABILITY PRODUCTS/INSTRUMENTS

- Call/Notice Money Borrowing
- Term Money Borrowing
- CD Issues
- Inter-bank Participation Certificates
- Reverse Repos/CBLO-backed Borrowing through CCIL

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- Refinance (RBI, SIDBI, NABARD, Exim Bank, NHB)
- Tier II Bonds (issued by bank)

B. Foreign Exchange

- (i) Interbank
 - Spot Currencies (this could be in the form of buy or sell for cash or settlement in a day known as TOM)
 - Forward and Forward-Forward (simultaneous purchase and sale of a currency for two different forward maturities)
 - Foreign Currency Placements, Investments and Borrowings (in accordance with RBI guidelines)
- (ii) Merchant Transactions (Initiated at Branches, Arranged by Forex Treasury)
 - Pre-shipment Credit in Foreign Currency (PCFC)
 - Foreign Currency Bills Purchased (FCBP)
 - Foreign Currency Loans (FCLs)/FCNR (B) Loans
 - Post-shipment Credit in Foreign Currency (PSFC)
 - External Commercial Borrowing (ECB)

C. Derivatives

- Interest Rate Swaps (IRSs)
- Forward Rate Agreements (FRAs)
- Interest Rate Futures
- Interest Rate Options
- Currency Options

D. Certain corporate assets such as investments in subsidiaries and joint ventures are reckoned as treasury assets although they are not traded and are permanent in nature.

These investments and instruments have certain characteristics and the buy /sell and trade practices are developed by markets. A Treasury will have to adopt the market practices in terms of pricing and settlement.

3.3 OBJECTIVES OF THE TREASURY

Treasury of a commercial bank undertakes various operations in fulfillment of the following objectives:

- To take advantage of the available trading and arbitrage opportunities in the bond and forex markets.
- To deploy and invest the deposit liabilities, internal generation and cash flows from maturing assets for optimum return on appropriate maturities either current or forward basis consistent with the bank's risk policies/appetite.

- To fund the balance sheet as cheaply as possible taking into account the marginal impact of these actions.
- To effectively manage the forex assets and liabilities of the bank.
- To manage and contain the treasury risks of the bank within the approved and prudential norms of the bank and regulatory authorities.
- To assess, advise and manage the financial risks associated with the non-treasury assets and liabilities of the bank.
- To adopt the best practices in dealing, clearing, settlement and risk management in treasury operations.
- To maintain statutory reserves – CRR and SLR – as mandated by the RBI on current and forward planning basis.
- To deploy profitably and without compromising liquidity the clearing surpluses of the bank.
- To identify and borrow on the best terms from the market to meet the clearing deficits of the Bank.
- To offer comprehensive value-added treasury and related services to the bank's customers.
- To act as a profit center for the bank and operationalize a Transfer Pricing mechanism between Branches and Treasury, so that both operate as independent Profit Centers.

3.4 ORGANISATIONAL STRUCTURE

Organizational structure of a commercial bank treasury should facilitate the handling of all market operations, from dealing to settlement, custody and accounting, in both the domestic and foreign exchange markets. In view of the voluminous and complex nature of transactions handled by a treasury, various functions are segregated as under.

Treasury Organization

Front-Office	Dealing and investment – Risk Taking
Mid-Office	Risk Management, Policy compliances and Management Information
Back-Office	Deal Confirmations, Settlements, Accounting and Reconciliation, Marking to Market and revaluations

The organization of a treasury depends on the volume of activities handled. However, notwithstanding the size or volume of transactions, it is important that the above three functions are distinct and work in water-tight compartments. Accordingly, the dealers are not supposed to handle settlement or accounts or risk management. The Back-Office should not perform dealing but may perform accounting function, and accounting section should not perform dealing but may perform Back Office function.

The corporate treasury should be headed by an appropriate senior executive who directs, controls and co-ordinates the activities of the treasury. The Front Office reports to him and is fully responsible for the management of funds, investments and forex activity. She/he will also be a member of Assets Liability Management Committee (ALCO) and help the committee in deciding on various policies

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on treasury management. Banks which have separate forex operations, will have dealers for forex operations.

Treasury will have a separate research division under Mid Office. Head of Research will be assisted by officers to carry out research activities/analysis in various types of securities. Research department could be common for money market, debt, equities and forex. Market analysis would also be provided by the research department. The Mid Office will report to The Chief Risk Officer (CRO). The CRO will report directly to the Risk Management Committee of the Board (RMCB) and not to the Managing Director and CEO. This is to ensure total independence of risk management function. Also, at CRO level, all the three forms of risk, namely, Credit, Market and Operational risk get integrated. Mid Office undertakes Stress Testing and Back Testing of the portfolio. Appropriate information Technology (process, software solution and infra-structure) is necessary for treasury management as the operations/transactions are distinct from branch banking and are also very critical. As software packages available in the market may not be adequate, banks may have to customize the software to suit its needs, changing circumstances and volatility.

The Back Office ensures settlement of all deals executed by Front Office. The Head of Back Office will not report to Head of Treasury, but instead to a different vertical Head, like Head of Operations. This ensures that there is independence of reporting of all three verticals right up to apex level.

The front office looks into the liquidity position, fund flows, and maintenance of reserve requirement/s. Risk managers should be posted in treasury for facilitating the evaluation of scenarios, independent review of line/limit excess, reviews of transactions to ensure compliance with regulations, monitor risk factors – credit risk, liquidity risk, interest rate risk, operational risk - in the transactions and give guidance to the front line, viz., dealers to remain in touch with product and market developments.

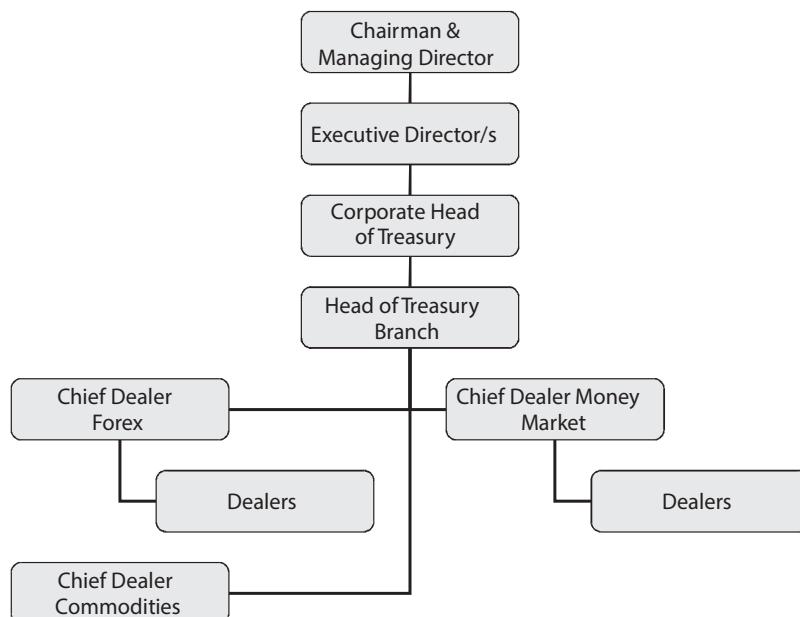


Figure 3.1 Corporate/Apex Treasury Organisation Structure

3.4.1 Front-office

The front office of a treasury has a responsibility to manage investment and market risks in accordance with guidance received from the bank's ALCO. This is undertaken through the Dealing Room which acts as the bank's interface to international and domestic financial markets. The Dealing Room is the center for market and risk management activities in the bank. It is the clearing house for risk and has the responsibility to manage the treasury risks taken in all areas of the bank, on behalf of customers, and on behalf of the bank, within the policies and limits prescribed by the Board and Risk Management Committee. For this reason, significant authority is delegated to the 'Treasurer' and the Dealing Room staff to commit the bank to market. Treasury also functions as a profit center of the bank. It is therefore important that the treasury is managed efficiently. In view of this, control over the activities of the treasury and its staff are critical to ensure that the bank is protected from undue market risk.

The dealers enter into transactions on the basis of current market price which is ascertained by them through the information network made available. Reuters and Bloomberg are market information providers which make available market information on a real time basis. In making deals, the dealers will have to adhere to the various limits such as counterparty exposure, day dealing limit, etc., that have been prescribed.

3.4.2 Mid-Office

Mid-office is responsible for onsite risk measurement, monitoring and management reporting. The other functions of Mid-Office are:

- (a) Limit setting and monitoring exposures in relation to limits;
- (b) Assessing likely market movements based on internal assessments and external/internal research;
- (c) Evolving hedging strategies for assets and liabilities;
- (d) Interacting with the bank's Risk Management Department on liquidity and market risk;
- (e) Monitoring open currency positions;
- (f) Calculating and reporting VAR;
- (g) Stress testing and back testing of investment and trading portfolios;
- (h) Risk-return analysis; and
- (i) Marking open positions to market to assess unrealised gain and losses.

3.4.3 Back-Office Functions

The key functions of back-office are:

- (a) Deal slip verification;
- (b) Generation and dispatch of interbank confirmations;
- (c) Monitoring receipt of confirmations from counterparty banks;
- (d) Monitoring receipt of confirmations of forward contracts;
- (e) Effecting/receiving payments;

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- (f) Settlement through CCIL or direct through nostro as applicable;
- (g) Monitoring receipt of forex funds in interbank contracts;
- (h) Statutory reports to the RBI;
- (i) Management of nostro funds to advise latest funds position to enable the F/O to take the decision for the surplus/short fall of funds;
- (j) Reconciliation of nostro/other accounts;
- (k) Monitoring approved exposure and position limits; and
- (l) Accounting.

3.5 FUNCTIONS OF A TREASURER

Treasury operations of a commercial bank consist mainly of two vital functions viz:

- (a) Ensuring strict compliance with the statutory requirements of maintaining the stipulated Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR), and
- (b) Liquidity management by (i) ensuring the optimum utilization of the residual resources through investments (ii) raising additional resources required for meeting credit demands at an affordable cost and (iii) managing market and liquidity risks in the transactions.

With financial market reforms, banks have been compelled to look for avenues for alternatives to credit, the historical source of profits. It has been realised that credit function alone is not sufficient and banks should look to investments for earning market related returns on funds. Investments have thus gained importance as an equally important part of the banks' balance sheets. Therefore, over and above the statutory holding of government securities, as SLR, a substantial portion of banks' resources are deployed in government/corporate bonds and other products as an alternative to credit, with a view to remain liquid and encash trading gains. The treasury operations also include providing of cover to the customers of the bank in respect of their foreign exchange exposure for their trade transactions like exports, imports, remittances, etc., and extending products and services to its customers for hedging the interest rate risks. While doing so, the treasury also takes care of the associated functions like liquidity management and asset-liability management of the domestic as well as foreign exchange resources and deployment.

Basic Treasury Functions

Domestic Operations	Forex Operations
Maintenance of statutory reserves	Extending cover to foreign exchange trade transactions
Managing liquidity	Funding and managing forex assets and liabilities
Profitable deployment of funds	Managing reserves both proprietary and for its constituents
Trading and arbitrage	Trading and Arbitrage
Hedge and cover operations	Providing hedge to forex risks – proprietary and for its constituents
Mid/Back – Office function/s	Mid/Back – Office functions

3.6 RESPONSIBILITIES OF A TREASURER

In today's highly competitive environment, the treasury plays a vital role in the viability and success of a bank and calls for effective internal and external interface. It performs a myriad of functions such as balance sheet management, liquidity management, reserves management, funds management, investments, managing capital adequacy, transfer pricing, risk management, trading activities and offering hedge products. It has to work on arriving at an optimal size of the balance sheet, interface with various liability and asset groups internally, give appropriate pricing signals keeping in mind the liquidity profile of the bank. On the external front it has to provide active trading support to the market, make two-way prices, add to the liquidity and continuously strive to provide the customers with value-added solutions to their specific financial needs.

3.6.1 Balance Sheet Management

The financial sector reforms have provided the banks freedom to price most of their assets and liabilities by themselves, with the exception of pricing of loans under Differential Interest Rate scheme. The pricing of treasury assets and liabilities which form a critical mass of the balance sheet, is therefore, very crucial to the balance sheet management. It is well known that the balance sheet management is a dynamic and proactive process. It requires continuous monitoring, analysis of market changes and controls. Demand and supply forces will impact the optimal balance sheet size and its growth rate.

An important aspect of balance sheet management is Liquidity Management. Liquidity essentially means the ability to meet all contractual obligations as and when they arise, as well as the ability to satisfy funds requirement to meet new business opportunities. Liquidity planning involves an analysis of all major cash flows that arise in the bank as a result of changes in the assets and liabilities and projecting these cash flows over the future, in sync with the business plan of the Bank. Ideally, balance sheet projections should be prepared for a twelve month period on a monthly basis. This would be in the nature of a monthly rolling forecast. This will enable the treasury manager to identify any potential liquidity problems that may arise in the future, such that corrective action can then be taken to maintain adequate liquidity. Liquidity analysis involves a study of the maturity profile of existing assets and liabilities over which is superimposed the impact of transactions that are planned for the future.

Effective liquidity management requires careful attention to balance sheet structure and growth. A balance sheet that is growing rapidly needs careful scrutiny to determine whether the liquidity of the bank is being adversely affected. Very often banks put up excessive assets in the form of cash credit loans or investments in securities without having matching source of funds of similar tenor. This mismatch in the maturities of assets and liabilities may result in the bank being subjected to liquidity risk, because the bank would start depending chronically and excessively on the most easily accessible source of funds, i.e., the interbank call money market. This could end in the bank funding long-term assets through overnight borrowings on an ongoing basis. It should be borne in mind that dependence on the call market may not be advisable due to the sharp fluctuations in market rates as well as volatility in the availability of funds in the market.

Funds management by the treasury involves providing a balanced and well diversified liability base to fund the various assets in the balance sheet of the bank. Diversified liabilities imply raising funds from a variety of sources, through a variety of instruments and for a varied mix of tenors. Customer

deposits are often the most suitable source of funds for a bank, due to actuarial and behavioural reasons. At the other end of the spectrum are the funds obtained from the interbank money market which are very short term in tenor and volatile as regards rate as well as availability. The treasury has to decide on an optimal mix of funds from various sources to ensure that there is no excessive dependence on any single category. It is also advisable that the maturity profile of assets conform broadly to that of the liabilities, so that there is no large structural mismatch in the balance sheet that can lead to liquidity problems. More importantly, the Treasury needs to ensure that the liquidity profile is in conformity with the RBI guidelines on Asset – Liability Management.

The treasury also has the responsibility for setting targets for balance sheet size and key ratios, in consultation with all business groups. Asset and liability levels need to be monitored and managed periodically to even out any structural imbalances. The ALCO (Asset and Liability Committee) should meet every month for this aspect of strategic business planning. The size of the balance sheet is a matter of great importance for a bank, in light of capital adequacy guidelines. A bank cannot afford to be driven just by volume goals which aim at a certain percentage growth in credit and deposits year after year. This is because balance sheet growth will call for additional capital in accordance with BIS guidelines, and capital is increasingly scarce. Therefore, the focus has now to shift on to the quality of assets, with return on assets being a key criterion for measuring the efficiency of deployment of funds.

3.6.2 Transfer Pricing

The treasury not only provides the interface between the bank and the external market, it also provides an interface between the asset and liability groups of the bank. It helps to provide a balance between the two, so that optimum returns can be obtained on the assets without compromising liquidity. The treasurer has to ensure that the funds of the bank are deployed in the most appropriate manner without sacrificing either yield or liquidity. This is done very effectively through the means of a transfer pricing mechanism administered by the treasury, which can provide correct signal to various business groups as to their future asset and liability strategies. Benchmarking of rates provides a ready reference for business groups about the correct business strategy to adopt, given the balance sheet structure of the bank as well as the conditions prevailing in the money markets and the treasury's forecast about the expected rate movements in the future. Benchmarking is extremely important in today's market environment which allows free market pricing of assets and liabilities. The treasury is ideally placed for this purpose since it has an overview of the balance sheet of the bank, a thorough understanding of the bank's overall funding needs as well as direct access to the external market.

Depending on the signals provided by the treasury in the form of benchmark rates for assets and liabilities, focus of the individual business groups can be shifted from asset growth to liability growth or *vice-versa* as triggered by the needs of the bank. Thus a correct transfer pricing provides a versatile tool in the hands of the treasury manager in optimizing the asset-liability mix on the balance sheet and the returns generated thereon.

3.6.3 Reserve Management and Investments

In the Indian banking scenario, a large asset base of a bank consists of investments on account of statutory reserves. Since significant proportion of funds is deployed in such reserves, management

of these reserves is a very important factor in the overall profitability of the bank. It should ideally take into account both liquidity as well as yield considerations. Even though the longer maturity securities could offer the higher yields, they are most susceptible to fall in price due to changes in the yield curve. On the other hand, short dated securities have low price risk but they could offer only lower returns. Therefore the choice of an appropriate mix of maturity patterns in the SLR and other securities portfolio is a very important function of the treasury manager. Along with this, the market risk of the portfolio in terms of its price sensitivity to interest rate changes, needs to be quantified and periodically monitored by means of analytical tools such as duration analysis. This will give a measure of the precise risk profile of the security holdings, and enable the portfolio manager to initiate suitable corrective action in line with the treasury's overall investment strategy and risk return parameters. As part of the Advanced Approach/Internal Models Approach to Market Risk management under the BIS standards, the Treasury needs to graduate to more sophisticated tools than Duration like Value at Risk (VaR) and ensure their robustness.

Along with investment for statutory reserves, the treasury also makes investments in various other kinds of instruments such as Certificate of Deposits, Commercial Papers, Public Sector Bonds, Units of mutual funds, Corporate Debts, equity shares etc. These investment decisions depend on factors such as bank's liquidity position, money market condition, tenor of funding available, market liquidity in various instruments, yield and tax planning requirements. Treasury may hold investment in these instruments till their maturity, or it can trade in them to take advantage of market opportunities.

3.6.4 Trading and Distribution

Trading and Distribution skills are keys to the success of any treasury. Tradability provides liquidity in various instruments and generates non-interest income. With increasing competition among banks, spreads in traditional banking products are shrinking. On the other hand, cost of various liabilities is rising. As a consequence, traditional fund-based income of banks is gradually being eroded. With the onset of reforms, it is also seen that there is an increasing trend towards disintermediation in the financial markets. Borrowers are directly accessing market through the medium of debt instruments like CPs, debentures, etc., or through forex/external borrowings. Moreover, fund-based exposures require balance sheet growth, and that in turn entails higher capital adequacy requirements. In such a situation, non-fund based revenue gains greater importance. It is here that the strength of the treasury lies. It can help to transform a borrower of funds into an issuer of debt. It can then distribute these debt instruments to investors who were till now only depositors. This will enable the bank to earn a fee income without any balance sheet growth and without locking up funds of its own. Trading in instruments creates more liquidity and increases investor appetite. This has been the trend in financial markets the world over. Securitisation of debt is likely to be an important growth area in the Indian market too in the near future.

3.6.5 Customer Focus

In the present day competitive environment, treasury cannot afford to lose its customer focus. In addition to trading avenues, which are essentially volatile in nature, treasury now requires non-volatile

sources of revenue which are reflected in the diversified customer base of the bank. With the growing liberalization and the opening up of the economy to international financial markets and investors, the treasury departments of various banks now function in a multi-product, multi-currency environment and cater to the multiple needs of its customers. There is bound to be a pressure on the treasury to offer various rupee-based and cross currency hedge products to their clients who have foreign currency exposures on their balance sheets. In fact, the recent changes in the regulations would, over a period of time, ensure the convergence of local currency and foreign currency yield curves and enable the clients to manage their foreign currency assets and liabilities in a more profitable manner through the use of foreign exchange derivatives both in the area of currency and interest rates. Customers today, with the help of the Foreign Exchange Unit of the Treasury, are able to raise foreign currency funds either through direct commercial borrowing or through use of export credit agency schemes and are also able to reduce the interest costs through embedded options or arrear swaps. While these products provide the client with the much desired interest saving, these are not without inherent risks. It is imperative for treasury to clearly define and explain these risks to their corporate clients and to help them effectively manage these risks keeping in mind the dynamic nature of the foreign exchange markets.

3.6.6 Risk Management

Treasury risk management is a separate topic in its own right. One of the major responsibilities of a successful treasury is to manage the risks arising out of the financial transactions entered into by the treasury. The most important risks which it has to manage are liquidity risk and price risk in addition to counterparty risk and issuer risk. In order to manage various risks, there should be a well-defined contingency liquidity plan, term structure for interest rate limits, maximum cumulative overflow limits, factor sensitivities, etc. These limits should be monitored by an independent risk manager, and the reports highlighting these limits, their usage and excesses, if any, should be generated by an independent system, monitored and managed by technology and operations.

In conclusion, it is worth reiterating that in today's fast changing market environment, treasury management has acquired a greater degree of complexity and sophistication. The success of any treasury thus depends a great deal on strong risk management, independent back-office operations and first rate technology. These issues have become all the more important as profitability and commercial viability have become key criteria for assessing performance. And, it is these very fundamentals that form the edifice of a successful treasury that can sustain efficient allocation of internal resources on the one hand and accelerate the globalization of our financial markets on the other.

Let Us Sum Up

The domestic treasury assets comprise G-secs, CPs, CODs, SLR bonds, non-SLR bonds, PTCs, equity shares, Reverse Repo, Bills discounted. Treasury liabilities are Call/Notice/Term money, certificate of deposits, Tier II bonds and Repo. The main objectives of the treasury are to take advantage of attractive trading and arbitrage opportunities in the bond and forex markets, to fund the balance sheet as cheaply as possible, and to assess and advise and manage the financial risks

associated with the non-treasury assets and liabilities of the bank and to maintain statutory reserves like CRR and SLR. Generally the organization of treasury consists of Front-office, Mid-office and Back-office. Broadly Front-office handles business (deals), Mid-office risk management and back office settlements and MIS.

Keywords

G-secs, Commercial paper, certificate of deposit, SLR and Non-SLR bonds, Pass Through Certificates, equity shares, call/term money, repo/CBLO, Front-office, Mid-office, Back-office, balance sheet management transfer pricing, hedge products, two-way prices, and risk management.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Which one of the following is a treasury asset?
 - (a) G-secs, CDs, CPs and SLR bonds
 - (b) Cash with Reserve Bank of India
 - (c) Bills purchased and discounted
 - (d) Fixed assets of the bank
2. The following are examples of derivatives which are treasury products:
 - (a) Tier II bonds issued by bank
 - (b) IRS, SWAPS, FUTURES and OPTIONS
 - (c) External commercial borrowing
 - (d) Floating rate bonds
3. What is the principal function of Treasury Front-office?
 - (a) MIS, reconciliation
 - (b) Customer service, depository functions
 - (c) Dealing, risk taking
 - (d) Risk management
4. What is essentially transfer pricing generally done by Treasuries?
 - (a) Providing subsidies to various business groups
 - (b) Asset Liability Management
 - (c) Strategizing to improve profitability
 - (d) Identifying and fixing prices for each transaction/product

Answers

1. (a) 2. (b) 3. (c) 4. (d)

MODULE – B

TREASURY OPERATIONS

Units

4. Liquidity Management
5. Integrated Treasury – Cost Centre and Profit Centre
6. Treasury Instruments
7. Interest Rate Quotations and Market Terminology
8. Fixed Income Securities
9. Other Capital Market Instruments
10. Foreign Exchange (FX) Markets
11. Derivatives – An Overview
12. SWAP
13. Options
14. Fixed Income Securities, Duration and Convexity
15. Bond Portfolio Management



LIQUIDITY MANAGEMENT

STRUCTURE

- 4.0 Objective
- 4.1 Objective, Sources and Deployment
- 4.2 Funding the Balance Sheet
- 4.3 Clearing Corporation of India Limited (CCIL—Netting/Elimination of Exposures
- 4.4 Network
- 4.5 Delivery Versus Payment III (DVP III) Settlement for Securities
- 4.6 Real Time Gross Settlement (RTGS)
- 4.7 Indian Financial Network
- 4.8 Structured Financial Messaging System (SFMS)
- 4.9 Public Key Infrastructure (PKI)

Let Us Sum Up

Keywords

Check Your Progress

4.0 OBJECTIVE

To provide inputs on liquidity management, ways of funding the balance sheet, maintenance of CRR, SLR, penalties for CRR short fall, monetary control by RBI, Clearing Corporation of India (CCIL), CBLO, RTGS, etc.

4.1 OBJECTIVE, SOURCES AND DEPLOYMENT

Liquidity can be defined as the comprehensive ability of a bank to meet demand for funds on account of maturity of liabilities exactly when they fall due or when depositors want their money back. This is at the heart of banking operations and distinguishes a bank from other entities. The bank's liquidity stems from the following:

- Cash in excess of CRR;
- Investments in SLR securities over and above the mandatory requirements. (These can be used for CBLO borrowing through CCIL or from the RBI's LAF and under reverse repo from market);
- Prime assets – investments in T-bills, top-rated short-term paper and loans to top-rated companies;
- Swapping forex funds to INR;
- Undrawn lines from the RBI – Marginal Standing Facility;
- Undrawn lines from specialized FIs – IDBI, SIDBI, NABARD, Exim Bank, NHB, etc.;
- Money Market Lines of Credit from other Banks.

If in need of short-term liquidity, a bank can have recourse to any of the above sources.

The bank can also generate liquidity from asset sales, especially of short-term paper of high credit quality. While SLR securities with SGL/CCIL facilities can be used in CBLO or REPO and need not be sold for liquidity, other instruments may not be amenable for such facilities.

A bank may also have approved refinance facilities for other types of loans in the bank's portfolio to small-scale units (from SIDBI), agriculture (from NABARD) and for imports/exports (from Exim Bank).

In a liquidity – short situation – a bank would naturally source the cheapest of the funds, after considering the call money market, repos, security (SLR and non-SLR) prices and the cost of refinance from the RBI and FIs.

In extraordinary situations, the bank may seek RBI liquidity support, on merits against the collateral of securities, under RBI repo and next level under MSF.

In a situation of surplus liquidity, the bank would look at the following options:

- Money market lending
- REPO
- Buying T-bills, CP or securities, depending upon the tenors of surplus liquidity
- Repaying refinance (if any)
- Resorting to Buy/Sell swaps in foreign currency

All the above, form part of the liquidity management system of a bank.

In order to have effective liquidity management, banks need to undertake periodic funds flow projections, taking into account movements in non-treasury assets and liabilities [fresh deposits, maturing deposits (and maturing) and new term loans] and maturing treasury assets and liabilities. This enables forward planning for CRR and SLR maintenance. The latter is especially crucial as timing is paramount in buying G-Secs given the volatility in their yields. If the bank expects yields to fall, it is better to buy SLR securities ahead of the actual need. Similarly, maturing assets can also be reinvested before their actual maturity (with inter-bank funding as the bridge).

4.2 FUNDING THE BALANCE SHEET

The bank's balance sheet is funded not only by deposits but also by market borrowing – call/notice/term money, inter-bank deposits, reverse repos and refinance. The latter assumes importance when the bank expands the portfolio of fixed income securities in anticipation of a fall in interest rates (which leads to price appreciation of the securities).

Forex funding is also resorted to when the USD/INR exchange rate is expected to be stable. On this view, the bank may create rupee assets from forex liabilities on an un-hedged basis, within the limits approved by RBI and the bank's investment policy on such exposures. Conversely, the bank may borrow INR and convert into USD to invest short-term surpluses, if offshore interest rates are high, and INR is depreciating. These can be done not only for the purpose of day-to-day liquidity management but also for arbitrage.

(A) Cash Reserve Ratio (CRR)

A scheduled bank (SCB) is under obligation to keep a cash reserve called the Statutory Cash Reserve, with the Reserve Bank as per provisions of section 42 of the Reserve Bank of India Act, 1934. Accordingly every scheduled bank is required to maintain with the Reserve Bank an average daily balance equal to at least 3% of its net demand and time liabilities. Average daily balances mean the average of balances held at the close of business on each day of the fortnight. The Reserve Bank is empowered to increase the rate of Statutory Cash Reserve from 3% to 20% of the net Demand & Time liabilities.

Liabilities not to be included for DTL/NDTL computation

The under-noted liabilities will not form part of liabilities for the purpose of CRR and SLR:

- (a) Paid up capital, reserves, any credit balance in the Profit & Loss Account of the bank, amount of any loan taken from the RBI and the amount of refinance taken from Exim Bank, NHB, NABARD, SIDBI;
- (b) Net income tax provision;
- (c) Amount received from DICGC towards claims and held by banks pending adjustments thereof;
- (d) Amount received from ECGC by invoking the guarantee;

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- (e) Amount received from insurance company on ad-hoc settlement of claims pending judgement of the Court;
- (f) Amount received from the Court Receiver;
- (g) The liabilities arising on account of utilization of limits under Bankers' Acceptance Facility (BAF);
- (h) District Rural Development Agency (DRDA) subsidy of Rs. 10,000 kept in Subsidy Reserve Fund account in the name of Self Help Groups;
- (i) Subsidy released by NABARD under Investment Subsidy Scheme for Construction/Renovation/Expansion of Rural Godowns;
- (j) Net unrealized gain/loss arising from derivatives transaction under trading portfolio;
- (k) Income flows received in advance such as annual fees and other charges which are not refundable;
- (l) Bill rediscounted by a bank with eligible financial institutions as approved by RBI.

Exempted Categories

SCBs are exempted from maintaining CRR on the following liabilities:

- (i) Liabilities to the banking system in India as computed under clause (d) of the explanation to Section 42(1) of the RBI Act, 1934;
- (ii) Credit balances in ACU (US\$) Accounts;
- (iii) Demand and Time Liabilities in respect of their Offshore Banking Units (OBU);
- (iv) The eligible amount of incremental FCNR (B) and NRE deposits of maturities of three years and above from the base date of July 26, 2013, and outstanding as on March 7, 2014, till their maturities/pre-mature withdrawals; and
- (v) Minimum of Eligible Credit (EC) and outstanding Long term Bonds (LB) to finance Infrastructure Loans and affordable housing loans, as per the circular DBOD.BP.BC. No.25/08.12.014/2014-15 dated July 15, 2014 extant instructions.

The objective of maintaining a minimum balance with RBI is basically to ensure the liquidity and solvency of the scheduled banks.

Demand Liabilities

Demand Liabilities include Current Deposits, Demand Liabilities portion of Saving Bank Deposits Margin held against LC, Balances in overdue FD, Cash Certificate and RD, Outstanding TTs, MTs and DDs, Unclaimed deposits, Credit Balances in CC accounts and Deposits held as security for advances which are repayable on demand. Money at Call and Short Notice from outside the banking system should be shown against liability to others.

Time Liabilities

Time Liabilities include Fixed Deposits, Cash Certificates, Cumulative and Recurring Deposits, Time Liabilities portion of Saving Bank Deposits, Staff Security Deposits, margins against LC not payable on demand, deposits held as securities for advances which are not payable on demand and Gold deposits.

Other Demand and Time Liabilities

Other Demand and Time Liabilities include interest accrued on deposits, Bills Payable, Unpaid Dividends, Suspense Account Balances, Participation Certificates issued to other banks without risk sharing basis, net credit balance in branch adjustment account, margins held on bills purchased or discounted, gold borrowed from abroad, cash collaterals received under derivative transactions and any amount due to the banking system which is not in the nature of deposits and borrowing.

Assets with the Banking System

Assets with the banking system include balances with banks in current account, balances with banks and notified financial institutions in other accounts, funds made available to banking system by way of loans or deposits repayable at call or short notice of a fortnight or less and loans other than money at call and short notice made available to the banking system. Any other amounts due from the banking system which cannot be classified under any of the above items are also to be taken as assets with the banking system.

Borrowings from abroad by banks in India

Loans/borrowings from abroad by banks in India will be considered as ‘liabilities to others’ and will be subject to reserve requirements. Upper Tier II instruments raised and maintained abroad shall be reckoned as liability for the computation of DTL for the purpose of reserve requirements.

Arrangements with Correspondent Banks for Remittance Facilities

When a bank accepts funds from a client under its remittance facilities scheme, it becomes a liability (liability to others) in its books. The liability of the bank accepting funds will extinguish only when the correspondent bank honours the drafts issued by the accepting bank to its customers. As such, the balance amount in respect of the drafts issued by the accepting bank on its correspondent bank under the remittance facilities scheme and remaining unpaid should be reflected in the accepting bank’s books as liability under the head ‘Liability to others in India’ and the same should also be taken into account for computation of DTL for CRR/SLR purpose.

The amount received by correspondent banks has to be shown as ‘Liability to the Banking System’ by them and not as ‘Liability to others’ and this liability could be netted off by the correspondent banks against the inter-bank assets.

Likewise sums placed by banks issuing drafts/interest/dividend warrants are to be treated as ‘Assets with banking system’ in their books and can be netted off from their inter-bank liabilities.

No interest is paid on CRR balances by Reserve Bank of India. The current mandatory requirement of CRR is 4%.

Every reporting fortnight starts on a Saturday, or, if it is a holiday, the next working day and ends on the following second Friday, (Thursday or the previous working day if Friday is a holiday), branches send their data on Deposits, etc. to Head Office. Banks prepare the NDTL position based

on this data from the branches. Provisional NDTL returns are due to the RBI within seven days of the close of a reporting fortnight, while final returns must reach in 21 days.

The NDTL statement in **Form A** is prescribed by the RBI. There is a fixed format in which branches send data to the CRR/SLR cell responsible for the RBI returns.

The reference NDTL on which the prescribed percentage (presently 4%) has to be maintained as CRR for a fortnight is the NDTL as on the Reporting Friday with one fortnight lag. CRR is to be maintained in the form of Balances in Current Account with RBI. With a view to provide some flexibility in funds management, Banks have been given the leeway to maintain a minimum 95% of the mandated CRR on a daily basis, and making up the daily average balance during a fortnight to 100% by providing more than 100% on some other days during the same reporting fortnight.

Cost of CRR Maintenance

There is an opportunity cost involved in maintaining CRR. Assuming the nominal cost of a deposit of 100 to be 8%, the applicable CRR will be ₹4.00 (4%). On this, no interest is paid by Reserve Bank of India. Effectively interest @ 8% is paid on ₹96 (net of CRR) which works out to 8.33% and is the effective cost of the deposit, although the nominal cost is only 8%. In general, the higher the CRR, the higher is the reserve adjusted (real) cost of deposits.

Penalties for CRR Shortfall

As the maintenance of CRR is mandatory, a bank cannot risk any non-compliance. The penalties for non-adherence to CRR stipulations are:

In case of default in maintenance of CRR requirement on a daily basis which is presently 95% of the total CRR requirement, penal interest will be recovered for that day at the rate of 3% p.a. above the Bank Rate on the amount by which the amount actually maintained falls short of the prescribed minimum on that day, and if the shortfall continues on the next succeeding day/s, penal interest will be recovered at a rate of 5% p.a. above the Bank Rate.

In cases of default in maintenance of CRR on average basis during a fortnight, penal interest will be recovered as envisaged in sub-section (3) of Section 42 of Reserve Bank of India Act, 1934.

- In general, the RBI takes a very serious view of a bank's failure to maintain CRR.

(B) Statutory Liquidity Ratio (SLR)

Section 24(2A) of Banking Regulation Act, 1949, requires every banking company in India to maintain such percentage not exceeding 40 per cent of its total Demand and Time Liabilities in specified assets as on the last Friday of the second preceding fortnight as the Reserve Bank may, by notification in the Official Gazette, specify from time to time. This is known as Statutory Liquidity Ratio and the specified assets include Cash (including net balances in current accounts with other SCBs in India), Gold valued at a price not exceeding the current market price or Unencumbered

Approved Securities excluding securities (including margin) acquired under the RBI Liquidity Adjustment Facility. The present stipulated SLR is 19.50% which came into effect from the fortnight commencing October 14, 2017.

Banks are also permitted to exceed the limit of 25 per cent of the total investments under HTM category, provided the excess comprises of SLR securities and total SLR securities held under HTM category are not more than 20 per cent by December 31, 2017 and 19.5 per cent by March 31, 2018.

RBI can increase the stipulation of SLR (not exceeding 40%) and advise the banks to keep a large portion of the funds mobilized by them in liquid assets, particularly government and other approved securities. As a result funds available for credit would get reduced. All banks have to maintain certain portion of their deposits as SLR and have to invest that amount in these government securities. Government securities are sovereign securities, which are issued by RBI on behalf of Government of India, as part of the Central Government's market borrowing program.

Statutory Liquidity Ratio (SLR) securities include:

- (i) Notified Dated securities issued up to May 6, 2011;
- (ii) Treasury Bills of the Government of India;
- (iii) Dated securities of the Government of India issued from time to time under the market borrowing programme and the Market Stabilization Scheme;
- (iv) State Development Loans (SDLs) of the State Governments issued from time to time under the market borrowing programme; and
- (v) Any other instrument as may be notified by the Reserve Bank of India.

The Central Government borrows funds to finance its fiscal deficit. The market borrowing of the Central Government is raised through the issue of dated securities and 364 days treasury bills either by auction or by floatation of fixed coupon loans, floating rate notes, index linked securities, etc.

In addition to the above, treasury bills of 91 days are issued for managing the temporary cash mismatches of the Government. These do not form part of the borrowing program of the Central Government.

The stipulated levels of Statutory Liquidity Ratio had reached a very high level of 38.5% during 1991–92 and thereafter it was gradually brought down as a result of recommendation of Narasimham Committee. Various relaxations have been given over a period of time beginning April 1992.

Cost of SLR Maintenance

The impact of SLR on the cost of deposits depends on the yield on SLR investments.

To arrive at the effective cost of SLR, it is necessary to compare the current yield on SLR bonds and the cost of deposits. If this spread is negative, it would mean that the effective cost of deposits is more than the nominal cost. For example, if the current yield on SLR bonds is 8% and the cost of deposits is 9%, the loss is 1% on ₹19.50 (as SLR is 19.50%) out of ₹100 of deposits, i.e., ₹0.195. This loss must be made good on the non-SLR asset portfolio of Rs. 80.50, which must yield $9.195/80.50 = 11.42\%$, to cover the cost of the deposit. A negative current yield spread on the SLR portfolio is significant as SLR accounts for 19.50% of the liabilities at present prescriptions.

The present methodology of computing Marginal Cost based Lending Rates (MCLR) takes into account such reserve adjusted cost, being the negative carry on CRR and SLR. 100% of the stipulated SLR must be maintained on a daily basis throughout a reporting fortnight.

Monetary Control by RBI

RBI has several tools to inject liquidity into or withdraw liquidity from the market. Such operations are undertaken to bring the market liquidity and interest rates in line with the RBI's monetary policy stance and interest rate objectives.

With the economy becoming more or less completely open to capital flows from abroad and their repatriation as well as capital outflows from residents, the short-term forex demand-supply balance has the potential to significantly affect the exchange rate, domestic liquidity and interest rates.

The liquidity management framework was modified in April 2016, providing assurance on both durable and frictional liquidity, while aiming to progressively lower the average ex-ante liquidity deficit in the system to a position closer to neutrality. Consistent with this assurance, the RBI proactively injects durable liquidity in the form of open market purchase operations, net forex market operations, and buyback of government securities.

The Reserve Bank is committed to reverting system liquidity to a position closer to neutrality, consistent with the stance of monetary policy. Towards this goal, the Reserve Bank employs a mix of instruments to ensure that all normal requirements of liquidity consistent with the growing economy are met:

- (a) Management of effects of demonetization not taken care of by the expansion in currency in circulation, with variable reverse repo auctions with a preference for longer term tenors.
- (b) Conducting Market Stabilisation Scheme (MSS) using Treasury Bills and dated securities to modulate liquidity from other sources.
- (c) Need based management of durable liquidity through open market operations (OMO sales and purchases) to bring the system level liquidity closer to neutrality.
- (d) Issuances of cash management bills (CMBs) of appropriate tenors.
- (e) Modulation of day-to-day liquidity with the help of variable rate repo/reverse repo auctions of various maturities.

The Reserve Bank has also proposed the introduction of a Standing Deposit Facility (SDF) by suitably amending the RBI Act since November 2015, which is under examination of the Government. Introduction of this facility would give greater flexibility to the Reserve Bank for managing its liquidity operations.

4.3 CLEARING CORPORATION OF INDIA LIMITED (CCIL—NETTING/ELIMINATION OF EXPOSURES)

CCIL is an institution set up to clear outright and repo trades among market players on a guaranteed basis. Negotiated Dealing System (NDS) is a trading platform while CCIL is a Clearing House settling trades.

Products handled by CCIL are

- (a) Domestic
 - G-Secs/State Governments/T-Bills
 - Outrights
 - Repos/CBLOs
 - RBI Auctions
- (b) Forex
 - USD/INR Spot, Cash and Tom
 - Forward

CCIL has also introduced a dealing and trading platform for forex called FX Clear to deal in forex swaps.

4.3.1 FX CLEAR

FX Clear is similar in concept and operation to the NDS and enables Straight Through Processing (STP) once a deal is concluded.

FX Clear enables trading to be done through Order Matching Mode and Negotiation Mode. Order Matching Mode automatically matches the best bids and offers in the system, while the Negotiation Mode enables deals after agreement on prices, quantities, etc., between the counter parties.

In the Order Matching Mode, the dealer can specify his parameters: minimum selling price, maximum buying price, stop loss and take profit levels. These can be time/date- constrained. Several query and report facilities are available to dealers in FX Clear: trades, activity log, settlement, etc. At present, all money market and debt market deals are transacted on Negotiated Dealing System – Order Matching (NDS OM) platform and settled through Straight Through Processing (STP).

A major advantage of FX Clear is that once a deal is put through, it is settled *suo moto*, i.e., with no further actions required on the part of the dealer or back-office. In other words, it is a STP system. At present FX Clear covers only USD/INR spot and forward. Tom, cash and crosses will be added in due course.

At present, FX Clear covers the inter-bank US Dollar-Indian Rupee (USD-INR) Spot and Swap transactions and transactions in major cross currencies (EUR/USD, USD/JPY, GBP/USD, etc.).

The new version of FX-CLEAR platform launched w.e.f. 6th April 2015, offers guaranteed settlement from the point of trade for all the trades concluded on the Order Matching Mode of the platform, wherein these trades shall be automatically sent to Clearing Corporation. Accordingly, Clearing Corporation (CCIL) shall be the Counterparty for these Trades.

4.3.2 FX-SWAP

FX-SWAP, a forex swap dealing system, which was launched by Clearcorp on May 31, 2010, offers an order matching platform for forex swaps. This platform endeavours to provide a transparent and

anonymous medium for trading in the highly broker driven swaps market by offering swap instruments extending up to 12 months along-with three upto spot instruments viz Cash/Tom, Cash/Spot, Tom/Spot, a LD/LD instrument (Month 1 end over Month 2 end) and two ORF instruments (Month 1 end and Month 2 end). FX-SWAP platform was launched with a unique feature of guarantee from the point of trades for the Forward Legs of the transactions concluded on the platform.

The new version of FX-SWAP platform launched w.e.f. 6th April 2015, extends the benefits of guaranteed settlement from the point of trade to all the legs of the trades concluded on the platform, including Cash, Tom, Spot and Forwards, wherein these trades shall be automatically sent to Clearing Corporation. Accordingly, Clearing Corporation (CCIL) shall be the Counterparty for these Trades.

4.4 NETWORK

(a) G-Secs/State Governments

The NDS/CCIL network spans the entire country. Deals can be logged into the NDS by banks from anywhere through their connectivity to RBI servers after which no manual intervention by banks is necessary to complete the settlement.

(b) Forex

INFINET, a secured closed-user group operated by IDRBT, covers the entire country. Banks, which are members of INFINET, can clear their USD/INR trades through CCIL.

4.4.1 Novation and Multilateral Netting

CCIL applies the concepts of novation and multilateral netting in its operations. Novation introduces CCIL as the intermediary responsible for clearing and settlement of trades between two counter parties. In effect, for settlement purposes, the counter party to a bank doing a trade with another bank is CCIL. CCIL takes responsibility for delivery, making and receiving payments to and from the counter parties for all transactions effected through the NDS and INFINET (for forex).

Multilateral Netting process, nets out the sums payable and receivable by each member to arrive at the net amount to be paid or received by the member.

4.4.2 Margins

Apart from settlement of trades, another major function of a Clearing Corporation is to reduce risks of its members from failed trades arising out of the defaults by their counterparties. By becoming central counterparty to the trades done by its members, the Corporation absorbs risk. It manages the risks through its risk management processes in such a manner that the ultimate risk to its members from fails is either eliminated or reduced to the minimum. Risk Management Department in CCIL has been entrusted with the responsibility of designing the Risk processes and its execution. The department is also responsible for keeping the processes efficient, current and user friendly. Margins are deposits kept in the form of liquid securities and cash with CCIL for performance of contracts. The details of margins are as under.

During the settlement processes, CCIL assumes certain risks which may arise due to a default by a member to honour its obligations. Settlement being on Delivery Versus Payment basis, the risk from a default is the market risk (change in price of the concerned security). *CCIL processes are designed to cover the market risk through its margining process.*

CCIL collects Initial Margin and Mark to Market Margin (both Intraday and EOD) from members in respect of their outstanding trades. Initial Margin is collected to cover *the likely risk from future adverse movement of prices* of the concerned securities. *Mark to Market Margin is collected to cover the notional loss (i.e., the difference between the current market price and the contract price of the security covered by the trade) already incurred by a member.* Both the margins are computed trade-wise and then aggregated member-wise.

In case of sudden volatility, Intraday Mark to Market Margin is collected if the difference between the Mark to Market Margin at previous EOD and intra-day Mark to Market Margin is greater than a specified threshold level of the initial margin as at previous EOD. In addition, CCIL may also collect Volatility Margin in case of unusual volatility in the market.

Members are required to keep balances in Settlement Guarantee Fund (SGF) in such a manner that the same is enough to cover the requirements for both Initial Margin and Mark-to-Market Margin for the trades done by such members. In case of any shortfall, CCIL makes margin call and the concerned member is required to meet the shortfall before the specified period of the next working day. Members' contribution to the SGF is in the form of eligible Govt. of India Securities/T-Bills and cash, with cash being not less than 10 % of the total margin requirement at any point of time.

Another important risk emanating from the process is Liquidity Risk. To ensure uninterrupted settlement, CCIL is required to arrange for liquidity both in terms of funds and securities. CCIL has arranged for Lines of Credit from Banks to enable it to meet any reasonable shortfall of funds arising out of a default by a member either in its Securities Segment or Forex Segment. In regard to the Securities Segment, member's contributions to SGF is mainly in the form of securities and through the list of specified securities acceptable for contribution to SGF, CCIL ensures that the most liquid securities in which a significant portion of the trades are settled are likely to be available in the SGF. For requirements of other securities, CCIL has put in place a limited purpose security borrowing arrangement with two major market participants.

G-SECS

CCIL collects an initial margin based on the outstanding trades awaiting settlement to cover the likely adverse price movements of securities. This margin must be kept in the ratio 90:10 between securities and cash. Securities must form part of an Eligible List of Securities, which is changed from time to time.

In addition to Initial Margin, CCIL requires Mark to Market margin to top up the initial margin, wherever the margined securities diminish in value because of market fluctuations. If price movements are excessive, CCIL could also impose a volatility margin.

The margin required on open (i.e., to be settled) positions in securities is calculated based on the margin factors applicable to each security awaiting settlement. The margin factors are continuously revised to reflect the latest price trends in the market. In case there is a shortfall, CCIL requires the bank to top up the margin before settling the trade. In general, the margin required for trading in short-term securities is less than that for medium and long-term securities as the price variations in the latter are more.

Forex

A net debit cap is calculated for the bank, taking into account its net worth, capital adequacy and other financial parameters. The bank's short USD position should not exceed the net debit cap. Members of CCIL Forex Segment are required to contribute their margin obligations to CCIL's dedicated SGF maintained for its Forex Segment in accordance with the advices by CCIL from time to time. Such contribution is a factor of the concerned Member's Net Debit Cap. Forex Segment SGF contribution is currently payable in the form of US Dollar funds only.

Currently CCIL has stipulated a cash:securities Settlement Guarantee Fund composition ratio of 5:95 of the margin requirement for Forex Forward Segment. For Continuous Linked Settlement Segment, no Cash: Securities composition has been prescribed.

4.5 DELIVERY VERSUS PAYMENT III (DVP III) SETTLEMENT FOR SECURITIES

CCIL follows DVP III for settling securities transactions. In this system, only the nets are settled, i.e., the bank receives (pays) the net credit (debit) on funds and delivers (receives) the net due (receivable) on individual securities.

Under DVP 1, Securities and Funds were Gross settled. Under DVP 2, Securities were Gross settled, while funds were Net settled. Under DVP 3, both securities and Funds are Net settled.

4.5.1 Settlement Guarantee Fund (SGF)

Members of CCIL's Securities Segment are required to deposit their margin contributions into CCIL's Settlement Guarantee Fund (SGF) maintained for this business segment. Individual member contributions is a function of their outstanding trade obligations based on the types of trades, securities involved and value dates of settlement. Members are expected to always maintain adequate balances in their SGF to cover their outstanding trade exposures. Margins are required to be maintained by every member for their own trades as well as trades reported by them on behalf of their constituents.

SGF is received in the form of both cash and securities. Members settling their funds obligations at Reserve Bank of India contribute their SGF Cash collateral in CCIL's RTGS Settlement Account with Reserve Bank of India. Whereas members settling their funds obligations at settlement bank(s) (commonly known as Multi Modal Settlement Bank mode of settlement) contribute their SGF cash

collateral in CCIL's Current Account with respective settlement bank. Minimum cash collateral contribution of ₹1 Lac needs to be maintained by a member at all times during currency of their membership to CCIL's Securities Segment.

SGF security contributions from all members are received and maintained in CCIL's Constituent SGL (CSGL) Account maintained with Reserve Bank of India, Mumbai.

Securities Segment SGF contributions are also utilized towards member's margin requirement in CCIL's Continuous Linked Settlement (CLS) and Forex Forward Segment(s).

CCIL operates a Settlement Guarantee Fund, made up of contributions from participating institutions in the form of Cash and Securities as mentioned in para 4.4.2 above. In the event of any likely shortage of securities or Currency in respect of forex settlements, CCIL will draw from the SGF to honour the trade. A gridlock may arise in the payment and settlement systems if there is temporary shortage of cash balance in the designated account. Member banks are to overcome this by resorting to Intra Day Loans (IDLs), which are to be repaid in full before the end of the day.

CCIL guarantees only those trades supported by adequate margins of counterparties. Whenever the volume traded by a member bank is higher than daily average in the past or the Dollar short position exceeds the Net Debit Cap set for itself, CCIL will call for top up margins in order to continue to offer settlement guarantee for all outstanding trades.

4.5.2 Risk Management

(a) Securities

As settlement is of the DVPIII type, counterparty credit risk is absent, but market risk exists. Initial Margin, Mark to Market Margin and Volatility Margin enable CCIL to cope with market risk, i.e., price fluctuations of securities involved in settlement.

In the event of depreciation of margin securities, CCIL makes margin calls to be honoured by the respective bank within a specified time on the next working day.

CCIL also has raised credit lines to put through settlements if there are shortfalls of securities and funds.

(b) Forex

As in the case of securities, the margins for forex settlement offer almost full protection against counterparty credit risk. CCIL will draw on its credit lines through the margins to settle US\$ liabilities in the event of any shortfall to put through settlement. CCIL also has recourse to the defaulting bank's RBI account for this purpose.

COLLATERALIZED BORROWING AND LENDING OBLIGATION (CBLO) With the restrictions on call money borrowing and lending imposed by the RBI, repos have increasingly come into vogue in the money market.

CCIL¹ has designed a product called Collateralized Borrowing and Lending Obligation (CBLO) to facilitate banking and non-banking entities to borrow from and lend funds to the inter-bank and money markets after they have reached the limits of unsecured lending and borrowing.

4.6 REAL TIME GROSS SETTLEMENT (RTGS)

The Real Time Gross Settlement system has been launched by the Reserve Bank of India on March 26, 2004, in Indian financial market, after a comprehensive audit and review of the software and also after conducting extensive training of users at commercial banks.

RTGS provides for an electronic-based settlement of inter-bank and customer-based transactions with intra-day collateralized liquidity support from the RBI to the participants of the system. RTGS system has also been enabled for Straight Through Processing (STP) of customer transactions without manual intervention. Today more than 90% of the inter-bank funds transfer are settled on RTGS, which were being earlier routed through the net-settlement based inter-bank clearing at Mumbai.

RTGS is a system of transferring funds from one Bank/Financial Institution (FI) to another on an immediate basis. In this system, the inter-bank payment instructions are processed and settled, transaction-by-transaction, one-by-one, continuously, i.e., in real time. In other words, these transactions are settled individually without netting debits against credits.

RTGS system will be fully integrated with the accounting system of the Reserve Bank of India and other settlement services, such as Deferred Net Settlement (DNS) systems, the settlement of which would be performed as RTGS transactions through a facility for Multi-Lateral Net Settlement (MLNS) Batch Processing.

RTGS system makes use of the state-of-the-art solution by using INFINET as its secure communication backbone; it also uses Structured Financial Messaging Solutions (SFMS) as the secure messaging system, IBM's S/390 mainframe system as the robust platform at the back-end for implementation, Quaestor, a product from the solution developer, Logical India, to be customized and used as the front end for solution. A MQ Series would act as the gluing interface between the various components of the solution. RTGS system has several unique features. It is a single, all-India system, with the settlement being effected in Mumbai. The payments are settled transaction by transaction. The settlement of funds is final and irrevocable. As the settlement is done in real time, funds settled can be further used immediately. It is a fully secure system which uses digital signatures and PKI-based encryption, for safe and secure message transmission. It provides for intra-day collateralized liquidity support for the member-banks to smoothen the temporary mismatches of fund flows and thereby ensuring smooth settlements. Under the RTGS system, inter-bank transactions, customer-based inter-bank transactions and net-clearing transactions can be settled. Both high value and retail payments can be effected through the RTGS system. Thus, it provides less risk-based funds transfers for both banks and for their customers, apart from providing for more efficient funds management at the treasuries of banks.

¹ www.ccilindia.com is CCIL's website and gives complete information on its constitution, charter, membership, rules and regulations, risk management, products, services and future plans.

4.6.1 IDRBT as Certifying Authority (CA)

The Institute for Development and Research in Banking Technology (IDRBT) at Hyderabad has become the Certifying Authority for the banking and financial sector for all the applications implemented over the INFINET. The INFINET provides for the communications backbone for all the Systemically Important Payment System Applications.

It is clear that banks will have to take urgent steps to ensure that all banks' branches, including those in the countryside, are networked. Further, the security infrastructure for message transfer in the form of Public Key Infrastructure (PKI), as per IDRBT CA, will also have to be urgently implemented in all organizations, covering all the branches, which will be offering RTGS services to the customers.

4.6.2 Essential Components of RTGS

- Membership of Indian Financial System Network (INFINET)
- Establishment of Payments Gateway
- Branch Connectivity with Payments Gateway
- Use of Structured Financial Messaging System (SFMS) as a Common Message Format.
- Use of Electronic Coding and Decoding Technology
- Unique Identification of Bank's Branch for RTGS

4.6.3 Types of Transactions Covered Under RTGS

- (a) Inter-bank Payments
- (b) Customer to Customer Transfers
- (c) Own Account Transfers
- (d) Multilateral Net Settlement Batches (MNSB)

4.6.4 Functioning of RTGS

Each bank has to open a separate RTGS account with the RBI. This will be an exclusive and dedicated account for settlement of RTGS transactions. This account will be an intra-day account, i.e., the account will have to be funded at the beginning of the day and the balances left in the account will be swept back to the regular current account at the end of the day. Thus, this account will show NIL balance at the end of any day. However, banks have to make suitable arrangements to ensure that adequate balance is always available in this account for meeting the settlement of transactions. In case adequate funds are not available to settle the payment transactions, RTGS system will send a message to Security Settlement System, where an intra-day liquidity (IDL) will be allowed against the securities. Banks have to ensure that the outstanding under IDL are settled on the same day lest the same should attract penalty.

4.7 INDIAN FINANCIAL NETWORK

IDRBT has taken the initiative to setup a communication backbone (Indian Financial Network, popularly known as INFINET) using both V-SATs and terrestrial leased line technology to provide

wide area network connectivity exclusively for the use of a closed user group – the entities in the Indian Banking and Financial Sector. The earth station is located at Hyderabad and all the banks and financial institutions are members in the network. This being a network of exclusive user group and is being managed by IDRBT, the public do not have access. INFINET becomes a reliable communication backbone and the transactions or messages passed through this network are safe and secure.

4.8 STRUCTURED FINANCIAL MESSAGING SYSTEM (SFMS)

Banking community is familiar with the use of SWIFT messages and formats in the case of International Financial Messages. IDRBT has developed a secure messaging backbone for the Indian Banking and Financial Sector and named it Structured Financial Messaging System (SFMS). IDRBT has studied the various applications requiring messaging, reviewed the existing message formats and designed various standard message formats for communicating messages across the banks. As the messages mainly relate to financial transactions, taking into consideration the security aspects, the messaging system is further fortified by providing facilities such as encryption and digital signatures.

4.9 PUBLIC KEY INFRASTRUCTURE (PKI)

In the physical world the signature of a person is used and associated to establish identity and credibility of the individual.

‘Creating Trust’ in an electronic environment involves assuring the transacting entities about confidentiality of the transaction, along with authentication of the sending and receiving entities such that both entities cannot repudiate the transaction. The technology used to achieve this trust is PKI.

PKI is an online infrastructure using encryption digital signatures and digital certificates. The paper-based concepts of identification, declaration and proof are carried through the use of digital signatures in electronic environment. Digital signatures are created and verified using Public Key Cryptography. A combination of many factors are taken and two pairs of keys – Public Key and Private Key – are generated using the algorithm. The two pairs will remain unique – i.e., no two pairs will be similar.

The keys are generated once and the private key is directly downloaded on to the smart card or system. The owner of a smart card is expected to take care of its protection. Public key is stored in the repository of the issuer and is available to everyone.

The private key is used for digitally signing a document, while the public key is used for verifying the digital signature.

Digital signature is more a system process than just affixing of a signature. When a document is digitally signed, the digital software scans the documents and creates a calculation, which represents the document. The calculation becomes part of the digital signature. When the recipient authenticates (verifies) the signature, a similar process is carried out. The sender’s and the receiver’s calculations are then compared. If the results are the same, the signature is treated as valid. If they are different, the signature is treated as invalid.

Any scheduled bank can be a member of RTGS which will be connected to Central HUB of RBI through INFINET via Payments Gateway of each Bank. The branches identified for RTGS will have connectivity to their Payments Gateway, viz., designated branch/office. Communication will be based on Structured Financial Message System (SFMS) formats.

Let Us Sum Up

Current CRR is 4%. No interest is paid on CRR balances with Reserve Bank of India. The cost of CRR has to be factored into pricing the products. There are penalties for shortfall in CRR maintenance. Banks have to adhere to SLR stipulation prevailing from time to time, presently 19.50%. CCIL is an institution set up to clear outright and repo trades amongst market players on a guaranteed basis. RTGS provides for an electronic based settlement of interbank and customer-based transactions with intra-day collateralized liquidity support from RBI. IDRBT is the certifying authority for the banking and financial sector for all applications implemented over INFINET.

Keywords

CRR, SLR, NDTL, Standing Deposit Facility, Market Stabilization Fund (MSF), NDS(OM), Novation and multi-lateral netting, DVP, SGF, RTGS, INFINET and IDRBT Structured Financial Messaging System (SFMS) and Public Key Infrastructure (PKI)

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. The Bank's balance sheet is funded not only by deposits, but also by what?
 - (a) Market borrowings
 - (b) Help from RBI
 - (c) Assistance from Head Office
 - (d) Contributions from peer banks
2. What is the main objective of maintaining minimum balance in the form of CRR with regulators?
 - (a) To increase the profitability of scheduled banks
 - (b) Basically to ensure the liquidity and solvency of the scheduled banks
 - (c) To eliminate inter-bank competitiveness in the market
 - (d) To popularize deposit insurance mechanism
3. What is the purpose of Central Government borrowing funds from the market?
 - (a) Generally to help build up forex reserves
 - (b) Generally to exercise tight control over the banking system
 - (c) Generally to finance its fiscal deficit
 - (d) Generally to ensure equitable distribution of wealth among its subjects

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4. A net debit cap is calculated by CCIL for the bank, taking into account its net worth, capital adequacy and other financial parameters. What should not exceed the net debit cap?
 - (a) Bank's long USD position
 - (b) Bank's stop loss limit
 - (c) Bank's overnight open position
 - (d) Bank's short USD position

Answers

1. (a) 2. (b) 3. (c) 4. (d)

UNIT
5

INTEGRATED TREASURY – COST CENTRE AND PROFIT CENTRE

STRUCTURE

- 5.0** Objective
- 5.1** Functions of Integrated Treasury
- 5.2** Nature of Integration
- 5.3** Benefits of Integration
- 5.4** Structure of Integrated Treasury
- 5.5** Arbitrage Benefit to Treasury
- 5.6** Initiatives of Integrated Treasury

Let Us Sum Up

Keywords

Check Your Progress

5.0 OBJECTIVE

To provide information on integrated treasury operations, other activities like risk management, transfer pricing, devising and dealing in derivative products, utilizing arbitrage opportunities and maintain capital adequacy.

Integrated treasury is a holistic approach to funding the balance sheet and deployment of funds across the domestic as well as global money and forex markets. This approach enables the bank to optimise its asset-liability management and also capitalize on arbitrage opportunities.

Traditionally, the forex dealing room of a bank managed the foreign exchange dealings mainly arising out of merchant transactions (forex buying from and selling to customers) and consequent cover operations in interbank market. The domestic treasury/investment operations were independent of forex dealings of a bank. The treasury operations were treated as a cost center, specifically devoted to reserve management (CRR and SLR) and consequent fund management. The treasury also undertook investment in government and non-government securities.

The need for integration of forex dealings and domestic treasury operations has arisen on account of interest rate deregulations, liberalization of exchange control, development of forex market, introduction of derivative products and technological advancement in settlement systems and dealing environment. The integrated treasury performs not only the traditional roles of forex dealing room and treasury unit but also many other functions.

5.1 FUNCTIONS OF INTEGRATED TREASURY

- (a) **Reserve Management and Investment:** This is an important function. It involves:
 - (i) Complying with CRR/SLR obligations,
 - (ii) Having an appropriate mix of investment portfolio to optimize yield and duration. Duration analysis is used as a tool to monitor the price sensitivity of an investment instrument to interest rate changes.
- (b) **Liquidity and Funds Management:** It involves:
 - (i) Analyzing of major cash flows arising out of asset-liability transactions,
 - (ii) Providing a balanced and well-diversified liability base to fund the various assets in the balance sheet of the bank, and
 - (iii) Providing policy inputs to the strategic planning group of the bank on funding mix (currency, tenor and cost) and yield expected in credit and investment.
- (c) **Asset Liability Management:** ALM calls for determining the optimal size and growth rate of the balance sheet and also price the assets and liabilities in accordance with prescribed guidelines.
- (d) **Risk Management:** Integrated treasury manages all market risks associated with a bank's liabilities and assets. The market risk of liabilities pertains to floating interest rate risks and asset and liability mismatches. Market risk for assets can arise from:
 - (i) unfavorable change in interest rates,
 - (ii) increasing levels of disintermediation,
 - (iii) Securitization of assets,

- (iv) emergence of credit derivatives, etc.

While the credit risk assessment continues to be in the domain of Credit Department, the treasury would monitor the cash inflow impact from changes in asset prices due to interest rate changes by adhering to prudential exposure limits.

- (e) **Transfer Pricing:** The treasury has to ensure that the funds of the bank are deployed optimally, without sacrificing yield or liquidity. An integrated treasury unit has an idea of the bank's overall funding needs as well as direct access to various markets (like money market, capital market, forex market, credit market). Hence, ideally the treasury should provide benchmark rates, after assuming market risk, to various business groups and product categories about the correct business strategy to adopt.
- (f) **Derivative Products:** The treasury can develop Interest Rate Swap (IRS) and other rupee based/cross-currency derivative products for hedging bank's own exposures and also offer/sell such products to customers/other banks.
- (g) **Arbitrage:** Treasury units of banks undertake arbitrage by simultaneous buying and selling of the same type of assets in two different markets in order to make profit. Arbitrage could also help in risk management.
- (h) **Capital Adequacy:** This function focuses on quality of assets, with Return on Assets (ROA) being a key criterion for measuring the efficiency of deployed fund.

An integrated treasury is a major profit center. It should have its own profit and loss measurement. It may undertake deals or take exposures through proprietary trading (deals done to make profits out of movements in market interest/exchange rates) that may not be required for general banking.

5.2 NATURE OF INTEGRATION

Integration of treasury can take many shapes. To start with, there is geographical and infrastructural integration. In this type of integration, the forex dealing rooms are merged and located in the same premises along with the domestic treasury unit.

Under horizontal integration the dealing/trading rooms engaged in the same trading activity are brought under the same policies, hierarchy, technological and accounting platform.

In vertical integration all existing and diverse trading and arbitrage activities are brought under one control with common pool of funding and contributions. The impact of transactions of all units on rupee funds is merged. There is computerized linking of transactions.

Independent Forex Role	Independent Investment Treasury Role	Integrated Role
Merchant Dealing	Funds Management	ALM in INR and FOREX
Corporate FX Trading	Liquidity/CRR/SLR Management	FCNR SWAP Management
Proprietary Trading	SLR/Non SLR investments	Overseas Borrowing
Non- INR dealing	Trading in Securities	Dealing in Derivatives
	Trading in Equities	Arbitrage
		Derivatives INR

5.3 BENEFITS OF INTEGRATION

The basic objective of integration is to improve portfolio profitability, risk-insulation and synergize banking assets with trading assets. Banking assets are held basically for client relationship/steady income/statutory obligations and are generally held till maturity, whereas trading assets are held primarily for generating profits on short-term differences in prices/yields. The purpose is achieved through efficient utilization of funds, cost effective sourcing of liability, proper transfer pricing, availing arbitrage opportunities, online and offline exchange of information between the money and forex dealers, single window service to customers, effective MIS, improved internal control, minimization of risks and better regulatory compliance. An integrated treasury acts as a center of arbitrage and hedging activities. It seeks to maximize its currency portfolio and free transfer of funds from one currency to another in order to remain a proactive profit center. With phased liberalization on capital account convertibility, there will be scope for banks with integrated treasury to structure multi-currency balance sheets and take advantage of strategic positioning.

5.4 STRUCTURE OF INTEGRATED TREASURY

The treasury branch is manned by the front-office, mid-office, back-office and audit group. The dealers and traders constitute the front-office. In the course of their buying and selling transactions, they are the first point of interface with other participants in the market (dealers of other banks, brokers and customers). They report to their department heads. They also interact among themselves to exploit arbitrage opportunities. A mid-office set-up, independent of the treasury unit, acts as the unit responsible for risk monitoring, measurement and analysis and reports directly to the top Management for control, through the Chief Risk Officer. This unit provides risk assessment to Asset Liability Committee (ALCO) and is responsible for daily tracking of risk exposures, individually as well as collectively. The back-office undertakes accounting, settlement and reconciliation operations. The audit group independently inspects/audits daily operations in the treasury department to ensure adherence to internal/regulatory systems and procedures.

5.5 ARBITRAGE BENEFIT TO TREASURY

The price differentials between different markets of the same asset category give rise to arbitrage opportunities.

For example, arbitrage benefit can be availed by borrowing in US dollar, converting the same into rupee, taking forward cover to hedge exchange risk and investing the same in domestic market. However, efficient functioning of financial markets generates asset prices and exchange rates that could preclude arbitrage.

5.5.1 What is 'Arbitrage'

Arbitrage is the simultaneous purchase and sale of an asset to profit from a difference in the price. It is a trade that profits by exploiting the price differences of identical or similar financial instruments on different markets or in different forms. Arbitrage exists as a result of market inefficiencies.

5.5.2 BREAKING DOWN ‘Arbitrage’

Arbitrage provides a mechanism to ensure prices do not deviate substantially from fair value for long periods of time. With advancements in technology, it has become extremely difficult to profit from pricing errors in the market. Many traders have computerized trading systems set to monitor fluctuations in similar financial instruments. Any inefficient pricing setups are usually acted upon quickly, and the opportunity is often eliminated in a matter of seconds. Arbitrage is a necessary force in the financial marketplace.

As a simple example of arbitrage, consider the following. The stock of Company X is trading at \$20 on the New York Stock Exchange (NYSE) while, at the same moment, it is trading for \$20.05 on the London Stock Exchange (LSE). A trader can buy the stock on the NYSE and immediately sell the same shares on the LSE, earning a profit of 5 cents per share. The trader could continue to exploit this arbitrage until the specialists on the NYSE run out of inventory of Company X’s stock, or until the specialists on the NYSE or LSE adjust their prices to wipe out the opportunity.

5.5.3 A Complicated Arbitrage Example

Though this is not the most complicated arbitrage strategy in use, this example of triangular arbitrage is more difficult than the above example. In triangular arbitrage, a trader converts one currency to another at one bank, converts that second currency to another at a second bank, and finally converts the third currency back to the original at a third bank. The same bank would have the information efficiency to ensure all of its currency rates were aligned, requiring the use of different financial institutions for this strategy.

For example, assume you begin with \$2 million. You see that at three different institutions the following currency exchange rates are immediately available:

Institution 1: Euros/USD = 0.894

Institution 2: Euros/British pound = 1.276

Institution 3: USD/British pound = 1.432

First, you would convert the \$2 million to euros at the 0.894 rate, giving you 1,788,000 euros. Next, you would take the 1,788,000 euros and convert them to pounds at the 1.276 rate, giving you 1,401,254 pounds. Next, you would take the pounds and convert them back to U.S. dollars at the 1.432 rate, giving you \$2,006,596. Your total risk-free arbitrage profit would be \$6,596.

5.6 INITIATIVES OF INTEGRATED TREASURY

Many banks in India have taken the initiative to set up their integrated treasury operations supported by infrastructural facilities like Reuters/Telerate/Bloomberg System, hotlines, Dealing Boards, Internet, etc., and dedicated software for integrated treasury. Payment systems like Negotiated Dealing System (NDS), Clearing Corporation of India Ltd. (CCIL) and new initiatives like Real Time Gross Settlement System (RTGS) are already in place.

Let Us Sum Up

Functions of integrated treasury include reserve management, liquidity and funds management, Asset liability management, risk management, transfer pricing, using derivative products, taking advantage of arbitrage between domestic and foreign exchange markets and trying to achieve capital efficiency. The basic objective of integration is to improve portfolio profitability, risk insulation and synergise banking assets.

Keywords

Cost center, profit center, integrated treasury, Asset liability management, transfer pricing, derivative products, arbitrage

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. How is CRR, the maintenance of which is important treasury function, computed?
 - (a) On Net Demand and Time Liabilities
 - (b) On time liabilities of one year and above
 - (c) On the total cash reserves held by the bank
 - (d) On the gross non-performing assets of the bank
2. The capital adequacy ratio of a bank broadly indicates what?
 - (a) Room for development of business
 - (b) Quality of asset base
 - (c) Efficiency of risk management policy
 - (d) Competitive advantage
3. What are the general benefits of integrated treasury?
 - (a) Savings of establishment charges
 - (b) Regulatory compliance
 - (c) Improved profitability and risk insulation
 - (d) Comfort of automated functioning
4. What is meant by arbitrage?
 - (a) Simultaneous purchase and sale of assets
 - (b) Purchasing an asset at its cheapest rate
 - (c) Sourcing an asset from a tax haven country
 - (d) Simultaneous purchase and sale of an asset to profit from difference in price

Answers

1. (a)
2. (b)
3. (c)
4. (d)



TREASURY INSTRUMENTS

STRUCTURE

6.0 Objective

6.1 Money Market – Instruments

Let Us Sum Up

Keywords

Check Your Progress

6.0 OBJECTIVE

To provide detailed information on money market instruments like call money, notice money, term money, Bank fixed deposits, certificate of deposits, commercial papers, BRDS, IBPCs, CBLO, treasury bills, repos, etc. The chapter also deals with interest rate quotations, market terminology, day count methods, bonds, non-SLR securities, corporate debentures, equities, preference shares, ECBs, GDRs, ADRs, IDRs, forex markets, derivatives, etc.

6.1 MONEY MARKET – INSTRUMENTS

There are a number of players in the money market and in addition the market is also characterised by a number of instruments. These instruments have specific characteristics, roles and nuances. The types and characteristics of important instruments in the market are explained hereunder:

6.1.1 Call Money/Notice Money

Call money or call deposits are those moneys which are lent where the borrower has to repay the funds when called on to do so by the lender. On the other hand, ‘Notice Money’ refers to those moneys where the lender has to give a certain number of days’ notice, which has been agreed on at the time of the contract, to the borrower to repay the funds. However, in the Indian money market, Call/Notice money refers to that transaction wherein the money is lent/borrowed between participants, permitted to operate in the Call/Notice money market, for tenors ranging from overnight to a maximum of fourteen days.

A major portion of the transactions in the call market are for an overnight tenor, i.e. the borrower repays principal and interest on the next day of the transaction. This market is used by participants to manage their daily funding mismatches and to comply with CRR stipulations. Resorting to the call/notice money transactions reflects temporary mismatch of funds during the short period of 1 to 14 days, as the case may be. The participants, who have surplus, lend money to adjust the mismatch for the relative period. The participants who are short of funds, on the other hand, would borrow funds for the relative period.

The rate at which the funds will be deployed or borrowed will be driven by demand and supply of funds and determined on the basis of the market conditions at a given point of time. When the market is highly liquid, funds would be easily available whereas funds will be difficult to obtain in tight money market conditions. The rates will be low in easy money (liquid) market and the rates would be high in tight money market. A liquid market can turn tight even overnight due to sudden changes in the financial environment, the policy of the central monetary authority or the government or even other external factors which have an impact on the financial market.

In the past, financial institutions were allowed as lenders in the Call Money market. However, recently the Call/Notice money market has been made a pure inter-bank market. Only Scheduled Commercial Banks (excluding Regional Rural Banks), Co-operative Banks (other than Land Development Banks) and Primary Dealers are permitted to operate in this market as both borrowers and lenders. The placement of money/lending in the call/notice money market is unsecured.

Call money is not secured and could pose some threats. Therefore, as a prudential measure, each lender fixes a placement/counter party exposure for each borrower. This limit denotes the maximum amount the lender would lend to a specified borrower.

In addition to the exposure limits, there is also a regulatory limit on the amount a Bank can lend and borrow in the call/notice money market. Accordingly, in a reporting fortnight the average daily borrowing by a bank cannot exceed 100% of its capital funds (Tier 1 + Tier 2 Capital) of the latest audited balance sheet; and on any given day, the borrowing should not exceed 125% of the same. In a Reporting fortnight the average daily lending by a bank cannot exceed 25% of its Tier 1 + Tier 2 Capital as of the previous financial year; and on any given day the lending should not exceed 50% of the same. These conditions should be complied by the borrowing institutions. The compliance of these conditions need not be ascertained by the lender in the call money market.

Primary Dealers are permitted a daily average borrowing limit of 225% of their Net Owned Funds and lending limit of 25% of their Net Owned Funds as at end March of the previous financial year. Cooperative Banks may lend without limit, but borrowing is limited to not more than 2% of their Deposits as at the end of March of the previous financial year.

The document by which the call/notice money transactions are evidenced is the call/notice money receipt issued by the borrower to the lender. The lender pays funds to the borrower by way of a Banker's Cheque, a cheque drawn on RBI or a RTGS credit. The following day or on a day fixed according to the notice, the reversal takes place by repayment with agreed interest by the borrower to the lender against the return of call/notice money receipt duly discharged by the lender.

Call deposit earns interest at agreed rate per annum. The repayment of call borrowings is along with interest for the days of use of money. The interest on call/notice money is simple interest and paid on maturity. On the due date of payment, the borrowing institution repays the lender the amount borrowed and the interest thereon for days (day count actual/365) of the call/notice money.

Call deposits are not negotiable or transferable. The money borrowed should be automatically repaid as per agreed terms and there is no need for demand for the repayment from the lender.

The Call/Notice Money transactions can be executed either on NDS-Call, a screen-based, negotiated, quote-driven electronic trading system managed by the Clearing Corporation of India (CCIL), or over the counter (OTC) through bilateral communication.

All dealings in Call/Notice/Term money executed on the Negotiated Dealing System-Call, i.e., NDS-Call (a screen-based, negotiated, quote-driven system), do not require separate reporting.

It is mandatory that all the OTC Call/Notice/Term money deals be reported over the reporting platform of NDS-Call by the parties who are having NDS-Call membership. OTC deals should be reported within 15 minutes on NDS-Call reporting platform, irrespective of the size of the deal or whether the counterparty is a member of the NDS-Call or not.

Eligible participants are free to decide on interest rates in call/notice money market. Calculation of interest payable is based on the methodology given in the Handbook of Market Practices brought out by the Fixed Income Money Market and Derivatives Association of India (FIMMDA).

Call market is generally active between the Saturday after the reporting Friday to the next Reporting Friday. A Reporting Friday is the day on which the bank calculates its demand and time liabilities

and complies with CRR and SLR stipulations. Therefore on the reporting Friday, normally there is not much activity in the call money market. However, if a bank were to be short on CRR or faces liquidity issues, it may borrow on reporting Friday also. In order that the call deposit does not get added up to DTL, banks prefer to borrow in the bill market on reporting Fridays. However, at present, all interbank liabilities have been exempted from reserve requirements and hence Call market is active even on reporting Fridays.

6.1.2 Term Money

Term Money refers to those borrowing/lending transactions between the inter-bank participants which have a fixed tenor of 15 days or more. The reasons for the transactions and other aspects could be the same as those for the call/notice money transactions. However, there is no regulatory limit on the amount an inter-bank participant can lend and borrow. In addition, term money also enables the borrower taking position in a short-term asset market.

Rates of interest on term money are negotiated between transacting parties. These rates are arrived from the deposit rates prevailing in the market. However there are no authentic rates such as MIBOR which could be bench marked. The interest rate is simple and calculated on a day count basis of actual/365.

Normally term money is not repayable before maturity. However, premature cancellation after 14 days can be done by mutual consent on mutually agreed terms. No loan/overdraft can be granted against Term Money. Term money cannot be traded. As such, it has limited use in the money market.

6.1.3 Bank Fixed Deposits (FDs)

Scheduled Commercial Banks (SCBs) and Co-operative banks accept term deposits for a period of 7 days and above. The rates of interest on such deposits vary from bank to bank. Deposits are accepted at bank branches. The depositor gets a Fixed/Term Deposit Receipt (FDR) or an advice from the bank which accepts the deposit. These deposits are not transferable. However, the depositor has an option to liquidate the deposit, known as premature closure (embedded option), prior to its contracted maturity subject to penalty as indicated by a bank which could vary from bank to bank. Presently, most banks have waived such penalties on interest payable on premature closure, to remain competitive in the market. Banks cannot engage in discretionary pricing of Fixed Deposits, as the interest rate quoted for a quantum and maturity should be the same across all its branches on any given day for all types of customers of the same class. Banks are however, allowed to offer differential rate of interest for single term deposit of ₹15 lakh and above.

Anybody can invest funds in a fixed deposit. In a strict sense a fixed deposit is not a money market instrument since it cannot be traded. However, often banks and FIs make investment in FDs. This is appropriate when funds are available for a specified period and rate in FD market is more favourable than other markets. FD investments can be foreclosed at a stipulated penalty in terms of loss of interest. Therefore, banks look at FDs if they can lock the funds for a specific period. FDs are mentioned here as it is a short-term alternate investment option and it does have certain liquidity features – albeit limited – in the sense that the investor can redeem the FD at the bank at any point in time.

6.1.4 Certificates of Deposit (CD)

Certificate of Deposit (CD) is a negotiable money market instrument and issued in dematerialized form or as a Usance Promissory Note, for funds deposited at a bank or other eligible financial institution for a specified time period. Guidelines for issue of CDs are presently issued by the Reserve Bank of India.

Accordingly, CDs can be issued by (i) scheduled commercial banks excluding Regional Rural Banks (RRBs) and Local Area Banks (LABs); and (ii) select all-India Financial Institutions that have been permitted by RBI to raise short-term resources within the umbrella limit fixed by RBI. Banks have the freedom to issue CDs depending on their requirements. An FI may issue CDs within the overall umbrella limit fixed by RBI, i.e. issue of CD together with other instruments, viz., term money, term deposits, commercial papers and inter-corporate deposits which should not exceed 100 per cent of its net owned funds, as per the latest audited balance sheet.

The maturity period of CDs issued by banks should be not less than 7 days and not more than one year. The FIs can issue CDs for a period of not less than 1 year and not exceeding 3 years from the date of issue.

CDs may be issued at a discount on face value. Banks/FIs are also allowed to issue CDs on floating rate basis, provided the methodology of compiling the floating rate is objective, transparent and market-based. The issuing bank/FI is free to determine the discount/coupon rate. The interest rate on floating rate CDs would have to be reset periodically in accordance with a pre-determined formula that indicates the spread over a transparent benchmark. However the more popular mode of issuing CDs has been as a discounted instrument. Banks can indulge in discretionary pricing in CDs.

Other features of CD are as follows:

1. CDs can be issued to individuals, corporations, companies, trusts, funds, associations, etc. Non-Resident Indians (NRIs) may also subscribe to CDs, but only on non-repatriable basis which should be clearly stated on the Receipt/Certificate. Such CDs cannot be endorsed to another NRI in the secondary market.
2. Physical CDs are freely transferable by endorsement and delivery. Demat CDs can be transferred as per the procedure applicable to other demat securities. Currently, as per RBI guidelines, Banks/FIs should issue CDs only in the demat form. However, according to the Depositories Act, 1996, investors have the option to seek certificate in physical form.
3. There is no lock-in period for the CDs (minimum period has to be in excess of 7 days).
4. Minimum amount of a CD should be Rs. 1 lakh, i.e. the minimum deposit that could be accepted from a single subscriber should not be less than Rs. 1 lakh and in the multiples of Rs. 1 lakh thereafter.
5. The rate of discount/coupon is determined by parties to the transaction. The market factors, demand and supply are taken into consideration while fixing the rates. Yet there are no benchmark rates and if a CD is issued at high rates, despite low call money and other rates, there would not be any difficulties. Banks/FIs are also allowed to issue CDs on floating rate basis provided the methodology of compiling the floating rate is objective, transparent and market-based. The issuing bank/FI is free to determine the discount/coupon rate. The interest rate on floating rate CDs would have to be reset periodically in accordance with a pre-determined formula that indicates the spread over a transparent benchmark. The investor should be clearly informed of the same.

Discount is calculated on Actual/365 day basis and on a rear-ended basis. Price to be calculated upto a maximum of four decimal places and rounded off to the 4th decimal place. The formula for calculating issue price or yield of a CD valued at Rs. 100 will be as under;

Case 1: In case yield is given then:

$$\text{Price} = \frac{100}{\frac{(1 + \text{Yield} * \text{No. of days to maturity})}{365 * 100}}$$

Case 2: In case price is given then

$$\text{Yield} = \frac{(100 - \text{Price}) * 365 * 100}{(\text{Price} * \text{No. of Days to maturity})}$$

Thus, if the CD's face value is ₹10000 and the yield is 10% and the period of CD is 91 days, the initial investment in the CD will be ₹9756.7495. The initial investment will give a coupon (simple interest) of 10%.

6. The instrument is to be stamped according to the rates prescribed by the Indian Stamp Act.
7. Banks/FIs cannot grant loans against CDs. Furthermore, they cannot ordinarily buy-back their own CDs before maturity, except with specific approval from RBI Unlike Bank FDs, CDs cannot be closed prematurely, but can be traded in secondary market for generating liquidity.

6.1.5 Commercial Paper (CP)

Commercial Paper (CP) is an unsecured money market instrument issued in the form of a promissory note. CP, as a privately placed instrument, was introduced in India in 1990 with a view to enable highly rated corporate borrowers to diversify their sources of short-term borrowings and to provide an additional instrument to investors. Subsequently, primary dealers and all-India financial institutions were also permitted to issue CP to enable them to meet their short-term funding requirements for their operations. Guidelines for issue of CP are issued by the Reserve Bank of India, and amended from time to time.

Corporates and primary dealers (PDs), and the all-India financial institutions (FIs) that have been permitted to raise short-term resources under the umbrella limit fixed by Reserve Bank of India, are eligible to issue CP.

A corporate would be eligible to issue CP provided: (a) the tangible net worth of the company, as per the latest audited balance sheet, is not less than ₹4 crore; (b) company has been sanctioned working capital limit by bank/s or all-India financial institution/s; and (c) the borrowing account of the company is classified as a Standard Asset by the financing bank/s/institution/s. CP can be issued as a "stand alone" product. The aggregate amount of CP from an issuer shall be within the limit as approved by its Board of Directors or the quantum indicated by the Credit Rating Agency for the specified rating, whichever is lower. Banks and FIs will, however, have the flexibility to fix working capital limits duly taking into account the resource pattern of companies' financing including CPs. An FI can issue CP within the overall umbrella limit fixed by the RBI, i.e., issue of CP together with other instruments, viz., term money borrowings, term deposits, certificates of deposit and inter-corporate deposits should not exceed 100 per cent of its net owned funds, as per the latest audited

balance sheet. The total amount of CP proposed to be issued should be raised within a period of two weeks from the date on which the issuer opens the issue for subscription. CP may be issued on a single date or in tranche/parts on different dates provided that in the latter case, each CP shall have the same maturity date. Every issue of CP, including renewal, should be treated as a fresh issue. All eligible participants shall obtain the credit rating for issuance of Commercial Paper from any one of the SEBI registered Credit Rating Agencies. The minimum credit rating shall be 'A3' as per rating symbol and definition prescribed by SEBI. The issuers shall ensure at the time of issuance of CP that the rating so obtained is current and has not fallen due for review.

CP can be issued for maturities between a minimum of 7 days and a maximum up to one year from the date of issue. The maturity date of the CP should not go beyond the date up to which the credit rating of the issuer is valid.

The other features of a CP are:

1. CP may be held by individuals, banking companies, other corporate bodies registered or incorporated in India and unincorporated bodies, Non-Resident Indians (NRIs) and Foreign Institutional Investors (FIIs). However, investment by FIIs is subject to (i) the limits set for their investments by Securities and Exchange Board of India (SEBI) and (ii) compliance with the provisions of Foreign Exchange Management Act, 1999, the Foreign Exchange (Deposit) Regulations, 2000 and the Foreign Exchange Management(Transfer or Issue of Security by a Person Resident Outside India) Regulations, 2000 as amended from time to time.
2. CP can be issued either in the form of a promissory note (Schedule I) or in a dematerialized form through any of the depositories approved by and registered with SEBI. While option is available to both issuers and subscribers to issue/ hold CP in dematerialized or physical form, issuers and subscribers are encouraged to prefer exclusive reliance on dematerialized form of issue/holding. However, with effect from June 30, 2001, banks, FIs and PDs are required to make fresh investments and hold CP only in dematerialized form. The secondary market deals in CPs are to be reported on F-Trac. However, the delivery of securities and transfer of funds will be done by the counterparties themselves to the Exchange Clearing Corporations which are mandated for settlement of the transactions.
3. CP will be issued at a discount to face value as may be determined by the issuer.
4. No issuer shall have the issue of CP underwritten or co-accepted. Banks and FIs have, however, the flexibility to provide for a CP issue, credit enhancement by way of standby assistance/credit, back-stop facility, etc., based on their commercial judgment, subject to prudential norms as applicable and with specific approval of their Boards. Non-bank entities including corporates may also provide unconditional and irrevocable guarantee for credit enhancement for CP issue provided:
 - (i) the issuer fulfills the eligibility criteria prescribed for issuance of CP;
 - (ii) the guarantor has a credit rating at least one notch higher than the issuer from an approved credit rating agency; and
 - (iii) the offer document for CP discloses, adequately, the net worth of the guarantor company, the names of the companies to which the guarantor has issued similar guarantees, the extent of the guarantees offered by the guarantor company, and the conditions under which the guarantee will be invoked.

5. Every issuer must appoint an IPA [Issue and Pay Agent] for issuance of CP. Only a scheduled bank can act as an IPA for issuance of CP.
6. CP shall be issued at a discount to face value as may be determined by the issuer.
7. The instrument is to be stamped according to the rates prescribed by the Indian Stamp Act.

6.1.6 Bill Rediscounting Scheme (BRDS)

BRD is the rediscounting of trade bills, which have already been purchased by/discounted with the bank by the customers. These trade bills arise out of supply of goods/services. Banks, in their normal course of business discount genuine bills of exchange. This forms part of the loans and advances or credit portfolio of the bank. To provide liquidity and to promote the bills culture in the economy, the RBI formulated a scheme whereby a bank may raise funds by issue of Derivative Usance Promissory Notes (DUPN) in convenient lots and maturities on the strength of genuine trade bills discounted by it. This scheme is known as the Bills Rediscounting Scheme (BRDS). Banks and permitted financial entities may invest by way of rediscounting trade bills of other eligible banks against a Derivative Usance Promissory Note issued by such bank. The minimum tenor of a BRDS transaction is 15 days and the maximum tenor is 90 days. The bank borrowing under the BRDS scheme issues a Derivative Usance Promissory Note to the lender as well as a certificate that the bank holds eligible bills, equal to the amount of the transaction on its books. The DUPN should be backed by unencumbered Usance Bills of Exchange of at least equal value not fallen due for payment drawn or endorsed in favour of the subscriber/lender arising out of bona fide commercial or trade transaction on which the required stamp duty is paid. The discounting bank will hold and continue to hold such unencumbered usance bills till the date of maturity of the Derivative Usance Promissory Note. In case any of the bills mature during the currency of the derivative UPN, such bills should be replaced by fresh eligible bills discounted by the bank issuing such derivative UPN.

Derivative Usance Promissory Note (DUPN):

Usance Promissory note drawn by the discounting Bank against the underlying Bills. While rediscounting the Bills, actual endorsement and delivery of these Bills are not necessary. Instead this Promissory Note is delivered. Since this Note derives its value from the underlying Bills, this is called Derivative Usance Promissory Note.

The bank availing of rediscounting facilities against bills earlier discounted by it, is required to maintain a register containing true and full particulars of usance bills held by it in respect of each promissory note so that the entries in the register can be verified. Banks can only rediscount eligible bills which have the following features:

- The bill of exchange should have arisen on account of a bonafide trade transaction. House bills and bills of finance companies are not eligible as cover for BRDS.
- The bill of exchange should be unencumbered.
- The unexpired tenor of the bill should not be more than 90 days.
- The advances of a bank borrowing under the BRDS get reduced to the extent of the borrowing while it is shown as an advance on the lender's books.
- The BRDS transaction is carried out on a discounted basis and has the following features.
- Interest is calculated on an actual/365 basis.

- Interest is calculated on a front-ended basis and rounded off to the nearest Rupee.
- The borrower receives an amount which is the Principal Amount less the interest/discount.
- The lender receives the Principal Amount, from the borrower, on the maturity of the transaction.
- The effective yield on the bills discounting is higher than the discount rate.

Consider the following examples:

Example 1:

Amount of Bill ₹100

Interest rate per annum 12

Bill Rediscounting period 3 months

Interest amount for three months is ₹3

Net amount lent is ₹97

The yield = $(3*4/97)*100 = 12.37\%$

It is seen that the yield is higher due to the discounting effect.

Example 2:

Transaction Amount: ₹10,00,00,000/- (Rupees Ten Crore) (Principal Amount)

No. of Days: 45 days

Rate of Discount: 10.25% p.a. front ended

Discount: $\frac{\text{Transaction Amount} * \text{No. of days} * \text{Rate of interest/discount}}{365 * 100}$

$$\text{i.e., } \frac{10,00,00,000 * 45 * 10.25}{365 * 100}$$

i.e., ₹12,63,699 (rounded off)

Amount payable: Transaction Amount – Discount/Interest

i.e., $10,00,00,000 - 12,63,699 = ₹9,87,36,301/-$

Amount to be Repaid on maturity: ₹10,00,00,000/-

6.1.7 Inter-Bank Participation Certificates (IBPCs)

IBPC is yet another short-term money market instrument whereby the banks can raise money/deploy short-term surplus. In the case of IBPC the borrowing bank (Issuing Bank) passes/sells the loans and credit that it has in its book, for a temporary period, to the lending bank (Participating Bank). IBPCs are of two types. They are: (i) With risk sharing (ii) Without risk sharing.

Scheduled Commercial Banks can issue and purchase/participate in IBPCs. The scheme was also extended to the Regional Rural Banks (RRBs) in 2009 whereby they were allowed to issue IBPCs

to scheduled commercial banks in respect of their priority sector advances in excess of the minimum stipulated requirement. With the upward revision in priority sector lending requirements for RRBs under the revised priority sector guidelines issued by RBI in 2015, the RRBs can now issue IBPCs for their priority sector advances in excess of 75% of their outstanding advances. The RRBs have not been allowed to purchase IBPCs. Further, the RRBs are allowed to issue IBPCs only on ‘risk sharing’ basis.

The various features of this instrument are given below:

1. The minimum period shall be 91 days and maximum period 180 days in the case of IBPCs on risk sharing basis and in the case of IBPCs under non-risk sharing basis the total period is limited to 90 days.
2. The maximum participation in loan/cash credit under IBPC would be 40% of the amount outstanding or the limit sanctioned whichever is lower. The participation however, should be in “standard asset” only.
3. Documents to be executed by the borrower in favour of the Issuing Bank shall provide a clause that the issuing bank shall have liberty to shift at its discretion without notice to the borrower, from time to time during the subsistence of the cash credit/loan account, a part or portion of the outstanding in the said account, to another bank/bank’s participating in the scheme.
4. Interest rates are determined between issuing bank and the participating bank.
5. The issuing bank and the participating bank have to enter into participation contracts in the format prescribed.
6. IBPCs are not transferable.
7. IBPCs cannot be redeemed before due date.
8. In case the balance in the cash credit/loan account on which IBPCs have been issued comes down, at any point of time, the issuing bank has to repay the portion of the IBPCs issued to the participating bank so that the participation is not more than 40% of the balance outstanding in the said account/s.
9. On the date of maturity the issuing Bank makes payment of the IBPC along with agreed rate of interest to the participating bank except in the case where risk has materialized, where the issuing bank may take necessary action in consultation with the participating bank and may share the recoveries proportionately. In the case of non-risk sharing IBPCs, the issuing bank will pay the amount of the participating bank irrespective of defaults, if any, in advance in question.
10. IBPC under non-risk sharing basis should be reflected as an inter – bank borrowing and subjected to SLR requirements.
11. IBPCs representing loans to various categories of priority sector, except ‘others’ category, are eligible for classification under respective categories of priority sector depending on the underlying assets. This has immensely benefitted the foreign banks and domestic private banks which usually face shortfall in achieving priority sector lending targets and consequently are required to keep the shortfall as deposit with financial institutions, like NABARD, at a very low rate of interest – The highest the shortfall in achieving priority sector lending targets, the lowest the rate of interest on such deposits.

6.1.8 Collateralized Borrowing and Lending Obligation (CBLO)

CBLO is a money market instrument approved by RBI. This is a product developed by CCIL for the benefit of the entities who have either been phased out from inter-bank call money market or have been given restricted participation in terms of ceiling on call borrowing and lending transactions and who do not have access to the call money market. CBLO is a discounted instrument available in electronic book entry form for the maturity period ranging from one day to ninety days (can be made available up to one year as per RBI guidelines). In order to enable the market participants to borrow and lend funds, CCIL provides the Dealing System through Indian Financial Network (INFINET), a closed user group to the Members of RBI CBS E-Kuber, who maintain Current account with RBI, and through Internet for other entities who do not maintain Current account with RBI.

CBLO is a borrowing arrangement, against those securities which are placed with the Clearing Corporation of India either as margin or otherwise. The process can be explained as under: CBLO is

- An obligation by the borrower to return the money borrowed, at a specified future date;
- An authority to the lender to receive money lent, at a specified future date with an option/ privilege to transfer the authority to another person for value received;
- An underlying charge on securities held in custody (with CCIL) for the amount borrowed/lent.
- For a lender of funds under CBLO, the securities can be reckoned as eligible securities for meeting SLR reserves.

Eligibility: Membership (including Associate Membership) of CBLO segment is extended to banks, financial institutions, insurance companies, mutual funds, primary dealers, NBFCs, non-government Provident/Pension Funds, Corporates, etc. The Members are required to open Constituent SGL (CSGL) Account with CCIL for depositing securities which are offered as collateral/margin for borrowing and lending of funds. Besides, Associate Members are required to open a current account with a Settlement Bank designated by CCIL for settlement of funds. An Associate Member can maintain its GILT Account with any custodian bank.

Eligible Securities: Eligible securities are Central Government securities including Treasury Bills.

6.1.9 Treasury Bills (T-bills)

Treasury bill is a short-term instrument issued by the Government of India (GOI) and are presently issued in three tenors, namely, 91 days, 182 days and 364 days. The T-Bill issuance calendar is announced by RBI for each half-year. The T-Bill is a discounted instrument, i.e., it is issued at a discount to its face value which is usually ₹100. The investment in the Treasury bills is reckoned for the purpose of Statutory Liquidity Reserve (SLR) requirements.

The T-Bills are issued in the primary market by the Reserve Bank of India periodically. Normally there are T-Bill auctions every week. The market participants have to bid for a discounted price in the auction. The cut-off price for the auction is determined by the RBI at a level where the notified amount of the auction is fully bid for. Thus, the cut-off is, under normal circumstances, determined by the market forces.

T-Bills have a moderately active secondary market. The secondary market trades in T-Bills on a YTM basis. The price of the T-Bill is then computed from the yield at which it has been dealt. The transfer of T-Bill is through the SGL mechanism.

In recent times the notified amount in T-Bill auction is also included as part for the Market Stabilization Scheme (MSS). The MSS was introduced in order to enable the RBI to mop up excess liquidity from the system.

Cash Management Bills

In 2010, the Government of India, in consultation with the Reserve Bank of India, introduced a new short-term instrument, known as Cash Management Bills, to meet the temporary cash flow mismatches of the Government. The Cash Management Bills are non-standard, discounted instruments issued for maturities less than 91 days.

The Cash Management Bills have the generic character of Treasury Bills and their sale is subject to the terms and conditions specified in the General Notification No. F.2 (12)-W&M/97 dated 31st March 1998 issued by Government of India and as amended from time to time.

The Cash Management Bills have the following features.

- The tenure, notified amount and date of issue of the proposed Cash Management Bills depends upon the temporary cash requirement of the Government. However, the tenure of the proposed Bills is less than 91 days.
- The Cash Management Bills are issued at discount to the face value through auctions, as in the case of the Treasury Bills.
- The announcement of the auction of the Cash Management Bills is made by the Reserve Bank of India through separate Press Release to be issued one day prior to the date of auction.
- The settlement of the auction is conducted on T+1 basis.
- The Non-Competitive Bidding Scheme for Treasury Bills is not to be extended to the Cash Management Bills.
- The Cash Management Bills are tradable and qualify for ready forward facility. Investment in the Bills is reckoned as an eligible investment in Government Securities by banks for SLR purpose under Section 24 of the Banking Regulation Act, 1949.

Example of an Auction Notice issued by RBI is given below:

RBI announces auction of a 43-Day Government of India Cash Management Bill			
The Reserve Bank of India announces auction of a 43-Day Government of India Cash Management Bill as per the following details.			
Auction Date	Settlement Date	Maturity date	Notified Amount
August 07, 2017 August 08, 2017 September 20, 2017 ₹20,000 crore			

The auction will be conducted using “Multiple Price Auction” method. The competitive bids for the auction should be submitted in electronic format on the Reserve Bank of India Core Banking Solution (E-Kuber) between 10.30 a.m. and 12.00 noon. The result of the auction will be announced on the same day.

6.1.10 Repurchase Agreements (Repos)

Repo is a money market mechanism, which enables collateralized short term borrowing and lending through sale/purchase operations in debt instruments. Unlike call deposits and T. Bills, repo is not an instrument in the market. It is a process wherein a number of instruments such as G-Secs, PSU Bonds and other securities can be used as underlying securities to borrow and lend in the money market. Under a repo transaction, a holder of securities sells them to lender of funds with an agreement to repurchase the same securities for a same amount at a predetermined date. It is essentially a lending and borrowing transaction at an agreed rate of interest known as repo rate. In view of this, the forward clean price of the bonds is set, at the time of sale, at a level which is different from the spot clean price by adjusting the difference between repo interest (known as repo rate) and coupon income on the security. The rate of interest on repo will be market related.

In the money market, a REPO transaction is nothing but collateralized lending, as the terms of the transaction are structured to compensate for the funds lent and the cost of the transaction is the repo rate. In other words, the inflow of cash from the transaction can be used by the borrower of funds to meet temporary liquidity requirement in the short term money market at comparable cost.

6.1.10.1 Repo Rate

It is the annualized interest rate for the funds lent by the buyer of the securities (lender) to the seller of the securities (borrower). Generally, the repo rate is lower than that offered on unsecured (or clean) interbank loan for the reason that it is a collateralized transaction and the creditworthiness of the issuer of the underlying security is often higher than the seller. Other factors that may affect the repo rate include the creditworthiness of the borrower, liquidity of the collateral and comparable rates of other money market instruments.

Repo is an instrument for borrowing funds by selling securities with an agreement to repurchase the said securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed. A reverse repo is the mirror image of a repo. REPO viewed from the angle of the lender is known as reverse repo. Thus, in a reverse repo, securities are acquired with a simultaneous commitment to resell. Hence, whether a transaction is a repo or a reverse repo is determined in terms of who initiated the first leg of the transaction. When the reverse repurchase transaction matures, the counter party returns the security to the entity concerned and receives its cash along with interest at the contracted repo rate. One factor which encourages an organization to enter into reverse repo is that it earns some income on its otherwise idle cash, from a secured form of lending.

A repo is also called a **ready forward** transaction as it is a means of funding by selling a security held on a spot (ready) basis and repurchasing the same on a forward basis.

When an entity sells a security to another entity on repurchase agreement basis and simultaneously purchases some other security from the same entity on resell basis, it is called a **double ready forward** transaction.

REPO is also undertaken by RBI for controlling liquidity in the market as also to help banks in need of liquidity. The banks can borrow funds from RBI by approaching RBIs REPO window. This

is a reverse repo for borrowing bank. Similarly, Banks with surplus liquidity can park their surplus overnight with RBI in RBIs Reverse Repo window, against government securities offered by RBI. This two way funding mechanism by RBI is known as **LAF** (Liquidity Adjustment Facility). RBI varies the REPO rate frequently. In fact LAF is a monetary tool in the hands of RBI.

Participants in the LAF market are those which are indicated by RBI. As against this, repo in the market can be between banks and financial institutions. Non-Banking participants can lend money to other eligible counterparties through repo. Repo is also allowed in PSU bonds and private corporate debts provided the debts are held in dematerialized form.

The lender of funds is not permitted to sell outright the securities held under repo, during the repo period as the Repo inherently involves repurchase of securities pledged by the borrower from the lender after the repo period.

The repo market is regulated by the Reserve Bank of India. All the above mentioned repo market transactions should be traded/reported on the electronic platform called the Clearcorp Repo Order Matching System (CROMS).

As part of the measures to develop the corporate debt market, RBI has permitted select entities (scheduled commercial banks excluding RRBs and LABs, PDs, all-India FIs, NBFCs, mutual funds, housing finance companies, insurance companies) to undertake repo in corporate debt securities. This is similar to repo in G-Secs except that corporate debt securities are used as collateral for borrowing funds. Only listed corporate debt securities that are rated 'AA' or above by the rating agencies are eligible to be used for repo. Commercial paper, certificate of deposit, non-convertible debentures of original maturity less than one year are not eligible for this purpose. These transactions take place in the OTC market and are required to be reported on FIMMDA platform within 15 minutes of the trade for dissemination of trade information. They are also to be reported on the clearing house of any of the exchanges for the purpose of clearing and settlement.

6.1.10.2 Repo Pricing

In a repo transaction there is a spot sale and a forward purchase by the borrower of funds. These transactions are complete when SGLs are exchanged or transfer in demat form is complete and the ownership of the securities is transferred to the buyer for the period of repo and sold back to the seller at the end of the agreed period. Often the reversal of the transaction is automatic and will be done by the clearing corporation or the securities holding company. As indicated, in a repo there are two legs of transactions, viz., selling of the security and repurchasing of the same. In the first leg of the transaction for a nearer date, sale price is usually based on the prevailing market price for outright deals. In the second leg, which is for a future date, the price will be structured based on the fund flow of interest and tax elements of funds exchanged. This is because, as the ownership of securities passes on from seller to buyer for the repo period, legally the coupon interest accrued for the period has to be passed on to the buyer. Thus, at the sale leg, while the buyer of security is required to pay the accrued coupon interest for the broken period, at the repurchase leg, the initial seller is required to pay the accrued interest for the broken period to the initial buyer.

Transaction-wise, both the legs are booked as spot sale/purchase transactions. Thus, after adjusting for accrued coupon interest, sale and repurchase prices are fixed so as to yield the required repo rate. Essentially, the price adjustment depends on the relationship between the net coupon and the repo amount worked out on the basis of the repo interest agreed upon the total funds transferred. When repo rate is higher than current yield, repurchase price will be adjusted upward signifying a capital loss. If the repo rate is lower than the current yield, then the repurchase price will be adjusted downward signifying a capital gain.

If the repo rate and coupon are equal, then the repurchase price will be equal to the sale price of security since no price adjustment at the repurchase stage will be required. In such cases, the out go (dirty price) in the first leg will be clean price + accrued interest. In the reversal leg also, the out go will be calculated as price plus accrued interest. Accrued interest will be higher as the repo period will be added to the original broken period.

If the repo rate is greater than the coupon, then the repurchase price is adjusted upward (with reference to sale price) to the extent of the difference between the two. And, if the repo rate is lower than the coupon, then the repurchase price is adjusted downward (with reference to sale price). Specifically, in terms of repo rate, there will be no price adjustment when the current yield on security calculated on the basis of sale value (including accrued coupon) is equivalent to repo rate.

In case the coupon payment day falls within the repo period, suitable adjustments in the price should be made.

It should be particularly remembered that whereas the price at the time of first leg is taken from the market, the second leg price is prefixed by working back the repurchase price to equate the consideration amount to principal exchanged in first leg plus accrued interest at repo rate and may not be market related.

As indicated previously, a repo transaction is also called a Ready Forward transaction, i.e. a transaction having a “Ready” leg and a “Forward” leg.

The ready forward transaction is in two legs:

Ready Leg: The borrower of funds sells securities at the prevailing market price to the lender.

Before the sale the borrower and lender agree on the tenor and rate of the Repo Transaction.

Forward Leg: The borrower of funds buys back the securities sold in the Ready leg from the lender at a computed price so that the lender (seller of securities in second leg) gets an amount which includes the amount lent on the Ready leg plus the interest for the amount lent at the agreed interest rate for the tenor of the Repo.

The repo transaction, therefore, should have:

1. Present sale or purchase with a commitment to repurchase or resale, respectively at a future date;
2. Contract between the same parties;
3. Same securities with the same quantum and;
4. Transactions must be entered on the same day for both legs.

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The following example will clarify the Repo transaction.

Computation Bank A agrees to borrow approximately ₹10 crore from Bank B for a period of 3 days at an interest rate of 5%.

Borrower:	Bank A
Lender:	Bank B
Tenor:	3 days
Repo Rate:	5.00%
Security:	6.85% GOI 2012 (Government of India security with a coupon rate of 6.85% and maturing on 05 April 2012)
Ready Leg Date:	15 November 2005
Forward Leg Date:	18 November 2005
Ready Leg Computation	
Ready Leg Price of Security:	₹100/-
Face Value of Security:	₹10,00,00,000/-
Principal Value of Security:	₹10,00,00,000/-A
Last Interest Date:	05 October 2005
Accrued Interest on Security:	₹7,61,111.11B
Ready Leg Proceeds (A+B):	₹10,07,61,111.11C
Forward Leg Computation	
Repo Interest Amount:	(₹10,07,61,111.11) × .05 × 3/365
	₹41,408.68D
Forward Leg Proceeds (C+D):	₹10,08,02,519.79E
Accrued Interest on Security:	₹8,18,194.44F
Principal Value of Security (E-F):	₹9,99,84,325.35G
Forward Leg Price of Security:	[G/(100000000)] × 100
	₹99.9843

The above example illustrates how the forward leg price is derived for a Repo transaction.

Eligible Instruments: Different instruments can be considered as collateral security for undertaking the ready forward deals and they include Government dated securities, Treasury Bills and corporate bonds.

However, under the Uniform Rules for Repo Accounting, the securities must move out and come back to the books of the bank, without any change in its Book Value. The price difference is routed through a Repo Price Adjustment Account and partly reflected as interest on Repo borrowings/lendings.

6.1.11 Types of Repos

Broadly, there are four types of repos available in the international market when classified with regard to maturity of underlying securities, pricing, term of repo, etc. They comprise buy-sell back repo, classic repo, bond borrowing and lending and tripartite repos.

Under a buy-sell repo (this is nothing but normal repo as described above) transaction, the lender actually takes possession of the collateral. Here a security is sold outright and agreement to buy back is exchanged simultaneously but the buyback settlement takes place on a later date. In a buy-sell repo, the ownership is passed on to the buyer and hence he retains any coupon interest due on the bonds. The forward price of the bond is set in advance at a level which is different from the spot clean price by actually adjusting the difference between repo interest and coupon earned on the security. The spot buyer/borrower of securities in effect earns the yield on the underlying security plus or minus the difference between this and the repo interest rate.

Classic repo is an initial sale of securities with a simultaneous agreement to repurchase them at a later date. In the case of this type of repo, the start and end prices of the securities are the same and a separate payment of “interest” is made. Classic repo makes it explicit that the securities are only collateral for cash loan. Here the coupon income will accrue to the seller of the security. Under a ‘hold in custody’ repo, the counter parties enter into an agreement whereby the securities sold are held in custody by the seller for the buyer until maturity of the repo, thus eliminating the settlement requirements.

In a bond lending/borrowing transaction, the customer lends bonds for an open ended or fixed period in return for a fee. The fee charged would depend on the type of underlying instrument, size and term of the loan and the credit rating of the counter party. The transaction would be taken care of by an agreement on securities lending and cash, or other securities of equal value could be provided as collateral in the transaction.

Under a Tripartite repo, a common custodian/clearing agency arranges for custody, clearing and settlement of repo transactions. They operate under a standard global master purchase agreement and provide for DVP system, substitution of securities, automatic marking to market, reporting and daily administration by single agency, which takes care of the risk by itself and automatic roll overs while does not insist on disclosing the identities by counter parties. The system starts with signing of agreements by all parties and the agreements include Global Master Repurchase and Tripartite Repo Service Agreements. This type of arrangement minimises credit risk and can be utilised when dealing with clients with low credit rating.

6.1.11.1 Repo Period

Repo transaction can be undertaken for overnight to a longer term period. Overnight repo lasts only one day. If more than one day period is fixed and agreed in advance, it is a term repo. Though these are terminated as per agreement, it is possible for either party to terminate the repo at any time by giving one or two days’ notice. Such terminations are seldom seen in the market. Though there is no restriction on the maximum period for which repos can be undertaken, generally ‘term repos’ are

for an average period of one week. In an open repo, there is no such fixed maturity period and the interest rate would change from day to day depending on the money market conditions. In such cases the lender agrees to provide money for an indefinite period and the agreement can be terminated on any day. Under flexible repos, the lender places funds, but they are withdrawn by the borrower as per his requirements over an agreed period.

6.1.11.2 Risks

Although repos are collateralized transactions, the parties to repo are exposed to counter party risk and the issuer risk associated with the collateral. The counter party risk may not be high as the investor/lender should be able to liquidate the securities received as collateral, thus largely offsetting any loss. Against this, the seller/lender of bonds will hold cash or other securities as protection against non-returning of the lent securities. In both the cases, it is to be ensured that the realizable value equals or exceeds the exposure. There is also the possibility of risk resulting from illiquid issues which are used as collateral in the transaction. Though risk of default is minimum, to avoid the likelihood of illiquid securities it has to be ensured that REPO is undertaken in active market securities and not in securities which are not traded.

In a repo transaction, the lender could be exposed to **interest rate risk**. This is because, interest rates might rise, forcing down the market value of the securities that have been used in the repo. If such an event coincides with the borrower becoming bankrupt and the repurchase was not executed, the lender might be left holding securities with a market value less than the amount lent. The borrower (seller of security) in a repo transaction also faces some risk. Interest rates might fall during the life of the agreement, forcing up the market value of the securities sold under REPO. In such a situation there is a loss of opportunity. Also, in such cases the borrower would be left holding an amount of money lesser than the market value of the securities sold, if the lender were to default and not honour the resell contract, then the borrower would have to buy the securities from the market at a higher price.

Repos are basically short-term instruments, which can be used effectively for bridging short-term asset-liability gaps of the bank or meeting short-term SLR requirements. A bank which is short on liquidity and holding surplus SLR securities, can sell securities under repo and create liquidity for the short term, with an understanding to repurchase the same lot of securities at an agreed future date. Conversely, a bank which wishes to park its short-term surplus liquidity can purchase the permissible securities under repo with an understanding to sell it back to the counter party at an agreed future date.

The Reserve Bank has permitted banks and specified institutions, primarily the primary dealers, to undertake repos. Though financial institutions can participate in the market through reverse repos, they cannot initiate repos. It is now possible, for approved institutions to do repos in Corporate Debt Securities, in addition to the SLR securities.

The eligible underlying collateral for repo in Corporate Debt Securities include:

- (a) Listed corporate debt securities of original maturity of more than one year which are rated 'AA' or above by the rating agencies registered with Securities and Exchange Board of India (SEBI), that are held in the security account of the repo seller, in demat form.

- (b) Commercial Papers (CPs), Certificates of Deposit (CDs) and Non-Convertible Debentures (NCDs) of original maturity up to one year which are rated A2 or above by the rating agencies registered with SEBI.
- (c) Bonds which are rated 'AA' or above, by the rating agencies registered with SEBI or internationally recognised rating agencies, and which are issued by multilateral financial institutions like the World Bank Group (e.g., IBRD, IFC), the Asian Development Bank or the African Development Bank and other such entities as may be notified by the Reserve Bank of India from time to time.

The tenor of Repos in corporate debt securities shall be for a minimum period of one day and a maximum period of one year.

The Repo transactions in Corporate Debt Securities are governed by the provisions of Repo in Corporate Debt Securities (Reserve Bank) Directions, 2015 issued by Reserve Bank on 3rd February, 2015 and as amended from time to time.

Thus, the essential requirements for the repos are, as follows:

1. Parties to the repo transaction should be eligible to undertake REPO as per regulatory guidelines.
2. Securities for the repos should also be permitted ones.
3. Double ready forward transactions are prohibited.
4. The redemption date of the subject security/s, lock-in period for the periodical interest payment, actual interest payment date should not fall during the repo duration.
5. The parties to the repo transaction have sufficient balance in the current account maintained with RBI and also the SGL account in Government securities, in case the repoed security happens to be the Government security/s. The rates to the repo transaction to be concluded depend upon the expected rates movement in call/notice money market in the relevant period for which repo is being done, as well as the demand and supply portion of the short term SLR securities in the market.

6.1.11.3 Documentation

Legal title to the collateral security which is used in repo transaction passes to the buyer during the repo period. As a result, in case the seller defaults in repayment of funds, the buyer need not separately establish right on the collateral security.

Many legal regimes across the world do not require repo agreements to be documented. In fact, the legal infrastructure varies with the social, economic and political conditions of the markets in which they operate. Both legs of the repo are transacted under the written formal agreement in the West and European countries. While in the USA it is the PSA Agreement which is in vogue, in Europe the PSA/ISMA General Master Repo Agreement is increasingly used in the case of domestic repos. The PSA/ISMA Global Master Repurchase Agreement with the relevant buy/sell back annex contains a full set of contractual rights and obligations including rights of re-pricing and clearly defined events of default. The contract allows obligations under all outstanding trades to be set off against each other upon the default or insolvency of the counter party. On the other

hand, when a repo is undertaken as a securities lending transaction, similar protections could be had under the Overseas Securities Lending Agreement (OSLA) developed by the International Stock Lenders Association.

The master agreements set out the relationships between parties and general positions applicable to all repos in terms of definition, delivery and payment obligations of the parties, margin mechanics, rights of substitution, treatment of income on securities involved, notice provisions, etc. The matters to be covered in the agreement, in detail should include provisions for the absolute transfer of title to securities, marking to market of transactions, appropriate initial margin and the maintenance of margin whenever the marking to market reveals a material change of value. Also, there is need to specify clearly the events of default and the consequential rights and obligation of the counter parties. Further, the agreements will elaborate on details on full set off of claims in the event of default between the counter parties and clarification of rights of the parties regarding substitution of collateral and the treatment of coupon and interest payments in respect of securities subject to it, including for example, the timing of any payment.

6.1.11.4 Uses

There are a number of advantages that repos can provide to the financial market in general, and debt market, in particular as under:

- An active repo market would lead to an increase in turnover in the money market, thereby improving liquidity and depth of the market.
- Repos would increase the volumes in the debt market as it is a tool for funding transactions. It enables dealers to deal in higher volumes. Thus, repos provide an inexpensive and most efficient way of improving liquidity in the secondary markets for underlying instruments. Debt market also gets a boost as repos help traders to take a position and go short or long on security. For instance, in a bullish scenario one can acquire securities and in a bearish environment, dispose them of, thus managing cash flows taking advantage of flexibility of repos.
- For institutions and corporate entities, repos provide a source of inexpensive finance and offers investment opportunities of borrowed money at market rates, thus earning a good spread.
- Tripartite repos will offer opportunities for suitable financial institutions to intermediate between the lender and the borrower.
- A large number of repo transactions for varying tenors will effectively result in a term interest rate structure, especially in the interbank market. It is well-known that absence of term ‘money market’ is one of the major hindrances to the growth of debt markets and the development of hedging instruments.
- Central banks can use repo as an integral part of their open market operations with the objective of injecting/withdrawing liquidity into and from the market and also to reduce volatility in short term in particular in call money rates. Bank reserves and call rates are used in such instances as the operating instruments with a view to ultimately ease/tighten the monetary conditions.

- Entities which engage in short selling of government securities and do not cover their positions overnight, but prefer to keep the position open for longer periods, have to access the repo market to make available the security during the carry forward period of such short positions.

Let Us Sum Up

Call money or call deposits are those which are lent to be repaid on call. The rate of interest will be driven by demand and supply of funds in the market. Term money refers to borrowing/lending with tenors greater than 14 days. Certificate of deposits should not be less than 7 days, and not more than 1 year. The amount of interest on CD is payable on a simple interest basis, but the same is discounted upfront. Commercial paper is unsecured money market instrument issued in the form of promissory note by Corporates. The minimum tenor of a BRDS transaction is 15 days and the maximum tenor is 90 days. IBPC is another short term money market instrument whereby the banks can raise/deploy their short term surplus. CBLO is a discounted instrument available in electronic book entry form for the maturity period ranging from 1 day to 90 days, backed by government securities. Treasury bill is a short-term instrument issued by the Government of India. Repo instrument allows banks to borrow from RBI at repo rate. Repo transactions can be undertaken from overnight to a longer term period.

Keywords

Call money, notice money, term money, certificate of deposits, commercial paper, CRISIL, ICRA, FITCH, Inter Bank Participation Certificates, CBLO, Liquidity Adjustment Facility, Repo/Reverse Repo, Ready leg/forward leg and tripartite repo

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. The placement of money/lending in the call/notice money market is
 (a) Unsecured
 (b) Secured
 (c) Regulated by CCIL
 (d) Regulated by SBI
2. An FI may issue CDs along with other instruments not exceeding of its net owned funds.
 (a) 25 percent
 (b) 100 percent
 (c) 50 percent
 (d) 200 percent
3. The minimum and maximum period for Inter Bank Participation Certificates under risk sharing basis is /
 (a) 1 day/7 days
 (b) 7 days/ 90 days

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- (c) 91 days/180 days
 - (d) 90 days only
4. CCIL provides the dealing system through a closed user group to the members of the negotiated dealing system (NDS).
- (a) WAN
 - (b) STP
 - (c) SGL
 - (d) INFINET

Answers

1. (a) 2. (b) 3. (c) 4. (d)

UNIT 7

INTEREST RATE QUOTATIONS AND MARKET TERMINOLOGY

STRUCTURE

- 7.0 Objective
- 7.1 Introduction
- 7.2 Fixed and Floating Rate of Interest
- 7.3 Simple and Compound Rate of Interest
- 7.4 Yield
- 7.5 Premium & Discount
- 7.6 Front-End and Rear-End Yield
- 7.7 Day Count Conventions

Let Us Sum Up

Keywords

Check Your Progress

7.0 OBJECTIVE

The chapter provides inputs on:

- Fixed and floating rate of interest
- Simple and compound rate of interest
- Concepts of nominal yield, current yield, YTM
- Premium and discount
- Front end, rear end yield
- Day count conventions

7.1 INTRODUCTION

Interest Rates on instruments can be set in different ways. In addition, there are various ways in which interest rates can be quoted for transactions. Also there are different ways for calculating the interest amount on a money market/debt instrument. In the following sections, some of the different types of interest rate quotations are explained.

7.2 FIXED AND FLOATING RATE OF INTEREST

Usually when we discuss a money market or debt instrument, we think of an instrument carrying a fixed rate of interest. Hence debt instruments are also referred to as fixed income instruments. In an instrument carrying a fixed rate, the interest rate or the coupon rate is fixed at the time of issue for the entire tenure of the instrument. Normally an instrument is issued for par value and coupon is fixed, the periodical income ($\text{par value} * \text{coupon} * \text{amount invested}$) is same for the tenor of the investment. So the return for an investor holding a fixed rate instrument till maturity is fixed. However, during the tenor of the instrument, the value (or market price) of the instrument will vary depending on the then prevailing interest rate in the market. If the market interest rate is higher than the coupon, the investors will pay less than par value for buying the security such that they get market return on the security. On the other hand, if the market interest rate is lower than the coupon, the security will attract a premium above the par value. Thus, if the market interest rate goes up, the value/price of a fixed rate instrument will decrease and if the market interest rate goes down, the value/price of a fixed rate instrument will increase.

On the other hand, in the case of an instrument carrying a **floating rate** of interest, the interest earned on the instrument may change from time to time during the tenor of the instrument. Usually in the case of a floating rate instrument, the interest rate is linked to a reference or a benchmark rate which is published at pre-determined periodic intervals, e.g., daily, semi-annually, annually, etc. The dates at which the reference rate is determined are known as the coupon reset dates. The reference/benchmark rate is usually a market determined one, e.g., FBIL Overnight MIBOR (the overnight call rate), the 364-day Treasury bill cut-off rate, etc. Obviously, the return to the investor over the tenor of the instrument will be variable. In view of this, the price volatility in the case of a floating rate instrument will be much less than that in the case of a fixed rate instrument of the same tenor. This is because of the fact that in the case of the floating rate instrument, the coupon rate will get aligned to the market interest rate at every reset date.

7.3 SIMPLE AND COMPOUND RATE OF INTEREST

The simple rate of interest as the name suggests is simple to understand as well as to calculate. The formula for a simple interest is as follows: Interest Amount = Principal × Interest Rate × Time. For example, a deposit of ₹100 at a simple interest rate of 7% p.a. will earn ₹7 over a period of 1 year.

On the other hand, in the case of a compounded rate of interest, interest is paid on the principal value as well as the interest earned during the previous interest periods depending on the compounding frequency.

For example, A fixed deposit of ₹100 at a rate of 7% for a period of 1 year with the interest compounded quarterly. The interest computation in this case will be as follows:

$$\text{First quarter interest: } 100 \times 7\% \times (3/12) = ₹1.75$$

$$\begin{aligned} \text{Second quarter interest: } & [100 \times 7\% \times (3/12)] + [1.75 \times 7\% \times (3/12)] \text{ or } 101.75 \times 7\% \times (3/12) \\ & = ₹1.78 \end{aligned}$$

$$\begin{aligned} \text{Third quarter interest: } & [100 \times 7\% \times (3/12)] + [(1.75 + 1.78) \times 7\% \times 3/12] \text{ or} \\ & 103.53 \times 7\% \times (3/12) = ₹1.81 \end{aligned}$$

$$\begin{aligned} \text{Fourth quarter interest: } & [100 \times 7\% \times (3/12)] + [(1.75 + 1.78 + 1.81) \times 7\% \times 3/12] \text{ or} \\ & 105.34 \times 7\% \times (3/12) = ₹1.84 \end{aligned}$$

Total Interest = $1.75 + 1.78 + 1.81 + 1.84 = ₹7.18$ as against ₹7 in case of simple interest.

Thus the effective rate of interest is 7.18% in this case.

The effective rate of interest on an instrument which carries a compounded rate of interest can be computed as follows:

Effective Rate of Interest = $[1 + i/f]^f - 1$ i = nominal rate of interest on the instrument f = compounding frequency.

Thus a compounded rate of interest gives a higher yield than the simple rate of interest at the same rate. The compounding frequency in case of instruments usually is quarterly or semi-annual, though there are instruments where the interest is compounded daily.

7.4 YIELD

Yield is a measure of the overall return to the investor on his/her investment. Yield on an investment can be computed in different ways, some of which are given below:

(i) Nominal Yield: This is the annual interest rate specified on the security, irrespective of its actual price or the rate at which the security has been purchased. This is also known as ‘coupon’.

(ii) Current Yield: This is the effective yield an investor earns keeping in mind the current market price of the security. This is calculated as follows:

$$\text{Current Yield} = [(Coupon)/(Current Market Price)] \times 100$$

(iii) Yield To Maturity [YTM]: This is the anticipated yield on the security if it is held till redemption, assuming discounting of all future cash flows. This can be interpreted as the average compounded rate of return on the security if the same is bought at the current market price and held until it matures and the face value is repaid. YTM is the uniform discount rate that equates the present value of all future cash flows on the instrument to the present market price of the security. Future cash flows include the interest and the capital gain/loss. This is calculated as per the following formula:

$P = \{(C/(1+y)) + (C/(1+y)^2) + (C/(1+y)^3) + \dots + [(C+A)/(1+y)^n]\}$ Y is worked out through trial and error until the equation tallies on both the sides through process of iteration, is the YTM.

Where P is the market price at which the security is traded. C is Coupon, A is face value, Y is the uniform discount rate at which the cash flows are discounted.

Holding Period Yield: This is the yield that accrues to the investor in the form of coupon (interest) earned and gains in the price at the time of sale for the period for which he/she holds the security. The coupon income and price gain is reckoned as a ratio to the initial investment to arrive at the yield and annualized.

7.5 PREMIUM & DISCOUNT

When the rate at which the security is quoted is above its par value, i.e., above 100 (normally the security prices are expressed with par value = 100) the security is said to be at premium. Conversely when the security is quoted below par, i.e., below 100, it is said to be at discount.

There is an inverse relationship between the price and the yield to maturity (YTM). When the security is at premium, the price is above par, and thus high. The YTM in this case will be lower than the coupon rate. Conversely, the YTM would be higher than the coupon when the security is at discount. In other words when the security is at premium and the premium the investor pays is more than the face value then his return is lower than the coupon; on the other hand, when the investor pays less than the face value, he gets higher return than the coupon.

A deep discount bond is a security, the price of which is at discount to face value and the period of the security is also fairly longer. Initially, the investor pays a value which is arrived at by discounting the redemption value by the discount rate. On maturity, the investor gets substantial terminal value (redemption value). Essentially these are zero coupon instruments.

7.6 FRONT-END AND REAR-END YIELD

Generally when one refers to a yield on an instrument one implies the yield till redemption. However, in case of discounted instruments, the yield referred could be on a front-ended or a rear-ended basis. When the yield is on a rear-ended basis then it is same as the YTM. However, when the yield is quoted on a front-ended basis, then the YTM will be higher than the front-end yield. The following example will illustrate the difference.

Example

A 90-day Commercial Paper (CP) is trading at 7%. CP yield is usually quoted to a rear-end basis and hence it is the YTM. The price of the CP, hence will be computed as follows:

$$\text{Price} = (100)/(1 + (7\% \times 90/365)) = 98.3033$$

Similarly, if a 91-day T-bill is traded at 98.59, then its YTM or rear-ended yield will be computed as follows:

$$\text{Yield on the T-Bill} = [(100 - 98.59)/98.59] \times [365/91] = 5.74\%.$$

However, in a BRDS transaction, the yields are quoted on a front-end basis. For example, Bank A lends ₹10 crore under BRDS at 7% for 90 days. The interest amount computation will be as follows:

Interest Due: $10,00,00,000/- \times 7\% \times (90/365) = ₹17,26,027/-$ – Bank A has to pay the principal value of the transaction less the interest on the day of the transaction and will receive ₹10 crore after 90 days.

Thus Bank A pays $(10,00,00,000/- - 17,26,027/-) = ₹9,82,73,973/-$ And receives ₹10,00,00,000/- after 90 days.

Thus effective yield or YTM or rear-ended yield for Bank A will be $[(10,00,00,000/- - 9,82,73,973/-) / (9,82,73,973/-)] \times [365/90] = 7.12\%$.

7.7 DAY COUNT CONVENTIONS

The market follows quite a few conventions for calculation of the number of days that has elapsed between two dates. It is interesting to note that these conventions were designed prior to the emergence of sophisticated calculating devices. At that time, the objectives were to reduce the math in complicated formulae and to bring about standards so that the prices quoted are correctly understood by all. The conventions are still needed even though calculating functions are readily available in hand-held devices. The conventions used are given below.

A/360 (Actual by 360)

In this method, the actual number of days elapsed between the two dates are divided by 360, i.e., the year is assumed to have 360 days.

A/365 (Actual by 365)

In this method, the actual number of days elapsed between the two dates are divided by 365, i.e., the year is assumed to have 365 days.

A/A (Actual by Actual)

In this method, the actual number of days elapsed between the two dates are divided by the actual days in the year. If the year is a leap year and the 29th of February is included between the two dates, then 366 is used in the denominator, else 365 is used. Using this method, accrued interest is 3.8356.

30/360 (30 by 360 – American)

The interest in the case of Government securities is calculated on 30/360 method. For calculating the broken period interest this is a very important convention.

This is how this convention is used in the US. Break up the earlier date as D(1)/M(1)/Y(1) and the later date as D(2)/M(2)/Y(2). If D(1) is 31, change D(1) to 30. If D(2) is 31 AND D(1) is 3s 0, change D(2) to 30. The days elapsed is calculated as:

$$Y(2)-Y(1)*360+M(2)-M(1)*30+D(2)-D(1)$$

30/360 (30 by 360 – European)

This is the variation of the above convention outside the United States. Break up the earlier date as D(1)/M(1)/Y(1) and the later date as D(2)/M(2)/Y(2). If D(1) is 31, change D(1) to 30. If D(2) is 31, change D(2) to 30. The days elapsed is calculated as

$$Y(2)-Y(1)*360 + M(2) - M(1)*30 + D(2) - D(1)$$

Importance of market conventions: Prices quoted in the market are driven by conventions. If three dealers in the market were to use different conventions such as 30/360, actual/365 or, say, 30/ 365 the prices of securities will vary and this will make trades difficult. Conventions have an important role to play in smoothening of the market practices. An important convention is that all prices are quoted for YTM irrespective of the fact that one may buy the security and sell it the very next day though the security may have a residual maturity of 10 years. Here again YTM is adopted as the basis for arriving at a price on a uniform basis and smoothens the market quotes.

Let Us Sum Up

The price volatility in the case of a floating rate instrument will be much less than that of a fixed rate instrument of the same tenor. Yield is a measure of the overall return to the investor on the investment. There are concepts like nominal yield and current yield. Yield to maturity is the anticipated yield on the security if it is held till redemption and all intermittent cash flows are discounted to present value. When the yield is on a rear-ended basis, then it is the same as the YTM. When the yield is quoted on front-ended basis, then the YTM will be higher than the front-end yield. The market follows various day count conventions like Actual/360, Actual/365, Actual/Actual, and also American and European conventions.

Keywords

Fixed and floating rate of interest, simple and compound interest, nominal yield, current yield, YTM, premium, discount, front-end and rear-end yield, day count conventions.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Why price volatility in floating rate instruments is less than that in fixed rate instruments?
 - (a) In the case of floating rate instruments the coupon gets realigned to market rate at regular re-set dates.
 - (b) In the case of floating rate instruments, volatility is subsidized by the market.
 - (c) In the case of floating rate instruments, the coupon is generally high as compared to fixed rate instruments.
 - (d) In the case of floating rate instruments, the frequency of coupon reset is more than in fixed rate instruments.
2. What is the impact on the price of fixed income instruments when the yield goes up?
 - (a) Increases
 - (b) Declines
 - (c) Doesn't change
 - (d) Trading stops
3. When the yield is quoted on a rear end basis, what is true of following?
 - (a) Yield is more than YTM
 - (b) Yield is less than YTM
 - (c) Yield is same as YTM
 - (d) Yield is twice YTM
4. In the day count convention Actual/Actual (A/A), what are the number of days in a year?
 - (a) 360
 - (b) 365
 - (c) 366
 - (d) 365 or 366

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
8**

FIXED INCOME SECURITIES

STRUCTURE

- 8.0** Objective
- 8.1** Introduction
- 8.2** Terminologies
- 8.3** Types of Bonds
- 8.4** Government of India Securities
- 8.5** State Development Loans (SDLS)
- 8.6** Auction Process
- 8.7** When Issued Market
- 8.8** Other Approved Securities
- 8.9** Non-SLR Securities
- 8.10** Public Sector Undertakings' (PSU) Bonds
- 8.11** Corporate Debentures
- 8.12** Bonds and Debentures
- 8.13** Some other Aspects of Fixed Income Instruments

Let Us Sum Up

Keywords

Check Your Progress

8.0 OBJECTIVE

The objective is to provide information to the reader on fixed income securities by explaining face value, coupon rate, redemption amount, tenor, clean price, dirty price, etc. The section also deals with types of bonds like Government of India bonds and State Development Loans. The section also provides information on the latest concept called ‘when issued securities’. It also gives information on SLR, Non-SLR securities, corporate debentures, bonds and debentures. After a thorough study of the section, the reader can become fully aware of the intricacies in the management of fixed income securities.

8.1 INTRODUCTION

Fixed Income Securities are instruments wherein the interest payable (also known as “Coupon”) to the investor is fixed throughout the tenor of the instrument. These are securities where the interest payable on the face value is a given percentage. Thus the amount of interest payable is fixed for the period of the security. These are tradable securities which usually carry a fixed interest rate payable periodically, called the “Coupon” and the amount payable on maturity called the ‘Redemption Amount’ is also fixed. Thus the total cash flows to be received by an investor in such a security are fixed at the time of the issue of the security. Hence the name Fixed Income Security.

However, it should be noted that during the life of the security, the return may fluctuate in case the investor wishes to sell the security before its redemption or if the investor values the security at the market price at any point in time. Since the income on the face value is constant over the tenor of the bond, the bond will trade at premium or discount if the market rate of interest is lower or higher than the coupon/fixed interest. Thus the price of a fixed income security goes down when the prevailing interest rates go up and vice-versa. Hence an investor in a fixed income security could end up getting a yield which could be lesser or more, than that envisaged at the time of purchase, during the tenor of the instrument. However, if the investor were to hold the security till maturity then the return to the investor would be fixed and same as the coupon except when the initial price paid were to be a discount or premium to the face value, as it happens in a secondary market purchase.

In broader terms, fixed income instruments also cover ‘zero-coupon’ securities which carry a zero coupon. ZERO coupon bonds are discounted securities issued at a price much lower than the face value. The securities normally mature at face value. In such securities the redemption amount is greater than the original issue price. This difference is the return to the investor. There also exists a class of securities whose coupon is linked to a benchmark which is reset periodically during the tenor of the security. Such securities are known as ‘Floating Rate securities’. Returns from these securities are obviously variable during the tenor of the security. Because the rate of interest on the floating rate bonds/securities are reset from time to time, the Floating rate securities can have varying coupon during its tenor. It may be noted that the floating rate bonds are less exposed to interest rate risks as the interest rate is periodically reset.

In this chapter the securities mentioned above have been used under generic term ‘bond’.

8.2 TERMINOLOGIES

8.2.1 Face Value

Normally the face value of a bond is the minimum denomination at which it is issued. This could be ₹10, ₹100, ₹1000 and so on. However, normally, in the market the face value of bonds is usually taken as ₹100 and all pricing is done based on this assumption.

In the case of a bond transaction, the Face Value is referred to as the total amount (in terms of face value) of the bonds being transacted. Thus a 5 crore bond transaction will mean that ₹5 crore face value of bonds are traded. (As bonds have, as per market convention, a face value of ₹100, ₹5 crores bonds transaction will mean that 500,000 bonds of face value of ₹100 each aggregating to ₹5 crores are traded). The price and/or outflow of funds security is not invoked when reporting a sale of a security. SGL of a security is also maintained for par/face value.

8.2.2 Coupon Rate

This is the rate of interest stipulated payable on a bond. Thus a bond carrying a coupon rate of 7% p.a. will pay ₹7 on a face value of ₹100. The interest is usually paid semi-annually. Annual and quarterly payments are also possible. Securities nomenclatures are prefixed with coupon. For example, 7.80 GOI 2021 is a taxable Central Government security issued on 04.11.2011 and maturing on 04.11.2021 and carries a coupon of 7.80% p.a. Similarly 8.79 GOI 2021 is again a Central Government taxable security issued on 11.08.2011 and maturing on 11.08.2021 carrying a coupon of 8.79% p.a. Each security will, normally have two coupon payment dates in a year.

A security with a specific repayment date is known as dated security. As against this, a security with repayment period after 50 years is known as perennial security. Whereas a dated security is traded on a YTM basis, the perennial security is generally traded on a current yield basis.

8.2.3 Redemption Amount

It is the amount payable by the issuer of the bond to the investor holding the bond on the redemption date. Usually the redemption amount is equal to or greater than the face value of the bond. In the latter case, for a non zero-coupon bond, the part of the redemption amount which is greater than the face value is termed as redemption premium.

8.2.4 Tenor

The tenor of the bond is the time period from the date of issue to the redemption date.

8.2.5 Interest Payment (IP) Date(s)

IP Dates are the date(s) on which the coupon is due. On the coupon date, the bond is traded ex-interest. There could be some days prior to the IP date for which either the bond is not traded or trades are not settled. This period is termed as the shut period. The main purpose of having a shut period is

to facilitate finalizing of the payment of maturity redemption proceeds and to avoid any change in ownership of securities during this process. Currently, the shut period for government securities held in SGL Accounts is one day. (Source: Government Securities Market – A Primer issued by RBI in July, 2016). However, nowadays the trading in Government Securities continues without any breaks.

8.2.6 Redemption Date(s)

These are the dates when either the full or partial redemption amounts are due to be paid by the issuer to the holder of the bond on that date.

8.2.7 Bullet v/s Staggered or Amortized Redemption

When the redemption amount of a bond is payable fully on one particular date it is termed as ‘Bullet Redemption’. On the other hand, there are bonds wherein the redemption amount is payable on more than one date. In such cases the redemption amounts are paid either monthly, quarterly, semi-annually or annually. These bonds are said to have ‘Staggered or Amortized Redemption’.

8.2.8 Clean Price

The clean price of the bond is the price payable for the face value of the bond. For example, if the clean price of a bond is ₹101/- this means for the bond of face value ₹100, the buyer needs to pay ₹101/-.

8.2.9 Dirty Price

The dirty price of a bond is the clean price plus the accrued interest from the last Interest payment date till the date of settlement. This is known as the interest for the broken period. For example, if the price of security purchased is ₹101 for value date on 2nd April and the interest payment date is 1st January and 1st July, the dirty price will be ₹101 plus interest for the period 1st January to 1st April.

8.2.10 Trade Date

This is the date on which the bond transaction is concluded between the buyer and seller.

8.2.11 Settlement Date

This is the date on which the buyer and seller in a bond transaction exchange the bond for funds.

8.2.12 Settlement Proceeds

The settlement proceeds is the amount that the buyer of a bond needs to pay to the seller on the settlement date. The settlement proceeds for a bond transaction are calculated as follows:

Settlement Proceeds = [(Price of bond/100) * (Total Face Value of the transaction)] + [Accrued interest on the total face value of a transaction].

8.3 TYPES OF BONDS

Bonds can be classified based on various characteristics. One can classify them as floating rate or fixed rate bonds depending on their coupon type. However the classification we will be using in this section is based on the type of issuer. On that basis, bonds can be classified as:

- (i) Government Securities or SLR Securities
- (ii) Non-SLR Securities

SLR Securities can be further classified as:

- (i) Government of India Securities
- (ii) State Development Loans
- (iii) Other approved securities

Non-SLR securities can be classified as

- (i) PSU Bonds
- (ii) Corporate Debentures

8.4 GOVERNMENT OF INDIA SECURITIES

Central Government Loans form a part of the government's borrowing programme in a given year. The loans are raised in the form of securities known as Government securities. Reserve Bank of India, in discharging its role as merchant banker to the Government, is vested with the power of offering various issues to the institutions/public on an on-going basis as per the notification issued by the central government in that connection.

At the beginning of every half of the Financial Year, viz., April-September and October-March, the government announces an issue calendar for dated securities. This calendar usually is for all or a major part of the budgeted borrowing programme. The calendar contains information about the amount of borrowing, the range of the tenor of securities (given in range of years, e.g., 5–9 years, 10–14 years, 20+ years, etc.) and the period during which auctions will be held for each issue.

A Notification and a Press Communiqué giving exact particulars of the securities, viz., name, amount, type of issue and procedure of auction are issued by the Government of India about a week prior to the actual date of auction. RBI places the notification and a Press Release on its website (www.rbi.org.in) and also issues advertisements in leading English and Hindi newspapers.

Securities are usually issued by way of an auction process. Auction for dated securities is conducted on Friday for settlement on T+1 basis (i.e., securities are issued on next working day i.e., Monday). The security being issued could be a security already in existence or it could be a new security. In the former case, it is a price based auction in which the investors bid the price at which they are willing to buy the reissued security. In the latter case, investors bid for the coupon rate for which they are willing to buy the new security. This is known as yield-based auction.

Auctions are conducted on the electronic platform called the E-Kuber, the Core Banking Solution (CBS) platform of RBI. Commercial banks, scheduled UCBs, Primary Dealers, insurance companies and provident funds, who maintain funds account (current account) and securities accounts (Subsidiary

General Ledger (SGL) account) with RBI, are members of this electronic platform. All members of E-Kuber can place their bids in the auction through this electronic platform. All non-E-Kuber members including non-scheduled UCBs can participate in the primary auction through scheduled commercial banks or PDs (called as Primary Members-PMs). For this purpose, the UCBs need to open a securities account with a bank / PD – such an account is called a Gilt Account. A Gilt Account is a dematerialized account maintained with a scheduled commercial bank or PD. The proprietary transactions in G-Secs undertaken by PMs are settled through SGL account maintained by them with RBI at PDO. The transactions in G-Secs undertaken by Gilt Account Holders (GAHs) through their PMs are settled through Constituent Subsidiary General Ledger (CSGL) account maintained by PMs with RBI at PDO for its constituent (e.g., a non-scheduled UCB).

The auction conducted by the RBI is usually a variable price auction (or French auction) wherein applicants submit bids at their desired price. The cut-off price is usually the price at which the entire issue amount is fully bid. At times, as part of signaling its interest rate stance, RBI may indicate a cut off (a higher price or a lower coupon) wherein the bids may not result in the issue being fully subscribed. In such cases the issue will partially or fully devolve. Such devolvement is mandatorily taken up by the Primary Dealers based on their underwriting commitment given before each auction. Subsequent to the enactment of the Fiscal Responsibility and Budget Management Act (FRBM), RBI no longer takes any devolvement on itself.

Under multiple/variable price auction method, all successful bidders, i.e., those bidders who have bid at or above the cut-off prices have to buy the securities at the prices at which they had bid. Thus each bidder gets the security at a price which could be different from another bidder. Sometimes the RBI conducts a uniform price auction (or Dutch auction). In this the successful bidders are allotted the security at the cut-off price or yield. This implies that every bidder gets the security at a uniform price or yield. In both the above cases, the bidders who have bid at a price higher than the cut-off price will get the full quantum of securities bid by them, while those who had bid at the cut-off price could get partial allotment, in the same proportion of oversubscription at cut off price of the quantity bid as the allotment is restricted to the notified amount.

PDs are expected to support the primary issues of dated securities of Central Government and State Government, T-Bills and CMBs through underwriting/bidding commitments. The related guidelines are as under:

Dated securities of Central Government

The underwriting commitment on dated securities of Central Government will be divided into two parts – (a) Minimum Underwriting Commitment (MUC), and (b) Additional Competitive Underwriting (ACU).

The MUC of each PD will be computed to ensure that at least 50 percent of the notified amount of each issue is mandatorily underwritten equally by all the PDs. The share under MUC will be uniform for all PDs, irrespective of their capital or balance sheet size. The remaining portion of the notified amount will be underwritten through an ACU auction.

Bidding in Primary auctions of T-Bills/CMBs

Each PD will individually commit, at the beginning of the year (April – March), to submit bids for a fixed percentage of the notified amount of T-Bills/CMBs in each auction.

On-tap issue

This is a reissue of existing Government securities having pre-determined yields/prices by Reserve Bank of India. After the initial primary auction of a security, the issue remains open to further subscription by the investors as and when considered appropriate by RBI. The period for which the issue is kept open may be time specific or volume specific. The coupon rate, the interest dates and the date of maturity remain the same as determined in the initial primary auction. Reserve Bank of India may sell government securities through on tap issue at lower or higher prices than the prevailing market prices. Such an action on the part of the Reserve Bank of India leads to a realignment of the market prices of government securities. Tap stock provides an opportunity to unsuccessful bidders in auctions to acquire the security at the market determined rate.

The Central Government dated securities are accounted for in the Subsidiary General Ledger (SGL), maintained at Public Debt Office (PDO) of RBI. This accounting is in the book form and not in the scrip form. The Reserve Bank however, issues scrips (certificates) to the investor on request where the investor is not having or is not permitted to have SGL account with the Reserve Bank or on the basis of specific request of the SGL account holder. The SGL account is credited in the case of subscription/purchase by the account holder and debited in the case of sale/redemption or conversion to the scrips form as this is treated as sale. For all SGL account holders, all purchases and sales are settled in electronic form, with Delivery versus Payment (DVP) in operation. This eliminates counterparty risk and part of settlement risk in trading in g-secs.

The Reserve Bank of India conducts auctions usually every Wednesday to issue T-bills. Settlement for the T-bills auctioned is made on T+1 day i.e. on the working day following the trade day. The 91 day T-bills are auctioned on every Wednesday. The Treasury bills of 182 days and 364 days tenure are auctioned on alternate Wednesdays. T-bills of 364 days tenure are auctioned on the Wednesday preceding the reporting Friday while 182 T-bills are auctioned on the Wednesday prior to a non-reporting Friday. The Reserve Bank releases a quarterly calendar of T-bill issuances for the upcoming quarter in the last week of the preceding quarter. e.g. calendar for April-June period is notified in the last week of March. The Reserve Bank of India announces the issue details of T-bills through a press release on its website every week.

Like T-bills, Cash Management Bills (CMBs) are also issued at a discount and redeemed at face value on maturity. The tenor, notified amount and date of issue of the CMBs depend upon the temporary cash requirement of the Government. The tenors of CMBs is generally less than 91 days. The announcement of their auction is made by Reserve Bank of India through a Press Release on its website. The settlement of the auction is on T+1 basis. The non-competitive bidding scheme (referred to in paragraph number 4.3 and 4.4 under question No. 4) has not been extended to the CMBs. However, these instruments are tradable and qualify for ready forward facility. Investment in CMBs is also reckoned as an eligible investment in G-Secs by banks for SLR purpose under Section 24 of the Banking Regulation Act, 1949. First set of CMBs were issued on May 12, 2010.

8.5 STATE DEVELOPMENT LOANS (SDLS)

This closely follows the Central Government Loans. The issuers are various State Governments. The quantum of the loan depends upon the estimated requirements of various State Governments in a given

year as submitted by the respective State Governments and notified by the Central Government to the Reserve Bank. These issues take place periodically during the year. The Reserve Bank while announcing the State Loans issue, notifies the quantum, the coupon, the date of issue, the date of redemption, calendar of interest payments, etc. Usually the SDLs are issued at a fixed coupon which is announced for the issue. However, in recent times, in some issues, the coupon was determined through auction mechanism. On the issue date, the successful bidders are required to deposit money at the counters of Reserve Bank of India. On the basis of amount received, the Reserve Bank decides to retain the notified amount and refund the excess received or to retain the entire subscription and allots. The accounting of the State Loans is in the SGL form as is in the case of Central Loans. The difference in coupon of the SDLs issued by various states reflects the market perception on the credit risk of the issuing State Governments.

On announcement of an auction of State Development Loans (SDLs), which are dated securities of the State Governments, RBI may invite PDs to collectively bid to underwrite up to 100 per cent of the notified amount. The auction could be either uniform price-based or multiple price-based depending upon the market conditions and other relevant factors, which will be announced before the underwriting auction for each issue. A PD can bid to underwrite up to 30 per cent of the notified amount of the issue. If two or more issues are floated on the same day, the limit of 30% is applied by taking the notified amounts separately.

8.5.1 Types of Market for Government Securities

8.5.1.1 Primary Market

The Central Government is the issuer of Government Securities, raising money through bond issuances, to fund budgetary deficits and other short and long term funding requirements.

The Reserve Bank of India, acts as the investment banker to the government, raises funds for the government through bond (G-Sec) and treasury-bill auctions.

8.5.1.2 Participants in the Primary Market

The participants in the primary market who take part in the auction process are:

- Banks
- Primary Dealers
- Mutual Funds
- Provident Funds
- Insurance Companies

8.5.2 Secondary Market

The secondary market for Government Securities is governed by the RBI and active trading happens on the Negotiated Dealing System-Order Matching (NDS – OM) operated by the CCIL on behalf of the RBI. The participants are again the same as the ones in the primary market. All outright trades undertaken in the OTC market and on the NDS-OM platform are cleared through the CCIL. The settlement takes place by simultaneous transfer of funds and securities under the ‘Delivery versus Payment’ system.

8.6 AUCTION PROCESS

Prior to introduction of auctions as the method of issuance, the interest rates were administratively fixed by the Government. With the introduction of auctions, the rate of interest (coupon rate) gets fixed through a market based price discovery process.

An auction may either be yield based or price based.

Yield Based Auction: A yield based auction is generally conducted when a new G-Sec is issued. Investors bid in yield terms up to two decimal places (e.g., 8.19%, 8.20%, etc.). Bids are arranged in ascending order and the cut-off yield is arrived at the yield corresponding to the notified amount of the auction. The cut-off yield is then fixed as the coupon rate for the security. Successful bidders are those who have bid at or below the cut-off yield. Bids which are higher than the cut-off yield are rejected. An illustrative example of the yield based auction is given below:

Yield based auction of a new security

- Maturity Date: January 11, 2026
- Coupon: It is determined in the auction (8.22% as shown in the illustration below)
- Auction date: January 08, 2016
- Auction settlement date/Issue date: January 11, 2016*
- Notified Amount: ₹1000 crore

*January 9 and 10 being holidays (Saturday and Sunday), settlement is done on January 11, 2016 (T+1 settlement).

Details of bids received in the increasing order of bid yields				
Bid No.	Bid Yield	Amount of bid (₹ Cr)	Cumulative amount (₹ Cr)	Price* with coupon as 8.22%
1	8.19%	300	300	100.19
2	8.20%	200	500	100.14
3	8.20%	250	750	100.13
4	8.21%	150	900	100.09
5	8.22%	100	1000	100
6	8.22%	100	1100	100
7	8.23%	150	1250	99.93
8	8.24%	100	1350	99.87

The issuer would get the notified amount by accepting bids up to bid at sl. no. 5. Since the bid number 6 also is at the same yield, bid numbers 5 and 6 would get allotment on pro-rata basis so that the notified amount is not exceeded. In the above case each of bidder at sl. no. 5 and 6 would get ₹ 50 crore. Bid numbers 7 and 8 are rejected as the yields are higher than the cut-off yield.

*Price corresponding to the yield is determined as per the relationship given under YTM calculation in question 24.

Price Based Auction: A price based auction is conducted when Government of India re-issues securities which have already been issued earlier. Bidders quote in terms of price per ₹100 of face value of the security (e.g., ₹102.00, ₹101.00, ₹100.00, ₹99.00, etc., per ₹100/-). Bids are arranged in descending order and the successful bidders are those who have bid at or above the cut-off price. Bids which are below the cut-off price are rejected. An illustrative example of price based auction is given below:

Price based auction of an existing security 8.24% GS 2018

- Maturity Date: April 22, 2018
- Coupon: 8.24%
- Auction date: January 08, 2016
- Auction settlement date: January 11, 2016*
- Notified Amount: ₹1000 crore

*January 9 and 10 being holidays (Saturday and Sunday), settlement is done on January 11, 2016 under T+1 cycle.

Details of bids received in the decreasing order of bid price				
Bid No.	Price of bid	Amount of bid (₹ Cr)	Implicit yield	Cumulative amount (₹ Cr)
1	100.31	300	8.1912%	300
2	100.26	200	8.1987%	500
3	100.25	250	8.2002%	750
4	100.21	150	8.2062%	900
5	100.20	100	8.2077%	1000
6	100.20	100	8.2077%	1100
7	100.16	150	8.2136%	1250
8	100.15	100	8.2151%	1350

The issuer would get the notified amount by accepting bids up to 5. Since the bid number 6 also is at the same price, bid numbers 5 and 6 would get allotment in proportion so that the notified amount is not exceeded. In the above case each of bidders at sl. no. 5 and 6 would get securities worth ₹50 crore. Bid numbers 7 and 8 are rejected as the price quoted is less than the cut-off price.

Depending upon the method of allocation to successful bidders, auction may be conducted on **Uniform Price** basis (Dutch Auction) or **Multiple Price** basis (French Auction). In a Uniform Price auction, all the successful bidders are required to pay for the allotted quantity of securities at the same rate, i.e., at the auction cut-off rate, irrespective of the rate quoted by them. On the other hand, in a Multiple Price auction, the successful bidders are required to pay for the allotted quantity of securities at the respective price / yield at which they have bid. In the example under (ii) above, if the auction was Uniform Price based, all bidders would get allotment at the cut-off price, i.e., ₹100.20. On the other hand, if the auction was Multiple Price based, each bidder would get the allotment at the price he/she has bid, i.e., bidder 1 at ₹100.31, bidder 2 at ₹100.26 and so on.

An investor, depending upon his eligibility, may bid in an auction under either of the following categories:

Competitive Bidding: In a competitive bidding, an investor bids at a specific price/yield and is allotted securities if the price/yield quoted is within the cut-off price/yield. Competitive bids are made by well informed institutional investors such as banks, financial institutions, PDs, mutual funds, and insurance companies. The minimum bid amount is ₹10,000 and in multiples of ₹10,000 in dated securities and minimum ₹25,000 in case of T-Bills and in multiples of ₹25,000 thereafter. Multiple bidding is also allowed, i.e., an investor may put in multiple bids at various prices/yield levels.

Non-Competitive Bidding (NCB): With a view to providing retail investors, who may lack skill and knowledge about G-Sec market or who have low demand and to enable them to participate in the auction directly, the scheme of NCB in dated securities was introduced in January 2002. NCB is open to individuals, HUFs, RRBs, co-operative banks, firms, companies, corporate bodies, institutions, provident funds, and trusts. Under the scheme, eligible investors apply for a certain amount of securities in an auction without mentioning price/yield.

A treasury auction is actually a common value auction, because the value of the auctioned security is the secondary market price that prevails after the auction, which is uniform for all bidders. Therefore, the loss to a successful bidder is less in a Dutch rather than a French auction. In our earlier example, assume that the secondary market price for the security, after the auction, was ₹110.65. If the auction was Dutch, the loss to all successful bidders is uniform, at 55 paise per bond. However, if the auction was French, the highest successful bidder will make a large loss of nearly a rupee 99 paise per bond. The discriminatory price auction, thus creates a ‘winner’s curse’ where a successful bidder is one who has priced his bid higher than the cut-off, but immediately suffers a loss in the market, if the after-market price is closer to cut-off, rather than his bid. There is a loss in the secondary markets, even in a Dutch auction, if the after-market price is lower than the cut-off.

8.6.1 Impact of an Auction on the Market

- **Bullish Environment (In a falling interest rate scenario):** In a bullish environment, the security which has been auctioned will continue to gain in the secondary market. As all the bidders would not have received the auctioned security in the auction process, they would be keen to buy it in the secondary market, whereas the successful bidders will be willing to sell it for a higher price. Hence, the demand will lead the prices to move northwards.
- **Bearish Environment (In a rising interest rate scenario):** In a bearish environment, the market reaction depends on whether the auction is of a new security or a re-issue of an existing security. In the case of a new security the market usually treats the security fairly depending on the tenor and the need of a security in that tenor. In case it's a re-issue of an existing security, the market will take the yields up after the announcement of the auction only. The way the re-issued security behaves after the auction will depend on the market sentiments and at the price which the market factored in and the actual cut-off in the auction.

8.6.2 Motivation behind Being Short or Long in a G-Sec

Short Selling G-Sec: Short Sale is defined as sale of securities one does not own. A bank/PD can also undertake ‘notional’ short sale where it can sell a security short in HFT (Held for trade) category

even if the security is held under its AFS (Available for sale)/HTM (Held to maturity) book. The entity originating a short sale must not be holding that security in HFT category. No naked short sale is permitted. The short sale is originated in a separate window in NDS=OM and security is delivered for settlement by borrowing the same in Clearcorp Repo Order Matching System (CROMS) or through market repo. The short position should be covered within a maximum period of three months, including the day of trade. In other words, the short sale position initiated today (trade date, T + 0) will have to be covered on or before close of T + 90 days.

The motive behind short selling a security can be that the price of the security is expected to fall in the specified time period allowed to run a short position and can be bought at a later date at a lower price. In other words, the person short selling the security expects the interest rates to go up. This provides some support against rising yields and also permits participants to hold contrarian views in the market.

The accumulated SHORT positions for any entity should not exceed 0.25% of total outstanding stock for non-liquid stocks and 0.75% of total outstanding stock issued of each security or ₹600 crore, whichever is lower, for liquid stocks. FIMMDA announces every month the list of “Liquid Securities”, based on data of trading volumes.

Long Positions

The view behind being long in a security can mainly be because of an expectation in fall of interest rates until and unless the security has been bought for some Asset Liability Management (ALM) purpose or to be held till maturity.

8.7 WHEN ISSUED MARKET

‘When-Issued’ (WI) security refers to a security that has been notified for issuance but not yet actually issued. ‘WI’ trading takes place between the time a new issue is announced and the time it is actually issued. All ‘when issued’ transactions are on an ‘if’ basis, to be settled if and when the actual security is issued. ‘WI’ originating transactions (sale or purchase of ‘WI’ securities) can be undertaken only on Negotiated Dealing System-Order Matching (NDS-OM). However, the cover leg of the ‘WI’ transactions can be undertaken even outside the NDS-OM platform, i.e. through telephone market. New issuances as well as re-issues of securities are eligible for ‘WI’ transactions. Open Positions in the ‘WI’ market are subject to the following limits:

Category	Limits	
	Long	Short
Primary Dealers and scheduled commercial banks	No Limits	Not exceeding 5 per cent of the notified amount.
Other eligible entities viz., mutual funds, insurance companies, pension funds, housing finance companies, NBFCs and UCBs	No Limits	Not Permitted

Further, aggregate net short positions (sum of all net short positions across all entities) in a new security will be capped at 90% of the notified amount and the same will be monitored on NDS-OM.

Only Primary Dealers (PD) and scheduled commercial banks can take a short position in the ‘WI’ market. In other words, non-PD entities (e.g. NBFCs) can sell the ‘WI’ security to any counter party only if they have a preceding purchase contract for equivalent or higher amount. The following example will elaborate the above.

Primary Dealer (PD) having a short position in ‘WI’ market: A PD can short sell a ‘WI’ security as they are also the underwriters of the auction, and intend to bid in the upcoming auction because of their obligation of underwriting. A PD will short, ‘WI’ security only if he believes that he will be able to get the security at a lower price in the auction.

Non-PD and non-banking entities having a short position in ‘WI’ market: A Non-PD/Non-Bank entity can only sell a ‘WI’ security if it has a preceding purchase contract for equivalent or higher amount. Therefore, a Non-PD entity will sell a ‘WI’ security only if it is able to sell it at a higher price than its buy price for the underlying purchase contract. The above two situations can or cannot arise, as it all depends on the market dynamics and whether market players are willing to take such positions.

When Issued market aids better price discovery.

8.8 OTHER APPROVED SECURITIES

These are eligible for SLR (Statutory Liquidity Ratio of Banks) purposes. While offering the issue for subscription, the issuer, generally a Central or State Government undertaking, would mention in the offer document that the particular security is eligible for SLR purposes and permission in that respect has been obtained from the Central Government. Another feature of this security is that the repayment of interest and principal on these securities are backed by the Central or a State Government’s guarantee. Generally these securities carry higher coupon than offered for the Central or State Government Loans for similar maturity. As compared to the Central or State Loans, the secondary market for these securities is not active; rather most of the times absent. Unlike the other two forms of securities eligible for SLR purposes, these securities are usually issued in the physical form. The issuers of such securities in the past have been Development Financial Institutions and Public Financial Institutions. Examples of these are ICICI, IDBI, NABARD, SIDBI, HUDCO, etc. Other issuers of such securities have been State Financial Corporations and State Electricity Boards. Of late, issue of such securities with SLR facility has been stopped. However, as prescribed under Section 20(f) of the Indian Trusts Act, 1882, the Central Government by notification in Official Gazette may authorize issue of any such security.

8.9 NON-SLR SECURITIES

These are securities which, as the name suggests are not eligible to be reckoned towards compliance for SLR. These are issued by entities usually to raise resources for their project finance or for working capital purposes. A bulk of these securities are issued by Public Sector Undertakings (PSUs) and Private Sector companies. Agencies such as municipal corporations also issue non-SLR securities.

Usually these securities are in form of bonds and debentures. Various aspects of these securities are discussed in the following sections.

8.10 PUBLIC SECTOR UNDERTAKINGS' (PSU) BONDS

These are Medium or long term debt instruments issued by Public Sector Undertakings (PSUs). The term usually denotes bonds issued by the companies owned by the Government of India, or one of the many State or Territorial Governments, or both. The company stock needs to be majority-owned by the Government to be a PSU. Most of the PSU Bonds are sold on Private Placement Basis to the targeted investors at Market Determined Interest Rates. Often investment bankers are roped in as arrangers to this issue. Most of the PSU Bonds are transferable by endorsement and delivery and are issued in the form of Usance Promissory Note. The Public Sector Undertakings raise money for their projects or for their expansion programmes through issuance of bonds in an open market. The term or period of bonds is generally between 5 to 10 years with or without options for early redemption. Compared to Government Securities, the coupon on these bonds would be higher as they rank for higher risk weight in terms of their External Credit Rating for computing capital adequacy for investor. These instruments may be rated for its financial viability by the rating agency. Sometimes the issue may be guaranteed by the Central or the respective State Government to provide further financial strength. Such guarantees are called as 'structured obligations'. The bonds are issued in the form of scrips. The bonds are to be listed on the National Stock Exchange (NSE) and/or the Stock Exchange, Mumbai (BSE). These are fairly actively traded in the secondary market. The bonds can be privately sold in the secondary market; but if they are listed on the NSE, it is obligatory for the bank to send information to the NSE on buying or selling the bond. The bonds are either taxable or tax-free. In the latter case, a specific permission to issue tax-free bonds is obtained by the PSU and this fact is mentioned in the offer document. The tax concession in the case of a tax free bond accrues to the investor. Thus, in the hands of the investor, post-tax yield of the taxable bond will be lower than the post-tax yield in the case of the tax-free bond. In case of tax free bond, the yield will be larger to the extent of the tax benefit enjoyed by the investor.

In recent times most of these bonds are available in the dematerialized form and the transfer of these bonds happen through the depository participants and the central depositories. Banks are permitted to hold investments in bonds in dematerialized form only.

Apart from public sector undertakings, Public Financial Institutions (PFIs) are also allowed to issue bonds. They access the market in two ways: – (1) Through public issues targeted at retail investors and trusts (2) Through private placements to large institutional investors. The maximum number of investors in a private placement is capped at fifty per tranche. FIs offer bonds with different features to meet the different needs of investors, e.g. Monthly Return Bonds, Quarterly Coupon Bearing Bonds, Cumulative Interest Bonds, Step up Bonds, etc. Some of these FIs are allowed to issue bonds (as per provisions in their respective Acts) in the form of Book entry. Hence, PFIs like IDBI, EXIM Bank, NHB, issue Bonds in physical and in electronic form (in the form of holding certificate or debenture certificate, as the case may be, in book entry form). PFIs who have provision to issue bond in the form of book entry are permitted under the respective Acts to design a special transfer form to allow transfer of such securities. Nominal stamp duty/transfer fee is payable on transfer transactions.

8.11 CORPORATE DEBENTURES

A Debenture is a debt security issued by a company (called the Issuer), which offers to pay interest on the money borrowed for a certain period. In essence it represents a loan taken by the issuer who pays an agreed rate of interest during the lifetime of the instrument and repays the principal normally, unless otherwise agreed, on maturity. These are long-term debt instruments issued by private sector companies. These are issued in denominations as low as ₹1000 and have maturities ranging between one and ten years. Long maturity debentures are rarely issued, as investors are not comfortable with such maturities. Debentures enable investors to reap the dual benefits of adequate security and good returns. Unlike other fixed income instruments such as Fixed Deposits and Bank Deposits, debentures can be transferred from one party to another by using transfer form. However it should be noted that debentures are not negotiable. Debentures are normally issued in physical form. However, of late, corporates/PSUs have started issuing debentures in Demat form. Generally, debentures are less liquid as compared to PSU bonds and their liquidity is inversely proportional to the residual maturity. Debentures can be secured or unsecured.

Debentures are divided into different categories on the basis of convertibility clause of the instrument and security offered to protect the investors.

Convertibility is with reference to the possibility of replacing the debt by equity of the company. Debentures can be classified on the basis of convertibility into:

- Non-Convertible Debentures (NCD): These instruments retain the debt character and cannot be converted into equity shares
- Partly Convertible Debentures (PCD): A part of these instruments are converted into Equity shares in a future date at notice of the issuer. The issuer decides the ratio and the date for conversion. This is normally decided at the time of subscription.
- Fully convertible Debentures (FCD): These are fully convertible into Equity shares at the issuer's notice. The ratio of conversion is decided by the issuer. Upon conversion the investors enjoy the same status as ordinary shareholders of the company.
- Optionally Convertible Debentures (OCD): The investor has the option to either convert these debentures into shares at price decided by the issuer/agreed upon at the time of issue.

On basis of Security, debentures are classified into:

Secured Debentures: These instruments are secured by a charge on the fixed assets of the issuer company. So if the issuer fails to pay either the principal or interest amount, his assets can be sold to repay the liability to the investors.

Unsecured Debentures: These instruments are unsecured in the sense that if the issuer defaults in payment of the interest or principal amount, the investor will be treated as unsecured creditors of the company.

NCD's call for a better understanding. The Companies issue NCDs generally, to augment funds to finance new projects, expansion of the existing facility, or for the purpose of working capital requirements. The tenor of the NCDs varies from 18 months to 9–10 years at times NCDs can be issued for periods less than 18 months also. Whereas NCDs of 18 months and below are generally unsecured and not rated, long term NCDs are generally secured and need to be compulsorily rated.

The Companies (Share Capital and Debentures) Rules, 2014 provide that an issue of secured debentures may be made, provided the date of its redemption shall not exceed ten years from the date of issue. However, the following classes of companies may issue secured debentures for a period exceeding ten years but not exceeding thirty years:

- (i) Companies engaged in setting up of infrastructure projects
- (ii) Infrastructure Finance Companies
- (iii) Infrastructure Debt Fund Non-Banking Financial Companies
- (iv) Companies permitted by a Ministry or Department of the Central Government or by Reserve Bank of India or by the National Housing Bank or by any other statutory authority to issue debentures for a period exceeding ten years.

Issue of debentures with an option to convert such debentures into shares, wholly or partly, can only be approved by a special resolution passed at a general meeting. Further, Companies are not allowed to issue any debentures carrying any voting rights.

Besides, in case of secured debentures, the following requirements are also mandatory:

1. A Debenture Redemption Reserve must be created except for specified companies.
2. The issuer must appoint trustees to take care of the interest of the bond holders as provided under Section 71(5) of the Companies Act, 2013.

The rate of interest on debentures is freely determined. It is generally higher than the coupon for the Government Securities and either equal to or marginally below the interest rate for the PSU bonds. For issue of debentures, the rules framed under Companies Act in connection with the debentures have to be mandatorily followed.

The Debenture Trustees are required to ascertain and satisfy themselves that the debenture certificates are issued in time and the interest and principal are paid on due dates. They are also required to ensure the creation of the security and the debenture redemption reserve. In case where listed debt securities are secured by way of receivables/book debts, the Trustees are required to obtain the following:

- (a) Certificates giving the value of book debts / receivables from the Director/Managing Director of the issuer company and an independent Chartered Accountant on quarterly basis.
- (b) Certificate giving the value of book debts / receivables from the statutory auditor on yearly basis.

Issuing company should submit to the debenture holders a certificate issued by the company's auditors once a year, in respect of utilization of funds during the implementation of the project and in the case of debentures issued for financing working capital, at the end of each accounting year.

8.12 BONDS AND DEBENTURES

Debentures and bonds are debt instruments, issued by corporate bodies, literally with a charge on specific assets. However, the literal meaning has been lost in practice and debentures and bonds can be issued with or without security. It is fairly common that the debt instruments are also issued with a floating charge or a lien on assets – where security is more of a technical nature to give comfort to the investors.

In India, conventionally, debentures are debt instruments issued by corporates in private sector, while bonds are issued by institutions in public sector, which distinction really has no meaning in international market. Bonds, though issued by public sector companies, do not imply guarantee by the government, unless it is so mentioned specifically in the terms of the issue, as also on the face of the bond.

In domestic market, there are material differences in debentures and bonds. Debentures are governed by relevant provisions of Company Law and are transferable only by registration. Bonds on the other hand are **negotiable** instruments governed by law of contracts, and are generally transferable by endorsement. Long-term debt securities issued by the Government of India or any of the State Governments or undertakings owned by them or by development financial institutions are called as bonds. Instruments issued by other entities are called debentures. The difference between the two is actually on the basis where they are registered, payment of stamp duty and how they trade.

Stamp duty is a state subject and the duty varies from State to State. There are two kinds of stamp duties levied on debentures, viz., issuance and transfer. Issuance stamp duty is paid in the State where the principal mortgage deed is registered. Over the years, issuance stamp duties have been coming down. Stamp duty on transfer is paid to the State in which the registered office of the company is located. Transfer stamp duty remains high in many states and is probably the biggest deterrent for trading in debentures in physical segment, resulting in poor liquidity.

On issuance, stamp duty is linked to mortgage creation, wherever applicable while on transfer, it is levied in accordance with the laws of the State in which the registered office of the company in question is located. A debenture transfer has to be effected through a transfer form prescribed for under Companies Act. Incidence of stamp duty on bonds is dealt under Indian Stamp Act, 1899 (Central Act). A bond is transferable by endorsement and delivery without payment of any transfer stamp duty.

Debentures and bonds may be issued with differing structures in order to enhance the marketability of the instruments as also to reduce the cost of issue. The variations include structured obligations, with put/call or convertibility options, zero coupon bonds, floating rate bonds, deep discount bonds and instruments with step up coupons. Debentures and bonds are also issued with redemption in installments over a period (sometimes called period bonds) and also with a premium on redemption in addition to coupon rate of interest. Debentures which are not secured by mortgages, but are secured by stocks or other collateral, are also referred to as collateralized obligations. Finally, there are also bonds with put/call option and step up coupons, with the incentive of higher interest for non-redemption of the bonds in early stages. The debenture and bond holders have, like other creditors, prior legal claim over the equity and preference stock holders, on the assets of the company. The issuer appoints a Trustee, most commonly when the debentures and bonds are secured, who would act in fiduciary capacity to protect the interests of the debenture and bond holders. The Trustee, by virtue of the Trust Deed executed by the issuer, holds charge of the security and would be instrumental in initiating legal action for recovery of principal/interest in case of any default. The Trustees, as per SEBI guidelines, are to be vested with requisite powers for protecting the rights of the debenture and bond holders, and have a right to appoint a nominee director on the board of the issuing company.

Companies issuing unsecured debentures and bonds are required to comply with the provisions of the Companies (Acceptance of Deposits) Rules, 1975 as amended from time to time.

Issue of Prospectus for public offer of debentures and bonds is governed by relevant provisions of Companies' Act, similar to the provision for offer of equity. SEBI has also evolved a framework of detailed guidelines for protection of investors' rights.

8.13 SOME OTHER ASPECTS OF FIXED INCOME INSTRUMENTS

There is a variety of financial instruments available in the market for mobilization of long term and short term resources. While the shares and debentures have been conventional instruments, there are different structures available, some of which are:

Interest rate related: Interest rate can be fixed or floating. Floating rates are variously linked with call rates, bank rate or government security rate, though a firm reference note is not yet available in the market. There are also instruments where interest rates are linked with index of inflation so that real interest rate return stands protected.

Interest rate stated on the face of the debt instrument is called coupon rate. Some debentures/bonds are issued with step-up coupons, where interest rate varies from period to period within the maturity date – generally on an ascending scale from year to year.

Security related: Debentures/bonds may be secured or unsecured. While conventionally, security is by way of mortgage, or floating charge on fixed assets, some of the new instruments are structured with charge on receivables (generally deposited in an escrow account) pertaining to a specific activity or generated in a specific area. Clean instruments with guarantee by government or parent company are also gaining popularity.

Securitized bonds are instruments with an underlying asset, income from which would go to meet obligations under the bond, and are commonly issued through a special purpose vehicle/company. For instance, a bank may issue bonds representing all its mortgage receivables through this route. Securitized bonds are preferred by the issuers for credit enhancement and for obtaining liquidity from the existing assets. These are broadly termed Collateralized Debt Obligations (CDO).

Options: A debt instrument can have certain inbuilt options. Convertibility option refers to conversion of debt into equity (always at the option of the investor if the conversion is to take place after 18 months of issue), either in full or in part. A put option is an option in favour of holder of the instrument to redeem the investment on a particular date, or during a specified period, before maturity. Call option is the right of the issuer to prepay the debt (i.e., to call back the debt paper) similarly before maturity date. The options infuse flexibility into the debt issues so that the issuer/holder can take advantage of the prevailing market conditions.

Tax status: Interest earned on certain securities (e.g., in infrastructure sector) has been exempted from income tax. Investment in certain bonds entitle the investor exemptions from capital gains tax. Pricing of such securities takes into account the value of tax exemption, with the result that the cost of the issue is lower, while the holder would relatively have higher pretax yields. Bonds and debentures which are exempt from tax directly compete with redeemable preference shares, as the dividend from the latter is also exempt from tax.

Risk weight: Bonds/debentures may also differ in respect of their risk weight for the purpose of Banks' capital adequacy requirement. For instance, SLR securities have negligible capital requirements, while PSU Bonds of some financial institutions bear 20% risk weight, while corporate bonds have been assigned higher risk weight linked to their Credit Rating.

Let Us Sum Up

Face value of the bond is the minimum denomination at which it is issued. Coupon rate is the rate of interest stipulated payable on a bond. Dirty price of a bond is the clean price plus the accrued interest from the last interest payment date till the date of settlement. The auction for government securities conducted by RBI is usually a variable price auction (or French auction) wherein applicants submit bids at their desired price. Sometimes RBI conducts a uniform price auction (or a Dutch auction). 'When-Issued' security refers to a security that has been authorised for issuance but is not actually issued. A Corporate Debenture is a debt security issued by a company which offers to pay interest on the money borrowed for a certain period. Debentures are transferable only by registration but bonds are negotiable. Bonds/Debentures may also differ in respect of their risk weight for the purpose of Bank's capital adequacy requirements.

Keywords

Face value, coupon rate, tenor, bullet, staggered and amortized redemption, clean price, dirty price, SLR and Non-SLR bonds, GOI securities, 'when-issued' securities, French and Dutch auction, Bonds and Debentures and risk weights.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is the dirty price of a bond?
 - (a) Clean price plus the accrued interest
 - (b) Discounted price
 - (c) Market price
 - (d) Face value of the bond
2. Who underwrites issue of Government Securities?
 - (a) Reserve Bank of India
 - (b) Primary Dealers
 - (c) NABARD
 - (d) Commercial Banks
3. What is the Open position limit in the 'WI' market for PDs in the case of re-issued securities?
 - (a) Short position not exceeding 6% of the notified amount
 - (b) Long or short position not exceeding 10% of the notified amount
 - (c) Short position not exceeding 5% of the notified amount
 - (d) Long position not exceeding 10% of the notified amount

4. Some bonds are issued with ‘step up’ coupons. What is meant by ‘step up’ coupon?
 - (a) Coupons payable are reinvested
 - (b) Coupons payable are discounted
 - (c) Coupons are included in the redemption amount
 - (d) Coupons payable are stepped up periodically

Answers

1. (a) 2. (b) 3. (c) 4. (d)

UNIT
9

OTHER CAPITAL MARKET INSTRUMENTS

STRUCTURE

- 9.0** Objective
- 9.1** Introduction
- 9.2** Equity Shares
- 9.3** Preference Shares
- 9.4** External Commercial Borrowing (ECB)
- 9.5** Global Depository Receipts (GDRS)
- 9.6** American Depository Receipts (ADRS)
- 9.7** Indian Depository Receipts
- 9.8** The RBI Circular

Let Us Sum Up

Keywords

Check Your Progress

9.0 OBJECTIVE

After a study of this section, the reader becomes very comfortable with various types of capital market instruments like Equity shares, Preference shares, External Commercial Borrowings, ADRs, and GDRs etc. Recently IDRs (Indian Depository Receipts) are also allowed to be issued in the Indian Market and Standard Chartered Bank is the first foreign entity to issue IDRs. Off late Masala Bonds, denominated in Indian Rupees are allowed to be issued to foreign entities providing one more additional avenue for raising resources. Hence information is also given on Indian Depository Receipts and Masala Bonds thus completing the subject.

9.1 INTRODUCTION

In the previous chapters details of money market instruments as well as fixed income instruments have been studied. In this chapter it is proposed to look at capital market instruments which relate to shareholder funds. This chapter will also cover instruments by which Indian companies can raise funds in the overseas markets.

9.2 EQUITY SHARES

A Public Limited Company is managed by Board of Directors appointed by the equity shareholders. Equity holders are entitled for a dividend from the distributable profits of the company at a rate decided by the Board of Directors. Equity holders also bear the final risk of corporate performance, i.e. they may forego their earnings and suffer loss of capital, if the company becomes insolvent. Equity shares are tradable in the secondary market. These shares can be issued at a premium or at a discount, depending on the earnings status of the company. Market price of the shares depends upon many factors such as earnings, dividend payout, liquidity, and economic situation. In the secondary market also, a share can be traded at premium or discount.

According to Companies Act, 2013 (which has replaced the Companies Act, 1956), a share is share in the share capital of the company and includes stock. This is one of the instruments in which RBI has permitted banks to invest since 1994. A share is the interest of a shareholder in the company measured by a sum of money, for the purpose of liability in the first place but also consisting of a series of mutual covenants entered into by all the shareholders inter se in accordance with the Companies Act, 1862. Shares are transferable and therefore described as a movable property. Each share in the company shall be distinguished by its appropriate number. A share certificate is a document stating the person named therein as the registered holder of the shares and amount mentioned thereon. Every company shall within two months after the allotment of shares, issue share certificate to the applicant who has been allotted shares and who has paid fully with regard to the particular share issue. Equity shareholder enjoys the voting rights and in good times a better dividend. Similarly, due to the transferable nature it is traded on a recognized stock exchange and thus provides capital gains opportunity to the holder. A few years back shares were held by investors in form of physical certificates and were transferred between two entities by a prescribed procedure. Accordingly a share was transferred by using a prescribed form which was required to be duly stamped and executed by or on behalf of the transferor and by or on behalf

of the transferee. The present rules namely Companies (Share Capital And Debentures) Rules, 2014 provide that an instrument of transfer of securities held in physical form shall be in Form **No.SH.4** and every instrument of transfer with the date of its execution specified thereon shall be delivered to the company within sixty days from the date of such execution.

Over the past few years, shares are being issued and traded in paperless or ‘dematerialized’ form. As per the present requirements, all public issues of size in excess of ₹10 crore, are to be made compulsorily in demat mode. There are two central depositories, viz., National Security Depository Ltd. (NSDL), sponsored by National Stock Exchange & other institutions and the Central Depository Services (India) Ltd. (CDSL), sponsored by Bombay Stock Exchange and other institutions. The NSDL and CDSL have several Depository Participants (DP) which are banks and entities like the Stock Holding Corporation of (India) Ltd. (SHCIL). All stocks and stock registers are maintained in electronic form by NSDL and CDSL. The shareholders open ‘demat’ accounts with the DPs wherein their individual stocks are held in electronic form.

SEBI has already made it obligatory to deal in listed stocks only in Dematerialized form. The seller gives instruction to the DP to transfer their stock to the broker/buyer electronically and gets payment from the broker/buyer in return. The stocks are credited to the buyer’s account with the DP. Even in Public Issues the successful subscriber’s DP account is credited with the requisite shares.

Shares are tradable and therefore, subject to the vagaries of the market forces. Shares are dealt on the recognized stock exchanges which provide the prices from time to time on the trading floor where deals take place. These deals are passed through the recognized members (stock brokers) of the respective stock exchange.

The stock exchanges are also electronically enabled these days. Accordingly a broker trades in the stock exchange through computer terminals and an investor can place his orders with the broker over telephone or through the net.

9.3 PREFERENCE SHARES

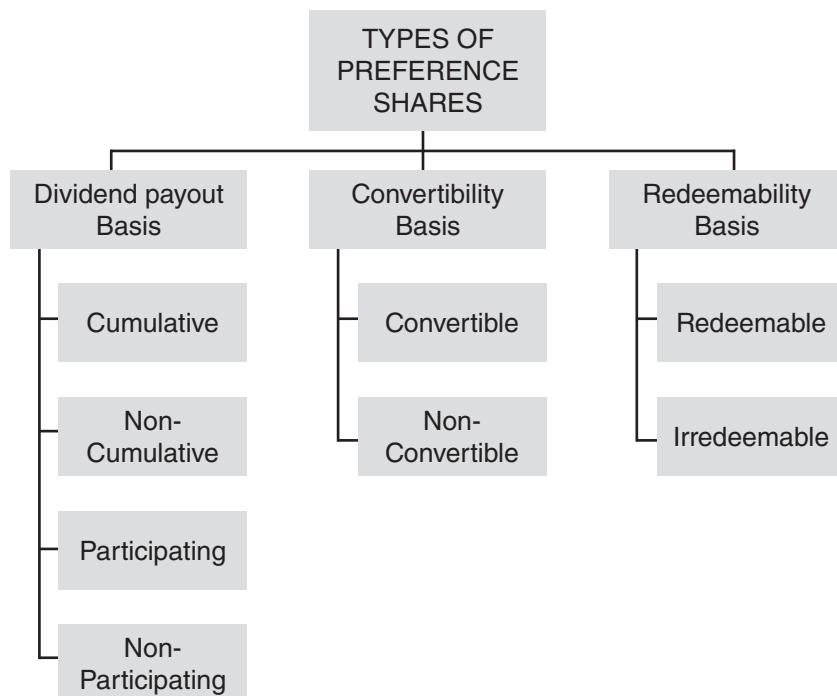
Preference shareholders assume only limited risk, since the rate of dividend is predetermined and dividend is payable in arrears (in case of cumulative preference shares) in preference to dividend on equity shares. They also receive precedence in repayment of capital over equity holders, in case of liquidation of a company. Preference shareholders, however, have no voting rights and do not participate in the management of the company. However, voting rights accrue to preference shareholders when dividend is in arrears for two years. Though the shares are marketable, they are not widely traded on account of a fixed dividend.

In India, only redeemable preference shares can be issued where the capital is repaid to the shareholders after a fixed period, say after 3 or 5 years. The redemption period cannot exceed 20 years. For this reason, preference shares have become more of a debt instrument, with the risk confined to the return on investment, i.e., fixed dividend, payment of which is dependent on earnings of the company. However, a company is allowed to issue preference shares for a period exceeding twenty years for infrastructure projects, subject to the redemption of a minimum ten per cent of such preference shares per year from the twenty first year onwards or earlier, on proportionate basis, at the option of the preference shareholders.

Preference shares can also be issued with a convertibility provision, to make the shares convertible into equity shares within a given period. Dividend paid on equity and preference shares is currently exempt from income tax, and hence effective post tax return, depending on the tax status of the investor, is higher than the actual dividend.

Warrants are forms of equity instruments, which entitle the holder to convert the warrants into equity, at a fixed price, or at market price prevailing on a particular date.

An ordinary preference share carries a fixed dividend which is payable before the equity shares are paid any dividend. However, if the company does not make any profit the preference shareholders will not get the preference dividend. The various types of preference shares are as illustrated below;



1. In case of Cumulative Preference Shares, the dividends are allowed to be accumulated when the company's resources are not adequate in a given year and then carried forward to be paid out of the future profits. Non-Cumulative shareholders do not enjoy this privilege.
2. In case of participating preference shares, the shareholders can participate in surplus fund and in surplus assets and profits, on winding up which may remain after the entire capital has been repaid. In case of non-participating shares, this advantage is missing.
3. In case of Convertible preference shares can be converted into equity, whereas non-convertible preference shares cannot be so converted.
4. As already explained, only Redeemable Preference Shares, where the shares are to be redeemed in the maximum period of twenty years except in case of shares issued by Companies for Infrastructure Projects. Can be issued in India? Irredeemable preference shares, though theoretically possible, are not allowed to be issued in India.

In the case of the redeemable shares, the company informs the preference shareholders before the date of redemption to send the share certificates duly discharged and pre-receipt for redeeming the share and making payment thereof. Like the equity share the preference share also can be transferred and the procedure and rules for the transfer are the same as are in the case of the equity shares.

For a company issuing preference capital, the advantages are that the Debt Equity ratio is not adversely affected as this is reckoned as equity, while the Earnings Per Share (EPS) is also not lowered as preference shareholders are not entitled to discretionary dividend as payable to ordinary shareholders.

9.4 EXTERNAL COMMERCIAL BORROWING (ECB)

External Commercial Borrowing (ECB) refer to commercial loans [in the form of bank loans, buyers' credit, suppliers' credit, securitized instruments (e.g., floating rate notes and fixed rate bonds, non-convertible, optionally convertible or partially convertible preference shares/debentures), financial lease, foreign currency convertible bonds and foreign currency exchangeable bonds availed from recognized non-resident lenders with minimum average maturity of 3 years. ECB framework is not applicable in respect of the investment in Non-convertible Debentures (NCDs) in India made by Registered Foreign Portfolio Investors (RFPIs). Hitherto, ECB was accessible under two routes, viz., (i) Automatic Route, and (ii) Approval Route. However, the present framework makes available ECB under three tracks, as detailed below.

Track 1: Medium term foreign currency denominated ECB with minimum average maturity 3/5 years.

Track 2: Long term foreign currency denominated ECB with minimum average maturity of 10 years.

Track 3: Indian Rupee denominated ECB with minimum average maturity 3/5 years.

Other than Foreign Currency Exchangeable Bonds (FCEB), all other forms of borrowing can be raised both under the automatic and approval routes, where the borrower can directly approach any Authorised Dealer Category 1 bank. For accessing through FCEB, the borrower must first obtain approval from RBI, routing their application through an AD bank.

9.4.1 Track I

(i) Eligible Borrowers:

- (a) Companies in manufacturing and software development sectors.
- (b) Shipping and airline companies.
- (c) Small Industries Development Bank of India (SIDBI).
- (d) Units in Special Economic Zones (SEZs).
- (e) Export Import Bank of India (only under approval route)
- (f) Companies in infrastructure sector, Non-Banking Financial Companies-Infrastructure Finance Companies (NBFC-IFCs), NBFCs-Asset Finance Companies (NBFC-AFCs), Holding Companies and Core Investment Companies (CICs).

(ii) Recognized Lenders: Borrowers can raise ECB from internationally recognised sources such as (i) international banks, (ii) international capital markets, (iii) multilateral financial institutions (such as IFC, ADB, etc.)/regional financial institutions and Government owned (either wholly

or partially) financial institutions, (iv) export credit agencies, (v) suppliers of equipment, (vi) foreign equity holders, (vii) Overseas long term investors like prudentially regulated financial entities, pension funds, insurance companies, Sovereign Wealth Funds and financial institutions located in International Financial Services Centres in India and (viii) Overseas Branches/subsidiaries of Indian banks. Overseas branches/subsidiaries of Indian Banks can be lenders only under Track-I and their participation under this track is subject to the prudential norms issued by the Department of Banking Regulation, RBI. Overseas branches/subsidiaries of Indian banks are permitted only to refinance ECBs of highly rated (AAA) corporates as well as Navratna and Maharatna PSUs, provided the outstanding maturity of the original borrowing is not reduced and all-in-cost of fresh ECB is lower than the existing ECB. Partial refinance of existing ECBs is also permitted subject to same conditions.

Overseas organizations planning to extend ECB would have to furnish a certificate of due diligence from an overseas bank which in turn is subject to regulation of host-country regulator and adheres to Financial Action Task Force (FATF) guidelines on anti-money laundering (AML)/combating the financing of terrorism (CFT) to the designated AD. The certificate of due diligence should comprise the following (i) that the lender maintains an account with the bank for at least a period of two years, (ii) that the lending entity is organised as per the local law and held in good esteem by the business/local community and (iii) that there is no criminal action pending against it.

Individual Lender has to obtain a certificate of due diligence from an overseas bank indicating that the lender maintains an account with the bank for at least a period of two years. Other evidence/documents such as audited statement of account and income tax return which the overseas lender may furnish need to be certified and forwarded by the overseas bank. Individual lenders from countries which do not adhere to FATF guidelines on AML / CFT are not eligible to extend ECB.

(iii) Amount and Maturity:

- (a) ECB up to USD 50 million or equivalent with minimum average maturity of three years
- (b) ECB above USD 50 million or equivalent with minimum average maturity of five years
- (c) The maximum amount of ECB which can be raised by a corporate is USD 500 million during a financial year. For companies in infrastructure and manufacturing sector, the cap is at USD 750 million, for those in software development sector, it is USD 200 million and for those in micro finance activities, it is USD 100 million. ECB proposals beyond aforesaid limits will come under the approval route.
- (d) The minimum average maturity period for Companies in infrastructure sector, Non-Banking Financial Companies -Infrastructure Finance Companies (NBFC-IFCs), NBFCs- Asset Finance Companies (NBFC-AFCs), Holding Companies and Core Investment Companies (CICs), Foreign Currency Convertible Bonds (FCCBs)/Foreign Currency Exchangeable Bonds (FCEBs) shall be five years irrespective of the amount of borrowing.
- (e) The call and put option, if any, for FCCBs shall not be exercisable prior to 5 years.

(iv) All-in-cost ceilings: All-in-cost includes rate of interest, other fees, expenses, charges, guarantee fees whether paid in foreign currency or Indian Rupees except commitment fee, pre-payment fee/charges, and withholding tax payable in Indian Rupees. In the case of fixed rate loans, the swap cost plus spread should be equivalent of the floating rate plus the applicable spread.

The all-in-cost ceilings for ECB are indicated from time to time. The following ceilings are valid till reviewed:

Minimum Average Maturity Period	All-in-cost Ceilings over six month LIBOR*
Three years and up to five years	300 basis points per annum
More than five years	450 basis points per annum

*Or applicable benchmark for the respective currency of borrowing.

Penal Interest, if any, for default or breach of covenants, not to exceed 2% over the contracted rate of borrowing.

(v) End-use:

- (1) ECB can be raised for meeting capital expenditure in the form of
 - (a) import of capital goods including payment towards import of services, technical knowhow and license fees, provided the same are part of these capital goods.
 - (b) Local sourcing of capital goods
 - (c) New project
 - (d) Modernization/expansion of existing unit
 - (e) Overseas Direct Investment in Joint Ventures/Wholly Owned Subsidiaries
 - (f) Acquisition of shares of public sector undertakings at any stage of disinvestment programme of the Government of India
 - (g) Refinancing of existing trade credit raised for import of capital goods
 - (h) Payment of capital goods already shipped/imported, but unpaid
 - (i) Refinancing of existing ECB provided the residual maturity is not reduced.
- (2) SIDBI can raise ECB only for the purpose of on-lending to the borrowers in micro, small and medium enterprises where MSME sector is defined under MSME Development Act, 2006, as amended from time to time.
- (3) Units in SEZs can raise ECB only for their own requirements.
- (4) Shipping and airline companies can raise ECB only for import of vessels and aircrafts respectively. This condition will be applicable for all three tracks.
- (5) ECB proceeds can be used for general corporate purpose (including working capital) provided the ECB is raised from the direct/indirect equity holder or from a group company for minimum average maturity of 5 years.
- (6) NBFC-IFCs and NBFC-AFCs can raise ECB only for financing infrastructure.
- (7) Holding Companies and CICs shall use ECB proceeds only for on-lending to infrastructure Special Purpose vehicles(SPVs)
- (8) ECBs for the following purposes will be considered only under the approval route:
 - (a) Import of second hand goods as per Director General of Foreign Trade (DGFT) guidelines.
 - (b) On-lending by Exim Bank.

9.4.2 Track 2

(i) Eligible borrowers

- (a) All entities listed under Track 1
- (b) Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (INVITs) coming under the regulatory framework of the SEBI

- (ii) **Recognized Lenders:** All entities listed under Track 1 except overseas branches/subsidiaries of Indian Banks.
- (iii) Minimum Average maturity period: Ten years irrespective of the amount.
- (iv) All-in-cost ceilings: All-in-cost includes rate of interest, other fees, expenses, charges, guarantee fees whether paid in foreign currency or Indian Rupees except commitment fee, pre-payment fee/charges, and withholding tax payable in Indian Rupees. In the case of fixed rate loans, the swap cost plus spread should be equivalent of the floating rate plus the applicable spread.

The all-in-cost ceilings for ECB under Track 2 is capped at 500 basis points per annum over 6 months LIBOR or the applicable benchmark. The remaining conditions will be as given in Track I.

9.4.3 Track 3

- (1) Eligible Borrowers:
 - (a) All entities listed under Track 2.
 - (b) All Non-Banking Financial Companies (NBFCs).
 - (c) NBFCs-Micro Finance Institutions, Not for profit companies registered under Companies Act, Societies, trusts and cooperatives, Non-Government Organisations (NGOs) which are engaged in micro finance activities. Entities engaged in micro finance activities to be eligible to raise ECB: 1) should have a satisfactory borrowing relationship for at least three years with an AD Category I bank in India and 2) should have a certificate of due diligence on “fit and proper” status from the AD Category I bank.
 - (d) Companies engaged in miscellaneous services viz. research and development (R&D), training (other than educational institutes), companies supporting infrastructure, companies providing logistics services.
 - (e) Developers of Special Economic Zones (SEZs)/National Manufacturing and Investment Zones (NMIZs).
- (2) Recognized Lenders: All entities listed under Track 1, except overseas branches/subsidiaries of Indian banks. In case of NBFC-MFIs, other eligible MFIs, Not For Profit Companies and NGOs, ECB can also be availed from overseas organisations and individuals.

Overseas organizations proposing to lend ECB would have to furnish to the AD bank of the borrower a certificate of due diligence from an overseas bank, which in turn, is subject to regulation of host country regulators and such host country adheres to the Financial Action Task Force (FATF) guidelines on Anti Money Laundering (AML)/combating the financing of terrorism (CFT). The certificate of due diligence should comprise the following: (1) that the lender maintains an account with the bank at least for a period of two years, (2) that the lending entity is organized as per the local laws and held in good esteem by the business/local community, and (3) that there is no criminal action pending against it.

Individual lender has to obtain a certificate of due diligence from an overseas bank indicating that the lender maintains an account with the bank for at least a period of two years. Other evidence/documents such as audited statement of account and income tax return, which the overseas lender may furnish, need to be certified and forwarded by the overseas bank.

Individual lenders from countries which do not adhere to FATF guidelines on AML/CFT are not eligible to extend ECB.

- (3) Minimum Average Maturity : Same as under Track 1
- (4) All in Cost: The all in cost must be in line with market conditions.
- (5) End use prescriptions:
 - (i) NBFCs can use ECB proceeds only for
 - (a) On lending to infrastructure sector as permitted by the concerned regulatory department of RBI
 - (b) Providing hypothecated loans to domestic entities for acquisition of capital goods/equipment, and
 - (c) Providing capital goods/equipment to domestic entities by way of lease and hire purchases.
 - (ii) Developers of SEZs/NMIZs can raise ECB only for providing infrastructure facilities within SEZ/NMIZ.
 - (iii) NBFCs-MFI, other eligible MFIs, NGOs and Not For Profit Companies registered under Companies Act, 1956/2013 can raise ECB only for on lending to Self-Help Groups (SHGs) or for micro credit or for bona fide micro finance activity including capacity building.
 - (iv) For other eligible entities under this Track, the ECB proceeds can be used for all purposes except as under
 - (a) Real Estate activities
 - (b) Investing in capital market
 - (c) Equity investment domestically
 - (d) On lending to other entities with any of the above objectives
 - (e) Purchase of land

Start Ups, recognized by GOI, can access the ECB market for maximum borrowing of USD 3 million or equivalent per financial year either in Indian Rupees or any convertible foreign currency or a combination of both, with minimum average maturity of three years.

9.4.4 Individual Limits

The individual limits refer to the amount of ECB which can be raised in a financial year under the automatic route.

- (1) The individual limit of ECB that can be raised by eligible entities under the automatic route per financial year for all the three tracks are as under:
 - (a) Upto USD 750 million or equivalent for the companies in infrastructure and manufacturing sectors, Non-Banking Financial Companies-Infrastructure Finance Companies (NBFC-IFCs), NBFCs-Asset Finance Companies (NBFC-AFCs), Holding Companies and Core Investment Companies,
 - (b) Upto USD 200 million or equivalent for companies in software development sector,
 - (c) Upto USD 100 million or equivalent for entities engaged in micro finance activities, and
 - (d) Upto USD 500 million or equivalent for remaining entities.

- (2) ECB proposals beyond aforesaid limits will come under the approval route. For computation of individual limits under Track III, exchange rate prevailing on the date of agreement should be taken to account.
- (3) In case the ECB is raised from direct equity holder, aforesaid individual limits will also be subject to ECB liability: equity ratio requirement. For ECB raised under the automatic route, the ECB liability of the borrower (including all outstanding ECBs and the proposed one) towards the foreign equity holder should not be more than four times the equity contributed by the latter. For ECB raised under approval route, this ratio should not be more than 7:1. This ratio will not be applicable if total of all ECBs raised by an entity is up to USD 5 million or equivalent.

For the purpose of ECB liability: equity ratio, the paid up capital, free reserves (including the share premium received in foreign currency) as per the latest audited balance sheet can be reckoned for calculating the “equity” of the foreign equity holder. Where there are more than one foreign equity holders in the borrowing company, the portion of the share premium in foreign currency brought in by the lender(s) concerned shall only be considered for calculating the ratio.

9.4.5 Currency of Borrowing

ECB can be raised in any freely convertible foreign currency as well as in Indian Rupees, as detailed below.

- (1) In case of rupee denominated ECB, the non – resident lender, other than foreign equity holder, should mobilise Indian Rupees through swaps/outright sale undertaken through an AD Category I bank in India.
- (2) Change of currency of ECB from one convertible currency to any other convertible foreign currency as well as to INR is freely permitted. Change of currency from INR to any foreign currency is, however, not permitted.
- (3) Change of currency of ECB into INR can be at the exchange rate prevailing on the date of the agreement between the parties concerned for such change or at an exchange rate which is less than the rate prevailing on the date of agreement if consented to by the ECB lender.

9.4.6 Hedging Requirements

Companies in infrastructure sector, Non-Banking Financial Companies-Infrastructure Finance Companies (NBFC-IFCs), NBFCs-Asset Finance Companies (NBFC-AFCs). Holding Companies and Core Investment Companies (CICs) are required to have a board approved risk management policy and are required to keep their ECB exposure hedged 100 per cent at all times. Further, the designated AD Category-I bank is required to verify that 100 per cent hedging requirement is complied with during the currency of ECB and report the position to RBI through ECB 2 returns. The entities raising ECB under the provisions of Track 1 and 2 are required to follow the guidelines for hedging issued, if any, by the applicable sectoral or prudential regulator I respect of foreign currency exposure.

9.4.7 Security for raising ECB

AD Category I banks are permitted to allow creation of charge on immovable assets, movable assets, financial securities and issue of corporate and/or personal guarantees in favour of overseas lender/security trustee, to secure the ECB to be raised/raised by the borrower, subject to satisfying themselves that;

- (1) The underlying ECB is in compliance with the extant ECB guidelines.
- (2) There exists a security clause in the Loan Agreement requiring the borrower to create charge, in favour of overseas lender/security trustee, on immovable assets/financial securities/issuance of corporate and or personal guarantee, and
- (3) No objection certificate, as applicable, from the existing lenders in India has been obtained.

9.4.8 Additional Conditions

Once aforesaid stipulations are met, the AD category I bank may permit creation of charge, during the currency of the ECB with security co-terminating with underlying ECB, subject to the following;

- (a) **Creation of Charge on Immovable Assets:** The arrangement shall be subject to the following:
 - (1) Such security shall be subject to provisions contained in the FEMA (Acquisition and Transfer of Immovable Property in India) Regulations, 2000.
 - (2) The permission should not be construed as a permission to acquire immovable asset (property) in India, by the overseas lender/security trustee.
 - (3) In the event of enforcement o/invocation of the charge, the immovable asset/property will have to be sold only to a person resident in India and the sale proceeds shall be repatriated to liquidate the outstanding ECB.
- (b) **Creation of Charge on Movable Assets:** In the event of enforcement/invocation of the charge, the claim of the lender whether the lender takes over the movable asset or otherwise, will be restricted to the outstanding claim against the ECB. Encumbered movable assets may also be taken out of the country subject to getting “No Objection Certificate” from domestic lender/s, if any.
- (c) **Creation of Charge over Financial Securities:** The arrangements may be permitted subject to the following:
 - (1) Pledge of shares of the borrowing company held by the promoters as well as in domestic associate companies of the borrower is permitted. Pledge on other financial securities, viz. bonds and debentures, Government Securities, Government Savings Certificates, deposit receipts of securities and units of the Unit Trust of India or of any mutual funds, standing in the name of ECB borrower/promoter, is also permitted.
 - (2) In addition, security interest over all current and future loan assets and all current assets including cash and cash equivalents, including Rupee accounts of the borrower/promoter, can be used as security for ECB. The Rupee accounts of the borrower/promoter can also be in the form of escrow arrangement or debt service reserve account.
 - (3) In case of invocation of pledge, transfer of financial securities shall be in accordance with the extant FDI/FII policy including provisions relating to sectoral cap and pricing as applicable, read with the FEMA (Transfer or Issue of Security by a Person Resident outside India) Regulations, 2000.

- (d) **Issue of Corporate or Personal Guarantee:** The arrangement shall be subject to the following;
- (1) A copy of Board Resolution for the issue of corporate guarantee for the company issuing such guarantee, specifying name of the officials authorized to execute such guarantees on behalf of the company or in individual capacity should be obtained.
 - (2) Specific requests from individuals to issue personal guarantee indicating details of ECB should be obtained.
 - (3) Such security shall be subject to provisions contained in Foreign Exchange Management (Guarantees) Regulations, 2000.
 - (4) ECB can be credit enhanced/guaranteed/insured by overseas party/parties only if it/they fulfil/s the criteria of recognized lender under extant ECB guidelines.

9.4.9 Issuance of Guarantee etc. by Indian Banks and Financial Institutions

Issuance of Guarantee, standby letter of credit, letter of undertaking or letter of comfort by Indian Banks, All India Financial Institutions and NBFCs relating to ECB is not permitted. Further, financial intermediaries shall not invest in FCCBs in any manner whatsoever.

9.4.10 Debt Equity Ratio

The borrowing entities will be governed by the guidelines on debt equity ratio issued, if any, by the sectoral or prudential regulator concerned.

9.4.11 Parking of ECB proceeds

ECB proceeds are permitted to be parked abroad as well as domestically in the manner given below.

- (a) **Parking of proceeds abroad:** ECB proceeds meant only for foreign currency expenditure can be parked abroad pending utilization. Till utilization, these funds can be invested in the following liquid assets. (1) Deposits or Certificate of Deposits or other products offered by banks rated not less than AA (-) by Standard & Poor / Fitch IBCA or Aa3 by Moody's, (2) Treasury Bills and other monetary instruments of maximum one year maturity having minimum rating as indicated above and (3) deposits with overseas branches/subsidiaries of Indian Banks.
- (b) **Parking of proceeds domestically:** ECB proceeds meant for Rupee expenditure should be repatriated immediately for credit to their rupee accounts with AD Category I banks in India. ECB borrowers are also allowed to park ECB proceeds in term deposits with AD Category I banks in India for a maximum period of 12 months. These term deposits should be kept in unencumbered position.

9.4.12 Conversion of ECB into Equity

Conversion of ECB including those which are matured but unpaid, into equity is permitted subject to the following conditions:

- (1) The activity of the borrowing company is covered under the automatic route for Foreign Direct Investment (FDI) or approval from the Foreign Investment Promotion Board (FIPB), wherever applicable, for foreign equity participation has been obtained as per extant FDI policy;
- (2) The conversion, which should be with the lender's consent and without any additional cost, will not result in breach of applicable sector cap on the foreign equity holding;
- (3) Applicable pricing guidelines for shares are complied with;
- (4) The reporting requirements prescribed by RBI are fulfilled;
- (5) If the borrower concerned has availed of other credit facilities from the Indian banking system, including overseas branches/subsidiaries, the applicable prudential guidelines issued by the Department of Banking Regulation of RBI, including guidelines on restructuring are complied with; and
- (6) Consent of other lenders, if any, to the same borrower is available or at least information regarding conversions is exchanged with other lenders of the borrower.

9.4.13 Reporting requirements

Borrowings under ECB are subject to reporting requirements in respect of the following:

- (1) Loan Registration Number (LRN) – Any drawdown in respect of an ECB as well as payment of any fees/charges for raising an ECB should happen only after obtaining the LRN from RBI. To obtain the LRN, borrowers are required to submit duly certified Form 83, which also contains terms and conditions of the ECB, in duplicate, to the designated AD Category I bank, who in turn will forward one copy to The Director, Balance of Payments Statistics Division, Department of Statistics and Information Management (DSIM), RBI, Bandra Kurla Complex, Mumbai 400051. Copies of loan agreement for raising ECB are not required to be submitted to RBI.
- (2) Changes in terms and conditions of ECB: Permitted changes in ECB parameters should be reported to the DSIM through revised Form 83 at the earliest, in any case not later than 7 days from the changes effected. While submitting revised Form 83, the changes should be specifically mentioned in the communication.
- (3) Reporting of actual transactions: The borrowers are required to report actual ECB transactions through ECB 2 return through AD Category I bank on a monthly basis so as to reach DSIM within seven working days from the close of the month to which it relates. Changes, if any, in ECB parameters should also be incorporated in ECB 2 return.
- (4) Reporting on account of conversion of ECB into equity: In case of partial or full conversion of ECB into equity, the reporting to the RBI will be as under:
 - (a) For partial conversion, the converted portion is to be reported to the Regional Office concerned of the Foreign Exchange Department of RBI in Form FC-GPR prescribed for reporting FDI flows, while monthly reporting to DSIM in ECB 2 Return will be with suitable remarks "ECB partially converted to equity".
 - (b) For full conversion, the entire portion is to be reported in Form FC-GPR, while reporting to DSIM in ECB 2 Return should be done with remarks "ECB fully converted to equity". Subsequent filing of ECB 2 Return is not required.
 - (c) For conversion of equity in phases, reporting through ECB 2 Return will also be in phases.

9.4.14 Refinancing of ECB

Refinancing of existing ECB with fresh ECB is permitted provided the fresh ECB is raised at a lower all-in-cost and residual maturity is not reduced. Overseas branches/subsidiaries of Indian banks are permitted only to refinance ECBs of highly rated (AAA) corporates as well as Navratna and Maharatna PSUs, provided the outstanding maturity of the original borrowing is not reduced and all-in-cost of fresh ECB is lower than the existing ECB. Partial refinance of existing ECBs is also permitted subject to same conditions.

9.4.15 Powers delegated to Banks to deal with ECB cases

The designated AD Category I banks can approve the following requests from the borrowers for changes in respect of ECBs except for FCCBs/FCEBs:

- (1) Changes/modifications in the drawdown/repayment schedule.
- (2) Changes in the currency of borrowing.
- (3) Change of the AD category I Bank.
- (4) Changes in the name of the borrower company.
- (5) Transfer of ECB.
- (6) Change in the recognized lender.
- (7) Change in name of lender.
- (8) Prepayment of ECB.
- (9) Cancellation of LRN.
- (10) Change in the end use of ECB proceeds.
- (11) Reduction in amount of ECB
- (12) Change in all-in-cost of ECB
- (13) Refinancing of existing ECB
- (14) Extension of matured but unpaid ECB

9.4.16 Foreign Currency Convertible Bonds (FCCB)

The issuance of FCCBs was brought under ECB guidelines in August 2005. Issuance of FCCBs shall conform to the Foreign Direct Investment (FDI) guidelines including sectoral cap. In addition to the requirement of (i) minimum maturity of five years, (ii) the Call and Put option, if any, shall not be exercisable before the expiry of five years, (iii) issuance without any warrants attached, (iv) the issue related expenses not exceeding 4% of the issue size and in case of private placement, not exceeding 2 per cent of the issue size, etc as required in terms of provisions contained in Regulation 21 of the Foreign Exchange Management (Transfer or Issue of any Foreign Security) Regulations, 2000 read with schedule I to the regulations. FCCBs are also subject to all the regulations which are applicable to ECBs.

9.4.17 Foreign Currency Exchangeable Bonds (FCEBs)

FCEBs can be issued only under the approval route and shall have minimum maturity of five years. The bonds are exchangeable into equity share of another company, to be called the “Offered Company”,

in any manner, either wholly or partly or on the basis of any equity related warrants attached to debt instruments. Issuance of FCEBs shall conform to the provisions contained in Regulation 21 of the Foreign Exchange Management (Transfer or Issue of any Foreign Security) Regulations, 2000 read with schedule IV to the regulations which contain eligibilities in respect of the issuer, offered company, subscriber, permitted end uses etc. The all-in-cost of FCEBs should be within the ceiling specified for ECB by RBI.

9.5 GLOBAL DEPOSITORY RECEIPTS (GDRS)

Global Depository Receipts, popularly known as GDRs, are internationally traded equity instruments. GDRs are issued by international depositories and denominated in US Dollars. They represent a fixed ratio of shares of a company registered in India and quoted on NSE/BSE. However, the physical possession of the underlying Indian shares is vested with a Custodian based in India, who acts as an agent for the Depository concerned. GDRs are negotiable certificates and they are freely traded in the overseas financial markets including Europe and USA.

In the run-up to a GDR issue, the Company that seeks to issue GDRs has to pass a resolution in its Board to that effect. An application is then made out to Ministry of Finance (MOF). While according the approval, MOF accords approval for a specified price range only as the finalisation of the pricing aspect is concluded just before the issue opens, having regard to the prevailing market conditions and the obtaining market sentiments. Normally, arrangements are made for underwriting the issue and road shows are conducted by the lead managers for marketing purposes. Actually, the shares are issued by the company concerned to the depository only and the shares are registered in the books of the company in the name of the depository only. Thereafter, the depository issues the GDRs to the ultimate investors which are freely tradable in major financial markets and also on OTC basis.

The dividend payout is done by the company in rupees to the depository. The depository makes its own arrangements to make the dividend payment to the GDR holders. GDR once issued may be cancelled but only after 45 days cooling period.

The major advantages and salient features of GDR are as follows: For the issuing company, it does not entail any foreign exchange risk as the transaction is reflected in its books only on rupee terms.

Issue of GDR enhances the corporate image of the company in the international financial circles as the company becomes more visible. GDR issues are a step in the direction of becoming an established global player.

With a view to initially attract the potential investors, the pricing of the GDRs is usually done at a discount to the domestic prices. The discount to domestic prices is also on account of the fact that rupee has been constantly depreciating against the US dollar over a period of time. However, on account of risk-reward perceptions on the Indian papers, FIIs have been showing an increased appetite for Indian scrips. This particular phenomenon has resulted in certain GDR issues being quoted at a premium at the time of issue stage itself.

GDRs are manifestation of the interest in Indian scrips by overseas investor community. The overseas investors are not normally concerned with the day-to-day running of the company and not interested in acquiring management stake. They are more interested in securing best returns on their investments by way of capital appreciation at the time of redemption.

Since GDR holders do not appear in the books of the company as equity-holders, they are not subject to the regulatory control span of authorities like SEBI (Security Exchange Board of India), etc., unlike FIIs who make direct investment into Indian papers and thus bear the currency fluctuation risk as well.

Despite periodic changes, be it economic or political, India continues to remain a relatively safe country in attracting direct/indirect investments.

The liquidity of GDRs is as good as the liquidity of the domestic shares of the company concerned. Generally, the market has witnessed linear relationship in the movements of GDR and domestic share prices for a given company. Of course, any abnormal behavior between the two markets will give rise to arbitrage opportunities.

Even as the GDR holders remain detached on a legal footing vis-à-vis the Company, they would nevertheless be entitled to all the attendant economic/monetary benefits. Apart from the above, while the depository concerned would remain the share-holder in the books of the Company, the depository is indirectly likely to be guided by the interests of the GDR holders as they hold large chunk of the capital indirectly subject to the agreements thereof and the disclosure clauses contained at the time of offer. Some of the important guidelines governing GDR issues are summarised as under:

- (i) An Indian corporate can raise foreign currency resources abroad through the issue of American Depository Receipts (ADRs) or Global Depository Receipts (GDRs). Regulation 4 of Schedule I of FEMA Notification no. 20 allows an Indian company to issue its Rupee denominated shares to a person resident outside India being a depository for the purpose of issuing Global Depository Receipts (GDRs) and/or American Depository Receipts (ADRs), subject to the conditions that: the ADRs/GDRs are issued in accordance with the Scheme for issue of Foreign Currency Convertible Bonds and Ordinary Shares (Through Depository Receipt Mechanism) Scheme, 1993 and guidelines issued by the Central Government there under from time to time. This scheme has been repealed, except to the extent relating to foreign currency convertible bonds, with the notification of a new scheme called “Depository Receipts Scheme, 2014” for investments under ADR/GDR by the Central Government with effect from December 15, 2014.

The salient features of the new scheme are:

- (a) The securities in which a person resident outside India is allowed to invest under Schedules 1, 2, 2A, 3, 5 and 8 of Notification No FEMA 20/2000-RB dated 3rd May 2000 shall be eligible securities for issue of Depository Receipts in terms of DR Scheme 2014.
- (b) A person will be eligible to issue or transfer eligible securities to a foreign depository for the purpose of issuance of depository receipts as provided in DR Scheme 2014.
- (c) The aggregate of eligible securities which may be issued or transferred to foreign depositories, along with the eligible securities already held by persons resident outside India, shall not exceed the limit on foreign holding of such eligible securities under the extant FEMA regulations, as amended from time to time.
- (d) The eligible securities shall not be issued to a foreign depository for the purpose of issuing depository receipts at a price less than the price applicable to a corresponding mode of issue of such securities to domestic investors under FEMA, 1999.

- (e) It is to be noted that if the issuance of the depository receipts adds to the capital of a company, the issue of shares and utilization of the proceeds shall have to comply with the relevant conditions laid down in the Regulations framed and Directions issued under FEMA, 1999.
- (f) The domestic custodian shall report the issue/transfer of sponsored/unsponsored depository receipts as per DR Scheme 2014 in Form DRR as given in Annex within 30 days of close of the issue/programme. These instruments are issued by a Depository abroad and listed in the overseas stock exchanges like NASDAQ. The proceeds so raised have to be kept abroad till actually required in India. There are no end use restrictions except for a ban on deployment/investment of these funds in real estate and stock markets. There is no monetary limit up to which an Indian company can raise ADRs/GDRs. However, the Indian company has to be otherwise eligible to raise foreign equity under the extant FDI policy and the foreign shareholding after the issue should be in compliance with FDI policy.
- (ii) The ADR/GDR can be issued on the basis of the ratio worked out by the Indian company in consultation with the Lead Manager of the issue. The Indian company will issue its rupee denominated shares in the name of the Overseas Depository and will keep in the custody of the domestic Custodian in India. On the basis of the ratio worked out and the rupee shares kept with the domestic Custodian, the Depository will issue ADRs/GDRs abroad.
- (iii) A limited Two-way Fungibility scheme has been put in place by the Government of India for ADRs/GDRs. Under this scheme, a stock broker in India, registered with SEBI, can purchase the shares from the market for conversion into ADRs/GDR. Re-issuance of ADRs/GDR would be permitted to the extent of ADRs/GDRs which have been redeemed into underlying shares and sold in the domestic market.
- (iv) An Indian company can also sponsor an issue of ADR/GDR: Under this mechanism, the company offers its resident shareholders a choice to submit their shares back to the company so that on the basis of such shares, ADRs/GDRs can be issued abroad. The proceeds of the ADR/GDR issue are remitted back to India and distributed among the resident investors who had offered their rupee denominated shares for conversion. These proceeds can be kept in Resident Foreign Currency (Domestic) accounts in India by the shareholders who have tendered such shares for conversion into ADR/GDR.
- (v) The ADR/GDR/FCCB proceeds may be utilised in the first stage acquisition of shares in the disinvestment process and also in the mandatory second stage offer to the public in view of their strategic importance.

ADRs have been permitted to allow Indian companies to prepay the existing FCCB subject to certain conditions.

9.6 AMERICAN DEPOSITORY RECEIPTS (ADRS)

American Depository Receipts, more popularly known as ADRs, are US Dollar denominated equity instruments widely traded in US financial markets. While GDRs are technically tradable world over, in reality, it is seen mostly traded only on the Luxembourg Bourse and thus catering to the European markets only. With GDRs only, it is becoming difficult for the corporates to penetrate the US markets. Further, US markets are too big and specialized to be ignored. However, the ADR route has a set of procedural formalities to be undertaken.

Issuance of ADRs requires strict compliance with the guidelines issued by US Security Exchange Regulation Commission, the counterpart of SEBI in India. Trading on ADRs could be done only by qualified institutional buyers, known as QIBs, as required under Section 144A of Security Exchange Regulation Commission. The above requirement, in effect, would keep the common investor away from the ambit of ADR, although it would be possible if the listing requirements in the individual stock exchanges in US and strict adherence to the exacting standards of US GAAP (Generally Accepted Accounting Principles), which are regarded as the most demanding level of disclosures and transparencies.

The main advantage of adopting the ADR rules is the visible image of the company that could be created in the US financial markets. Entry into US markets could be helpful in setting up mutually rewarding business relationships by way of Joint Ventures/Wholly Owned Subsidiaries (JVs/WOS).

9.7 INDIAN DEPOSITORY RECEIPTS

The Reserve Bank of India (RBI) has issued a circular¹ (the RBI Circular), seeking to amend the Indian exchange control regulations, to (1) enable foreign companies to issue Indian Depository Receipts (IDRs) in India, and (2) permit Foreign Institutional Investors (FIIs), their sub-accounts, and Non-Resident Indians (NRIs) to invest in IDRs.

9.7.1 Brief Regulatory Background

In principle, IDRs are the Indian equivalent of Global Depository Receipts (GDRs)/American Depository Shares (ADS) issued by Indian companies overseas. The issuance of IDRs was first contemplated in 2000 when changes were brought about in the Companies Act, 1956, thereby allowing foreign companies to issue IDRs in India, subject to complying with special rules to be issued by the Indian Government in this regard. These rules, called the Companies (Issue of IDR) Rules, 2004 (IDR Rules), were notified by the Government in February 2004. In April 2006, SEBI amended the SEBI (Disclosure and Investor Protection) Guidelines, 2000 (DIP Guidelines) to enable foreign companies to raise funds through IDR issuances in the Indian public markets and also issued its model listing agreement for such issues. Some recognized stock exchanges in India have incorporated SEBI's model listing agreement in the listing agreements they propose to execute with the foreign issuer companies. Subsequently, in January 2009, the Indian Government brought about certain amendments to the IDR Rules to make it operationally easier for foreign companies to issue IDRs in India.

The RBI has, vide its circular, sought to amend the Indian exchange control regulations to enable foreign companies issue IDRs in India and permit FIIs/sub-accounts and NRIs to invest in them.

9.7.2 Brief Overview of the Regulations Governing IDRs

A summary of the current regulatory framework governing the issuance of IDRs is provided below:

1. Only a foreign company which meets the following eligibility criteria is permitted to issue IDRs in India:

- Its pre-issue paid-up capital and free reserves are at least US\$ 50 million and it has minimum average market capitalization during the last three years in its parent country of at least USD 100 million.
 - It has a continuous trading record or history on a stock exchange in the parent country for at least three immediately preceding years.
 - It has a track record of distributable profits for at least three out of immediately preceding five years.
 - It is listed in its home country; it has not been prohibited from issuing securities by any regulatory body, and it has a good track record with respect to compliance with securities market regulations
 - The size of an IDR issue shall not be less than ₹50 crores.
2. The issuer company shall procure the prior approval of SEBI to raise funds through IDRs. It shall also obtain the necessary approvals or exemptions from its appropriate home regulators under the relevant laws relating to issue of capital, where required.
 3. The issuer company is required to appoint an overseas custodian bank, a domestic depository and a merchant banker for the purpose of the IDR issue. It may appoint underwriters to underwrite the IDR issue. It is required to file a due diligence report as well as a prospectus with the Registrar of Companies and SEBI.
 4. The IDRs are required to be listed on a recognised stock exchange in India having nation-wide trading terminals.
 5. The IDRs issued in any financial year cannot exceed 15 percent of the paid-up capital and free reserves of the issuer company, and the size of the IDR issue shall not be less than ₹500 million (i.e., approximately US\$ 7.8 million).
 6. In every IDR issue at least 50 percent of the issue shall be subscribed by Qualified Institutional Buyers (QIBs) as defined by SEBI in its DIP Guidelines. The balance 50 percent of the issue shall be available for subscription by non-institutional investors and retail individual investors, including employees. The minimum application amount in an IDR issue shall be ₹20,000 (i.e., approximately US\$ 313).

9.8 THE RBI CIRCULAR

The RBI Master Direction – Foreign Investment in India as updated till 12th January, 2018 provides the following:

9.8.1 Issue of IDRs

1. Companies incorporated outside India may issue IDRs through a Domestic Depository, to a person resident in India and a person resident outside India;
2. The issue of IDRs should comply with the Companies (Registration of Foreign Companies) Rules, 2014 and the Securities and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations, 2009;
3. Any issue of IDRs by financial/banking companies having presence in India, either through a branch or subsidiary, shall require prior approval of the sectoral regulator(s);

4. IDRs shall be denominated in Indian Rupees only;
5. The proceeds of the issue of IDRs shall be immediately repatriated outside India by the companies issuing such IDRs.

9.8.2 Purchase/sale of IDRs

1. An FPI or an NRI or an OCI may purchase, hold or sell IDRs,
2. NRIs or OCIs may invest in the IDRs out of funds held in their NRE/FCNR(B) account, maintained in accordance with the Foreign Exchange Management (Deposit) Regulations, 2016,
3. There would be an overall cap of USD 5 billion for raising of capital by issuance of IDRs by eligible foreign companies in Indian markets. This limit would be monitored by SEBI.

9.8.3 Transfer, redemption and two way fungibility of IDRs

1. Redemption/conversion of IDRs into underlying equity shares of the issuing company shall comply with the Foreign Exchange Management (Transfer or Issue of any Foreign Security) Regulations, 2004.
2. IDRs shall not be redeemable into underlying equity shares before the expiry of one year from the date of issue.
3. Limited two way fungibility of IDRs is permissible.
4. The guidelines to be followed for 3(i), 3(ii) and 3(iii) above are as follows:
 - (a) Listed Indian companies may either sell or continue to hold the underlying shares subject to compliance with the Foreign Exchange Management (Transfer or Issue of any Foreign Security) Regulations, 2004.
 - (b) Indian Mutual Funds, registered with SEBI may either sell or continue to hold the underlying shares subject to compliance with the Foreign Exchange Management (Transfer or Issue of any Foreign Security) Regulations, 2004.
 - (c) Other persons resident in India including resident individuals are allowed to hold the underlying shares only for the purpose of sale within a period of 30 days from the date of conversion of the IDRs into underlying shares.
5. The FEMA provisions shall not apply to the holding of the underlying shares, on redemption of IDRs by the FPIs.

9.9. MASALA BONDS

Masala Bonds represent Indian Rupee denominated debt issued overseas. The currency risk is borne by the overseas investor.

Banks are permitted to issue Rupee Denominated Debt overseas in the form of

- (1) Perpetual Debt Instruments (PDI) qualifying as Additional Tier 1 equity or Tier 2 debt.
- (2) Long Term Bonds for financing infrastructure as well as affordable housing sectors.

HDFC Ltd is the first Indian entity to issue masala bonds overseas. British Columbia (a province in Canada) issued sub five year debt and invested in HDFC Ltd's masala bonds.

Let Us Sum Up

RBI permitted banks to invest in shares since 1994. Preference shareholders assume only limited risk. In India only redeemable preference shares be issued where the capital is repaid to the shareholders after a fixed period. There are two routes Automatic route and Approval route for availing External Commercial Borrowings. RBI determines the all-in cost ceilings for ECBs. ADRs are US denominated equity instruments widely traded in US financial markets, while GDRs are predominantly traded in Europe. In principle, IDRs are the Indian equivalent of GDRs issued by Indian companies overseas.

Keywords

Equity shares, preference shares, External Commercial Borrowings, all-in cost, GDR, ADR, IDR, Masala Bonds

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. When do voting rights accrue to the holder in the case of preference shares?
 - (a) When dividend is in arrears for two years
 - (b) No voting rights for preference shareholders
 - (c) When dividend exceeds 25% of net profit
 - (d) When dividend remains unpaid for one year
2. What is the significance of Track I under which ECBs are allowed to be raised?
 - (a) Long term foreign currency denominated ECBs with minimum average maturity of 10 years can be raised.
 - (b) Medium term foreign currency denominated ECBs with minimum average maturity of 3/5 years can be raised.
 - (c) Indian Rupee denominated ECBs with minimum average maturity of 3/5 years can be raised.
 - (d) ECBs in the form of Foreign Currency Exchangeable Bonds can be raised under automatic route.
3. What is the criterion for a foreign company to be able to issue Indian Depository Receipts?
 - (a) Its pre-issue paid-up capital and reserves are at least US\$100 million.
 - (b) Its average market capitalization during the last two years should be at least US\$ 100 million.
 - (c) Its average market capitalization during the last three years in its parent country should be at least US\$100 million.
 - (d) Its pre-issue reserves should not be less than US\$50 million.

4. In the case of Masala Bonds, who bears the exchange risk?
 - (a) Issuer
 - (b) Commercial Bank
 - (c) Regulator
 - (d) Investor

Answers

1. (a) 2. (b) 3. (c) 4. (d)

UNIT
10

FOREIGN EXCHANGE (FX) MARKETS

STRUCTURE

- 10.0** Objective
- 10.1** Introduction
- 10.2** Definitions and Exchange Rate Quotations
- 10.3** Factors Influencing Exchange Rates
- 10.4** Role of Banks in the Indian FX Market
- 10.5** Relationship with Money Market Operations

Let Us Sum Up

Keywords

Check Your Progress

10.0 OBJECTIVE

This section deals with Exchange rate mechanism, various types of quotations, factors influencing exchange rates and the relationship with money markets.

10.1 INTRODUCTION

Foreign Exchange Markets are dynamic round the clock markets. Owing to the different time zones in which the participating countries are located, the quotes are continuously available at all times. For instance, when Indian FX markets commence business, the Far-Eastern markets like Australia, Japan, HongKong and, Singapore would be in their post-lunch session. By the time, it is post-lunch session for Indian FX markets; the European markets commence their operations. When European markets are closing, US markets open up. Thus, the market quotes are available throughout.

The BIS Triennial Central Bank Survey is the most comprehensive source of information on the size and structure of global foreign exchange (FX) and over-the-counter (OTC) derivatives markets. The Triennial Survey aims to increase the transparency of OTC markets and to help central banks, other authorities and market participants monitor developments in global financial markets. It also helps to inform discussions on reforms to OTC markets.

FX market activity has been surveyed every three years since 1986, and OTC interest rate derivatives market activity since 1995. The Triennial Survey is coordinated by the Bank for International Settlements(BIS) under the auspices of the Markets Committee (for the FX part) and the Committee on the Global Financial System (for the interest rate derivatives part). It is supported through the Data Gaps Initiative endorsed by the G20. The latest survey of turnover took place in April 2016. Central banks and other authorities in 52 jurisdictions participated in the 2016 survey. They collected data from close to 1,300 banks and other dealers in their jurisdictions and reported national aggregates to the BIS, which then calculated global aggregates. Turnover data are reported by the sales desks of reporting dealers, regardless of where a trade is booked, and are reported on an unconsolidated basis, i.e. including trades between related entities that are part of the same group.

Highlights

Highlights from the 2016 Triennial Survey of turnover in OTC foreign exchange markets:

1. Trading in foreign exchange markets averaged \$5.1 trillion per day in April 2016. This is down from \$5.4 trillion in April 2013, a month which had seen heightened activity in Japanese yen against the background of monetary policy developments at that time.
2. For the first time since 2001, spot turnover declined. Spot transactions fell to \$1.7 trillion per day in April 2016 from \$2.0 trillion in 2013. In contrast, the turnover of FX swaps rose further, reaching \$2.4 trillion per day in April 2016. This rise was driven in large part by increased trading of FX swaps involving yen.
3. The US dollar remained the dominant vehicle currency, being on one side of 88% of all trades in April 2016. The euro, yen and Australian dollar all lost market share. In contrast, many emerging market currencies increased their share. The renminbi doubled its share, to 4%, to become the world's eighth most actively traded currency and the most actively traded

emerging market currency, overtaking the Mexican peso. The rise in the share of renminbi was primarily due to the increase in trading against the US dollar. In April 2016, as much as 95% of renminbi trading volume was against the US dollar.

4. The share of trading between reporting dealers grew over the three-year period, accounting for 42% of turnover in April 2016, compared with 39% in April 2013. Banks other than reporting dealers accounted for a further 22% of turnover. Institutional investors were the third largest group of counterparties in FX markets, at 16%.
5. In April 2016, sales desks in five countries – the United Kingdom, the United States, Singapore, Hong Kong SAR and Japan – intermediated 77% of foreign exchange trading, up from 75% in April 2013 and 71% in April 2010.

The world currency markets are marked by the presence of currencies like US Dollar (USD), Great British Pound (GBP), Euro (EUR), Swiss Franc (CHF), Japanese Yen (JPY), etc, besides the other continental and exotic currencies. The share of Indian Rupee trades in the global market is about 1.1%, and India ranks 17th in FX turnover with the average daily turnover touching USD 53 billion. The tradability of individual currencies is subject to the local exchange control regulations. Currencies of the countries that have full capital account convertibility are deemed to be freely tradable or they are said to float freely in FX markets. Examples of currencies which follow a free float are USD, EUR, CHF, JPY, Canadian Dollar (CAD), Australian Dollar (AUD), etc. There are several countries whose economies are not fully open. These economies are open partially on the capital account, and fully or partially on the current account. India is fully convertible on the current account, but only partially convertible on the capital account. So while the Indian Rupee (INR) floats freely, due to the partial convertibility, its exchange rates can be managed more effectively than a fully convertible currency. There are currencies which follow a managed float, i.e., the exchange rate of the currency is managed in a band by the relevant authority, usually the central bank of that country. Also, there are currencies which are pegged to another currency, i.e. the exchange rate of that currency is fixed to another currency, usually the USD. The Chinese Yuan (CNY or Renminbi) and the Malaysian Ringgit (MYR) were, till recently pegged to the USD. However the peg stands removed now and they have been allowed to float within a restricted band against other currencies. It must be mentioned that even for currencies which follow a free float regime, central banks may still intervene in the market to try and adjust the exchange rate of a particular currency if they think it is required to do so.

10.2 DEFINITIONS AND EXCHANGE RATE QUOTATIONS

A few definitions in respect of the oft-repeated terms in FX markets are furnished below:

Exchange Rate refers to the price of one currency against another currency.

Spot transaction refers to the transaction wherein the settlement takes place two working days after the date of transaction. This is the standard basis on which majority of FX transactions are concluded.

When the transaction and the settlement take place on the same day of the date of transaction, then such transaction is said to have taken place on Cash or Today value basis.

TOM transaction refers to the transaction wherein the settlement takes place one working day after the date of transaction. The term TOM stands for Value Tomorrow.

Any transaction in respect of which the settlement takes place beyond the spot date is a Forward transaction.

An outright transaction is one in which a particular currency is bought against another currency that is being sold for a given value date at a mutually agreed exchange rate.

Swap transaction refers to the purchase and sale of a given pair of currencies against each other for different maturity/value dates. In effect, it is a combination of two outright deals of varying maturity dates, one being a sale leg and the other a purchase leg, or vice versa.

Cross rate is the process of arriving at a value of a given currency through the medium of two different pairs of currencies, in which there is a common currency for both the pairs.

For instance, in order to arrive at EUR/INR price, market uses EUR/USD price and USD/INR price.

Direct quotations refer to the quoting of a price wherein, a given unit of Foreign Currency is kept constant and the home currency is expressed as a variable. Direct quotations are regarded as easy to understand, user-friendly, and transparent. Indirect quotations refer to the quoting of a price wherein, the home currency is kept constant for a given unit, and the foreign currency is expressed as variable.

In a direct quote USD/INR 65.10/15, USD is termed the BASE currency and INR is termed the QUOTING currency.

Since FX is akin to a commodity, there would be invariably a price differential between the buying and selling price which is called the bid/offer spread.

When the forward price of a currency is higher than the spot price of that currency, the currency is said to be at a premium.

When the forward price of a currency is lower than the spot price of that currency, the currency is said to be at a discount.

Proprietary trading refers to the trading in FX markets on the bank's own account.

Merchant trading refers to the entering of a particular transaction in the books of the bank on behalf of a client. The banks normally undertake immediate cover operations in respect of such deals, so that they are insulated from any risks arising out of adverse exchange rate movements against the quotes already offered to the client.

10.3 FACTORS INFLUENCING EXCHANGE RATES

The movements of exchange rates are indeed fascinating. The reasons for the movements are varied. A few causes are listed here below:

- (i) Demand and Supply for the individual currency.
- (ii) Relative strengths of the economies for a given pair of currencies.
- (iii) Trade-surplus/deficit vis-á-vis the currencies of the countries concerned.
- (iv) A host of economic factors like Gross National Product, Fiscal Deficit, Balance of Payments Position, Industrial Production data, Employment data, etc.
- (v) Monetary Policies of the Government/Central Bank Political and Security climate.

- (vi) Inflation rate differentials,
- (vii) Interest rate differentials.

It may be added, that the interest rate differentials, which are in turn a function of the inflation differentials, would be more relevant in case of forward rate determinations/movements. The factors that contribute to the exchange rate movements are quite varied and wide. The demand and supply factors are equally important in determining the exchange rates.

The news flashes that periodically tick in will impact the exchange rate movements. Whether a particular news item would cause any movement in the exchange rate typically, depends upon the way in which the same is perceived by the market forces. Normally, by the time the news is out, it is acted upon and absorbed by the market instantaneously. Anticipated news, by the time it is formally announced, may have no impact in the market as the same would have been already factored into the exchange rate movement. The movement, at best, could be restricted to the extent of variance between the anticipated news and the actual news. The market sentiments play a definite role in causing the upward/downward movement of exchange rates in the short run, although the fundamentals of the economy play a major role in the medium to long term. Market sentiments have their due place in determination of exchange rate in the short run even though they may not be at times adequately backed by common logic/reasoning, and it may be such that the views could be, in reality, contrary to the perceptions based on economic fundamentals.

10.4 ROLE OF BANKS IN THE INDIAN FX MARKET

The role of banks in the Indian FX market comes into focus, on account of the fact that customers cannot deal in foreign exchange markets on their own without the banking medium. Customers need to buy or sell their foreign currency arising out of their export, import, and remittance transactions. Their trade finance and personal remittances dealings involve inflow or outflow of foreign exchange which, in turn, are governed by the extant foreign exchange regulations. Banks, even as they are catering to the FX requirements of the clients, also ensure that the transactions are well within the ambit of the provisions of the Exchange Control Regulations currently in force which is presently Foreign Exchange Management Act 1999. Another demanding segment is the personal segment comprising Non-Resident Indians (NRIs).

All foreign exchange transactions need to comply with the provisions of Foreign Exchange Management Act (FEMA), 1999. The regulatory authority for the Indian FX market is the Reserve Bank of India (RBI). The RBI issues guidelines/regulations/instructions from time to time which govern the functioning of the market.

Only Authorised Dealers (ADs) licensed by the RBI can participate directly in the FX market. These are usually Scheduled Commercial Banks. In addition there are institutions that have been granted a limited/restrictive AD license which permits them to undertake certain FX activities. A set of participants who are the Full Fledged Money Changers (FFMCs) have been granted license to undertake certain currency transactions with the general public. However the FFMCs also need to cover their FX positions with the ADs.

Hitherto, Commercial Banks have been categorized as Authorised Dealers – Category 1. They can undertake all capital and current account foreign exchange transactions as per FEMA.

Authorised Money Changers (Restricted) category cannot sell Foreign Currency, but buy them from public.

Full Fledged Money Changers category can do both, buying and selling of Foreign Currency.

Off Shore Banking Units (OBUs) form the third category. These three together were termed as Authorised Persons (AP).

AD Category II can carry out specified non trade related current account transactions and any other activity as decided by RBI. Cooperative Banks, RRBs, Full Fledged Money Changers (FFMC) fall into Category II.

AD Category-I Banks and FFMCs can appoint franchisees, who can carry out Restricted Money Changing – they can only buy foreign currency, and the foreign currency purchased by franchisee must be surrendered to franchisor within 7 days.

Customers approach ADs to get the best value for their FX requirements. Usually, the AD quoting the best FX rate will get the deal from the customer. Factors like customer relationship, execution capability, and post trade service quality will also have a bearing on which AD gets the deal. To offer a competitive quote to a customer, an AD has to have the ability to get the best quotes from the market. This in turn would depend on how active that AD is in the inter-bank FX market.

An exporter would sell foreign currency to an AD, while an importer would purchase foreign currency. Apart from trade transactions there are remittances which could be inward remittances, involving the sale of foreign currency to an AD, and outward remittances involving purchase of foreign currency. The customer's requirements for purchase or sale of foreign currency also arise from capital account transactions such as Foreign Currency Borrowings or their repayment, issue of ADRs/GDRs, acquisition of domestic companies by an overseas entity or vice-versa, etc.

Having concluded an FX transaction with the customer, the AD may have an overbought or oversold position in a foreign currency vis-à-vis INR. The exchange rate quoted to the customer would usually be at a spread to the prevailing inter-bank exchange rate. To realize this spread, the AD would look to cover its position in the inter-bank market. Depending on the actual rate at which the AD manages to square its position in the market, the spread earned would be higher, lower or same as the earlier envisaged spread.

Apart from merchant transactions, ADs also take proprietary positions, i.e., positions on their own account. These positions can be taken by the AD on the back of a customer transaction or could be initiated in the inter-bank market on a stand-alone basis. These positions are subject to daylight and overnight limits. The net overnight position which is termed as the Net Overnight Open Position Limit (NOOPL) is approved by the RBI for each AD after the latter's Board of Directors have approved the same.

Trading activities act like a backbone in providing depth to the markets. Unless two-way prices are offered on an on-going basis, market making will be rendered difficult. Shallow markets do not contribute anything positive, but just impart dullness to FX markets. Even in the case of merchant cover operations, as mentioned earlier, unless the FX markets are active, customers may not get the best of exchange rates. Active trading desks cause the narrowing of buy-sell differential margins

driven by high volume-low spread concept. Thus ADs acting as market makers have an important role to play in the FX market.

Banks, as foreign exchange Authorised Dealers, provide support to the international trade, comprising of exports and imports and remittances. Banks maintain foreign currency positions in different convertible currencies. The banks offer variety of foreign exchange rates like spot, forwards, swaps, cross currency rates, etc., which facilitates the clients in conducting their transactions in various foreign currencies from time to time. Through swaps and forward contracts, banks facilitate exchange risk management of their clients. Foreign exchange market is not only an organized market but also a rigidly controlled one, and banks are the most important players in this market.

10.5 RELATIONSHIP WITH MONEY MARKET OPERATIONS

Usually in the case of a fully convertible currency, the forward rates against any other currency reflect the interest rate differential of the two currencies. However, as stated earlier the INR is not fully convertible on the capital account. This results in arbitrage opportunities between the interest rates in the domestic market, and that implied by the forward premiums. The arbitrage opportunities will be clear from the following examples:

Example 1

USD/INR Spot: 65.10, Spot Date: 12/12/2017

USD/INR March Forward Premium: INR 0.20 March End: 31/03/ 2018

USD Deposit Rate till 31/03/2018: 3.50%

INR Inter-bank term money till 31/03/2018: 4.35%

Implied Interest Rate from the USD/INR forward curve:

$$(0.20/65.10) \times (365/109) = 1.03\%$$

An AD can borrow INR at 4.35% till 31/03/2018. With this INR the AD can do a Buy/Sell swap in the FX market wherein it buys USD Spot and sell its forward for 31/03/2018. The AD then places the USD so bought in the Spot market with an overseas bank till 31/ 03/2018, earning an interest rate of 3.50%.

The effective return to the AD in USD is $3.50\% + 1.03\% = 4.53\%$.

Thus the AD makes a spread of 0.18% ($4.53\% - 4.35\%$) on its INR borrowing. ADs can do this as long as they operate within its approved Aggregate Gap Limit (AGL).

Example 2

USD/INR Spot: 64.95, Spot Date:12/12/2017

USD/INR November Forward Premium: INR 0.40 November End: 30/11/2018

USD LIBOR Rate till 30/11/2018: 3.75%

INR Inter-bank term money till 30/11/2018: 5.75%

Implied Interest Rate from the USD/INR forward curve:

$$(0.40/64.95) \times (365/353) = 0.64\%$$

Assume that the AD can borrow USD at LIBOR + 25 bp till 30/11/ 2018. The AD will swap the borrowed USD into INR by doing a Sell/Buy Swap in the FX market wherein it sells USD against INR on Spot Basis, and buys USD against INR for 30/11/2018. The AD then invests the INR so raised in an inter-bank term deposit till 30/ 11/2018 at 5.75% p.a.

The effective cost of USD for the AD = $(3.75\% + 0.25\%) + 0.64\% = 4.64\%$. Thus, the AD makes a spread of 1.11% ($5.75\% - 4.64\%$) on its USD borrowing. ADs are allowed to borrow in Foreign Currency up to 25% of their unimpaired TIER I Capital, and use these borrowings to fund their INR balance sheet. Thus, ADs can raise relatively cheaper funds up to this limit in the case of market conditions specified in this example.

It, thus, makes sense for the FX Treasury and the Domestic Money Market Treasury of Banks to work in co-ordination with each other, in order to capitalize on such market opportunities with the overall corporate objective in mind. It should be borne in mind that in the absence of a clear focus, the individual treasuries may regard each of them as separate profit centres in their own right, and thereby, miss out the arbitrage opportunities or start working at cross-purposes. This is one of the reasons why most banks have either set up or are in the process of setting up integrated Treasuries.

The foreign exchange traders keep looking for arbitrage opportunities in the market to make quick money. In this context, it will be useful to understand the arbitrage mechanism in greater detail.

Forex arbitrage is defined as “the simultaneous purchase and sale of the same, or essentially similar, security in two different markets for advantageously different prices,” according to the concept formalized by economists Sharpe and Alexander in the 1990s.

“RISK-FREE Or Locational Arbitrage”

According to economic theory, trading on financial markets is bound by the Efficient Markets Hypothesis, a concept developed by economist Eugene Fama and others from the 1960s onward. It suggests that markets (or more importantly all the active investors and participants in them) will process all available information about asset values and prices efficiently and quickly in such a way that there will be little, if any, room for price discrepancies across markets, and that prices will move quickly toward equilibrium levels.

Because of this natural tendency for prices to move toward equilibrium levels across markets at all times, traders may find it difficult to identify price discrepancies across markets that allow them to buy assets at “bargain rates.” Or, in the words of renowned economist Milton Friedman, there’s no such thing as a “free lunch.”

The Negative Spread: A Free Lunch?

While the efficient markets theory indeed works, in practice traders have found that markets have not shown themselves to be 100% efficient at all times due to asymmetric information between buyers and sellers.

One such occasion of market inefficiency is when one seller's ask price is lower than another buyer's bid price, also known as a "negative spread." For instance, this may happen when one bank quotes a particular price for a currency while another bank is referencing a different price. When a situation like this arises, an arbitrageur can make a quick profit by simultaneously executing a purchase from the seller and a sale to the buyer. In essence, the trader begins the trade in a situation of profit, rather than having to wait for a favorable evolution of market trends.

However, while risk-free trading may sound like a great deal in theory, once again, in practice, traders should be aware that losses can occur. The most common risk identified by traders in arbitrage trading is "execution risk." This is the risk that price slippage or requotes can occur, making the trade less profitable or turning it into a loss.

A Fast-Moving Market

With the rise of electronic trading platforms since the 1970s and the more recent growth of "high-frequency trading" using algorithms and dedicated computer networks to execute trades, some opportunities for so-called "risk-free" arbitrage have diminished. At the least, traders now must be much more agile and quick on the trigger finger to execute such trades. Whereas several years ago arbitrage trade opportunities may have lingered for several seconds, traders now report they may last for only a second or so before prices converge toward equilibrium levels.

However, market researchers have found that negative spread situations still do arise in particular circumstances. These tend to occur more often in periods of market volatility. They can also arise because of price quote errors, failure to update old quotes (stale quotes) in the trading system or situations where institutional market participants are seeking to cover their clients' outstanding positions.

Triangular Arbitrage

A variation on the negative spread strategy that may offer chances for gains is triangular arbitrage. Triangular arbitrage involves the trade of three (or more) different currencies, thus increasing the likelihood that market inefficiencies will present opportunities for profits. In this strategy, traders will look for situations where a specific currency is overvalued relative to one currency but undervalued relative to the other.

An example of triangular arbitrage would be to trade in three currency pairs, such as EUR/USD, USD/JPY and EUR/JPY. If in this case the euro is undervalued in relation to the yen, and overvalued in relation to the dollar, the trader can simultaneously use dollars to buy yen and use yen to buy euros, to subsequently convert the euros back into dollars at a profit.

Cross-currency arbitrage

Trading text books always talk about cross-currency arbitrage, also called triangular arbitrage. Yet the chances of this type of opportunity coming up, much less being able to profit from it are remote.

With triangular arbitrage, the aim is to exploit discrepancies in the cross rates of different currency pairs.

For example, suppose we have:

Broker A

EUR/USD = 1.1615

GBP/USD = 1.3148

This means we should have the cross rate:

GBP/EUR = 1.3148/1.1615 = 1.1319

Suppose **Broker B** quotes GBP/EUR at 1.1300. From the above the arbitrageur does the following trade:

Buy 1.13 EUR @ 1.1615 × 1.1319 USD from Broker A

Buy 1 GBP @ 1.1319 EUR from Broker B

Sell 1 GBP @ 1.3148 USD to Broker A

His profit is $1.3148 \text{ USD} - 1.1615 \times 1.1319 \text{ USD} = .0001 \text{ USD}$

Of course, in reality the arbitrageur could have increased his deal sizes. If he trades standard lots, his profit would have been $1000,000 \times .0001$ or \$100.

Interest Rate Arbitrage

Another form of arbitrage that is common in currency trading is interest rate arbitrage, also known as “carry trade.” This is when an investor sells currency from a country with low interest rates and buys and holds a currency from a country paying higher interest rates. When the investor reverses the operation at a later time, they will receive the net difference in interest paid on the two currencies. Because this operation is carried out over a period of time, the trader also may be subject to risks of variations in the levels of currencies or in interest rates.

Spot-Future Arbitrage: Cash And Carry

An additional form of arbitrage, known popularly as “cash and carry,” involves taking positions in the same asset in both the spot and futures markets. With this technique, the trader buys an underlying asset and sells, or “shorts,” the same asset in the futures market while the asset is purchased.

A similar strategy can also be taken in the other direction, and it’s known as “reverse cash and carry.” In this operation, the trader sells the underlying asset and buys, or “goes long,” on the same asset in the futures market.

Someone who practices arbitrage is known as an “arbitrageur.” Simply put, an arbitrageur buys cheaper assets and sells more expensive assets simultaneously to take a profit with no net cash flow. In theory, the practice of arbitrage should require no capital and involve no risk, although in practice attempts at arbitrage generally involve both,

While the above indicated transactions are technically possible in the aforesaid market conditions, it would, however, be subject to the directions/indications from the regulatory authorities, from time to time, as most of the actions should be in tune with overall objectives of maintaining orderliness in the market.

Let Us Sum Up

Exchange rate refers to the price of one currency against another currency. Spot transaction facilitates settlement after two working days whereas Tom transaction permits settlement after one day. Exchange rate are influenced by host of factors like, demand supply, relative strength of economies, monetary policies, political climate, inflation and interest differentials, etc.

Keywords

Spot, Tom and forward transactions, ADs, Net Overnight Open Position Limit, Tier I capital

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Which is the most authentic source of information on the size and structure of global foreign exchange and OTC markets?
 - (a) Triennial survey of BIS
 - (b) RBI's survey on unclassified receipts
 - (c) Growth of global financial markets survey by FED
 - (d) Survey by Monetary Authority of Singapore
2. Till recently the Malaysian Ringgit was pegged to which currency?
 - (a) Great British Pound
 - (b) United States Dollars
 - (c) Australian Dollars
 - (d) Thai Baht
3. What is the restriction on ‘Restricted Money Changers’?
 - (a) They are allowed to operate only certain days of the week.
 - (b) They are allowed to transact with restricted group of clients only.
 - (c) They are not allowed to sell foreign currency to clients.
 - (d) They are allowed to operate only in certain currencies.

4. What is the amount up to which ADs can leave the forex transactions uncovered?
 - (a) Market determined
 - (b) Amount equal to their Tier I capital
 - (c) Amount as indicated by FEDAI
 - (d) Amount equal to NOOPL

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
11**

DERIVATIVES – AN OVERVIEW

STRUCTURE

- 11.0** Objective
- 11.1** Introduction
- 11.2** Characteristics of Derivatives
- 11.3** Functions of Derivatives
- 11.4** Users of Derivatives
- 11.5** Futures
- 11.6** Forward Contract
- 11.7** Forward Rate Agreement (FRA)

Let Us Sum Up

Keywords

Check Your Progress

11.0 OBJECTIVE

After a careful reading of the chapter, the reader becomes well versed in basics of derivatives by understanding characteristics and functions of derivatives, futures and forward contracts, bond futures, stock index futures, etc. The section also provides inputs on Forward Rate Agreements and pricing of FRAs.

11.1 INTRODUCTION

Investment involves setting aside substantial amount of money in the hope of receiving interest and gains on account of price increase. There is a possibility that the expected price rise may not happen, thereby resulting in loss of investment and income. Consider investing in a share in the hope of a price rise. If the price increase happens, the investment is profitable. If the price rise does not happen then the investment would become unprofitable. This is the normal investment route. In order to reduce the chances of such losses the derivative market has been developed. A derivative will enable an investor to take a chance on the possibility of price rise or fall even without the initial investment. Derivative is thus an instrument whose value depends on the values of other more basic underlying variables. The underlying variables could be:

- (i) Stock prices
- (ii) Exchange rates
- (iii) Interest rates
- (iv) Exotics (like wind velocity, racing horse's speed and the like)

These underlying variables are called cash market variables.

As an example, consider the following financial contract:

The market offers a contract to buy Y stock if the price of stock is ₹1007 or more. In this contract there will be a gain of ₹101 if the closing price of Y stock is ₹1108 tomorrow wherein the investor in the contract can buy the stock at ₹1007 and sell it at ₹1108. On the contrary if the price were to fall lower than ₹1007 say ₹900, then there will be no purchase of stock under this specific contract at the pre agreed price of ₹1007, and the investor would have only paid the price for buying the contract. If the price does not move, there will be no gain accruing to the investor.

As against this, if the stock Y was purchased at ₹1007, a price of ₹1108 will give a profit of ₹101, while at the price of ₹900 the loss would be ₹107. In the case of the purchase there is also the cost of funding the purchase.

The payoff that one may receive from the above contract is dependent on/or derived from the Y stock's price. The above financial contract is an example of a derivative contract. The payoff from such a contract is derived from the behaviour of an underlying variable like a stock price.

11.2 CHARACTERISTICS OF DERIVATIVES

1. Derivatives have the characteristic of Leverage or Gearing.
2. With a small initial outlay of funds (a small percentage of the entire contract value), one can deal big volumes. As such, because of the leverage, just as the profit potential is high, the losses can also be high.

3. Pricing and trading in derivatives are complex, and a thorough understanding of the price behavior of the underlying and product structure is an essential pre-requisite before one can venture into dealing in these products.
4. Derivatives, by themselves, have no independent value. Their value is derived out of the underlying instruments.

11.3 FUNCTIONS OF DERIVATIVES

- (i) Derivatives shift the price risk from the buyer of the derivative product to the seller and as such are very effective risk management tools.
- (ii) Derivatives improve the liquidity of the underlying instrument. Derivatives perform an important economic function, viz., price discovery. They provide better avenues for fixing cost of raising money. They contribute substantially to increasing the depth of the markets.

11.4 USERS OF DERIVATIVES

Hedgers, Traders, and Speculators use derivatives for different purposes. Hedgers use derivatives to protect their assets/positions from erosion in value due to market volatility. Traders look for enhancing their income by making a two-way price for other market participants. Speculators set their eyes on making quick money by taking advantage of the volatile price movements. Hedging is a mechanism by which an investor seeks to protect his asset from erosion in value due to adverse market price movements. A Hedger is usually interested in streamlining his future cash flows. He is most concerned when the market prices are very volatile. He is less concerned with future positive potential of the value of underlying asset.

A speculator (also known as Trader) has, normally, no asset in his possession to protect. He is not concerned with stabilizing his future cash flows. He is interested only in making quick money by taking advantage of the price movements in the market. He is quite happy with volatility. In fact, volatility is his daily bread and butter.

Arbitrageurs also form a segment of the financial markets. They make riskless profit by exploiting the price differentials in different markets. For example, if a company's shares were trading at ₹3500 in Mumbai market and ₹3498 in Delhi market, an arbitrageur will buy it in Delhi and sell it in Mumbai to make a riskless profit of ₹2/ (transaction cost is ignored for the purpose of this example). Such successive transactions will iron out the difference in prices and bring equilibrium in the market. However, arbitraging without strict internal controls is not a very safe way of making money as proved in the case of Barings Bank, where unscrupulous arbitraging between Osaka and Tokyo exchanges in Nikkei Stock index futures drove the Bank to bankruptcy.

Salient Points

1. Financial Derivatives are products whose values are derived from the values of the underlying, be it an asset, a benchmark index or a traded price.
2. Derivatives have the characteristics of high leverage and of being complex in their pricing and trading mechanism.

3. Derivatives enable price discovery, improve the liquidity of the underlying asset, serve as effective hedge instruments, and offer better ways of fixing cost of raising money.
4. The main players in a financial market include hedgers, speculators arbitrageurs, and traders.
5. Hedging can be done in two ways, viz., fixing a price (the linear way) and taking an insurance (non-linear or asymmetric way).

There are a variety of derivative contracts. Basically these are forwards, futures, swaps and options. Forwards are definitive purchases and/or sales of a stock, currency or commodity for a future date. Forward contracts are contracted for a particular value and should be transacted on a given date. Forwards are useful in avoiding liquidity risk, price variations, and locking in at a price for avoiding a downside. Forward, however, has the limitation that the contract has to be performed in full and has attendant credit risk and market risk. Forwards are most useful in forex transactions where a spot transaction can be covered by a contrary move in the forward market.

The other derivatives are futures, swaps and options.

11.5 FUTURES

11.5.1 Futures Contract

It is an agreement to buy or sell an asset or a benchmark interest rate for a certain price at a certain time. It is similar to forward contract. While a forward contract is traded over the counter, a futures contract is traded on an exchange. It has standardized contract parameters.

Sr. No.	Forwards	Futures
1.	Essentially, OTC contracts involve only the buyer and the seller. 2. Both the parties have to perform the contract. 3. There is no payment of any initial margins. 4. The maturity and size of the contract may be customized. 5. Settlement takes place only on the date of maturity. 6. Credit or Counter-party risk is high. 7. Markets for forward contracts are not very liquid. 8. Physical delivery takes place on the maturity date. 9. A contract is traded through an exchange. Buyer, Seller and Exchange are involved. 10. The contract need not necessarily culminate in the delivery of underlying. 11. To trade in futures contract, one has to become a member of the exchange by paying the initial margin, and maintain a variable margin account too with the Futures Exchange. 12. The maturity and size of contracts are standardized. 13. Contracts are generally net settled on expiry date with current spot price of underlying. 14. Margining is done on a daily basis, on all the outstanding contracts (marking to market on a daily basis), to eliminate credit risk. 15. The Futures Exchange takes care of credit or counter-party risk. 16. Futures contracts are highly liquid and can be closed out easily. 17. Hardly 2% of the total contracts are delivered and taken delivery of.	

The difference between a forward contract and a futures contract can be summarized as follows: A futures contract is an agreement to buy or sell a standard quantity and quality of a given underlying on a future date through the medium of an Exchange House at a price which is predetermined. The definition may look very similar to a simple forward contract, but the differences between the two are many. Let us first list down the differences between a forward contract and a futures contract.

Thus, futures contracts differ considerably from simple forward contracts. To trade in Futures contracts, one has to become a member of the Exchange by paying an Initial Margin that is normally based on the price volatility of the underlying instrument. The variable margin account has to be maintained with the Exchange, so that the daily profit or loss on the outstanding position on account of marking to market or the actual profit or loss, arising out of closing out of open positions may be accounted for. Further, the contracts are normally maturing on the third Wednesday of the calendar months of March, June, September, and December. The size of the contract too is standardised. For example, the Euro \$ interest rate futures has a standard size of USD 1 mio per contract, which means that one can trade only in a standard size of 1 mio or its multiples, and that too for the standard maturities in March, June, September, and December. As Futures contracts are entered into basically for hedging purposes, physical delivery of the underlying instrument between the buyer and the seller rarely takes place. If physical delivery is to take place, the quality and the quantity of the underlying are standardized by the Exchange, and the counter parties are bound by such standardization.

In India, futures contracts are available and traded on the National Stock Exchange (NSE) and The Stock Exchange, Mumbai (BSE). These contracts are either for the Indices – BSE Sensex and NSE NIFTY, or for specific stocks. Further, commodity futures are traded on the three commodity exchanges, viz., NCDEX, MCX, and as of now there is no trading on bond futures. Interest Rate Futures are also available in Treasury Bills and Benchmark bonds.

Salient Points

1. Futures contracts are traded through an exchange, and are very liquid.
2. The size and maturities of a futures contract are standardized.
3. Marking to market of outstanding positions at the end of each trading day is a risk management feature of futures markets.
4. Initial and Variable margins are to be maintained with the exchange by participants of futures market.
5. Physical delivery of futures contracts is minimal, and positions are normally closed out by opposite trades at price of underlying in the cash market on expiry day.
6. The futures exchange guarantees the settlement between various parties to the market, and hence counter party risk is absent.
7. Futures are available on currencies, bonds, interest rates, stock indices, commodities, etc.
8. Each of the above futures contracts has its own specifications and procedures.

11.5.2 Currency Futures

Currency Futures were first introduced in the International Money Market at Chicago, USA in the year 1972. These are contracts where there is a commitment to deliver or take delivery of one

currency against receipt or payment in another currency at an exchange rate agreed to at the time of entering into the contract. This definition may look very similar to a forward contract, but we have already seen the major differences between the forwards and futures contracts. Currency Futures are available in the major exchanges in the world, viz., The London International Financial Futures Exchange (LIFFE), The Tokyo International Financial Futures Exchange, Chicago Board of Trade and, Singapore International Monetary Exchange (SIMEX). The contracts have standard sizes, and the prices are normally quoted in US Dollar terms. The standard sizes are 125000 per contract for Euro, CHF, etc., 62500 for Pound Sterling, and 12.5 Mio for Japanese Yen. The price movements are calibrated to move with a minimum tick size. The tick size is 0.01 % or 0.0001 per unit of the currency. Hence if the exchange rate moves by 1 pip, the loss or profit for this unit movement in price is the product of 0.0001 and the contract size.

Hedging currency exposures through currency futures is a very popular strategy adopted by various treasury and forex managers. Let us say we have a long position of Euro 1 mio against the USD at an exchange rate of 1 Euro = 0.9450 USD, and we are worried that the exchange rate of Euro against the Dollar would weaken. In order to hedge this risk, we sell Euro futures (4 contracts × 125000) at the current futures price, say, 0.9500 USD to a Euro. If Euro falls to USD 0.9400 in the cash market, we lose on the underlying long position of 1 mio against the dollar, the loss being 1 mio × 0.0050 (0.9450 – 0.9400) = USD 5000. However, if the futures settle at 0.9445, we make profit on the futures position. The profit is 4 × 125000 × 0.0055 (0.9500 – 0.9445) = USD 5500. Thus, we make a net profit of 500 USD under these transactions and our long position in Euro is also hedged. However, this may not always be the situation. The price movement in the futures and in the cash markets may not move in tandem, and may result in a net loss on the transactions too. The prices of currency futures are determined by the simple interest parity theorem or in the same manner as currency forwards are priced. The following equation gives the price of futures.

$$\text{Futures Price} = \text{Spot price} \times \frac{(1 + \text{Interest Rate of Domestic Currency} \times \text{Days}/360)}{(1 + \text{Interest Rate of Foreign Currency} \times \text{Days}/360)}$$

11.5.3 Bond Futures

Bond Futures are available in the international exchanges for two major maturities, viz., 5 years and 10 years. The conventions of the bond futures are slightly different from those of currency futures. As there may be many bonds whose maturities are closer (either higher or lower) to the standard 5/10 years maturities, a notional bond of 5/10 years respectively is created with a notional yield. The price of the futures moves around this notional yield, and there is a basket of bonds of the same kind with a maturity closer to the futures' maturity of 5/10 years. This basket is called the deliverable basket, and its contents are determined by the futures exchanges. A party willingly taking physical delivery on expiry of the contract should accept delivery of any of the bonds from this basket. As the yield to maturities of these bonds in the basket may be different, as their maturities are different, a conversion factor is furnished by the exchange and the quantum of bonds to be delivered is determined on the basis of these conversion factors. The contracts are available for maturity in March, June, September, and December of the year, and the settlement date for each of these maturities is the last Wednesday of the respective month.

Let us look at the special features of bond futures with an example. The 10 years Euro Bond Futures in the Frankfurt exchange has a notional yield of 6%, which means that when the 10 years futures interest rate is perceived to be at 6% by the market players, the yield will correspond to 6%, the notional rate. As the expectations in the movement of interest rate for 10 years change, the futures price will also change. If the expected interest rate is above 6%, the futures price will fall below 100 and if the interest rate is perceived to be below 6%, the futures price moves upwards above 100. The minimum price movement is 0.01% or 0.0001, and for each tick movement in price the profit or loss for the futures position holder is Euro 10 as the contract size is Euro 100 000 per contract. A treasury manager who wishes to hedge his Euro bond portfolio against price risk would sell bond futures for, if the interest rate goes higher, the futures price would fall and he would make a profit on the futures position. However, his cash position would suffer a loss if the interest rate goes up, because then the price would fall. In case of physical delivery on the maturity of the contract, the person having an open sold position in the futures is at liberty to deliver any bond from out of the basket of deliverable bonds determined by the exchange, and the buyer is obliged to accept delivery of the same. The seller would, therefore, try to deliver the cheapest bond from the basket. The cheapest to deliver is worked out on the basis of the demand for the bonds in the deliverable basket of the Repo markets. The bond which has the highest implied repo rate will be the cheapest to deliver; the reason being this bond with the highest repo rate becomes unattractive to be used in the repo transactions as the interest cost for borrowing money through repurchase agreement using this bond is high. Hence, the bond with the least implied repo rate, will be the most sought after bond in the basket as the holder can repo this bond and borrow money at a very cheap rate.

11.5.4 Stock Index Futures

Stock index futures offer a convenient hedging mechanism to holders of stocks. When we trade in stock index futures, we take a view on what direction the stock index would move in the future. As the index futures are based on the movements of a mere number, viz., the stock index, there is no physical delivery of the underlying under the contract. The contract is always cash-settled.

In India, two stock index futures, viz., the Bombay Stock Exchange Futures based on Sensex Index and the National Stock Exchange Futures based on Nifty (the stock index of 50 securities of NSE) are available. Both these contracts were introduced from June 2000. Let us briefly discuss the features of the Nifty futures. The Nifty futures have a standard lot size of 100, and the contract value is the product of the Nifty and contract size, viz., 100. Three contracts are available at a time. They are the immediate month, next month, and the third month maturities. The contracts come to a close on the last Thursdays of the respective months.

In order to hedge a portfolio of stocks using Nifty Futures, one has to determine the exact number of contracts to be sold. At the outset, we must know the Beta of our portfolio. The number of lots of futures to sell is then equal to:

$$\frac{\text{Portfolio Size} \times \text{Beta}}{\text{Ongoing Futures Price} \times 100 \text{ (the standard size)}}$$

(Beta is the ratio of the change in a portfolio's return or an individual stock's return to the return of the market as a whole) Let us say, we have acquired ₹25,00,000 worth of shares of a blue chip company on 1 April 2017. Let the beta of the shares be 1.5. We would like to protect or hedge this portfolio for, say, a month. We have to, obviously, sell the April futures at the ongoing price in order to hedge the underlying.

$$\text{No. of lots to be sold} = \frac{25,00,000 \times 1.5}{1020 \times 100 \text{ (the standard size of Nifty futures)}} \\ \text{(1020 is the current April Nifty futures Price)} \\ = 36.76 \text{ or "37" lots}$$

The 37 lots are sold to hedge the portfolio, and if the futures settle at a lower level on the target date, the profit on futures will take care of the loss on the underlying portfolio on account of the decline in prices. Let us say, by the last Thursday of the month of April, the futures settle at 980, the profit on closing out the futures position is $= (1020 - 980) \times 100 \times 37 = ₹1,48,000$.

Let us say the underlying stock has also depreciated in value, and our holdings are reduced to a value of ₹23,60,000. The loss on the underlying cash position is, therefore, ₹1,40,000 (2500000 – 236000). The net profit is thus, ₹8000 (148000 – 140000). The portfolio is hedged, and a small profit on futures is also made. Recently futures on individual stocks have also been introduced in the Indian markets.

11.5.5 Pricing Financial Futures

The price of any futures contract has three essential components. These are:

- (a) the spot price of the underlying asset.
- (b) the cost of financing, storing, insuring and transporting the asset.
- (c) the income if any, earned from the asset.

Taking all these three factors into account futures price will be equal to the spot price + financing, and other costs – income if any.

$$F.P = S.P + \text{Costs} - \text{Income.}$$

In the case of commodity futures, all the four costs mentioned at (b) above are applicable, whereas, in the case of financial futures, perhaps, only the financing cost is material. Therefore, for financial futures, it is the interest rate (financing cost) which determines the futures price. This is very similar to pricing a simple forward contract.

$$\text{Futures Price} = \text{Spot Price} \times (1 + r)^t$$

Where r is the rate of interest, and t is the time period of the contract.

If one were to use continuous compounding, the above formula will stand modified to,

$$\text{Futures Price} = \text{Spot Price} \times e^{r \cdot t}$$

(where e is the exponential)

The futures price for all practical purposes, would be equal to forward price. However, when interest rates increase, the price of the underlying also increases giving an advantage to the holder, and the financing cost also goes higher. On the contrary, if the interest rates go lower, the underlying asset depreciates in value and results in a loss to the holder, and the cost of financing for holding the asset also becomes lower. Thus, there has to be a correlation between the movement of price of the underlying and the movement of the financing cost. This is not true of forward contracts, where the two counter-parties are locked to the pre-agreed forward price. However, it must be noted that the futures price and future spot price will tend to converge near the maturity of the contract.

11.6 FORWARD CONTRACT

A forward foreign exchange transaction is one which is executed today at a rate agreed today, but settlement takes place at an agreed future time. The outright Forward Rate is calculated as a combination of spot exchange rate and interest rates over a period of time in the future.

As an example, consider an importer who has to make a USD payment 6 months from now. Thus, he would have to buy USD exactly 6 months from now. However, he is not sure what the USD/INR rate would be. Hence, he enters into a contract to buy USD after 6 months at a pre-determined rate. Thus, a forward contract is an agreement where 2 parties agree to specified trade at a specified point in future.

In a forwards contract:

The contract is negotiated directly by the buyer and seller. It is an OTC (over the counter) agreement.

Terms of the contract can be tailored to suit the needs of each party. No money changes hands when a contract is first negotiated and it is settled at maturity.

Neither party can walk away unilaterally from the contract, i.e., both parties are obliged to fill their contractual terms.

Customers who are not very sure of the exact date of delivery of foreign exchange (purchase/sale) can seek optional deliverable period as the maturity. It can be first week of a month, first fortnight of a month, or any day in a month, and so on. Accordingly, the bank will pass on the forward premium up to the earliest optional delivery period for Forward Purchase Contracts and charge premium up to the last optional delivery period for Forward Sales Contracts. If foreign exchange is delivered or taken delivery of, earlier than the maturity date, customer will have to bear early delivery charges. A Forward Exchange Contract will be cancelled by the Bank on the seventh day after maturity if actual delivery does not happen, and the cancellation charges are to be borne by the customer.

All forward contract bookings must be with genuine underlying, in the form of a firm order, LC, bill, etc. Forward contracts booked with genuine underlying are freely cancellable and rebooked, and the exchange gains can be passed on to the customer. Customers with large trading volumes are permitted to book forward contracts up to a limit, on past performance basis, without underlying at the time of booking. Such entities can freely book and cancel forward contracts up to 75% of their turnover and Banks can pass on the profits on cancellation too. However, for contracts cancelled beyond 75% of turnover, the profits cannot be passed on to the customer.

With a view to bypass local foreign exchange restrictions, and yet take a bet on Rupee movement against foreign currency, foreign entities trade in NON DELIVERABLE FORWARDS (NDF). The NDF market is active in overseas markets like Singapore, Hong Kong and Dubai and are cash settled on expiry date. Actual physical delivery of currency does not happen. The difference between contracted price and cash price on expiry date is net settled. Parties resident outside the home country (to avoid regulatory purview of the home currency country) enter into NDF contracts and net settlement, for say, USD/INR NDFs will not be in INR, but a convertible currency, say USD.

11.7 FORWARD RATE AGREEMENT (FRA)

Introduction

An FRA is a forward contract on the interest rate. It is a financial contract to exchange interest payments based on a fixed interest rate with payments based on floating interest rate like 6m LIBOR/ 3 m MIBOR. The exchange of payments is based on a notional principal of the FRA. Thus, there are 2 legs in an FRA – the fixed leg and the floating leg.

Consider a company which has an expected requirement for funds after 3 months. It is concerned that the interest rates will head higher from the current levels, and hence it may have to pay higher interest rate on the loan. The company can enter into an FRA, where it pays fixed interest rate to hedge or fix its borrowing cost today for a requirement after 3 months. The fixed rate agreed via the FRA will be compared to the benchmark rate at the settlement date to determine the settlement amount.

If a corporate borrowed for a period of 3 months, 3 months from now, it is referred to as a 3×6 FRA, meaning beginning THREE months from now and ending SIX months from now. If the corporate buys a FRA, then it pays a particular fixed rate and receives a floating rate, hence, it hedges against any rise in the interest rates. If a corporate sells a FRA, then it receives a particular fixed rate and pays a floating rate; hence, it hedges against any fall in the interest rates.

Consider the following example of a FRA. A corporate sells an FRA on the following terms:

Notional principal: INR 250 Million (INR 25 cr.)

Corporate to receive: 5.60% fixed

Corporate to pay: 3 month NSE MIBOR

Term of FRA: 3×6

Tenor of FRA: 90 days

On the settlement date, the 3 month NSE MIBOR is 6.00%.

In this case, the corporate will have to pay

$$(6.00\% - 5.60\%) \times 25,00,00,000/- \times 90/365 = ₹2,46,575.34$$

This amount is settled upfront at the beginning of the FRA period, discounted at the benchmark rate.

Example

A Forward Rate Agreement is a contract between two parties, by which they agree to settle between them the interest differential on a notional principal on a future settlement date for a specified future period.

Let us assume that a corporate wants to borrow a sum of ₹1 crore for a period of 6 months, starting 3 months from today. Its main concern is that the 6 months interest rate may rise in 3 months time, and hence it wants to lock in a rate right today for a future borrowing commitment. It enters into a 3×9 FRA with a counter party for a notional amount of ₹1 crore. If the counterparty quotes, say, 6.25/6.50 for a 3×9 FRA, the corporate buys the FRA at 6.50 which effectively means that it is locking itself for 6.5% for the above borrowing commitment. If on the date of settlement, which is the date 3 months from today when the borrowing commitment has to be met, the benchmark rate agreed to by the counterparties settle, say, at 7.00%, the corporate's view on the interest rate has come true and it is paid by the seller of FRA the difference of 0.50% ($7 - 6.5$) on the notional principal for a period of 6 months discounted at 7%. The amount receivable by the corporate is calculated as under:

$$\frac{10000000 \times 0.50 \times 0.50}{36500} \times \frac{1}{(1 + 0.07 \times 181/365)}$$

On the other hand, if the benchmark interest rate settles at, say, 6.25% on the settlement date, the corporate pays the seller of FRA the difference of 0.25% ($6.5 - 6.25$) on the notional principal of ₹1 crore discounted at 6.25%. Thus in both the cases (whether the interest rate rises or falls) the corporate's effective borrowing rate remains unchanged at 6.5%.

11.7.1 Market Conventions of FRAs

The principal amount is only notional. There is no commitment on either of the counterparties to either lend or borrow this amount.

The convention in FRA markets is to denote the FRA as 3×6 , 6×9 etc. A 6×9 FRA means seeking protection for a 3 months borrowing or lending commitment, starting 6 months from today and ending 9 months from today. A 9×12 FRA means seeking protection for a 3 months borrowing or lending commitment starting 9 months from today and ending 12 months from today and so on so forth.

Prices are quoted two ways in the market for FRAs. Obviously, the customer buys at the higher of the two rates, and sells at the lower rate.

The benchmark interest rate is a reference rate, basically a floating rate like T Bill rate, Libor, etc., to compare the FRA rate on the settlement day, and to enable the settlement of difference in rates on the notional principal.

The discounting of the amount to be settled is due to the fact that the difference of interest is settled at the beginning of a borrowing or lending commitment, whereas normally interest is payable on maturity of a loan.

Borrowers at a future point of time buy the FRA to lock themselves at a fixed rate, whereas lenders sell FRA to lock in a fixed return on their future lending.

11.7.2 Pricing a Forward Rate Agreement

Let us price a 3×12 FRA when the market rates for various months are as follows:

$$1 \text{ m} = 6.00/6.25\%$$

$$2 \text{ m} = 6.50/6.75\%$$

$$3 \text{ m} = 7.00/7.30\%$$

$$6 \text{ m} = 7.50/7.80\%$$

$$9 \text{ m} = 8.00/8.30\%$$

$$12 \text{ m} = 8.50/8.75\%$$

A 3×12 FRA is equivalent to a commitment to either lend or borrow a sum of money for a period of 9 months starting 3 months from today and ending 12 months from today.

Given the above yield curve, if we have to lend money for 9m starting 3m from today, initially we have to borrow the money for 12m and invest it for 3m. On completion of 3m, the investment will mature and we can again lend it for 9m.

We can borrow money for 12m from the market at 8.75%, and the repayment amount after 12 months will be $(1 + 0.0875)$. The amount, thus, borrowed can be invested for 3m at 7%, and this investment on maturity can be invested at some unknown forward rate, for 9m say ‘r’. The compounded value of these two cash flows will be $(1 + 0.07 \times 91/365) * (1 + r \times 271/365)$.

The above two cash flows should be equal for us to break, even in terms of interest cost.

Therefore, $(1 + 0.0875) = (1 + 0.07 \times 91/365) * (1 + r \times 271/365)$. From the preceding equation, the value of ‘r’ can be easily calculated, ($r = 9.27\%$). Similarly, if we borrow money for 3m at 7.30%, and renew this borrowing for 9m at the end of 3 months (the interest rate for such a forward borrowing needs to be calculated), and we lend the money at one go for 12m at 8.50%, the following equation will be true:

$$(1 + 0.0850) = (1 + 0.0730 \times 91/365) \times (1 + r \times 271/365) \text{ from which 'r' can be calculated.}$$

Here, $r = 8.84\%$.

These two rates 8.84% and 9.27% serve as the base rates for us to price the FRA.

An FRA is a simple forward contract on interest rate, where the performance is limited to the interest differential on a given notional principal. Hence, it is easy to understand its mechanism, implications, and settlement calculations.

As FRAs are OTC contracts, it is easy to customise the size, and periods to suit the needs of the customer.

Further, as the commitment is only to settle the interest differential, the credit risk with the counter party is minimal.

FRAs can be used effectively to lock in interest rates and, thus, manage the gaps between rate sensitive assets and liabilities of the balance sheet. Thus, they are very useful in Asset Liability Management as they can easily replicate cash market transactions with a lower capital requirement, and can also improve the liquidity of the underlying cash markets.

FRAs do not enjoy very liquid markets. At times, it may become difficult to dispose of an FRA in the market at competitive prices. This is very true in shallow markets, as the ones prevailing in India. Cancellation of an FRA too would be difficult in the absence of a ready market.

The pricing of an FRA has to be done in tune with the market determined Yield Curve, otherwise imperfections in pricing would lead to financial loss.

The credit risk in an FRA may be restricted to the interest differential on the notional principal, yet the default risk of the counter party not paying the difference is very much present.

Salient Points

1. Forward Rate Agreements, Financial Futures, and Interest Rate Swaps are linear derivatives, whereas, Options are nonlinear.
2. Forward Rate Agreements are over the counter type derivatives which are used to hedge short term interest rate risk.
3. A Forward Rate Agreement is a contract between two parties by which they agree to settle between them, the interest differential on a notional principal on a future settlement date for a specified future period.
4. A person who has a commitment to borrow money at a future point of time buys a Forward Rate Agreement to protect himself against interest rate risk, and a person who has a commitment to lend money at a future point of time sells a Forward Rate Agreement to hedge his interest rate exposure.

Let Us Sum Up

A derivative will enable an investor to take a chance on the possibility of a price rise or fall even without the initial investment. Derivative is thus an instrument whose value depends on the values of other more basic underlying variables. Derivatives are effective risk management tools. Hedgers, traders and speculators use derivatives for different purposes. Futures contract is an agreement to buy or sell an asset for a certain price at a certain time. Forwards are OTC products whereas Futures are Exchange traded. Currency futures were first introduced in International Money Market, Chicago, USA in 1972. There are also Bond futures and Stock index futures. An FRA is a forward contract on the interest rate. The pricing of an FRA is based on the principle of borrowing and lending for appropriate periods at market rates and recovering the difference from the FRA counter party.

Keywords

Derivatives, leverage, Futures, OTC market, Currency futures, Bond futures, Stock index futures, Forward contract, Forward Rate Agreement and notional principal amount.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Derivatives which have no value by themselves, derive the value from what?
 - (a) Underlying instrument
 - (b) Market counter parties
 - (c) Mutual agreement
 - (d) Approval from Regulator
2. Who are the third group of users of derivatives apart from hedgers and traders?
 - (a) Business people
 - (b) Speculators
 - (c) Banks
 - (d) Corporates
3. Forward contracts are used to hedge which of the following risk?
 - (a) Reputational risk
 - (b) Legal risk
 - (c) Exchange rate risk
 - (d) Operational risk
4. Which risk is hedged by the use of Forward Rate Agreements (FRAs)?
 - (a) Credit risk
 - (b) Settlement risk
 - (c) Compliance risk
 - (d) Interest rate risk

Answers

1. (a) 2. (b) 3. (c) 4. (d)



SWAP

STRUCTURE

- 12.0** Objective
- 12.1** Introduction
- 12.2** Pricing an Interest Rate SWAP
- 12.3** Types of Interest Rate SWAPS
- 12.4** Salient Features of RBI Guidelines on IRS

Let Us Sum Up

Check Your Progress

12.0 OBJECTIVE

The objective is to provide the reader with basic information on swaps like Interest rate swap, Currency swap, Basis swap, Overnight Index Swap (OIS), etc. Types of Interest Rate Swaps and pricing interest rate swaps have also been discussed. The section ends with salient features of RBI guidelines on IRS.

12.1 INTRODUCTION

A swap in simple terms can be explained as a transaction to exchange one thing for another or ‘barter’. In financial markets the two parties to swap a transaction contract exchange cash flows. An interest rate swap is a custom tailored bilateral agreement in which cash flows are determined by applying a prearranged formula on a notional principal, whereas in a currency swap, physical exchange of one currency against another takes place at pre-determined prices.

Interest Rate Swap: where cash flows at a fixed rate of interest are exchanged for those referenced to a floating rate. Interest Rate Swaps involving exchange of interest payments linked/referenced to two floating rates are also used/available in the market.

Currency Swap: where one currency is exchanged for another currency at pre agreed prices.

Basis Swaps: where cash flows on both the legs of the swap are referenced to different floating rates.

Interest Rate Swap: is a contractual agreement to exchange a series of cash flows. One leg of cash flow is based on a fixed interest rate, and the other leg is based on a floating interest rate over a period of time. There is no exchange of principal. The size of the swap is referred to as the notional principal amount, and is the basis for calculating the cash flows. Example of such swaps in the Indian market are:

Overnight Index Swaps (OIS) – Fixed v/s NSE Overnight MIBOR Index

Mumbai Inter-bank Forward Offer Rate (MIFOR) Swap – Fixed V/s Implied INR yield is derived from the USD/INR premium and the relevant USD Libor for that tenor, usually 6 months. MIFOR is permitted between Banks only and cannot be used with customers as counterparties.

INBMK Swap – Fixed v/s 1 year INBMK rate

The 1 year INBMK rate is derived from the rate on the benchmark Indian Government of India securities of one year tenor.

A **currency swap** is conceptually similar to an interest rate swap. The main differences are:

- Each interest rate is in a different currency.
- The notional amount is now replaced by two principal amounts – one in each currency.
- These principal amounts are typically exchanged at the start of the swap, and then re-exchanged at maturity.

The major difference between a generic interest rate swap (IRS) and a generic currency swap (CCIRS) is that the latter includes not only the exchange of interest rate payments, but also the exchange of principal amounts both initially and on termination. Since the payments made by both parties are in different currencies, the payments need not be netted.

The different kinds of currency swaps are as follows:

- Principal + Interest Swap – Covers both Principal and Coupon flows
- Principal Only Swap (POS) – Covers only Principal amount
- Coupon (Interest) Only Swap – Covers only Coupon flows

A Basis swap could be an Interest Rate Swap or a currency swap where both legs are based on a floating rate. A basis swap involves a regular exchange of cash flows, both of which are based on floating interest rates. Most swaps are based on payment of a fixed rate against a floating rate, say, LIBOR. In the basis swap both legs are calculated on floating rates.

6 months USD LIBOR against 3 months USD LIBOR

6 months JPY LIBOR against 6 months USD LIBOR

6 months MIFOR against 6 Months USD LIBOR

A Basis Swap is most commonly used when:

- Liabilities are tied to one floating rate index and
- Financial assets are tied to another floating index

This mismatch can be hedged via a basis swap:

- To create either synthetic fixed or floating rate liabilities or assets.
- To hedge against adverse movements.
- As an asset liability management tool.
- To reduce the funding cost by exploiting the comparative advantage that each counterparty has in the fixed/floating rate markets.

For trading:

In the Indian market, banks are allowed to run a book on swaps, which have an Indian Rupee leg. Banks can offer swaps, which do not have an Indian Rupee leg, to their customers, but have to cover these with an overseas bank on a back-to-back basis.

12.2 PRICING AN INTEREST RATE SWAP

An interest rate swap is simply an exchange of a fixed rate cash flow for a floating rate cash flow or vice versa, on the agreed Notional Principal amount. Hence, the first step in pricing an IRS consists in finding the present values of these two cash flows. The net present value of the cash flows of these two should be equal to start with. It is easy to compute the present value of the fixed rate leg as risk free zero rates for various maturities are easily available from, say, government securities yield curve. It is not so easy to compute the present value of floating leg payments, as one does not know what the rates are likely to be in future. Hence using the zero rates, an implied forward yield curve is

developed, and these rates are used to discount the floating leg payments. The present values of fixed and floating legs, thus, obtained are equated, and the rate that makes them equal is computed. This rate will be base rate for pricing the swap on which markup may be made to offer it to the market. A brief note on computation of zero or spot yields, and the implied forward yields is furnished here for ready reference. (The Yield to Maturity or YTM has a drawback in that it assumes that future cash flows will be invested at the same rate 'y' – the YTM itself, which is a wrong assumption for no one knows what the interest rates are likely to be in future).

If we are able to eliminate the intermediary cash flows by some means, then there will be no reinvestment risk and, hence, the assumption of same rate for future periods can also be done away with. This may be achieved by arriving at the Zero rates (also known as Spot Rate) by a mathematical process known as Boot Strapping. This process eliminates intermediary cash flows and, hence, the wrong assumption of the same rate for reinvestment as well.

12.2.1 Example of an Overnight Index Swap

Let us say, Paradise Bank has entered into an OIS on a notional principal of ₹10 crores, and has agreed to receive Mibor overnight floating rate for a fixed payment of 8% on the notional principal. The swap was entered into on 1 April 2002, and was to commence on 2 April 2002 and run for a period of 7 days. The amount payable by Paradise Bank on the floating rate will be calculated on the notional principal every day at the respective Mibor rate, and will be compounded on a daily basis as shown below (Please note the rate for Saturday and Sunday are the same, as the market is closed on Sundays). The fixed leg interest payment is worked in the normal way for 7 days at 8%, and the difference between the two is the amount Paradise Bank has to pay or receive on maturity. It may be noted that the interest payments are not exchanged on a daily basis, but are exchanged only on maturity.

Sr. No.	Dates	Notional Principal	Mibor	ACCINT
1.	2.4.2013 (Tue)	10,00,00,000	7.75%	21232
2.	3.4.2013 (Wed)	10,00,21,232	8.15%	22333
3.	4.4.2013 (Thu)	10,00,43,565	8.12%	22256
4.	5.4.2013 (Fri)	10,00,66,0421	7.95%	21795
5.	6.4.2013 (Sat)			
6.	7.4.2013 (Sun)	10,00,87,836	7.98%	43764
7.	8.4.2013 (Mon)	10,01,31,600	8.15%	22358

Interest on fixed LEG = $10\text{CR} \times 0.08 \times 7/365 = 153424$

Paradise Bank to receive $153738 - 153424 = \text{INR } 314$ (net)

12.3 TYPES OF INTEREST RATE SWAPS

1. A Plain Vanilla Swap: This is the simplest form of Interest rate swaps, where a fixed rate is exchanged for a floating rate or vice versa on a given notional principal at pre-agreed intervals during the life of the contract.
2. A Basis Swap: In a floating to floating swap, it is possible to exchange the floating rates based on different benchmark rates. For example, we may agree to exchange 3m Mibor for 91 days T Bills rate. Such a swap is called a Basis Swap.
3. An Amortizing swap: As the name suggests, swaps that provide for reduction in notional principal amount corresponding to the amortization of a loan, are called amortizing swaps.
4. Step-up Swap: This is the opposite of an amortizing swap. In this variety the notional principal increases as per a pre-agreed schedule.
5. Extendable Swap: When one of the counter parties has the right to extend the maturity of the swap beyond its original life, the swap is said to be an extendable swap.
6. Delayed start swaps/Deferred swaps/Forward swaps: When it is agreed between the counter parties that the swap will come into effect on a future date, it is termed as a delayed start swap or deferred swap or a forward swap.
7. Differential Swaps: Interest rate swaps which are structured in such a way that one leg of the swap provides for payment of interest at a rate pertaining to a currency other than the currency of the underlying principal amount. The other leg provides for payment of interest at the rate and currency of the underlying principal. For example, a corporate can choose to enter into a differential swap by which it can bind itself to pay 3m USD Libor on a principal of ₹100 crores, and receive 12% fixed in the Indian currency. The interest on both the legs will be computed on the notional principal of ₹100 crores. The swap is thus a combination of currency and plain interest rate swaps. There is no currency risk in this arrangement.

12.4 SALIENT FEATURES OF RBI GUIDELINES ON IRS

1. Scheduled commercial banks (excluding Regional Rural Banks), Primary Dealers, and all India Financial Institutions are free to undertake IRS as a product for their own balance sheet management and for market making.
2. They may also offer these products to corporates for hedging their own balance sheet exposures.
3. Participants should ensure adequate infrastructure, and risk management systems before venturing into market making activities.
4. The Bench Mark rate should necessarily evolve on its own in the market and require market acceptance.
5. The parties are free to use any domestic money or debt market rate as benchmark rate provided the methodology of computing the rate is objective, transparent, and mutually acceptable.
6. There is no restriction on the minimum or maximum size of notional principal amounts. Size norms are to emerge in the market with the development of the market.
7. There is no restriction on the tenor.
8. Banks, Financial Institutions, and Primary Dealers are required to maintain capital for FRAs and IRS.

9. Transactions for hedging and market making purposes should be recorded separately. Positions on account of market making activities should be marked to market at least at fortnightly intervals. Transactions entered into for hedging purposes should be accounted for on accrual basis.
10. Participants can consider using ISDA standard documentation with suitable modifications for transactions in FRAs and IRS.
11. Participants are required to report their operations in FRAs and IRS on a fortnightly basis to Monetary Policy Department of RBI.
12. Capital adequacy for banks and financial institutions for undertaking FRAs and IRS transactions shall be calculated as follows:

All new INR Mumbai Inter Bank Offer Rate (MIBOR) – Overnight Index Swap (OIS) contracts executed from April 1, 2013 onwards are standardized in terms of minimum notional principal amount, tenors, trading hours, settlement calculations, etc.

The notional principal will be multiplied by a conversion factor as per the table below:

For original maturities less than a year 0.5%

For original maturities one year and less than two years 1.00%

For each additional year 1.00%

The product thus obtained shall be assigned risk weightage at 20% for banks and financial institutions and at 100% for others (except governments).

On the resultant sum, the required capital adequacy of 9% will have to be maintained.

13. All Interest Rate Swaps should be marked to market for disclosure in financial statements. If used as a hedge, it must be stated so at the time of initiating the swap and its tenor should not exceed that of the underlying. It must be subjected to validation of hedge effectiveness but need not be marked to market. If a hedge swap becomes naked (when the underlying no longer exists in the books), it must be treated as a trading swap.

Salient Points

1. An interest rate swap can be construed as a series of FRAs.
2. The notional principal is not exchanged between the counterparties in an FRA and IRS.
3. An Interest Rate Swap is a contract between two parties, whereby, they agree to exchange a stream of interest payments on a notional principal for a given period at pre-agreed intervals of time.
4. Buying an IRS means choosing to pay Fixed and receive Floating.
5. Prices of IRS are quoted in terms of the fixed leg.
6. Pricing of IRS is based on the present value of fixed rate cash flows, and floating rate cash flows.

Let Us Sum Up

In financial markets, the two parties to a swap transaction contract to exchange cash flows. The different types of swaps include Principal + Interest swap, Principal only swaps (POS), Coupon

only swap (COS). OIS is a popular swap. Plain vanilla swap, Basis swap, Amortizing swap, Step-up swap, Extendable swap, Delayed start swap, Differential swap are examples of interest rate swaps. The guidelines of RBI on IRS/FRA include fortnightly reporting to RBI, use of ISDA by market participants and guidelines for capital adequacy requirements.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is a currency swap?
 - (a) Exchange of one currency for another currency at pre-agreed prices.
 - (b) Exchange of ISDA between two counterparties.
 - (c) Exchange of information on fake currencies between two countries.
 - (d) Purchase of one currency and sale of another currency with a lag.
2. What is a basis swap?
 - (a) Exchange of periodical interest payments under a pre-determined mechanism.
 - (b) Where cash flows on both the legs of the swap are referenced to different floating rates.
 - (c) Where cash flows on both the legs of the swap are referenced to LIBOR.
 - (d) Where cash flows on both the legs of the swap are based on financial soundness of counterparties.
3. What is the only limitation of MIFOR?
 - (a) It is not normally allowed by RBI.
 - (b) It is the only swap with no exchange of cash flows.
 - (c) MIFOR is permitted between banks only.
 - (d) MIFOR is permitted between customers only.
4. What is the essential principle under ‘amortization swaps’?
 - (a) Exchange of cash flows takes place after the maturity period of swap.
 - (b) The formula for exchange can be altered during the life of swap.
 - (c) No exchange of cash flows is involved.
 - (d) Provides for reduction in notional principal amount corresponding to the amortization of a loan.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
13**

OPTIONS

STRUCTURE

13.1 Introduction

Let Us Sum Up

Keywords

Check Your Progress

13.1 INTRODUCTION

An option is a contract, which gives the buyer (holder) the right, but not the obligation, to buy or sell specified quantity of the underlying assets, at a specific (strike) price on or before a specified time (expiration date). The underlying may be physical commodities, like wheat/rice/cotton/gold/oil or financial instruments like equity stocks/stock index/bonds, etc. Option buyer gets the privilege to legally back out from a contract.

13.1.1 Important Terminology

Underlying: The specific security/asset/index on which an options contract is based.

Option Premium: Premium is the price paid by the buyer to the seller to acquire the right to buy or sell.

Strike Price or Exercise Price: The strike or exercise price of an option is the specified/pre-determined price of the underlying asset, at which the same can be bought or sold if the option buyer exercises his right to buy/sell on or before the expiration day. The buyer of the Option can choose the Strike Price he wants, according to which the premium will change.

Expiration date: The date on which the option expires is known as Expiration date. On Expiration date, either the option is exercised, or it expires worthless.

Exercise Date: is the date on which the option is actually exercised. In case of European Options, the exercise date is same as the expiration date while in case of American options, the options contract may be exercised any day between the purchase of the contract and its expiration date (see European/American Option).

Open Interest: The total number of options contracts outstanding in the market at any given point of time.

Option Holder: is the one who buys an option which can be a call or a put option. He enjoys the right to buy or sell the underlying asset at a specified price, on or before specified time. His upside potential is unlimited, while losses are limited to the Premium paid by him to the option writer. He has a LONG position in the option.

Option seller/writer: is the one who is obligated to buy from the option holder (in case of put option) or to sell to the option holder (in case of call option), the underlying asset in case the buyer of the option decides to exercise his option. His profits are limited to the premium received from the buyer, while his downside is unlimited. He has a SHORT position in the option.

Option Class: All listed options of a particular type (i.e., call or put) on a particular underlying instrument, e.g., all Sensex Call Options, (or) all Sensex Put Options.

Option Series: An option series consists of all the options of a given class with the same expiration date and strike price.

E.g., BSXCMAY3600 is an options series, which includes all Sensex Call options that are traded with Strike Price of 3600, and expiry in May.

(BSX Stands for BSE Sensex (underlying index), C is for Call Option, May is the expiry date, and strike Price is 3600).

13.1.2 European & American Style of Options

An American style option is the one, which can be exercised by the buyer on or before the expiration date, i.e. anytime between the day of purchase of the option and the day of its expiry. The European kind of option is the one, which can be exercised by the buyer on the expiration day only, and not any time before that.

13.1.3 Call Options

A call option gives the holder (buyer/one who is long call); the right to buy specified quantity of the underlying asset at the strike price, on or before expiration date. The seller or writer of the option (one who is short call), however, has the obligation to sell the underlying asset, if the buyer of the call option decides to exercise his option to buy.

Example: An investor buys one European call option on Infosys at the strike price of ₹3500 paying a premium of ₹100. If the market price of Infosys on the day of expiry is more than ₹3500, the option will be exercised. The buyer of the option will earn profits once the share price crosses ₹3600 (Strike Price + Premium, i.e., 3500 + 100). Suppose stock price is ₹3800, the option will be exercised and the investor will buy 1 share of Infosys from the seller of the option at ₹3500 and sell it in the market at ₹3800, making a profit of ₹200 {(Spot price – Strike price) – Premium}.

In another scenario, if at the time of expiry, stock price falls below ₹3500, say, suppose it touches ₹3000, the buyer of the call option will choose not to exercise his option. In this case, the buyer of the option loses the premium (₹100) paid, which shall be the revenue earned by the seller (Writer of the option) of the call option.

13.1.4 Put Options

A Put option gives the holder (buyer/one who is long Put), the right to sell specified quantity of the underlying asset at the strike price on or before expiry date. The seller of the put option (one who is short Put), however, has the obligation to buy the underlying asset at the strike price, if the buyer decides to exercise his option to sell. Example: An investor buys one European Put option on Reliance at the strike price of ₹300 and pays a premium of ₹25. If the market price of Reliance, on the day of expiry is less than ₹300, the option can be exercised as it is, ‘in the money’. The investor’s Breakeven point is ₹275 (Strike Price – premium paid), i.e., investor will earn profits if the market falls below 275. Suppose stock price is ₹260, the buyer of the Put option immediately buys Reliance share in the market at ₹260 and exercises his option of selling the Reliance share at ₹300 to the option writer, thus, making a net profit of ₹15 {(Strike price – Spot Price) – Premium paid}.

In another scenario, if at the time of expiry, market price of Reliance is ₹320, the buyer of the Put option will choose not to exercise his option to sell as he can sell in the market at a higher rate.

In this case the investor loses the premium paid (i.e., ₹25), which shall be the revenue earned by the seller of the Put option.

	Call Options	Put Options
Option buyer or option holder	Buys the right to buy the underlying asset at the specified price.	Buys the right to sell the underlying asset at the specified price.
Option seller or option writer	Has the obligation to sell the underlying asset (to the option holder) at the specified price.	Has the obligation to buy the underlying asset (from the option holder) at the specified price.

The significant differences in Futures and Options are as under:

Futures are agreements/contracts to buy or sell specified quantity of the underlying assets at a price agreed upon by the buyer and seller, on or before a specified time. Both the buyer and seller are obligated to buy/sell the underlying asset. In case of options the buyer enjoys the right, and not the obligation, to buy or sell the underlying asset.

Futures Contracts have symmetric risk profile for both the buyer as well as the seller, whereas options have asymmetric risk profile. In case of Options, for a buyer (or holder of the option), the downside is limited to the premium (option price) he has paid, while the profits may be unlimited. For a seller or writer of an option, however, the downside is unlimited while profits are limited to the premium he has received from the buyer.

The Futures contracts prices are affected mainly by the prices of the underlying asset. The prices of options are, however, affected by prices of the underlying asset, time remaining for expiry of the contract, and volatility of the underlying asset.

It costs nothing to enter into a futures contract, whereas there is a cost for entering into an options contract, termed as Premium.

‘In the Money’, ‘At the Money’, and ‘Out of the money’ Options.

An option is said to be, ‘at-the-money’, when the option’s strike price is equal to the underlying asset’s cash market price. This is true for both puts and calls. A call option is said to be in-the-money when the strike price of the option is less than the underlying asset’s cash market price. For example, a Sensex call option with strike price of 3900 is, ‘in-the-money’, when the spot Sensex is at 4100, as the call option has value in relation to the current index number. The call holder has the right to buy a Sensex at 3900, no matter how much the spot market price has risen. And with the current price at 4100, a profit can be made by selling Sensex at this higher price.

On the other hand, a call option is out-of-the-money when the strike price is greater than the underlying asset’s cash market price. Using the earlier example of Sensex call option, if the Sensex falls to 3700, the call option no longer has positive exercise value. The call holder will not exercise the option to buy Sensex at 3900 when the current price is at 3700.

A put option is in-the-money when the strike price of the option is greater than the spot price of the underlying asset. For example, a Sensex put at a strike of 4400 is in-the-money when the Sensex is

at 4100. When this is the case, the put option has value, because the put holder can sell the Sensex at 4400, an amount greater than the current Sensex of 4100. Likewise, a put option is out-of-the-money when the strike price is less than the spot price of underlying asset. In the above example, the buyer of Sensex put option won't exercise the option when the spot is at 4800. The put no longer has positive exercise value. Options are said to be deep in-the-money (or deep out-of-the-money), if the exercise price is at significant variance with the underlying asset price.

	Call Options	Put Options
In-the-money	Strike price < Spot price of underlying asset	Strike price > Spot price of underlying asset
At-the-money	Strike price = Spot price of underlying asset	Strike price = Spot price of underlying asset
Out-of-the-money	Strike price > Spot price of underlying asset	Strike price < Spot price of underlying asset

13.1.5 Covered and Naked Calls

A call option position that is covered by an opposite position in the underlying instrument (for example, shares, commodities, etc.), is called a covered call. Writing covered calls involves writing call options, when the shares that might have to be delivered (if option holder exercises his right to buy), are already owned.

Eg. A writer writes a call on Reliance, and at the same time holds shares of Reliance so that if the call is exercised by the buyer, he can deliver the stock.

Covered calls are far less risky than naked calls (where there is no opposite position in the underlying), since the worst that can happen is that the investor is required to sell shares already owned, below their market value on expiration date of the option written by him. When a physical delivery uncovered/naked call is assigned an exercise, the writer will have to purchase the underlying asset to meet his call obligation, and his loss will be the excess of the purchase price over the exercise price of the call reduced by the premium received for writing the call. However, Option writers use delta hedging techniques to limit their downside on exercise of options written by them.

13.1.6 Intrinsic Value of an Option

The intrinsic value of an option is defined as the amount by which an option is in-the-money, or the immediate exercise value of the option when the underlying position is marked-to-market. For a call option: Intrinsic Value = Spot Price – Strike Price, For a put option: Intrinsic Value = Strike Price - Spot Price. The intrinsic value of an option must be a positive number or zero, it can't be negative. For a call option, the strike price must be less than the price of the underlying asset for the call to have an intrinsic value greater than zero. For a put option, the strike price must be greater than the underlying asset price for it to have intrinsic value.

TIME VALUE of an option (Extrinsic) is the premium a rational investor would pay over its current intrinsic value based on the probability the option will increase in value before expiry. Mathematically, Time Value = Option Premium – Intrinsic Value.

Factors that affect the value of an option (premium).

There are two types of factors that affect the value of the option premium:

Quantifiable Factors:

1. underlying stock price,
2. the strike price of the option,
3. the volatility of the underlying stock,
4. the time to expiration, and
5. the risk free interest rate.

Non-Quantifiable Factors:

1. Market participants' varying estimates of the underlying asset's future volatility.
2. Individuals' varying estimates of future performance of the underlying asset, based on fundamental or technical analysis.
3. The effect of supply and demand – both in the options marketplace and in the market for the underlying asset.
4. The 'depth' of the market for that option – the number of transactions and the contract's trading volume on any given day.

13.1.7 Different Pricing Models for Options

The theoretical option pricing models are used by option traders for calculating the fair value of an option on the basis of the earlier mentioned influencing factors. An option pricing model assists the trader in keeping the prices of calls and puts in proper numerical relationship to each other, and helps the trader make bids and offers quickly.

The two most popular option pricing models are:

Black Scholes Model: which assumes that percentage change in the price of underlying follows a normal distribution.

Binomial Model: which assumes that percentage change in price of the underlying follows a binomial distribution.

Options Premium is not fixed by the Exchange. The fair value/theoretical price of an option can be known with the help of pricing models, and then depending on market conditions the price is determined by competitive bids and offers in the trading environment. An option's premium/price is the sum of Intrinsic value and Time Value (explained earlier). If the price of the underlying stock is held constant, the intrinsic value portion of an option premium will remain constant as well. Therefore, any change in the price of the option will be entirely due to a change in the option's time value. The time value component of the option premium can change in response to a change in the volatility of the underlying, the time of expiry, interest rate fluctuations, dividend payments, and to the immediate effect of supply and demand for both the underlying and its option.

Some general postulates on Option pricing are given below.

1. Longer the tenor of the expiry date, higher will be the option premium.
2. Out of the Money options will command lower premium than In The Money contracts.
3. Higher the volatility of the underlying, higher will be the option premium.
4. Interest rate change has least effect on option premium.
5. Option Seller (Writer) is not seller of underlying asset, he is underwriter of price risk on underlying asset.

13.1.8 Option Greeks

The price of an Option depends on certain factors like price and volatility of the underlying, time of expiry, etc. The option Greeks are the tools that measure the sensitivity of the option price to the above mentioned factors. They are often used by professional traders for trading and managing the risk of large positions in options and stocks. These Option Greeks are:

Delta: is the option Greek that measures the estimated change in option premium/price for a change in the price of the underlying.

Gamma: measures the estimated change in the Delta of an option for a change in the price of the underlying.

Vega: measures the estimated change in the option price for a change in the volatility of the underlying.

Theta: measures the estimated change in the option price for a change in the time to option expiry. This is also referred to as “Time Decay”.

Rho: measures the estimated change in the option price for a change in the risk free interest rates.

Players in the Options Market:

Banks, Developmental institutions, Mutual Funds, Domestic and Foreign Institutional Investors, Brokers and Retail Participants are the likely players in the Options Market.

13.1.9 Stock Index Options

The Stock Index Options are options where the underlying asset is a Stock Index for, e.g., Options on S&P 500 Index/Options on BSE Sensex, etc. Index Options were first introduced by Chicago Board of Options Exchange (CBOE) in 1983 on its Index ‘S&P 100’. As different from options on individual stocks, index options give an investor the right to buy or sell the value of an index which represents group of stocks.

Uses of Index Options

Index options enable investors to gain exposure to a broad market, with one trading decision, and frequently with one transaction. To obtain the same level of diversification using individual stocks or individual equity options, numerous decisions and trades would be necessary. Since, broad

exposure can be gained with one trade, transaction cost is also reduced by using Index Options. As the percentage of the underlying value, premiums of index options are usually lower than those of equity options as underlying equity prices are more volatile than the Index.

Index Options are effective enough to appeal to a broad spectrum of users, from conservative investors to more aggressive stock market traders. Individual investors might wish to capitalize on market opinions (bullish, bearish or neutral), by acting on their views of the broad market or one of its many sectors. The more sophisticated market professionals might find the variety of index option contracts as excellent tools for enhancing market timing decisions, and adjusting asset mixes for asset allocation. To a market professional, managing the risk associated with large equity positions may mean using index options to either reduce their risk or to increase market exposure.

13.1.10 Options on Individual stocks

Options contracts where the underlying asset is an equity stock, are termed as Options on stocks. They are mostly American style options cash settled or settled by physical delivery. Prices are normally quoted in terms of the premium per share, although each contract is invariably for a larger number of shares, e.g., 100.

13.1.11 Exotic Options

Derivatives with more complicated payoffs than the standard European or American calls and puts are referred to as Exotic Options. Some of the examples of exotic options are as under:

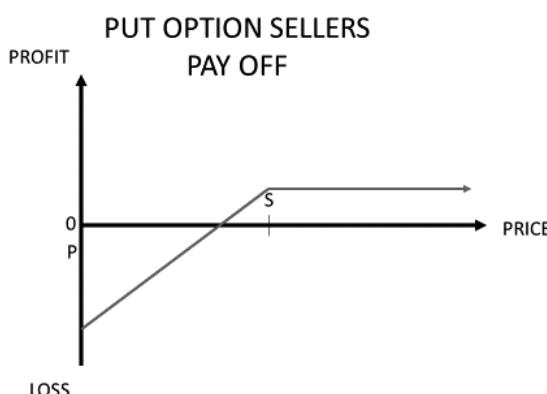
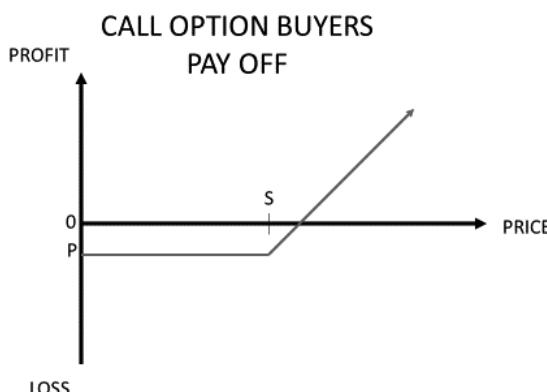
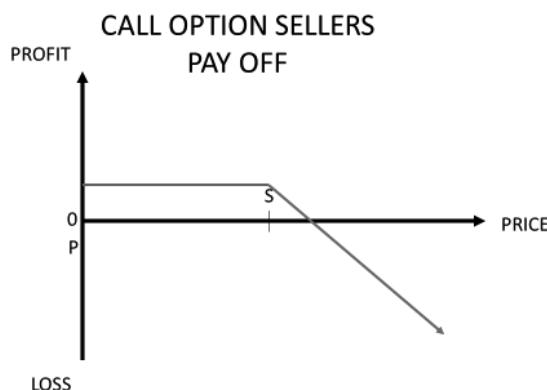
Barrier Options: where the payoff depends on whether the underlying asset's price reaches a certain level during a certain period of time. CAPS traded on CBOE (traded on the S&P 100 and S&P 500) are examples of Barrier Options where the pay-out is capped so that it cannot exceed \$30. A Call CAP is automatically exercised on a day when the index closes more than \$30 above the strike price. A put CAP is automatically exercised on a day when the index closes more than \$30 below the cap level.

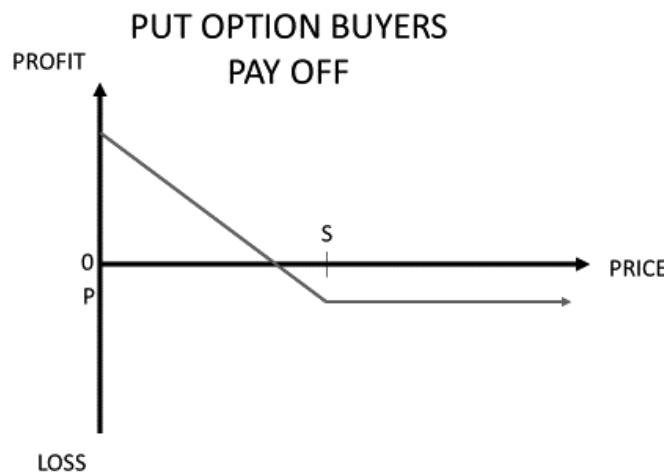
Binary Options: are options with discontinuous payoffs. A simple example would be an option which pays off, if price of an Infosys share ends up above the strike price of, say, ₹4000 and pays off nothing if it ends up below the strike. The option holder is "Knocked Off" at such events. Thus these options are also called Knock off and Knock Ins.

Collars: If a trader is Long Call in a stock at strike price "x" and Short Put in same stock for same expiry at strike price "x+10", the trader ends up buying the stock at x or x+10, irrespective of the price of the stock on expiry date, as either one of the options get exercised. This is called a "Collar".

Straddles: Holding a PUT option and CALL option at same strike price and expiry date on an underlying is a "Straddle". The downside is the premium paid for both the options, while the upside is unlimited, as either one of the options can be exercised. If the stock price is close to the strike price at expiration of the options, the straddle leads to a loss. However, if there is a sufficiently large move in either direction, a significant profit will result. This is useful when the holder anticipates wide swings in the price of the underlying but does not know in which direction the move will be.

Illustratively, Call option on ABC at strike price 60 is purchased paying a premium of ₹4. Put option on ABC at same strike price 60 is purchased paying a premium, say ₹4. The total premium cost to the buyer is ₹8. If stock price on expiry touches 80, he exercises the call option at 60 and books a profit of $80 - 60 - 8 = 12$. If stock price were to close at 25, he exercises the Put option at 60 and books a profit of $60 - 25 - 8 = 27$.





13.1.12 The Buyer and Seller of an Option

The buyer of an Option is normally the one who seeks protection against risk, whereas the seller takes over his risk at a price which is called the Premium on the Option. The option buyer is under no obligation to buy (call) or sell (put) the underlying, whereas the option seller is obliged to sell or buy the underlying depending upon whether it is a call or put respectively sold by him. The buyer of an option enjoys unlimited profit potential during the life of the option, and the maximum loss he incurs is limited to the premium he has paid. The seller of an option has maximum loss potential during the life of the option, and his profit is limited to the premium he has received.

13.1.13 The Option Profiles

Let us now analyze the profit potential of a buyer and seller of a Call Option. Let us say, we have bought a call option on a bond at a strike price of ₹99. The current market price of the bond, say, is ₹99 (at-the-money call). The premium paid for the option is ₹5, and the maturity is 3 months, American Style (meaning thereby, that it can be exercised on any working day within these 3 months). The payoff profile will be dependent on the movement in the price of the bond which is underlying here. As the price of the underlying increases from 99 to, say, 100, 101, 102, 103, etc., we as the buyer of the option would not, in the normal circumstances, exercise this option till the price of the bond reaches a minimum of 104 (our breakeven price), or above as we have paid a premium of ₹5.

The price movement beyond 104 can be to any level, say, even 110 or so, in which case our profit potential is to the extent of the maximum price of the bond reached during this period of three months. On the other hand, if the price falls from 99 to 98, 97, 96, etc. we would not exercise the option because we might as well buy the underlying bond in the market at a lower price than our strike price. Our option in this case, would be of no value and hence we would lose our premium of ₹5. The reverse is true in the case of the seller of this option. His profit potential is limited to ₹5 which he has received as premium, and his loss is to the extent of maximum price of the bond reached during this period of three months.

13.1.14 Value of an Option

The value of an option is made up of two components, viz., its Intrinsic Value and Time or Extrinsic Value. The intrinsic value of an Option is the difference between its strike price and the current market price. For example, if the strike price of a call option is ₹100, and the current market price is ₹102, its intrinsic value is ₹2 (102–100). As this call is an in-the-money option, its intrinsic value is positive. If the strike price is equal to the current market price, i.e., ₹102, its intrinsic value is zero (102–102), and if the strike price is more than the current market price, the intrinsic value though negative, will be reckoned as zero, as it has no intrinsic value. The reverse will be true of a Put option. Thus it is easy to determine the intrinsic value of an option.

The time value or extrinsic value of an option is difficult to determine. It depends basically upon the volatility of the price movements of the underlying instrument. The probability that an option will be exercised, plays a key role while determining the value of the option. Quite a few pricing models have been designed by financial engineers of which the Black & Scholes and the Binomial model are quite popular. Time Value = Premium – Intrinsic value.

13.1.15 Put Call Parity

The simultaneous purchase of a call and sale of a Put option for the same strike price (other than at the money strikes), can result in two types of arbitrages, viz., the Conversion arbitrage and Reversal arbitrage. Such a situation will not be allowed to be exploited by the market participants. The conversion arbitrage creates a synthetic short position in the underlying asset by buying the same in the cash market and then selling a Call and buying a Put on it. The Reversal arbitrage creates a synthetic long position on the underlying by selling it in the cash market, and then buying a call and selling a put at the same strike. These two arbitrages can be eliminated if the difference between the strike price and the spot price of the underlying is made equal to the difference between the call premium and the put premium. This phenomenon is called Put Call Parity.

Example: Let us say, we buy the underlying asset at ₹100 in the cash market. We also sell an out of the money call at a strike of ₹105, and earn a premium of ₹5. Simultaneously, we also buy an in the money American put at ₹105 by paying a premium of ₹8. The net outflow on account of the two options is ($-8 + 5 = -3$) However, we may immediately exercise our Put to sell the underlying at ₹105, and make a profit of ₹5 (₹105 – 100). Thus, our net profit is ₹2 (5 – 3). This is a clear arbitrage position on account of the fact that the difference between the option premia, and the difference between the strike and spot prices are not equal. If they are equal, such an arbitrage is not possible.

13.1.16 Interest Rate Options

Interest Rate options are fundamentally of two types, the Cap and the Floor. A Cap is an interest rate option in which the buyer of the option, with the intention of locking himself to a ceiling in interest costs for his borrowing, reserves the right to receive the difference in interest rate on a notional principal in case the interest rate on the underlying borrowing goes higher than the ceiling

he has chosen at pre-agreed periodic intervals for a given time maturity. To illustrate, let us say we have issued a bond for ₹100 crore and raised money in the market at a floating rate of 6 Mibor + 50 basis points. And let us assume, that we have invested the money at fixed rate of 8%. We have also agreed to pay the investors in our bond interest at 6 monthly intervals, and the maturity of the bond is say 5 years. This means that we have an interest rate risk for the next 5 years in case the 6m Mibor goes higher. If the 6m Mibor is currently 5%, our return is $8 - 5.5 = 2.5\%$. However, if 6m Mibor were to go higher at future points of time, our return would go down below 2.5% till the 6m MIBOR interest rate reaches 7.5%, when we would just break even. Beyond 7.5% level in Mibor, we will make a negative spread. In order to eliminate this risk we may buy a CAP at, say, 7.0%. This means that we are sure of getting a spread of at least 0.5% in the above structure, and any movement in 6m Mibor beyond 7% will result in our being compensated by the seller of the CAP. The 6m Mibor rate is prevailing on each of the 6 monthly coupon payment dates, and if it is higher than 7%, the difference on the notional principal will be paid by the seller of the CAP. However, if the 6m Mibor is less than 7%, we choose not to exercise the option and hence we need not pay the seller the difference as is obtained in an FRA or an IRS. This is the major difference.

Some of the salient features of an options contract are given below:

Separation of liquidity from return exposure

Allows the option purchaser to acquire or shed exposure to the underlying asset without the necessity to purchase or sell the asset itself.

Leverage

The option contract is also inherently leveraged in that the full face value of the underlying asset is controlled through the payment of a premium that represents a percentage of the face value.

Asymmetric return profile

The key element of the option contract is the ability of an option buyer to get asymmetric exposure to price fluctuations in the underlying asset.

Off balance sheet

The option contract is off balance sheet to the parties entering the transaction.

Some of the types of options are listed as follows:

- Vanilla
- European:** Exercisable only on the Expiry Date.
- Call:** An option to buy an asset for a certain price by a certain date.
- Put:** An option to sell an asset for a certain price by a certain date.
- Exotic
- American:** Exercisable anytime during the life of the Option up to Expiry Date.
- Bermudan:** Choice from multiple exercise date.

Knock-out barrier: The option ceases to exist if the Knock out level is seen. This can be either European or American.

Some of the uses/applications of options are listed below:

Hedging

The separation of cash and return facilitates hedging with option contracts. Hedging involves options to provide protection to the party seeking to hedge from unfavorable asset price movements while allowing continued participation in favourable price movements.

Structured Protection

The capacity to adjust the strike price of the option enables the exact nature of risk hedged to be structured in accordance with the price expectations.

Speculation: Same as hedging

‘The separation of cash and return facilitates hedging with option contracts.’

Return Enhancement

The sale of options against an underlying asset can be used to enhance the return on the underlying holding of the asset. The premium earned on the option contracts sold, if the option expires without being exercised, results in reducing the holding price of the asset in option writer’s book.

Option strategies

The Call and Put options can be employed either individually, or in combination, to effectively hedge and trade in options. Let us look at some of the basic options strategies.

Long call

When the prospective buyer of an underlying instrument is very bullish on its price movements, he buys a call option. As we have seen earlier, in the payoff profile of a simple call option, the buyer of a call option enjoys unlimited profit potential, but suffers loss limited to the premium paid.

Short call

A short call position or selling a call option on the underlying instrument is resorted to when the value of the underlying is likely to remain stable, or decreases. If the value remains stable, the option may not be exercised by the buyer and, hence, the premium received is a profit.

Ratio range forward

These are a variety of Range Forward, where the principal amounts of the call and put are different. Buyer of Ratio Range Forward shares profit with the writer in a pre-determined ratio, if the value of the underlying moves above the targeted level.

A covered call

At times, when the market price movements are slightly bullish, but moderate, right to writing or selling a call option on the owned underlying instrument can be resorted to in order to earn extra income. This strategy is called writing a covered call. It must be borne in mind that as the name suggests, this strategy should not be employed unless the underlying is owned by the option seller as otherwise it would amount to short selling the underlying, and might result in huge losses in case the call were exercised. The advantage of this strategy is that it earns some upfront premium for the writer. The disadvantage arises if the call were exercised on account of unexpected higher price movements of the underlying, in which case the appreciation in the value of underlying will be lost to the option writer, and his profit will be limited to the premium he has received upfront.

Let Us Sum Up

This chapter deals with various money market instruments, including Inter Bank Participation Certificate and collateralized borrowing and lending obligation (CBLO), Treasury bills and repos. Repo pricing is discussed. The concepts of fixed and floating rates of interest, simple and compound rate of interest, yield, YTM, and premium and discount have been explained. Day count conventions have been explained. Fixed income securities have also been discussed in detail. Equity shares and preference shares, ECBs have also been discussed. The salient features of GDR, ADR and IDR have been given.

Forex markets and forex products are also discussed. An overview of derivatives is provided covering futures, forward contracts, Forward rate agreements, IRS, Currency swap, OIS. A brief introduction to options is given.

Keywords

IBPCs, repo, FRAs, Options, American and European varieties, futures, delta, gama, vega, theta, rho, Mibor, OIS

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Why is Repo sometimes called a ready forward transaction?
 - (a) It is a means of funding by selling a security held on a spot (ready) basis, and repurchasing the same on a forward basis.
 - (b) The delivery of funds is done on a future date.

- (c) Repo rates are quoted forward.
 - (d) Ready repo is offset by future reverse repo.
2. YTM is the discount rate that equates the present value of all cash flows to what?
- (a) The face value of the security.
 - (b) The present market price of the security.
 - (c) The total coupon payments on the security.
 - (d) The maturity value of the security.
3. In India, what is the limit of redemption period for preference shares in case of companies not dealing with infrastructure projects?
- (a) 10 years.
 - (b) 5 years.
 - (c) 20 years.
 - (d) 25 years.
4. What does, in options, delta measure for a change in the price of the underlying?
- (a) It gives the total number of options in the market.
 - (b) It measures the total open interest in the market.
 - (c) It measures the uncovered portion of the underlying.
 - (d) It measures the estimated change in option premium/price.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

UNIT
14

FIXED INCOME SECURITIES, DURATION AND CONVEXITY

STRUCTURE

14.0 Objectives

14.1 Time Value of Money

Let Us Sum Up

Keywords

Check Your Progress

14.0 OBJECTIVES

After studying this section, you will be able to:

- Define the concept of Time Value of Money.
- Apply compounding and discounting factors to find the present and future value of a single cash flow as well as multiple cash flows.
- Define a fixed income security and its major types.
- Evaluate the fixed income security and identify the factors that affect its price.
- Define the various properties of bonds (fixed income securities).
- Calculate the price of a fixed income security given the various parameters.
- Define and apply the concepts of Duration, Modified Duration, and Convexity to understand the price sensitivity of a fixed income security when interest rate changes in the market.
- Define and apply the concepts of different types of yields associated with a fixed income security.
- Identify the major weakness of yield to maturity, and calculate the zero coupon and implied forward rates.

14.1 TIME VALUE OF MONEY

As mentioned in section 2, Money has time value. Time value is best understood when one says 'I would prefer a Rupee paid to me today rather than tomorrow'. The reasons for ready possession of money rather than at a future date are:

- (a) One would prefer not to be affected by the erosion in value of their money on account of inflation.
- (b) One would like to be compensated for the sacrifice of postponing their present consumption to a future date.
- (c) Ready possession of money is the highest form of liquidity.
- (d) One would like to invest the money, and it would earn interest.

The amount payable (A) on an initial investment (P) at a rate of interest (r) compounded annually for a period of (n) years is given by the formula:

$$A = P (1 + r)^n$$

The amount (A) receivable at the end of ' n ' years is the future value of the initial principal invested, *viz.*, (P). If one initially invests ₹1 at rate ' r ' for a period of ' n ' years, the future value of this investment will be $(1 + r)^n$. This factor $(1 + r)^n$ is known as the compounding factor, or the **future value factor** of an initial investment.

If the compounding is done at half yearly intervals, the above formula would stand modified as:

$$A = P (1 + r/2)^{2n}$$

In general, if the No. of compounding intervals is say ' m ' then,

$$A = P (1 + r/m)^{mn}$$

On the other hand, if one has to receive Re. 1 at the end of ' n ' years at a rate of ' r ', the initial amount to be invested (P) is given by the equation:

$$P = \frac{1}{(1+r)^n}$$

Thus, the present value of an amount of ₹1 receivable at the end of ' n ' years at the rate of ' r ' is arrived at by the above equation where the factor $1/(1+r)^n$ is known as the discounting factor or the **present value factor** of an amount receivable at a future point of time.

These factors help us to find the present or future value of a single cash flow. However, in business we come across multiple cash flows whose present and future values are to be computed for various purposes. The simplest form of a multiple cash flow is an Annuity. An annuity is nothing but a series of an identical amount of payment over a period of time at regular intervals. A Recurring Deposit Account with a bank is a perfect example of an Annuity.

Annuities are of two types, *viz.*, Ordinary Annuity and Annuity Due.

In an ordinary Annuity, the payments are made at the end of the specified intervals of time. For example, if I receive ₹1000 at the end of each month for the next 5 years, the cash flow structure is an Ordinary annuity. The present value of an ordinary annuity can be found by the formula:

$$P.V. = \frac{PMT}{(1+r)^1} + \frac{PMT}{(1+r)^2} + \frac{PMT}{(1+r)^3} + \dots + \frac{PMT}{(1+r)^n}$$

Where PMT is the equal amount receivable at the end of each year at the rate of ' r ' for a period of n years. The sum of all the present values of this series of payments when $PMT = 1$ (substituting PMT with 1 in the right hand side of the above equation) is known as the present value of an ordinary annuity.

14.1.1 Present Value Annuity Factor

The future value of the above annuity can be calculated using the formula:

$$F.V. = PMT (1+r)^1 + PMT (1+r)^2 + \dots + PMT (1+r)^n$$

The sum of all the future values of the above series when $PMT = 1$ is known as the **Future Value Annuity factor**.

14.1.2 Value Annuity Factor

In the case of Annuity Due, as the payments are made in the beginning of each period,

$$P.V. = \frac{PMT}{(1+r)^0} + \frac{PMT}{(1+r)^1} + \frac{PMT}{(1+r)^2} + \dots + \frac{PMT}{(1+r)^{n-1}}$$

$$F.V. = PMT (1+r)^0 + PMT (1+r)^1 + \dots + PMT (1+r)^{n-1}$$

Examples

- Calculate the future value of ₹10,000 invested for five years at the interest rate of 6% per annum.

Sol. The simplest way to find the future value would be to multiply the principal amount with the future value factor at 6% for 5 years. The future value (or compounding factors) factor for 6%, for five years is 1.3382 (from tables).

$$\text{Therefore, Future value} = 10,000 \times 1.3382 = ₹13382.$$

- How much should one invest to get ₹25,000 at the end of 3 years when the interest rate is 7%?

Sol. In this problem we have to find the present value of ₹25,000 at 7% for 3 years. The present value factor for 7% for 3 years read from the table is 0.8163.

$$\text{Therefore, Present Value} = 25,000 \times 0.8163 = ₹20,407.50$$

- If one invests ₹2,500 at the end of each year at the rate of 8% p.a., to what amount would this investment grow after 5 years?

Sol. The investment here is a typical, ordinary annuity. We can find the future value of this ordinary annuity by multiplying the amount of ₹2500 by the future value annuity factor of 8% for 5 years, which is 5.8666.

$$\text{Therefore, the maturity value of this investment} = 2500 \times 5.8666 = ₹14666.50$$

- What is the present value of an ordinary annuity of ₹5000 p.a. when the interest rate is 7% and maturity period is 8 years?

Sol. To find the present value of the ordinary annuity, we have to multiply the amount of ₹5000 by the present value annuity factor of 7% for 8 years which is 5.9713 as read from the table. Therefore, present value of this annuity = $5000 \times 5.9713 = ₹29,856.50$

14.1.3 Fixed Income Securities

Fixed Income Securities are also known as Bonds. They are called Fixed Income Securities because of the fixed coupon income that they generate over a specified period of maturity at pre-agreed intervals of time. Equities and Bonds are two major types of Capital Market instruments. Equities bestow upon the holders, the right of participation in the management of the borrowers' business, whereas Bonds do not. Equities do not assure a fixed regular income, whereas Bonds do. Normally, the volatility of price movements of equities is quite high compared to Bonds' price movements.

The nomenclature of a bond, say, 9.85% GOI Loan 2015 indicates three major aspects. The 9.85% represents the fixed income (calculated on the face value of the bond) that the investor would receive at say semi-annual intervals. This rate is called the Coupon of the Bond, and is never changed, come what may, to the ongoing market interest rate for this maturity. Usually, the mid portion in the nomenclature indicates the name of the borrower, the Government of India, in this case. The last portion indicates the maturity when the principal would be repaid along with the last coupon due.

Bond prices are sensitive to various factors in the market. These factors include the economic fundamentals like GDP growth, inflation, interest rates, unemployment, money supply, fiscal policies, etc. Besides, political factors and acts of God also have a bearing on the prices of bonds. Technical

factors like chart points, stochastic indicators, etc., also exert their influence on the prices of bonds. However, the most important factor influencing bond prices is the interest rate movements.

14.1.4 Bond Valuation

To determine the fair price of a bond, we have to appreciate the fact that the market interest rate for the term to maturity (or the residual term to maturity) of a bond keeps changing in the real world. Although the coupon of a bond is never changed, as the market interest rate changes, adjustments will have to be made in the price of bonds to reflect the ongoing market interest rate. Thus, when the market rate and the coupon rate for a given maturity are the same, the bond will, obviously, trade at par. When the market interest rate rises beyond the coupon of the bond, the price of the bond will have to be lowered, so that the income from the bond is in line with market rates. Conversely, if the market interest rate goes below the coupon of a bond, its price will have to be higher to reflect the lower market interest rate. Thus, the valuation of a bond, fundamentally, rests on the movement in market interest rates. Thus, the price of a bond is inversely related to the change in interest rate.

What we mean by value of a bond is the present value of all its future cash flows. The sum of the present value of all future cash flows of a bond is its fair value (current market price). Let us take the example of an 8% bond with a residual maturity of exactly 5 years from today, with the assumption that the coupon is paid annually on this bond. If the present market interest rate for 5 years maturity is say 9%, then the value of this bond is given by the total present value of all the five annual coupon payments of ₹8 each, and the face value of ₹100 payable at maturity. Mathematically,

$$\text{Total P.V.} = \frac{8}{(1 + 0.09)} + \frac{8}{(1 + 0.09)^2} + \frac{8}{(1 + 0.09)^3} + \frac{8}{(1 + 0.09)^4} + \frac{108}{(1 + 0.09)^5}$$

The cash flows on account of coupon payments are uniformly ₹8 for 5 years at annual installments. This is nothing but an annuity for 5 years. The face value of 100 payable on maturity is a single cash flow. So in order to find the present value of this series of cash flows, we may rewrite the above equation as:

Total P.V. = $8 \times \text{P.V. annuity factor at } 9\% \text{ for } 5 \text{ years} + 100 \times \text{P.V. factor at } 9\% \text{ for } 5 \text{ years}$. These factors as observed from the PV annuity table and PV single cash flow tables are 3.8897 and 0.6499 respectively.

Therefore, the Total P.V. of the bond = $8 \times 3.8897 + 100 \times 0.6499 = ₹96.1076$

The above equation can be alternatively narrated as: 9% is the UNIFORM DISCOUNT RATE at which the future cash flows, when discounted, equals the price of the bond (which is 96.1076). This uniform discount rate is called Yield To Maturity (YTM). This formula presupposes that all future cash flows are reinvested at the same uniform discount rate and that the interest rate remains constant during the tenor of the bond. These two assumptions do not hold good in actual market dynamics. However, YTM is a powerful tool to price or value bonds with different coupons and tenors according to the yield curve. Thus, a Bond always has two risks, inherent in it, one acting in opposite direction to the other. These two risks are (1) The Price Risk and (2) The Reinvestment Risk. When interest rates come down, the price risk is in favour of the bond holder, as bond prices move inversely to

movement in interest rate, and they go up. But the interest rate at which the intermittent cash flows (being coupon flows) are reinvested will be at a lower rate and hence reinvestment risk is running against the investor. The presence of price risk and reinvestment risk in opposing directions is called the “Natural Hedge” in a bond.

Also, YTM need not necessarily be the realized yield. It is only a anticipated (expected) yield, which presupposes that intermittent cash flows are reinvested at YTM rate and interest rate remains constant during the tenor of the bond.

14.1.5 Bond Theorems

Theorem 1: The price of a bond is inversely related to the change in interest rate.

The ruling market interest rate has an inverse impact on bond prices. When the interest rate goes up, bond prices come down and vice versa. Let us take a bond with a coupon of 8% maturing exactly in 10 years. When the market interest rate is 9%, its price would be,

$$\text{Price} = 8 \times 6.4177 + 100 \times 0.4224 = 93.5816$$

When the interest rate goes up by say 1% to 10%, the price of the bond would be $8 \times$ present value annuity factor of 10% for 10 years + $100 \times$ present value factor of 10% for 10 years, i.e.

$$\text{Price} = 8 \times 6.1446 + 100 \times 0.385 = 87.7068$$

We notice that the price of the bond has fallen to 87.7068 when interest rate has risen to 10% from 9%.

When the interest rate goes down from 9.00% to 8.00%, the price of the bond would be,

$$8 \times 6.7101 + 100 \times 0.4632 = ₹100$$

We notice that the price has gone up to ₹100 from ₹93.5816.

Thus we conclude that bond prices and yield are inversely related.

An interesting observation that can be made from the above discussion is that, the price of the bond is ₹100 (par) when the market rate and the coupon of the bond (8.00%) are the same.

Theorem 2: The increase in the price of a bond when the interest rate goes down by a certain percentage, is greater than the decrease in its price when the interest rate goes up by the same percentage.

In other words, given the same level, of say 1% change in interest rate, the price appreciation on account of interest rate going down by 1% is greater than the price depreciation on account of interest rate going down by 1%.

This is amply illustrated in the example we worked out earlier for theorem 1 in which we saw the appreciation in price when interest rate fell from 9% to 8% at $₹6.4184 \times 100/93.5816 = 6.858\%$, whereas, the depreciation was $5.8748 \times 100/93.5816 = 6.277\%$ when the interest rate went up from 9% to 10%. This property of a fixed income security, whereby, the bond suffers lesser depreciation on account of rise in interest rate than the appreciation it enjoys for the same degree of fall in interest rate, is called Convexity. We shall deal with Convexity in detail later.

Theorem 3: Longer the term to maturity of a bond, higher will be its price sensitivity.

If we have two bonds of same coupon, say 8% one maturing in 10 years, and the other maturing in 7 years, the 10 years bond will experience more price sensitivity than the 7 years bond.

In the example we worked out (for theorem 1), we have seen the price depreciation of the bond maturing in 10 years with a coupon of 8% when the interest rate went up from 9% to 10% is ₹5.8748 and the percentage change in price = 6.277.

If we calculate the price of the 7 years bond at 9% and 10% we find the depreciation is ₹4.697, as shown below:

$$\text{Price at } 9\% = 8 \times 5.0330 + 100 \times 0.5470 = ₹94.964$$

$$\text{Price at } 10\% = 8 \times 4.8684 + 100 \times 0.5132 = ₹90.267$$

$$\text{The percentage change in price} = [(94.964 - 90.267)/94.964] * 100 = 4.946\%$$

The depreciation in the price of the 10 years bond, is obviously more than the depreciation in the 7 years.

Theorem 4: Between two bonds of same maturity but different coupons, the bond with the lower coupon will experience more price sensitivity than the one with higher coupon.

Let us say, there are two bonds of 10 years maturity with coupons 8% and 6% respectively. When the market interest rate is 9%, the price of the bond with coupon 8% is 93.5816, and the price of the bond with coupon 6% is 80.7462.

If the market interest rate changes to 10% from 9%, the prices of the bonds are 87.7068 and 75.4176 respectively. The percentage changes in the price of these bonds (6.277% and 6.60% respectively) clearly indicate the higher price sensitivity of the bond with the lower coupon (*i.e.*, 6%)

Theorem 5: Between two bonds of same coupon and same maturity, but differing coupon payment intervals, the bond with higher frequency of coupon payment is less sensitive to price changes when market interest rate changes.

Let there be two bonds of 8% coupon and of 10 years maturity. Bond A pays coupon semiannually, and Bond B pays annual coupons. If we study the following table carefully, we will be able to observe that the bond A which pays semiannual coupons is less price sensitive to interest rate changes.

Coupon	Market Rate	Price of Bond A	Price of Bond B	% change in price of Bond A (Semiannual coupons)	% change in price of Bond B (annual coupons)
8%	8%	100	100		
8%	6%	114.72	114.88	14.72%	14.88%
8%	10%	87.71	87.53	22.29%	22.47%

The most fundamental of Bond Theorems states that ‘the price of a bond is inversely related to the market interest rates’. Thus, if interest rate goes up, the price falls and *vice versa*. Besides, a Bond

also generates interim cash flows in the form of periodic coupon payments which may be reinvested as and when received. The rate at which this reinvestment may be done also depends on the market movements in interest rates. Thus, if the interest rate rises, the reinvestment will fetch a higher return (as opposed to the capital loss due to fall in price). The converse is true, if interest rate falls. These two opposing effects should neutralize each other at one point of time or other, during the life of the fixed income security, at a given interest rate. This point of time in the life of a fixed income security, when the capital loss/gain is matched exactly by the gain/loss in reinvestment income, is called its Duration. The reinvestment risk and price risk neutralize at Duration point of time. Thus, the natural hedge in a bond.

Looked at from another point of view, duration is nothing but the weighted average life of a fixed income security. The intermediary cash flows in the form of coupon payments impact the actual maturity, and reduce it to an effective maturity. This effective maturity (which may be computed using the coupon rate, actual maturity, and the market interest rate) is known as Duration. In so computing the duration, the weighted average life of the bond is arrived at using the present value of future cash flows as weights.

As Duration is a direct outcome of interest rate and maturity, it may also be defined as the measure of price sensitivity of a bond to changes in interest rates.

Duration is also the fulcrum around which the present value of future cash flows balance themselves. Let us look at it pictorially.

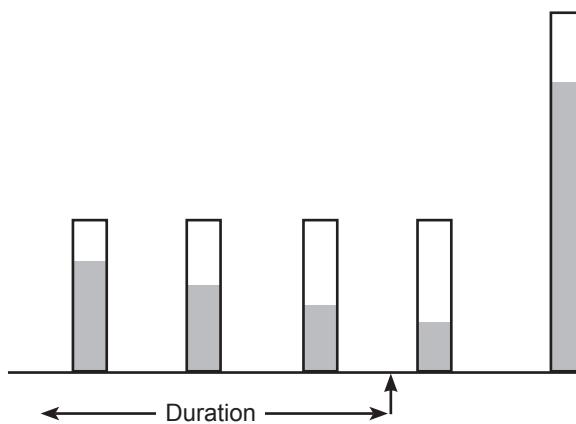


Figure 14.1.5

The previous figure represents the annual coupon payments on a 5 year bond and the final payment of face value and the last coupon on maturity. The black portions represent the present value of future cash flows (arrived at by discounting the future cash flows with a discounting factor corresponding to the ongoing market interest rate). Assuming all these flows have been placed on a horizontal balance, a fulcrum point will have to be found where the present values will balance themselves as weights. Duration is the distance between the start day and the fulcrum point.

The Simple Duration we have defined here is also known as **Macaulay Duration**, as it was Macaulay, the French Mathematician of early twentieth Century who conceptualized this property of fixed income securities in 1938.

Macaulay Duration is computed by using the following mathematical formula:

$$\text{Macaulay Duration (In Periods)} = \frac{(1)\text{PVCF}_1 + (2)(\text{PVCF}_2 + (3)(\text{PVCF}_3 + \dots + (n)\text{PVCF}_n)}{\text{PVTCF}}$$

Where

PVCF_t = Present value of the cash flow in period t discounted at the prevailing period yield (in case of semi-annual bond, one-half the YTM)

t = Period when the cash flow is expected to be received ($t = 1, 2, \dots, n$)

n = Number of periods under maturity

k = Number of periods, or payments per year (k = 2 for semi-annual pay bonds and 1 for annual pay bonds)

PVTCF = Total present value of the cash flow of the bond, where the present value is determined by using the prevailing YTM

Macaulay Duration in years is computed by using the following formula:

$$\frac{\text{Macaulay Duration (In Periods)}}{k}$$

As we will see in the following examples, Macaulay's Duration is linked to the price volatility of a bond.

Let us now calculate the duration of a bond that matures in exactly 7 years carrying a coupon of 7%. Let the market interest rate for 7 years be 8%.

Let us also assume that the coupons are paid annually.

Sl. No.	Coupon	Disc. Factor at 8%	PV of coupon (2 × 3)	Wt in yrs.	PV × Wt. (4 × 5)
(1)	(2)	(3)	(4)	(5)	(6)
1	7	0.9259	6.4813	1	6.4813
2	7	0.8573	6.0011	2	12.0022
3	7	0.7938	5.5566	3	16.6698
4	7	0.7350	5.1450	4	20.5800
5	7	0.6806	4.7642	5	23.8210
6	7	0.6302	4.4114	6	26.4684
7	107	0.5835	62.4345	7	437.0415
Total PV			94.7941		543.0642

Duration $543.0642 \div 94.7941 = 5.72888$ years.

Note: Duration in this case will be measured in years as the coupon is payable annually.

Alternative Method:

Sl.No.	Coupon	Disc. Factor at 8%	P.V. (2 × 3)	PV/Total PV (Weight)	Time of receipt of cashflow	(5 × 6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	7	0.9259	6.4813	0.068372	1	0.068372
2	7	0.8573	6.0011	0.063307	2	0.126613
3	7	0.7938	5.5566	0.058618	3	0.175853
4	7	0.735	5.145	0.054276	4	0.217102
5	7	0.6806	4.7642	0.050258	5	0.251292
6	7	0.6302	4.4114	0.046537	6	0.27922
7	107	0.5835	62.4345	0.658633	7	4.610429
Total PV			94.7941	1	Duration	5.728882

Now, how does duration help in measuring the price sensitivity of a bond?

If, in the above example, the interest rate for 7 years is to change to 7.80%, the change in price of the bond can be roughly worked out as follows:

Percentage change in price:

$$\begin{aligned}
 &= \text{Duration} \times \text{Percentage change in yield} \\
 &= 5.728882 \times (8.00 - 7.80) \\
 &= 1.145774\%
 \end{aligned}$$

Absolute change in price = $94.7941 \times 1.145774\% = 1.08612$

As the interest rate has fallen from 8% to 7.890, the price of the bond will appreciate to $94.7941 + 1.08612 = 95.88022$

(Please note that the price of a bond is nothing but the total of the present values of all its future cash flows.)

This method is, however, crude, and the preceding formula does not hold good for higher changes in interest rates. We shall see at a later stage, how we can refine this formula.

Let us now look at the properties of Duration.

1. Duration for a coupon-paying bond is less than its maturity. This is because of the intermediary cash flows, which reduce its effective maturity.
2. Duration is directly related to maturity/larger the maturity, longer will be its duration. A bond of 5 years maturity, will have lower duration than a bond of 10 years maturity.
3. Duration is inversely related to the coupon. In other words, for two coupon-paying bonds of same maturity but different coupon rates, the bond with higher coupon will have lower duration.

4. Duration is inversely related to the market interest rate or yield. The lower the market yield, the higher will be the duration.
5. Duration of a zero coupon bond is equal to its residual maturity. A bond which does not carry any intermediary cash flows, is a zero coupon bond. Obviously, in the absence of any intermediary cash flows, there is no impact on the maturity of the bond time wise, and hence its duration should be equal to its residual maturity.
6. Higher frequency of intermediary cash flows reduces duration. Let us take two bonds of same maturity and same coupon rate: One bond pays coupon annually, and the other semi – annually. The bond paying semi – annual coupon will have lower duration.
7. Duration of a Floating Rate bond is equal to its interest reset period, or the period remaining to next reset.
8. Duration of a portfolio of bonds is equal to the weighted average duration of all the bonds in the portfolio. Duration is additive.

The above properties can be easily verified by substituting suitable values in the example worked out earlier.

From the above discussion, it is obvious that Duration is basically a price sensitivity measure. Higher the Duration, the higher will be the price risk to the holder of a fixed rate bond.

14.1.6 Modified Duration

Duration does not capture accurately the price changes in bonds arising from larger changes in interest rates. Hence, we refine the formula we discussed earlier by introducing a new concept, known as Modified Duration. Modified Duration is a better measure of price sensitivity of bond prices. It is calculated using the formula,

$$\text{Modified Duration} = \frac{\text{Duration}}{1 + \text{Yield}}$$

In our example worked out earlier, Modified Duration is equal to,

$$5.728882 \div (1 + 0.08) = 5.3045$$

Let us use this Modified Duration to calculate the change in the price of the bond, when the interest rate changes from 8% to 7.8%.

The formula is:

$$\text{Percentage Change in Price} = -\text{Modified Duration} \times \text{Percentage change in yield}$$

$$= -5.3045 \times -0.20$$

(- 0.20 because yield has fallen)

$$= +1.0609\%$$

$$\text{Absolute change in price} = 94.7941 \times 1.0609\% = 1.00567$$

Hence the new price of the bond will be $94.7941 + 1.00567 = 95.79977$ (as against 95.88022 arrived at using simple duration).

The negative sign used in the above formula takes care of the inverse price/yield relationship.

Modified Duration is mathematically the first order derivative of duration. It too has its shortcomings, for it does not capture price movements for changes in interest rates beyond 1% or 100 basis points accurately. This is because of the convexity effect of fixed income securities.

14.1.7 Limitations of Duration

1. Duration basically assumes parallel shift in the yield curve.
2. Duration does not capture interest rate volatility.
3. Duration as price sensitive measure is applicable only for small changes in interest rates.
4. Duration is applicable only to option free bonds.

What is Convexity?

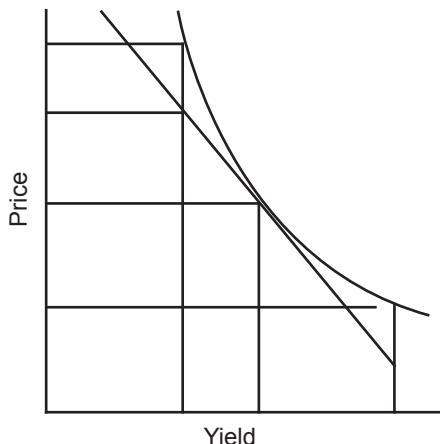


Figure 14.1.7

We know that any fall in interest rate results in the bonds' prices going up and vice versa. It has been empirically observed that the price appreciation for a given fall in interest rate is always higher than the price depreciation when the interest rises by the same level. This property of a bond is due to its Convexity.

The previous figure illustrates the convex property of a bond. The straight line represents Price Yield's inverse relationship based on duration. The convex curve represents the empirical results of price changes observed for various changes in yield. At the point where the straight line touches the curve, the bond trades at par when the market interest equals the coupon. The portion of the straight line very close to the curve on either sides of this point of contact, represents the price yield changes captured by modified duration. The portions on either side of the point of contact represent the error that occurs in calculating price changes using duration/modified duration only *visavis* price changes calculated with the effect of convexity also built in.

Convexity is the second order derivative of duration. It is a number which is always positive, and its effect is always added to the effect due to modified duration to arrive at the accurate price change, when interest rates change beyond 1%.

An example on how to calculate the convexity, and its effect on price changes is shown below:

Sr. (1)	Coupon (2)	Disc. Factor at 8% (3)	PV of coupon (2 × 3) (4)	$t(1+t)$ (5)	(4×5) (6)
1	7	0.9259	6.4813	1	12.9626
2	7	0.8573	6.0011	6	36.0066
3	7	0.7938	5.5566	12	66.6792
4	7	0.735	5.145	20	102.9000
5	7	0.6806	4.7642	30	142.9260
6	7	0.6302	4.4114	42	185.2788
7	107	0.5835	62.4345	56	3496.3320
Total PV		94.7941	Total of Col. 6 = 4043.0852		

$$\begin{aligned}\text{Convexity} &= 4043.0852 \div \{ 94.7941 \times (1 + 0.08)^2 \} \\ &= 4043.0852 \div 110.5678 = 36.56\end{aligned}$$

The change in price as captured by convexity, is obtained by the formula, $0.5 \times \text{convexity} \times (\text{change in yield})^2 \times 100$

Thus, if the market interest rate changes from, say, 8 to 9.5%, the percentage change in price of the bond will be equal to,

$$\begin{aligned}&= \text{change due to mod.duration effect} + \text{change due to convexity effect} \\ &= (-5.3045 \times 1.5) + [0.5 \times 36.56 \times (0.015)^2 \times 100] \\ &= -7.9675 + 0.4113 \\ &= -7.5454 \text{ or } -7.54\%\end{aligned}$$

Thus, the accurate change in price of the bond when interest rate rises from 8 to 9.5%, is equal to $94.7941 \times 7.54/100 = 7.14$, i.e., the price of the bond will now be, $94.7941 - 7.14 = 87.6541$.

Please study the following table, which shows the price of a 10 year bond with coupon of 8% at various interest rates. It may be easily observed, that the percentage fall in price is smaller than the percentage rise in price for a given rate change of interest.

Mkt. Int. Rate	Price	% change in price
4.00	132.70	3.587
4.50	127.94	3.564
5.00	123.38	3.526
5.50	119.03	3.487
6.00	114.99	3.464
6.50	110.90	3.417
7.00	107.11	3.398

7.50	103.47	3.354
8.00	100.00	0.000
8.50	96.68	3.320
9.00	93.50	3.289
9.50	90.45	3.262
10.00	87.54	3.217
10.50	84.75	3.187
11.00	82.07	3.162
11.50	79.51	3.119
12.00	77.06	3.081
12.50	74.71	3.050

14.1.9 Bond Yield

The coupon interest received on a bond reflects only a nominal current income, and does not reflect the actual income (return) when the market interest is different. Hence, the coupon rate is known as Nominal Yield or just Coupon Yield.

However, if we take the price we pay into consideration while computing the return from a bond, the result we arrive at is called the Current Yield. In other words, Current Yield = Coupon amount / Price. Current Yield is a useful indicator for very short periods of time only, as it does not capture the effect of change in price of the bond on the realized yield.

Yield to Maturity of a bond is that single discount rate which reduces all the future cash flows to their present value. We know that,

$$P.V. = \frac{C}{(1+r)} + \frac{C}{(1+r)^2} + \frac{C}{(1+r)^3} + \frac{C}{(1+r)^4} + \dots + \frac{C+100}{(1+r)^n}$$

In the above equation, if we know the price of the bond (*i.e.*, total PV of all future cash flows), and the coupon amounts, we can calculate the value of ‘r’, the interest rate which is used to find the present value of all future cash flows. This rate ‘r’ is known as the Yield to Maturity.

Realized Yield: Let us say, we bought a 7 years bond with a coupon of 7%, exactly 2 years ago at a price of ₹100. Today, we want to sell it in the market, and would like to calculate the yield that we have earned on holding this bond for two years, which is the Realized Yield on this investment.

Let us say, today the 5 years market rate is 6.5%. The price of our bond which has exactly 5 years residual maturity will be,

$$\text{Price} = \frac{7}{(1+0.065)} + \frac{7}{(1+0.065)^2} + \frac{7}{(1+0.065)^3} + \frac{7}{(1+0.065)^4} + \frac{105}{(1+0.065)^5} = 102.1056$$

This may be equated to the two coupon flows, and the sale proceeds we would get on selling this bond to arrive at the realized yield.

Price paid for buying the bond two years ago,

$$= \frac{7}{(1+y)} + \frac{102.1056 + 7}{(1+y)^2}$$

(We will have received two coupons for having held the bond for 2 years from the date of purchase.)

We may solve for 'Y' which is the realized yield.

Expected Yield: Let us say we bought a bond with 7% coupon maturing in 7 years at a price of 100. We would like to know what would be the expected yield of this bond, say 2 years from now. Let us also assume our view on interest rate is, that it would rise to 8% in 2 years time.

Then, the price of this bond after 2 years when the interest rate is likely to be 8% is,

$$\text{Price} = \frac{7}{(1+0.08)} + \frac{7}{(1+0.08)^2} + \frac{7}{(1+0.08)^3} + \frac{7}{(1+0.08)^4} + \frac{107}{(1+0.08)^5} = 94.9445$$

We have paid a price of ₹100 at the time of buying this bond, therefore,

$$100 = \frac{7}{(1+y)} + \frac{94.945 + 7}{(1+y)^2}$$

(We will have received two coupons while holding the bond for exactly 2 years.)

We can solve for 'y' from the above equation, which will be the expected yield if we wish to sell it 2 years from today.

The Yield to Maturity can be only considered as a measure of the overall internal rate of return on the investment in bond, which provides intermediate cash flows that are assumed to be reinvested for the remaining period till maturity of the bond at an interest rate equal to YTM. Obviously, YTM cannot be considered as the interest rate for the corresponding period. Further, YTM has a drawback in that it assumes that future cash flows will be reinvested over the respective remaining periods till maturity at the same fixed rate the YTM itself. This presumes that the yield curve is flat, i.e. the yield is uniform for all time periods. This assumption is not realistic.

Hence, it is necessary to arrive at a measure of interest rate for specific periods, called Spot Rates from the traded prices of bonds of various maturities which do not provide intermediate cash flows. Zero coupon bonds meet this requirement perfectly, hence, Spot Rate is also known as Zero Coupon Yield. But we do not have zero coupon bonds of various maturities which are traded in the market, from whose prices we can calculate the interest rates (Spot Rates) for various periods. This is, therefore, achieved by arriving at the Zero Coupon/Spot rates by a mathematical process known as Boot Strapping. This process eliminates intermediary cash flows and, hence, the wrong assumption of the same rate for reinvestment as well.

Let us say, the present Market Rates or YTM for different bond maturities are as follows:

- 1 year 5%
- 2 years 6%
- 3 years 7%
- 4 years 7.5% and so on.

These rates, as a measure of interest for the above terms, are impure for the reasons explained previously. If we consider, each of these maturities as representing bonds maturing in the corresponding years, we may easily arrive at the zero rates for each maturity, which is devoid of reinvestment risk, or devoid of assumption of same rate for reinvestment of coupon flows.

For the first year, a bond paying 5% annually will have only one payment at the maturity. So, there is no intermediary cash flow, and so the YTM is 5% and the Zero rate is the same.

If we consider the twoyear rate of 6% as a bond maturing in 2 years with two annual coupons of 6% each, the price of the bond will be,

$$\text{Price} = \frac{6}{(1 + 0.05)} + \frac{106}{(1 + Z_2)^2} \quad (\text{Eq. I})$$

If we know the price of this bond in the market, we can calculate Z_2 from the above equation which is the 2 year Zero Rate.

If we consider the threeyear rate of 7% as a bond maturing in 3 years with three annual coupons of 7% each, the price of the bond will be,

$$\text{Price} = \frac{7}{(1 + 0.05)} + \frac{7}{(1 + Z_2)^2} + \frac{107}{(1 + Z_3)^3}$$

In the above equation, we know the price and the value of Z_2 (from Eq I above), and so we can solve for Z_3 , which will be the three year Zero Rate.

By continuing this process we can develop a Zero Rate Yield Curve for different maturities, and these Zero Rates are now pure rates devoid of the assumption of same rate for reinvestment of intermediary cash flows of a couponpaying bond.

Let us note here that Zero Rates are very useful for pricing derivative products as they are Pure Rates.

Forward Rates

Let us say, that we have some money to invest for 6 months. The present interest rates available for different maturities are as follows:

- 1m 5.5%
- 2m 6%
- 3m 6%
- 6m 6.5%
- 1 year 7.5%, etc.

We can invest this money in different ways. For example, we can invest the amount at one go for 6 months at 6.5%. We can also invest this money initially for 3 months, and then on maturity roll it over for 3 more months. There are many such possibilities. Confining ourselves to the two possibilities mentioned previously, we will be indifferent to either of these two methods only when the final cash flow that we are going to receive is the same in both the cases.

The investment at one go for 6 months straight, is going to give us a maturity amount of $(1 + 0.065 \times 181/365)$.

The investment in two legs, *viz.*, for 3 months initially, and then for another 3 months will give us a maturity amount of,

$(1 + 0.06 \times 91/365) \times (1 + f \times 91/365)$, where 'f' is the 3 months interest rate, 3 months from now.

These two maturity values should be equal, in order to remain indifferent to either of these two methods.

Therefore, $(1 + 0.065 \times 181/365) = (1 + 0.06 \times 91/365) \times (1 + f \times 91/365)$

We can solve for f from the above equation which will be 3 months interest rate, 3 months from now, and is implied in the present yield curve.

$(f = 6.82\%)$

Similarly, we can derive the forward rates for different maturities starting at different future dates, and develop an implied forward yield curve which will be very useful for pricing derivatives.

Salient Points

1. Money has Time Value. Ready possession of money is preferable.
2. People prefer ready possession of money, because money earns interest, its value may be eroded due to inflation, and present consumption will have to be postponed if one were to receive the money due to it today at a future date.
3. Interest is paid on a simple basis or on a compounded basis.
4. The factor used to find the present value of a future cash flow is called a discount factor, and the factor which is used to find the future value of a present investment is called a compounding factor.
5. Cash flows can be either single or multiple.
6. Fixed income securities are debt instruments which pay a periodic interest rate (coupon) on the investment for a given maturity.
7. A coupon payment structure of fixed income security is similar to an annuity.
8. The value of a fixed income security is arrived at by computing the present value of all its promised cash flows in future.
9. The price of a fixed income security is inversely related to the market interest rate.
10. The appreciation in price, when interest rate goes down is greater than the depreciation in price when the interest rate rises higher by the same degree.
11. The longer the maturity, the more volatile will be the price of a bond.
12. Bonds with lower coupon will be more volatile in their price movements when interest rate changes in the market.
13. Between two bonds of same maturity and coupon rates, the bond with higher frequency of coupon payments will be less volatile in its price changes when interest rate changes in the market.
14. Duration is a neutral point of time in the life of a fixed income security when the reinvestment risk is compensated by the price risk.
15. Duration is in essence, the effective maturity of the bond.

16. Duration is directly related to the maturity of a bond.
17. Duration is inversely related to coupon and market interest rates.
18. Duration of a coupon paying bond is less than its maturity.
19. Duration of a floating rate bond is equal to the interest resetting period, or the period remaining to the next resetting.
20. Duration of a zero coupon bond is equal to its residual maturity.
21. Duration of a portfolio of bonds is additive.
22. Modified Duration is a refinement over Duration, as the latter does not capture price changes accurately when market interest rate changes.
23. Modified Duration too captures price changes only for small changes in interest rates.
24. Convexity together with Modified Duration captures price changes of bonds accurately, when the market interest rate changes.

Let Us Sum Up

Money has time value. Fixed income securities are known as bonds. Although the coupon of a bond is never changed, as the market interest rate changes, adjustments will have to be made in the price of the bonds to reflect the on-going market interest. Thus the price of the bond has an inverse relationship with market interest rates. The increase and decrease in prices when the interest rate move by the same measure may not be the same. Longer the term to maturity of a bond, higher will be its price sensitivity. Between two bonds of the same maturity but different coupons, the bond with lower coupon will experience more price sensitivity than the one with higher coupon. Between two bonds of same coupon and same maturity but differing coupon intervals, the bond with higher frequency of coupon payment is less sensitive to price changes when market interest rate changes. Duration may be defined as the measure of price sensitivity of a bond to changes in interest rates. Modified duration is mathematically the first order derivative of duration.

Keywords

Time value of money, bond valuation, bond theorems, duration, modified duration and bond yield

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is the general assumption under Duration?
 - (a) Parallel shift in yield curve
 - (b) Linear shift in yield curve
 - (c) Non-linear shift in yield curve
 - (d) Uniform shift in yield curve
2. Duration is applicable to _____ free bonds
 - (a) Interest
 - (b) Option

- (c) Discount
 - (d) Maturity
3. What is the duration of a zero coupon bond?
- (a) More than maturity
 - (b) Less than maturity
 - (c) Equal to maturity
 - (d) Determined by issuer
4. How is current yield defined?
- (a) Price/coupon
 - (b) price/market interest rate
 - (c) coupon/face value
 - (d) coupon/price

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
15**

BOND PORTFOLIO MANAGEMENT

STRUCTURE

- 15.0** Objectives
- 15.1** Legal Framework Governing Securities
- 15.2** Bond Portfolio Management
- 15.3** Banking Book and Trading Book
- 15.4** Buy-and-Hold Strategy
- 15.5** Investment Maturity Strategies
- 15.6** The Ladder or Spaced Maturity Strategy
- 15.7** The Front-End Loaded Maturity Strategy
- 15.8** The Back-End Loaded Maturity Strategy
- 15.9** The Barbell Strategy
- 15.10** Active Bond Management
- 15.11** Maturity
- 15.12** Sector-Issuer
- 15.13** Quality
- 15.14** Coupon and Tax Implications
- 15.15** Yield Curve Anticipation

Let Us Sum Up

Keywords

Check Your Progress

15.0 OBJECTIVES

After studying this section, you will be able to:

- Describe the important RBI instructions governing securities.
- Identify the risk involved in investment in bonds.
- Explain the Active and Passive Approach to bond portfolio management.
- Explain the meaning of Banking Book and Trading Book.
- Explain the investment maturity strategies.
- Explain what is meant by immunization and dedication.
- Explain the aspects of bonds which are important from the angle of active bond portfolio management.
- Describe 'yield curve anticipation' as a tool of bond portfolio management.

Banks in India, generally invest in bonds issued by both the Central and State Governments and their agencies. Investment in corporate debt is also increasingly becoming popular. Banks may invest in all types of bonds of varying maturities, and are expected to manage the interest rate risk arising from these investments by adopting suitable AssetLiability management policies. Further, certain privately placed NonSLR Bonds will be treated at par with Advances and be subjected to all prudential norms relating to advances. A typical bank's investment portfolio would consist of all types of bonds and possibly equity shares also.

15.1 LEGAL FRAMEWORK GOVERNING SECURITIES

Reserve Bank of India is entrusted with the regulation of transactions in Government securities, money market securities, gold related securities and repos in all debt instruments. In particular, aspects relating to Government securities are covered under the Public Debt Act and Rules and Notifications under the Public Debt Act, issued by both Central and State Governments. As regards corporate bonds, provisions contained in the Securities Contracts (Regulation) Act, Depositories Act, Stock Exchange Bye Laws and the terms and conditions of issue of the individual bonds are relevant.

Investment and trading activities of banks in bonds should conform with the regulations issued by RBI on classification and valuation of investments in addition to other legal provisions mainly contained in the Securities Contracts (Regulation) Act. The RBI regulations are mainly prudential. Accordingly banks are required to categorize the investments into three, viz 'Held To maturity' (HTM), 'Held For Trading' (HFT) and 'Available for Sale' (AFS). HTM is not to exceed 25% of the investments. However, Banks are permitted to hold investments in HTM category up to the regulatory SLR. HFT should be subject to the discipline and controls required for trading. AFS contains investments which are in neither HTM nor HFT categories. Categorisation is based on the intention of the bank at the time of purchase of the security and shifting between categories is permissible only exceptionally. There are stringent rules for shifting between categories. Banks are not expected to take any unrealised gain to income account, but provide for all losses on a markto-market basis. While HTM investments need not be marked to market, HFT and AFS should be marked to market. RBI also has stipulated that banks should maintain an 'Investment Fluctuation Reserve' and build up adequate reserves out of realised gains every year.

While the above are some of the salient features of RBI instructions, Investment managers in banks should be fully conversant with the instructions issued by RBI from time to time regarding the procedural and regulatory aspects relating to investments.

In addition, it is necessary to take into consideration the management perspectives on returns and risk management. The organizational structure for treasury management also has an important bearing on the conduct of bond portfolio management on safe and sound lines.

15.2 BOND PORTFOLIO MANAGEMENT

The Investment policy is the document approved by the top management of a bank articulating the investment objectives, risk management aspects, etc. Banks can adopt both passive and active approaches for the management of their portfolios and the bank's investment policy should specify the bank's approach. The passive approach is usually identified with buyandhold strategy. Active bond portfolio management involves switching and swapping bonds as circumstances change in the market.

15.3 BANKING BOOK AND TRADING BOOK

Investments are categorized on the basis of the bank's intent at the time of acquisition of securities, *i.e.* whether it is meant to be held till maturity (Held To Maturity) or sold after some period. A further differentiation is possible in respect to the securities acquired for sale: whether they are intended to be available for sale at an appropriate time depending on the bank's liquidity needs (Available for Sale) or whether they are intended for trading operations (purchase and sale of securities with a view to take advantage of the expected movement in their market prices). Those securities purchased with the intention of trading have to be classified as 'Held for Trading' and are subject to regulatory prescriptions regarding holding period, stoploss, etc. The aggregation of such securities held for trading forms the 'Trading Book' of the bank. A bank which decides to maintain a trading book is expected to have in place proper risk management, trading policies, delegation of powers, skills, dealing infrastructure, etc. Basle Committee's capital adequacy norms prescribe maintenance of capital to cover market risk in the Trading Book. Securities, other than those in the trading book, are classified as belonging to the 'Banking Book'. In the case of 'Banking Book', the securities are treated at par with other assets as far as balance sheet risks are concerned.

15.4 BUY AND HOLD STRATEGY

We have seen in an earlier section that if an investor holds a security till maturity, and has also been able to reinvest the periodic coupons during the residual maturity period at a return, which is not less than the yield to maturity (YTM) expected at the time of purchasing the bond, he would have realised an yield which is not less than the expected YTM. A buy-and hold strategy essentially involves investing in securities and holding them till maturity or earlier redemption (in case of bonds with call option). The coupon payments from the bond are reinvested in similar securities. The potential loss in

a bond portfolio arises from two sources, one is the price risk, if the bond is sold before maturity and interest rates harden; and the second is reinvestment risk when the coupons cannot be reinvested at the expected YTM on account of market interest rates declining. A hold to maturity strategy ensures that the first risk, viz., the price risk, is eliminated as the bond will fetch the par value on redemption at maturity and the investor needs only to bother about the creditworthiness of the issuer. However, the reinvestment risk cannot be avoided in a buyandhold strategy as the investor will be able to reinvest the coupons only at the yields available in the market at the relevant periods, and in case the market yields decline, the investor faces a reinvestment loss. Consequently, the investor may fail to achieve a realised yield on the investment as expected at the time of purchase of the bond. However, the buy and hold strategy is attractive for investors who are primarily interested in receiving large coupon incomes during the investment horizon which is predefined. This type of investors includes individuals such as retired persons and institutional investors comprising endowment funds, debt mutual funds, insurance companies, etc. Entities with very large size funds, at times, may find it difficult to effect portfolio turnover, particularly if the market is shallow when large deals could have considerable price impact in the market. In markets which are not developed, managers of such funds may find it prudent to adopt a passive strategy. Even in the passive portfolio strategy it is possible to plan out the maturities in order to achieve better portfolio yields. For instance, 'Bond Ladder' strategy presents such an opportunity.

15.5 INVESTMENT MATURITY STRATEGIES

A static buy-and-hold strategy may not always be practical as it would be difficult to foresee all exigencies in the markets, regulatory requirements and the bank's internal funds position – forcing liquidation of the investment before its contractual maturity. Further, the corpus of a fund invested in a single bond to be held till maturity may change its value depending upon the interest rates at which the coupons could be reinvested. While high coupons would provide some compensation in case reinvestment income falls below expectation (*i.e.*, if interest rate decline in the market), high coupon bonds are typically long term and as such, subject to higher price risk. If all monies are invested in long term securities, the investor may receive high coupon but misses the opportunity to diversify the portfolio with reference to maturities. In the case of a bank this may aggravate the problem of assetliability mismatch. Thus it is prudent to invest in securities of varying maturities. Several maturity distribution strategies are available, as described in the following paragraphs.

15.6 THE LADDER OR SPACED MATURITY STRATEGY

Banks may decide the maximum acceptable maturity, say, eight years and then invest equal proportion in each of several maturity intervals. Thus the bank may invest 12.50 per cent of its investment portfolio in securities one year or less from maturity, another 12.50 per cent in securities maturing within two years but not less than one year, another 12.50 per cent in interval of two to three years and so forth, until the eight year point is reached. The Ladder strategy helps avoid income fluctuations, but does not maximise returns. By ensuring periodic availability of funds from the redemptions,

the strategy builds in flexibility to take advantage of the promising opportunities that may appear. The Ladder Strategy may be adopted by banks with limited portfolio management expertise. An easy way to build a ladder will be to participate in the auctions conducted by the RBI for sale of treasury bills and dated securities, provided the investing bank has the required bidding skills or is in a position to take the services of seasoned bidders like banks and primary dealers at the auctions. However, the transaction cost aspects would have to be considered particularly by banks with small corpus of funds.

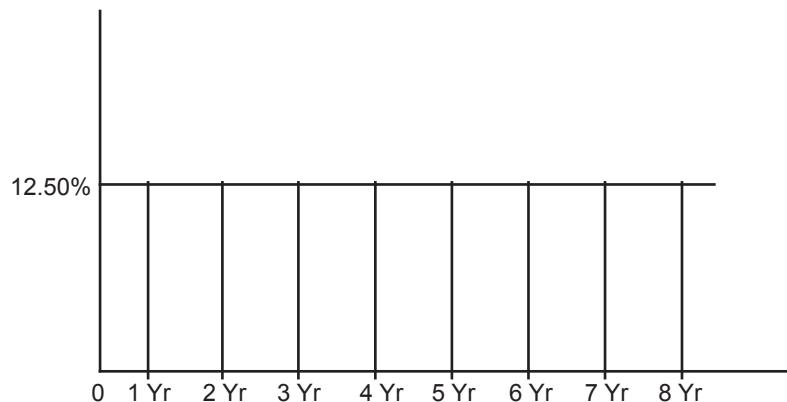


Figure 15.1

15.7 THE FRONT-END LOADED MATURITY STRATEGY

Under this strategy a bank may make all its investments in bonds which mature within a brief period of time, say two years. Within this two year period, the bank may decide that 20 per cent may be invested in maturities up to one year and the remaining in maturities up to two years, but not less than one year. Thus, this approach emphasizes the use of investment portfolio more as a source of liquidity and less as a source of income.

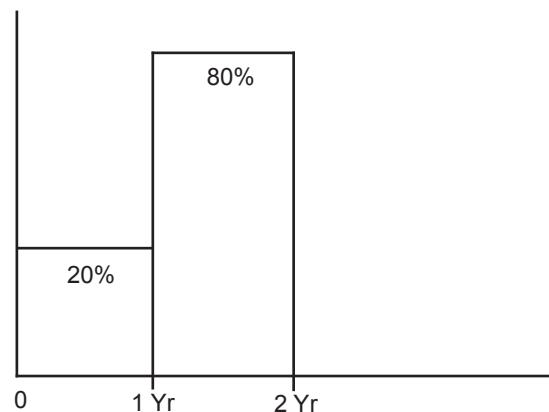


Figure 15.2

15.8 THE BACK-END LOADED MATURITY STRATEGY

A bank placing emphasis on income as opposed to liquidity may adopt a policy of investing in medium to long term bonds (say, 5 to 10 years). The strategy may be to increase the net interest income by borrowing short and investing long. This entails interest rate (maturity mismatch) risk for the bank.

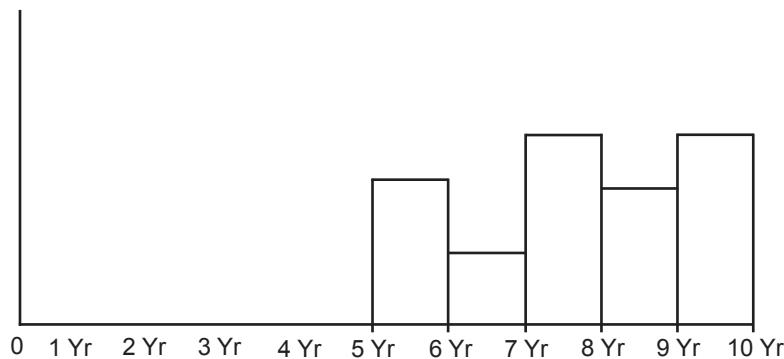


Figure 15.3

15.9 THE BARBELL STRATEGY

The Barbell strategy is a combination of frontended and backended approaches. The bank makes most of its investments in short term bonds (to provide liquidity) and long term bonds (to provide income associated with high coupons) with minimal investments in the intermediate maturities.

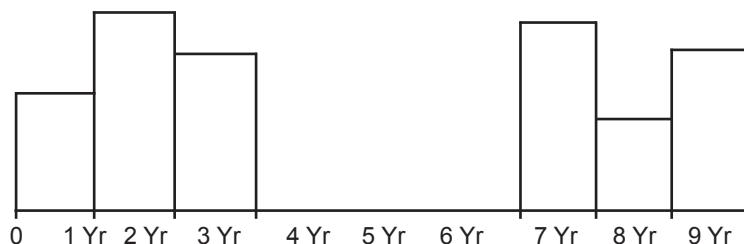


Figure 15.4

Immunization

Immunization is a strategy which applies the concept of duration in bond portfolio management. Duration is the weighted-average measure of a bond's life, where the various time periods in which the bond generates cash flows are weighted according to the relative size of the present value of those cash flows. Thus, Duration is the measure of average time for receipt of the cash flows from a bond in present value terms. This is also the point of time in the life of the bond when the capital gain/loss is exactly countervailed by their reinvestment loss/gain. Hence, if a bond is sold exactly

at the point of its Duration the investor will not suffer any loss in return and his realised yield will be same as the Expected Yield at the time of purchase of bond. In other words, his investment is immunized from loss if he takes care to ensure that his investment horizon matches with the duration of his portfolio. [Note: duration is additive and the duration of a portfolio is the weighted average of the durations of the individual bonds in the portfolio, weights being the ratio of the market price to the total market value of the portfolio]. In other words, if the investment horizon is two years, the *duration of the portfolio should be two years and as such, the nominal maturity will be higher.* The following example will make the concept clear:

Example

An investor has purchased a 10 year bond providing a coupon income of 8% per annum. Duration of the bond is 7.07 years. It may be seen from the following table showing the total return for holding for 1, 3, 7.07 and 10 years (sale and reinvestment values at different interest rate levels) that the expected yield of 8% is ensured if the bond is sold at the end of 7.07 years in all interest rate scenarios, viz. stable, declining and increasing interest rates.

Total Return on 8% ten year Bond held through Various Holding Periods

Income Source	Yield on reinv.	Holding Period in years			
		1	3	7.07	10
Coupon income		80.00	240.00	565.60	800.00
Duration at time of sale		6.75	5.58	2.65	0.00
Capital Gain/loss		127.36	105.28	50.00	0.00
Interest on interest	6%	1.20	18.74	140.64	274.81
Total return		208.56	364.02	756.24	1074.81
Return%		20%	11%	8%	7%
Coupon income		80.00	240.00	565.60	800.00
Duration at time of sale		6.35	5.34	2.75	0.00
Capital Gain/loss		0.00	0.00	0.00	0.00
Interest on interest	8%	1.60	25.32	160.38	391.12
Total return		81.60	265.32	725.98	1191.12
Return%		8%	8%	8%	8%
Coupon income		80.00	240.00	565.60	800.00
Duration at time of sale		6.17	5.24	2.73	0.00
Capital Gain/loss		-111.21	-94.47	-49.21	0.00
Interest on interest	11%	2.20	35.52	234.54	594.73
Total return		-29.01	181.05	750.94	1394.73
Return%		-3%	6%	8%	9%

Immunization using the concept of duration, to be effective, has to be a continuous process, as duration changes with the change in yields as also the remaining period to maturity. If, for instance, the initial investment horizon is three years, the initial *duration* of the portfolio should be three years. After some time, say six months, investment horizon will be two and half years, but the duration of portfolio would be different from two and half years on account of changes in the market yields and the nominal residual maturities of the bonds in the portfolio reducing by six months. The portfolio will now have to be rebalanced by buying/selling appropriate bonds such that the duration is brought to two and half years.

The following limitations in the technique of immunization must be noted:

- (i) Continual rebalancing of portfolio would entail considerable transaction cost.
- (ii) When the market is illiquid, it may not be possible to bring about the desired changes in portfolio.

Duration measure can be used as an important element in both passive and active portfolio strategies. In the former case, duration matching with the investment horizon is attempted for neutralizing the interest rate risk. In the latter case, efforts are made to take interest rate risk positions by aggressively changing the durations of portfolio (going long when the interest rates are expected to decline and short when rates are expected to increase). However, the basic assumptions subject to which duration is used as price sensitivity measure should always be borne in mind, *vis.,* assumption of parallel shift in yield curve and lack of precision when interest rate changes are large. When interest rate changes do not satisfy these assumptions, matching the duration to the investment horizon will not ensure immunization. Nevertheless, studies support the theory that a duration-matched portfolio will outperform a maturity-matched portfolio.

Dedication

Dedication is a strategy wherein the bond portfolio is structured in such a way that cash flows of the portfolio would be available as and when necessary to fund the maturing liabilities. As the cash flows are sought to be matched, dedication would to some extent, help in managing interest rate risk. If the portfolio is structured properly cash flows from principal repayments and coupon receipts plus any interest from investments in short term instruments would be sufficient to defray planned expenses /'repay liabilities as they fall due. Such dedication can be easily achieved by using a series of Zero coupon bonds, durations of which would match with the outflows. STRIPS, where they are available, also are useful instrument in place of Zeros. [Separate Trading in Registered Interest and Principal Securities STRIPS is a method which would facilitate separation of coupons and principal from a coupon bearing bond, and also their reconstitution, with a view to facilitate trade in them by pricing each of the expected coupon or principal cash flows as separate zero coupon bonds.]

15.10 ACTIVE BOND MANAGEMENT

The intention behind undertaking active bond management is to achieve higher returns compared to those available under passive strategies. Higher returns are expected to be achieved by correctly

positioning the portfolio's maturity structure, coupons and quality to benefit from changes in the general levels of interest rates. Thus active bond management entails taking a view on the movement of the level of interest rates in different market segments, *viz.*, call, term, corporate and sovereign debt, etc. The strategy has rate and spread anticipation as its mainstay, is highly risky and can be suggested only if the bank has the necessary skills and infrastructure and risk management system.

Trading is an important function of active portfolio management. It is important that the policy specifically states whether the bank would undertake trading in investments. Where a bank's management is satisfied that the bank has the necessary human skills and infrastructure to undertake trading in securities and decides to derive income from trading activities, such bank maintains a 'Trading Book'. There should be strict rules in place relating to the specific bonds to be included in the trading book and maximum holding period and defeasance period (meaning time taken for unwinding a position). Specific limits should be prescribed relating to the overall size of the trading book, duration of bonds/portfolio, stop-loss, etc.

While conducting bond portfolio management, in particular active management, the following aspects are of relevance:

15.11 MATURITY

The dealer may go in for longer maturity if interest rates are expected to fall as prices will rise, and shorter maturity, if interest rates are expected to rise and prices fall. However, while making the maturity decision, the portfolio objectives of maximizing total return (coupons, reinvestment income and capital gains) should not be lost sight of. Most importantly, the forecast on interest rates based on which decisions on maturity are taken should be reviewed continuously as expected rates may change significantly due to changing economic expectations, RBI policy, and developments in external sector. As a matter of prudence, banks which reap huge trading profits during times of falling interest rates should build up investment fluctuation reserves to take care of losses when the interest rates may rise in future so as to avoid volatility in earnings. As mentioned earlier, RBI has already stipulated this.

15.12 SECTOR-ISSUER

Bonds are issued by corporates operating in different economic/commercial sectors and carry different credit risks. Hence they are priced differently in the market. Typically, the market prices the bonds by adding credit risk premium over the sovereign yield (default risk free) of corresponding maturity. The level of premium can also be influenced by the state of the market liquidity and the condition of the issuer (like steel, IT, petroleum, etc.). The premium over the sovereign yield for the time being existing in the market is known as the 'yield spread' or credit risk premium. The yield spread changes as a consequence of the changes about the expectations on the credit quality of the issuer and/or prospect of the sector. It may widen or narrow down. Assume that the yield spread was 20 basis points between an AAA company and Government bond yield. If it is expected that this spread is likely to widen, a dealer may sell company's bonds from his portfolio and buy them back when the spread actually widens and the prices go down, thus reaping a price gain.

15.13 QUALITY

Quality of a bond is reflected in its market prices. High quality bonds typically offer low yields and low quality bonds higher yields. An important requirement in portfolio management is to achieve quality diversification, as a proper mix of high and low quality bonds should be held in order to achieve higher returns by assuming risk consciously. Management of such risks thus becomes an important responsibility of the portfolio manager. Generally, yield spreads between different quality bonds narrow during economic recovery and widen during economic contraction. Subject to the investment policy laid down by the bank, high quality bonds may be purchased when economy is expected to contract and lower quality bonds acquired when an economic expansion is expected. During the ensuing economic expansion even the low quality bonds are expected to see increase in prices, offering profit potential.

15.14 COUPON AND TAX IMPLICATIONS

Coupon is the interest rate promised on the bond by the issuer. There is a wide range of issues made both by Governments and companies offering a range of coupon rates to choose from. Choice of coupon is dependent on factors such as need for current income, the sensitivity to price fluctuations and interest rate expectations. The following considerations are important:

- (i) High coupon bonds are relatively less price sensitive compared to low coupon bonds with similar characteristics.
- (ii) Prices/Yields change also because of factors such as supply of new issues, call features, credit enhancements, etc.
- (iii) Tax implications also play an important role in the selection of appropriate coupon.

For example, an individual who is concerned with receiving high current income and has a buy-and-hold approach will select issues carrying high coupons. From taxation angle he may go in for a Zero Coupon Bond if the capital gain tax has to be paid only on sale/redemption.

On the other hand, if tax has to be paid on the annual interest accrued, the tax implication would be different. Thus a bond dealer has to ascertain the position of the prevailing tax law in order to meaningfully assess the post-tax returns on bonds. Also, if the bond manager expects the interest rate to fall, he may prefer to invest in Zero coupon bonds to maximize the capital gains. On the other hand, if he feels that the interest rate is likely to rise he may go in for high coupon bonds which are less price sensitive. However, for a fund which is exempt from payment of income tax, total return is more important and as such the selection of issue will take into account all the factors impacting total return and not the coupon size alone.

15.15 YIELD CURVE ANTICIPATION

We have discussed in the above paragraphs how by anticipating interest rates banks can take investment decisions. The rate anticipation strategy can be refined by adopting more sophisticated strategies based on Yield Curve anticipation. The level of interest rates (low, high) and pattern of yield curve changes over a period and anticipation of such changes helps in positioning the portfolio as far as investment maturities are concerned.

A measure of such changes is the term spread, i.e. spread of long term yield over short term yield, otherwise known as “tenor premium”. Term spreads change by different magnitudes across the yield curve. For instance the short term rates may rise (say) by 100 basis points while during the same time long term rates may rise only by (say) 25 basis points. As a result the price changes in respect of short term and long term bonds over a given period can be different from the changes if a parallel shift in yield curve was assumed. The changes can be quite substantial when the shape of yield curve changes from positive slope to negative slope and *vice versa*. In such conditions short and intermediate maturities will undergo higher levels of yield shift compared to long term bonds. If the yield falls by more number of basis points in the intermediate maturity segment of the yield curve, it is possible that the corresponding price gain can be more than in the case of long term bonds. Thus, it becomes important not only to forecast the movement of the general level of interest rates but also the segment on the yield curve where the changes are expected to be more, compared to other segments. For instance, if an investor feels that the interest rates are likely to fall, rate anticipation would suggest making investment in the longest available bond. However, if the investor further anticipates that the decline will be small in the long end and more in middle and short ends on the yield curve, he may invest in medium term bonds. In the event of his forecast turning out to be correct, he can achieve appreciation in the value of his investment. However, if his forecast on the rate movement turns out wrong and the rates in fact rise, he would be suffering less losses compared to his positioning on the long end, as per the rate anticipation strategy.

Riding the yield curve is another commonly adopted strategy. If the yield curve is positively sloped and the dealer expects that the yield curve would be stable over a period of time, he may adopt this strategy. This involves investing for a period longer than the investment horizon and liquidating the investment at the expiry of the investment horizon. Thus if the investment horizon is one year and one year yield is 8%, one could invest in a two year bond (say) at 9% and receive the high yield for one year. At the end of one year the residual maturity of the bond is one year. This will now be priced corresponding to its lower yield of 8% (assuming the yields have not changed substantially) and the investor will be receiving capital appreciation in addition to the higher coupon income at 9%.

The technique of ‘Yield Curve Anticipation’ has its own limitations. The movements of the yield curve are very uncertain. The concept is based on a crude but traditional concept of maturity of a security; it does not reckon periodic income/cash flows from the security. For this, Yield Curve anticipation may have to be combined with the application of the concept of duration for evolving strategy for bond portfolio management.

Salient Points

1. Investment and trading activities of banks in bonds should conform to the regulations issued by RBI on classification and valuation of investments in addition to other legal provisions mainly contained in the Securities Contracts (Regulation) Act.
2. Those securities purchased with the intention of trading have to be classified as ‘Held for Trading’ and are subject to regulatory prescriptions regarding holding period, stop-loss, etc. The aggregation of such securities held for trading forms the ‘Trading Book’ of the bank.

3. A bank which decides to maintain a trading book is expected to have in place proper risk management, trading policies, delegation of powers, skills, dealing infrastructure, etc.
4. Basle Committee's capital adequacy norms prescribe maintenance of capital to cover market risk in the Trading Book.
5. Securities, other than those in the trading book, are classified as belonging to the 'Banking Book'. In the case of 'Banking Book' the securities are treated on par with other assets as far as balance sheet risks are concerned.
6. A buy-and-hold strategy essentially involves investing in securities and holding them until maturity or earlier redemption (in case of bonds with call option). The coupon payments from the bond are reinvested in similar securities.
7. The potential loss in a bond portfolio arises from two sources, one's the price risk if the bond is sold before maturity and interest rates harden. And the second is reinvestments risk when the coupons cannot be reinvested at the expected YTM on account of market interest rates declining.
8. A hold-to-maturity strategy ensures that the price risk is eliminated as the bond will fetch the par value on redemption at maturity and the investor needs only to bother about the creditworthiness of the issuer. However, the reinvestment risk cannot be avoided in a BuyandHold strategy as the investor will be able to reinvest the coupons only at the yields available in the market at the relevant periods.
9. Consequently, the investor may fail to achieve a realized yield on the investment as expected at the time of purchase of the bond.
10. The Buy-and-Hold strategy is attractive for investors who are primarily interested in receiving large coupon incomes during the investment horizon which is predefined.
11. Even in the passive portfolio strategy it is possible to plan out the maturities in order to achieve better portfolio yields. For instance, 'Bond Ladder' strategy presents such an opportunity.
12. 'The Ladder or Spaced Maturity Strategy', 'FrontEnd Loaded Maturity Strategy', 'The Backend Loaded Strategy' and 'The Barbell Strategy' are some of the investment maturity strategies.
13. Immunization is a strategy to protect the expected yield from the interest rate risk during the investment horizon. The duration of the portfolio is monitored to ensure that the duration matches the remaining investment period on an ongoing basis.
14. Dedication is a strategy wherein the bond portfolio is structured in such a way that cash flows of the portfolio would be available as and when necessary to fund the maturing liabilities.
15. While conducting bond portfolio management important aspects to be taken care of include maturity of bond, sector of issuer, credit quality and coupon and tax implication.
16. The level of interest rates (low, high) and anticipation of the pattern of yield curve change help in positioning the portfolio as far as investment maturities are concerned.

Let Us Sum Up

Banks are required to categorize the investments into 'Held to Maturity' (HTM), 'Held For Trading' (HFT) and 'Available For Sale' (AFS). There are various strategies like 'buy and hold strategy', and investment maturity strategies, the ladder or spaced maturity strategy, the front-end loaded maturity strategy, the back-end loaded maturity strategy and the Barbell strategy, etc. The rate anticipation strategy can be refined by adopting yield curve anticipation.

Keywords

HTM, HFT, AFS, Banking book, Trading book, immunization and yield curve anticipation.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is the salient feature of front-end loaded maturity strategy?
 - (a) Focus on liquidity
 - (b) Focus on appreciation
 - (c) Focus on income
 - (d) Focus on rating
2. What is the salient feature of back-end loaded maturity?
 - (a) Focus on liquidity
 - (b) Focus on income
 - (c) Focus on fees
 - (d) Focus on rating
3. What is Barbell strategy?
 - (a) Holding till maturity
 - (b) Investing in top rated bonds
 - (c) Combination of back-end and front-end loaded maturity strategy
 - (d) Maintaining oversold position where permitted
4. Which of the following statements is true in respect of fixed income bonds?
 - (a) High coupon bonds are relatively more price sensitive compared to low coupon bonds with similar characteristics.
 - (b) Prices/Yields are immune to factors such as supply of new issues, call features, credit enhancements, etc.
 - (c) Bonds are generally insensitive to yield changes.
 - (d) High coupon bonds are relatively less price sensitive compared to low coupon bonds with similar characteristics.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

MODULE – C

TREASURY & INTERNATIONAL BANKING

Units

- 16.** Treasury Operations – The Global Scenario
- 17.** Exchange Rate Mechanism
- 18.** Risk Analysis and Control
- 19.** Forex Valuation
- 20.** Ethics, Morals and Code of Conduct for the Dealing Room
- 21.** Components of Multi-Currency Balance Sheets

UNIT
16

TREASURY OPERATIONS – THE GLOBAL SCENARIO

STRUCTURE

16.0 Objective

16.1 Treasury Operations: The Global Scenario

Let Us Sum Up

Keywords

Check Your Progress

16.0 OBJECTIVE

To provide inputs on the emergence of a global unified financial market.

16.1 TREASURY OPERATIONS – THE GLOBAL SCENARIO

Prior to 1980, national markets were largely independent of each other. During this period the foreign exchange market and the Euro market alone had the characteristic of being global in their operations. As against this, today there is a greater dependency among national markets. The process of integration has been accelerated due to liberalization and deregulation of economies by various countries.

The emergence of a global unified financial market has resulted in the removal of the distinction between national markets as also between national and offshore markets. The Indian financial markets also started showing signs of integration since 1991. Several measures have been taken by Government of India and the Reserve Bank of India, to ensure the integration of financial markets. Some of the important measures taken are enumerated below:

- (a) Deregulation of interest rates;
- (b) Liberalization of exchange control regulations relating to foreign investments in India;
- (c) Permission granted to Indian corporates to raise resources in International Financial Markets;
- (d) Relaxation of control in the end-use of funds raised abroad by issuance of Global Depository Receipts (GDRs), Foreign Currency Convertible Bonds (FCCBs) or by way of External Commercial Borrowings (ECBs);
- (e) Permission accorded to banks to invest funds mobilized under FCNR(B), EEFC, RFC, etc. in overseas markets. This can be termed as the single most important step in integrating the markets;
- (f) Allowing banks to maintain balances in foreign currencies and undertake investments in overseas markets up to the levels approved by their Board;
- (g) Allowing banks to invest the un-deployed FCNR (B) funds in overseas markets in long-term fixed income securities for periods not exceeding the maturity of the underlying FCNR (B) deposits;
- (h) Permitting utilization of Foreign currency funds representing surpluses in the nostro accounts for making loans to resident constituents and for extending credit facilities to Indian wholly owned subsidiaries/joint ventures abroad;
- (i) Permitting overseas foreign currency borrowings including existing External Commercial Borrowings and overdrafts in Nostro accounts (not adjusted within five days), up to 100 per cent of their unimpaired Tier I capital or USD 10 million (or its equivalent), whichever is higher;
- (j) Permitting borrowings outside the limit of 100 per cent of unimpaired Tier I capital or USD 10 million (or its equivalent), whichever is higher in select cases;
- (k) Allowing banks to borrow from International/Multilateral Financial Institutions in which Government of India is a shareholding member or which have been established by more than one government or have shareholding by more than one government and other international organizations;
- (l) Permission given to corporates/banks to deal in derivative products for risk management;
- (m) Introduction of Repo/Reverse Repo in government and in certain other types of securities. This has facilitated in influencing call money rates;

- (n) Permission granted to banks to initiate cross currency position overseas;
- (o) Introduction of market determined exchange rates and the conscious decision of the government to borrow at market related interest rate;
- (p) Permission accorded to borrow/lend foreign currencies among authorized dealers;
- (q) Freedom to banks to fix open position limits and aggregate gap limits subject to approval of RBI;
- (r) Removal of interbank borrowings from the purview of CRR/SLR requirements;
- (s) Placing a revised liquidity framework in August, 2014 and deciding to review the operation of the Revised Liquidity Management Framework on an ongoing basis to bring about further refinements as considered necessary.

Banks can raise rupee resources by sale of foreign currencies for meeting their rupee requirements for lending to corporates provided such lending is profitable. Corporates have been permitted to borrow in INR and/or in foreign currencies, and, also to alternate between the INR loan and the Foreign Currency Loan (FCL). Corporates will compare the cost of borrowings in INR and in foreign currencies and decide to borrow in the currency on which the effective cost is less. This aspect has also contributed towards the integration of Forex and money markets.

It should however be said here that the swap differentials of currencies may not reflect the interest rate differentials as the Indian markets are not totally free from regulations. The Indian financial markets will also behave in a similar way as the global financial markets when full convertibility in capital account is introduced.

The integration of the various domestic financial markets, and the domestic financial markets with the global financial markets will ensure massive cross-border financial flows. Further, the investors will have access to various financial markets in the world and have diversified asset portfolios. Apart from these, the other impacts of integration are:

- (a) There will not be any distinction between the short-term and long-term interest rates in the sense that corporates can borrow long-term funds at short-term interest rates if they are raising funds on floating rate basis. As a corollary to this, the distinction between short-term and long-term funds is also slowly getting reduced.
- (b) There will be no difference between the domestic financial markets vis-à-vis international financial markets.
- (c) The efficiency and the competitiveness of the markets will be reflected in the narrow spread between the bid and the ask prices; and because of the narrow spread, convergence of markets will take place.
- (d) The financial markets will be deeper and more liquid.
- (e) Innovations in financial products will take place to suit the requirements of the various market players.
- (f) Exchange rates as also interest rates will be determined purely on the basis of demand and supply.
- (g) Forward rates will be purely the inflation interest rate differentials.

The integration of various international financial markets has achieved two objectives: (a) integration of domestic financial markets, and (b) supporting financial transactions that are supranational. The foreign exchange market is the vehicle through which this is taking place. The cost of covering the proceeds of an international transaction in the money market and the forex market will be the same

if these markets are in equilibrium. The Indian financial markets are not fully integrated because of restrictions in capital flows. However, the Government of India as also the Reserve Bank of India have been taking a number of measures to ensure phased integration among the various financial markets and the markets will eventually integrate only when the full Capital Account Convertibility is permitted.

Let Us Sum Up

The treasury operations in the global scenario post de-regulation have resulted in integration of markets. New investment avenues like FCNR (B), EEFC, RFC, etc., and various types of External Commercial Borrowings are now available.

Keywords

Deregulation, liberalization, GDR, FCCB, ECB, EEFC, RFC, FCL

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. During liberalization, corporates and banks are allowed to do what for risk management?
 - (a) deal in derivatives
 - (b) take mutual help for reducing risk
 - (c) deal in ECBs
 - (d) deal in syndications
2. What is the important change in government borrowing during liberalization?
 - (a) government stopped borrowing
 - (b) government started borrowing at market determined rates
 - (c) government directed RBI to borrow
 - (d) government started borrowing for very short term
3. Following liberalization, what is the treatment given to interbank borrowing for CRR/SLR requirements?
 - (a) interbank borrowings banned
 - (b) interbank borrowings discouraged
 - (c) interbank borrowings removed from the purview of CRR/SLR requirements
 - (d) interbank borrowings given same weight as other liabilities
4. Why swap differentials of currencies do not reflect the interest rate differentials in Indian market?
 - (a) Indian markets are fully liberalized
 - (b) Indian markets are fully integrated with foreign markets
 - (c) Interest rates in India are high
 - (d) Indian markets are not totally free from regulations

Answers

1. (a)
2. (b)
3. (c)
4. (d)

UNIT
17

EXCHANGE RATE MECHANISM

STRUCTURE

17.0 Objective

17.1 Factors Influencing Exchange Rates

17.2 Ready Exchange Rates

17.3 Principal Types of Buying Rates

Let Us Sum Up

Keywords

Check Your Progress

17.0 OBJECTIVE

To provide insights into factors affecting exchange rates, to explain the exchange rate mechanism, methods of quotation, types of forex transactions, forward rate calculation, various types of exchange rates.

17.1 FACTORS INFLUENCING EXCHANGE RATES

A. Money Market

A tight monetary policy is favourable for the exchange rate because high interest rates will cool the economy and drive down inflation attracting funds into the currency. Prospective falls in bond yields also support the currency.

B. Fiscal Policy

The budgetary position of the government indicates the soundness of fiscal management. A lax fiscal policy weakens the currency.

C. Inflation

High inflation is negative for a currency while low inflation points to a strengthening currency.

D. Trade/Current Account Balance

Trade/current account surplus is bullish for a currency.

E. Attractiveness of Country for Investment

Sound economic fundamentals, stable government, higher international credit rating of the sovereign and an international orientation attract foreign investment, strengthen the currency.

F. Forex Reserves

Reserves are the ammunition that can be deployed to ward off speculative attacks on a currency. A healthy reserves position enables the central bank to manage the exchange rate in line with its goals and domestic economic considerations.

G. Forex Debt

Debt is in absolute terms, in relation to GDP and short-term debt as a percentage of reserves (liquidity ratio). High forex debt ratio is considered adverse for the currency.

H. Agricultural Production/Food Stocks (important in emerging markets)

Threat of high inflation is less if the country is comfortably positioned as far as availability of items of mass consumption is concerned. Low inflation risk is considered favourable for the currency.

I. Commodity Prices

Important for commodity intensive, exporting countries, e.g., Australia and South Africa. High commodity prices (for oil, gold, base metals, coffee, etc.) favour the exchange rates of major producers of these products.

J. Rate of GDP Growth

A higher growth favours currency.

K. Political

Stability of Government is the confluence and interplay of all the above factors – past and prospective – which determines currency movements. Different factors predominate at different times, creating uncertainty and volatility, which characterise currency markets.

The movements of exchange rates are indeed fascinating. The reasons for the movements are varied. A few more causes are listed here below:

- (a) Demand and Supply for the individual currency
- (b) Relative strengths of the economies for a given pair of currencies
- (c) Trade-surplus/deficit vis-a-vis the currencies of the countries concerned
- (d) A host of economic factors like Gross National Product, Fiscal Deficit, Balance of Payments Position, Industrial Production data, Employment data etc.
- (e) Monetary Policies of the Government/Central Bank Political and Security climate
- (f) Inflation rate differentials
- (g) Interest rate differentials

It may be added that the interest rate differentials, which are, in turn, a function of the inflation differentials, would be more relevant in case of forward rate determinations/movements.

The factors that contribute to the exchange rate movements are quite varied and wide. The demand and supply factors are equally important in determining the exchange rates.

The news flashes that periodically tick in will impact the exchange rate movements. Whether a particular news item would cause any movement in the exchange rate typically depends upon the way in which the same is perceived by the market forces. Normally, by the time the news is out, it is acted upon and absorbed by the market instantaneously. Anticipated news, by the time it is formally announced, may have no impact in the market as the same would have been already factored into the exchange rate movement. The movement, at best, could be restricted to the extent of variance between the anticipated news and the actual news. The market sentiments play a definite role in causing the

upward/downward movement of exchange rates in the short run although the fundamentals of the economy play a major role in the medium to long term. Market sentiments have their due place in determination of exchange rate in the short run even though they may not be, at times, adequately backed by common logic/ reasoning, and it may be such that the views could be, in reality, contrary to the perceptions based on economic fundamentals.

17.1.1 Exchange Mechanism

Foreign exchange dealing is a business in which foreign currency is the commodity. Foreign currency is not a legal tender outside the country of issue. The US dollar cannot be used for settlement of debts in India; nevertheless, it has value. The value of US dollar is like the value of any other commodity. Therefore, foreign currency can also be considered as the commodity in foreign exchange dealings.

17.1.2 Purchase and Sale Transactions

Trading has two aspects: (i) Purchase and (ii) Sale.

A trader has to purchase goods from his suppliers which he sells to his customers.

An Authorised Dealer purchases as well as sells the commodity, i.e., Foreign Currency.

Two most important points while dealing in foreign exchange are that:

- (i) The transaction is always viewed from the bank's point of view; and
- (ii) The item referred to is the commodity, i.e., foreign currency.

Therefore, when we talk about purchase it means the bank has purchased foreign currency, and while we say sale, it means the bank has sold foreign currency.

In a purchase transaction the bank acquires foreign currency and parts with home currency.

In a sale transaction the bank parts with foreign currency and acquires home currency.

17.1.3 EXCHANGE QUOTATIONS

There are two methods:

1. Exchange rate, expressed as the price per unit of foreign currency in terms of the home currency is known as the 'Home currency quotation' or 'Direct Quotation'.
2. Exchange rate expressed as the price per unit of home currency in terms of the foreign currency is known as the 'Foreign Currency Quotation' or 'Indirect Quotation'.

Direct Quotation is used in New York and other foreign exchange markets, and Indirect Quotation is used in London foreign exchange market.

In India, till 1966 direct quotation was prevalent. After the devaluation of the rupee in 1966, indirect quotation was adopted. Effective from August 2, 1993, India has switched over to direct method of quotation. This switch over from indirect to direct method is to establish transparency in exchange rates in India.

17.1.4 Direct Quotation: Buy Low, Sell High

The prime motive of any trader is to make profit. By purchasing the commodity at lower price and selling it at a higher price, a trader earns profit. In foreign exchange, the banker buys the foreign currency at a lesser price and sells it at a higher price. Therefore, in DIRECT Quotation, the maxim is Buy Low, Sell High.

17.1.5 Indirect Quotation: Buy High, Sell Low

A trader for a fixed amount of investment would acquire more units of the commodity when he purchases, and for the same amount he would part with lesser units of the commodity when he sells. Hence, the maxim that the dealer has to follow in the case of an indirect quotation is ‘Buy High, Sell Low’.

17.1.6 Two-way Quotation

The foreign exchange quotation between banks will have two rates: one at which the quoting bank is willing to buy and the other at which it is willing to sell foreign currency. In case of direct quotation, the maxim ‘Buy Low and Sell High’ applies. The lower of the two rates is the buying rate and higher is the selling rate. In case of indirect quotation, the rule ‘Buy High and Sell Low’ applies. The higher of the two rates is the buying rate and the lower rate is the selling rate.

The buying rate is also known as the bid rate and the selling rate as the offer rate; the difference between the two is known as spread, which is profit for the quoting party. The quoting party is known as the “Price Giver” and the party facing or receiving the quote is known as the “Price Taker”.

17.1.7 Spot and Forward Transactions

Bank ‘A’ agrees to buy USD 100,000 from Bank ‘B’. The actual exchange of currencies, i.e. payment of rupees and receipt of US dollars, under the contract may take place:

- (a) on the same day, or
- (b) The next working day,
- (c) two days later, or
- (d) sometime later, say after a month.

(a) On the same day

Where the agreement to buy and sell is agreed upon and settled on the same date, the transaction is known as CASH transaction or value today transaction. The terminology is T+0 settlement.

The rupee equivalent of the transaction will be paid by bank ‘A’ in favour of bank ‘B’. Foreign currency payment is effected, say at New York. ‘A’ Bank maintains an account in US dollar at New York with some other bank. Bank ‘B’ maintains a similar account with some other bank there. Bank ‘B’ would advise its correspondent bank through tested SWIFT message to pay to the bank maintaining Bank ‘A’ Bank account. USD 100,000 for credit to the account of Bank ‘A’ with them.

(b) The Next Working Day

When the Trade is concluded today and settled for value the next working day, it is referred as TOM value trade. The terminology is for T+1 settlement.

(c) Two days later

This procedure involves some time; therefore two days are allowed to ensure that foreign exchange is delivered by crediting nostro account of a bank.

For example if the contract is made on Monday, the delivery should take place on Wednesday. If Wednesday is holiday, the delivery will take place on the next day, i.e. Thursday. Rupee payment is also made on the same day the foreign currency is received. The transaction where the exchange of currencies takes place two days after the date of the contract is known as the SPOT transaction. The terminology is T+2 settlement. A majority of forex transactions are ‘spot’ transactions across the globe.

(d) Some days later, say after a month

The delivery of foreign currency and payment in rupees take place after one month. The transaction in which the exchange of currencies takes place at a specified future date is known as a forward transaction. The forward transaction can be for delivery one or two or three months, etc. A forward contract for delivery one month means the exchange of currencies will take place after one month from the date of contract. A forward contract for delivery two months means the exchange of currencies will take place after two months and so on.

17.1.8 Forward Margin/Swap Points

Forward rate may be the same as the spot rate for the currency. Then it is said to be at par with the spot rate. But this rarely happens. More often the forward rate for a currency may be costlier or cheaper than its spot rate. The difference between the forward rate and the spot rate is known as the forward margin or swap points. The forward margin may be either at a premium or at a discount. If the forward margin is at a premium, the foreign currency will be costlier under forward rate than under the spot rate. If the forward margin is at discount, the foreign currency will be cheaper for forward delivery than for spot delivery. Generally, the forward premium is a function of the interest rate differential between the two countries, which form the currency pair in the quotation. Factors like expectation about demand – supply also assume significance in the forward rate. It may be noted that if there are restrictions on free trade of foreign currency or interest rates in the country are administered/managed, then the forward premium/discount may not exactly represent the interest rate differential.

17.1.9 Direct Quotation

Premium is added to spot rate to arrive at the forward rate. This is done for both types of transactions, i.e., either sale or purchase transaction. Discount is deducted from the spot rate to arrive at the forward rate.

17.1.10 Interpretation of Inter-bank Quotations

The market quotation for a currency consists of the spot rate and the forward margin. The outright forward rate has to be calculated by loading the forward margin into the spot rate. For example, US dollar is quoted in the inter-bank market on a given day as under:

Spot	1 USD = ₹64.1000/1300
Spot/November	0200/0500
Spot/December	1500/1800

The following points should be noted in interpreting the above quotation:

1. The first statement is the spot rate for dollar. The quoting bank's buying rate is ₹64.1000 and selling rate is ₹64.1300.
2. The second and third statements are forward margins for forward delivery during the months of November and December respectively. Spot/November rate is valid for delivery end November. Spot/December rate is valid for delivery end December.
3. The margin is expressed in points, i.e., 0.0025 of the currency. Therefore, the forward margin for November is 2 paise and 5 paise. Forward margin for December is 15 paise and 18 paise.
4. It can be seen that under direct quotation, the first rate in the spot quotation is for buying and second for selling the foreign currency. Correspondingly, in the forward margin, the first rate relates to buying and second to the selling. Taking Spot/November as an example, the margin of 2 paise is for purchase and 5 paise is for sale of foreign currency.

Where the forward margin for a month is given in ascending order, as in the quotation above, it indicates that the forward currency is at premium. The outright forward rates are arrived at by adding the forward margin to the spot rates.

The outright forward rates of dollar can be derived from the above quotation as follows:

	<i>Buying Rate</i>		<i>Selling Rate</i>	
	<i>November</i>	<i>December</i>	<i>November</i>	<i>December</i>
Spot Rate	64.1000	64.1000	64.1300	64.1300
Add: Premium	0.0200	0.1500	0.0500	0.1800
Forward Rate	64.1200	64.2500	64.1800	64.3100

From the above calculations, we arrive at the following outright rates,

Spot delivery USD1	= ₹64.1000	₹64.1300
Forward November USD1	= ₹64.1200	₹64.1800
Forward December USD1	= ₹64.2500	₹64.3100

If the forward margin is at discount, it would be indicated by quoting the forward margin in the descending order.

The conclusion is that:

If Forward margin is in the ascending order, the Premium is to be added to the spot rate.

If Forward margin is in the descending order, the Discount is to be deducted from the spot rate.

Factors determining the forward margin, as the difference between the spot rate and forward rate of a currency, make the forward currency cheaper or costly as compared to the spot currency. The difference in the rate of interest prevailing at different financial centers is a dominant factor determining forward margin. Other factors that affect forward margin are demand and supply of currency, speculation about spot rates and exchange control regulations.

(1) Rate of Interest: The difference in the rate of interest prevailing at the home center and the concerned foreign center determines the forward margin. If the rate of interest at the foreign center is higher than that prevailing at the home center, the forward margin would be at discount. Conversely, if the rate of interest at the foreign center is lower than that at the home center, the forward margin would be at premium. This can be explained as follows:

When the bank enters into a forward sale contract with the customer, it arranges for delivery of the foreign currency on the due date by keeping the funds in deposit at the foreign center concerned. If the interest rate is higher at the foreign center, forward rate is at a discount. If the interest rate is lower at the foreign center, the bank suffers a net loss and the loss is passed on to the customer by quoting the forward rate at a premium.

Illustration:

The spot rate for US dollar is ₹64.25. The rate of interest at Mumbai is 6% p.a. and at New York it is 2.5% p.a. The bank has to quote 3 months selling rate to a customer. Assuming that the operation is for USD 10000 and the entire interest loss/gain is passed on to the customer, the forward rate can be calculated.

To meet the needs of the customer, the bank may buy spot US dollar and deposit them in New York for 3 months so that it can deliver on due date the required dollar amount. The operations involved are as under:

Purchase dollar and	Borrows in Mumbai to pay	
Invest for 3 months USD 10000 for dollar at	₹64.25	
₹64.25 × 10000	₹642500	
Interest earned for	Interest payable for	
3 months at 2.5% p.a.	USD 62.5	3 months at 12% ₹9637.50
After 3 months		
Receive USD 10062.50	Pay	₹652137.50

The bank should be able to get ₹652137.50 against USD 10,062.50. Therefore the rate quoted is
 $\text{₹652137.50}/10062.50 = ₹64.81$

Thus the forward premium is $(64.81 - 64.25) = ₹0.56$.

This can also be calculated approximately by the following formula:

Forward Margin

Spot Rate × Forward Period × Interest Differential/100 × Time

$$[\{64.25 \times 3 \times (6 - 2.5)\} / (100 \times 12)] = 0.56$$

If suitable conditions prevail in the market, the rate of interest would exert a greater influence than any other factor and the forward margin would tend to be compensated by the forward margin. But, in practice, it is hard to find this, and the forward margin at any particular time is determined by other factors listed below.

(2) Demand and Supply: Forward margin is also determined by the demand for and the supply of foreign currency. If the demand for foreign currency is more than its supply, forward rate would be at premium. If the supply exceeds the demand, the forward rate would be at discount.

(3) Speculation about Spot Rates: Since the forward rates are based on spot rates any speculation about the movement of spot rates would influence forward rates also. If the exchange dealers anticipate the spot rate to appreciate, the forward rate would be quoted at premium. If they expect the spot rate to depreciate, the forward rates would be quoted at a discount.

(4) Exchange Regulations: Exchange control regulations may put some conditions on the forward dealings and may influence the effect of the above factors on the forward margin. Such restrictions may be with respect to keeping of balances abroad, borrowing overseas, etc. Intervention in the forward market by the central bank may also be done to influence the forward margin.

17.2 READY EXCHANGE RATES

The foreign exchange dealing of a bank with its customer is known as ‘merchant business’ and the exchange rate at which the transaction takes place is the ‘merchant rate’. The merchant business in which the contract with the customer to buy or sell foreign exchange is agreed to and executed on the same day is known as ready transactions or cash transactions. As in the case of inter-bank transactions, a value next day contract is deliverable on the next business day and a spot contract is deliverable on the second succeeding business day following the date of the contract. Most of the transactions with customers are on ready basis. In practice, the terms ready and spot are used synonymously to refer to transactions concluded and executed on the same day.

17.2.1 Basis for Merchant Rates

When the bank buys foreign exchange from the customer, it sells the same in the inter-bank market at a better rate and thus makes a profit out of the deal. In the inter-bank market, the bank will accept the rate as dictated by the market. It can therefore sell foreign exchange in the market at the market buying rate for the currency concerned. Thus the inter-bank buying rate forms the basis for quotation of buying rate by the bank to its customer. Similarly, when the bank sells foreign exchange to the customers, it meets the commitment by purchasing the required foreign exchange from the inter-bank market. It can acquire foreign exchange from the market at the market selling rate. Therefore, the inter-bank selling rate forms the basis for quotation of selling rate to the customer by the bank.

The inter-bank rate on the basis of which the bank quotes its merchant rate is known as base rate.

17.2.2 Exchange Margin

If the bank quotes the base rate to the customer, it makes no profit. On the other hand, there are administrative costs involved. Further, the deal with the customer takes place first. Only after acquiring or selling the foreign exchange from/to the customer, the bank goes to the inter-bank market to sell or acquire the foreign exchange required to cover the deal with the customer. An hour or two might have lapsed by this time. The exchange rates are fluctuating constantly and by the time the deal with the market is concluded, the exchange rate might have turned adverse to the bank. Therefore, sufficient margin should be built into the rate to cover the administrative cost, cover the possible exchange fluctuation and provide some profit on the transaction to the bank. This is done by loading exchange margin to the base rate. The quantum of margin that is built into the rate is determined by the bank concerned, keeping with the market trend.

{Up to 1995, the exchange margin included in the merchant rates was prescribed by FEDAI.}

17.2.3 Fineness of Quotation

The exchange rate is quoted up to 4 decimals in multiples of 0.0025. The quotation is for one unit of foreign currency except in the case of Japanese yen, Indonesian rupiah, Kenyan shilling, and currencies of Asian Clearing Union Countries (Bangladesh taka, Myanmar kyat, Iranian riyal, Pakistani rupee and Sri Lankan rupee) where the quotation is per 100 units of the foreign currency concerned.

17.3 PRINCIPAL TYPES OF BUYING RATES

In a purchase transaction, the bank acquires foreign exchange from the customer and pays him in Indian rupees. Some of the purchase transactions result in the bank acquiring foreign exchange immediately, while some involve delay in the acquisition of foreign exchange. For instance, if the bank pays a demand draft drawn on it by its correspondent bank, there is no delay because the foreign correspondent bank would already have credited the nostro account of the paying bank while issuing the demand draft. On the other hand, if the bank purchases an ‘On demand bill’ from the customer, it has first to be sent to the drawee’s place for collection. The bill will be sent to the correspondent bank for collection. The correspondent bank will present the bill to the drawee. The nostro account of the bank with its correspondent bank will be credited only when the drawee makes payment against the bill. Suppose this takes 20 days. The bank will acquire foreign exchange only after 20 days.

Depending upon the time of realization of foreign exchange by the bank, two types of buying rates are quoted in India, they are:

- (i) TT Buying Rate, and
- (ii) Bill Buying Rate.

17.3.1 TT Buying Rate (TT Stands for Telegraphic Transfer)

This is the rate applied when the transaction does not involve any delay in realization of the foreign exchange by the bank. In other words, the nostro account of the bank would already have been

credited. The rate is calculated by deducting from the inter-bank buying rate the exchange margin as determined by the bank. Though the name implies telegraphic transfer, it is not necessary that proceeds of the transaction is received by telegram. Any transaction where no delay is involved in the bank acquiring the foreign exchange will be done at the TT rate.

17.3.2 Transactions where TT Rate is applied

- (i) Payment of demand drafts, mail transfers, telegraphic transfers, etc., drawn on the bank where bank's nostro account is already credited.
- (ii) Foreign bills collected. When a foreign bill is taken for collection, the bank pays the exporter only when the importer pays for the bill and the bank's nostro abroad is credited.
- (iii) Cancellation of foreign exchange sold earlier. For instance the purchaser of a bank draft drawn on New York may later request the bank to cancel the draft and refund the money to him. In such case, the bank will apply the TT buying rate to determine the rupee amount payable to the customer.

TT Buying Rate is worked out as follows:

Dollar/Rupee market spot buying rate (say)	:	₹64.2538
Less : Exchange Margin (-)	:	₹0.0200
T.T. Buying Rate	:	₹64.2338
Rounded off to nearest multiple of 0.0025	:	₹64.2325

17.3.3 Bill Buying Rate

This is the rate to be applied when a foreign bill is purchased. When a bill is purchased, the proceeds will be realized by the bank after the bill is presented to the drawee at the overseas center. In the case of a usance bill, the proceeds will be realized on the due date of the bill which includes the transit period and the usance period of the bill.

If a sight bill on London is purchased, the realization will be after a period of about 20 days (transit period). The bank would be able to dispose of the foreign exchange only after this period. Therefore, the rate quoted to the customer would be based not on the spot rate in the inter-bank market, but on the interbank rate for 20 days forward. Likewise, if the bill purchased is 30 days usance bill, then the bill will be realized after about 50 days (20 days transit plus 30 days usance bill, period). Therefore, the bank would be able to dispose of foreign exchange only after 50 days; the rate to the customer would be based on the inter-bank rate for 50 days forward.

Two points need consideration in loading the bills buying rate with forward margin. First, forward margin is normally available for periods of a calendar month and not for 20 days, etc. Secondly, forward margin may be at a premium or discount. Premium is to be added to the spot rate and discount should be deducted from it. While making calculations, the bank will see that the period for which forward margin is loaded is beneficial to the bank.

Thus, where the foreign currency is at premium, while calculating the bill buying rate, the bank will round off the transit and usance periods to the lower month.

Where the foreign currency is at discount, while calculating the bill buying rate, the bank will round off the transit and usance periods to a higher month.

Logically, while quoting selling rates, i.e., TT selling rates and bill selling rates the bank will round off the transit and usance periods to the higher month if the currency is at premium and round off the transit and usance periods to the lower month if the currency is at discount.

Let Us Sum Up

Factors like conditions in money market, fiscal policy, inflation, trade/current account balance, forex reserves, forex debt, commodity prices, rate of GDP growth, political conditions, all influence exchange rates. There are two methods of quotation direct and indirect quotation. The calculation of forward rates is explained.

Keywords

Direct and indirect quotation, two way quotation, spot, cash and forward, forward margin, swap points, TT buying and Bill buying.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is direct quotation in foreign exchange?
 - (a) Foreign currency unit is expressed in number of home currency units.
 - (b) Home currency unit is expressed in number of foreign currency units.
 - (c) Foreign currency unit is expressed in another foreign currency unit which is expressed as number of units to home currency.
 - (d) When one foreign currency unit is quoted as weighted average of trades between the two countries.
2. When a foreign exchange transaction is contracted on Monday and settlement takes place on Wednesday, how is the transaction known in foreign exchange market?
 - (a) TOM transaction
 - (b) Spot transaction
 - (c) Forward transaction
 - (d) Outright transaction
3. If the supply of foreign currency exceeds demand, then how is foreign currency quoted?
 - (a) At a premium
 - (b) At par
 - (c) At a discount
 - (d) Unquoted till demand and supply equal

4. What is the general rule regarding application of TT Buying rate in foreign exchange transactions?
 - (a) When cash is tendered TT buy rate is applied.
 - (b) When FCNR deposit is accepted, TT buy rate is applied.
 - (c) When a DD is issued, TT buy rate is applied.
 - (d) When Nostro account is credited, TT buy rate is applied.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
18**

RISK ANALYSIS AND CONTROL

STRUCTURE

- 18.0** Objective
- 18.1** Introduction
- 18.2** Risk Management: Overview
- 18.3** Factors Affecting Exchange Rates
- 18.4** Factors Affecting Interest Rates
- 18.5** Operational Risk
- 18.6** Mitigation
- 18.7** Financial Risks
- 18.8** Risks in Treasury and Their Management: Some Examples
- 18.9** Risk Management: RBI Guidelines/Norms
- 18.10** Asset-Liability Pricing
- 18.11** Adding New Products
- 18.12** Risk Analysis and Control

Let Us Sum Up

Keywords

Check Your Progress

18.0 OBJECTIVE

To provide necessary inputs on various types of risks like credit risk, operational risk, market risk, liquidity risk, and their mitigation, providing information on tools like VaR, RBI guidelines on risk management, Asset-liability pricing, to provide essential information on overnight, day light limits, and also to inform about legal risk.

18.1 INTRODUCTION

Risk profile of the treasury activities consists of two broad categories, viz., Financial Risk and Operational Risk.

Financial risks include market risks (interest rate risk, price risk, basis risk), credit risks, liquidity risks, etc.

Operational Risks include systemic risk, compliance risk, legal risks, IT risks, fraud risks, etc.

For mitigation of such risks, various prudential guidelines prescribed by the regulators and internal policies and procedures laid down by the management are to be scrupulously followed.

Most of the treasury activities, like investments in bonds, forex positions, etc., predominantly involve high degree of market risks than credit risks.

18.2 RISK MANAGEMENT: OVERVIEW

Treasury and risk management is closely related. In the past, risk management was a part of treasury management and the rest of the activities of the bank were not much concerned with risk management. However, some of the well documented financial failures in the past and post Basel I & II norms and post financial crisis, risk management has, on the contrary, gone beyond treasury. Capital adequacy has become a corner stone of risk management as banks have been mandated to maintain adequate capital so that financial stability is given more importance. Risk management has now become an organization pervasive issue and is pursued in greater detail. Every bank has a separate risk management unit (known as risk organization). Risk management is removed from the front offices as pursuit of profit or price, it is believed comes in the way of objective risk management. Risk management is, thus, involved in stipulating rules, regulations, and practices such that risk is contained to the extent the management considers appropriate. Managements indicate the extent of risk taking ability (also known as risk appetitive) by indicative methods such as duration, convexity, VaR and the like. In order that the risk estimate is not breached the banks follow exposure norms, dealer limits, concurrent audit, separate back office, etc.

It should, however, be remembered that the risk management investments, hedge and other risk management policies are operationalized by treasury department. Treasury is the most important function when it comes to managing liquidity. Treasury is also involved in advising the corporate and high net worth clients in investment and risk management. Treasury sells hedge and treasury products suited to its corporate clients. Corporate clients will be happy so long as they make the extra Rupee or Dollar, but once they see some loss they will cry foul. This is indeed a difficult area for treasury. As such the role of treasury in risk management is critical in the overall risk management.

Risk in treasury can be studied in terms of liquidity, price, interest rate, and operational issues. Operational issues arise on account of technology failures and violation of internal guidelines on the treasury functions. Market innovations keep occurring at regular intervals, and the guidelines lag the innovations. Take the case of the CDS and the recent financial crisis. It is well known that the volumes in CDS went sky rocketing and before appropriate norms could be developed, much damage was done. In these circumstances treasury and risk management should work together such that repeat of such events can be avoided. Taking position in hedge and derivative products themselves could result in some risk as hedge and counter hedge cost could become runaway issues. Pursuit of speculative profits and trading for profits are best done when there is not only stop loss limits, but also clear cut booking profit practices.

Risk management could be studied in terms of preventive measures and policies. The following table gives a bird's eye view of the treasury risk, measures of mitigation. These instruments are covered separately in various chapters of this book.

Risk	Manifest in	Preventive Measures	Points to remember
Liquidity	Default in investment/instrument resulting in cash flow problems	<ol style="list-style-type: none"> Investing in appropriate credit rated investments Exposure norms help in diversification such that the impact of default is reduced 	Points to remember <ol style="list-style-type: none"> Cost of risk management could impact the yield. Often not transparent
	Inability to market or exit an investment due to market apathy – could result in failure to meet one's commitments	<ol style="list-style-type: none"> As indicated investing in high rated investments Having alternate cash arrangements 	<ol style="list-style-type: none"> Credit rating does not guarantee performance and the changes in the rating lags the market. Often the rating down grade is very quick and the market dries up before the rating downgrade. Also, instruments are not traded on rating related yields
	Prepayment (receipt) of debts by borrowers	<ol style="list-style-type: none"> Carefully plan put and call options Indicate penal charges for prepayment 	Such prepayment happens when the contracted rates are lower than what is offered in the investment. As the market rates are lower the prepayment will result in ALM mismatch for the period for which it will be invested. Alternate investments may have different risk profiles
Interest rate risk in fixed income securities	<ol style="list-style-type: none"> A change in market rates of interest could impact the price of the security at the time of selling. Changes in price at the time of balance sheet could impact the financials 	<ol style="list-style-type: none"> Use tools such as duration and convexity to control risk Practice strict stop loss policies to avoid a slide in the price Practice asset valuation based on conservative approach. RBI has indicated policies for HTM, AFS, and HFT securities. 	<ol style="list-style-type: none"> Banks liabilities, as per the extant policy is almost fully made of fixed rate liabilities. As against this the assets could be floating rates. Banks must do periodical analysis and arrive at the mix of liabilities such that acquisition is focused on ALM

Risk	Manifest in	Preventive Measures	Points to remember
Interest rate risk in re-pricing floating rate assets		1. Forward Rate Agreements	
Price risk in investments-equity	Volatile Prices	1. Stop Loss Policy 2. Take appropriate position F&O market 3. Exposure limits	
Price risk in foreign Exchange Market	Changes in Currency prices	1. Keeping the exposure fully covered in spot and forward market 2. Forward, Futures, and Options contract to manage the currency risk 3. Have Open Position Limits consistent with risk appetite.	
Operational risk	Over Trading- connivance among dealers I.T infrastructure Failure	1. Segregation of front, middle and back office 2. Dealer wise exposures 3. Checks and Balances- Audit 4. Back up servers and Data Recovery System	
Bad delivery	Trade or purchase or sale not going through	1. Approved and Diversified counterparties 2. Exposure Norms 3. Trading through approved channels such as exchange as a counter party 4. Trading through market makers like Primary Dealers	

18.3 FACTORS AFFECTING EXCHANGE RATES

- Macroeconomic, social and political influences
- Exchange control regulations and exchange rate policy
- Balance of payment and balance of trade
- Relative price and inflation
- Assets market
- Interest rate difference between the relative currencies
- Anticipations and economic estimates of input variables
- Other factors, e.g., political developments like war, change in the government, official intervention, restriction on capital flows, change in productivity levels, fiscal and monetary policy of the government and underlying psychology of the market operators.

18.4 FACTORS AFFECTING INTEREST RATES

- Macroeconomic, social and political influences
- Fiscal and monetary policy measures of the Government and central bank
- Demand for money, which is dependent on growth rate, economy, etc.
- Government borrowings
- Supply of money, depending on price level, incentives to save, etc.
- Inflation rate

Treasury risk management assumes importance for two reasons:

- (i) The nature of treasury activity is such that profits are generated out of market opportunities, and market risk is present at every step.
- (ii) Treasury is also responsible for balance sheet management, i.e. market risk generated by other operational departments.

Bank management is highly sensitive to treasury risk, as the risk arises out of the high leverage the treasury business enjoys. The risks of losing capital are much higher than, say, in the credit business. In the case of a loan, the risk is limited to the principal and interest, which may be lost, fully or partly, over a period of time. The Bank's capacity to extend loans is limited by the high capital requirement, a minimum of 9% of the loan amount; hence, the losses are also correspondingly limited. Treasury on the other hand has a very low capital requirement, which is known as high leverage. For instance, treasury can buy and sell foreign exchange of value of ₹1000 crores, with as little capital as ₹90 lakhs. But at the same time, an adverse movement of the exchange rate by ₹1 may result in a loss of ₹10 crore to the bank – which is a straight loss of capital.

A second reason for management concern is the large size of transactions done at the sole discretion of the treasurer. Certain market practices like minimum market lot and dealers' anxiety and hurry to book more profit induce them to resort to big ticket transactions. A single transaction may range from ₹5 crores to ₹50 crores (even more in larger banks). The limits are intimated to the treasurer in advance, and individual market deals rarely need specific approval from the management. If the treasurer commits an error of judgment, consequent losses to the bank would be enormous.

A third factor closely connected to the above is that the losses in treasury business materialise in a very short term, and, the transactions, once confirmed, are irrevocable – hence, no corrective actions are possible. Particularly in foreign exchange, the market reacts so fast that profits or losses on trade deals are almost instantaneous. It is for the above reasons that not only bank management, but also the central banks are concerned with treasury risk management. The conventional control and supervisory measures, mostly in the nature of preventive steps, can be divided into three parts:

- Organizational controls
- Exposure ceiling
- Limits on trading positions and stop-loss limits

18.5 OPERATIONAL RISK

This covers the entire gamut of the transaction cycle from dealing to custody. Operational risk can again be divided into those arising from:

- System deficiencies, authorizations, based on approved delegation of powers, must integrate with work and document flows. This ensures that individual payments and deliveries by the bank are entirely deal/transaction supported;
- non-compliance with laid-down procedures and authorizations for dealing, settlement, and custody;
- fraudulent practices involving deals and settlements;
- IT involving software quality, hardware uptime; and
- legal risks due to inadequate definitions and coverage of covenants, and responsibilities of the bank and counter party in contracts and agreements.

18.6 MITIGATION

- Dealers must operate strictly within the single deal, portfolio and prudential limits set for the instrument and counter party. Stop loss and risk norms of duration and value at risk should be adhered to at all times.
- No deviation from approved and implemented work and document flows should be allowed.
- All the necessary authorizations must accompany documents as they pass from one stage of the transaction cycle to the next.
- Delegation of powers must be strictly adhered to. Deals or transactions exceeding powers must be immediately and formally ratified in accordance with management/board edicts on ratification.
- The prescribed settlement systems in each product/instrument and market must be followed. Deviations from delivery and payment practices should not be allowed.
- Computer systems – hardware, networks, and software – should have adequate backups. They should be put through periodic stress tests to determine their ability to cope with increased volumes, and external data combinations.
- Custodian's creditworthiness is paramount in demat systems of records of ownership and transfer. Custodial relationships should be only with those with the highest credit rating.
- Counter party authorizations/powers of attorney must be kept current.
- The list of approved brokers should be reviewed periodically to satisfy the bank's credit standards and ethics. In equity transactions, the broker is the counter party. Settlement must be of the delivery against payment type.
- Deal, transaction, and legal documentation should be adequate to protect the bank, especially in one-off transactions and structured deals.

18.7 FINANCIAL RISKS

The following identifies and defines individual financial risks:

18.7.1 Credit Risk

- The oldest of all financial risks in its simplest form, refers to the possibility of the issuer of a debt instrument being unable to honor his interest payments and/or principal repayment obligations. But, in modern financial markets, it includes non-performance by a counter party in a variety of off-balance sheet contracts such as forward contracts, interest rate swaps and currency swaps, and counter party risk in the inter-bank market. These have necessitated prescribing maximum exposure limits for individual counter parties for fund and non-fund exposures.

18.7.1.1 *Mitigation*

- Better Credit appraisal. Careful analysis of cash flows of the business before investing.
- Investing only in rated instruments. Rating companies must be reputed in their line of business.
- Risk pricing.
- Credit enhancement through margin arrangements, escrow accounts, etc.
- Obtaining Guarantees/letters of credit from rated entities.
- Adequate financial and/or physical assets as security.
- Adherence to the Exposure limits by counter party, industry, location, business group, on and off balance sheet.
- Diversification by industry, sector, location, and so on.
- Exposure limits for individual bank counter parties for funded/non-funded assets.
- Reputation and image of counterparties.
- Collateralization of transactions through repos.

18.7.2 Liquidity Risk

- An asset that cannot be converted into cash when needed is liquidity note, which is the normal characteristic of the vast majority of bonds.

There is also the risk of scarcity of funds in the market. This could happen, for example, when the RBI deliberately tightens liquidity, by increasing CRR, selling securities or forex.

A third situation is when a bank's creditworthiness becomes suspect, and there are no willing lenders, even though there is no liquidity shortage in the market.

18.7.2.1 *Mitigation*

- Increase the proportion of investments in liquid securities.
- Increase the proportion of investments in near-maturity high quality instruments.
- Maintain credit rating, reputation, and image.
- Securitize loan portfolio of large as well as small borrowers.

18.7.3 Market Risk

- A generic term to describe both **interest rate risk** and **event ('systemic')** risk.

18.7.4 Event Risk

- The risk that an unexpected happening, which is extreme, sudden or dramatic (e.g., the 11 September terrorist attacks, tsunami), will cause an all-round fall in market prices.

18.7.4.1 Mitigation

Increase the proportion of assets in risk-free, high quality investments of short maturity.

18.7.5 Interest Rate Risk (Balance Sheet)

This affects both the assets and liabilities of a bank. On an overall basis, the maturity gaps between assets and liabilities lead to the risk of a contraction of spreads if interest rates fall and assets mature before liabilities, or interest rates rise and liabilities mature before assets.

Apart from interest rate, risk originating from the disparity in the maturities of assets and liabilities, there is also **basis** risk, because interest rate determination may differ. For example, if assets are MIBOR-linked (floating rate), while liabilities are fixed rate and MIBOR falls, asset yields also do, compressing the spreads. Mitigation of basis risk will involve converting (in the above instance) assets to fixed rate (or converting liabilities to MIBOR-linked). Instruments used are interest rate swaps, futures, and FRAs.

(a) Interest Rate Risk: Investment/Trading Book

The prices of bonds are affected by changes in interest rates. When interest rates go down, their prices go up. The opposite happens when interest rates rise. The most price-affected bonds in response to rate movements are those of long maturity – indeed maturity and price changes are strongly, positively correlated.

Duration measures the price sensitivity of a bond to changes in interest rates. Increasing duration makes the bond portfolio more sensitive to interest rates, while decreasing duration reduces it. As bond prices and interest rates are inversely related, if the bank expects interest rates to fall, subject to market liquidity, it will have to increase duration by buying long-dated securities. Conversely, in anticipation of a rise in interest rates, the bank will lower duration by selling long-dated securities. Banks may adopt duration as a measure of risk, and maintain the duration of its portfolio at a given level to minimise or restrict risk.

(b) Value-at-risk (Var)

Value-at-risk indicates the possible maximum loss which will be suffered in a specified period, and at a specified confidence level from an adverse movement in the price of a security (or exchange rate), given historic data on the price behavior of the security (exchange rate) or assessment of likely future market movements. The concept is applied to calculate the risk content of an individual security, foreign exchange position, equity share or a portfolio of these instruments.

VaR at 99% confidence level implies 1% probability of the stated loss. The loss is generally stated in absolute amounts for a given transaction value (or value of an investment portfolio).

VaR is an estimate of potential loss, always for a given period at a given confidence level. Therefore, a VaR of ₹1,000,000 at 99% confidence level for one week for an investment portfolio of ₹100,000,000 means that the market value of the portfolio is most likely to drop by maximum ₹1,000,000 with 1% probability over one week, or 99% of the time the portfolio will stand at or above its current value.

VaR is derived from a statistical formula based on volatility of the market. Volatility is the standard deviation from the mean of, say USD/INR exchange rates (or any other asset prices) observed over a period. Volatility assumes a normal distribution curve, and the number of standard deviations from the mean which denotes the probability of reaching a target level. The volatility multiplied by the number of standard deviations required for a given confidence level results in the VaR.

The following are the steps involved in the calculation of VaR:

- (a) Take price series of the asset for which VaR is required.
- (b) Calculate the natural logarithm of a day's price divided by the previous day's price and the mean.
- (c) Calculate the difference of each natural logarithm from the mean and square the difference. Sum up the squares of the differences.
- (d) Calculate variance.
- (e) Calculate standard deviation.

Of course, VaR is a function of the standard deviation of relative price changes (i.e., the price change from one day to the next). Whether historical data or a forecast should be used for this purpose, is entirely left to the judgment of the user. A forecast is better if the immediate future is going to be very different from historical data.

VaR can be calculated for any period as desired. In every case, the standard deviation as calculated above is multiplied by the number of working days in the period for which the VaR is required. The number of working days in a year is 252 (forex market) and 300 (securities market), while in a month it is 22 (forex) and 26 (securities).

The same methodology can be followed to calculate the VaR of assets like foreign exchange and equity shares. To calculate the VaR of a portfolio, simply add the VaR of the individual instruments in the portfolio (on the assumption that their price movements are wholly uncorrelated). Otherwise, to calculate the VaR of a portfolio, its daily change in value must be used to calculate the volatility and VaR as above for a single security.

VaR is not a tool of risk management, but is a measure of risk. There could be times, as it happened in the global financial turmoil of 2008, when risks of unforeseen nature of unexpected proportions were noticed at the tail end of the curve.

18.8 RISKS IN TREASURY AND THEIR MANAGEMENT: SOME EXAMPLES

Scenario

A customer walks into the bank with a cheque for US\$ 10,000, and requests the bank to pay Rupees by purchasing the instrument.

Nature of risk

Market risk, more specifically Exchange rate risk.

Treasury reacts

By effectively and immediately covering the transaction in the interbank/international market.

Scenario

A customer walks into the bank with a cheque for US\$ 10,000, and requests the bank to deposit amount in FCNR (B) for 5 years.

Nature of risk

Market risk, more specifically interest rate risk.

Treasury reacts

By hedging the risk using Forward Rate Agreement or Interest Rate Swaps.

Scenario

An exporter books a forward contract with the bank for covering the receipts of exports of US\$ 10 Mio.

Nature of risk

Market risk, more specifically exchange rate risk.

Treasury reacts

By covering the transaction in the interbank market.

Scenario

A customers walks into the bank with a cheque for US\$ 10,000, and requests the bank to pay Rupees by purchasing the instrument. The system fails to take the transaction into position.

Nature of risk

Operational risk leading to market risk.

Treasury reacts

By covering the transaction and putting in place a correct system.

Scenario

A customer walks into the bank with a cheque for US\$ 10,000, and requests the bank to pay rupees by purchasing the instrument. The system fails to capture the gap position.

Nature of risk

Compliance risk as the statutory statement GPB submitted to RBI is wrong.

Treasury reacts

By correcting the gap position, and submitting the correct GBP while simultaneously correcting the system to capture gaps precisely.

Scenario

Branch reports delivery under forward contract to Dealing room.

Nature of risk

Operational risk leading to market risk.

Treasury reacts

By covering the transaction, and advising Back up and the branch. Suitable and correct guidelines will be issued to the branches.

Scenario

Bank opens an import LC for US\$ 25 Mio, and lodges reimbursement instructions with reimbursing Bank. Reimbursement claim lodged without intimation to Dealing room.

Nature of risk

Liquidity risk as Dealing room has to arrange immediate funds.

Treasury reacts

By arranging funds and advising the branch.

Scenario

A foreign currency loan of US\$ 20 Mio is sanctioned and disbursed.

Nature of risk

Credit risk.

Treasury reacts

By ensuring adherence to exposure limits.

Scenario

A corporate requests for derivative limits.

Nature of risk

Legal risk.

Treasury reacts

By ensuring that ISDA is executed and exchanged between the Corporate and the Bank.

Scenario

A Corporate books a forward. Exchange rate starts moving favourably to the corporate.

Nature of risk in case of Cancellation

Market risk that may become credit risk.

Treasury reacts

By marking the contract to market periodically, and demanding margin from the Corporate.

Scenario

Bank's corporate client raises FCCBs and the corporate does not have any hedging policy.

Nature of risk

Risks arising out of unhedged forex exposures of Corporates

Treasury reacts

By ensuring that the Corporate puts in place a proper hedging policy and by following regulatory provisioning norms

Scenario

A Corporate which has a lot of economic exposure to a foreign country deals with the bank.

Nature of risk

Indirect country exposure.

Treasury reacts

By capturing indirect country exposure.

18.9 RISK MANAGEMENT: RBI GUIDELINES/NORMS

The RBI has circulated detailed guidance notes on Market Risk Management, Asset Liability Management, and Credit Risk Management. According to these,

- (a) Banks are required to send monthly reports covering liquidity mismatches and interest rate sensitivity.
- (b) Banks are required to pay special attention to liquidity risk and management, and monitor the following:
 - (i) Call Borrowing/Lending
 - (ii) Purchased Funds vis-à-vis Liquid Assets
 - (iii) Core Deposits vis-à-vis Core Assets, i.e., CRR, SLR and Loans
 - (iv) Duration of Liabilities and Investments
 - (v) Maximum Cumulative Outflows across all time bands
 - (vi) Commitment Ratio – on and off B/S
 - (vii) Swapped Funds Ratio, i.e., extent of liabilities from forex sources.

18.9.1 Risk Management in Banks

- (a) Banks have created an Asset-Liability Management Committee (ALCO), which manages gap, interest rate, liquidity, and currency risks of the treasury and non-treasury balance sheets.
- (b) The banks submit monthly statements to the Board and RBI on liquidity mismatches and interest rate sensitivity.
- (c) Stop loss levels are fixed for both SLR and non-SLR securities.
- (d) Bank undertakes concurrent audits of securities and funds management transactions. These findings/reports are put up to the Audit Committee of the Board every quarter.
- (e) The Investment Committee reviews the investment portfolio every half-year, with emphasis on rating migration and portfolio quality.
- (f) The Treasury Department is subject to periodic inspection.
- (g) The panel of brokers is reviewed annually.
- (h) The software package used by treasury is system-audited at regular intervals to test its ability to cope with new products and instruments, scale of operations and outlying data and conditions.
- (i) The functions of front-office, settlement back-office, mid-office, and accounts are completely segregated. This helps in avoiding operational risk and monitoring adherence to risk policies.
- (j) Deals are backed by deal slips, and office memos containing approvals by competent authority.
- (k) Defaults/arrears in interest/principal on bonds are monitored and reported to appropriate authorities.
- (l) A bank will fully comply with all the RBI's guidelines, regulations, and rules governing the investment portfolio.

- (m) The RBI has now finalized norms for risk-based internal audit systems. Banks have been following the new system now.

18.10 ASSET-LIABILITY PRICING

The Bank's liabilities are principally customer's deposits of the demand (current, savings) and time categories. Time deposits could be of maturities from as little as 7 days to 10 years.

Deposit pricing is a function of:

- (a) Money market rates;
- (b) Interest rates/yields on risk-free securities, i.e. Government of India bonds;
- (c) Maturity;
- (d) Shape of the yield curve;
- (e) Rate offered by competitors; and
- (f) Rates on alternative fixed income instruments.

The ALCO of the bank decides on the deposit rates after taking into account all the above factors. The rates should give a spread to the bank on the asset side. Ideally speaking, deposit rates should be at or less than money market rates, as the latter represents the opportunity cost of funds for the bank. This necessitates close liaison between head office and treasury on the one hand, and treasury and branches on the other.

18.11 ADDING NEW PRODUCTS

Dealing in new products should be suitably authorised – informally at first if there is time pressure– and ratified immediately thereafter.

Key steps to be gone through in this process are:

- (a) Approval for dealing with the new product – whether one-off or on a regular basis;
- (b) Procedures for credit clearance in general, and limits specific clearances;
- (c) Check if within existing regulations or guidelines, or specific then RBI approval is required;
- (d) Ensure that the bank's investment/treasury policies are not transgressed;
- (e) Assess and identify specific risk factors associated with the new product;
- (f) Evolve pricing approaches and models;
- (g) Specify settlement procedures;
- (h) Specify custodial responsibilities and follow-up of obligations of and to the bank;
- (i) Accounting; and
- (j) Development of Software.

18.11.1 Forex (Market) Risk

The forex market is probably the most consistently volatile of all financial markets. While it offers enormous scope for making profits, the other side of the coin is the risk of big losses from

unexpected swings in exchange rates. This necessitates an effective forex risk management system involving:

- (a) Fixing exposure limits by currency and maturity;
- (b) Continuous market monitoring with reference to the bank's open positions; and
- (c) Closing loss positions, if stop loss limits/VaR are breached. For supporting the above, it is necessary to have adequate data-gathering systems in place to measure currency wise exposures and their maturities.

The following determine the forex risk exposure of the bank:

- (a) Open Positions;
- (b) Gap (Interest Rate/Swap) Risk;
- (c) Counter party (Credit) Risk;
- (d) Settlement Risk;
- (e) Country Risk;
- (f) Value-at-Risk;
- (g) Operational Risk; and
- (h) Legal Risk.

18.11.2 Open Positions and Gaps

- (a) The main source of forex risk is the bank's **open positions** in individual currencies.

An open position is a completely unhedged exposure in a currency. For example, if the bank has bought USD and sold INR, it is **long** USD and **short** INR – in effect it has a USD asset and INR liability. Thus, if the USD appreciates against the rupee, the bank gains, but if it depreciates, the bank loses. On the other hand, if the bank has sold USD and bought INR, it is exposed to the risk of USD appreciation.

A perfect hedge in this situation is if the bank has offset a long USD position with a USD sale. Now it runs no currency risk: there is **no** open position.

The same definition and analysis applies to cross-currencies – USD/JPY, EUR/USD, GBP/USD, etc., as well.

Dealers do a host of transactions in different currencies in the interbank market or for customers. In view of the large volumes, transactions offset one another leaving net open (uncovered) positions in various currencies. Treasury Front Office maintains and manages all the forex positions of the bank.

When the dealing room closes 'shop' everyday, the open position for each currency is arrived at. It is essential to ensure that this should be within the approved limits; otherwise it should be justified and ratified in accordance with the delegation of powers.

Dealers may or may not cover customer's deals immediately, depending upon the market situation, movements, and dealers views on markets. If not covered, they add to the bank's open position.

Thus, the forex deal book of the bank is a portfolio of long and short forex positions in different currencies. These positions vary in amount and maturity. Spot deals mature in two working days (as of trade day) and forwards may mature any time up to 6 months or even a year.

Long and short positions in a currency maturing on the same date ('natural hedges') will partly offset one another leaving a **net** open position.

Formally, the net open position in a currency is:

Net spot position (assets less liabilities in the currency including accrued income and expenditure).

Net forward position (forward assets less forward liabilities, including swaps, options, futures, etc.)

+

Unsettled spot contracts (spot asset less spot liability positions)

+

Crystallized off-balance sheet liabilities (L/Cs, guarantees, etc.)

+

Net open position

The net position in each currency is summed, with the longs on one side and the shorts on the other. This is done in the base currency, USD. The higher of the aggregate longs and aggregate shorts is the open position of the bank. To this should be added the open position in gold (if any). The total open position must be within the board-approved limit for open forex positions.

In assessing risk in a forex portfolio, cross-currency positions (e.g., USD/JPY, euro/USD) must be isolated from USD/INR positions. The issue then is whether to convert all non-dollar assets/liabilities into USD assets/liabilities (and keep only USD/INR risk) or *vice-versa* (and keep cross-currency risk).

(b) Open Position Limits

- **Daylight:** Daylight open positions, as the name suggests, are exposures that are opened in the course of a trading day and will invariably be closed (squared) before the close of the day. Daylight exposures may last only for a few seconds, minutes or hours and arise when dealers try to take advantage of volatility during a trading session, either in the domestic (USD/INR) market or Far East, European or US markets, if trading in the crosses.

Thus, the bank may buy USD 1 mio. and sell equivalent INR at 10 a.m. for ₹64.75 and sell USD 1 mio., buying INR, for ₹64.80 at 11 a.m. for a profit of ₹0.05/USD. The bank has an open position of USD 1 mio. for one hour till the transaction is squared and risks USD depreciation during this time.

- **Overnight:** Overnight positions are positions carried over from one trading day to the next. If the bank elects not to close positions at the close of trading, it has an overnight

exposure. O/N exposures are monitored on a real time basis. All O/N open positions carry 100% risk weight.

18.11.3 Gap (Interest Rate/Swap) Risk

Period mismatches in a currency pair result in interest (or swap) rate risk. If the bank has long USD/INR three months and short USD/INR six months (same amount), there is no open position, but on maturity of the long (three-month) contract, there will be a gain or loss depending on:

- whether spot USD/INR is more or less than the originally contracted three-month forward; and
- whether the three-month swap rate for three months after three months (3×6) is more or less than the original swap differential when the three-month and six-month positions were created.

A fall in the forward discount on INR/USD (or, to put it differently, fall in the forward premium on USD/INR) could have been because INR interest rates are coming down or USD interest rates going up (or both). The point is that movements in interest rates affect forward premiums or discounts. A long forward position is adversely affected if interest rates in the long currency go up and vice-versa.

Or, as is won't in the Indian situation, the forward premiums or discounts are driven more by expectations than interest differentials. Thus, if the market expects USD/INR to fall (rise), forward premiums on USD/INR will fall (rise).

The same principle applies to maturity mismatches in asset and liability flows in a currency. If assets mature ahead of liabilities, there is **reinvestment risk**, i.e., new assets may not yield as much as existing assets. Conversely, when liabilities mature earlier, refinancing risk arises because liabilities may increase in cost.

This underlines the need to monitor and forward a plan to manage the interest rate risks inherent in mismatched forward contracts and cash flow positions.

Forex risk management in the bank involves the following:

- (a) Identification of Risk Factors by Product and Risk Measure
 - (b) Identification of Risk Management Responsibilities by Function
- (a) **Credit Risk Exposure Measurement:** All forward and derivative contracts must be valued at replacement cost (i.e., marked to market). The RBI has suggested the **original exposure method** or **current exposure method** for the purpose. The latter contains a provision for changes in future credit exposure as well.
 - (b) **Customer Credit Risk:** In merchant transactions, credit risk is the responsibility of the branches from which the transactions originate. Branches will have to credit appraise customers before putting through deals on their behalf.

18.11.4 Settlement Risk

Settlement risk arising from time differences between trading zones, which may result in one of the parties to a transaction having to settle ahead of the other party, i.e., payment and receipt of currencies

are not synchronized. To some extent (but not completely), this is mitigated by the exposure limits fixed for each inter-bank counterparty. But there is settlement risk to the full extent of the counterparty limit in case the risk materializes.

18.11.5 Country Risk

Country risk is the possibility that a country or bank in a country will not be able to honor obligations due to shortage of foreign exchange or political risk.

The RBI has asked banks to measure, monitor and control country exposures. It requires specific responsibility and accountability in the organization structures of the bank for country risk management.

The RBI's principal norms with regard to country risk are summarized below:

- Monitoring and management are necessary only for countries where the net funded exposure is 1% of total assets.
- Country risk is part of counterparty risk. Thus, apart from credit risk with regard to individual borrowers, banks should factor in the country risk of the host country of the bank's branch or the borrower.
- Over a period of time, the bank must develop internal ratings for country risk. They, however, should not exceed the international rating of individual countries.
- In the meanwhile, banks may use the ECGC's seven category classification of country risk.
- Banks must fix country exposure limits in relation to their Tier I and II capital as well as by product, maturity buckets and branches. These must be reviewed at least once a year. Individual limits should not be more than the regulatory capital requirements of the concerned country.
- Country exposures should be monitored weekly in the beginning and then real time. High risk countries should be put on real time monitoring.
- Country portfolios should be subject to stress tests. The bank should have contingency plans and exit strategies to manage emergent situations, especially in high risk category countries.
- Exposures of the bank's foreign branches to the host country must be included.
- Exposures to the bank's foreign subsidiaries should be within the applicable country risk limits.
- Specific provisioning norms for the six categories of country risk have been stipulated. The provisioning needs to be only 25% of the norm for exposures maturing within 180 days. This is in addition to those for other assets.
- Provisioning out of Tier II capital should not exceed 1.25% of risk weighted assets.
- The following disclosures are mandatory:
 - Country exposures by risk category.
 - Aggregate provisioning for country risk.
 - Country exposures form part of the DBS returns to the RBI.

18.11.6 Legal Risk

Standard agreements govern forex contracts in the domestic and international markets, the main being:

- | | |
|---|---|
| (a) For Spot and Forward Foreign Exchange | International Foreign Exchange Nostro Agreement (IFENA)\ |
| (b) Foreign Exchange Options | International Currency Options Agreement (ICOM) |
| (c) All others including Derivatives | Internal Swap Dealers' Association Master Agreement (ISDA Master Agreement) |

Disputes and arbitration in international courts/tribunals will be governed by covenants and obligations in the above agreements.

18.11.7 Operational Risk and Concurrent Audit

As required by the RBI, the banks carry out concurrent audit of all forex transactions. Auditors are required to give daily and monthly reports covering:

- Compliance with approved open position limit
- Compliance with overnight exposure limits
- Compliance with aggregate and individual gap limits
- Compliance with value at risk norms.

18.12 RISK ANALYSIS AND CONTROL

In view of the above, treasury is the epicenter of financial health quakes in a bank as it handles huge volumes of business and it assumes enormous amount of risks mainly market risk because of the volatile markets. Of late the markets have become very volatile, be they forex markets, securities markets, equities markets or gold market. The treasuries by their very nature have to cover the exposures that they assume on account of their customers and the modern treasuries have also become profit centres by doing proprietary trading in a big way. This explains the enormous exposures that the treasuries have to deal with which is a direct indication of the market risk that the treasury is exposed to.

The plethora of instruments that the treasuries are now handling/selling and the existence of various complex hedging tools available in the market all add up to a lot of risk for the treasury. Financial newspapers are often found riddled with headlines such as: "stock exchange may face settlement risk"; "high volume of open interest in 'March futures' in exchange causes concern"; "bond dealers worried about year-end valuations as the yields rise"; "tight liquidity in the market"; "impact of war on oil prices and possible decline in corporate profits"; "increasing NPA levels of banks"; "realignment of interest rates sends jitters"; etc. All these headlines have one common underlying factor: They all point towards one or the other form of risk. It could be liquidity risk, market risk, price risk, interest rate risk, settlement risk, operational risk, or default risk and they all call for their management. There are two ways of managing the risk. Anticipate, evaluate and take protective action to avoid downside or leave things to luck. Since the latter is a question of chance, banks have learnt to manage risk via hedging. As the market does not always behave as one anticipates, and as the instruments available for managing risk are varied and complex, managing risk has become more complicated.

Financial institutions are therefore required to understand risk, characteristics of instruments meant for managing risk, evaluate alternatives to protect the downside of risk, develop prudential exposure

norms etc. to keep afloat. Risk management is possible only because there are people in the market who perceive risk differently and take contrary positions. It is important to remember that the level of information in the market is varied and so are the competency levels of market players. It is these factors that have given rise to existence of hedgers, speculators and arbitrageurs in the market.

Risk should be clearly distinct from inadequate policies. Take the case of call money market where one can witness days of very high call rates, often the result of sudden liquidity issues. If the dealer were to be guided by such high rates alone and invest all the surplus in call money market he/she will find it difficult to park funds if (often definite) the markets were to stabilize. It will appropriate that the bank follows exposure norms in different avenues and instruments rather than allowing the dealer to take such position which could impair the income levels and result in idle funds. Not having exposure limits on the argument that dealers are well trained to know when and where to invest will be a bad policy. To classify such events as risks is not appropriate. Another example is the stop loss policy. Often there appears a tendency to not adhere to stop loss limits on the plea that markets will bounce back (often they do) and therefore non adherence was a calibrated risk. Will the same argument hold good if the market did not bounce back. Hence stop loss limit should be stipulated and strictly adhered to. In fact a professional treasury will not tolerate non adherence to stop loss limits. Stop loss limits are derived from the basic risk appetite policies and hence should be complied with. Thus risk and bad policies and non-compliance are distinct.

Compliance is an important aspect of risk management. Compliance to the norms and practices and monitoring effective compliance should be part and parcel of the treasury department. Back office interventions on non-compliance is often post event and cannot contain damages, if any as such heads of treasury should focus on compliance.

Most of the treasury risks get classified under market risk. However, the credit, liquidity and operational risks in treasury are also equally important. The Basel III Regulations issued by RBI cover all these aspects and the salient features of the RBI Guidelines in this regard have been reproduced as **Appendix A**, which cover not only policy but also procedures. It is noteworthy that some of these well tested measures were started as early as 1992.

Let Us Sum Up

Various risks like operational risk, credit risk, liquidity risk, market risk, event risk, interest rate risk and their mitigation have been discussed. The concept of Value at risk (VaR) as an indicator of possible maximum loss which will be suffered in a specified period at a specified confidence level from a fall in the price of a security is explained. RBI guidelines on risk management have been given. Open position and gaps and open position limits, settlement risk and country risk and legal risk have been elaborated.

Keywords

Operational risk, credit risk, liquidity risk, market risk, event risk, interest rate risk, Value at risk, ALCO, Gap, settlement risk, IFEMA, ICOM and ISDA.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

**UNIT
19**

FOREX VALUATION

STRUCTURE

19.0 Objective

19.1 FEDAI Guidelines and Valuation

19.2 Effects of Revaluation

Let Us Sum Up

Keywords

Check Your Progress

19.0 OBJECTIVE

To provide inputs on forex valuation, FEDAI guidelines, revaluation of mirror accounts, effects of revaluation and also to provide basic information on accounting entries.

19.1 FEDAI GUIDELINES AND VALUATION

As per ***FEDAI Guidelines on Valuation***, the prescribed procedure for revaluation of foreign currency position and booking of exchange profits/loss is as follows:

No.	Particulars	Revaluation rate to be applied
1	Balance in Mirror Account	Spot rate as on the foreign currency valuation date
2	Spot and Forward contracts (includes outstanding and overdue export bills purchased/discounted – excluding crystallized bills, merchant and interbank forward purchase and sale contracts outstanding and overdue option forward contracts to be grouped and netted out on month-wise maturity)	Spot Rates
3	(a) Spot contracts (due within two Appropriate Forward working days from valuation date) (b) Forward (yet to mature) contracts	To be accounted in Balances the respective <i>Mirror Accounts</i>
4	Exchange profit and loss arising out of (a) Revaluation of <i>Mirror Account</i> (b) Revaluation of the items (2)	To be accounted through exchange profit and loss adjustment account and reversed on the next working day after the valuation day

Notes:

- Valuation Date:** Last working day of each month/year.
- Valuation Rate:** The middle rates as prescribed by authorities should be applied in the case of valuation of both spot and forwards. In case of forwards, if the rate is not available for any particular month, the applicable rate may be arrived at through interpolation.
- Periodicity of Valuation:** Revaluation of spot and forward positions should be done at least once every half-year and monitored monthly on an estimate basis.

19.1.1 Revaluation of Mirror Account Balances

In respect of Mirror Account Balances, the foreign currency amount in each of the Nostro mirror (position transactions only) are revalued in rupee terms by applying the mirror revaluation rates as provided by FEDAI. The difference between the actual rupee outstanding and the rupee equivalent after revaluation is the profit/loss for that mirror account. The revaluation report is generated on monthly basis for MIS only and the profit/loss is not appropriated. The booking of profit/loss is done on half-yearly basis.

19.1.2 Forward Evaluation

All transactions listed in the table above other than mirror account balances are to be valued at the rates provided by FEDAI for forward evaluation. All outstanding forwards are revalued in rupee terms by applying these rates. The difference between the actual rupee outstanding and the rupee equivalent after revaluation is the profit/loss for that particular transaction. The revaluation is carried out on monthly basis for MIS and the profit/loss is appropriated on half-yearly basis only and reversed on the next working day after valuation date.

19.2 EFFECTS OF REVALUATION

(a) Mirror (Pos) Balances/Forwards

INR Equivalent	INR Equivalent	Profit/Loss
Before Revaluation	After Revaluation	
Debit	(+) Increase	Profit Debit
Credit	(-) Decrease	Profit
		(-) Decrease
		Loss Credit
		(+) Increase
		Loss

(b) Accounting Entries for Mirror Balances

For Recording Profit

Debit: Nostro Mirror A/C Credit: Exchange A/C (Mirror) Loss

Debit: Exchange A/C (Mirror) Credit: Nostro Mirror A/C

(c) Accounting Entries for Forwards

For recording Profit

Debit: Profit and Loss A/C

Credit: Profit and Loss on Revaluation A/C

For Recording Loss

Debit: Profit and Loss on Revaluation A/C Credit: Profit and Loss A/C

The above entries in respect of forward evaluation are reversed on the next working day after the valuation date. The entry is reversed because the forward profit/loss is indicative in nature and all the forward transactions due for execution at a future point in time should be brought back to the original contracted rate. The actual profit in these items will be booked through the process of revaluation of nostro mirror accounts once these future obligations mature at a future date.

Let Us Sum Up

The FEDAI guidelines on valuation with periodicity of valuation, with effects of valuation with accounting entries have been given.

Keywords

FEDAI, mirror, valuation date, Nostro accounts.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What are the FEDAI guidelines for valuation of balance in foreign currency mirror accounts?
 - (a) Spot rates as on date of valuation to be used.
 - (b) Forward rates for the period from the date of credit to Nostro to date of valuation to be used.
 - (c) RBI reference rates to be used.
 - (d) rates derived from bootstrapping to be used.
2. What is the stipulation of FEDAI for valuation of spot contracts?
 - (a) spot rates as on date of contract to be used.
 - (b) spot rates as on valuation date to be used.
 - (c) forward rates as decided bilaterally under information to FEDAI.
 - (d) no rate is applied for valuation of spot contracts.
3. What does FEDAI say in respect of forward contracts?
 - (a) apply spot rates.
 - (b) apply outright purchase rates.
 - (c) apply appropriate forward rates.
 - (d) WAR rates given by FEDAI.
4. What is the treatment to be given to exchange profit or loss arising out of revaluation of mirror account balances as per FEDAI?
 - (a) To be valued at rates decided by Management.
 - (b) Profit to be valued at TT buy and loss at TT sell on the date of valuation.
 - (c) To be valued at RBI reference rates for respective currencies.
 - (d) To be accounted in the respective mirror accounts.

Answers

1. (a)
2. (b)
3. (c)
4. (d)

UNIT
20

ETHICS, MORALS AND CODE OF CONDUCT FOR THE DEALING ROOM

STRUCTURE

20.0 Objective

20.1 Ethical Culture

20.2 Code of Conduct for Dealers

Let Us Sum Up

Keywords

Check Your Progress

20.0 OBJECTIVE

To provide inputs on ethics and morals to be followed by dealers in the dealing room to create high standards of integrity and honesty for dealers in line with international best practices and also to furnish the details of the code of conduct issued by FEDAI.

20.1 ETHICAL CULTURE

Culture can be described but not defined easily. Nor can it be manufactured in an organization just by putting in a programme. Rather it is perceived by those who are employed or those who come into contact with the business. At its most basic, corporate culture expresses itself in behaviour and the way the business is run. Staff is sensitive to management styles; where the prevailing culture is one characterized by greed or arrogance, it is soon reflected in the way they behave. On the other hand, if it is one of trust, integrity and openness, staff generally will feel comfortable at work and be proud of the organization.

It is however more important that in the dealing room and Treasury, the people are expected to maintain highest standards of honesty and integrity because of the nature of business/work and also because of the volumes of business handled. The actions of the dealers will make the face of the bank and the impact and result of these actions is very profound on the organization. Hence there is great need to drive home the concept of integrity to the dealers with an intention to not only protect the image of the bank but also to avert any possible legal tussle. In this chapter, we briefly discuss the issues relating to integrity at work.

1. Use of confidential information

If accidentally, the dealers come to possess very confidential information of a competitor, peer banker or a client, the appropriate action should be clear while bearing in mind the bank's reputation for the highest standards of integrity. The dealers must resist all temptation to utilize the information and derive undue advantage in the given situation which the asymmetry of information may give.

What is unethical is to use the information for competitive advantage knowing that it was privileged.

Adverse consequences of misuse of information may include perception throughout the industry that internal standards are low which can excuse inappropriate behaviour elsewhere besides causing immense reputational damage.

2. Gifts and pleasantries

It is quite possible that dealers may, in the normal course of business, receive small gifts and pleasantries from clients, brokers, counterparties, etc., as is the practice in the industry. It is desirable to have a well-documented policy on accepting small gifts so as to ensure that gifts do not transgress and become bribery. To avoid the emergence of such situation, the maximum value of the gift must be prescribed and the gift must be accepted in a transparent manner.

What is unethical is accepting gifts of high value not in line with the customs and practices of the trade and not in a transparent way.

Adverse consequences may include reputational risk, charges of bribery and may also lead to litigation.

3. Dealers prudential trading limits

It is expected of all dealers to strictly adhere to the stipulated trading limits without having regard to their personal assessment of profitability of the trades. The limits reflect the risk appetite of the management and are also part of the risk management policy, and hence very sacred. Any violation of the limits will be viewed seriously by the management and the Regulator. Repeated violations may drive the management to attribute motives and may lead to disciplinary actions.

What is unethical is repeated violations of limits in place without appropriate authority

Adverse consequences may include reputational risk, concentration of risk leading to potential losses. The Bank's systems and controls appear inadequate with potential consequential action by the Regulator.

4. New recruitment

The underlying principles of new recruitment should be trust and integrity of the candidates. The Bank should try to inculcate and nurture its own culture. Culture of an organisation is a key mitigating tool for the proper management of conflict of interests. Culture is a combination of both formal structures and procedures (such as HR policies on compensation, appraisals, discipline and training and IT support tools for this) and informal structures including the values and ethics promoted by the organisation and staff behaviours, for example, what is considered generally acceptable by the staff in the industry.

Adverse consequences may include reputational risk and the risk of employing someone who may cause damage and loss to the bank.

5. Compliance culture

Compliance culture in the bank must be encouraged and appreciated. It is necessary for all the dealers and treasurers to comply with the regulatory and other prudential guidelines and procedures. The Compliance officer must ensure compliance and should command respect among operational and front office staff.

Adverse consequences of non-compliance may include regulatory breach and if unchecked, may lead to further breaches.

6. Conflict of interest

Conflict of interest should be avoided at all times. The allotment of duties and departments should be done in such an effective manner that the conflict of interest is avoided.

What is unethical is to utilize the conflict of interest, should it arise, to one's own personal advantage and to the detriment of the Banks' interest.

Adverse consequences may include reputational risk. Failure to resolve conflict of interest or inability to properly handle it may sometimes result in regulatory action.

7. Misselling

From the Dealing room, misselling of treasury products and derivatives should never happen. The dealers must resist the temptation of selling the products to wrong or uninformed buyers with the intention of increasing volumes/profitability. The misselling mostly happens with reference to exotic and complex derivative products and Treasury products. Reserve Bank of India has expressed concerns on the issue of misselling and put in place the 'Suitability and Appropriateness' policy and advised the Treasuries to follow the same scrupulously.

What is unethical is selling structured (leveraged) complex products to buyers without properly and clearly explaining the risks, especially, the downside risks, associated with the product. It is also unethical to sell the products to people/clients for whom the products are not suitable and appropriate.

Adverse consequences may include reputational damage and financial loss, aggrieved counterparties/clients seeking redressal from the Bank and regulatory action.

8. Poaching of Staff

In very specialised areas like Treasury, the attrition rate is becoming very high. But it is not proper to poach staff from a competitor or another market player. Poaching leads to chaos in the market.

What is unethical is poaching from an organization with whom the bank has valuable relationship.

Adverse consequences may include strained relationships and sometimes legal complications.

9. Reputational Issues

There may arise situations in which Banks/dealers may be required to participate in transactions that ultimately result in some tax advantage to the client or allow the clients to take advantage of some arbitrage. These types of transaction should be best avoided. Alternatively, extensive due diligence needs to be undertaken on all aspects before proceeding. Bank may be satisfied on the question of the legality of the proposal, but the question remains whether the inherent risks associated with tax evasion/tax arbitrage might still make the proposal unacceptable.

What is unethical is participating in transactions which bend the rules to an unacceptable, albeit, not illegal extent, which may well cause considerable internal discussion before participation.

Adverse consequences may include adverse publicity, loss of business resulting from regime change.

10. Corporate Hospitality

Corporate hospitality/entertainment can be a contentious area, particularly if banks do not have clear guidelines covering both the offering and acceptance of entertainment and gifts. Generally any hospitality deemed appropriate should be proportionate to the nature of the relationship and the seniority of those involved. Hospitality should not be offered without the donor being present and would not normally cover more than the event itself. A register of gifts and hospitality should be kept covering all activity above a specified figure.

What is unethical is accepting or offering hospitality beyond the laid down policy.

Adverse consequences: Lack of clear policy and guidance can result in inappropriate types and value of entertainment being offered and received, resulting in lax culture developing. Inadequate control and understanding of the purpose and place of corporate hospitality makes the possibility of what is in effect bribery becoming acceptable.

11. Whistle blowing

The Bank should have a documented reporting or whistleblowing procedure and it must be well publicized. The management should be approachable. It should have an active dialogue with staff, providing opportunities for situations to be brought to its attention. The procedures should also offer alternative reporting routes to areas such as compliance or HR. The bank should have a track record of treating these issues effectively and in confidence, if reported. If the bank is perceived to be lacking in appropriate policies or the staff has no confidence in their effective application, there is always the nuclear option of making a report direct to the regulator. Clearly, it is in the Banks' interest to ensure that the reports are made internally in the first instance but, if members of staff lack confidence to follow internal procedures, it suggests that the organization's culture and ethos may be deficient.

What is unethical is the action of the staff in ignoring the published complaints procedure. Discouraging staff from reporting rule breaches is unethical. Ignoring rule breaches, having been made aware of them, is unethical.

Adverse consequences: Internally, the consequences of taking no action are to undermine the organization's procedures and regard for them in three areas – operations, compliance and human resources. Operationally, failure to follow procedures breeds a culture of carelessness, which can lead to financial loss or regulatory sanction for compliance failure. An absence of reporting procedures for staff, or contempt for them, suggests a culture of general indifference, which can lead to operational loss and compliance failure.

19.2 CODE OF CONDUCT FOR DEALERS

The dealing room is a sensitive department with dealers having access to a lot of price-sensitive information and trading strategies. The dealers are required to handle brokers, customers and other counter-parties very professionally. There should be no conflict of interest for dealers and they should demonstrate high degrees of integrity and honesty. The dealers are generally advised to sign and

execute a code of conduct designed and prepared by a Self Regulatory Agency (SRA) like FEDAI, besides undertaking to abide by various guidelines and directions issued by the bank.

Foreign Exchange Dealers' Association of India (FEDAI), a Self Regulatory Agency (SRA), has come out with a code of conduct for dealers and brokers which all the banks follow. The copy of the code of conduct is furnished below.

19.2.1 FEDAI Code of Conduct-Dealers and Brokers

1. Confidentiality

- 1.1 The preservation of confidentiality is essential for proper conduct of business in foreign exchange transactions. The dealers and brokers should realise that any breach of confidentiality would damage the reputation of the participants in the markets. Merely for the sake of securing short term gains, a bank dealer may sometimes be tempted to press a broker for information which would be improper for him to pass on; an active bank dealer may even hint that failure to co-operate with him might lead to reduction in business routed through the concerned broker. Any such behaviour or other similar acts on the part of a dealer to induce a broker or vice-versa to breach confidentiality should be strongly condemned. A broker also should not induce a 'Bank Dealer' and force him to close a deal with him to enable him to have short term gains. The following rules should be followed for safeguarding confidentiality.
- 1.2 A broker shall not reveal the name of the counter-party bank until the deal is closed. No deal shall be deemed to be concluded finally under normal circumstances unless and until the name of the counter party bank is furnished by the broker. Brokers/dealers should ensure that the names of banks which are not acceptable are not divulged as a matter of routine, to others.
- 1.3 Where a counter party bank's name proves to be unacceptable to the bank making the offer, the broker should not disclose the name of the latter nor the reason for non-acceptance of the other bank. The bank whose acceptance is refused may sometimes feel that the broker in such a situation had made a quotation which he could not substantiate. In such cases, the broker may ask the FEDAI to mediate through the guidance committee and to obtain confirmation from the reluctant counter-party bank assuring that the broker did have business at the quoted price thus establishing the bona fides of the broker and his quotation.
- 1.4 Bank dealers should not normally be allowed to visit broker's offices. However, when necessary, they may do so at the express invitation of the partners of the firm concerned and with the prior knowledge and approval of the officer-in-charge of bank's foreign exchange business. The partner of the broker's firm should carefully supervise such visits so as to protect the confidentiality of business being transacted in the broker's office during such visits.
- 1.5 No broker firm should solicit business from bank's dealers through unorthodox means.
- 1.6 Bank dealers should, on no account, deal from a broker's office or from a place outside their dealing rooms.
- 1.7 Dealing for personal account is prohibited.
- 1.8 Deals, concluded after the back office has closed recording for the day, (late deals) are to be marked as such and included in that day's position. A late deal slip must be passed immediately to an official unconnected with the dealer.

- 1.9 The dealer has to operate according to the guidelines laid down by the management.
- 1.10 Dealers should not associate with the accounting work.
- 1.11 Dealers/brokers should acknowledge in writing that they have read, understood and would observe the code of conduct. It must be made clear to them that disciplinary actions could be taken against those who breach the code. All dealers should furnish an undertaking to conform to the code of conduct.
- 1.12 Dealers and brokers should not relay any information which they know to be false and should take great care when discussing unsubstantiated information.
- 1.13 In the normal course of business, dealers and brokers are often entrusted with proprietary and materially price sensitive information. To disclose such confidential information without consent before it becomes public is unethical and breach of confidentiality.
- 1.14 Dealers and brokers should not, with intent or through negligence, profit or seek to profit from confidential information, nor assist anyone with such information to make profit.
- 1.15 Dealers should refrain from trading against confidential information and they should never reveal such information outside their organisations, even after they have changed their employment.

2. Dealing Procedures

- 2.1 The dealing operations between banks and brokers are done mostly over telephone and therefore call for very high standards of credibility, code of conduct and expertise. It is equally necessary for identification of the voices of the brokers/dealers. A high degree of ethical standard is, therefore, required among all participants in the market.
- 2.2 Once a bank dealer has quoted a price and stated his requirements to a broker, he is bound to deal on those terms with acceptable names and within a 'reasonable' period. The bank dealer must at the time of placing the order indicate to the broker time limit for that offer. Similarly, a broker on his part should make it clear to the bank whether his price offer is 'firm' and if so, indicate the amount involved and the time up to which the offer is valid. In case a broker cannot strike a deal within the time stipulated, he should at reasonable intervals inquire whether the offer still holds good. It is the duty of the bank dealer to inform the broker that the offer stands/withdrawn. A bank dealer who wishes to withdraw/change the offer already made, must clearly advise the broker that the offer stands withdrawn/altered; mere dropping down the telephone receiver does not make the offer withdrawn.
- 2.3 A bank dealer/broker may indicate rates for information only.
- 2.4 Banks shall honour the firm prices quoted by them provided the brokers respond within the stipulated time, giving the name of the counter-party bank. The language used among the banks and brokers should be clear and unambiguous.
- 2.5 In case the amounts involved do not reflect the normal market practice, the broker should get confirmation of the amounts before quoting the rates to other banks. While finalising a deal, the broker must give the name of the counter party bank and confirm that the deal is closed. No transaction can be treated as final till the broker confirms the deal and declares an acceptable name of the counter party to the offering bank. Any change in name of the counterparty bank, exchange rate, amount and delivery period should be made with the acceptance of both the banks.

- 2.6 Advantage should never be taken even unintentionally of an obviously incorrect quotation offered or accepted.
- 2.7 To minimize errors and misunderstanding, brokers should pass on their 'Broker Notes' as soon as practicable after the deals have been concluded and banks should normally receive confirmation from the broker through the fastest means on the same day.
- 2.8 The handling of confirmations of the deals deserve special attention and banks shall exchange their written confirmations promptly, as undetected discrepancies in payment instructions or other details may prove to be irksome and costly. Adherence to the following procedure is essential:
 - (i) Banks should receive confirmation from the broker through fastest means on the same day. Brokers' notes should be delivered to the concerned department of the bank.
 - (ii) Brokers' Notes should indicate specifically and clearly whether the contract is an 'outright' or a 'swap' deal.
 - (iii) The Brokers' Notes shall indicate the settlement instructions as required by contracting banks.
 - (iv) It shall be the duty of the broker to assist the bank to obtain confirmation of deals from the other banks, where necessary.
 - (v) Discrepancies/errors found in the Brokers' Notes should be notified to the brokers on the same day and in any case not later than the close of business on the second working day.
- 2.9 Banks shall not treat contracts as closed unless and until the brokers also confirm their closures.
- 2.10 Management should have a clear written policy regarding the use of mobiles and wireless communication devices by trading, sales and settlement staff. The use of wireless communication devices within the front or back offices for official business, except in an emergency or disaster recovery situation or specifically approved by senior management is not considered good practice.

3. Differences Payable by Brokers

- 3.1 There may be occasions, particularly, in the fast moving foreign exchange markets, when a broker may not be able to substantiate his firm quotation where he has an obligation to do so. The broker should close the deal at the next available price and settle the difference between the 'firm' rate and 'settled' rate by issue of a cheque for the amount to that bank which has suffered the loss under cover of a letter stating the circumstances which necessitated such a settlement. He shall not attempt or agree to compensate the bank by promising favourable rates in future deals. FEDAI 'Guidance Committee' should be kept informed of such instances by the broker as well as banker for necessary record/action. In terms of para. 3.3 below, brokers shall operate on the specific instructions of dealers', and thus substitution of one bank by another in inter-bank contracts by brokers is prohibited.
- 3.2 As market participants, the brokers must be impartial in rendering services to banks.
- 3.3 Under the Reserve Bank of India Guidelines, brokers are prohibited from dealing on their own account. No broker shall maintain an 'exchange' position. Banks must promptly bring to the notice of the 'Guidance Committee' instances of brokers holding such positions.

- 3.4 While dealers may arrange to pick up deliveries under contracts directly to the extent possible, it shall be the duty of the broker to assist the dealers in the matter, when requested to do so but he shall not be responsible for any loss which the bank may incur due to delay in the delivery of the amounts, etc.

4. *Frivolous Quotations*

- 4.1 Brokers and bank dealers shall not make frivolous quotations designed to mislead market participants.
- 4.2 If any broker or a bank dealer is found to be resorting to frivolous quotations, it shall be the duty of other brokers/bank dealers to bring such instances to the notice of FEDAI in writing for appropriate action by the ‘Guidance Committee’.

5. *Quotation of Fictitious Rates*

- 5.1 Under no circumstances shall a broker or a bank dealer conclude ‘swap’ transactions at rates/differences at off-market rates.
- 5.2 In the case of ‘forward to forward’ contracts, the rates quoted for the ‘swap’ transactions should not be out of alignment with the going inter-bank ‘forward’ rates. Swap differentials in such cases should not grossly be away from ongoing market differences.
- 5.3 If any dealer/broker is found to be indulging in such malpractices, the matter should be promptly brought to the attention of FEDAI Guidance Committee.

6. *After-Hours Dealing*

- 6.1 Banks should prescribe in writing dealing hours of the bank dealers (staggered hours, if necessary) keeping in mind the instructions of Internal Control Guidelines of Reserve bank of India with regards to Hours of Business. Where one of the legs is Indian Rupee, the hours of business are to be as per FEDAI Rule 1.
- 6.2 There is a possibility that the inter-bank market deals may be concluded through brokers outside normal hours. To ensure the authenticity of such deals, the dealers as well as the brokers should arrange that such deals are confirmed immediately.
- 6.3 Unless authorised by the management of the banks, no dealer should handle dealing operations after normal hours and, in such cases, proper record of deals such as electronic/telex messages, time chart of rates, etc., should be maintained.

7. *Brokerage Payments by Banks*

- 8.1 Brokerage bills shall not be passed for payment by dealers.
- 8.2 Dealers should not nominate brokers.
- 8.3 Bank dealers shall not distribute brokerage among brokers who are not involved in the execution of a deal.
- 8.4 Under no circumstances shall a broker waive or offer to waive brokerage payable by a bank on account of business concluded by him with that bank.

8. Market Irregularities

- 8.1 Where there is a suspicion of improper conduct on the part of a participant in the market, banks/brokers who may come to know of it should bring such matter to the attention of FEDAI promptly for purpose of investigation and necessary action by the ‘Guidance Committee’. Such report will be considered as strictly private & confidential.
- 8.2 Spreading of rumours in the market about market participants, even giving out factual information as to deals made by different authorised dealers would be deemed contrary to the ‘Code of Conduct’ and the delinquent dealers/brokers are liable for disciplinary action as may be decided upon by the FEDAI/Bank Managements.

9. Enquiry into the Conduct of Brokers

In case any instances of malpractices committed by a bank dealer or a broker are brought to the notice of the FEDAI, the FEDAI may call for full details of such transactions which will be investigated. The report will be placed before Guidance Committee, which will recommend mode of action to FEDAI. The Managing Committee of FEDAI will initiate appropriate disciplinary action against delinquent bank dealer or a broker in case of infringement of the ‘Code of Conduct’.

10. Penalties

- 10.1 Any violation of the above ‘Code’ by a broker will make him liable for deterrent penalty up to the maximum of Rs. 50,000/- exclusive of payment of any loss/damage caused to a bank by such violation. Collection and payment of such penalties by the brokers to FEDAI should be ensured by FEBAI. FEDAI may also suspend the concerned broker on the recommendation of the Guidance Committee.
- 10.2 As far as bank dealers are concerned, any punishment or disciplinary action for violation of the ‘Code’ shall be taken by the concerned bank’s management on the basis of the decision of the ‘FEDAI’ and other relevant evidence made available.
- 10.3 Broking firm/company which is not subscribing to this Code shall not be permitted to participate in the market operations.

In compliance with FEDAI guidelines Banks generally obtain undertaking letters from dealers to ensure strict adherence to high ethical standards and integrity.

Let Us Sum Up

Ethics to be followed by dealers in respect of confidential information, new recruitment, compliance culture, conflict of interest, misselling, poaching and whistle blowing have been discussed. The code of conduct formulated by FEDAI and being followed by the banks have been discussed in detail and the draft copies of undertakings generally banks take from the dealers have been provided.

Keywords

Prudential trading limits, conflict of interest, misselling, poaching, whistle blowing, frivolous quotations, after hours dealing, brokerage and penalties.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is unethical when the dealers handle confidential information?
 - (a) Using the information for competitive advantage knowing that it was privileged.
 - (b) Destroying the information.
 - (c) Keeping and storing the information with themselves.
 - (d) Not revealing the information to anybody.
2. What do the prudential trading limits reflect?
 - (a) They reflect merely the directives of management.
 - (b) They reflect risk appetite of the management.
 - (c) They reflect the understanding with the counter parties.
 - (d) They reflect the dealers' competence levels.
3. The functions of Front and Mid office should be segregated and must be distinctly different, why?
 - (a) To prevent Front office and Mid office from colluding and defrauding the bank.
 - (b) To enable Front office to increase volumes without intervention by mid office.
 - (c) To avoid conflict of interest.
 - (d) To provide level playing field for both Front office and Mid office.
4. What is misselling in dealing room?
 - (a) Selling products of other banks.
 - (b) Selling bank products without collecting stipulated charges.
 - (c) Selling products that are still in the making.
 - (d) Selling complex products without explaining the downside risks and selling products that are not suitable and appropriate to the clients.

Answers

1. (a) 2. (b) 3. (c) 4. (d)

UNIT **21**

COMPONENTS OF MULTI-CURRENCY BALANCE SHEETS

STRUCTURE

21.0 Objective

21.1 Components of Multi-Currency Balance Sheet

21.2 Guidelines for Compliance by Banks – Accounting Standard (AS) 11(revised 2003), ‘The Effects of Changes in Foreign Exchange Rates’

Let Us Sum Up

Keywords

Check Your Progress

21.0 OBJECTIVE

To provide inputs on various components of present day balance sheet of banks that conduct various cross-border transactions. Such balance sheets will be generally denominated in multi-currency. Then arises the need for valuation of assets and liabilities. Hence guidelines for compliance with Accounting Standards -11 have been given.

The components and disclosure norms of balance sheets of banks and corporates have undergone tremendous changes in recent times. The corporates have added plethora of activities to their list and some of the corporate have established treasuries to manage their funds. The corporates have started acquisitions, mergers and takeovers. They are allowed to take ECBs, foreign currency loans and enter into areas hitherto unheard of. Foreign Currency Convertible Bonds (FCCB) have become a popular route to raise resources. All this resulted in dramatic change of the composition of their balance sheets.

The banks have also grown in size and complexity. Banks have started opening overseas branches to help their corporate clients in their expansionary ventures. Banks have started borrowing through MTNs (Medium Term Notes) in foreign currency. They have started accepting liabilities in foreign currency like FCNR, EEFC, RFC RFC (D), Special Foreign Currency deposits, etc. They have also started granting pre-shipment loans in foreign currency, post-shipment loans in foreign currency. They also lend to their foreign branches and make placements in foreign currency with their foreign correspondents. Banks are also participating in CLNs (Credit Linked Notes) and other complex derivative products. Further, banks are doing cross-border lending. With the spurt in international activities, the complexity of balance sheets has also increased. The liabilities as well as assets have started appearing in various foreign currencies lending the balance sheets colour and complexity.

In this background, banks are required to maintain the resources and assets in the respective currencies to effectively manage the exchange rate risk leading them to maintain multi-currency balance sheets.

21.1 COMPONENTS OF MULTI-CURRENCY BALANCE SHEET

Apart from the usual items, the following items may appear in a multi-currency balance sheet.

Resources

- Foreign Currency Non-Resident Deposits-FCNR (B)
- Exchange Earners Foreign Currency account
- Resident Foreign Currency account
- Resident Foreign Currency account (domestic)
- Special foreign currency account
- Borrowings from overseas branches/foreign correspondents

Assets

- Foreign currency loans
- Pre-shipment credit in foreign currency
- Post-shipment credit in foreign currency

- Placements with overseas branches/foreign correspondents
- Credit linked notes

Even though various assets and liabilities will appear in various currencies, the final balance has to be prepared in the Reporting currency, i.e. Indian Rupees for Indian Banks and respective reporting currencies for foreign branches of Indian banks. This translation of multi-currency balance sheet in to the reporting currency entails lot of exchange risk. Precisely in this context, AS 11 guidelines have come in to force. AS 11 guidelines:

21.2 GUIDELINES FOR COMPLIANCE BY BANKS – ACCOUNTING STANDARD (AS) 11(REVISED 2003), ‘THE EFFECTS OF CHANGES IN FOREIGN EXCHANGE RATES’

21.2.1 Classification of Integral and Non-integral Foreign Operations

Paragraph 17 of the Standard states that the method used to translate the financial statements of a foreign operation depends on the way in which it is financed and operates in relation to the reporting enterprise. For this purpose, foreign operations are classified as either ‘integral foreign operations’ or ‘non-integral foreign operations’. While complying with the Standard, a doubt may arise on the classification of representative offices set up in foreign countries, foreign branches and off-shore banking units set up in India as ‘integral foreign operation’ or ‘non-integral foreign operation’.

21.2.2 Action to be Taken by Banks

Paragraphs 18 and 19 of the Standard explain ‘integral foreign operation’ and ‘non-integral foreign operation’. Paragraph 20 of the Standard provides indications as to when a foreign operation is a non-integral foreign operation rather than an integral foreign operation. Taking into consideration the operation of the foreign branches of Indian banks and the indicators listed in paragraph 20, foreign branches of Indian banks would be classified as ‘non-integral foreign operations’. Similarly, Offshore Banking Units (OBUs) set up in India by banks would also be classified as ‘non-integral foreign operations’. Taking into consideration the operation of the representative offices of banks set up abroad and the explanation in paragraph 18 of the Standard, Representative Offices would be classified as ‘integral foreign operations’. These classifications are for the limited purpose of compliance with the Standard.

21.2.3 Exchange Rate for Recording Foreign Currency Transactions and Translation of Financial Statements of Non-integral Foreign Operation

As per paragraphs 9 and 21 of the Standard, a foreign currency transaction should be recorded by Indian branches and integral foreign operations, on initial recognition in the reporting currency, by applying to the foreign currency amount the exchange rate between the reporting currency and the

foreign currency at the date of the transaction. Further, paragraph 24 (b) of the Standard states that income and expense items of non-integral foreign operations should be translated at exchange rates at the dates of the transactions. While adopting the Standard, Indian branches and integral foreign operations of banks may face difficulty in applying the exchange rate prevailing at the date of the transaction in respect of the items which are not being recorded in Indian Rupees or are currently being recorded using a notional exchange rate, due to their extensive branch network and volume of transactions. Similarly, banks may face difficulty in translating income and expense items of a non-integral foreign operation by applying the exchange rates at the dates of the transactions.

21.2.4 Action to be Taken by Banks

Banks, which are in a position to apply the exchange rate prevailing on the date of the transaction for recording the foreign currency transactions at their Indian branches and integral foreign operations and for translating the income and expense items of non-integral foreign operations as required under AS 11 are encouraged to comply with the requirements. Banks, which have an extensive branch network, which have a high volume of foreign currency transactions and are not fully equipped on the technology front may be guided by the following:

- (i) Paragraph 10 of the Standard allows, for practical reasons, the use of a rate that approximates the actual rate at the date of the transaction. For example, an average rate for a week or a month might be used for all transactions in each foreign currency occurring during that period. Similarly, in respect of the non-integral foreign operations, paragraph 25 of the Standard provides that for practical reasons, a rate that approximates the actual exchange rates, for example an average rate for the period, is often used to translate income and expense items of a foreign operation. The Standard also states that if exchange rates fluctuate significantly, the use of average rate for a period is unreliable. Therefore, as per the Standard, except in cases where exchange rates fluctuate significantly, a rate that approximates the actual rate at the date of the transaction may be used. Since the enterprises are required to record the transactions at the date of the occurrence thereof, the weekly average closing rate of the preceding week can be used for recording the transactions occurring in the relevant week, if the same approximates the actual rate at the date of the transaction. In view of the practical difficulties which banks may have in applying the exchange rates at the dates of the transactions and since the Standard allows the use of a rate that approximates the actual rate at the date of the transaction, banks may use average rates as detailed below. In this regard FEDAI has agreed to publish a weekly average closing rate at the end of each week and a quarterly average closing rate at the end of each quarter for various currencies.
 - In respect of Indian branches and integral foreign operations, those foreign currency transactions, which are currently not being recorded in Indian Rupees at the date of the transaction or are being recorded using a notional exchange rate may now be recorded at the date of the transaction by using the **weekly average closing rate of the preceding week**, published by FEDAI, if the same approximates the actual rate at the date of the transaction.
 - Generally, Indian banks prepare the consolidated accounts for their domestic and foreign branches at quarterly or longer intervals. Hence, banks may use the **quarterly average closing rate**, published by FEDAI at the end of each quarter, for translating the income and expense items of non-integral foreign operations during the quarter.

- If the weekly average closing rate of the preceding week does not approximate the actual rate at the date of the transaction, the closing rate at the date of the transaction should be used. For this purpose, the weekly average closing rate of the preceding week would not be considered approximating the actual rate at the date of the transaction if the difference between (a) the weekly average closing rate of the preceding week, and (b) the exchange rate prevailing at the date of the transaction, is **more than five percent** of (b). In respect of non-integral foreign operations, if there are significant exchange fluctuations during the quarter, the income and expense items of non-integral foreign operations should be translated by using the exchange rate at the date of the transaction instead of the quarterly average closing rate. For this purpose, the exchange rate fluctuation would be considered as significant, if the difference between the two rates is **more than ten per cent** of the exchange rate prevailing at the date of the transaction. The limit of five/ten percent variation has been considered as appropriate since such variation is not expected to have a material impact on the amount of the relevant items such as foreign currency loans and advances and deposits, and operating results.
- (ii) Banks are, however, encouraged to equip themselves to record the foreign currency transactions of Indian branches as well as integral foreign operations and translate the income as well as expense items of non-integral foreign operations at the exchange rate prevailing on the date of the transaction.

21.2.5 Closing Rate

Paragraph 7 of the Standard defines ‘Closing rate’ as the exchange rate at the balance sheet date.

21.2.6 Action to be Taken by Banks

In order to ensure uniformity among banks, closing rate to be applied for the purposes of AS 11(revised 2003) for the relevant accounting period would be the last closing spot rate of exchange announced by FEDAI for that accounting period.

With the adoption of AS 11 guidelines, the P/L accounts of banks have become very volatile as they adopt the exchange rate for the currencies as on the date of balance sheet and transfer the net effect to P&L account. In view of this the banks are required to make some additional disclosures in their balance sheets to enable the shareholders, clients, public, analysts, and correspondents to understand and interpret the balance sheets correctly.

Source: RBI circular

In the case of overseas branches, there may be an item on their liability side titled ‘Retained earnings’ unless the profits are repatriated back to Indian Head Office every year. While translating the balance sheet in to Indian Rupees, there may not be any effect of this item as it is treated as another liability, this item will have great impact on the calculation of overnight open position limit of the branch as it is reckoned for computation of overnight open position limit of the bank globally.

Another item that could find place in the multi-currency balance sheets may be ‘Credit Linked Notes’ which are high risk instruments and hence change the risk nature of the balance sheet.

With the adoption of multi-currency balance sheets, the risk profile of banks has completely changed. The foreign currency liabilities and assets contribute great amount of interest risk and exchange risk. Therefore banks are required to hedge these risks effectively using the available tools. Banks started hedging interest rate risk using extensively FRAs (Forward Rate Agreements) and IRS (Interest Rate Swaps). The foreign currency borrowings either at fixed rate or floating rate, depending on the developing interest rate scenario, are covered by currency swaps either by POS (Principal Only Swap) or COS (Coupon Only Swap). The Exchange traded currency futures provide another platform for banks to hedge their exchange risks.

Thus the emergence of multi-currency balance sheets heralds an era of opportunities, complexities and challenges.

Let Us Sum Up

The components of multi-currency balance sheet like FCNR (B), EEFC, RFC, RFC (domestic), SFC overseas borrowings, PCFC, PSFC, FCL, overseas placements and CLNs have been discussed. The RBI guidelines on AS 11 accounting has also been explained.

Keywords

Multi-currency Balance Sheet, FCNR (B), AS11, Non-integrated foreign operation

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. According to paragraph 20 of the standards, foreign finance of Indian Bank would be classified as
 - (a) Non-integral foreign operations
 - (b) Integral foreign operations
 - (c) Composite operations
 - (d) stand alone operations
2. In respect of Indian Banks, Foreign currency transactions may be recorded using WAR (Weekly Average Rate) given by whom?
 - (a) IBA
 - (b) FEDAI
 - (c) RBI
 - (d) CCIL
3. Which one of the following may appear as an asset in the multi-currency balance sheet of a bank?
 - (a) FCNR(B)
 - (b) RFC(D)

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- (c) Foreign currency loans
 - (d) Borrowing from overseas branches
4. How are OBUs set up by banks in India classified?
- (a) Integral foreign operations
 - (b) integral domestic operations
 - (c) non-integral domestic operations
 - (d) non-integral foreign operations

Answers

1. (a) 2. (b) 3. (c) 4. (d)

MODULE – D

RISK MANAGEMENT

Units

- 22.** Accounting/Valuation
- 23.** Exposure Norms
- 24.** Internal and External Audit
- 25.** Role of Information Technology in Treasury Management
- 26.** Regulations, Supervision and Compliance of Treasury Operations



ACCOUNTING/ VALUATION

STRUCTURE

- 22.0** Objective
- 22.1** Accounting
- 22.2** Profit Accounting
- 22.3** Valuation

Let Us Sum Up

Keywords

Check Your Progress

22.0 OBJECTIVE

To provide necessary information on the classification of investments like HTM, HFT and AFS and valuation methodologies for various types of securities, accounting and provisioning norms for non-standard assets.

22.1 ACCOUNTING

1. The investment portfolio of the bank will include marketable debt, equity and quasi-debt/equity instruments. A bank's investments in subsidiaries and joint ventures also form part of the investment portfolio.
2. The RBI stipulates that the entire investment portfolio of a bank should be classified into the following three categories:
 - (a) Held to Maturity (HTM).
 - (b) Held for Trading (HFT).
 - (c) Available for Sale (AFS).
3. This classification is necessary only for profit accounting and valuation purposes. Balance sheet classification and disclosures will continue on the existing practice basis wherein all investments will be shown at cost or market price whichever is lower. In order that the approach to valuation is consistent and to ensure that banks do not change the category on the face of adversity it has been stipulated that a bank should decide to which of the three categories a security belongs at the time of its acquisition.

22.2 PROFIT ACCOUNTING

- (a) General Principles
 - Accrued (broken period) interest paid when buying securities is expensed.
 - Accrued interest received when securities are sold is treated as income.
 - Book values are, therefore, clean prices (net of adjustments below).
 - Brokerage received (e.g., when investing in a new issue) is deducted from the cost of acquisition.
 - Brokerage paid (when buying/selling) is expensed.
 - All inter-category transfers must be at the lower of market price/book value. Depreciation, if any, should be fully provided for.
- (b) HTM
Profits/losses from sales are first taken to P&L and then appropriated to Capital Reserves.
- (c) HFT
Profit/loss is defined as the difference between sales and purchase prices (both on clean basis). If purchases and sales are in different unequal tranches, it is left to the discretion of treasury to match purchases and sales on FIFO, LIFO or (weighted) average prices.
Profits/losses in the HFT portfolio directly impinge upon operating results.

(d) AFS

Depending upon the bank's policies, the cost of sales could be based on FIFO, LIFO or weighted average price of inventory. As in the case of HFT securities, realised profits/losses squarely impact current performance.

Capital Charge

As an initial step towards prescribing capital requirement for market risk, banks were advised to:

- (i) assign an additional risk weight of 2.5 per cent on the entire investment portfolio.
- (ii) assign a risk weight of 100 per cent on the open position limits on foreign exchange and gold, and
- (iii) build up investment fluctuation reserve up to a maximum of 5 per cent of the investments held in HFT and AFS categories

22.3 VALUATION

Valuation Principles (enunciated by the RBI and operationalized by FIMMDA) of securities are as under. Under these guidelines banks have to classify their investments into Held to Maturity, AFS (Available for Sale) and HFT (Held for Trading). This classification is important for valuation of securities. Normally once a security is classified under one of these categories the banks/institutions are not permitted to change the classification. This is because the valuation norms should not be used to artificially enhance the profit.

(a) HTM (Held till/to Maturity)

All investments in the HTM category will be valued at acquisition cost (unless the asset requires provisioning because of interest and/or principal arrears, in which case the RBI's *provisioning and valuation norms* will apply). If the redemption value is less than acquisition cost, the difference must be amortized over the years remaining to maturity. Such amortization expense will be debited to Interest Account.

HTM investments need not be *marked-to-market*.

Marked to market indicates that if the current market price of a security is lower than the acquisition price, the bank should make appropriate provisioning in the books of account.

(b) HFT

Individual securities in the HFT category must be compulsorily ***marked-to-market***. Appreciation will be ignored while depreciation will flow straight to the profit and loss account. However, book values of these securities will not change. Valuation should be done monthly or at more frequent intervals.

(c) AFS

AFS will also be *marked-to-market* as in the case of HFT. Depreciation should be charged to P&L. It can be absorbed by transfer to P&L from *Investment Fluctuation Reserve (IFR)*. In case depreciation provision is no longer necessary, it is credited to 'Provisions and Contingencies' and an equivalent amount is appropriated to *IFR*.

22.3.1 Portfolio Valuation

For both HFT and AFS, a portfolio approach to provisioning may be adopted. This means that the appreciation/depreciation of each security in the category is calculated. If the overall effect is positive, it is ignored; however, if negative, it must be charged to P&L.

22.3.2 Valuation Methodology

(a) G-Secs

The steps involved are:

- Classify portfolio into HTM, HFT and AFS categories.
- HTM portfolio need not be *marked-to-market*.
- HFT and AFS categories must be *marked-to-market*.
- The valuation of individual securities as indicated by FIMMDA will form the basis of valuation of SLR securities.

(b) T-bills

As per Ind AS (Indian Accounting Standards), beginning from April 2017, T Bills are to be marked to market at prices given out by FIMMDA.

(c) State Government Securities

As per Ind AS (Indian Accounting Standards), beginning from April 2017, State Development Loans are to be marked to market at prices given out by FIMMDA.

(d) Other SLR Securities

These are valued on terms identical to State Government securities.

(e) Valuation of Corporate and Bank/FI Bonds

(i) Rated Bonds

Are valued on the basis of FIMMDA published risk spread.

- FIMMDA publishes the credit risk spread over the yield on *G-Secs* for various maturities and credit ratings on the rating scale.
- The valuation of a given bond is the yield for the benchmark *G-Secs* of the same (residual) maturity (interpolated, if necessary, for the broken period) plus the spread for the risk premium applicable for the credit rating of the bond.
- If the bond has two ratings, the lower should be adopted for valuation.
- For a rating to be valid, it should not be more than 12 months old.
- The minimum spread over *G-Secs* of bonds issued by FIs should be 10bp.
- Unrated Bonds
- If the same issuer has a rated bond whose maturity is within 6 months of that of the unrated bond, banks must use that rating and follow the procedure described above for rated bonds and mark up the resultant yield by 20% (i.e., 6% becomes 7.2%).
- If no rated bond of the same issuer exists, the bank should get a quick rating from a credit rating agency and mark it up by 25%. Alternatively, find the yield spread over *G-Secs* for the bond at the time of issue and increase this by 25%.

- This should then be compared with yields on 'AAA' bonds of similar tenure and the higher of the two should be adopted.
 - Pre-1996 unrated bonds should be valued at cost.
- (ii) Bonds with Simultaneous Call/Put Options
 For valuation purpose the nearest callable/puttable dates are taken as the maturity of such bonds. Then the valuation is done on the basis of methods given above.
 If interest/principal is in arrears, these valuations do not hold.
- (iii) Bonds with Call or Put Option
 In these cases, for valuation purposes the earliest call date or put date should be considered. The **YTM** for these dates are derived as above. These are termed the **yield-to-worst** for callable bonds and **yield-to-best** for puttable bonds.
- (iv) **MIBOR** – linked Bonds
 The *Overnight Index Swap (OIS)* rates will be used to convert **MIBOR** into a fixed rate coupon for the residual maturity of the bond. The spread over **MIBOR** is added to this rate to arrive at the applicable fixed rate coupon for valuing the bond.
- (v) Tax-free Bonds
 In these cases the coupon is grossed up by (1 minus tax rate). After this the valuation is done as if it is a bond like an 'AAA' for the residual maturity from the *credit risk spread table*.
- (vi) Capital-Indexed Bonds
 These bonds are valued at cost.
- (vii) Priority Sector Bonds
 Valued like AAA bonds from *credit risk spread* table for the residual maturity. As interest is paid semi-annually, the *credit risk spread* applicable is converted to semi-annual basis and added to the semi-annualized *base yield curve*.
- (viii) Unrated Non-SLR Government-Guaranteed Bonds
 For valuation purposes the spreads over base yield curve at the time of issue apply.
 - Mark up the spread by 25% for unrated corporate bonds. If the resultant yield is less than that of AAA bonds of the same residual tenure, adopt the latter.
 - Mark up the spread by 15% for unrated government-guaranteed non-SLR bonds if the issue is more than 12 months old.
 - Mark up the spread by 25% for preference shares.
- (ix) Securitized Debt/PTCs
 These are valued as per valuation of Corporate Bonds.
- (f) **Preference Shares**
 These are valued at the spread over the sovereign risk free yield curve at the time of issue marked up by 25% and added to the **YTM** rate applicable to *G-Secs* of similar residual tenure or the dividend rate of preference shares, whichever is higher. **YTM** has to be increased by at least 15% if dividend is in arrears. Preference shares issued for project finance is to be valued at par for two years after production starts or five years after subscription, whichever is earlier.

The above is subject to the valuation, not in any case, exceeding that of *G-Secs* of the same maturity and/or rated equivalent preference shares. Also, in rehab cases, the YTM should be at least 1.5% above equivalent *G-Secs*. No valuation more than the redemption price is allowed. Stock exchange price is to be adopted if traded in the last 15 days.

(g) Equity Shares

Equity shares are valued at Stock exchange prices or book value for unquoted shares. It would be advisable to deduct intangibles (e.g. miscellaneous expenses) and debit balance to P&L of the issuing company before arriving at the book value, from published audited accounts of the Company which are not more than twelve months old as on valuation date. If book value is not available, the shares are to be valued at Rupee 1 per Company.

(h) Mutual Funds

The investment in mutual funds are valued at repurchase price or stock exchange price whichever is lower. In the case of close ended schemes the NAV published by the AMC is used.

(i) Commercial Paper/Certificates of Deposit

As per Ind AS (Indian Accounting Standards), beginning from April 2017, CPs and CDs are to be marked to market at prices given out by FIMMDA.

(j) Valuation of Swaps

If a quote is available in the market for the same type of swap for the residual maturity:

- the swap should be valued on the basis of such quote.

If no quote is available:

- Where, a Government of India security benchmark is used for a swap transaction, the *base yield curve* will be used for valuing the swap.

FIMMDA also publishes the swap benchmarks on a daily basis. Where the following benchmarks are used for swap transactions, they will also be used for valuing the swap:

- FIMMDA-NSE MIBID/MIBOR
- FIMMDA-Reuters MIFOR/FIMMDA-Reuters MITOR/FIMMDA-Reuters MIOIS/ FIMMDA-Reuters MIOCS
- FIMMDA-Money line Telerate Commercial Paper

FIMMDA, FEDAI and IBA have jointly floated Financial Benchmarks India Ltd (FBIL), which is tasked with publishing benchmark rates.

22.3.4 FIMMDA-Money line Telerate Treasury Bill

In respect of the others, they should be valued at the same benchmarks that were used at the time of entering into the swap transaction.

Accounting and Provisioning Norms for Non-Standard Assets

- (a) An investment is classified as non-performing if interest/principal remains overdue for a period of 90 days.

- (b) Income should not be recognized on assets classified as sub-standard, doubtful or loss assets.
- (c) Provisioning for NPAs is to be done as in credit cases.

If interests/principals are in arrears, these valuations do not hold good.

Let Us Sum Up

The classification of investments into HFT, HTM and AFS and the valuation of various instruments like T-bills, rated bonds, unrated bonds, capital indexed bonds, etc., have been dealt with.

Keywords

HTM, HFT, AFS, capital charge, Rated bonds, unrated bonds, bonds with simultaneous call/put options, Mibor linked bonds, tax-free bonds, capital indexed bonds, securitized debt and PTCs.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Which one of the following is not one of the classifications of investments which RBI recommends for banks?
 - (a) Held for evaluation
 - (b) Held till maturity
 - (c) Held for trading
 - (d) Available for sale
2. What is the valuation method for investments under HTM category in which the principal is in arrears?
 - (a) to be valued at acquisition cost
 - (b) RBI's valuation norms apply
 - (c) marked to market
 - (d) marked to market and then discounted at market rate
3. How are T bills to be valued?
 - (a) At acquisition cost
 - (b) At rates given by CCIL
 - (c) Marked to market at prices given out by FIMMDA
 - (d) Market to market at average prices polled by select five banks
4. How are investments in close ended mutual funds valued?
 - (a) Repurchase price
 - (b) Stock exchange price
 - (c) At rates given by AMFI
 - (d) At NAV published by AMC

Answers

1. (a) 2. (b) 3. (c) 4. (d)



EXPOSURE NORMS

STRUCTURE

23.0 Objective

23.1 Need for Exposure Norms

23.2 Credit Risk

23.3 Market Risk

23.4 Settlement Risk

23.5 Limits on Brokers

23.6 Operational Risk

23.7 Limits on SWIFT Transmission

23.8 Limits on Dealers

Let Us Sum Up

Keywords

Check Your Progress

23.0 OBJECTIVE

This section provides various exposure norms that the banks follow to mitigate/manage various types of risks in the conduct of their Forex and other businesses.

The treasury operates in markets that are characterized by volatility, be it forex, securities, money, equities, or derivatives market. Market volatility is a function of the demand and supply, speculators, arbitrageurs and hedgers, the policies of governments, the guidelines of the Regulator, and the moves by the market players. Whereas, volatility provides opportunities to dealers to make/maximise profits, it poses a number of challenges. A market without volatility is dull, and is of no interest to dealers, whereas a market with lot of volatility is risky, and requires to be handled with utmost care and caution.

It is evident that a volatile market provides opportunities, and could be equally risky; it, therefore, becomes all the more important to discipline the level of risk taking, and restrict dealers from venturing into unknown terrains. It is necessary to provide speed breakers, and also to provide direction to the dealers with the objective of controlling the risks. The dealers or the front office is like a railway engine with enough auto power to move and proceed forward to explore, and it requires a Mid office or Risk Management department, like a guard, to show red flag and apply brakes and provide direction. One of the measures of restricting risk taking to predetermined levels is prescribing appropriate exposure norms.

23.1 NEED FOR EXPOSURE NORMS

As the volatility in prices/rates leads to market risk, it is essential to contain the risk within acceptable limits having regard to the risk appetite and culture of the organization by putting in place various limits. Exposure limits help control/contain the credit risk, and concentration risk by stipulating monetary limits on various aspects. These limits help the organization to control the risk and probable loss. The limits also will take away unbridled freedom from the dealers, which may lead to financial losses that the organization may find difficult to absorb.

23.2 CREDIT RISK

The credit risk in treasury is less pronounced as compared to market risk, because the majority of counter parties that the treasury deals with are banks whose credit rating is definitely a notch above the individuals and corporates. However, the treasuries will have policies in place to assume credit exposures during the course of their activities.

- **Credit Risk: Quantitative controls:** Quantitative limits help the dealing room avoid concentration risk and credit risk. Quantitative exposure limits could be in terms of counter party limits, wherein the counter parties are identified and credit appraisals are done to ascertain their net worth and counter party limits are fixed. These limits are generally determined in terms of the net worth of the bank or the net worth of the counter party banks. The market developments/reports in respect of the counter party are closely monitored, and the limits are fine-tuned with regard to the developments. Thus, the limit fixation is a dynamic process

which automatically takes into account the changes in the credit worthiness of the counter party. These limits include per party/per deal limits, which act as brakes on the dealers.

- Further, separate limits are earmarked for Forex dealing and Forex lending activities. Under both the heads there may be distinct limits for short term exposures like spot and overnight placements, and forwards and long term placements. The exposure limits for foreign branches, if any, will also be incorporated in the same policy. Further, the exposures that the designated branches take are also incorporated. Thus, the limits represent global limits of banks on counter party banks. Reserve Bank of India requires banks to monitor the counter party exposures globally, and on real time basis. Thus, the exposures are captured globally on line and monitored on a daily basis. Further, the powers are delegated to different functionaries so as to enable effective and smooth functioning. The exceptions are monitored on a regular basis, and it will be ensured that the global exposure remains within the approved limit which again has a relation to the net worth of the bank, or the net worth of the counter party.
- **Credit Risk Qualitative controls:** Qualitative limits represent the control of quality of the portfolio that helps prevent deterioration in the quality of assets. Examples are, limits on tenor instruments, exposure to an entity rated 'AAA', exposure to instruments rated 'AAA', etc. Prescribing exit routes when there is impairment of quality of an exposure is also a qualitative control measure. In areas where credit rating is not available, the banks may identify counter parties based on net worth. Fixing the progressively reducing limits of exposure is a technique designed to control the quality of exposures. The qualitative controls/limits provide the desired direction to the dealers.

23.3 MARKET RISK

Is the risk arising out of the movement of market variables/parameters like, exchange rates, interest rates, equity prices, and commodity prices. Treasury is exposed to more pronounced market risk because the treasury deals in foreign exchange, government securities, and equities. Hence, there is a great need to measure, control, and monitor the market risk in treasury. Precisely for this purpose, various limits must be put in place to minimize/eliminate market risk. Some of the limits/norms are discussed here below:

- **Market Risk: Intra-day limit/Daylight limit:** In treasury intra-day/daylight limits are prescribed to the dealers. This is aimed at controlling the market risk during the day/during trading hours. The dealers are supposed to strictly adhere to these limits during the periods of trading. Any exceptions will be monitored by Mid office and the dealers have to provide explanation for the deviation. As a practice, exceptions should not happen. In forex there may be currency-wise limits or sometimes consolidated intra-day limits. In money market there could be per transaction volume. The prerequisites for effective adherence to daylight limits are, availability of adequate counterparty limits, expertise of dealers in cover operations, effective communication systems, availability of dedicated on-line trading systems with various counter parties, empanelment of good/effective brokers, and perfect co-ordination between various sections of the treasury. The intra-day limits are generally larger as compared to overnight open position limits as the dealers will be in a position to cover the deal in the market which is active. Intraday limit should be higher at the dealer level where the decision time is less

as compared to those investments where decision time is more. For example, call money decisions are rather instantaneous, whereas term money decisions need not be instantaneous. One of the limits in the securities market could be in terms of deals routed through brokers where it could be stipulated that not more than 5% of transactions could be routed through one approved broker. Stipulation of these limits call for detailed analysis of funds in hand, volume of transactions, etc., lest the limit constrain the normal level of treasury activities.

- **Market Risk – Overnight open position limit:** In addition to intra-day limit, one regulatory prescription for effective monitoring of market risk in forex market is Net overnight open position limit (NOOPL). This limit quantifies the open position of the dealing room during the night. As the exchange rates/prices are likely to move swiftly during the long period of night, and as also there will be no active market to cover, the overnight open position limit is relatively smaller than the intra-day limit. The banks are required to obtain approval of Reserve Bank of India for the overnight open position limit. Banks monitor the overnight open position limit on a daily basis, and report on-line to RBI in daily statement called GPB (Gap, Position, and Balance). The Reserve Bank of India has issued detailed guidelines to compute overnight open position. The components that go into the computation overnight open position limit include the open position on account of cash transactions, the open position on account of accrued incomes and expenses, the position arising out of devolvement of any contingent liabilities like Bank guarantees, open position of overseas branches, if any, and also the delta value of derivatives, if any. The overnight open position limit is monitored on a global basis. Reserve Bank of India has also directed that the banks could follow the short hand method while computing overnight open position limit. The short hand method involves reckoning the higher of the overbought and oversold positions calculated separately. Presently, the regulatory guidelines stipulate considering the NPV (Net Present Value) for the O/N position, which the banks are following.
- **Market Risk – Aggregate Gap Limit (AGL):** This is another limit that addresses the market risk in the dealing room. The gaps or uncovered positions that are sensitive to market risk are aggregated without reference to signs and monitored against a sanctioned limit.
- **Market Risk – Stop Loss Limit:** The stop loss limits are meant to stop the loss when a position is initiated. When a position initiated, starts incurring loss, the stop loss is triggered when that loss is equal to the limit fixed. Stop loss indicates that once the limit is reached or breached the dealer should exit the position. This way the loss is contained within the limits accepted which again reflect the risk appetite of the bank/organization. This is a very effective tool for containing the market risk. The dealers are strictly advised to adhere to the stop loss limits, and come out of the position when warranted. The stop loss limits are fixed in various ways like stop loss limit per deal, stop loss limit per trading session, stop loss limit per day, stop loss limit for the dealing room, etc. The limits are strictly monitored and exceptions are viewed seriously. Stop loss limits should be viewed by the dealer as a mandate. A dealer could be asked to explain why a stop loss limit was not adhered. A stop loss may not be adhered to if the liquidity position of the market does not allow the exit. These aspects must be closely monitored.
- **Book profit or Take Profit Limit:** Take profit limit, is a limit given to the dealers, a point at which the dealers are expected to book the profit and come out without waiting for further profits. This eliminates a situation where dealers may land in loss while waiting for more profits. This is a conservative approach to avoid losses in the dealing room.

- **Market Risk – Value at Risk Limit (VaR):** Value at risk measures and quantifies the probable loss that a position or a portfolio may incur, should the market variables move adversely. VaR is a statistical tool that measures the market risk with a certain confidence level within a specified time horizon. The Board approved limits for VaR will be put in place, in respective banks, which serves as another effective control over market risk. There may be different VaR models that capture different market situations. Banks must select the model that suits the nature and complexity of their business. Presently, Indian banks are following a model given by FEDAI. However, with the implementation Basel II, RBI has advised the banks to capture risk using advanced measurement approach. Probably, banks will move over to their own VaR models in time, that realistically reflect the market risk of their portfolios and achieve capital efficiency.
- **Effective Monitoring of Market Risk:** The existence of AGL and VaR limits serves as an effective tool to control/monitor market risk. VaR is a reflection of volatility, more the volatility, the more the VaR. In moments of high volatility, VaR limit may be touched while AGL may still be available. In moments of low volatility, AGL limit may be touched while VaR limit may still be available. Thus, a combination of AGL and VaR limits may be useful to monitor market risk, both in times of low volatility and high volatility.

23.4 SETTLEMENT RISK

Settlement risk is the risk: when a counterparty does not deliver a security, or its value, in cash as per agreement; when the security was traded after the other counter party or counter parties have already delivered security or cash value as per the trade agreement.

One of the well-known **settlement risks** is foreign exchange settlement risk or cross-currency settlement risk, sometimes called **Herstatt risk** after the German bank, Bankhaus Herstatt, that made a famous example of the risk. On 26 June 1974, the bank's license was withdrawn by German regulators at the end of the banking day (4:30 pm local time), because of a lack of income and capital to cover liabilities that were due. But some banks had undertaken foreign exchange transactions with Herstatt, and had already paid Deutsche Mark to the bank during the day, believing they would receive US dollars later the same day in the US from Herstatt's US nostro. But, after 4:30 pm in Germany, and 10:30 am in New York, Herstatt stopped all dollar payments to counter parties, leaving the counter parties unable to collect their payment. The closing of Drexel Burnham Lambert in 1990 did not cause similar problems, because the Bank of England had set up a special scheme which ensured that payments were completed. Barings' shutdown in 1995 resulted in minor losses for counterparties in the foreign exchange market because of a specific complexity in the ECU clearing system.

23.4.1 Mitigating Settlement Risk

- Delivery versus payment: This is the method adopted by the RBI for settlement of security transactions through SGL account. Herein the payment of cash by the buyer, and delivery of security by the seller is effected simultaneously, such that settlement risk is totally eliminated.
- Settlement via clearing houses.

- Foreign exchange settlement using continuous linked settlement.
- CCIL has introduced guaranteed spot and forward deal settlement in foreign exchange thus fully eliminating counter party and settlement risks as CCIL acts as the central counter party.

Banks put in place, settlement limits on each counter party bank to reduce/mitigate the settlement risk.

- **Pre-settlement risk:** For determining the credit exposure to individual/group borrowers, the forward contracts in foreign exchange, and other foreign exchange derivative products, such as currency swaps, options, etc., should be included in their **replacement cost** to determine the individual/group borrower exposures.

- **The current exposure method:**

For the purpose of exposure norms, banks shall compute their credit exposures, arising on account of the interest rate & foreign exchange derivative transactions and gold, using the ‘Current Exposure Method’, as detailed below. While computing the credit exposure banks may exclude ‘sold options’, provided the entire premium / fee or any other form of income is received/realised.

Bilateral netting of Mark-To-Market (MTM) values arising on account of such derivative contracts cannot be permitted. Accordingly, banks should count their gross positive MTM value of such contracts for the purposes of capital adequacy as well as for exposure norms.

- (i) The credit equivalent amount of a market related off-balance sheet transaction calculated using the current exposure method is the sum of current credit exposure and potential future credit exposure of these contracts.
- (ii) Current credit exposure is defined as the sum of the positive mark-to-market value of these contracts. The Current Exposure Method requires periodical calculation of the current credit exposure by marking these contracts to market, thus capturing the current credit exposure.
- (iii) Potential future credit exposure is determined by multiplying the notional principal amount of each of these contracts irrespective of whether the contract has a zero, positive or negative mark-to-market value by the relevant add-on factor indicated below according to the nature and residual maturity of the instrument.

Residual Maturity	Conversion factor to be applied on notional principal amount	
	Interest rate contracts	Exchange rate contracts & Gold
One Year or less	0.50%	2.00%
Over One year to Five years	1.00%	10.00%

- (iv) For contracts with multiple exchanges of principal, the add-on factors are to be multiplied by the number of remaining payments in the contract.
- (v) For contracts that are structured to settle outstanding exposure following specified payment dates and where the terms are reset such that the market value of the contract is zero on these specified dates, the residual maturity would be set equal to the time until the next reset date. However, in the case of interest rate contracts which have residual maturities of more than one year and meet the foregoing criteria, the CCF or “add-on factor” applicable shall be subject to a floor of 1.00 per cent.

- (vi) No potential future credit exposure would be calculated for single currency floating / floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.
- (vii) Potential future exposures should be based on effective rather than apparent notional amounts. In the event that the stated notional amount is leveraged or enhanced by the structure of the transaction, banks must use the effective notional amount when determining potential future exposure. For example, a stated notional amount of USD 1 million with payments based on an internal rate of two times the Base Rate would have an effective notional amount of USD 2 million.

23.5 LIMITS ON BROKERS

The forex brokers are accredited by Foreign Exchange Dealers' Association of India (FEDAI), and the banks use the services of brokers to obtain finer rates, and to improve the ease of functioning in the dealing room. As a prudent policy, banks keep in place restrictions on the quantum of business routed through approved brokers or on the quantum of brokerage paid to the brokers. In the case of securities, and bond market the banks follow a procedure of fixing an appropriate limit to each broker, such that all transactions are not routed through a single broker. This helps in avoiding concentration.

23.6 OPERATIONAL RISK

To ensure that the dealers quote rates, related to market rates as per the prescribed policy, the rate chart is generated for a defined number of times in a day (say 5 times, 8 times), and the dealt rates are compared with the market rates, to identify transactions that are done at rates that are not market related. The exceptions are investigated and rectified. The exceptions are also captured in terms of variations of certain percentage from the market rate and analyzed. The dealing room is provided with market information by giving access to information screens such as Reuter and Bloomberg to each dealer.

23.7 LIMITS ON SWIFT TRANSMISSION

Threshold limits are put in place for different currencies, beyond which transmission through SWIFT is captured and separately authorised. This enables the bank to monitor the unusually large transmissions, and acts as a check on Back office.

23.8 LIMITS ON DEALERS

Limits may be placed on individual dealers for each deal, or one currency may be assigned to one dealer, or cumulative trading volumes may be defined to mitigate and monitor operational risk. The job rotation policies, and the compulsory leave arrangements of dealers are some of the tools used to have an effective check on dealers.

Let Us Sum Up

Exposure limits help control/contain the credit risk and concentration risk by stipulating monetary limits on various aspects. Banks prescribe quantitative as well as qualitative limits. They prescribe intra-day, overnight, AGL, stop loss, Take profit and VaR limits to manage market risks. Settlement and pre-settlement risks are also monitored. Replacement costs are arrived at by following current exposure method. Limits on brokers and dealers are also fixed to ensure effective risk management.

Keywords

Credit risk, market risk, intra-day/overnight open position limits, AGL, Value at Risk, Herstatt risk, current exposure method

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is the logic for Intra-day limit being generally bigger than overnight limit?
 - (a) The dealers can cover the deals in active day-time markets
 - (b) Dealers will be absent during night times
 - (c) Volatility is more during night times
 - (d) The systems are shut down during night times
2. Overnight open position limits are now being computed as per RBI directives on _____
 - (a) Consolidated basis
 - (b) Net present value basis
 - (c) Currency basis
 - (d) Approximate basis
3. Continuous Linked Settlement (CLS) is devised to handle what type of risk?
 - (a) Linkage risk
 - (b) Continuity risk
 - (c) Settlement risk
 - (d) Technology risk
4. The credit equivalent amount of a market related off-balance sheet transaction calculated using the current exposure method is the sum of Current exposure and
 - (a) Market value
 - (b) Discounted value
 - (c) Future credit exposure
 - (d) Potential future credit exposure

Answers

1. (a)
2. (b)
3. (c)
4. (d)

**UNIT
24**

INTERNAL AND EXTERNAL AUDIT

STRUCTURE

- 24.0** Objective
- 24.1** Internal Checks/Control
- 24.2** Concurrent Audit
- 24.3** External Checks/Audits
- 24.4** Inspection by RBI
- 24.5** Statutory Audit

Let Us Sum Up

Keywords

Check Your Progress

24.0 OBJECTIVE

To explain various types of internal and external surveillance that the Treasuries are subjected to during their functioning.

In the recent years, treasuries have emerged as profit centres for banks, and are considered as an important SBU of the banks, as they have started trading in various instruments, be it in the forex market, money market or derivative market. The volume of business and transactions handled by treasuries are usually very large and, hence, has potential for high profits and high risks. Thus, treasury is a specialized area with a lot of focus on profit and regulatory compliance. Because of the sheer volumes, and the impact of treasury on the whole balance sheet of the banks, there is a lot of focus on the functioning of the treasury department/function of banks. Precisely for this reason, banks have put in place a rigorous internal inspection and audit system that serves to mitigate the operational risk, and ensures regulatory compliance. The Regulator also appreciates the importance and significance of treasuries, and undertakes periodical scrutiny of the books of the treasury through detailed inspections.

24.1 INTERNAL CHECKS/CONTROL

As a measure of internal check and control, as we have seen earlier, the bank's treasury is divided into front office, back office, and middle office with specific and exclusive functions which ensure checks and balances. In addition, banks have a system of ensuring periodical, generally quarterly, inspections by internal inspectors of the treasuries. These inspections are transaction based, and are aimed at unearthing income lost, if any, and also non-compliance with various guidelines. The books are thoroughly verified and the transactions are critically examined and reports are submitted to the controlling authority which ensures rectification of the lapses pointed out. This serves as a first layer of surveillance of the treasury operations.

There is also generally a more detailed scrutiny by the authorities at the bank at approximately annual rests. These investigations are generally done by Senior Officials, and cover the entire gamut of operations in treasury. The rectification reports are submitted to the senior officials, and this exercise greatly helps in reducing the operational risk, and in improving the culture of regulatory compliance.

24.2 CONCURRENT AUDIT

The treasury function is also subject to concurrent audit. There is a mandatory system of concurrent audit by external auditors of all treasuries. Auditors with repute and expertise in treasury functioning are appointed by the bank to conduct concurrent audits of the treasuries. The concurrent audit goes on simultaneously as the treasury is functioning, and it is considered a micro audit. Concurrent audit goes thorough each transaction to ensure adherence to set procedures. It looks closely into the adherence of various exposure limits, dealer limits, and the processes. The reports of such audit are generally submitted once a month directly to Head office. The treasuries are under obligation to provide all details and information to the auditors, and offer valid explanation to all exceptions. The rectification reports need to be expeditiously submitted to the Competent Authority, generally the Audit Committee of the Board (ACB). The closure of these periodical reports assumes a lot of importance, and the Regulator also will be looking at these reports to gauge the extent of regulatory compliance by the treasury.

24.3 EXTERNAL CHECKS/AUDITS

The nature of the concurrent and external audits is changing now, and becoming more of risk-based audits than transaction-based inspections. The auditors identify the risks in various situations of treasury, and also grade the risks as low, medium, and high and also quantify the impact on the unit. They further try to identify the direction of the risk by categorically stating whether a risk is rising, decreasing, or stable. The risk-based scrutiny of the treasuries will be very helpful to the bank management for understanding the level of operational and other risks that the bank is driven to assume by the treasury. Under the risk-based audit, the auditors try to assess the competence levels of the personnel manning the treasuries to ascertain their suitability to the job, and the dangers they pose to the bank in terms of operational risk. They also focus on the training and skill-up gradation programs of key personnel in dealing room and mid office, and report on skill gaps. The underlying principle of the risk-based audit is to identify new risks as they appear, and put in place effective systems to address and mitigate them.

24.4 INSPECTION BY RBI

Another important type of external audit is the inspection of treasury by Reserve Bank of India as part of Annual Financial Inspection (AFI) of the bank at yearly rests. This inspection will be a very elaborate and detailed one, covering all important aspects of treasury. The inspectors will look into various policies formulated by the treasuries to determine whether they conform to the regulatory guidelines. They will also comment on the deviations, adherence to stop loss limits, adherence to entry/exit level criteria in the purchase/sale of securities, the classification of investments under HFT, AFS, and HTM category, correctness of the calculations of CAR, and adequacy of provisions, etc., in a very detailed manner. The treasuries are required to attend to rectification of the observations in AFI report on priority, and submit their report to RBI. The culmination of the AFI exercise is a very high level meeting between the Bank represented by CMD, and RBI represented by its Executive Director. RBI shares its views, and renders advice to the Bank.

24.5 STATUTORY AUDIT

The Statutory Central Auditors of Public Sector Banks are selected and appointed by the Boards of Banks with the final approval of RBI to conduct the audit of the bank every year. In case of Private Sector/Foreign Banks, the appointment of Statutory Central Auditors will be made on an annual basis, subject to their fulfilling the eligibility norms prescribed by RBI and applicable provisions of Companies Act, 2013, and also subject to their suitability. These auditors are drawn from reputed chartered accountant firms following some laid down norms. As a part of the statutory audit, these firms also audit the treasury function in a detailed fashion. Here the focus will be to generally bring out the true nature of the balance sheet by insisting on various statutory disclosures. The bank has to provide all disclosures to project the risk profile of the treasury honestly.

Off-site surveillance:

The Reserve Bank further compiles quarterly risk profile of treasuries by calling for detailed information from the banks. This gives a clear picture of the progress of the treasury in risk profiling of its activities, and it helps in understanding its own position.

Further, RBI conducts periodical surveys like survey on unclassified receipts, survey on OTC derivatives, etc. Even though they are not in the nature of inspections/audits, they provide vital information to the public and analysts and, hence, serve as useful tools to banks that examine important segments of their business.

Board Review:

The Inspection reports, audit observations, and other feedback must be reviewed by the bank with regular periodicity. Board must closely look at the risk aspects, and issue appropriate guidelines to the treasury.

Let Us Sum Up

The internal checks include quarterly internal audits, concurrent audits by external auditors, risk-based audits, etc. Reserve Bank of India does a thorough inspection in the form of Annual Financial Inspection which is an external inspection. Statutory auditors complete the external scrutiny of the treasury operations.

Keywords

Concurrent Auditors, risk-based audit, skill-up gradation, AFI and Statutory Audit

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is concurrent audit?
 - (a) Audit done concurrently along with operations
 - (b) That done by RBI
 - (c) That done by expert auditors
 - (d) Annual Financial Inspection
2. During risk-based audit, what auditors do in addition to grading the risks as low, medium and high?
 - (a) Identify the seepage of income
 - (b) Identify the direction of the risk
 - (c) Identify the culprits
 - (d) Penalize the bank
3. Internal checks and controls are useful to address which type of risk?
 - (a) internal risks
 - (b) uncontrolled risks
 - (c) operational risks
 - (d) outlier risks
4. The important periodical inspection of banks done by RBI in thorough fashion is known by which name?
 - (a) Thorough Periodical Inspection(TPI)
 - (b) Additional Fiscal introspection AFI)
 - (c) Aided Future Insights (AFI)
 - (d) Annual Financial Inspection (AFI)

Answers

1. (a)
2. (b)
3. (c)
4. (d)

UNIT
25

ROLE OF INFORMATION TECHNOLOGY IN TREASURY MANAGEMENT

STRUCTURE

25.0 Objective

25.1 Negotiated Dealing System

25.2 Other Trading Platforms/Systems

25.3 Straight-through-processing (STP)

Let Us Sum Up

Keywords

Check Your Progress

25.0 OBJECTIVE

To provide information on NDS, INFINET, other trading platforms, STP, custody, and conversion of physical securities to dematerialized form.

25.1 NEGOTIATED DEALING SYSTEM

Negotiated Dealing System (NDS) is an electronic platform for facilitating dealing in Government securities and money market instruments.

The Indian debt market has gone through sweeping changes with the introduction of the Negotiated Dealing System (NDS). This is an electronic trading platform for the following instruments:

- Government of India Dated Securities
- State Governments Securities
- T-bills
- Call/Notice/Term Money
- Commercial Paper
- Certificates of Deposit
- Repos

Membership of the NDS is open to all institutions that are members of INFINET, and have Subsidiary General Ledger (SGL) accounts with the RBI. At present, this covers the following:

- Banks
- Financial Institutions
- Primary Dealers
- Insurance Companies
- Mutual Funds

Banks and Primary Dealers are obliged to become members of the NDS.

NDS facilitates electronic submission of bids/application by members for primary issuance of government securities by RBI, through auction and floatation. The system of submission of physical SGL transfer form for deals, done between members on implementation of NDS has been discontinued. NDS also provides interface to Securities Settlement System (SSS) of Public Debt Office, RBI, thereby, facilitating settlement of transactions in Government Securities including treasury bills, both outright and repos.

NDS uses INFINET, a closed user group network as communication backbone. Hence, membership to the NDS is restricted to members of INFINET. Membership of INFINET entails holding SGL and/or current account with RBI or as may be prescribed from time to time.

Negotiated Dealing System (NDS) IN DETAIL

Till 2002, the Government securities market was mainly a telephone market. Buyers and sellers traded over telephone and submitted physical Subsidiary General Ledger (SGL) transfer forms for

transfer of the Government securities and cheques for settlement of the funds to the Reserve Bank of India. These manual operations were inefficient and often resulted in delays. In order to improve efficiency in the market, the Reserve Bank of India took steps to automate the process of trading and settlement of Government securities transactions and the Negotiated Dealing System (NDS) was introduced in February 2002.

The Negotiated Dealing System (NDS) has two modules – one for the primary market and the other for the secondary market.

I. Primary Market Module

The Reserve Bank uses the primary auction platform (NDS Auction) for auction of both, dated securities of the Government of India and the State Governments as also, treasury bills. This platform allows participants to electronically submit their bids in the primary auctions and receive allotment reports.

Main features of the auction platform are:

- (a) *Creation of issues* – The Reserve Bank creates a security issue giving the details of the security, the total amount (notified amount) and bidding date and timings, etc.
- (b) *Submission of bids* – Member participants can click on the issue number and electronically submit bids by specifying the amount and price/yield at which they are willing to buy the securities.
- (c) *Processing of bids* – The Reserve Bank processes the bids and arrives at the cut-off price/yield depending on the format of the auction.
- (d) *Allotment advice* – Once the cut-off price/yield is decided, the Reserve Bank accepts all the bids above and up to this cut-off price/yield. The system automatically generates participant-wise reports of successful bids and electronically sends them to the participants.
- (e) *Settlement* – The system generates a settlement report giving details of the amounts that each member has to pay and the quantity of securities to be issued to each participant. Based on this report, funds account of each member with the Reserve Bank is debited and securities account of each member with the Reserve Bank is credited. For constituent bids, accounts of their custodian banks/Primary Dealers get operated the same way. Primary Dealers are financial institutions that deal in Government securities. Custodian is the bank or primary dealer that maintains the Government securities account of individuals and small entities.

II. Secondary Market Module

Secondary market trading in Government securities can happen over-the-counter (OTC). These trades generally happen over phone. Players are required to report secondary market trades on the NDS. Once they complete the reporting process and the system accepts trades, the data automatically flows to the Clearing Corporation of India Ltd. (CCIL) for clearing and settlement (See box for CCIL). This avoids paper based settlement process. Paper based system required participants to exchange subsidiary general ledger (SGL) forms for transfer of securities and cheques for transfer of funds.

The details of the trades reported on NDS are disseminated through the RBI web site <http://www.rbi.org.in/Scripts/NdsUserXsl.aspx>

NDS-OM

The Reserve Bank introduced the Negotiated Dealing System-Order Matching system or NDS-OM as it is called, in August 2005. The NDS-OM is an electronic, screen based, anonymous, order driven trading system for dealing in Government securities. The Reserve Bank owns NDS-OM and CCIL maintains it. The platform is in addition to the existing facility of over-the-counter (OTC) or phone market in Government securities.

The NDS-OM brings transparency in secondary market transactions in Government securities. Members can place bids (buy orders) and offers (sell orders) directly on the NDS-OM screen. Being order driven, the system matches all bids and offers on price/time priority, that is, within the orders of the same price, it matches the oldest order first. The system ensures complete anonymity among the participants as CCIL acts as the central counter party (CCP) for settlement of all the trades. The NDS-OM also facilitates straight-through-processing (STP), that is, all the trades on the system are automatically sent to the CCIL for settlement. With the efficiency and ease of its operations, the NDS-OM has today captured over 80 per cent of the trading volume in Government securities.

The trade details of NDS-OM are disseminated through the CCIL's website <http://www.ccilindia.com/OMHome.aspx>. Only authorised users of the member entities can log in to the system.

Participants

There are two kinds of participants in NDS-OM – direct and indirect. Direct members have current and SGL accounts with the Reserve Bank and can directly settle their trades on NDS-OM. Indirect members are those players who do not have current and SGL accounts with the Reserve Bank and therefore have to trade on NDS-OM through members who have these accounts with the Reserve Bank.

All resident entities, including corporates but excluding individuals, can access NDS-OM, either directly or indirectly. Foreign institutional investors (FIIs) have been provided indirect access.

More specifically, currently banks, including state cooperative banks, primary dealers (PDs), insurance companies, mutual funds and larger provident funds have current and SGL accounts with the Reserve Bank and therefore can directly trade on NDS-OM.

Qualified entities, such as, non-banking finance companies(NBFCs), smaller provident funds, pension funds, cooperative banks, regional rural banks and trusts, corporates and FIIs do not have current and SGL accounts with the Reserve Bank and therefore can only indirectly, that is, through banks and PDs, trade on NDS-OM.

Banks and PDs provide custodial services to indirect members by opening their securities and funds accounts. Indirect members can place orders through their custodian using client accounts. Such trades would finally settle through the Constituent SGL (CSGL) account and current account of the custodian who is a direct member.

NDS-OM currently has direct membership from more than 130 financial institutions.

Who can be a member of NDS-OM?

Following are the prerequisites of obtaining membership of the NDS-OM:

- SGL account with the Reserve Bank
- Current account with Reserve Bank*
- INFINET (Indian Financial Network) connectivity
- Membership of CCIL

Why trade on NDS-OM?

- NDS-OM ensures anonymity of participants and, therefore, ensures objective pricing in the market. Since players know each other in market, in OTC trade, players can face adverse pricing.
- The system provides information, both pre-trade (e.g., bids/offers) and post-trade (e.g., last traded price and volume) on real time basis. This assures transparency and better price discovery as against the OTC market where there could be a delay of up to 30 minutes in information dissemination.
- Trading happens in standardised lot size of Rs. 5 crore and in multiples of Rs.5 crore providing enough liquidity in the system.
- To facilitate trading in small lot sizes of less than Rs. 5 crore, a separate ‘odd lot’ segment (with the minimum trading lot size being only Rs. 10,000) is also available.
- Participants get to know the depth of the market as the system shows the order depth in terms of number and total amount of sell/ buy orders for each security. This is not possible in OTC market.
- There is a high level of operational ease as the entire cycle of placing orders, trading and settlement of trades is fully automated.
- Once the trade is concluded on the system, it is treated as confirmed for settlement. In the OTC market, deals have to be confirmed on NDS and only then they are accepted for settlement.
- Reporting happens simultaneously with trades on NDS-OM; whereas in the OTC market participants need to report the transactions separately.

Features of NDS-OM

While there are a host of features for operational ease and better security, the following are the major ones.

(i) Market watch

Market watch is the first page of NDS-OM once the user logs in to the system. The page gives security-wise details, current state of the market by giving details like best bid, best offer, last traded price and yield and total traded amount on real time basis for each security.

Market watch is separately available for different segments of the market, viz., Central Government securities (CG), State Government securities (SG), Treasury bills (TB), Odd lot market (OD) and When Issued market (WI).

25.2 OTHER TRADING PLATFORMS/SYSTEMS

In these platforms, trading is done electronically through networked computers/workstations. Market participants and players are part of a secure WAN, and make bids and offers, be it forex, bonds, or equities. The system electronically matches bids and offers. Current examples of electronic trading platforms are, those of NSE (*NEAT*), BSE (*BEST, BOLT+On Web*), and foreign exchange (through the Reuters electronic dealing system).

25.3 STRAIGHT-THROUGH-PROCESSING (STP)

STP is the latest technological wave to hit financial markets. This electronic system enables trading, documentation, clearing, settlement, and custody on a single, end-to-end hardware and software platform.

This is a natural extension of electronic trading, whereby, individual trades, once approved and authorised by the buyer and seller, are settled automatically by the system through its connectivity with a Clearing House. Buyers receive securities in their custodial accounts, and sellers receive funds.

Settlement

Post-approval of a deal, the system *suo moto*, credits and debits the respective cash and securities accounts of the buyer and seller as required. In G-Secs, the NDS enables this through the intermediation of the CCIL. Please see Chapters 5 and 6.

Forex deals in USD/INR and cross-currencies, i.e., USD/JPY, Euro/USD, GBP/USD, etc., are also settled electronically through CCIL or SWIFT, through transfers of funds from and to nostro accounts.

Custody

Electronic records of ownership of securities are held by DPs. Such securities do not exist in physical form. The SGL depository of the RBI maintains custody and ownership of SLR securities in electronic form.

25.3.1 Conversion of Physical Securities to Demat

The RBI and SEBI have now made it mandatory for almost all securities to be in demat, *i.e.*, electronic form. A demat account is basically an electronic record of ownership and transactions in securities, maintained with a depository participant (DP), which, in turn, maintains an account with the apex depository (NSDL, CDSL, etc.)

Similarly, Real Time Gross Settlement (RTGS) has already been introduced by RBI which is a completely electronically propelled countrywide payment system.

Besides the above, the application of sophisticated IT tools has made it possible to calculate VaR, conduct thousands of scenario analysis through simulation, carry out back testing/stress testing, apply statistical tools for complicated analysis in bond dynamics, and exchange rate mechanisms.

Let Us Sum Up

This chapter deals with Negotiated Dealing Settlement INFINET and other trading platforms, Straight Through Processing, etc., RBI and SEBI have made it mandatory for almost all securities to be in demat.

Keywords

NDS, INFINET, STP, Demat

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. Negotiated Dealing System (NDS) an electronic trading platform does not deal in which of the following products?
 - (a) corporate debentures
 - (b) Government of India dated securities
 - (c) T bills
 - (d) Repos
2. At present membership of NDS is open to which of the following entities?
 - (a) Individuals
 - (b) Mutual funds
 - (c) Minors
 - (d) Differently enabled individuals
3. For what purpose does RBI use the primary auction platform of NDS?
 - (a) For auction of Government securities only
 - (b) For auction of T bills only
 - (c) For auction of dated securities of GOI, State Government securities and T bills
 - (d) For repurchase of all types of securities from public
4. What are the characteristics of direct participants of NDS(OM)?
 - (a) They directly deal with counterparties
 - (b) They directly negotiate the prices
 - (c) They directly receive securities from RBI
 - (d) Direct members have current and SGL accounts with RBI

Answers

1. (a)
2. (b)
3. (c)
4. (d)

**UNIT
26**

REGULATIONS, SUPERVISION AND COMPLIANCE OF TREASURY OPERATIONS

STRUCTURE

- 26.0** Objective
- 26.1** Introduction
- 26.2** Reserve Bank Guidelines
- 26.3** The Dealing Room
- 26.4** Dealing Procedures and Principles

Let Us Sum Up

Keywords

Check Your Progress

26.0 OBJECTIVE

To provide information on regulatory guidelines, treasury set up, dealing room structure, code of conduct for conducting off premises dealings, rules for rate scan, rotation of dealers, dealing hours regarding confirmations, firm quotations, and reporting deals on NDS.

26.1 INTRODUCTION

Banks perform the role of intermediation in the financial sector. Thus, deposits and other liabilities of various maturities, sizes and prices (interest rates) are deployed by the bank in assets of differing maturities, sizes, and prices. This role is facilitated by the status and confidence of depositors that the banks enjoy as good managers of financial risks, particularly credit risk. It is easy to see that in the process of intermediation, there can always be some time lag between the acceptance of liabilities and creation of assets that match with the liabilities. It may also happen that banks may find attractive avenues for medium/long-term investments, but may not have matching resources, or raising funds for the same may take time. Moreover, depositors may suddenly withdraw their deposits (prematurely), and borrowers can prepay their loans. Liquidity surplus/deficits of significant order can result from the operations of primary dealers, mutual funds, governments (inflows on account of payment of coupons/repayment of loans, outflows on account of tax payment, etc.). All these can result in banks, at times, carrying surplus funds (surplus in liquidity), and at other times facing funds crunch (deficit in liquidity). While there is a need to park the surplus funds as early as possible in some short-term, secure, and earning assets before being invested in more stable assets, deficit has to be made good by borrowing short term initially, before a more stable resource is tied up. Under such conditions, only the surplus fund, which is capable of being transferred easily to a counter party, is of consequence. In other words, balances with RBI in excess of the statutory reserves required to be maintained by banks, and balances maintained by financial institutions with RBI can represent approximately, the liquidity available in the system. Money market is the place where such monies and assets, typically short term in nature, are priced and traded.

Money market is a center in which financial institutions congregate for the purpose of dealing impersonally in monetary assets. It is a market for short-term money (generally up to 1 year), or financial assets that are near substitutes for money, i.e. financial assets, which can be quickly converted into money with minimum transaction cost.

Money market provides the interface between the providers and users of liquidity, and acts as an equilibrating mechanism for evening out short-term liquidity surpluses and deficits. It has the important role of providing a ‘medium’, through which monetary policy signals of the central bank (RBI) aimed at managing short-term liquidity in the system are transmitted. Obviously, in order to successfully fulfill its role, money market has to be very liquid, where short term instruments are traded in high volumes. It is also important that the money market should have systems to ensure limitation of counter party risk to protect the participants. RBI is concerned about the functioning of money market on sound lines as problems in the money market can escalate into systemic risk, and result in huge losses in the absence of proper supervision and risk management.

RBI regulates the money market, and all money market instruments come under its regulatory purview. Government of India has delegated powers to RBI under Section 16 of the Securities

Contracts (Regulation) Act, 1956, for regulating contracts in government securities, money market securities, gold related securities and derivatives based on these securities, as also ready forward contracts in all debt securities. RBI has already announced its intention to make call money market a pure interbank market with banks and primary dealers as members, and made it a pure Inter-Bank market, only exception being Primary Dealers. The lending by non-banks in the call money market has been phased out.

The money market used to be typically a telephone market. But, with vast improvement of market infrastructure and introduction of Negotiated Dealing System, Clearing Corporation of India, and the Real Time Gross Settlement System (RTGS), the payment and settlement infrastructure is reaching international standards, thus, facilitating better turnover and price discovery in the money market, besides addressing the systemic risk. In the not too distant future, money market will be totally screen and systems driven.

For any segment of financial market to develop on healthy lines, it is necessary that in addition to the regulation by the Central Bank of the country and other authorities, self-regulation be accorded priority. Accordingly, in the Indian Foreign Exchange Market, Foreign Exchange Dealers' Association (FEDAI) is the Self-Regulatory Organization (SRO) for the foreign exchange segment. Fixed Income Money Market and Derivatives Association (FIMMDA) is SRO for the money market. FIMMDA has taken initiatives to frame a Code of Conduct, and ensure adherence to the code by the market participants. It has also developed standard Master Agreements for various types of money market transactions to promote their use in the market. Along with an effective SRO, a strong central bank to support and supervise the money market, integration with the rest of the markets in the financial system, existence of risk management systems, adherence to the various risk control procedure, norms for disclosures, and transparency in the balance sheets of banks are some of the prerequisites for a sound working of the money market. These prerequisites are almost fully prevalent in the Indian Money Market.

Following are the extracts from the guidelines/self-regulations policies from the Reserve Bank of India/FIMMDA in respect to dealing with regulations, supervision, compliance, dealing and trading operations, control and orderly conduct, moral and ethical codes, etc., on treasury operations.

26.2 RESERVE BANK GUIDELINES

26.2.1 Organizational Set Up

Management of market risk should be the primary concern of the top management of banks. The boards should clearly articulate market risk management policies, procedures, prudential risk limits, review mechanisms and reporting and auditing systems. The policies should address the bank's exposure on a consolidated basis, and clearly articulate the risk measurement systems that capture all material sources of market risk, and assess the effects on the bank. The operating prudential limits and the accountability of the line management should also be clearly defined. The Asset-Liability Management Committee (ALCO) should function as the top operational unit for managing the balance sheet within the performance/risk parameters laid down by the board.

The successful implementation of any risk management process depends on the top managements and its strong commitment to integrate basic operations and strategic decision making with risk management. Ideally, the organizational set up for Market Risk Management should be as under:

- (a) The Board of Directors
- (b) The Asset-Liability Management Committee (ALCO)
- (c) The ALM Support Groups/Market Risk Groups
- (d) The Risk Management Committee
 - (i) The Board of Directors should have the overall responsibility for management of risks. The board should decide the risk management policy of the bank and set limits for liquidity, interest rate, foreign exchange, and equity price risks.
 - (ii) The Asset-Liability Management Committee, popularly known as ALCO should be responsible for ensuring adherence to the limits set by the board, as well as for deciding the business strategy of the bank in line with the bank's budget and predetermined risk management objectives. The ALCO is a decision-making unit responsible for balance sheet planning from risk-return perspective including strategic management of interest rate and liquidity risks. The role of the ALCO should include, *inter-alia*, the following:
 - product pricing for deposits and advances, depending on desired maturity profile and mix of incremental assets and liabilities;
 - articulating interest rate view of the bank, and deciding on the future business strategy;
 - reviewing and articulating funding policy;
 - reviewing economic and political impact on the balance sheet
 - The ALCO will also be responsible for ensuring the adherence to the limits set by the board of directors. The ALCO will also decide the transfer pricing policy of the bank. The ALCO will comprise the Managing Director, heads of various divisions, and other senior personnel involved with the ALM process.
 - (iii) The ALM Support Groups consisting of operating staff should be responsible for analyzing, monitoring, and reporting the risk profiles to the ALCO.
 - (iv) The Risk Management Committee should prepare forecasts (simulations) showing the effects of various possible changes in market conditions related to the balance sheet, and recommend the action needed to adhere to the bank's internal limits.

26.3 THE DEALING ROOM

The Treasury Dealing Room within a bank is generally the clearing house for matching, managing, and controlling market risks. It may provide funding, liquidity and investment support for the assets and liabilities generated by regular business of the bank. The Dealing Room is responsible for the proper management and control of market risks in accordance with the authority granted to it by the bank's Risk Management Committee.

The Dealing Room is also responsible for meeting the needs of business units in pricing market risks for application to its products and services. The Dealing Room acts as the bank's interface to international and domestic financial markets, and generally bears the responsibility for managing market risks in accordance with instructions received from the bank's Risk Management committee.

The Risk Management Committee may also allocate a discretionary limit within which the Dealing Room may take market risk on a proprietary basis. In view of this, effective control and supervision of the bank's Dealing Room activities is critical to its effectiveness in managing and controlling market risks. Critical to a Dealing Room's effective functioning is a comprehensive Dealing Room Manual covering all aspects of their day to day activities, and ensuring that all dealers have access to it.

All dealers active in day to day trading activities must acknowledge familiarity with, and provide an undertaking in writing to adhere to the bank's dealing guidelines and procedures. The Dealing Room Procedures Manual should be comprehensive in nature, covering operating procedures for all the bank's trading activities in which the Dealing Room is involved, and in particular it must cover the bank's requirements in:

- Code of Conduct – All dealers active in the day to day trading activities in the Indian market must acknowledge familiarity with, and provide an undertaking to adhere to FEDAI code of conduct (and FIMMDA when available).
- Adherence to Internal Limits – All dealers must be aware of, acknowledge, and provide an undertaking to adhere to the limits governing their authority, to commit the bank, to risk exposures as they apply to their own particular risk responsibilities and level of seniority.
- Adherence to RBI Limits and Guidelines – All dealers must acknowledge, and provide an undertaking to adhere to their responsibilities to remain within RBI limits and guidelines in their area of activity.
- Dealing with Brokers – All dealers should be aware of, acknowledge, and provide an undertaking to follow the guidelines governing the bank's activities with brokers, including conducting business only with brokers authorised by the bank's Risk Management Committee (on the bank's Brokers Panel).
- Ensuring that their activities with brokers do not result in the brokers acting as principals in transactions, but remain strictly in their authorised role as market intermediaries.
- Demanding that brokers provide all 'brokers notes', and confirmations of transactions before close of business each day (or exceptionally by the beginning of the next business day, in which case the notes must be prominently marked by the broker as having been transacted on the previous day, and the Back-office must recast the previous night's position against limits reports) to the bank's Back-office for reconciliation with transaction data.
- Ensuring that all brokerage payments and statements are received, reconciled, and paid by the bank's Back-Office department, and under no circumstances authorised or any payment released by dealers.
- Prohibiting the dealers acceptance of gifts, gratifications, or other favors from brokers, instances of which should be reported in detail to RBI's Department of Banking Supervision, indicating the nature of the case.
- Prohibiting dealers from nominating a broker in transactions not done through that broker.
- Promptly investigate complaints against dealers, and malpractices by brokers, and report them to FEDAI and RBI's Department of Banking Supervision.
- Dealing Hours – All Dealers should be aware of the bank's normal trading hours, cut-off time for overnight positions, and rules governing after hours and off-site trading (if allowed by the bank).

- Security and Confidentiality – All dealers should be aware of the bank's requirements in respect to maintaining confidentiality over its own, and its customers' trading activities, as well as the responsibility for secure maintenance of access media, keys, passwords, and PINS.
- Staff Rotation and Leave Requirements – All dealers should be aware of the requirement to take at least one period of leave, of not less than 14 days continuously per annum, and of the bank's internal policy with regard to staff rotation.

26.3.1 Extracts from FIMMDA: Handbook of Market Practices

General Principles:

- All Principals and brokers shall maintain the highest standards of conduct so as to enhance the reputation of these markets.
- All participants must ensure that any individual who commits on behalf of the institution is acting within approved authorities.
- All institutions must stand by the commitment made by an individual acting on their behalf, the principle being, 'My Word is my Bond'.
- Institutions must ensure that the individuals acting on their behalf, are fully trained, and completely aware of the rules and regulations, conventions, practices, and the markets with which they deal.
- All individuals must comply with the rules and regulations governing the market, and keep themselves updated with the changes that happen from time to time.
- The role of a broker is to bring together the counterparties for a fee. When brokers act as intermediaries, they are not expected to act as principals or in a discretionary capacity, even momentarily. Where the broking company is acting on its own account, it is expected to declare that it is dealing as a principal before negotiating the trade.
- Brokers and principals are expected to maintain confidentiality of the parties involved in the transactions.
- Settlement of the deals in Fixed Income, Money Market, and Rupee Derivatives will be subjected to market conventions laid down by FIMMDA, irrespective of the counterparty being a member of FIMMDA, or not.

26.3.2 Management Controls

The management should put in place appropriate controls, and procedures in respect of their dealing in the markets, covered by the handbook. It should be ensured that the staff members who deal with the market and the other support staff, follow the controls and procedures so laid down.

The management should periodically review the controls and procedures.

26.3.3 Organization of the Dealing Department

The fundamental principle of maintenance of internal controls is the functional segregation of the front-office and back-office and settlement functions. However, in view of the increasing volume and

complexity of the transactions, it may be a good practice to segregate the functions of the dealing department as under:

Table 26.1: Role of various offices in the treasury

Front Office	Dealing
Mid-office	Risk Management, Accounting and Management Information
Back Office	Confirmations, Settlement and Reconciliation

Since there may be an overlap of the mid-office and back-office functions, the managements may lay down any other level of segregation that it thinks fit. (Back-office and mid-office have been used interchangeably in this handbook).

Personnel in back-office functions and mid-office functions should be functionally segregated from those in the front office. Persons who conclude trades must not be involved in the confirmation or settlement of trades.

26.3.4 Know Your Counter Party

It is a good practice to conduct basic due diligence and, ‘know your counter party’ checks before dealing. These checks should show a basic understanding of who the counter party is, and why the counter party is dealing with the product. For derivatives transactions, firms should, in spirit of ‘duty of care’ be satisfied that the company is aware of the risks involved in using those products, and that the person is authorised by the company for executing those transactions.

26.3.5 Recording of Conversations

Experience has shown that recourse to tapes proves invaluable to the speedy resolution of differences and disputes. Members who do not tape all their Front Office conversations should review this matter, and introduce the system as soon as possible. When initially installing recording equipment, or taking on new clients or counter parties, firms should inform the dealing counter party that the conversations will be recorded. Communication devices like mobile phones, not connected to the voice recorder should not be allowed to be used for trading purposes. Banks should have mobile phone usage policies in line with RBI guidelines.

Tapes should be kept at least for 3 months. Tapes related to disputed/unconfirmed transactions should be retained until the disputes have been settled/confirmed.

Management should ensure that access to the recording equipment, whether in use or in store, is strictly controlled so that they cannot be tampered with.

26.3.6 Off-Premises Dealing

As a practice, participants should deal only from their normal place of dealing, i.e., from their respective dealing rooms/office as the case may be.

However, there may be occasions when the dealer may have to deal from places other than their normal place of dealing. Management may lay down the guidelines, including specifying the staff that are authorised to deal from outside the normal place of dealing. The back-office should inform the management about such off-premises deals. Management should satisfy themselves of the needs for such dealing.

The dealer/official should, prior to dealing, inform the counter party about dealing off-premises. The fact that the deal has been done off the premises should also be recorded in the deal confirmation and/or other relevant records.

26.3.7 Dealing Hours

Dealing hours for Fixed Income Securities are as follows:

- (a) Dealing hours for Government Securities (outright and derivatives): 9.00 AM to 5.00 PM (NDS also has the same timings for trading sessions).
- (b) Dealing hours for Corporate Bonds / CP / CD (T+0) : 9.00 AM to 2.30 PM
- (c) Dealing hours for Corporate Bonds / CP / CD (T+1) : 9.00 AM to 5.00 PM

Market Repo Transactions:

- (d) Government Securities Repo (T+0) : 9.00 AM to 2.30 PM
- (e) Government Securities Repo (T+1) : 9.00 AM to 5.00 PM
- (f) Corporate Bonds Repo (T+0) : 9.00 AM to 2.30 PM
- (g) Corporate Bonds Repo (T+1) : 9.00 AM to 5.00 PM

OTC deals done outside these hours should be reported to the management and management should satisfy themselves about the necessity of concluding such deals outside the prescribed hours.

26.3.8 Rate Scan

Market players shall not deal at the rates which are not market related. Management should ensure that proper procedures, including the periodicity of taking rate scans, are in place to ensure this. Management should set up the ‘rate-bands’ within which the actual traded rates should fall.

A proper procedure to monitor the deals, which are outside the rate-bands should be laid down. Usually this would be, because of extraordinary volatility, or because the amount of the deal is small and transactional costs have been loaded into the price.

The back-office should report these exceptions to the management, and the management must satisfy itself that the exceptions are for legitimate and comprehensible reasons.

26.3.9 Conflicts of Interest

It is possible that the dealers may wish to make personal investments in the products, which the institution is dealing with, or in the products covered by this handbook. Management should formulate a ‘Personal Investment Policy’ and ensure adherence to the same.

While framing the Personal Investment Policy, the management may take into consideration the rules and regulations laid down by any statutory authority in respect to insider trading.

26.3.10 Rotation of Dealers

Dealers should not be kept for long on the same desk. Banks shall have a mandatory leave and surprise leave policy, as well as a dealer rotation policy, in line with RBI guidelines. An annual compulsory leave of two calendar weeks in a single spell every year for the dealers as stipulated in internal control guidelines as minimum mandatory leave be followed. Surprise away from desk requirement is left to the choice of the individual banks.

26.3.11 Confirmations

Firms should ensure that they have a process in place, which at the minimum ensures the following:

Deals recorded by the trader are confirmed independently by the back-office. All confirmations should include the date of the deal, the name of the counter party, and all other details of the deal. It is a good practice to also confirm all settlement details, even when some of these details do not change with each and every deal. The back-office must respond promptly to confirmations received for which they do not have a corresponding trade. It is proper to first check with the front office to ensure that no deal has been missed. They should then promptly advise the back-office of the counter party, of the absence of the trade.

Any discrepancy between a confirmation and significant details of the trade, or even the existence of a trade, should be brought to the attention of the management. Ageing discrepancies beyond T+2 should be escalated/placed to the Management Committee. Management should satisfy them-selves about the genuineness and accuracy of the trade. It is important that discrepancies should be promptly sorted out.

Physical exchange of confirmation of CD/CP deals and other deals which are reported to and matched by CCIL/CLS is not necessary provided there exists a bilateral/multilateral agreement to this effect with the counterparty.

26.4 DEALING PROCEDURES AND PRINCIPLES

Scope

Deals done in the Indian market should be conducted on the basis of guidelines contained in the FIMMDA handbook.

In respect of deals done with overseas counter parties, the counter party should be made aware of the conventions, followed in India, in advance, to avoid any possible confusion.

26.4.1 Preliminary Negotiation of Terms

Dealers should clearly state at the outset, prior to a transaction being executed, any qualifying conditions to which the deal will be subject to. Where a firm quote has been indicated on the NDS, qualifying conditions cannot be specified after the conclusion of the deal.

Typical examples of qualifications include: where a price is quoted subject to the necessary credit approval, limits available for the counter party, inability to conclude a transaction because offices of the member in other centres are not open. This should be made known to the broker and the potential counter party at an early stage, and before names are exchanged by the broker.

26.4.2 Firmness of Quotation

Dealers, whether acting as principals, agent or broker, have a duty to make absolutely clear whether the prices they are quoting are firm or merely indicative. Prices quoted by brokers should be taken as indicative, unless otherwise qualified.

In respect of deals on the NDS-CALL, the dealer would put the quote as a “firm” quote or “indicative” quote on the NDS-CALL. In case the dealer is willing to do the deal only with a certain set of counterparties, he should put the quote as “firm” only for preferred counterparties.

In respect of other deals, a dealer quoting a firm price or rate either through a broker, or directly to a potential counter party, is committed to deal at that price or rate in a marketable amount, provided, the counter party name is acceptable. Generally, prices are assumed to be firm as long as the counterparty or the broker is on line. Members should clearly and immediately indicate when the prices are withdrawn.

In volatile markets, or when some news is expected, dealers quoting a firm price or rate should indicate the length of time for which their quote is firm. The price or the rate is usually for the marketable amount. If the quote is not for a marketable quantity, the dealer/broker should qualify the same while submitting the quote.

A significant part of the transaction by brokers relies on mandates given by dealers acting on behalf of principals. The risk that the principal runs is that such an offer could get hit after an adverse market move has taken place.

The broker is expected to use the mandate in order to ‘advertise’ the principal’s interest to the entities that the broker expects will have an interest in the price. Generally, the broker is free to show the price to the entities he deems fit, but members have the right to expect that if a smaller set is defined, the broker will adhere to such a smaller set.

Mandates shall not be for a period of more than 15 minutes, unless otherwise specified. Brokers are expected to check with the principal from time to time to ensure that the mandate is still current.

The broker shall reveal the name of the entity offering the mandate, when the counter party is firm to deal at the mandated price. The broker will then call the member who offered the mandate and confirm the deal. In case the price is not adhered to, it is the responsibility of the member who had offered the mandate to explain why the mandate is no longer valid. It is required of the member that the mandate price be withdrawn before the broker reveals the counter party name. The only exception to this is when the counter party name is not acceptable.

The principal should call the broker if he wishes to withdraw the mandate before its expiry. The quote cannot be withdrawn after the broker has concluded the deal.

26.4.3 Delivery of the Securities/Funds

The dealers should agree upon the delivery conditions before concluding the deal.

Delivery of the securities/funds is on a Delivery-versus-Payment (DVP) basis in respect of Government Securities, T-Bills, CP, CD and Corporate Bond. In respect of other securities, which are in demat form, since there is no DVP mechanism, the dealers should agree upon the priority of settlement of the securities and funds.

Banks and primary dealers are currently not allowed to invest in securities, which are not in demat form. In the event where physical securities are to be delivered, the dealers should agree before conclusion of the deal as to whether the settlement will be DVP or otherwise (in which case the priority of settlement needs to be agreed upon).

What is Delivery versus Payment (DvP) Settlement?

Delivery versus Payment (DvP) is the mode of settlement of securities wherein the transfer of securities and funds happen simultaneously. This ensures that unless the funds are paid, the securities are not delivered and vice versa. DvP settlement eliminates the settlement risk in transactions. There are three types of DvP settlements, viz., DvP I, II and III which are explained below:

- (i) **DvP I** – The securities and funds legs of the transactions are settled on a gross basis, that is, the settlements occur transaction by transaction without netting the payables and receivables of the participant.
- (ii) **DvP II** – In this method, the securities are settled on gross basis whereas the funds are settled on a net basis, that is, the funds payable and receivable of all transactions of a party are netted to arrive at the final payable or receivable position which is settled.
- (iii) **DvP III** – In this method, both the securities and the funds legs are settled on a net basis and only the final net position of all transactions undertaken by a participant is settled.

Liquidity requirement in a gross mode is higher than that of a net mode since the payables and receivables are set off against each other in the net mode.

26.4.4 Concluding a Deal

Dealers should regard themselves as bound to honor a deal once the price, name acceptability, credit approval, and any other key commercial terms have been agreed. Oral agreements/contracts are considered binding on all the parties concerned.

Where quoted prices are qualified as being indicative or subject to negotiation of commercial terms, members should normally treat themselves as bound to honor the deal at the point when the terms have been agreed without qualification.

Oral agreements are considered binding; the subsequent confirmation is evidence of the deal but should not override terms agreed to orally.

Making a transaction subject to documentation is not a good practice. In order to minimise the likelihood of disputes arising once the documentation is prepared, dealers should make every

effort to clarify all material points quickly during the oral negotiation of terms, and should include these in the confirmation. Where brokers are involved, members have the right to expect that the broker will make them aware immediately on conclusion of the deal. As a general rule, a deal should be regarded as having been ‘done’ where the dealer positively acknowledges the broker’s confirmation. It is expected that a broker shall not assume that a deal is done without oral confirmation from the dealer.

26.4.5 Passing of Names by Brokers

It is a good practice for dealers not to seek the names of the counter party before transacting, and for brokers not to divulge the names before concluding the deal. Dealers and brokers should at all times treat the details of transactions as absolutely confidential between the parties involved.

To save time and avoid confusion, dealers should, wherever practical, give brokers prior indication of counterparties with whom, for whatsoever reason, they would be unwilling to do business. In all their transactions, brokers should aim to achieve a mutual and immediate exchange of names.

In the repo markets, it is accepted that members may vary the price (Repo Rate) depending on the counter party. Hence, it is acceptable for the member to know the name of the counter party in advance.

In the case of instruments like Certificate of Deposits and Commercial Papers, where the seller may not be the same entity as the issuer, the broker shall first disclose the issuer’s name to the potential buyer. The name of the buyer shall be disclosed only after the buyer has accepted the seller’s name. The seller has the right to refuse to transact with the buyer.

26.4.6 Reporting of Deals on the NDS

All deals in Government securities will be settled on T+1 basis. However, if FPI is one of the counterparties, the deals will be settled on T+2 basis. These will include deals between a domestic entity and an FPI, deals between two FPIs of different custodians, deals between a custodian and its FPI Gilt Account Holder, and deals between two FPI Gilt account Holders of the same custodian.

The deals concluded outside the NDS-OM, should be reported on the NDS_OM reporting segment within the time frame stipulated by the regulator concerned(presently 15 minutes) from the time of the conclusion of the deal. Custodian bank of the FPI selling the security or the counterparty entity selling the security to the FPI will also have to report the deal on trade date itself within the prescribed reporting time. However, Custodian bank of the FPI buying the security can report the deal till next business day upto prescribed reporting time.

Deals in Government Securities and T-Bills may be concluded either on the NDS or otherwise. However, all the deals in Government Securities and T-Bills concluded outside the NDS-OM system have to be reported on the NDS_OM Reporting Segment by the seller as well as buyer independently. The settlement of outright trades and repo trades shall be through CCIL as per its Bye-Laws, Rules and Regulations.

26.4.7 Oral Confirmations

In respect of deals done on voice / OTC platform an oral confirmation of the deals by the back office is a good practice. Lack of response should not be construed as confirmation.

26.4.8 Written Confirmations

Exchange of written deal confirmation is not needed for the following deals:

- (a) Deals done in G-secs on NDS-OM platform
- (b) Deals done in G-secs on voice/OTC platform and reported on NDS-Reported deals segment.
- (c) Deals done in Call Money/Notice Money/Term Money on NDS Call Money platform.
- (d) Deals done in G-sec Repo/Reverse Repo on NDS-CROMS platform.
- (e) Deals done in IRS/OIS on CCIL's IRS/OIS trading platform.
- (f) Deals done in CP/CD/Repo in Corporate Bond on voice/OTC platform and reported on F-Trac, provided the counterparties have executed a bilateral /multilateral agreement as permitted by their respective regulators.

In respect of all other deals, a written confirmation of each deal must be sent out at the earliest and a confirmation should be received from the counterparty.

The confirmation provides a necessary final safeguard against dealing errors. Confirmations should be despatched and checked promptly, even when oral deal confirmations have been undertaken.

A confirmation of each deal must be sent out at the earliest. This is particularly essential if dealing is for same day settlement. All participants of the wholesale markets should have in place the capability to despatch confirmations so that they are received and can be checked within a few hours from the time of striking the deal. Where the products involved are more complex, and so require more details to be included on the confirmation, this may not be possible; nevertheless it is in the interest of all concerned that such deals are confirmed as quickly as possible and in no case later than the next working day of the date of the deal. It is recommended that principals should inquire about confirmations not received within the expected time.

All confirmations should include the trade date, value date, the name of the counter party, and all other details of the deal, including, wherever appropriate, the commission charged by the broker. All confirmations should state: 'The settlement of the deals in Fixed Income, Money Market and Rupee Derivatives is subject to FIMMDA's market conventions, irrespective of the counter party being a member of FIMMDA'.

It is an accepted practice for principals to confirm directly all the details of transactions arranged through a broker, who independently sends a contract/transaction confirmation to both counter parties.

It is vital that principals, upon receipt of confirmations, immediately check the confirmations carefully so that discrepancies are quickly revealed and corrected. As a general rule, the confirmations should not be issued by or sent to and checked by dealers. Confirmation is a back-office function.

26.4.9 Settlement of Differences

If all the procedures outlined above are adhered to, the incidence and size of differences would be reduced. Errors may occur, and they should be identified and corrected promptly. Failure to observe these principles could leave those responsible bearing the cost of any differences, which arise.

Where difference in payment arises because of errors in the payment of funds, firms should not attempt undue enrichment by retaining the funds. In case funds are retained, then compensation terms should be negotiated between the counter parties. The same principle is applicable in case of delivery of securities.

26.4.8 Rounding off

All interest receivable/payable should be rounded off to the higher rupee if the paise component is equal to or higher than 50 paise, and should be ignored if the paise component is less than 50 paise. The rounding off to paise should also be done in respect of broken period interest receivable/payable.

26.4.9 Bank Holidays/Market Disruption

The list of holidays will be displayed by FIMMDA on its website. Holidays are declared by the State Governments on calendar year basis. If the maturity of a Security falls on a Sunday or a Mumbai bank holiday, the market participants will follow the guidelines adopted for government securities i.e the redemption proceeds (Redemption value and the coupon) will be paid on the previous Mumbai working day without any reduction in the amount. If the coupon payment date of a security falls on a Sunday or a Mumbai bank holiday, the coupon payment shall be made on the next working day without any increase in the amount.

If due to unforeseen events, a particular date for which transactions have been entered into, is subsequently declared as a holiday, then while settling such claims, the principle of no undue enrichment should be followed. The practice to be followed, in case of declaration of an unscheduled holiday, is given in Chapter 9 of the FIMMDA Handbook of Market Practices.

Bank Annual Account Closing Day (i.e. 1st April) – will be treated as a normal holiday.

Let Us Sum Up

Management of market risk should be the primary concern of the top management of the banks. The ALCO is a decision making unit responsible for balance sheet planning from risk-return perspective including strategic management of interest rate and liquidity risks. Dealers must sign and observe the FEDAI code of conduct. The market practices as laid down by FIMMDA need to be adhered by all market participants. The organisation of Treasury in terms of Dealing room, Mid office, and Back office has been discussed. Issues relating to ‘Know your counter party’, recording of conversations, off-premises dealing, dealing hours, conflicts of interest, rotation of dealers, and confirmations have been discussed in detail.

Keywords

ALCO, Risk management committee, code of conduct, FIMMDA, Front office, Mid office, Back office, Rate scan, DVP, NDS, and market disruption.

Check Your Progress

Choose the appropriate answers for the following questions from the options given below.

1. What is the important role of ALCO?
 - (a) product pricing for deposits and advances
 - (b) strategizing for achieving year end targets
 - (c) Motivating staff
 - (d) liaising with RBI
2. The main functions of Mid office include
 - (a) Risk management and monitoring
 - (b) Business development
 - (c) Staff management
 - (d) Administration
3. How are the prices quoted by brokers to be treated?
 - (a) As indicative always
 - (b) As final always
 - (c) To be taken as indicative unless otherwise qualified
 - (d) Only to be taken as final after receipt of confirmation from the counterparty
4. What is the essential feature of DvP III?
 - (a) Securities and funds legs of the transaction are settled on gross basis
 - (b) Securities are settled on gross basis, funds are settled on net basis
 - (c) Funds are settled on gross, securities are settled on net basis
 - (d) Both the securities and funds legs are settled on net basis

Answers

1. (a) 2. (a) 3. (c) 4. (d)

APPENDICES

Units

Appendix A — Prudential Norms on Capital Adequacy

Appendix B — Examples/Problems

Appendix C — Indian Securities Markets

Appendix D — Basics of Debt Markets

Appendix E — Important Excel Functions

Appendix F — Undertakings of FEDAI

Appendix G — Glossary of Debt Market Terms

Appendix

A

PRUDENTIAL NORMS ON CAPITAL ADEQUACY

BASEL ACCORDS AND CAPITAL ADEQUACY

Basel Accords have in their core, the concept of capital adequacy for financial institutions like banks. Capital Adequacy, as the term literally implies, is about having adequate capital. Capital adequacy is a common measure of the strength of a financial institution, such as a bank. Measure of the financial strength of a bank or securities firm, is usually expressed as a ratio of its capital to its assets. To put it quantitatively, the ratio of the capital of a firm to its assets is its capital adequacy ratio. Higher the capital adequacy, the stronger the firm. The higher the capital adequacy, the less leveraged the firm.

A bank should always have enough capital so that, if some of the risks the bank has taken are realized, the bank can remain in business without jeopardizing its depositors. The minimum level of capital recommended by Basel I and subsequently adopted by regulators was 8%. In India, Banks are required to maintain minimum 9% of this ratio, which is called as ‘CRAR’ (Capital Risk Adjusted Ratio). Banks therefore maintain the following risk asset ratio at or above that level:

- Own funds (i.e., available capital and reserves)
- Risk-weighted assets (i.e., the amount of money the bank has put at risk in the course of its business)

The capital adequacy ratio of a bank’s capital its total assets required by regulators to be above a minimum (“adequate”) level so that there is little risk of the bank going bust. How high this minimum level is may vary according to how risky a bank’s activities are. The formula for arriving at CRAR is given below:

CRAR = Capital/Total Risk Weighted Assets.

In calculating this ratio both on-balance sheet and off-balance sheet items are considered.

Comparison between the Basel Guidelines:

Basel I	Basel II	Basel III
<p>A. Basel Committee on Banking Supervision (BCBS) had come out with these guidelines in the year July, 1988 as a solution to mitigate the Herstatt Risk that took place in the year 1974 due to collapse of the German Bank.</p> <p>B. By definition, recognized only the Credit risk as the potential risk for the failure of the Banks.</p> <p>C. Subsequently, BCBS came out with Market Risk paper in the year 1996 a set of rules to strengthen the treasury operations of the banks. This was necessitated out of Nick Leeson Fraud, due to which the world saw the collapse of Barings Bank Ltd.</p>	<p>A. BCBS came out with these guidelines in the year June 2004 to overcome the inadequate risk measurement approach of Basel I arising out of the changed banking scenario more due to technology adoption.</p> <p>B. Besides, credit & market risks, recognized operational risk as an additional risk.</p> <p>C. The Credit risk of Basel I was completely revamped and Basel II adopted provided a flexible menu of risk-based approaches to Credit & Operation risk measurement. It also introduced risk mitigation techniques as Basel I did not recognize the role of credit risk mitigants, such as credit derivatives, securitizations, collaterals and guarantees, netting in reducing the credit risk. It also emphasized on bank's internal methods, supervisory review and market discipline.</p>	<p>A. BCBS came out with this Consultative Paper on 13th September, 2010 as a fall out of Sub-Prime Crisis of US, which later on became a contagion effect and resulted into a global crisis.</p> <p>B. As stated above, Basel III calls only for additional capital for the Banks to help raise the resilience of individual banking institutions to periods of stress, and address to system wide risks that can build up across the banking sector as well as the procyclical amplification of these risks over time.</p> <p>C. The enhanced Basel framework revised and strengthen the three pillars established by Basel II.</p> <p>D. It extended the framework with several innovations like</p> <ul style="list-style-type: none"> (a) Capital conservation buffer (b) Countercyclical capital buffer (c) A leverage ratio (d) Liquidity Coverage Ratio (e) Net Stable Funding Ratio (f) Additional proposals for systemically important banks

IMPLEMENTATION OF BASEL III REGULATIONS IN INDIA

The Basel III capital regulations are being implemented in India with effect from April 1, 2013. Banks have to comply with the regulatory limits and minima as prescribed under Basel III capital regulations, on an ongoing basis. To ensure smooth transition to Basel III, appropriate transitional arrangements have been provided for meeting the minimum Basel III capital ratios, full regulatory adjustments to the components of capital etc. Consequently, Basel III capital regulations would be fully implemented as on March 31, 2019.

Extracts from RBI Guidelines on Capital adequacy (Original Para Nos as in the RBI guidelines retained):

A. Master Circular on Basel III Capital Regulations dated 1st July, 2015:

Guidelines on Minimum Capital Requirement

4. COMPOSITION OF REGULATORY CAPITAL

4.1 General

Banks are required to maintain a minimum Pillar 1 Capital to Risk-weighted Assets Ratio (CRAR) of 9% on an on-going basis (other than capital conservation buffer and countercyclical capital buffer etc.). The Reserve Bank will take into account the relevant risk factors and the internal capital adequacy assessments of each bank to ensure that the capital held by a bank is commensurate with the bank's overall risk profile. This would include, among others, the effectiveness of the bank's risk management systems in identifying, assessing/measuring, monitoring and managing various risks including interest rate risk in the banking book, liquidity risk, concentration risk and residual risk. Accordingly, the Reserve Bank will consider prescribing a higher level of minimum capital ratio for each bank under the Pillar 2 framework on the basis of their respective risk profiles and their risk management systems. Further, in terms of the Pillar 2 requirements, banks are expected to operate at a level well above the minimum requirement. A bank should compute Basel III capital ratios in the following manner:

Common Equity Tier 1 capital ratio	=	$\frac{\text{Common Equity Tier 1 Capital}}{\text{Credit Risk RWA}^* + \text{Market Risk RWA} + \text{Operational Risk RWA}}$
Tier 1 capital ratio	=	$\frac{\text{Eligible Tier 1 Capital}}{\text{Credit Risk RWA}^* + \text{Market Risk RWA} + \text{Operational Risk RWA}}$
Total Capital (CRAR#)	=	$\frac{\text{Eligible Total Capital}}{\text{Credit Risk RWA} + \text{Market Risk RWA} + \text{Operational Risk RWA}}$

* RWA = Risk weighted Assets;

Capital to Risk Weighted Asset Ratio

4.2 Elements of Regulatory Capital and the Criteria for their Inclusion in the Definition of Regulatory Capital

4.2.1 Components of Capital

Total regulatory capital will consist of the sum of the following categories:

- (i) Tier 1 Capital (going-concern capital)
 - (a) Common Equity Tier 1
 - (b) Additional Tier 1
- (ii) Tier 2 Capital (gone-concern capital)

4.2.2 Limits and Minima

- (i) As a matter of prudence, it has been decided that scheduled commercial banks (excluding LABs and RRBs) operating in India shall maintain a minimum total capital (MTC) of 9% of total risk weighted assets (RWAs), i.e., capital to risk weighted assets (CRAR). This will be further divided into different components as described under paragraphs 4.2.2(ii) to 4.2.2(viii).
- (ii) Common Equity Tier 1 (CET1) capital must be at least 5.5% of risk-weighted assets (RWAs), i.e., for credit risk + market risk + operational risk on an ongoing basis.
- (iii) Tier 1 capital must be at least 7% of RWAs on an ongoing basis. Thus, within the minimum Tier 1 capital, Additional Tier 1 capital can be admitted maximum at 1.5% of RWAs.
- (iv) Total Capital (Tier 1 Capital plus Tier 2 Capital) must be at least 9% of RWAs on an ongoing basis. Thus, within the minimum CRAR of 9%, Tier 2 capital can be admitted maximum up to 2%.
- (v) If a bank has complied with the minimum Common Equity Tier 1 and Tier 1 capital ratios, then the excess Additional Tier 1 capital can be admitted for compliance with the minimum CRAR of 9% of RWAs.
- (vi) In addition to the minimum Common Equity Tier 1 capital of 5.5% of RWAs, banks are also required to maintain a capital conservation buffer (CCB) of 2.5% of RWAs in the form of Common Equity Tier 1 capital. Details of operational aspects of CCB have been furnished in **paragraph 15**. Thus, with full implementation of capital ratios and CCB the capital requirements are summarised as follows:

	Regulatory Capital	As % to RWAs
(i)	Minimum Common Equity Tier 1 Ratio	5.5
(ii)	Capital Conservation Buffer (comprised of Common Equity)	2.5
(iii)	Minimum Common Equity Tier 1 Ratio plus Capital Conservation Buffer [(i)+(ii)]	8.0
(iv)	Additional Tier 1 Capital	1.5
(v)	Minimum Tier 1 Capital Ratio [(i)+(iv)]	7.0
(vi)	Tier 2 Capital	2.0
(vii)	Minimum Total Capital Ratio (MTC) [(v)+(vi)]	9.0
(viii)	Minimum Total Capital Ratio plus Capital Conservation Buffer [(vii)+(ii)]	11.5

- (vii) For the purpose of all prudential exposure limits linked to capital funds, the ‘capital funds’ will be defined as the sum of all eligible Common Equity Tier 1 capital, Additional Tier 1 capital and Tier 2 capital, net of regulatory adjustments and deductions.

4.2.3 Common Equity Tier 1 Capital

4.2.3.1 Common Equity – Indian Banks

A. Elements of Common Equity Tier 1 Capital

Elements of Common Equity component of Tier 1 capital will comprise the following:

- (i) Common shares (paid-up equity capital) issued by the bank which meet the criteria for classification as common shares for regulatory purposes
- (ii) Stock surplus (share premium) resulting from the issue of common shares;
- (iii) Statutory reserves;
- (iv) Capital reserves representing surplus arising out of sale proceeds of assets;
- (v) Other disclosed free reserves, if any;
- (vi) Balance in Profit & Loss Account at the end of the previous financial year;
- (vii) Banks may reckon the profits in current financial year for CRAR calculation on a quarterly basis provided the incremental provisions made for non-performing assets at the end of any of the four quarters of the previous financial year have not deviated more than 25% from the average of the four quarters. The amount which can be reckoned would be arrived at by using the following formula:

$$EP_t = \{NP_t - 0.25*D*t\}$$

Where;

EP_t = Eligible profit up to the quarter ‘t’ of the current financial year; t varies from 1 to 4

NP_t = Net profit up to the quarter ‘t’

D = average annual dividend paid during last three years

- (viii) Revaluation Reserves at a discount of 55% subject to meeting the prescribed conditions.
- (ix) Foreign currency translation reserve at a discount of 25% subject to meeting the prescribed conditions
- (x) While calculating capital adequacy at the consolidated level, common shares issued by consolidated subsidiaries of the bank and held by third parties (i.e., minority interest) which meet the laid down criteria; and
- (xi) Less: Regulatory adjustments/deductions applied in the calculation of Common Equity Tier 1 capital including specified Deferred Tax assets [i.e., to be deducted from the sum of items (i) to (x)].

B. Criteria for Classification as Common Shares for Regulatory Purposes

Common Equity is recognised as the highest quality component of capital and is the primary form of funding which ensures that a bank remains solvent. Therefore, under Basel III, common shares to be included in Common Equity Tier 1 capital must meet the criteria as furnished in **Annex 1**.

4.2.3.2 Common Equity Tier 1 Capital – Foreign Banks' Branches

A. Elements of Common Equity Tier 1 Capital

Elements of Common Equity Tier 1 capital *will remain the same* and consist of the following:

- (i) Interest-free funds from Head Office kept in a separate account in Indian books specifically for the purpose of meeting the capital adequacy norms;
- (ii) Statutory reserves kept in Indian books;
- (iii) Remittable surplus retained in Indian books which is not repatriable so long as the bank functions in India;
- (iv) Interest-free funds remitted from abroad for the purpose of acquisition of property and held in a separate account in Indian books provided they are non-repatriable and have the ability to absorb losses regardless of their source;
- (v) Capital reserve representing surplus arising out of sale of assets in India held in a separate account and which is not eligible for repatriation so long as the bank functions in India; and
- (vi) Less: Regulatory adjustments/deductions applied in the calculation of Common Equity Tier 1 capital [i.e., to be deducted from the sum of items (i) to (v)].

B. Criteria for Classification as Common Equity for Regulatory Purposes

The instruments to be included in Common Equity Tier 1 capital must meet the criteria furnished in **Annex 2**.

The Reserve Bank has also prescribed additional compliance requirements for foreign banks.

4.2.4 Additional Tier 1 Capital

4.2.4.1 Additional Tier 1 Capital – Indian Banks

A. Elements of Additional Tier 1 Capital

Indian Banks

Additional Tier 1 capital will consist of the sum of the following elements:

- (i) Perpetual Non-Cumulative Preference Shares (PNCPS), which comply with the regulatory requirements;
- (ii) Stock surplus (share premium) resulting from the issue of instruments included in Additional Tier 1 capital;
- (iii) Debt capital instruments (Perpetual Debt Instruments – PDI) eligible for inclusion in Additional Tier 1 capital, which comply with the regulatory requirements;
- (iv) Any other type of instrument generally notified by the Reserve Bank from time to time for inclusion in Additional Tier 1 capital;
- (v) While calculating capital adequacy at the consolidated level, Additional Tier 1 instruments issued by consolidated subsidiaries of the bank and held by third parties which meet the criteria for inclusion in Additional Tier 1 capital; and

- (vi) Less: Regulatory adjustments/deductions applied in the calculation of Additional Tier 1 capital [i.e., to be deducted from the sum of items (i) to (v)].

B. Criteria for Classification as Additional Tier 1 Capital for Regulatory Purposes

- (i) Under Basel III, the criteria for instruments to be included in Additional Tier 1 capital have been modified to improve their loss absorbency as indicated in **Annex 3, 4 and 16**. Criteria for inclusion of Perpetual Non-Cumulative Preference Shares (PNCPS) in Additional Tier 1 Capital are furnished in **Annex 3**. Criteria for inclusion of Perpetual Debt Instruments (PDI) in Additional Tier 1 Capital are furnished in **Annex 4**. **Annex 16** contains criteria for loss absorption through conversion/write-down/write-off of Additional Tier 1 instruments on breach of the pre-specified trigger and of all non-common equity regulatory capital instruments at the point of non-viability.

4.2.4.2 Elements and Criteria for Additional Tier 1 Capital – Foreign Banks' Branches

Various elements and their criteria for inclusion in the Additional Tier 1 capital are as follows:

- (i) Head Office borrowings in foreign currency by foreign banks operating in India for inclusion in Additional Tier 1 capital which comply with the regulatory requirements;
- (ii) Any other item specifically allowed by the Reserve Bank from time to time for inclusion in Additional Tier 1 capital; and
- (iii) Less: Regulatory adjustments/deductions applied in the calculation of Additional Tier 1 capital [i.e. to be deducted from the sum of items (i) to (ii)].

B. Elements of Tier 2 Capital

Under Basel III, there will be a single set of criteria governing all Tier 2 debt capital instruments.

4.2.5.1 Tier 2 Capital – Indian Banks

A. Elements of Tier 2 Capital

- (i) *General Provisions and Loss Reserves*
 - (a) Provisions or loan-loss reserves held against future, presently unidentified losses, which are freely available to meet losses which subsequently materialize, will qualify for inclusion within Tier 2 capital. Accordingly, General Provisions on Standard Assets, Floating Provisions, incremental provisions in respect of unhedged foreign currency exposures, Provisions held for Country Exposures, Investment Reserve Account, excess provisions which arise on account of sale of NPAs and 'countercyclical provisioning buffer will qualify for inclusion in Tier 2 capital. However, these items together will be admitted as Tier 2 capital up to a maximum of 1.25% of the total credit risk-weighted assets under the standardized approach. Under Internal Ratings Based (IRB) approach, where the

total expected loss amount is less than total eligible provisions, banks may recognise the difference as Tier 2 capital up to a maximum of 0.6% of credit-risk weighted assets calculated under the IRB approach.

- (b) Provisions ascribed to identified deterioration of particular assets or loan liabilities, whether individual or grouped should be excluded. Accordingly, for instance, specific provisions on NPAs, both at individual account or at portfolio level, provisions in lieu of diminution in the fair value of assets in the case of restructured advances, provisions against depreciation in the value of investments will be excluded.
- (ii) Debt Capital Instruments issued by the banks;
- (iii) Preference Share Capital Instruments [Perpetual Cumulative Preference Shares (PCPS)/Redeemable Non-Cumulative Preference Shares (RNCPS)/Redeemable Cumulative Preference Shares (RCPS)] issued by the banks;
- (iv) Stock surplus (share premium) resulting from the issue of instruments included in Tier 2 capital;
- (v) While calculating capital adequacy at the consolidated level, Tier 2 capital instruments issued by consolidated subsidiaries of the bank and held by third parties which meet the criteria for inclusion in Tier 2 capital;
- (vi) Revaluation reserves at a discount of 55%, if not included in CET1 Capital;
- (vii) Any other type of instrument generally notified by the Reserve Bank from time to time for inclusion in Tier 2 capital; and
- (viii) Less: Regulatory adjustments/deductions applied in the calculation of Tier 2 capital [i.e., to be deducted from the sum of items (i) to (vii)].

B. Criteria for Classification as Tier 2 Capital for Regulatory Purposes

Under Basel III, the criteria for instruments to be included in Tier 2 capital have been modified to improve their loss absorbency as indicated in **Annex 5, 6 and 16**. Criteria for inclusion of Debt Capital Instruments as Tier 2 capital are furnished in **Annex 5**. Criteria for inclusion of Perpetual Cumulative Preference Shares (PCPS)/Redeemable Non-Cumulative Preference Shares (RNCPS)/Redeemable Cumulative Preference Shares (RCPS) as part of Tier 2 capital are furnished in **Annex 6**. **Annex 16** contains criteria for loss absorption through conversion/write-off of all non-common equity regulatory capital instruments at the point of non-viability.

4.2.5.2 Tier 2 Capital – Foreign Banks' Branches

A. Elements of Tier 2 Capital

Elements of Tier 2 capital in case of foreign banks' branches will be as under:

- (i) General Provisions and Loss Reserves as applicable for Indian banks;
- (ii) Head Office (HO) borrowings in foreign currency received as part of Tier 2 debt capital; and
- (iii) Revaluation reserves at a discount of 55%, if not included in CET1 Capital; and
- (iv) Less: Regulatory adjustments/deductions applied in the calculation of Tier 2 capital [i.e., to be deducted from the sum of items (i) and (iii)].

B. Criteria for Classification as Tier 2 Capital for Regulatory Purposes

Criteria for inclusion of Head Office (HO) borrowings in foreign currency received as part of Tier 2 debt Capital for foreign banks are furnished in **Annex 5 and Annex 16**.

4.3 RECOGNITION OF MINORITY INTEREST (I.E. NON-CONTROLLING INTEREST) AND OTHER CAPITAL ISSUED OUT OF CONSOLIDATED SUBSIDIARIES THAT IS HELD BY THIRD PARTIES

4.3.1 Under Basel III, the minority interest is recognised only in cases where there is considerable explicit or implicit assurance that the minority interest which is supporting the risks of the subsidiary would be available to absorb the losses at the consolidated level. Accordingly, the portion of minority interest which supports risks in a subsidiary that is a bank will be included in group's Common Equity Tier 1. Consequently, minority interest in the subsidiaries which are not banks will not be included in the regulatory capital of the group. In other words, the proportion of surplus capital which is attributable to the minority shareholders would be excluded from the group's Common Equity Tier 1 capital. Further, as opposed to Basel II, a need was felt to extend the minority interest treatment to other components of regulatory capital also (i.e., Additional Tier 1 capital and Tier 2 capital). Therefore, under Basel III, the minority interest in relation to other components of regulatory capital will also be recognised.

Regulatory Adjustments/Deductions

The regulatory adjustments/deductions applied to regulatory capital **both** at solo and consolidated level are as under:

- (a) Goodwill and all Other Intangible Assets
- (b) Deferred Tax Assets (DTAs)
- (c) Cash Flow Hedge Reserve
- (d) Shortfall of the Stock of Provisions to Expected Losses
- (e) Gain on Sale Related to Securitisation Transactions
- (f) Cumulative Gains and Losses due to Changes in Own Credit Risk on Fair Valued Financial Liabilities
- (g) Defined Benefit Pension Fund Assets and Liabilities
- (h) Investment in own shares (Treasury stock)
- (i) Investments in the Capital of Banking, Financial and Insurance Entities
- (j) Equity investments in non-financial subsidiaries
- (k) Intra Group Transactions and Exposures

4.5 TRANSITIONAL ARRANGEMENTS

4.5.1 In order to ensure smooth migration to Basel III without aggravating any near term stress, appropriate transitional arrangements have been made. The transitional arrangements for capital ratios began **as on April 1, 2013**. However, the phasing out of non-Basel III compliant regulatory capital

instruments began from **January 1, 2013**. Capital ratios and deductions from Common Equity will be fully phased-in and implemented as on March 31, 2019. The phase-in arrangements for banks operating in India are indicated in the following Table:

**Table 1: Transitional Arrangements-Scheduled Commercial Banks
(excluding LABs and RRBs)**

(% of RWAs)

Minimum capital ratios	April 1, 2013	March 31, 2014	March 31, 2015	March 31, 2016	March 31, 2017	March 31, 2018	March 31, 2019
Minimum Common Equity Tier 1 (CET1)	4.5	5	5.5	5.5	5.5	5.5	5.5
Capital conservation buffer (CCB)	–	–	–	0.625	1.25	1.875	2.5
Minimum CET1+ CCB	4.5	5	5.5	6.125	6.75	7.375	8
Minimum Tier 1 capital	6	6.5	7	7	7	7	7
Minimum Total Capital*	9	9	9	9	9	9	9
Minimum Total Capital +CCB	9	9	9	9.625	10.25	10.875	11.5
Phase-in of all deductions from CET1 (in %) #	20	40	60	80	100	100	100

*The difference between the minimum total capital requirement of 9% and the Tier 1 requirement can be met with Tier 2 and higher forms of capital;

The same transition approach will apply to deductions from Additional Tier 1 and Tier 2 capital.

4.5.2 The regulatory adjustments (i.e., deductions and prudential filters) would be fully deducted from Common Equity Tier 1 only by March 31, 2017. During this transition period, the remainder not deducted from Common Equity Tier 1/Additional Tier 1/Tier 2 capital will continue to be subject to treatments given under Basel II capital adequacy framework.

8. CAPITAL CHARGE FOR MARKET RISK

8.1 Introduction

Market risk is defined as the risk of losses in on-balance sheet and off-balance sheet positions arising from movements in market prices. The market risk positions subject to capital charge requirement are:

- (i) The risks pertaining to interest rate related instruments and equities in the trading book; and
- (ii) Foreign exchange risk (including open position in precious metals) throughout the bank (both banking and trading books).

8.2 Scope and Coverage of Capital Charge for Market Risks

8.2.1 These guidelines seek to address the issues involved in computing capital charges for interest rate related instruments in the trading book, equities in the trading book and foreign exchange risk (including gold and other precious metals) in both trading and banking books. Trading book for the purpose of capital adequacy will include:

- (i) Securities included under the Held for Trading category
- (ii) Securities included under the Available for Sale category
- (iii) Open gold position limits
- (iv) Open foreign exchange position limits
- (v) Trading positions in derivatives, and
- (vi) Derivatives entered into for hedging trading book exposures.

8.2.2 Banks are required to manage the market risks in their books on an ongoing basis and ensure that the capital requirements for market risks are being maintained on a continuous basis, i.e., at the close of each business day. Banks are also required to maintain strict risk management systems to monitor and control intra-day exposures to market risks.

8.2.3 Capital for market risk would not be relevant for securities, which have already matured and remain unpaid. These securities will attract capital only for credit risk. On completion of 90 days delinquency, these will be treated on par with NPAs for deciding the appropriate risk weights for credit risk.

8.3 Measurement of Capital Charge for Interest Rate Risk

8.3.1 This section describes the framework for measuring the risk of holding or taking positions in debt securities and other interest rate related instruments in the trading book.

8.3.2 The capital charge for interest rate related instruments would apply to current market value of these items in bank's trading book. Since banks are required to maintain capital for market risks on an ongoing basis, they are required to mark to market their trading positions on a daily basis. The current market value will be determined as per extant RBI guidelines on valuation of investments.

8.3.3 The minimum capital requirement is expressed in terms of two separately calculated charges,

- (i) “**specific risk**” charge for each security, which is designed to protect against an adverse movement in the price of an individual security owing to factors related to the individual issuer, both for short (short position is not allowed in India except in derivatives and Central Government Securities) and long positions, and
- (ii) “**general market risk**” charge towards interest rate risk in the portfolio, where long and short positions (which is not allowed in India except in derivatives and Central Government Securities) in different securities or instruments can be offset.

8.3.4 For the debt securities held under AFS category, in view of the possible longer holding period and attendant higher specific risk, the banks shall hold total capital charge for market risk equal to greater of (a) or (b) below:

- (a) Specific risk capital charge, computed notionally for the AFS securities treating them as held under HFT category (as computed according to Table 16: Part A/C/E(i)/F/G/H, as applicable) plus the General Market Risk Capital Charge.
- (b) Alternative total capital charge for the AFS category computed notionally treating them as held in the banking book (as computed in accordance with Table 16: Part B/D/E(ii)/F/G/I, as applicable)

A. Specific Risk

8.3.5 The capital charge for specific risk is designed to protect against an adverse movement in the price of an individual security owing to factors related to the individual issuer. The specific risk charges for various kinds of exposures would be applied as detailed below:

Sr. No.	Nature of debt securities/issuer	Table to be followed
a.	Central, State and Foreign Central Governments' Bonds: (i) Held in HFT category (ii) Held in AFS category	Table 16 – Part A Table 16 – Part B
b.	Banks' Bonds: (i) Held in HFT category (ii) Held in AFS category	Table 16 – Part C Table 16 – Part D
c.	Corporate Bonds (other than Bank Bonds): (i) Held in HFT category (ii) Held in AFS category	Table 16 – Part E(i) Table 16 – Part E(ii)
d.	Securitised Debt Instruments Held in HFT and AFS categories	Table 16 – Part F
e.	Re-securitised Debt Instruments Held in HFT and AFS categories	Table 16 – Part G
f.	Non-common Equity Capital Instruments issued by Financial Entities other than Banks (i) Held in HFT category (ii) Held in AFS category	Table 16 – Part H Table 16 – Part I
g.	Equity Investments in Banks Held in HFT and AFS Categories	Table 19 – Part A
h.	Equity Investments in Financial Entities (other than Banks) Held in HFT and AFS Categories	Table 19 – Part B
i.	Equity Investments in Non-financial (commercial) Entities	Table 19 – Part C

Note: Please refer to the Master Circular for details of Table 16 & Table 19.

8.3.6 Banks shall, in addition to computing the counterparty credit risk (CCR) charge for OTC derivatives, as part of capital for credit risk as per the Standardised Approach covered in **paragraph 5** above, also compute the specific risk charge for OTC derivatives in the trading book as required in terms of **Annex 9**.

B. General Market Risk

8.3.7 The capital requirements for general market risk are designed to capture the risk of loss arising from changes in market interest rates. The capital charge is the sum of four components:

- (i) the net short (short position is not allowed in India except in derivatives and Central Government Securities) or long position in the whole trading book;
- (ii) a small proportion of the matched positions in each time-band (the “vertical disallowance”);
- (iii) a larger proportion of the matched positions across different time-bands (the “horizontal disallowance”); and
- (iv) a net charge for positions in options, where appropriate.

8.3.8 Separate maturity ladders should be used for each currency and capital charges should be calculated for each currency separately and then summed with no offsetting between positions of opposite sign. In the case of those currencies in which business is insignificant (where the turnover in the respective currency is less than 5 per cent of overall foreign exchange turnover), separate calculations for each currency are not required. The bank may, instead, slot within each appropriate time-band, the net long or short position for each currency. However, these individual net positions are to be summed within each time-band, irrespective of whether they are long or short positions, to produce a gross position figure. The gross positions in each time-band will be subject to the assumed change in yield set out in **Table-2** with no further offsets.

8.3.9 The Basel Committee has suggested two broad methodologies for computation of capital charge for market risks. One is the standardised method and the other is the banks’ internal risk management models method. As banks in India are still in a nascent stage of developing internal risk management models, it has been decided that, to start with, banks may adopt the standardised method. Under the standardised method there are two principal methods of measuring market risk, a “maturity” method and a “duration” method. As “duration” method is a more accurate method of measuring interest rate risk, it has been decided to adopt standardised duration method to arrive at the capital charge. Accordingly, banks are required to measure the general market risk charge by calculating the price sensitivity (modified duration) of each position separately.

Under this method, the mechanics are as follows:

- (i) first calculate the price sensitivity (modified duration) of each instrument;
- (ii) next apply the assumed change in yield to the modified duration of each instrument between 0.6 and 1.0 percentage points depending on the maturity of the instrument (see **Table 17**);
- (iii) slot the resulting capital charge measures into a maturity ladder with the fifteen time bands as set out in **Table 17**;
- (iv) subject long and short positions (short position is not allowed in India except in derivatives and Central Government Securities) in each time band to a 5 per cent vertical disallowance designed to capture basis risk; and
- (v) carry forward the net positions in each time-band for horizontal offsetting subject to the disallowances set out in **Table 18**.

Table 17. Duration Method – Time Bands and Assumed changes in Yield

<i>Time Bands</i>	<i>Assumed Change in Yield</i>	<i>Time Bands</i>	<i>Assumed Change in Yield</i>
Zone 1		Zone 3	
1 month or less	1.00	3.6 to 4.3 years	0.75
1 to 3 months	1.00	4.3 to 5.7 years	0.70
3 to 6 months	1.00	5.7 to 7.3 years	0.65
6 to 12 months	1.00	7.3 to 9.3 years	0.60
Zone 2		9.3 to 10.6 years	0.60
1.0 to 1.9 years	0.90	10.6 to 12 years	0.60
1.9 to 2.8 years	0.80	12 to 20 years	0.60
2.8 to 3.6 years	0.75	over 20 years	0.60

Table 18. Horizontal Disallowances

<i>Zones</i>	<i>Time band</i>	<i>Within the zones</i>	<i>Between adjacent zones</i>	<i>Between zones 1 and 3</i>
Zone 1	1 month or less	40%	40%	
	1 to 3 months			
	3 to 6 months			
	6 to 12 months			
Zone 2	1.0 to 1.9 years	30%	40%	100%
	1.9 to 2.8 years			
	2.8 to 3.6 years			
Zone 3	3.6 to 4.3 years	30%	40%	
	4.3 to 5.7 years			
	5.7 to 7.3 years			
	7.3 to 9.3 years			
	9.3 to 10.6 years			
	10.6 to 12 years			
	12 to 20 years			
	over 20 years			

8.3.10 The measurement system should include all interest rate derivatives and off balance-sheet instruments in the trading book which react to changes in interest rates, (e.g. forward rate agreements (FRAs), other forward contracts, bond futures, interest rate and cross-currency swaps and forward foreign exchange positions). Options can be treated in a variety of ways as described in **Annex 9**.

8.4 Measurement of Capital Charge for Equity Risk

8.4.1 The capital charge for equities would apply on their current market value in bank's trading book. Minimum capital requirement to cover the risk of holding or taking positions in equities in

the trading book is set out below. This is applied to all instruments that exhibit market behaviour similar to equities but not to non-convertible preference shares (which are covered by the interest rate risk requirements described earlier). The instruments covered include equity shares, whether voting or non-voting, convertible securities that behave like equities, for example: units of mutual funds, and commitments to buy or sell equity.

Specific and General Market Risk

8.4.2 Capital charge for specific risk (akin to credit risk) will be 11.25 per cent or capital charge in accordance with the risk warranted by external rating (or lack of it) of the counterparty, whichever is higher and specific risk is computed on banks' gross equity positions (i.e., the sum of all long equity positions and of all short equity positions – short equity position is, however, not allowed for banks in India). In addition, the general market risk charge will also be 9 per cent on the gross equity positions. These capital charges will also be applicable to all trading book exposures, which are exempted from capital market exposure ceilings for direct investments.

8.4.3 Specific Risk Capital Charge for banks' investment in Security Receipts will be 13.5 per cent (equivalent to 150 per cent risk weight). Since the Security Receipts are by and large illiquid and not traded in the secondary market, there will be no General Market Risk Capital Charge on them.

8.4.4 The specific risk charge for bank's investments in the equity of other banks/other financial entities/non-financial entities will be as given in Table 19 as under:

Part A: Specific risk charge for bank's investments in the equity of other banks held in HFT and AFS portfolios

Part B: Specific risk charge for bank's investments in the equity of financial entities other than banks

Part C: Specific risk charge for bank's investments in the equity of non-financial (commercial) entities

Note: Please refer to the Master Circular for details of Table 16 & Table 19.

8.5 Measurement of Capital Charge for Foreign Exchange Risk

The bank's net open position in each currency should be calculated by summing:

- The net spot position (i.e., all asset items less all liability items, including accrued interest, denominated in the currency in question);
- The net forward position (i.e., all amounts to be received less all amounts to be paid under forward foreign exchange transactions, including currency futures and the principal on currency swaps not included in the spot position);
- Guarantees (and similar instruments) that are certain to be called and are likely to be irrecoverable;
- Net future income/expenses not yet accrued but already fully hedged (at the discretion of the reporting bank);
- Depending on particular accounting conventions in different countries, any other item representing a profit or loss in foreign currencies;
- The net delta-based equivalent of the total book of foreign currency options.

Foreign exchange open positions and gold open positions are at present risk-weighted at 100 per cent. Thus, capital charge for market risks in foreign exchange and gold open position is 9 per cent. These open positions, **limits or actual whichever is higher**, would continue to attract capital charge at 9 per cent. This capital charge is in addition to the capital charge for credit risk on the on-balance sheet and off-balance sheet items pertaining to foreign exchange and gold transactions.

8.6 Measurement of Capital Charge for Credit Default Swap (CDS) in the Trading Book

8.6.1 General Market Risk

A credit default swap does not normally create a position for general market risk for either the protection buyer or protection seller. However, the present value of premium payable/receivable is sensitive to changes in the interest rates. In order to measure the interest rate risk in premium receivable/payable, the present value of the premium can be treated as a notional position in Government securities of relevant maturity. These positions will attract appropriate capital charge for general market risk. The protection buyer/seller will treat the present value of the premium payable/receivable equivalent to a short/long notional position in Government securities of relevant maturity.

8.6.2 Specific Risk for Exposure to Reference Entity

A CDS creates a notional long/short position for specific risk in the reference asset/obligation for protection seller/protection buyer. For calculating specific risk capital charge, the notional amount of the CDS and its maturity should be used. The specific risk capital charge for CDS positions will be as per Tables below.

Table 20: Specific Risk Capital Charges for bought and sold CDS positions in the Trading Book: Exposures to entities other than Commercial Real Estate Companies/ NBFC-ND-SI

Upto 90 days			After 90 days	
<i>Ratings by the ECAI*</i>	<i>Residual Maturity of the instrument</i>	<i>Capital charge</i>	<i>Ratings by the ECAI*</i>	<i>Capital charge</i>
AAA to BBB	6 months or less	0.28%	AAA	1.8%
	Greater than 6 months and up to and including 24 months	1.14%	AA	2.7%
	Exceeding 24 months	1.80%	A BBB	4.5% 9.0%
BB and below	All maturities	13.5%	BB and below	13.5%
Unrated (if permitted)	All maturities	9.0%	Unrated (if permitted)	9.0%

*These ratings indicate the ratings assigned by Indian rating agencies/ECAIs or foreign rating agencies. In the case of foreign ECAIs, the rating symbols used here correspond to Standard and Poor. The modifiers “+” or “-” have been subsumed within the main category.

Table 21: Specific Risk Capital Charges for bought and sold CDS positions in the Trading Book: Exposures to Commercial Real Estate Companies/NBFC-ND-SI#

Ratings by the ECAI*	Residual Maturity of the instrument	Capital charge
AAA to BBB	6 months or less	1.4%
	Greater than 6 months and up to and including 24 months	7.7%
	Exceeding 24 months	9.0%
BB and below	All maturities	9.0%
Unrated (if permitted)	All maturities	9.0%

#The above table will be applicable for exposures up to 90 days. Capital charge for exposures to Commercial Real Estate Companies/NBFC-ND-SI beyond 90 days shall be taken at 9.0%, regardless of rating of the reference/deliverable obligation.

*These ratings indicate the ratings assigned by Indian rating agencies/ECAIs or foreign rating agencies. In the case of foreign ECAIs, the rating symbols used here correspond to Standard and Poor. The modifiers “+” or “-” have been subsumed within the main category.

8.6.2.1 Specific Risk Capital Charges for Positions Hedged by CDS

- (i) Banks may fully offset the specific risk capital charges when the values of two legs (i.e., long and short in CDS positions) always move in the opposite direction and broadly to the same extent. This would be the case when the two legs consist of **completely identical CDS**. In these cases, no specific risk capital requirement applies to both sides of the CDS positions.
- (ii) Banks may offset 80 per cent of the specific risk capital charges when the value of two legs (i.e. long and short) always moves in the opposite direction but not broadly to the same extent. This would be the case when a long cash position is hedged by a credit default swap and there is an exact match in terms of the reference/deliverable obligation, and the maturity of both the reference/deliverable obligation and the CDS. In addition, key features of the CDS (e.g., credit event definitions, settlement mechanisms) should not cause the price movement of the CDS to materially deviate from the price movements of the cash position. To the extent that the transaction transfers risk, an 80% specific risk offset will be applied to the side of the transaction with the higher capital charge, while the specific risk requirement on the other side will be zero.
- (iii) Banks may offset partially the specific risk capital charges when the value of the two legs (i.e. long and short) usually moves in the opposite direction. This would be the case in the following situations:
 - (a) The position is captured in paragraph 8.6.2.1(ii) but there is an asset mismatch between the cash position and the CDS. However, the underlying asset is included in the (reference/deliverable) obligations in the CDS documentation and meets the requirements in paragraph 5.17.1.3(i) above.
 - (b) The position is captured in paragraph 8.6.2.1(ii) but there is maturity mismatch between credit protection and the underlying asset. However, the underlying asset is included in the (reference/deliverable) obligations in the CDS documentation.

- (c) In each of the cases in paragraph (a) and (b) above, rather than applying specific risk capital requirements on each side of the transaction (i.e., the credit protection and the underlying asset), only higher of the two capital requirements will apply.

8.6.2.2 Specific Risk Charge in CDS Positions which are not meant for Hedging

In cases not captured in paragraph 8.6.2.1, a specific risk capital charge will be assessed against both sides of the positions.

8.6.3 Capital Charge for Counterparty Credit Risk

The credit exposure for the purpose of counterparty credit risk on account of CDS transactions in the Trading Book will be calculated according to the Current Exposure Method.

8.6.3.1 Protection Seller

A protection seller will have exposure to the protection buyer only if the fee/premia is outstanding. In such cases, the counterparty credit risk charge for all single name long CDS positions in the Trading Book will be calculated as the sum of the current marked-to-market value, if positive (zero, if marked-to-market value is negative) and the potential future exposure add-on factors based on table given below. However, the add-on will be capped to the amount of unpaid premia.

Table 22: Add-on Factors for Protection Sellers

(As % of Notional Principal of CDS)	
Type of Reference Obligation	Add-on Factor
Obligations rated BBB- and above	10%
Below BBB- and unrated	20%

8.6.3.2 Protection Buyer

A CDS contract creates a counterparty exposure on the protection seller on account of the credit event payment. The counterparty credit risk charge for all short CDS positions in the Trading Book will be calculated as the sum of the current marked-to-market value, if positive (zero, if marked-to-market value is negative) and the potential future exposure add-on factors based on table given below:

Table 23: Add-on Factors for Protection Buyers

(As % of Notional Principal of CDS)	
Type of Reference Obligation	Add-on Factor
Obligations rated BBB and above	10%
Below BBB and unrated	20%

8.6.3.3 Capital Charge for Counterparty Risk for Collateralised Transactions in CDS

As mentioned in paragraph 3.3 of the circular IDMD.PCD.No.5053/14.03.04/2010-11 dated May 23, 2011, collaterals and margins would be maintained by the individual market participants. The

counterparty exposure for CDS traded in the OTC market will be calculated as per the Current Exposure Method. Under this method, the calculation of the counterparty credit risk charge for an individual contract, taking into account the collateral, will be as follows:

$$\text{Counterparty risk capital charge} = [(\text{RC} + \text{add-on}) - \text{CA}] \times r \times 9\%$$

Where;

RC = the replacement cost,

add-on = the amount for potential future exposure calculated according to paragraph 5.17.3 above.

CA = the volatility adjusted amount of eligible collateral under the comprehensive approach prescribed in paragraph 7.3 on “Credit Risk Mitigation Techniques – Collateralised Transactions” of these guidelines, or zero if no eligible collateral is applied to the transaction, and

r = the risk weight of the counterparty.

8.6.4 Treatment of Exposures below Materiality Thresholds of CDS

Materiality thresholds on payments below which no payment is made in the event of loss are equivalent to retained first loss positions and should be assigned risk weight of 1250 per cent for capital adequacy purpose by the protection buyer.

8.7 Aggregation of the capital charge for Market Risks

As explained earlier capital charges for specific risk and general market risk are to be computed separately before aggregation. For computing the total capital charge and Risk Weighted Assets for market risks, the calculations may be plotted in the following table:

Risk Category	Capital charge	Risk Weighted Assets (RWA)
I. Interest Rate (a+b)		12.5 times the capital charge
a. General market risk		
(i) Net position (parallel shift)		
(ii) Horizontal disallowance (curvature)		
(iii) Vertical disallowance (basis)		
(iv) Options		
b. Specific risk		
II. Equity (a+b)		12.5 times the capital charge
a. General market risk		
b. Specific risk		
III. Foreign Exchange and Gold		12.5 times the capital charge
IV. Total capital charge and RWA for market risks (I+II+III)		

8.8 Treatment for Illiquid Positions

8.8.1 Prudent Valuation Guidance

- (i) This section provides banks with guidance on prudent valuation for positions that are accounted for at fair value. This guidance would be applicable to all positions enumerated in **paragraph 8.2.1** above. It is especially important for positions without actual market prices or observable inputs to valuation, as well as less liquid positions which raise supervisory concerns about prudent valuation. The valuation guidance set forth below is not intended to require banks to change valuation procedures for financial reporting purposes.
- (ii) A framework for prudent valuation practices should at a minimum include the following:

8.8.1.1 Systems and Controls

Banks must establish and maintain adequate systems and controls sufficient to give management and supervisors the confidence that their valuation estimates are prudent and reliable. These systems must be integrated with other risk management systems within the organisation (such as credit analysis). Such systems must include:

- (i) Documented policies and procedures for the process of valuation. This includes clearly defined responsibilities of the various areas involved in the determination of the valuation, sources of market information and review of their appropriateness, guidelines for the use of unobservable inputs reflecting the bank's assumptions of what market participants would use in pricing the position, frequency of independent valuation, timing of closing prices, procedures for adjusting valuations, end of the month and ad-hoc verification procedures; and
- (ii) Clear and independent (i.e., independent of front office) reporting lines for the department accountable for the valuation process.

8.8.1.2 Valuation Methodologies:

Marking to Market

- (i) Marking-to-market is at least the daily valuation of positions at readily available close out prices in orderly transactions that are sourced independently. Examples of readily available close out prices include exchange prices, screen prices, or quotes from several independent reputable brokers.
- (ii) Banks must mark-to-market as much as possible. The more prudent side of bid/offer should be used unless the institution is a significant market maker in a particular position type and it can close out at mid-market. Banks should maximise the use of relevant observable inputs and minimise the use of unobservable inputs when estimating fair value using a valuation technique. However, observable inputs or transactions may not be relevant, such as in a forced liquidation or distressed sale, or transactions may not be observable, such as when markets are inactive. In such cases, the observable data should be considered, but may not be determinative.

Marking to Model

- (iii) Marking to model is defined as any valuation which has to be benchmarked, extrapolated or otherwise calculated from a market input. Where marking-to-market is not possible,

banks should follow the guidelines on valuation of investments contained in Master Circular DBOD No.BP.BC.3/21.04.141/2009-10 dated July 1, 2009, as amended from time to time on prudential norms for classification, valuation and operation of investment portfolio by banks. For investment and derivative positions other than those covered in the Master Circular, the valuation model used by banks must be demonstrated to be prudent. When marking to valuation model other than that prescribed in RBI/FIMMDA guidelines, an extra degree of conservatism is appropriate. RBI will consider the following in assessing whether a mark-to-model valuation is prudent:

- Senior management should be aware of the elements of the trading book or of other fair-valued positions which are subject to mark to model and should understand the materiality of the uncertainty this creates in the reporting of the risk/performance of the business.
- Market inputs should be sourced, to the extent possible, in line with market prices (as discussed above). The appropriateness of the market inputs for the particular position being valued should be reviewed regularly.
- Where available, generally accepted valuation methodologies for particular products should be used as far as possible.
- Where the model is developed by the institution itself, it should be based on appropriate assumptions, which have been assessed and challenged by suitably qualified parties independent of the development process. The model should be developed or approved independently of the front office. It should be independently tested. This includes validating the mathematics, the assumptions and the software implementation.
- There should be formal change control procedures in place and a secure copy of the model should be held and periodically used to check valuations.
- Risk management should be aware of the weaknesses of the models used and how best to reflect those in the valuation output.
- The model should be subject to periodic review to determine the accuracy of its performance (e.g., assessing continued appropriateness of the assumptions, analysis of P&L versus risk factors, comparison of actual close out values to model outputs).
- Valuation adjustments should be made as appropriate, for example, to cover the uncertainty of the model valuation (see also valuation adjustments in paragraphs 8.8.1.2 (vi), (vii) and 8.8.2.1 to 8.8.2.4.)

Independent Price Verification

- (iv) Independent price verification is distinct from daily mark-to-market. It is the process by which market prices or model inputs are regularly verified for accuracy. While daily marking-to-market may be performed by dealers, verification of market prices or model inputs should be performed by a unit independent of the dealing room, at least monthly (or, depending on the nature of the market/trading activity, more frequently). It need not be performed as frequently as daily mark-to-market, since the objective, i.e., independent, marking of positions should reveal any error or bias in pricing, which should result in the elimination of inaccurate daily marks.
- (v) Independent price verification entails a higher standard of accuracy in that the market prices or model inputs are used to determine profit and loss figures, whereas daily marks are used primarily for management reporting in between reporting dates. For independent price

verification, where pricing sources are more subjective, e.g., only one available broker quote, prudent measures such as valuation adjustments may be appropriate.

Valuation Adjustments

- (vi) As part of their procedures for marking to market, banks must establish and maintain procedures for considering valuation adjustments. RBI would particularly expect banks using third-party valuations to consider whether valuation adjustments are necessary. Such considerations are also necessary when marking to model.
- (vii) At a minimum, banks should consider the following valuation adjustments while valuing their derivatives portfolios:
 - incurred CVA losses,
 - closeout costs,
 - operational risks,
 - early termination, investing and funding costs, and
 - future administrative costs and,
 - where appropriate, model risk.

Banks may follow any recognised method/model to compute the above adjustments except provisions against incurred CVA losses. However, banks may use the following formula to calculate incurred CVA loss on derivatives transactions:

$$ICVAL_t = \text{Max} [0, \{(EE_t * RP_t) - (EE_0 * RP_0)\}]$$

Where;

$ICVAL_t$ = Cumulative Incurred CVA loss at time 't'.

EE_t = Value of counterparty exposure projected after one year from 't' and discounted back to 't' using CEM and a risk free discount rate for one year.

EE_0 = Counterparty exposure estimated at time '0' using CEM.

RP_t = Credit spread of the counterparty as reflected in the CDS or bond prices.

In cases where market based credit spreads are not available, risk premium applicable to the counterparty according to its credit grade as per the internal credit rating system of the bank used for pricing/loan approval purposes at time 't' may be used.

RP_0 = Credit spread of the counterparty as reflected in the CDS or bond prices.

In cases where market based credit spreads are not available, risk premium applicable to the counterparty according to its credit grade as per the internal credit rating system of the bank used for pricing/loan approval purposes at time '0' i.e., the date of the transaction.

Note: Some of other terms used above are explained below:

Close-out costs

Close-out costs adjustment factors in the cost of eliminating the market risk of the portfolio.

Investing and Funding costs

The "investing and funding costs adjustment" relating to the cost of funding and investing cash flow mismatches at rates different from the rate which models typically assume.

Administrative costs adjustment

Administrative costs adjustment relates to the costs that will be incurred to administer the portfolio.

8.8.2 Adjustment to the current valuation of less liquid positions for regulatory capital purposes

8.8.2.1 Banks must establish and maintain procedures for judging the necessity of and calculating an adjustment to the current valuation of less liquid positions for regulatory capital purposes. This adjustment may be in addition to any changes to the value of the position required for financial reporting purposes and should be designed to reflect the illiquidity of the position. An adjustment to a position's valuation to reflect current illiquidity should be considered whether the position is marked to market using market prices or observable inputs, third-party valuations or marked to model.

8.8.2.2 Bearing in mind that the assumptions made about liquidity in the market risk capital charge may not be consistent with the bank's ability to sell or hedge out less liquid positions where appropriate, banks must take an adjustment to the current valuation of these positions, and review their continued appropriateness on an on-going basis. Reduced liquidity may have arisen from market events. Additionally, close-out prices for concentrated positions and/or stale positions should be considered in establishing the adjustment. RBI has not prescribed any particularly methodology for calculating the amount of valuation adjustment on account of illiquid positions. Banks must consider all relevant factors when determining the appropriateness of the adjustment for less liquid positions. These factors may include, but are not limited to, the amount of time it would take to hedge out the position/risks within the position, the average volatility of bid/offer spreads, the availability of independent market quotes (number and identity of market makers), the average and volatility of trading volumes (including trading volumes during periods of market stress), market concentrations, the aging of positions, the extent to which valuation relies on marking-to-model, and the impact of other model risks not included in paragraph 8.8.2.2. The valuation adjustment on account of illiquidity should be considered irrespective of whether the guidelines issued by FIMMDA have taken into account the illiquidity premium or not, while fixing YTM/spreads for the purpose of valuation.

8.8.2.3 For complex products including, but not limited to, securitisation exposures, banks must explicitly assess the need for valuation adjustments to reflect two forms of model risk:

- (i) the model risk associated with using a possibly incorrect valuation methodology; and
- (ii) the risk associated with using unobservable (and possibly incorrect) calibration parameters in the valuation model.

8.8.2.4 The adjustment to the current valuation of less liquid positions made under paragraph 8.8.2.2 will not be debited to P&L Account, but will be deducted from Common Equity Tier 1 capital while computing CRAR of the bank. The adjustment may exceed those valuation adjustments made under financial reporting/accounting standards and paragraphs 8.8.1.2 (vi) and (vii).

8.8.2.5 In calculating the eligible capital for market risk, it will be necessary first to calculate the banks' minimum capital requirement for credit and operational risk and only afterwards its market risk requirement to establish how much components of capital is available to support market risk.

9. CAPITAL CHARGE FOR OPERATIONAL RISK

9.1 Definition of Operational Risk

Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk. Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

9.2 The Measurement Methodologies

The New Capital Adequacy Framework (NCAF) outlines three methods for calculating operational risk capital charges in a continuum of increasing sophistication and risk sensitivity:

- (i) the Basic Indicator Approach (BIA);
- (ii) the Standardised Approach (TSA); and
- (iii) Advanced Measurement Approaches (AMA).

9.2.2 Banks are encouraged to move along the spectrum of available approaches as they develop more sophisticated operational risk measurement systems and practices.

9.2.3 The New Capital Adequacy Framework provides that internationally active banks and banks with significant operational risk exposures are expected to use an approach that is more sophisticated than the Basic Indicator Approach and that is appropriate for the risk profile of the institution. However, to begin with, banks in India shall compute the capital requirements for operational risk under the Basic Indicator Approach. Reserve Bank will review the capital requirement produced by the Basic Indicator Approach for general credibility, especially in relation to a bank's peers and in the event that credibility is lacking, appropriate supervisory action under Pillar 2 will be considered.

9.3 The Basic Indicator Approach

9.3.1 Under the Basic Indicator Approach, banks must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted as alpha) of positive annual gross income. Figures for any year in which annual gross income is negative or zero should be excluded from both the numerator and denominator when calculating the average. If negative gross income distorts a bank's Pillar 1 capital charge, Reserve Bank will consider appropriate supervisory action under Pillar 2. The charge may be expressed as follows:

$$\text{KBIA} = [\Sigma (\text{GI}_{1...n} \times \alpha)]/n$$

Where:

KBIA = the capital charge under the Basic Indicator Approach.

GI = annual gross income, where positive, over the previous three years.

n = number of the previous three years for which gross income is positive.

α = 15 per cent, which is set by the BCBS, relating the industry wide level of required capital to the industry wide level of the indicator.

9.3.2 Gross income is defined as “Net interest income” plus “net non-interest income”. It is intended that this measure should:

- (i) be gross of any provisions (e.g., for unpaid interest) and write-offs made during the year;
- (ii) be gross of operating expenses, including fees paid to outsourcing service providers, *in addition to fees paid for services that are outsourced, fees received by banks that provide outsourcing services shall be included in the definition of gross income*;
- (iii) exclude reversal during the year in respect of provisions and write-offs made during the previous year(s);
- (iv) exclude income recognised from the disposal of items of movable and immovable property;
- (v) exclude realised profits/losses from the sale of securities in the “*held to maturity*” category;
- (vi) exclude income from legal settlements in favour of the bank;
- (vii) exclude other extraordinary or irregular items of income and expenditure; and
- (viii) exclude income derived from insurance activities (i.e. income derived by writing insurance policies) and insurance claims in favour of the bank.

9.3.3 Banks are advised to compute capital charge for operational risk under the Basic Indicator Approach as follows:

- (a) Average of [Gross Income * alpha] for each of the last three financial years, excluding years of negative or zero gross income
- (b) Gross income = *Net profit (+) Provisions & contingencies (+) operating expenses (Schedule 16) (-) items (iii) to (viii) of paragraph 9.3.2.*
- (c) Alpha = 15 per cent

9.3.4 As a point of entry for capital calculation, no specific criteria for use of the Basic Indicator Approach are set out in these guidelines. Nevertheless, banks using this approach are encouraged to comply with the Basel Committee’s guidance on ‘*Sound Practices for the Management and Supervision of Operational Risk*’, February 2003 and the ‘*Guidance Note on Management of Operational Risk*’, issued by the Reserve Bank of India in October, 2005.

9.3.5 Once the bank has calculated the capital charge for operational risk under BIA, it has to multiply this with 12.5 and arrive at the notional risk weighted asset (RWA) for operational risk.

ANNEX 5

(cf. para 4.2.5)

Criteria for Inclusion of Debt Capital Instruments as Tier 2 Capital

The Tier 2 debt capital instruments that may be issued as bonds/debentures by Indian banks should meet the following terms and conditions to qualify for inclusion as Tier 2 Capital for capital adequacy purposes:

1. Terms of Issue of Instruments Denominated in Indian Rupees

1.1 Paid-in Status

The instruments should be issued by the bank (i.e., not by any ‘SPV’, etc., set up by the bank for this purpose) and fully paid-in.

1.2 Amount

The amount of these debt instruments to be raised may be decided by the Board of Directors of banks.

1.3 Maturity Period

The debt instruments should have a minimum maturity of five years and there are no step-ups or other incentives to redeem.

1.4 Discount

The debt instruments shall be subjected to a progressive discount for capital adequacy purposes. As they approach maturity these instruments should be subjected to progressive discount as indicated in the table below for being eligible for inclusion in Tier 2 capital.

Remaining Maturity of Instruments	Rate of Discount (%)
Less than one year	100
One year and more but less than two years	80
Two years and more but less than three years	60
Three years and more but less than four years	40
Four years and more but less than five years	20

1.5 Rate of Interest

- (i) The interest payable to the investors may be either at a fixed rate or at a floating rate referenced to a market determined rupee interest benchmark rate.
- (ii) The instrument cannot have a credit sensitive coupon feature, i.e., a coupon that is reset periodically based in whole or in part on the banks' credit standing. Banks desirous of offering floating reference rate may take prior approval of the RBI (DBR) as regard permissibility of such reference rates.

1.6 Optionality

The debt instruments shall not have any 'put option'. However, it may be callable at the initiative of the issuer only after a minimum of five years:

- (a) To exercise a call option a bank must receive prior approval of RBI (Department of Banking Regulation); and
- (b) A bank must not do anything which creates an expectation that the call will be exercised. For example, to preclude such expectation of the instrument being called, the dividend/coupon reset date need not be co-terminus with the call date. Banks may, at their discretion, consider having an appropriate gap between dividend/coupon reset date and call date; and
- (c) Banks must not exercise a call unless:
 - (i) They replace the called instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or

- (ii) The bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised.

The use of tax event and regulatory event calls may be permitted. However, exercise of the calls on account of these events is subject to the requirements set out in points (a) to (c) of criterion 1.6. RBI will permit the bank to exercise the call only if the RBI is convinced that the bank was not in a position to anticipate these events at the time of issuance of these instruments as explained in case of Additional Tier 1 instruments.

1.7 Treatment in Bankruptcy/Liquidation

The investor must have no rights to accelerate the repayment of future scheduled payments (coupon or principal) except in bankruptcy and liquidation.

1.8 Prohibition on Purchase/Funding of Instruments

Neither the bank nor a related party over which the bank exercises control or significant influence (as defined under relevant Accounting Standards) should purchase the instrument, nor can the bank directly or indirectly should fund the purchase of the instrument. Banks should also not grant advances against the security of the debt instruments issued by them.

1.9 Reporting of Non-payment of Coupons

All instances of non-payment of coupon should be notified by the issuing banks to the Chief General Managers-in-Charge of Department of Banking Regulation and Department of Banking Supervision of the Reserve Bank of India, Mumbai.

1.10 Seniority of Claim

The claims of the investors in instruments shall be

- (i) senior to the claims of investors in instruments eligible for inclusion in Tier 1 capital;
- (ii) subordinate to the claims of all depositors and general creditors of the bank; and
- (iii) is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis bank creditors.

1.11 Investment in Instruments Raised in Indian Rupees by Foreign Entities/NRIs

- (i) Investment by FIIs in Tier 2 instruments raised in Indian Rupees shall be outside the limit for investment in corporate debt instruments, as fixed by the Govt. of India from time to time. However, investment by FIIs in these instruments will be subject to a separate ceiling of USD 500 million. In addition, NRIs shall also be eligible to invest in these instruments as per existing policy.
- (ii) Banks should comply with the terms and conditions, if any, stipulated by SEBI/other regulatory authorities in regard to issue of the instruments.

1.12 Terms of Issue of Tier 2 Debt Capital Instruments in Foreign Currency

Banks may issue Tier 2 Debt Instruments in Foreign Currency without seeking the prior approval of the Reserve Bank of India, subject to compliance with the requirements mentioned below:

- (i) Tier 2 Instruments issued in foreign currency should comply with all terms and conditions applicable to instruments issued in Indian Rupees.

- (ii) The total outstanding amount of Tier 2 Instruments in foreign currency shall not exceed 25% of the unimpaired Tier 1 capital. This eligible amount will be computed with reference to the amount of Tier 1 capital as on March 31 of the previous financial year, after deduction of goodwill and other intangible assets but before the deduction of investments, as per paragraph 4.4.9 of the Master Circular on Basel III capital regulations.
- (iii) This will be in addition to the existing limit for foreign currency borrowings by Authorised Dealers stipulated in terms of Master Circular No. 14/2010-11 dated July 1, 2010 on Risk Management and Inter-Bank Dealings as updated from time to time.

1.13 Compliance with Reserve Requirements

- (i) The funds collected by various branches of the bank or other banks for the issue and held pending finalisation of allotment of the Tier 2 Capital instruments will have to be taken into account for the purpose of calculating reserve requirements.
- (ii) The total amount raised by a bank through Tier 2 instruments shall be reckoned as liability for the calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will attract CRR/SLR requirements.

1.14 Reporting of Issuances

Banks issuing debt instruments shall submit a report to the Chief General Manager-in-charge, Department of Banking Regulation, Reserve Bank of India, Mumbai giving details of the debt raised, including the terms of issue specified at para 1 above, together with a copy of the offer document soon after the issue is completed.

1.15 Investment in Tier 2 Debt Capital Instruments Issued by Other Banks/FIs

- (i) A bank's investment in Tier 2 debt instruments issued by other banks and financial institutions will be reckoned along with the investment in other instruments eligible for capital status while computing compliance with the overall ceiling of 10% for cross holding of capital among banks/FIs prescribed vide circular DBOD.BP.BC.No.3/21.01.002/2004-05 dated 6th July 2004 and also subject to cross holding limits.
- (ii) Bank's investments in Tier 2 instruments issued by other banks/financial institutions will attract risk weight as per paragraphs 5.6 and 8.3.5 of the Master Circular on Basel III Capital Regulations, whichever applicable for capital adequacy purposes.

1.16 Classification in the Balance Sheet

The amount raised by way of issue of Tier 2 debt capital instrument may be classified under 'Schedule 4 – Borrowings' in the Balance Sheet.

1.17 Debt Capital Instruments to Retail Investors

With a view to enhancing investor education relating to risk characteristics of regulatory capital requirements, banks issuing subordinated debt to retail investors, subject to approval of their Board, should adhere to the following conditions:

- (a) For floating rate instruments, banks should not use its Fixed Deposit rate as benchmark.
- (b) The requirement for specific sign-off as quoted below, from the investors for having understood the features and risks of the instrument may be incorporated in the common application form of the proposed debt issue.

"By making this application, I/We acknowledge that I/We have understood the terms and conditions of the Issue of [insert the name of the instruments being issued] of [Name of The Bank] as disclosed in the Draft Shelf Prospectus, Shelf Prospectus and Tranche Document".

- (c) All the publicity material, application form and other communication with the investor should clearly state in bold letters (**with font size 14**) how a subordinated bond is different from fixed deposit particularly that it is not covered by deposit insurance. In addition, the loss absorbency features of the instrument should be clearly explained and the investor's sign-off for having understood these features and other terms and conditions of the instrument should be obtained.

1.18 Raising of Instruments for Inclusion as Tier 2 Capital by Foreign Banks in India

Foreign banks in India may raise Head Office (HO) borrowings in foreign currency for inclusion as Tier 2 capital subject to the same terms and conditions as mentioned in items 1.1 to 1.17 above for Indian banks. In addition, the following terms and conditions would also be applicable:

- (a) *Maturity period*: If the amount of Tier 2 debt capital raised as HO borrowings is in tranches, each tranche shall be retained in India for a minimum period of five years.
- (b) *Rate of interest*: Rate of interest on Tier 2 capital raised as HO borrowings should not exceed the on-going market rate. Interest should be paid at half yearly rests.
- (c) *Withholding tax*: Interest payments to the HO will be subject to applicable withholding tax.
- (d) *Documentation*: The foreign bank raising Tier 2 debt capital as HO borrowings should obtain a letter from its HO agreeing to give the loan for supplementing the capital base for the Indian operations of the foreign bank. The loan documentation should confirm that the loan given by HO shall be eligible for the same level of seniority of claim as the investors in debt capital instruments issued by Indian banks. The loan agreement will be governed by and construed in accordance with the Indian law.
- (e) *Disclosure*: The total eligible amount of HO borrowings shall be disclosed in the balance sheet under the head 'Tier 2 debt capital raised in the form of Head Office borrowings in foreign currency'.
- (f) *Hedging*: The total eligible amount of HO borrowing should remain fully swapped in Indian Rupees with the bank at all times.
- (g) *Reporting and certification*: Details regarding the total amount of Tier 2 debt capital raised as HO borrowings, along with a certification to the effect that the borrowing is in accordance with these guidelines, should be advised to the Chief General Managers-in-Charge of the Department of Banking Regulation (International Banking Division), Department of External Investments and Operations and Financial Markets Regulation Department, Reserve Bank of India, Mumbai.
- (h) *Features*: The HO borrowings should be fully paid up, i.e., the entire borrowing or each tranche of the borrowing should be available in full to the branch in India. It should be unsecured, subordinated to the claims of other creditors of the foreign bank in India, free of restrictive clauses and should not be redeemable at the instance of the HO.

- (i) *Rate of discount:* The HO borrowings will be subjected to progressive discount as they approach maturity at the rates indicated below:

Remaining maturity of borrowing	Rate of discount (%)
More than 5 years	Not Applicable (the entire amount can be included as subordinated debt in Tier 2 capital)
More than 4 years and less than 5 years	20
More than 3 years and less than 4 years	40
More than 2 years and less than 3 years	60
More than 1 year and less than 2 years	80
Less than 1 year	100 (No amount can be treated

1.19 Requirements

The total amount of HO borrowings is to be reckoned as liability for the calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will attract CRR/SLR requirements.

1.20 Hedging

The entire amount of HO borrowing should remain fully swapped with banks at all times. The swap should be in Indian rupees.

1.21 Reporting and Certification

Such borrowings done in compliance with the guidelines set out above would not require prior approval of Reserve Bank of India. However, information regarding the total amount of borrowing raised from Head Office under this Annex, along with a certification to the effect that the borrowing is as per the guidelines, should be advised to the Chief General Managers-in-Charge of the Department of Banking Regulation (International Banking Division), Department of External Investments and Operations and Financial Markets Regulation Department, Reserve Bank of India, Mumbai.

ANNEX 9

(cf. para 8.3.10)

Measurement of capital charge for Market Risks in respect of Interest Rate Derivatives and Options

A. Interest Rate Derivatives

The measurement system should include all interest rate derivatives and off-balance-sheet instruments in the trading book, which react to changes in interest rates, (e.g., forward rate agreements (FRAs),

other forward contracts, bond futures, interest rate and cross-currency swaps and forward foreign exchange positions). Options can be treated in a variety of ways as described in para B.1 below. A summary of the rules for dealing with interest rate derivatives is set out in the Table at the end of this section.

1. Calculation of positions

The derivatives should be converted into positions in the relevant underlying and be subjected to specific and general market risk charges as described in the guidelines. In order to calculate the capital charge, the amounts reported should be the market value of the principal amount of the underlying or of the notional underlying. For instruments where the apparent notional amount differs from the effective notional amount, banks must use the effective notional amount.

(a) Futures and Forward Contracts, including Forward Rate Agreements

These instruments are treated as a combination of a long and a short position in a notional government security. The maturity of a future or a FRA will be the period until delivery or exercise of the contract, plus – where applicable – the life of the underlying instrument. *For example, a long position in a June three-month interest rate future (taken in April) is to be reported as a long position in a government security with a maturity of five months and a short position in a government security with a maturity of two months.* Where a range of deliverable instruments may be delivered to fulfill the contract, the bank has flexibility to elect which deliverable security goes into the duration ladder but should take account of any conversion factor defined by the exchange.

(b) Swaps

Swaps will be treated as two notional positions in government securities with relevant maturities. *For example, an interest rate swap under which a bank is receiving floating rate interest and paying fixed will be treated as a long position in a floating rate instrument of maturity equivalent to the period until the next interest fixing and a short position in a fixed-rate instrument of maturity equivalent to the residual life of the swap.* For swaps that pay or receive a fixed or floating interest rate against some other reference price, e.g., a stock index, the interest rate component should be slotted into the appropriate repricing maturity category, with the equity component being included in the equity framework.

Separate legs of cross-currency swaps are to be reported in the relevant maturity ladders for the currencies concerned.

2. Calculation of capital charges for derivatives under the Standardised Methodology

(a) Allowable offsetting of Matched Positions

Banks may exclude the following from the interest rate maturity framework altogether (for both specific and general market risk):

- Long and short positions (both actual and notional) in identical instruments with exactly the same issuer, coupon, currency and maturity.
- A matched position in a future or forward and its corresponding underlying may also be fully offset, (the leg representing the time to expiry of the future should however be reported) and thus excluded from the calculation.

When the future or the forward comprises a range of deliverable instruments, offsetting of positions in the future or forward contract and its underlying is only permissible in cases where there is a readily identifiable underlying security which is most profitable for the trader with a short position to deliver. The price of this security, sometimes called the “cheapest-to-deliver”, and the price of the future or forward contract should in such cases move in close alignment.

No offsetting will be allowed between positions in different currencies; the separate legs of cross-currency swaps or forward foreign exchange deals are to be treated as notional positions in the relevant instruments and included in the appropriate calculation for each currency.

In addition, opposite positions in the same category of instruments can in certain circumstances be regarded as matched and allowed to offset fully. To qualify for this treatment the positions must relate to the same underlying instruments, be of the same nominal value and be denominated in the same currency. In addition:

- for Futures: offsetting positions in the notional or underlying instruments to which the futures contract relates must be for identical products and mature within seven days of each other;
- for Swaps and FRAs: the reference rate (for floating rate positions) must be identical and the coupon closely matched (i.e., within 15 basis points); and
- for Swaps, FRAs and Forwards: the next interest fixing date or, for fixed coupon positions or forwards, the residual maturity must correspond within the following limits:
 - less than one month hence: same day;
 - between one month and one year hence: within seven days;
 - over one year hence: within thirty days.

Banks with large swap books may use alternative formulae for these swaps to calculate the positions to be included in the duration ladder. The method would be to calculate the sensitivity of the net present value implied by the change in yield used in the duration method and allocate these sensitivities into the time-bands set out in Table 17 in paragraph 8.3.9 of the Basel III Capital Regulations.

(b) Specific Risk

Interest rate and currency swaps, FRAs, forward foreign exchange contracts and interest rate futures will not be subject to a specific risk charge. This exemption also applies to futures on an interest rate index (e.g., LIBOR). However, in the case of futures contracts where the underlying is a debt security, or an index representing a basket of debt securities, a specific risk charge will apply according to the credit risk of the issuer as set out in paragraphs above.

(c) General Market Risk

General market risk applies to positions in all derivative products in the same manner as for cash positions, subject only to an exemption for fully or very closely matched positions in identical instruments as defined in paragraphs above. The various categories of instruments should be slotted into the maturity ladder and treated according to the rules identified earlier.

Table – Summary of Treatment of Interest Rate Derivatives

Instrument	Specific risk charge	General Market risk charge
Exchange-traded Future		
– Government debt security	No	Yes, as two positions
– Corporate debt security	Yes	Yes, as two positions
– Index on interest rates (e.g., MIBOR)	No	Yes, as two positions
OTC Forward		
– Government debt security	No	Yes, as two positions
– Corporate debt security	Yes	Yes, as two positions
– Index on interest rates (e.g., MIBOR)	No	Yes, as two positions
FRAs, Swaps	No	Yes, as two positions
Forward Foreign Exchange	No	Yes, as one position in each currency
Options		
– Government debt security	No	
– Corporate debt security	Yes	
– Index on interest rates (e.g., MIBOR)	No	
– FRAs, Swaps	No	

B. Treatment of Options

1. In recognition of the wide diversity of banks' activities in options and the difficulties of measuring price risk for options, alternative approaches are permissible as under:
 - those banks which solely use purchased options will be free to use the simplified approach described in Section I below;
 - those banks which also write options will be expected to use one of the intermediate approaches as set out in Section II below.

Unless all their written option positions are hedged by perfectly matched long positions in exactly the same options, in which case no capital charge for market risk is required.

2. In the **simplified approach**, the positions for the options and the associated underlying, cash or forward, are not subject to the standardised methodology but rather are "carved-out" and subject to separately calculated capital charges that incorporate both general market risk and specific risk. The risk numbers thus generated are then added to the capital charges for the relevant category, i.e., interest rate related instruments, equities, and foreign exchange as described in paragraph 8.3 to 8.5 of the Basel III Capital Regulations. The *delta-plus method* uses the sensitivity parameters or "Greek letters" associated with options to measure their market risk and capital requirements. Under this method, the delta-equivalent position of each option becomes part of the standardised methodology set out in paragraph 8.3 to 8.5 of the

Basel III Capital Regulations with the delta-equivalent amount subject to the applicable general market risk charges. Separate capital charges are then applied to the gamma and Vega risks of the option positions. The **scenario approach** uses simulation techniques to calculate changes in the value of an options portfolio for changes in the level and volatility of its associated underlyings. Under this approach, the general market risk charge is determined by the scenario “grid” (i.e., the specified combination of underlying and volatility changes) that produces the largest loss. For the delta-plus method and the scenario approach the specific risk capital charges are determined separately by multiplying the delta-equivalent of each option by the specific risk weights set out in paragraph 8.3 to 8.4 of the Basel III Capital Regulations.

I. Simplified Approach

3. Banks which handle a limited range of purchased options only will be free to use the simplified approach set out in Table A below, for particular trades. As an example of how the calculation would work, if a holder of 100 shares currently valued at ₹10 each holds an equivalent put option with a strike price of ₹11, the capital charge would be: ₹1,000 × 18 per cent (i.e., 9 per cent specific plus 9 per cent general market risk) = ₹180, less the amount the option is in the money ($₹11 - ₹10$) × 100 = ₹100, i.e., the capital charge would be ₹80. A similar methodology applies for options whose underlying is a foreign currency or an interest rate related instrument.

Table A – Simplified approach: capital charges

Position	Treatment
Long cash and Long put Or Short cash and Long call	The capital charge will be the market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying less the amount the option is in the money (if any) bounded at zero
Long call Or Long put	The capital charge will be the lesser of: <ol style="list-style-type: none"> (i) the market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying (ii) the market value of the option

II. Intermediate Approaches

(a) Delta-plus Method

4. Banks which write options will be allowed to include delta-weighted options positions within the standardised methodology set out in paragraph 8.3 to 8.5 of this Master Circular. Such options should be reported as a position equal to the market value of the underlying multiplied by the delta.

However, since delta does not sufficiently cover the risks associated with options positions, banks will also be required to measure gamma (which measures the rate of change of delta) and Vega (which measures the sensitivity of the value of an option with respect to a change in volatility) sensitivities in order to calculate the total capital charge. These sensitivities will be calculated according to an

approved exchange model or to the bank's proprietary options pricing model subject to oversight by the Reserve Bank of India.

5. Delta-weighted positions with *debt securities or interest rates as the underlying* will be slotted into the interest rate time-bands, as set out in **Table 17** of paragraph 8.3 of the Basel III Capital Regulations, under the following procedure. A two-legged approach should be used as for other derivatives, requiring one entry at the time the underlying contract takes effect and a second at the time the underlying contract matures. For instance, a bought call option on a June three-month interest-rate future will in April be considered, on the basis of its delta-equivalent value, to be a long position with a maturity of five months and a short position with a maturity of two months. The written option will be similarly slotted as a long position with a maturity of two months and a short position with a maturity of five months. Floating rate instruments with caps or floors will be treated as a combination of floating rate securities and a series of European-style options. For example, the holder of a three-year floating rate bond indexed to six month LIBOR with a cap of 15 per cent will treat it as:
 - (i) a debt security that reprices in six months; and
 - (ii) a series of five written call options on a FRA with a reference rate of 15 per cent, each with a negative sign at the time the underlying FRA takes effect and a positive sign at the time the underlying FRA matures.
6. The capital charge for *options with equities as the underlying* will also be based on the delta-weighted positions which will be incorporated in the measure of market risk described in paragraph 8.4 of the Basel III Capital Regulations. For purposes of this calculation each national market is to be treated as a separate underlying. The capital charge for *options on foreign exchange and gold positions* will be based on the method set out in paragraph 8.5 of the Basel III Capital Regulations. For delta risk, the net delta-based equivalent of the foreign currency and gold options will be incorporated into the measurement of the exposure for the respective currency (or gold) position.
7. In addition to the above capital charges arising from delta risk, there will be further capital charges for *gamma* and for *Vega risk*. Banks using the delta-plus method will be required to calculate the gamma and Vega for each option position (including hedge positions) separately. The capital charges should be calculated in the following way:
 - (i) for ***each individual option*** a "gamma impact" should be calculated according to a Taylor series expansion as:

$$\text{Gamma impact} = \frac{1}{2} \times \text{Gamma} \times \text{VU}^2$$
 where VU = Variation of the underlying of the option.
 - (ii) VU will be calculated as follows:
 - for interest rate options if the underlying is a bond, the price sensitivity should be worked out as explained. An equivalent calculation should be carried out where the underlying is an interest rate;
 - for options on equities and equity indices; which are not permitted at present, the market value of the underlying should be multiplied by 9 per cent;
 - for foreign exchange and gold options: the market value of the underlying should be multiplied by 9 per cent.

- (iii) For the purpose of this calculation the following positions should be treated as *the same underlying*:
 - for interest rates, each time-band as set out in Table 17 of the Basel III Capital Regulations;
 - for equities and stock indices, each national market;
 - for foreign currencies and gold, each currency pair and gold.
- (iv) Each option on the same underlying will have a gamma impact that is either positive or negative. These individual gamma impacts will be summed, resulting in a net gamma impact for each underlying that is either positive or negative. Only those net gamma impacts that are negative will be included in the capital calculation.
- (v) The total gamma capital charge will be the sum of the absolute value of the net negative gamma impacts as calculated above.
- (vi) For **volatility risk**, banks will be required to calculate the capital charges by multiplying the sum of the Vegas for all options on the same underlying, as defined above, by a proportional shift in volatility of ± 25 per cent.
- (vii) The **total capital charge** for Vega risk will be the sum of the absolute value of the individual capital charges that have been calculated for Vega risk.

(b) Scenario Approach

8. More sophisticated banks will also have the right to base the market risk capital charge for options portfolios and associated hedging positions on *scenario matrix analysis*. This will be accomplished by specifying a fixed range of changes in the option portfolio's risk factors and calculating changes in the value of the option portfolio at various points along this "grid". For the purpose of calculating the capital charge, the bank will revalue the option portfolio using matrices for simultaneous changes in the option's underlying rate or price and in the volatility of that rate or price. A different matrix will be set up for each individual underlying as defined in paragraph 7 above. As an alternative, at the discretion of each national authority, banks which are significant traders in options for interest rate options will be permitted to base the calculation on a minimum of six sets of time-bands. When using this method, not more than three of the time-bands as defined in paragraph 8.3 of this Master Circular should be combined into any one set.
9. The options and related hedging positions will be evaluated over a specified range above and below the current value of the underlying. The range for interest rates is consistent with the assumed changes in yield in Table - 17 of paragraph 8.3 of this Master Circular. Those banks using the alternative method for interest rate options set out in paragraph 8 above should use, for each set of time-bands, the highest of the assumed changes in yield applicable to the group to which the time-bands belong. The other ranges are ± 9 per cent for equities and ± 9 per cent for foreign exchange and gold. For all risk categories, at least seven observations (including the current observation) should be used to divide the range into equally spaced intervals.
10. The second dimension of the matrix entails a change in the volatility of the underlying rate or price. A single change in the volatility of the underlying rate or price equal to a shift in volatility of $+ 25$ per cent and $- 25$ per cent is expected to be sufficient in most cases. As

circumstances warrant, however, the Reserve Bank may choose to require that a different change in volatility be used and/or that intermediate points on the grid be calculated.

11. After calculating the matrix, each cell contains the net profit or loss of the option and the underlying hedge instrument. The capital charge for each underlying will then be calculated as the largest loss contained in the matrix.
12. In drawing up these intermediate approaches it has been sought to cover the major risks associated with options. In doing so, it is conscious that so far as specific risk is concerned, only the delta-related elements are captured; to capture other risks would necessitate a much more complex regime. On the other hand, in other areas the simplifying assumptions used have resulted in a relatively conservative treatment of certain options positions.
13. Besides the options risks mentioned above, the RBI is conscious of the other risks also associated with options, e.g., rho (rate of change of the value of the option with respect to the interest rate) and theta (rate of change of the value of the option with respect to time). While not proposing a measurement system for those risks at present, it expects banks undertaking significant options business at the very least to monitor such risks closely. Additionally, banks will be permitted to incorporate rho into their capital calculations for interest rate risk, if they wish to do so.

ANNEX 3

[cf. para 4.2.4.1]

Criteria for Inclusion of Perpetual Non-cumulative Preference Shares (PNCPS) in Additional Tier 1 Capital

The PNCPS will be issued by Indian banks, subject to extant legal provisions only in Indian rupees and should meet the following terms and conditions to qualify for inclusion in Additional Tier 1 Capital for capital adequacy purposes:

1. Terms of Issue of Instruments

1.1 Paid up Status

The instruments should be issued by the bank (i.e., not by any ‘SPV’, etc., set up by the bank for this purpose) and fully paid up.

1.2 Amount

The amount of PNCPS to be raised may be decided by the Board of Directors of banks.

1.3 Limits

While complying with minimum Tier 1 of 7% of risk weighted assets, a bank cannot admit, Perpetual Non-Cumulative Preference Shares (PNCPS) together with Perpetual Debt Instruments (PDI) in Additional Tier 1 Capital, more than 1.5% of risk weighted assets. However, once this minimum total Tier 1 capital has been complied with, any additional PNCPS and PDI issued by the bank can be included in Total Tier 1 capital reported. Excess PNCPS and PDI can be reckoned to comply with Tier 2 capital if the latter is less than 2% of RWAs, i.e., while complying with minimum Total Capital of 9% of risk weighted assets.

1.4 Maturity Period

The PNCPS shall be perpetual, i.e., there is no maturity date and there are no step-ups or other incentives to redeem.

1.5 Rate of Dividend

The rate of dividend payable to the investors may be either a fixed rate or a floating rate referenced to a market determined rupee interest benchmark rate.

1.6 Optionality

PNCPS shall not be issued with a ‘put option’. However, banks may issue the instruments with a call option at a particular date subject to following conditions:

- (a) The call option on the instrument is permissible after the instrument has run for at least five years;
- (b) To exercise a call option a bank must receive prior approval of RBI(Department of Banking Regulation); and
- (c) A bank must not do anything which creates an expectation that the call will be exercised. For example, to preclude such expectation of the instrument being called, the dividend/coupon reset date need not be co-terminus with the call date. Banks may, at their discretion, consider having an appropriate gap between dividend/coupon reset date and call date; and
- (d) Banks must not exercise a call unless:
 - (i) They replace the called instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or
 - (ii) The bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised.

The use of tax event and regulatory event calls may be permitted. However, exercise of the calls on account of these events is subject to the requirements set out in points (b) to (d) of criterion 1.6., RBI will permit the bank to exercise the call only if the RBI is convinced that the bank was not in a position to anticipate these events at the time of issuance of PNCPS.

To illustrate, if there is a change in tax treatment which makes the capital instrument with tax deductible coupons into an instrument with non-tax deductible coupons, then the bank would have the option (not obligation) to repurchase the instrument. In such a situation, a bank may be allowed to replace the capital instrument with another capital instrument that perhaps does have tax deductible coupons. Similarly, if there is a downgrade of the instrument in regulatory classification (e.g., if it is decided by the RBI to exclude an instrument from regulatory capital) the bank has the option to call the instrument and replace it with an instrument with a better regulatory classification, or a lower coupon with the same regulatory classification with prior approval of RBI. However, banks may not create an expectation/signal an early redemption/maturity of the regulatory capital instrument.

1.7 Repurchase/Buy-back/Redemption

- (i) Principal of the instruments may be repaid (e.g., through repurchase or redemption) only with prior approval of RBI and banks should not assume or create market expectations that supervisory approval will be given (this repurchase/buy-back/redemption of the principal is

in a situation other than in the event of exercise of call option by the bank. One of the major differences is that in the case of the former, the option to offer the instrument for repayment on announcement of the decision to repurchase/buy-back/redeem the instrument, would lie with the investors whereas, in case of the latter, it lies with the bank).

- (ii) Banks may repurchase/buy-back/redeem the instruments only if:
 - (a) They replace such instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or
 - (b) The bank demonstrates that its capital position is well above the minimum capital requirements after the repurchase/buy-back/redemption.

1.8 Dividend Discretion

- (i) The bank must have full discretion at all times to cancel distributions/payments;
- (ii) Cancellation of discretionary payments must not be an event of default;
- (iii) Banks must have full access to cancelled payments to meet obligations as they fall due;
- (iv) Cancellation of distributions/payments must not impose restrictions on the bank except in relation to distributions to common stakeholders; and
- (v) Dividends must be paid out of distributable items. As regards ‘distributable items’, it is clarified that the dividend on perpetual non-cumulative preference shares (PNCPS) will be paid out of current year’s profit only;
- (vi) The dividend shall not be cumulative. i.e., dividend missed in a year will not be paid in future years, even if adequate profit is available and the level of CRAR conforms to the regulatory minimum. When dividend is paid at a rate lesser than the prescribed rate, the unpaid amount will not be paid in future years, even if adequate profit is available and the level of CRAR conforms to the regulatory minimum;
- (vii) The instrument cannot have a credit sensitive coupon feature, i.e., a dividend that is reset periodically based in whole or in part on the banks’ credit standing. For this purpose, any reference rate including a broad index which is sensitive to changes to the bank’s own creditworthiness and/or to changes in the credit worthiness of the wider banking sector will be treated as a credit sensitive reference rate. Banks desirous of offering floating reference rate may take prior approval of the RBI (DBR) as regard permissibility of such reference rates;
- (ix) In general, it may be in order for banks to have dividend stopper arrangement that stop dividend payments on common shares in the event the holders of AT1 instruments are not paid dividend/coupon. However, dividend stoppers must not impede the full discretion that bank must have at all times to cancel distributions/payments on the Additional Tier 1 instrument, nor must they act in a way that could hinder the re-capitalisation of the bank. For example, it would not be permitted for a stopper on an Additional Tier 1 instrument to:
 - attempt to stop payment on another instrument where the payments on this other instrument were not also fully discretionary;
 - prevent distributions to shareholders for a period that extends beyond the point in time that dividends/coupons on the Additional Tier 1 instrument are resumed;
 - impede the normal operation of the bank or any restructuring activity (including acquisitions/disposals).

A stopper may act to prohibit actions that are equivalent to the payment of a dividend, such as the bank undertaking discretionary share buybacks, **if otherwise permitted**.

1.9 Treatment in Insolvency

The instrument cannot contribute to liabilities exceeding assets if such a balance sheet test forms part of a requirement to prove insolvency under any law or otherwise.

1.10 Loss Absorption Features

PNCPS should have principal loss absorption through either (i) conversion to common shares at an objective pre-specified trigger point or (ii) a write-down mechanism which allocates losses to the instrument at a pre-specified trigger point. The write-down will have the following effects:

- (a) Reduce the claim of the instrument in liquidation;
- (b) Reduce the amount re-paid when a call is exercised; and
- (c) Partially or fully reduce dividend payments on the instrument.

Various criteria for loss absorption through conversion/write-down/write-off on breach of pre-specified trigger and at the point of non-viability are furnished in **Annex 16**.

1.11 Prohibition on Purchase/Funding of PNCPS

Neither the bank nor a related party over which the bank exercises control or significant influence (as defined under relevant Accounting Standards) should purchase PNCPS, nor can the bank directly or indirectly fund the purchase of the instrument. Banks should also not grant advances against the security of PNCPS issued by them.

1.12 Re-capitalisation

The instrument cannot have any features that hinder re-capitalisation, such as provisions which require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame.

1.13 Reporting of Non-payment of Dividends

All instances of non-payment of dividends should be notified by the issuing banks to the Chief General Managers-in-Charge of Department of Banking Regulation and Department of Banking Supervision of the Reserve Bank of India, Mumbai.

1.14 Seniority of Claim

The claims of the investors in instruments shall be

- (i) Superior to the claims of investors in equity shares;
- (ii) Subordinated to the claims of PDIs, all Tier 2 regulatory capital instruments, depositors and general creditors of the bank; and
- (iii) is neither secured nor covered by a guarantee of the issuer nor related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis bank creditors.

1.15 Investment in Instruments Raised in Indian Rupees by Foreign Entities/NRIs

- (i) Investment by FIIs and NRIs shall be within an overall limit of 49% and 24% of the issue respectively, subject to the investment by each FII not exceeding 10% of the issue, and

investment by each NRI not exceeding 5% of the issue. Investment by FIIs in these instruments shall be outside the ECB limit for rupee-denominated corporate debt, as fixed by Government of India from time to time. The overall non-resident holding of Preference Shares and equity shares in public sector banks will be subject to the statutory/regulatory limit.

- (ii) Banks should comply with the terms and conditions, if any, stipulated by SEBI/other regulatory authorities in regard to issue of the instruments.

1.16 Compliance with Reserve Requirements

- (i) The funds collected by various branches of the bank or other banks for the issue and held pending finalisation of allotment of the Additional Tier 1 Preference Shares will have to be taken into account for the purpose of calculating reserve requirements.
- (ii) However, the total amount raised by the bank by issue of PNCPS shall not be reckoned as liability for calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will not attract CRR/SLR requirements.

1.17 Reporting of Issuances

- (i) Banks issuing PNCPS shall submit a report to the Chief General Manager-in-charge, Department of Banking Regulation, Reserve Bank of India, Mumbai giving details of the debt raised, including the terms of issue specified at above **paragraphs**, together with a copy of the offer document soon after the issue is completed.
- (ii) The issue-wise details of amount raised as PNCPS qualifying for Additional Tier 1 capital by the bank from FIIs/NRIs are required to be reported within 30 days of the issue to the Chief General Manager, Reserve Bank of India, Foreign Exchange Department, Foreign Investment Division, Central Office, Mumbai 400 001 in the **proforma** given at the end of this **Annex**. The details of the secondary market sales/purchases by FIIs and the NRIs in these instruments on the floor of the stock exchange shall be reported by the custodians and designated banks, respectively, to the Reserve Bank of India through the soft copy of the LEC Returns, on a daily basis, as prescribed in Schedule 2 and 3 of the FEMA Notification No.20 dated 3rd May 2000, as amended from time to time.

1.18 Investment in Additional Tier 1 Capital Instruments (PNCPS) Issued by Other Banks/FIs

- (i) A bank's investment in PNCPS issued by other banks and financial institutions will be reckoned along with the investment in other instruments eligible for capital status while computing compliance with the overall ceiling of 10% of investing banks' capital funds as prescribed vide circular DBOD.BP.BC.No.3/21.01.002/2004-05 dated July 6, 2004.
- (ii) Bank's investments in PNCPS issued by other banks/financial institutions will attract risk weight as provided in paragraphs 5.6 and 8.3.5 of the Master Circular on Basel III Capital Regulations, whichever applicable for capital adequacy purposes.
- (iii) A bank's investments in the PNCPS of other banks will be treated as exposure to capital market and be reckoned for the purpose of compliance with the prudential ceiling for capital market exposure as fixed by RBI.

1.19 Classification in the Balance Sheet

PNCPS will be classified as capital and shown under 'Schedule I - Capital' of the Balance sheet.

1.20 PNCPS to Retail Investors

With a view to enhancing investor education relating to risk characteristics of regulatory capital requirements, banks issuing PNCPS to retail investors, subject to approval of their Board, should adhere to the following conditions:

- (a) The requirement for specific sign-off as quoted below, from the investors for having understood the features and risks of the instrument may be incorporated in the common application form of the proposed issue.

"By making this application, I/We acknowledge that I/We have understood the terms and conditions of the Issue of [insert the name of the instruments being issued] of [Name of The Bank] as disclosed in the Draft Shelf Prospectus, Shelf Prospectus and Tranche Document".

- (b) All the publicity material, application form and other communication with the investor should clearly state in bold letters (**with font size 14**) how PNCPS is different from common shares. In addition, the loss absorbency features of the instrument should be clearly explained and the investor's sign-off for having understood these features and other terms and conditions of the instrument should be obtained.

Reporting Format

Details of Investments by FIIs and NRIs in Perpetual Non-Cumulative Preference Shares qualifying as Additional Tier 1 capital

- (a) Name of the bank:
- (b) Total issue size/amount raised (in Rupees):
- (c) Date of issue:

FIIs			NRIs		
No of FIIs	Amount Raised		No of NRIs	Amount Raised	
	in Rupees	as a percentage of the total issue size		in Rupees	as a percentage of the total issue size

It is certified that

- (i) the aggregate investment by all FIIs does not exceed 49% of the issue size and investment by no individual FII exceeds 10% of the issue size.
- (ii) It is certified that the aggregate investment by all NRIs does not exceed 24% of the issue size and investment by no individual NRI exceeds 5% of the issue size.

Authorised Signatory

Date

Seal of the bank

ANNEX 4

(cf. para 4.2.4)

Criteria for Inclusion of Perpetual Debt Instruments (PDI) in Additional Tier 1 Capital

The Perpetual Debt Instruments that may be issued as bonds or debentures by Indian banks should meet the following terms and conditions to qualify for inclusion in Additional Tier 1 Capital for capital adequacy purposes:

1. Terms of Issue of Instruments Denominated in Indian Rupees

1.1 Paid-in Status

The instruments should be issued by the bank (i.e., not by any ‘SPV’ etc. set up by the bank for this purpose) and fully paid-in.

1.2 Amount

The amount of PDI to be raised may be decided by the Board of Directors of banks.

1.3 Limits

While complying with minimum Tier 1 of 7% of risk weighted assets, a bank cannot admit, Perpetual Debt Instruments (PDI) together with Perpetual Non-Cumulative Preference Shares (PNCPS) in Additional Tier 1 Capital, more than 1.5% of risk weighted assets. However, once this minimum total Tier 1 capital has been complied with, any additional PNCPS and PDI issued by the bank can be included in Total Tier 1 capital reported. Excess PNCPS and PDI can be reckoned to comply with Tier 2 capital if the latter is less than 2% of RWAs, i.e., while complying with minimum Total Capital of 9% of risk weighted assets.

1.4 Maturity Period

The PDIs shall be perpetual i.e. there is no maturity date and there are no step-ups or other incentives to redeem.

1.5 Rate of Interest

The interest payable to the investors may be either at a fixed rate or at a floating rate referenced to a market determined rupee interest benchmark rate.

1.6 Optionality

PDIs shall not have any ‘put option’. However, banks may issue the instruments with a call option at a particular date subject to following conditions:

- a. The call option on the instrument is permissible after the instrument has run for at least five years;
- b. To exercise a call option a bank must receive prior approval of RBI (Department of Banking Regulation);
- c. A bank must not do anything which creates an expectation that the call will be exercised. For example, to preclude such expectation of the instrument being called, the dividend/coupon

reset date need not be co-terminus with the call date. Banks may, at their discretion, consider having an appropriate gap between dividend/coupon reset date and call date; and

- d. Banks must not exercise a call unless:

- (i) They replace the called instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or
- (ii) The bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised.

The use of tax event and regulatory event calls may be permitted. However, exercise of the calls on account of these events is subject to the requirements set out in points (b) to (d) of criterion 1.6. RBI will permit the bank to exercise the call only if the RBI is convinced that the bank was not in a position to anticipate these events at the time of issuance of PDIs.

To illustrate, if there is a change in tax treatment which makes the capital instrument with tax deductible coupons into an instrument with non-tax deductible coupons, then the bank would have the option (not obligation) to repurchase the instrument. In such a situation, a bank may be allowed to replace the capital instrument with another capital instrument that perhaps does have tax deductible coupons. Similarly, if there is a downgrade of the instrument in regulatory classification (e.g., if it is decided by the RBI to exclude an instrument from regulatory capital) the bank has the option to call the instrument and replace it with an instrument with a better regulatory classification, or a lower coupon with the same regulatory classification with prior approval of RBI. However, banks may not create an expectation/signal an early redemption/maturity of the regulatory capital instrument.

1.7 Repurchase/Buy-back/Redemption

- (i) Principal of the instruments may be repaid (e.g., through repurchase or redemption) only with prior approval of RBI and banks should not assume or create market expectations that supervisory approval will be given (this repurchase/buy-back/redemption of the principal is in a situation other than in the event of exercise of call option by the bank. One of the major differences is that in the case of the former, the option to offer the instrument for repayment on announcement of the decision to repurchase/buy-back/redeem the instrument, would lie with the investors whereas, in case of the latter, it lies with the bank).
- (ii) Banks may repurchase/buy-back/redemption only if:
 - (a) They replace the such instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or
 - (b) The bank demonstrates that its capital position is well above the minimum capital requirements after the repurchase/buy-back/redemption.

1.8 Coupon Discretion

- (a) The bank must have full discretion at all times to cancel distributions/payments.
- (b) Cancellation of discretionary payments must not be an event of default.
- (c) Banks must have full access to cancelled payments to meet obligations as they fall due.
- (d) Cancellation of distributions/payments must not impose restrictions on the bank except in relation to distributions to common stakeholders.

- (e) Coupons must be paid out of distributable items. In this context, coupon may be paid out of current year profits. However, if current year profits are not sufficient, i.e., payment of coupon is likely to result in losses during the current year, the balance amount of coupon may be paid out of revenue reserves (i.e., revenue reserves which are not created for specific purposes by a bank) and/or credit balance in profit and loss account, if any.

However, payment of coupons on PDIs from the revenue reserves is subject to the issuing bank meeting minimum regulatory requirements for CET1, Tier 1 and Total Capital ratios at all times and subject to the requirements of capital buffer frameworks (i.e., capital conservation buffer, countercyclical capital buffer and Domestic Systemically Important Banks).

Banks must ensure and indicate in the offer document that they have full discretion at all times to cancel distributions/payments in order to meet the eligibility criteria for perpetual debt instruments.

- (f) The interest shall not be cumulative.
- (g) The instrument cannot have a credit sensitive coupon feature, i.e., a dividend that is reset periodically based in whole or in part on the banks' credit standing. For this purpose, any reference rate including a broad index which is sensitive to changes to the bank's own creditworthiness and/or to changes in the credit worthiness of the wider banking sector will be treated as a credit sensitive reference rate. Banks desirous of offering floating reference rate may take prior approval of the RBI (DBR) as regard permissibility of such reference rates.
- (h) In general, it may be in order for banks to have dividend stopper arrangement that stop dividend payments on common shares in the event the holders of AT1 instruments are not paid dividend/coupon. However, dividend stoppers must not impede the full discretion that bank must have at all times to cancel distributions/payments on the Additional Tier 1 instrument, nor must they act in a way that could hinder the re-capitalisation of the bank. For example, it would not be permitted for a stopper on an Additional Tier 1 instrument to:
- attempt to stop payment on another instrument where the payments on this other instrument were not also fully discretionary;
 - prevent distributions to shareholders for a period that extends beyond the point in time that dividends/coupons on the Additional Tier 1 instrument are resumed;
 - impede the normal operation of the bank or any restructuring activity (including acquisitions/disposals).

A stopper may act to prohibit actions that are equivalent to the payment of a dividend, such as the bank undertaking discretionary share buybacks, **if otherwise permitted**.

1.9 Treatment in Insolvency

The instrument cannot contribute to liabilities exceeding assets if such a balance sheet test forms part of a requirement to prove insolvency under any law or otherwise.

1.10 Loss Absorption Features

PDIs may be classified as liabilities for accounting purposes (not for the purpose of insolvency as indicated in paragraph 1.9 above). In such cases, these instruments must have principal loss absorption through either (i) conversion to common shares at an objective pre-specified trigger point or (ii) a

write-down mechanism which allocates losses to the instrument at a pre-specified trigger point. The write-down will have the following effects:

- (a) Reduce the claim of the instrument in liquidation;
- (b) Reduce the amount re-paid when a call is exercised; and
- (c) Partially or fully reduce coupon payments on the instrument.

Various criteria for loss absorption through conversion/write-down/write-off on breach of pre-specified trigger and at the point of non-viability are furnished in **Annex 16**.

1.11 Prohibition on Purchase/Funding of Instruments

Neither the bank nor a related party over which the bank exercises control or significant influence (as defined under relevant Accounting Standards) should purchase the instrument, nor can the bank directly or indirectly fund the purchase of the instrument. Banks should also not grant advances against the security of the debt instruments issued by them.

1.12 Re-capitalisation

The instrument cannot have any features that hinder re-capitalisation, such as provisions which require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame.

1.13 Reporting of Non-payment of Coupons

All instances of non-payment of coupon should be notified by the issuing banks to the Chief General Managers-in-Charge of Department of Banking Regulation and Department of Banking Supervision of the Reserve Bank of India, Mumbai.

1.14 Seniority of Claim

The claims of the investors in instruments shall be

- (i) superior to the claims of investors in equity shares and perpetual non-cumulative preference shares;
- (ii) subordinated to the claims of depositors, general creditors and subordinated debt of the bank;
- (iii) is neither secured nor covered by a guarantee of the issuer nor related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis bank creditors.

1.15 Investment in Instruments Raised in Indian Rupees by Foreign Entities/NRIs

- (i) Investment by FIIs in instruments raised in Indian Rupees shall be outside the ECB limit for rupee denominated corporate debt, as fixed by the Govt. of India from time to time, for investment by FIIs in corporate debt instruments. Investment in these instruments by FIIs and NRIs shall be within an overall limit of 49% and 24% of the issue, respectively, subject to the investment by each FII not exceeding 10% of the issue and investment by each NRI not exceeding 5% of the issue.
- (ii) Banks should comply with the terms and conditions, if any, stipulated by SEBI/other regulatory authorities in regard to issue of the instruments.

1.16 Terms of Issue of Instruments Denominated in Foreign Currency

Banks may augment their capital funds through the issue of PDIs in foreign currency without seeking the prior approval of the Reserve Bank of India, subject to compliance with the requirements mentioned below:

- (i) Instruments issued in foreign currency should comply with all terms and conditions as applicable to the instruments issued in Indian Rupees.
- (ii) Not more than 49% of the eligible amount can be issued in foreign currency.
- (iii) Instruments issued in foreign currency shall be outside the existing limit for foreign currency borrowings by Authorised Dealers, stipulated in terms of Master Circular No. RBI/2006-07/24 dated July 1, 2006 on Risk Management and Inter-Bank Dealings as updated from time to time.

1.17 Compliance with Reserve Requirements

The total amount raised by a bank through debt instruments shall not be reckoned as liability for calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will not attract CRR/SLR requirements.

1.18 Reporting of Issuances

Banks issuing PDIs shall submit a report to the Chief General Manager-in-charge, Department of Banking Regulation, Reserve Bank of India, Mumbai giving details of the debt raised, including the terms of issue specified at **paragraph 1** above, together with a copy of the offer document soon after the issue is completed.

1.19 Investment in Additional Tier 1 Debt Capital Instruments (PDIs) Issued by Other Banks/FIs

- (i) A bank's investment in debt instruments issued by other banks and financial institutions will be reckoned along with the investment in other instruments eligible for capital status while computing compliance with the overall ceiling of 10% for cross holding of capital among banks/FIs prescribed vide circular DBOD.BP.BC.No.3/21.01.002/2004-05 dated July 6, 2004 and also subject to cross holding limits.
- (ii) Bank's investments in debt instruments issued by other banks will attract risk weight for capital adequacy purposes, as prescribed in paragraphs 5.6 and 8.3.5 of the Master Circular on Basel III Capital Regulations, whichever applicable.

1.20 Classification in the Balance Sheet

The amount raised by way of issue of debt capital instrument may be classified under 'Schedule 4 – Borrowings' in the Balance Sheet.

1.21 Raising of Instruments for Inclusion as Additional Tier 1 Capital by Foreign Banks in India

Foreign banks in India may raise Head Office (HO) borrowings in foreign currency for inclusion as Additional Tier 1 capital subject to the same terms and conditions as mentioned in items 1.1 to 1.18 above for Indian banks. In addition, the following terms and conditions would also be applicable:

- (a) *Maturity period:* If the amount of Additional Tier 1 capital raised as Head Office borrowings shall be retained in India on a perpetual basis.

- (b) *Rate of interest:* Rate of interest on Additional Tier 1 capital raised as HO borrowings should not exceed the on-going market rate. Interest should be paid at half yearly rests.
- (c) *Withholding tax:* Interest payments to the HO will be subject to applicable withholding tax.
- (d) *Documentation:* The foreign bank raising Additional Tier 1 capital as HO borrowings should obtain a letter from its HO agreeing to give the loan for supplementing the capital base for the Indian operations of the foreign bank. The loan documentation should confirm that the loan given by HO shall be eligible for the same level of seniority of claim as the investors in debt capital instruments issued by Indian banks. The loan agreement will be governed by and construed in accordance with the Indian law.
- (e) *Disclosure:* The total eligible amount of HO borrowings shall be disclosed in the balance sheet under the head ‘Additional Tier 1 capital raised in the form of Head Office borrowings in foreign currency’.
- (f) *Hedging:* The total eligible amount of HO borrowing should remain fully swapped in Indian Rupees with the bank at all times.
- (g) *Reporting and certification:* Details regarding the total amount of Additional Tier 1 capital raised as HO borrowings, along with a certification to the effect that the borrowing is in accordance with these guidelines, should be advised to the Chief General Managers-in-Charge of the Department of Banking Regulation (International Banking Division), Department of External Investments and Operations and Financial Markets Regulation Department, Reserve Bank of India, Mumbai.

1.22 Perpetual Debt Instruments to Retail Investors

With a view to enhancing investor education relating to risk characteristics of regulatory capital requirements, banks issuing Perpetual Debt Instruments to retail investors, subject to approval of their Board, should adhere to the following conditions:

- (a) For floating rate instruments, banks should not use its Fixed Deposit rate as benchmark.
- (b) The requirement for specific sign-off as quoted below, from the investors for having understood the features and risks of the instrument may be incorporated in the common application form of the proposed debt issue.

“By making this application, I/We acknowledge that I/We have understood the terms and conditions of the Issue of [insert the name of the instruments being issued] of [Name of The Bank] as disclosed in the Draft Shelf Prospectus, Shelf Prospectus and Tranche Document”.

- (c) All the publicity material, application form and other communication with the investor should clearly state in bold letters how a Perpetual Debt Instrument is different from fixed deposit particularly that it is not covered by deposit insurance. In addition, the loss absorbency features of the instrument should be clearly explained and the investor’s sign-off for having understood these features and other terms and conditions of the instrument should be obtained.

ANNEX 5

(cf. para 4.2.5)

Criteria for Inclusion of Debt Capital Instruments as Tier 2 Capital

The Tier 2 debt capital instruments that may be issued as bonds/debentures by Indian banks should meet the following terms and conditions to qualify for inclusion as Tier 2 Capital for capital adequacy purposes:

1. Terms of Issue of Instruments Denominated in Indian Rupees

1.1 Paid-in Status

The instruments should be issued by the bank (i.e. not by any ‘SPV’ etc. set up by the bank for this purpose) and fully paid-in.

1.2 Amount

The amount of these debt instruments to be raised may be decided by the Board of Directors of banks.

1.3 Maturity Period

The debt instruments should have a minimum maturity of five years and there are no step-ups or other incentives to redeem.

1.4 Discount

The debt instruments shall be subjected to a progressive discount for capital adequacy purposes. As they approach maturity these instruments should be subjected to progressive discount as indicated in the table below for being eligible for inclusion in Tier 2 capital.

Remaining Maturity of Instruments	Rate of Discount (%)
Less than one year	100
One year and more but less than two years	80
Two years and more but less than three years	60
Three years and more but less than four years	40
Four years and more but less than five years	20

1.5 Rate of Interest

- (i) The interest payable to the investors may be either at a fixed rate or at a floating rate referenced to a market determined rupee interest benchmark rate.
- (ii) The instrument cannot have a credit sensitive coupon feature, i.e., a coupon that is reset periodically based in whole or in part on the banks’ credit standing. Banks desirous of offering floating reference rate may take prior approval of the RBI (DBR) as regard permissibility of such reference rates.

1.6 Optionality

The debt instruments shall not have any ‘put option’. However, it may be callable at the initiative of the issuer only after a minimum of five years:

- (a) To exercise a call option a bank must receive prior approval of RBI (Department of Banking Regulation); and
- (b) A bank must not do anything which creates an expectation that the call will be exercised. For example, to preclude such expectation of the instrument being called, the dividend/coupon reset date need not be co-terminus with the call date. Banks may, at their discretion, consider having an appropriate gap between dividend/coupon reset date and call date; and
- (c) Banks must not exercise a call unless:
 - (i) They replace the called instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or
 - (ii) The bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised.

The use of tax event and regulatory event calls may be permitted. However, exercise of the calls on account of these events is subject to the requirements set out in points (a) to (c) of criterion 1.6. RBI will permit the bank to exercise the call only if the RBI is convinced that the bank was not in a position to anticipate these events at the time of issuance of these instruments as explained in case of Additional Tier 1 instruments.

1.7 Treatment in Bankruptcy/Liquidation

The investor must have no rights to accelerate the repayment of future scheduled payments (coupon or principal) except in bankruptcy and liquidation.

1.8 Prohibition on Purchase/Funding of Instruments

Neither the bank nor a related party over which the bank exercises control or significant influence (as defined under relevant Accounting Standards) should purchase the instrument, nor can the bank directly or indirectly fund the purchase of the instrument. Banks should also not grant advances against the security of the debt instruments issued by them.

1.9 Reporting of Non-payment of Coupons

All instances of non-payment of coupon should be notified by the issuing banks to the Chief General Managers-in-Charge of Department of Banking Regulation and Department of Banking Supervision of the Reserve Bank of India, Mumbai.

1.10 Seniority of Claim

The claims of the investors in instruments shall be

- (i) senior to the claims of investors in instruments eligible for inclusion in Tier 1 capital;
- (ii) subordinate to the claims of all depositors and general creditors of the bank; and
- (iii) is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis bank creditors.

1.11 Investment in Instruments Raised in Indian Rupees by Foreign Entities/NRIs

- (i) Investment by FIIs in Tier 2 instruments raised in Indian Rupees shall be outside the limit for investment in corporate debt instruments, as fixed by the Govt. of India from time to

time. However, investment by FIIs in these instruments will be subject to a separate ceiling of USD 500 million. In addition, NRIs shall also be eligible to invest in these instruments as per existing policy.

- (ii) Banks should comply with the terms and conditions, if any, stipulated by SEBI/other regulatory authorities in regard to issue of the instruments.

1.12 Terms of Issue of Tier 2 Debt Capital Instruments in Foreign Currency

Banks may issue Tier 2 Debt Instruments in Foreign Currency without seeking the prior approval of the Reserve Bank of India, subject to compliance with the requirements mentioned below:

- (i) Tier 2 Instruments issued in foreign currency should comply with all terms and conditions applicable to instruments issued in Indian Rupees.
- (ii) The total outstanding amount of Tier 2 Instruments in foreign currency shall not exceed 25% of the unimpaired Tier 1 capital. This eligible amount will be computed with reference to the amount of Tier 1 capital as on March 31 of the previous financial year, after deduction of goodwill and other intangible assets but before the deduction of investments, as per paragraph 4.4.9 of the Master Circular on Basel III capital regulations.
- (iii) This will be in addition to the existing limit for foreign currency borrowings by Authorised Dealers stipulated in terms of Master Circular No. 14/2010-11 dated July 1, 2010 on Risk Management and Inter-Bank Dealings as updated from time to time.

1.13 Compliance with Reserve Requirements

- (i) The funds collected by various branches of the bank or other banks for the issue and held pending finalisation of allotment of the Tier 2 Capital instruments will have to be taken into account for the purpose of calculating reserve requirements.
- (ii) The total amount raised by a bank through Tier 2 instruments shall be reckoned as liability for the calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will attract CRR/SLR requirements.

1.14 Reporting of Issuances

Banks issuing debt instruments shall submit a report to the Chief General Manager-in-charge, Department of Banking Regulation, Reserve Bank of India, Mumbai giving details of the debt raised, including the terms of issue specified at para 1 above, together with a copy of the offer document soon after the issue is completed.

1.15 Investment in Tier 2 Debt Capital Instruments Issued by Other Banks/FIs

- (i) A bank's investment in Tier 2 debt instruments issued by other banks and financial institutions will be reckoned along with the investment in other instruments eligible for capital status while computing compliance with the overall ceiling of 10% for cross holding of capital among banks/FIs prescribed vide circular DBOD.BP.BC.No.3/21.01.002/2004-05 dated 6th July 2004 and also subject to cross holding limits.
- (ii) Bank's investments in Tier 2 instruments issued by other banks/financial institutions will attract risk weight as per paragraphs 5.6 and 8.3.5 of the Master Circular on Basel III Capital Regulations, whichever applicable for capital adequacy purposes.

1.16 Classification in the Balance Sheet

The amount raised by way of issue of Tier 2 debt capital instrument may be classified under ‘Schedule 4 – Borrowings’ in the Balance Sheet.

1.17 Debt Capital Instruments to Retail Investors

With a view to enhancing investor education relating to risk characteristics of regulatory capital requirements, banks issuing subordinated debt to retail investors, subject to approval of their Board, should adhere to the following conditions:

- (a) For floating rate instruments, banks should not use its Fixed Deposit rate as benchmark.
- (b) The requirement for specific sign-off as quoted below, from the investors for having understood the features and risks of the instrument may be incorporated in the common application form of the proposed debt issue.

“By making this application, I/We acknowledge that I/We have understood the terms and conditions of the Issue of [insert the name of the instruments being issued] of [Name of The Bank] as disclosed in the Draft Shelf Prospectus, Shelf Prospectus and Tranche Document”.

- (c) All the publicity material, application form and other communication with the investor should clearly state in bold letters (**with font size 14**) how a subordinated bond is different from fixed deposit particularly that it is not covered by deposit insurance. In addition, the loss absorbency features of the instrument should be clearly explained and the investor’s sign-off for having understood these features and other terms and conditions of the instrument should be obtained.

1.18 Raising of Instruments for Inclusion as Tier 2 Capital by Foreign Banks in India

Foreign banks in India may raise Head Office (HO) borrowings in foreign currency for inclusion as Tier 2 capital subject to the same terms and conditions as mentioned in items 1.1 to 1.17 above for Indian banks. In addition, the following terms and conditions would also be applicable:

- (a) *Maturity period*: If the amount of Tier 2 debt capital raised as HO borrowings is in tranches, each tranche shall be retained in India for a minimum period of five years.
- (b) *Rate of interest*: Rate of interest on Tier 2 capital raised as HO borrowings should not exceed the on-going market rate. Interest should be paid at half yearly rests.
- (c) *Withholding tax*: Interest payments to the HO will be subject to applicable withholding tax.
- (d) *Documentation*: The foreign bank raising Tier 2 debt capital as HO borrowings should obtain a letter from its HO agreeing to give the loan for supplementing the capital base for the Indian operations of the foreign bank. The loan documentation should confirm that the loan given by HO shall be eligible for the same level of seniority of claim as the investors in debt capital instruments issued by Indian banks. The loan agreement will be governed by and construed in accordance with the Indian law.
- (e) *Disclosure*: The total eligible amount of HO borrowings shall be disclosed in the balance sheet under the head ‘Tier 2 debt capital raised in the form of Head Office borrowings in foreign currency’.
- (f) *Hedging*: The total eligible amount of HO borrowing should remain fully swapped in Indian Rupees with the bank at all times.

- (g) *Reporting and certification:* Details regarding the total amount of Tier 2 debt capital raised as HO borrowings, along with a certification to the effect that the borrowing is in accordance with these guidelines, should be advised to the Chief General Managers-in-Charge of the Department of Banking Regulation (International Banking Division), Department of External Investments and Operations and Financial Markets Regulation Department, Reserve Bank of India, Mumbai.
- (h) *Features:* The HO borrowings should be fully paid up, i.e. the entire borrowing or each tranche of the borrowing should be available in full to the branch in India. It should be unsecured, subordinated to the claims of other creditors of the foreign bank in India, free of restrictive clauses and should not be redeemable at the instance of the HO.
- (i) *Rate of discount:* The HO borrowings will be subjected to progressive discount as they approach maturity at the rates indicated below:

Remaining maturity of borrowing	Rate of discount (%)
More than 5 years	Not Applicable (the entire amount can be included as subordinated debt in Tier 2 capital)
More than 4 years and less than 5 years	20
More than 3 years and less than 4 years	40
More than 2 years and less than 3 years	60
More than 1 year and less than 2 years	80
Less than 1 year	100 (No amount can be treated as subordinated debt for Tier 2 capital)

1.19 Requirements

The total amount of HO borrowings is to be reckoned as liability for the calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will attract CRR/SLR requirements.

1.20 Hedging

The entire amount of HO borrowing should remain fully swapped with banks at all times. The swap should be in Indian rupees.

1.21 Reporting and Certification

Such borrowings done in compliance with the guidelines set out above would not require prior approval of Reserve Bank of India. However, information regarding the total amount of borrowing raised from Head Office under this Annex, along with a certification to the effect that the borrowing is as per the guidelines, should be advised to the Chief General Managers-in-Charge of the Department of Banking Regulation (International Banking Division), Department of External Investments and Operations and Financial Markets Regulation Department, Reserve Bank of India, Mumbai.

ANNEX 6

(cf. para 4.2.5.1.A(iii))

Criteria for Inclusion of Perpetual Cumulative Preference Shares (PCPS)/ Redeemable Non-Cumulative Preference Shares (RNCPS)/Redeemable Cumulative Preference Shares (RCPS) as Part of Tier 2 Capital

1 Terms of Issue of Instruments

The criteria relating to loss absorbency through conversion/write-down/write-off at the point of non-viability are furnished in Annex 16.

1.1 Paid-in Status

The instruments should be issued by the bank (i.e. not by any ‘SPV’ etc. set up by the bank for this purpose) and fully paid-in.

1.2 Amount

The amount to be raised may be decided by the Board of Directors of banks.

1.3 Maturity Period

These instruments could be either perpetual (PCPS) or dated (RNCPS and RCPS) instruments with a fixed maturity of minimum five years and there should be no step-ups or other incentives to redeem. The perpetual instruments shall be cumulative. The dated instruments could be cumulative or non-cumulative.

1.4 Amortisation

The Redeemable Preference Shares (both cumulative and non-cumulative) shall be subjected to a progressive discount for capital adequacy purposes over the last five years of their tenor, as they approach maturity as indicated in the table below for being eligible for inclusion in Tier 2 capital.

Remaining Maturity of Instruments	Rate of Discount (%)
Less than one year	100
One year and more but less than two years	80
Two years and more but less than three years	60
Three years and more but less than four years	40
Four years and more but less than five years	20

1.5 Coupon

The coupon payable to the investors may be either at a fixed rate or at a floating rate referenced to a market determined rupee interest benchmark rate. Banks desirous of offering floating reference rate may take prior approval of the RBI (DBR) as regard permissibility of such reference rates.

1.6 Optionality

These instruments shall not be issued with a ‘put option’. However, banks may issue the instruments with a call option at a particular date subject to following conditions:

- (a) The call option on the instrument is permissible after the instrument has run for at least five years; and
- (b) To exercise a call option a bank must receive prior approval of RBI (Department of Banking Regulation); and
- (c) A bank must not do anything which creates an expectation that the call will be exercised. For example, to preclude such expectation of the instrument being called, the dividend/coupon reset date need not be co-terminus with the call date. Banks may, at their discretion, consider having an appropriate gap between dividend/coupon reset date and call date; and
- (d) Banks must not exercise a call unless:
 - (i) They replace the called instrument with capital of the same or better quality and the replacement of this capital is done at conditions which are sustainable for the income capacity of the bank; or
 - (ii) The bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised.

The use of tax event and regulatory event calls may be permitted. However, exercise of the calls on account of these events is subject to the requirements set out in points (b) to (d) of criterion 1.6. RBI will permit the bank to exercise the call only if the RBI is convinced that the bank was not in a position to anticipate these events at the time of issuance of these instruments as explained in case of Additional Tier 1 instruments.

1.7 Treatment in Bankruptcy/Liquidation

The investor must have no rights to accelerate the repayment of future scheduled payments (coupon or principal) except in bankruptcy and liquidation.

1.8 Prohibition on Purchase/Funding

Neither the bank nor a related party over which the bank exercises control or significant influence (as defined under relevant Accounting Standards) should purchase these instruments, nor can the bank directly or indirectly fund the purchase of the instrument. Banks should also not grant advances against the security of these instruments issued by them.

1.9 Reporting of Non-payment of Coupon

All instances of non-payment of coupon should be notified by the issuing banks to the Chief General Managers-in-Charge of Department of Banking Regulation and Department of Banking Supervision of the Reserve Bank of India, Mumbai.

1.10 Seniority of Claim

The claims of the investors in instruments shall be:

- (i) senior to the claims of investors in instruments eligible for inclusion in Tier 1 capital;
- (ii) subordinate to the claims of all depositors and general creditors of the bank; and
- (iii) is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis bank creditors.

1.11 Investment in Instruments Raised in Indian Rupees by Foreign Entities/NRIs

- (i) Investment by FIIs and NRIs shall be within an overall limit of 49% and 24% of the issue respectively, subject to the investment by each FII not exceeding 10% of the issue and investment by each NRI not exceeding 5% of the issue. Investment by FIIs in these instruments shall be outside the ECB limit for rupee denominated corporate debt as fixed by Government of India from time to time. However, investment by FIIs in these instruments will be subject to separate ceiling of USD 500 million. The overall non-resident holding of Preference Shares and equity shares in public sector banks will be subject to the statutory/regulatory limit.
- (ii) Banks should comply with the terms and conditions, if any, stipulated by SEBI/other regulatory authorities in regard to issue of the instruments.

1.12 Compliance with Reserve Requirements

- (a) The funds collected by various branches of the bank or other banks for the issue and held pending finalization of allotment of these instruments will have to be taken into account for the purpose of calculating reserve requirements.
- (b) The total amount raised by a bank through the issue of these instruments shall be reckoned as liability for the calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, will attract CRR/SLR requirements.

1.13 Reporting of Issuances

Banks issuing these instruments shall submit a report to the Chief General Manager-in-charge, Department of Banking Regulation, Reserve Bank of India, Mumbai giving details of the debt raised, including the terms of issue specified in para 1 above (1.1 to 1.14), together with a copy of the offer document soon after the issue is completed.

1.14 Investment in these Instruments Issued by other Banks/FIs

- (i) A bank's investment in these instruments issued by other banks and financial institutions will be reckoned along with the investment in other instruments eligible for capital status while computing compliance with the overall ceiling of 10% of investing banks' total capital funds prescribed vide circular DBOD.BP.BC.No.3/21.01.002/2004-05 dated July 6, 2004 and also subject to cross holding limits.
- (ii) Bank's investments in these instruments issued by other banks/financial institutions will attract risk weight for capital adequacy purposes as provided vide paragraphs 5.6 and 8.3.5 of the Master Circular on Basel III Capital Regulations, whichever applicable.

1.15 Classification in the Balance Sheet

These instruments will be classified as 'Borrowings' under Schedule 4 of the Balance Sheet under item No. I (i.e., Borrowings).

1.16 PCPS/RNCPS/RCPS to Retail Investors

With a view to enhancing investor education relating to risk characteristics of regulatory capital requirements, banks issuing PCPS/RNCPS/RCPS to retail investors, subject to approval of their Board, should adhere to the following conditions:

- (a) The requirement for specific sign-off as quoted below, from the investors for having understood the features and risks of the instrument may be incorporated in the common application form of the proposed issue.

"By making this application, I/We acknowledge that I/We have understood the terms and conditions of the Issue of [insert the name of the instruments being issued] of [Name of The Bank] as disclosed in the Draft Shelf Prospectus, Shelf Prospectus and Tranche Document".

- (b) All the publicity material, application form and other communication with the investor should clearly state in bold letters how a PCPS/RNCPS/RCPS is different from common shares/ fixed deposit particularly that it is not covered by deposit insurance. In addition, the loss absorbency features of the instrument should be clearly explained and the investor's sign-off for having understood these features and other terms and conditions of the instrument should be obtained.

B. Master Circular – Prudential Norms on Capital Adequacy – Basel I Framework dated 1st July, 2015

2.4 Capital Charge for Subsidiaries

2.4.1 The Basel Committee on Banking Supervision has proposed that the New Capital Adequacy Framework should be extended to include, on a consolidated basis, holding companies that are parents of banking groups. On prudential considerations, it is necessary to adopt best practices in line with international standards, while duly reflecting local conditions.

2.4.2 Accordingly, banks may voluntarily build-in the risk weighted components of their subsidiaries into their own balance sheet on notional basis, at par with the risk weights applicable to the bank's own assets. Banks should earmark additional capital in their books over a period of time so as to obviate the possibility of impairment to their net worth when switchover to unified balance sheet for the group as a whole is adopted after sometime. Thus banks were asked to provide additional capital in their books in phases, beginning from the year ended March 2001.

2.4.3 A consolidated bank defined as a group of entities which include a licensed bank should maintain a minimum Capital to Risk-weighted Assets Ratio (CRAR) as applicable to the parent bank on an ongoing basis. While computing capital funds, parent bank may consider the following points:

- i. Banks are required to maintain a minimum capital to risk weighted assets ratio of 9%. Non-bank subsidiaries are required to maintain the capital adequacy ratio prescribed by their respective regulators. In case of any shortfall in the capital adequacy ratio of any of the subsidiaries, the parent should maintain capital in addition to its own regulatory requirements to cover the shortfall.
- ii. Risks inherent in deconsolidated entities (i.e., entities which are not consolidated in the Consolidated Prudential Reports) in the group need to be assessed and any shortfall in the regulatory capital in the deconsolidated entities should be deducted (in equal proportion from Tier I and Tier II capital) from the consolidated bank's capital in the proportion of its equity stake in the entity.

2.5 Procedure for computation of CRAR

2.5.1 While calculating the aggregate of funded and non-funded exposure of a borrower for the purpose of assignment of risk weight, banks may ‘net-off’ against the total outstanding exposure of the borrower –

- (a) advances collateralised by cash margins or deposits;
- (b) credit balances in current or other accounts which are not earmarked for specific purposes and free from any lien;
- (c) in respect of any assets where provisions for depreciation or for bad debts have been made;
- (d) claims received from DICGC/ECGC and kept in a separate account pending adjustment; and
- (e) subsidies received against advances in respect of Government sponsored schemes and kept in a separate account.

2.5.2 After applying the conversion factor as indicated in **Annex 9**, the adjusted off Balance Sheet value shall again be multiplied by the risk weight attributable to the relevant counter-party as specified.

2.5.3 Computation of CRAR for Foreign Exchange Contracts and Gold: Foreign exchange contracts include- Cross currency interest rate swaps, Forward foreign exchange contracts, Currency futures, Currency options purchased, and other contracts of a similar nature.

Foreign exchange contracts with an original maturity of 14 calendar days or less, irrespective of the counterparty, may be assigned “zero” risk weight as per international practice.

As in the case of other off-Balance Sheet items, a two stage calculation prescribed below shall be applied:

- (a) Step 1 – The notional principal amount of each instrument is multiplied by the conversion factor given below:

Residual Maturity	Conversion Factor
One year or less	2%
Over one year to five years	10%
Over five years	15%

- (b) Step 2 – The adjusted value thus obtained shall be multiplied by the risk weight age allotted to the relevant counter-party as given in Step 2 in section D of **Annex 9**.

2.5.4 Computation of CRAR for Interest Rate related Contracts:

Interest rate contracts include the Single currency interest rate swaps, Basis swaps, Forward rate agreements, Interest rate futures, Interest rate options purchased and other contracts of a similar nature. As in the case of other off-Balance Sheet items, a two stage calculation prescribed below shall be applied:

- (a) Step 1 – The notional principal amount of each instrument is multiplied by the percentages given below:

Residual Maturity	Conversion Factor
One year or less	0.5%
Over one year to five years	1.0%
Over five years	3.0%

- (b)** Step 2 – The adjusted value thus obtained shall be multiplied by the risk weightage allotted to the relevant counter-party as given in Step 2 in Section I.D. of Annex 9.

2.5.5 Aggregation of Capital Charge for Market Risks

The capital charges for specific risk and general market risk are to be computed separately before aggregation. For computing the total capital charge for market risks, the calculations may be plotted in the proforma as depicted in Table 2 below.

Table-2: Total Capital Charge for Market Risk

(₹ in crore)

Risk Category	Capital charge
I. Interest Rate (a+b)	
a. General market risk	
• Net position (parallel shift)	
• Horizontal disallowance (curvature)	
• Vertical disallowance (basis)	
• Options	
b. Specific risk	
II. Equity (a+b)	
a. General market risk	
b. Specific risk	
III. Foreign Exchange & Gold	
IV. Total capital charge for market risks (I+II+III)	

2.5.6 Calculation of total risk-weighted assets and capital ratio: Following steps may be followed for calculation of total risk weighted assets and capital ratio:

2.5.6.1 Arrive at the risk weighted assets for credit risk in the banking book and for counterparty credit risk on all OTC derivatives.

2.5.6.2 Convert the capital charge for market risk to notional risk weighted assets by multiplying the capital charge arrived at as above in Proforma by $100 \div 9$ [the present requirement of CRAR is 9% and hence notional risk weighted assets are arrived at by multiplying the capital charge by $(100 \div 9)$].

2.5.6.3 Add the risk-weighted assets for credit risk as at 2.5.6.1 above and notional risk-weighted assets of trading book as at 2.5.6.2 above to arrive at total risk weighted assets for the bank.

2.5.6.4 Compute capital ratio on the basis of regulatory capital maintained and risk-weighted assets.

2.5.7 Computation of Capital available for Market Risk:

Capital required for supporting credit risk should be deducted from total capital funds to arrive at capital available for supporting market risk as illustrated in Table 3 below.

Table-3: Computation of Capital for Market Risk

(₹ in crore)

1	Capital funds Tier I capital ----- Tier II capital -----	55 50	105
2	Total risk weighted assets RWA for credit risk ----- RWA for market risk -----	1000 140	1140
3	Total CRAR		9.21
4	Minimum capital required to support credit risk (1000*9%) Tier I – 45 (@ 4.5% of 1000) ----- Tier II – 45 (@ 4.5% of 1000) -----	45 45	90
5	Capital available to support market risk (105 – 90) Tier I – (55 – 45) ----- Tier II – (50 – 45) -----	10 5	15

2.5.8 Worked out Examples: Two examples for computing capital charge for market risk and credit risk are given in **Annex 10**.

ANNEX 9

Risk Weights for Calculation of Capital Charge for Credit Risk

I. Domestic Operations

A. Funded Risk Assets

Sr. No.	Item of asset or liability	Risk Weight %
I	Balances	
1.	Cash, balances with RBI	0
2.	i. Balances in current account with other banks ii. Claims on Bank	20 20
II	Investments (applicable to securities held in HTM)	
1.	Investments in Government Securities.	0

Sr. No.	Item of asset or liability	Risk Weight %
2.	<p>Investments in other approved securities guaranteed by Central/ State Government.</p> <p>Note:</p> <p>If the repayment of principal/interest in respect of State Government Guaranteed securities included in item 2, 4 and 6 has remained in default, for a period of more than 90 days banks should assign 100 per cent risk weight. However, the banks need to assign 100 per cent risk weight only on those State Government guaranteed securities issued by the defaulting entities and not on all the securities issued or guaranteed by that State Government.</p>	0
3.	Investments in other securities where payment of interest and repayment of principal are guaranteed by Central Govt. (This will include investments in Indira/Kisan Vikas Patra (IVP/KVP) and investments in Bonds and Debentures where payment of interest and principal is guaranteed by Central Govt.)	0
4.	Investments in other securities where payment of interest and repayment of principal are guaranteed by State Governments.	0
5.	Investments in other approved securities where payment of interest and repayment of principal are not guaranteed by Central/State Govt.	20
6.	Investments in Government guaranteed securities of Government Undertakings which do not form part of the approved market borrowing programme.	20
7.	Claims on commercial banks.	20
8.	Investments in bonds issued by other banks	20
9.	Investments in securities which are guaranteed by banks as to payment of interest and repayment of principal.	20
10.	Investments in subordinated debt instruments and bonds issued by other banks or Public Financial Institutions for their Tier II capital.	100
11.	Deposits placed with SIDBI/NABARD/NHB in lieu of shortfall in lending to priority sector.	100
12.	Investment in Mortgage Backed Securities (MBS) of residential assets of Housing Finance Companies (HFCs) which are recognised and supervised by National Housing Bank (subject to satisfying terms & conditions furnished in Annex 10.2).	50
13.	Investment in Mortgage Backed Securities (MBS) which are backed by housing loan qualifying for 50% risk weight.	50

Sr. No.	Item of asset or liability	Risk Weight %
14.	Investment in securitised paper pertaining to an infrastructure facility. (subject to satisfying terms & conditions given in Annex 10.3).	50
15.	Investments in debentures/bonds/security receipts/Pass Through Certificates issued by Securitisation Company/SPVs/Reconstruction Company and held by banks as investment	100
16.	All other investments including investments in securities issued by PFIs. Note: Equity investments in subsidiaries, intangible assets and losses deducted from Tier I capital should be assigned zero weight	100
17.	Direct investment in equity shares, convertible bonds, debentures and units of equity oriented mutual funds including those exempted from Capital Market Exposure	125
18.	Investment in Mortgaged Backed Securities and other securitised exposures to Commercial Real Estate	150
19.	Investments in Venture Capital Funds	150
20.	Investments in Securities issued b y SPVs (in respect of securitisation of standard assets) underwritten and devolved on originator banks during the stipulated period of three months	100
21.	Investments in Securities issued b y SPVs in respect of securitisation of standard asset underwritten and devolved on bank as third party service provider during the stipulated period of three months	100
22.	NPA Investment purchased from other banks	100
23.	Investments in instruments issued by NBFC-ND-SI	100
III	Loans & Advances including bills purchased and discounted and other credit facilities	
1.	Loans guaranteed by Govt. of India Note: The amount outstanding in the account styled as "Amount receivable from Government of India under Agricultural debt Waiver Scheme 2008" shall be treated as a claim on the Government of India and would attract zero risk weight for the purpose of capital adequacy norms. However, the amount outstanding in the accounts covered by the Debt Relief Scheme shall be treated as a claim on the borrowers and risk weighted as per the extant norms.	0

Sr. No.	Item of asset or liability	Risk Weight %
2.	Loans guaranteed by State Govts. Note: If the loans guaranteed by State Govts. have remained in default for a period of more than 90 days a risk weight of 100 percent should be assigned.	0
3.	Loans granted to public sector undertakings of Govt. of India	100
4.	Loans granted to public sector undertakings of State Govts.	100
5.(i)	For the purpose of credit exposure, bills purchased/discounted/negotiated under LC (where payment to the beneficiary is not under reserve) is treated as an exposure on the LC issuing bank and assigned risk weight as is normally applicable to inter-bank exposures.	20
(ii)	Bills negotiated under LCs ‘under reserve’, bills purchased/discounted/negotiated without LCs, will be reckoned as exposure on the borrower constituent. Accordingly, the exposure will attract a risk weight appropriate to the borrower. (i) Govt. (ii) Banks (iii) Others	0 20 100
6.	Others including PFIs	100
7.	Leased assets	100
8.	Advances covered by DICGC/ECGC Note: The risk weight of 50% should be limited to the amount guaranteed and not the entire outstanding balance in the accounts. In other words, the outstandings in excess of the amount guaranteed, will carry 100% risk weight.	50
9.	Micro and Small Enterprises (MSE) Advances Guaranteed by Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) up to the guaranteed portion. Note: Banks may assign zero risk weight for the guaranteed portion. The balance outstanding in excess of the guaranteed portion would attract a risk-weight as appropriate to the counter-party. Two illustrative examples are given in Annex 10.1.	0

Sr. No.	Item of asset or liability	Risk Weight %														
10.	Insurance cover under Business Credit Shield, the product of New India Assurance Company Ltd. (Subject to Conditions given in Annex 10.4) Note: The risk weight of 50% should be limited to the amount guaranteed and not the entire outstanding balance in the accounts. In other words, the outstanding in excess of the amount guaranteed, will carry 100% risk weight.	50														
11.	Advances against term deposits, Life policies, NSCs, IVPs and KVPs where adequate margin is available.	0														
12.	Loans and Advances granted to staff of banks which are fully covered by superannuation benefits and mortgage of flat/house.	20														
13.	<table border="1"> <thead> <tr> <th>Category of Loan**</th> <th>LTV Ratio¹³ (%)</th> </tr> </thead> <tbody> <tr> <td>(a) Individual Housing Loans</td> <td>90 50</td> </tr> <tr> <td> (i) Up to ₹20 lakh</td> <td>80 50</td> </tr> <tr> <td> (ii) Above ₹20 lakh and up to ₹75 lakh</td> <td>75 75</td> </tr> <tr> <td> (iii) Above ₹75 lakh</td> <td>NA 75</td> </tr> <tr> <td>(b) Commercial Real Estate-Residential Housing (CRE-RH)</td> <td>NA 100</td> </tr> </tbody> </table> <p>Restructured housing loans should be risk weighted with an additional risk weight of 25 per cent to the risk weights prescribed above</p>	Category of Loan**	LTV Ratio ¹³ (%)	(a) Individual Housing Loans	90 50	(i) Up to ₹20 lakh	80 50	(ii) Above ₹20 lakh and up to ₹75 lakh	75 75	(iii) Above ₹75 lakh	NA 75	(b) Commercial Real Estate-Residential Housing (CRE-RH)	NA 100			
Category of Loan**	LTV Ratio ¹³ (%)															
(a) Individual Housing Loans	90 50															
(i) Up to ₹20 lakh	80 50															
(ii) Above ₹20 lakh and up to ₹75 lakh	75 75															
(iii) Above ₹75 lakh	NA 75															
(b) Commercial Real Estate-Residential Housing (CRE-RH)	NA 100															
14.	Housing loans guaranteed by Credit Risk Guarantee Fund Trust for Low Income Housing (CRGFTLIH) up to the guaranteed portion. Note: Banks may assign zero risk weight for the guaranteed portion. The balance outstanding in excess of the guaranteed portion would attract a risk-weight as appropriate to the counter-party.	0														
15.	Consumer credit including personal loans and credit cards	125														
16.	Educational Loans	100														
17.	Loans up to ₹1 lakh against gold and silver ornaments	50														
18.	<table border="1"> <tr> <td>Takeout Finance</td> <td></td> </tr> <tr> <td>(i) Unconditional takeover (in the books of lending institution)</td> <td></td> </tr> <tr> <td> (a) Where full credit risk is assumed by the taking over institution</td> <td>20</td> </tr> <tr> <td> (b) Where only partial credit risk is assumed by taking over institution</td> <td></td> </tr> <tr> <td> (i) The amount to be taken over</td> <td>20</td> </tr> <tr> <td> (ii) The amount not to be taken over</td> <td>100</td> </tr> <tr> <td> (iii) Conditional take-over (in the books of lending and Taking over institution)</td> <td>100</td> </tr> </table>	Takeout Finance		(i) Unconditional takeover (in the books of lending institution)		(a) Where full credit risk is assumed by the taking over institution	20	(b) Where only partial credit risk is assumed by taking over institution		(i) The amount to be taken over	20	(ii) The amount not to be taken over	100	(iii) Conditional take-over (in the books of lending and Taking over institution)	100	
Takeout Finance																
(i) Unconditional takeover (in the books of lending institution)																
(a) Where full credit risk is assumed by the taking over institution	20															
(b) Where only partial credit risk is assumed by taking over institution																
(i) The amount to be taken over	20															
(ii) The amount not to be taken over	100															
(iii) Conditional take-over (in the books of lending and Taking over institution)	100															

Sr. No.	Item of asset or liability	Risk Weight %
19.	Capital Market Exposures (CME) including those exempted from CME Norms	125
20.	Fund based exposures to commercial real estate* Fund Based Exposure to Commercial Real Estate-Residential Housing (CRE-RH)@	100 75
21.	Funded liquidity facility for securitisation of standard asset transactions	100
22.	NPA purchased from other banks	100
23.	Loans & Advances NBFC-ND-SI (other than Asset Finance Companies (AFCs))&	100
24.	All unrated claims on corporate, long term as well as short term, regardless of the amount of the claim	100
IV	Other Assets	
1.	Premises, furniture and fixtures	100
2.	Income tax deducted at source (net of provision) Advance tax paid (net of provision) Interest due on Government securities Accrued interest on CRR balances and claims on RBI on account of Government transactions (net of claims of Government/RBI on banks on account of such transactions)	0 0 0 0
	All other assets #	100

#:

- (i) The exposures to CCPs on account of derivatives trading and securities financing transactions (e.g., CBLOs, Repos) outstanding against them, will be assigned zero exposure value for counterparty credit risk, as it is presumed that the CCPs' exposures to their counterparties are fully collateralised on a daily basis, thereby providing protection for the CCP's credit risk exposures;
- (ii) The deposits/collaterals kept by banks with the CCPs will attract risk weights appropriate to the nature of the CCP. In the case of CCIL, the risk weight will be 20 per cent and for other CCPs, it will be according to the ratings assigned to these entities as per the New Capital Adequacy Framework.

&: As regards claims on AFCs, there is no change in the risk weights, which would continue to be governed by the credit rating of the AFC, except the claims that attract a risk weight of 150 per cent under the New Capital Adequacy Framework, which shall be reduced to a level of 100 per cent.

*: It is possible for an exposure to get classified simultaneously into more than one category, as different classifications are driven by different considerations. In such cases, the exposure would be reckoned for regulatory/prudential exposure limit, if any, fixed by RBI or by the bank itself, for all the categories to which the exposure is assigned. For the purpose of capital adequacy, the largest of the risk weights applicable among all the categories would be applicable for the exposure.

Securitisation exposures not meeting the requirements prescribed in the securitisation guidelines dated May 7, 2012 will be risk weighted at the rates prescribed therein.

****:** The LTV ratio should not exceed the prescribed ceiling in all fresh cases of sanction. In case the LTV ratio is currently above the ceiling prescribed for any reasons, efforts should be made to bring it within limits.

@: Commercial Real Estate – Residential Housing (CRE-RH) would consist of loans to builders/developers for residential housing projects (except for captive consumption) under CRE segment. Such projects should ordinarily not include non-residential commercial real estate. However, integrated housing projects comprising of some commercial space (e.g., shopping complex, school, etc.) can also be classified under CRE-RH, provided that the commercial area in the residential housing projects does not exceed 10% of the total Floor Space Index (FSI) of the project. In case the FSI of the commercial area in the predominantly residential housing complex exceeds the ceiling of 10%, the project loans should be classified as CRE and not CRE-RH.

Banks' exposure to third dwelling unit onwards to an individual will also be treated as CRE exposures.

I.B. Off-Balance Sheet items

The credit risk exposure attached to off-Balance Sheet items has to be first calculated by multiplying the face value of each of the off-Balance Sheet items by 'credit conversion factor' as indicated in the table below. This will then have to be again multiplied by the weights attributable to the relevant counter-party as specified above.

Sr. No.	Instruments	Credit Conversion Factor
1.	Direct credit substitutes, e.g., general guarantees of indebtedness (including standby L/Cs serving as financial guarantees for loans and securities) and acceptances (including endorsements with the character of acceptance).	100
2.	Certain transaction-related contingent items (e.g., performance bonds, bid bonds, warranties and standby L/Cs related to particular transactions).	50
3.	Short-term self-liquidating trade-related contingencies (such as documentary credits collateralized by the underlying shipments).	20
4.	Sale and repurchase agreement and asset sales with recourse, where the credit risk remains with the bank.	100
5.	Forward asset purchases, forward deposits and partly paid shares and securities, which represent commitments with certain draw down.	100
6.	Note issuance facilities and revolving underwriting facilities.	50
7.	Other commitments (e.g., formal standby facilities and credit lines) with an original maturity of over one year.	50

8.	Similar commitments with an original maturity up to one year, or which can be unconditionally cancelled at any time.	0
9.	Aggregate outstanding foreign exchange contracts of original maturity – • less than one year • for each additional year or part thereof	2 3
10.	Take-out Finance in the books of taking-over institution • Unconditional take-out finance • Conditional take-out finance <i>Note:</i> As the counter-party exposure will determine the risk weight, it will be 100 percent in respect of all borrowers or zero percent if covered by Government guarantee.	100 50
11.	Non-Funded exposures to commercial real estate	150
12.	Non-funded capital market exposures, including those exempted from CME norms	125
13.	Commitment to provide liquidity facility for securitization of standard asset transactions	100
14.	Second loss credit enhancement for securitization of standard asset transactions provided by third party	100
15.	Non-funded exposure to NBFC-ND-SI	100

Note: In regard to off-balance sheet items, the following transactions with non-bank counterparties will be treated as claims on banks and carry a risk-weight of 20%.

- Guarantees issued by banks against the counter guarantees of other banks.
- Rediscounting of documentary bills accepted by banks. Bills discounted by banks which have been accepted by another bank will be treated as a funded claim on a bank.

In all the above cases banks should be fully satisfied that the risk exposure is in fact on the other bank.

I. C. Risk Weights for Open Positions

Sr. No.	Item	Risk weight (%)
1.	Foreign exchange open position.	100
2.	Open position in gold <i>Note:</i> The risk weighted position both in respect of foreign exchange and gold open position limits should be added to the other risk weighted assets for calculation of CRAR	100

I. D. Risk Weights for Forward Rate Agreement (FRA)/Interest Rate Swap (IRS)

For reckoning the minimum capital ratio, the computation of risk weighted assets on account of FRAs/IRS should be done as per the two steps procedure set out below:

Step 1

The notional principal amount of each instrument is to be multiplied by the conversion factor given below:

Counter party	Risk weight
Banks	20 per cent
Central & State Govt.	0 per cent
All others	100 per cent

II. Overseas operations (applicable only to Indian banks having branches abroad)**A. Funded Risk Assets**

Sr. No.	Item of asset or liability	Risk Weight %
(i)	Cash	0
(ii)	Balances with Monetary Authority	0
(iii)	Investments in Government securities	0
(iv)	Balances in current account with other banks	20
(v)	All other claims on banks including but not limited to funds loaned in money markets, deposit placements, investments in CDs/FRNs, etc.	20
(vi)	Investment in non-bank sectors	100
(vii)	Loans and advances, bills purchased and discounted and other credit facilities	
	(a) Claims guaranteed by Government of India.	0
	(b) Claims guaranteed by State Governments	0
	(c) Claims on public sector undertakings of Government of India.	100
	(d) Claims on public sector undertakings of State Governments	100
	(e) Others	100
(viii)	All other banking and infrastructural assets	100

B. Non-funded Risk Assets

Sr. No.	Instruments	Credit Conversion Factor (%)
(i)	Direct credit substitutes, e.g., general guarantees of indebtedness (including standby letters of credit serving as financial guarantees for loans and securities) and acceptances (including endorsements with the character of acceptances)	100
(ii)	Certain transaction-related contingent items (e.g., performance bonds, bid bonds, warranties and standby letters of credit related to particular transactions)	50

(iii)	Short-term self-liquidating trade related contingencies – such as documentary credits collateralised by the underlying shipments	20
(iv)	Sale and repurchase agreement and asset sales with recourse, where the credit risk remains with the bank.	100
(v)	Forward asset purchases, forward deposits and partly paid shares and securities, which represent commitments with certain draw down	100
(vi)	Note issuance facilities and revolving underwriting facilities	50
(vii)	Other commitments (e.g., formal standby facilities and credit lines) with an original maturity of over one year.	50
(viii)	Similar commitments with an original maturity up to one year, or which can be unconditionally cancelled at any time.	0

ANNEX 9.1

MSE Advances Guaranteed by Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) – Risk weights and Provisioning norms

(paragraph I (A)(III)(9) of Annex 9)

Risk-Weight

Example I

CGTMSE Cover: 75% of the amount outstanding or 75% of the unsecured amount or ₹18.75 lakh, whichever is less

Realisable value of Security	:	₹ 1.50 lakh
(a) Balance outstanding	:	₹10.00 lakh
(b) Realisable value of security	:	₹ 1.50 lakh
(c) Unsecured amount (a) – (b)	:	₹ 8.50 lakh
(d) Guaranteed portion (75% of (c))	:	₹ 6.38 lakh
(e) Uncovered portion (8.50 lakh – 6.38 lakh)	:	₹ 2.12 lakh
Risk-weight on (b) and (e) – Linked to the counter party		
Risk-weight on (d) – Zero		

Example II

CGTMSE cover: 75% of the amount outstanding or 75% of the unsecured amount or ₹18.75 lakh, whichever is less

Realisable value of Security	:	₹10.00 lakh.
(a) Balance outstanding	:	₹40.00 lakh
(b) Realisable value of security	:	₹10.00 lakh

- | | |
|---|---------------|
| (c) Unsecured amount (a) – (b) | : ₹30.00 lakh |
| (d) Guaranteed portion (max.) | : ₹18.75 lakh |
| (e) Uncovered portion (₹30 lakh – 18.75 lakh) | : ₹11.25lakh |
| Risk-weight (b) and (e) – Linked to the counter party | |
| Risk-weight on (d) – Zero | |

ANNEX 9.2

Terms and conditions for the purpose of liberal Risk Weight for Capital Adequacy for investments in Mortgage Backed Securities (MBS) of residential assets of Housing Finance Companies (HFC) (Vide item (I)(A)(II)(12)of Annex 9)

1(a) The right, title and interest of a HFC in securitized housing loans and receivables there under should irrevocably be assigned in favour of a Special Purpose Vehicle (SPV)/Trust.

1(b) Mortgaged securities underlying the securitized housing loans should be held exclusively on behalf of and for the benefit of the investors by the SPV/Trust.

1(c) The SPV or Trust should be entitled to the receivables under the securitised loans with an arrangement for distribution of the same to the investors as per the terms of issue of MBS. Such an arrangement may provide for appointment of the originating HFC as the servicing and paying agent. However, the originating HFC participating in a securitisation transaction as a seller, manager, servicer or provider of credit enhancement or liquidity facilities:

- i. shall not own any share capital in the SPV or be the beneficiary of the trust used as a vehicle for the purchase and securitization of assets. Share capital for this purpose shall include all classes of common and preferred share capital;
- ii. shall not name the SPV in such manner as to imply any connection with the bank;
- iii. shall not have any directors, officers or employees on the board of the SPV unless the board is made up of at least three members and where there is a majority of independent directors. In addition, the official(s) representing the bank will not have veto powers;
- iv. shall not directly or indirectly control the SPV; or
- v. shall not support any losses arising from the securitization transaction or by investors involved in it or bear any of the recurring expenses of the transaction.

1(d) The loans to be securitized should be loans advanced to individuals for acquiring/constructing residential houses which should have been mortgaged to the HFC by way of exclusive first charge.

1(e) The loans to be securitized should be accorded an investment grade credit rating by any of the credit rating agencies at the time of assignment to the SPV.

1(f) The investors should be entitled to call upon the issuer - SPV - to take steps for recovery in the event of default and distribute the net proceeds to the investors as per the terms of issue of MBS.

1(g) The SPV undertaking the issue of MBS should not be engaged in any business other than the business of issue and administration of MBS of individual housing loans.

1(h) The SPV or Trustees appointed to manage the issue of MBS should have to be governed by the provisions of Indian Trusts Act, 1882.

2. If the issue of MBS is in accordance with the terms and conditions stated in paragraph 1 above and includes irrevocable transfer of risk and reward of the housing loan assets to the Special Purpose Vehicle (SPV)/Trust, investment in such MBS by any bank would not be reckoned as an exposure on the HFC originating the securitized housing loan. However, it would be treated as an exposure on the underlying assets of the SPV/Trust.

ANNEX 9.3

Conditions for availing concessional Risk Weight on investment in securitised paper pertaining to an infrastructure facility (*Vide item (I)(A)(II)(14)of Annex 9*)

1. The infrastructure facility should satisfy the conditions stipulated in our circular DBOD. No. BP. BC. 92/21.04.048/2002- 2003 dated June 16, 2004.
2. The infrastructure facility should be generating income/cash flows which would ensure servicing/repayment of the securitised paper.
3. The securitised paper should be rated at least 'AAA' by the rating agencies and the rating should be current and valid. The rating relied upon will be deemed to be current and valid if:

The rating is not more than one month old on the date of opening of the issue, and the rating rationale from the rating agency is not more than one year old on the date of opening of the issue, and the rating letter and the rating rationale is a part of the offer document.

In the case of secondary market acquisition, the 'AAA' rating of the issue should be in force and confirmed from the monthly bulletin published by the respective rating agency.

The securitised paper should be a performing asset on the books of the investing/lending institution.

ANNEX 9.4

Conditions for availing concessional risk weight for Advances covered by Insurance cover under Business Credit Shield the product of New India Assurance Company Ltd.

(Vide item (I)(A)(III)(10) of Annex10)

New India Assurance Company Limited (NIA) should comply with the provisions of the Insurance Act, 1938, the Regulations made thereunder – especially those relating to Reserves for unexpired risks and the Insurance Regulatory and Development Authority (Assets, Liabilities and Solvency Margin of Insurers) Regulations, 2000 and any other conditions/regulations that may be prescribed by IRDA in future, if their insurance product – Business Credit Shield (BCS) - is to qualify for the above treatment.

2. To be eligible for the above regulatory treatment in respect of export credit covered by BCS policy of NIA, banks should ensure that:

The BCS policy is assigned in its favour, and NIA abides by the provisions of the Insurance Act, 1938 and the regulations made there under, especially those relating to Reserves for unexpired risks and the Insurance Regulatory and Development Authority (Assets, Liabilities and Solvency Margin of Insurers) Regulations, 2000, and any other conditions/regulations that may be prescribed by IRDA in future.

3. Banks should maintain separate account(s) for the advances to exporters, which are covered by the insurance under the “Business Credit Shield” to enable easy administration/verification of risk weights/provisions.

ANNEX 10

Worked out examples for computing Capital Charge for Credit and Market Risks

Example I- Case where the trading book does not contain equities and interest rate related derivative instruments

1. Assumptions:

- 1.1. A bank may have the following position:

Sl. No.	Details	Amount (in ₹ Crore)
1	Cash & Balances with RBI	200.00
2	Bank balances	200.00
3.	Investments	2000.00
	3.1 Held for Trading (Market Value)	500.00
	3.2 Available for Sale (Market Value)	1000.00
	3.3 Held to Maturity	500.00
4	Advances (net)	2000.00
5	Other Assets	300.00
6	Total Assets	4700.00

- 1.2. In terms of counter party, the investments are assumed to be as under:

Government – ₹1000 crore

Banks – ₹500 crore

Others – ₹500 crore

1.3. For simplicity sake the details of investments are assumed to be as under:

(i) Government Securities

Date of Issue	Date of reporting	Maturity Date	Amount ₹ in crore	Coupon (%)	Type
01/03/1992	31/03/2003	01/03/2004	100	12.50	AFS
01/05/1993	31/03/2003	01/05/2003	100	12.00	AFS
01/03/1994	31/03/2003	31/05/2003	100	12.00	AFS
01/03/1995	31/03/2003	01/03/2015	100	12.00	AFS
01/03/1998	31/03/2003	01/03/2010	100	11.50	AFS
01/03/1999	31/03/2003	01/03/2009	100	11.00	AFS
01/03/2000	31/03/2003	01/03/2005	100	10.50	HFT
01/03/2001	31/03/2003	01/03/2006	100	10.00	HTM
01/03/2002	31/03/2003	01/03/2012	100	8.00	HTM
01/03/2003	31/03/2003	01/03/2023	100	6.50	HTM
Total			1000		

(ii) Bank Bonds

Date of Issue	Date of reporting	Maturity Date	Amount ₹ in crore	Coupon (%)	Type
01/03/1992	31/03/2003	01/03/2004	100	12.50	AFS
01/05/1993	31/03/2003	01/05/2003	100	12.00	AFS
01/03/1994	31/03/2003	31/05/2003	100	12.00	AFS
01/03/1995	31/03/2003	01/03/2006	100	12.50	AFS
01/03/1998	31/03/2003	01/03/2007	100	11.50	HFT
Total			500		

(iii) Other Securities

Date of Issue	Date of reporting	Maturity Date	Amount ₹ in crore	Coupon (%)	Type
01/03/1992	31/03/2003	01/03/2004	100	12.50	HFT
01/05/1993	31/03/2003	01/05/2003	100	12.00	HFT
01/03/1994	31/03/2003	31/05/2003	100	12.00	HFT
01/03/1995	31/03/2003	01/03/2006	100	12.50	HTM
01/03/1998	31/03/2003	01/03/2017	100	11.50	HTM
Total			500		

(iv) Overall Position

	Break-up of total investments (₹ in crore)			
	Government Securities	Bank bonds	Other securities	Total
HFT	100	100	300	500
AFS	600	400	0	1000
Trading Book	700	500	300	1500
HTM	300	0	200	500
Total	1000	500	500	2000

2. Computation of risk weighted assets**2.1. Risk Weighted Assets for Credit Risk**

As per the guidelines, held for trading and available for sale securities would qualify to be categorized as trading book. Thus, trading book in the instant case would be ₹1500 crore as indicated above. While computing the credit risk, the securities held under trading book would be excluded and hence the risk-weighted assets for credit risks would be as under:

₹ in Crore

S. No.	Details of Assets	Market Value*	Risk Weight (%)	Risk weighted Assets
1	Cash & balances with RBI	200	0	0
2	Bank balances	200	20	40
3	Investments:			
	Government	300	0	0
	Banks	0	20	0
	Others	200	100	200
4	Advances (net)	2000	100	2000
5	Other Assets	300	100	300
6	Total Assets	3200		2540

*Assumed as Market Value for illustration

2.2. Risk Weighted Assets for Market Risk (Trading Book)

(Please refer to table in para 1.3(iv))

a. Specific Risk

- (i) Government securities: ₹700 crore – Nil
- (ii) Bank bonds:

(Amount in ₹ crore)

Details	Capital charge	Amount	Capital charge
For residual term to final maturity 6 months or less	0.30%	200	0.60
For residual term to final maturity between 6 and 24 months	1.125%	100	1.125
For residual term to final maturity exceeding 24 months	1.80%	200	3.60
Total		500	5.325

(iii) Other securities: ₹300 crore @ 9% = ₹27 crore
 Total charge for specific risk (i) + (ii) + (iii)
 = ₹0 crore + ₹5.325 crore + ₹27 crore = ₹32.325 crore

Therefore, capital charge for specific risk in trading book is ₹32.33 crore.

b. General Market Risk

Modified duration is used to arrive at the price sensitivity of an interest rate related instrument. For all the securities listed below, date of reporting is taken as 31/3/2003.

(Amount in ₹ crore)

Counter Party	Maturity Date	Amount (market value)	Coupon (%)	Capital Charge For general market risk
Govt.	01/03/2004	100	12.50	0.84
Govt.	01/05/2003	100	12.00	0.08
Govt.	31/05/2003	100	12.00	0.16
Govt.	01/03/2015	100	12.50	3.63
Govt.	01/03/2010	100	11.50	2.79
Govt.	01/03/2009	100	11.00	2.75
Govt.	01/03/2005	100	10.50	1.35
Banks	01/03/2004	100	12.50	0.84
Banks	01/05/2003	100	12.00	0.08
Banks	31/05/2003	100	12.00	0.16
Banks	01/03/2006	100	12.50	1.77
Banks	01/03/2007	100	11.50	2.29
Others	01/03/2004	100	12.50	0.84
Others	01/05/2003	100	12.00	0.08
Others	31/05/2003	100	12.00	0.16
	Total	1500		17.82

c. Total Charge for Market Risk

Adding the capital charges for specific risk as well as general market risk would give the total capital charge for the trading book of interest rate related instruments. Therefore, capital charge for Market Risks = ₹32.33 crore + ₹17.82 crore, i.e., ₹50.15 crore.

d. To facilitate computation of CRAR for the whole book, this capital charge needs to be converted into equivalent risk weighted assets. In India, the minimum CRAR is 9%. Hence, the capital charge could be converted to risk weighted assets by multiplying the capital charge by $(100 \div 9)$, Thus risk weighted assets for market risk is $50.15 * (100 \div 9) = ₹557.23$ crore.

2.3 Computing the Capital Ratio

(Amount in ₹ crore)

1	Total Capital	400
2	Risk weighted assets for Credit Risk	2540.00
3	Risk weighted assets for Market Risk	557.23
4	Total Risk weighted assets (2+3)	3097.23
5	CRAR $[(1 \div 4) * 100]$	12.91 %

Example 2 – indicating computation of capital charge for credit and market risks – with equities and interest rate related derivative instruments. Foreign exchange and gold open positions also have been assumed.

Assumptions

A bank may have the following position:

Sr. No.	Details	₹ in Crore
1	Cash & Balances with RBI	200.00
2	Bank balances	200.00
3	Investments	
	3.1 Interest Rate related Securities	
	Held for Trading	500.00
	Available for Sale	1000.00
	Held to Maturity	500.00
	3.2 Equities	300.00
4	Advances (net)	2000.00
5	Other Assets	300.00
6	Total Assets	5000.00

Foreign exchange open position limit is assumed as ₹60 crore and Gold open position is assumed at ₹40 crore.

Let us also assume that the bank is having the following positions in interest rate related derivatives:

- (i) Interest Rate Swaps (IRS), ₹100 crore – bank received floating rate interest and pays fixed, next interest fixing after 6 months, residual life of swap 8 years, and
- (ii) Long position in interest rate future (IRF), ₹50 crore, delivery after 6 months, life of underlying government security 3.5 years.

In terms of counter party the investments are assumed to be as under:

(a) Interest rate related securities		
Government		₹1000 crore
Banks		₹500 crore
Corporate Bonds		₹500 crore
(b) Equities		
Others		₹300 crore

For interest rate swaps and interest rate futures the counterparties are assumed to be corporates. For simplicity sake let us assume the details of investments in interest rate related securities as under:

(i) Government Securities

Date of Issue	Date of reporting	Maturity Date	Amount ₹ crore	Coupon (%)	Type
01/03/1992	31/03/2003	01/03/2004	100	12.50	AFS
01/05/1993	31/03/2003	01/05/2003	100	12.00	AFS
01/03/1994	31/03/2003	31/05/2003	100	12.00	AFS
01/03/1995	31/03/2003	01/03/2015	100	12.50	AFS
01/03/1998	31/03/2003	01/03/2010	100	11.50	AFS
01/03/1999	31/03/2003	01/03/2009	100	11.00	AFS
01/03/2000	31/03/2003	01/03/2005	100	10.50	HFT
01/03/2001	31/03/2003	01/03/2006	100	10.00	HTM
01/03/2002	31/03/2003	01/03/2012	100	8.00	HTM
01/03/2003	31/03/2003	01/03/2023	100	6.50	HTM
Total			1000		

(ii) Bank Bonds

Date of Issue	Date of reporting	Maturity Date	Amount (₹ in crore)	Coupon (%)	Type
01/03/1992	31/03/2003	01/03/2004	100	12.50	AFS
01/05/1993	31/03/2003	01/05/2003	100	12.00	AFS
01/03/1994	31/03/2003	31/05/2003	100	12.00	AFS
01/03/1995	31/03/2003	01/03/2006	100	12.50	AFS
01/03/1998	31/03/2003	01/03/2007	100	11.50	HFT
Total			500		

(iii) Other Securities

Date of Issue	Date of reporting	Maturity Date	Amount (₹ in crore)	Coupon (%)	Type
01/03/1992	31/03/2003	01/03/2004	100	12.50	HFT
01/05/1993	31/03/2003	01/05/2003	100	12.00	HFT
01/03/1994	31/03/2003	31/05/2003	100	12.00	HFT
01/03/1995	31/03/2003	01/03/2006	100	12.50	HTM
01/03/1998	31/03/2003	01/03/2017	100	11.50	HTM
Total			500		

(iv) Overall Position

	Break-up of total investments (₹ in crore)					
	Interest rate related instruments				Equity	
	Government Securities	Bank bonds	Other securities	Total		Grand Total
HFT	100	100	300	500	300	800
AFS	600	400	0	1000	0	1000
Trading Book	700	500	300	1500	300	1800
HTM	300	0	200	500	0	500
Total	1000	500	500	2000	300	2300

2. Computation of Risk Weighted Assets

2.1. Risk Weighted Assets for Credit Risk

As per the guidelines, held for trading and available for sale securities would qualify to be categorized as Trading Book. Thus trading book in respect of interest rate related investments in the instant case would be ₹1500 crore. In addition, equities position of ₹300 crore would be in the trading book, as indicated above. The derivative products held by banks are to be considered as part of trading book. Open position on foreign exchange and gold also would be considered for market risk. While computing the capital charge for credit risk, the securities held under trading book would be excluded and hence the credit risk based risk-weights would be as under:

(Amount in ₹ Crore)

Details of Assets	Book Value	Risk Weight	Risk weighted Assets
Cash & RBI	200	0%	0
Bank balances	200	20%	40
Investments in (HTM category)			
Government	300	0%	0
Banks	0	20%	0
Corporate Bonds	200	100%	200

Advances (net)	2000	100%	2000
Other Assets	300	100%	300
Total	3200		2540
Credit Risk for OTC Derivatives:			
IRS	100 (<i>Credit conversion factor - 1% + 1% per year</i>)	100%	8.00
IRF	50 (<i>Credit conversion factor for maturities less than one year – 0.5%</i>)	100%	0.25
Total	3350		2548.25

2.2 Risk Weighted Assets for Market Risk (Trading Book)

a. Specific Risk

1. Investments in interest rate related instruments:

- (i) Government securities – ₹700 crore
- (ii) Bank bonds – Nil

(Amount in ₹ Crore)

Details	Capital charge	Amount	Capital Charge
For residual term to final maturity 6 months or less	0.30%	200	0.600
For residual term to final maturity between 6 and 24 months	1.125%	100	1.125
For residual term to final maturity exceeding 24 months	1.80%	200	3.600
Total		500	5.325

(iii) Others ₹300 crore @ 9% = ₹27 crore

$$\begin{aligned} \text{Total: (i) + (ii) + (iii)} \\ = ₹0 \text{ crore} + ₹5.325 \text{ crore} + ₹27 \text{ crore} = ₹32.325 \text{ crore} \end{aligned}$$

2. Equities – capital charge of 9% = ₹27 crore

Total specific charge (1+2)

Therefore, capital charge for specific risk in the trading book is ₹59.33 crore (₹32.33 crore + ₹27 crore).

b. General Market Risk

(1). Investments in interest rate related instruments:

Modified duration is used to arrive at the price sensitivity of an interest rate related instrument. For all the securities listed below, date of reporting is taken as 31/3/2003.

(Amount in ₹ Crore)

Counter Party	Maturity Date	Amount market value	Coupon (%)	Capital Charge for general market risk
Govt.	01/03/2004	100	12.50	0.84
Govt.	01/05/2003	100	12.00	0.08
Govt.	31/05/2003	100	12.00	0.16
Govt.	01/03/2015	100	12.50	3.63
Govt.	01/03/2010	100	11.50	2.79
Govt.	01/03/2009	100	11.00	2.75
Govt.	01/03/2005	100	10.50	1.35
Banks	01/03/2004	100	12.50	0.84
Banks	01/05/2003	100	12.00	0.08
Banks	31/05/2003	100	12.00	0.16
Banks	01/03/2006	100	12.50	1.77
Banks	01/03/2007	100	11.50	2.29
Others	01/03/2004	100	12.50	0.84
Others	01/05/2003	100	12.00	0.08
Others	31/05/2003	100	12.00	0.16
	Total	1500		17.82

(2) Positions in interest rate related derivatives**Interest rate swap**

Counter Party	Maturity Date	Notional Amount (i.e., market value)	Modified duration or price sensitivity	Assumed change in yield (ACI)	Capital charge*
GOI	30/09/2003	100	0.47	1.00	0.47
GOI	31/03/2011	100	5.14	0.60	(-) 3.08
					(-) 2.61

Interest rate future

Counter Party	Maturity Date	Notional Amount (i.e., market value)	Modified duration or price sensitivity	Assumed change in yield	Capital charge
GOI	30/09/2003	50	0.45	1.00	(-) 0.225
GOI	31/03/2007	50	2.84	0.75	1.070
					0.840

(3) Disallowances

The price sensitivities calculated as above have been slotted into a duration-based ladder with fifteen time-bands as shown in table at the end of the Annexure. Long and short positions within a time band have been subjected to vertical disallowance of 5%. In the instant case, vertical disallowance is applicable under 3–6 month time band and 7.3–9.3 year time band. Then, net positions in each time band have been computed for horizontal offsetting subject to the disallowances mentioned in the table. In the instant case, horizontal disallowance is applicable only in respect of Zone 3. Horizontal disallowances in respect of adjacent zones are not applicable in the instant case.

3.1 Calculation of Vertical Disallowance

While calculating capital charge for general market risk on interest rate related instruments, banks should recognize the basis risk (different types of instruments whose price responds differently for movement in general rates) and gap risk (different maturities within timebands). This is addressed by a small capital charge (5%) on matched (off-setting) positions in each time band (“Vertical Disallowance”).

An off-setting position, for vertical disallowance, will be either the sum of long positions and or the short positions within a time band, whichever is lower. In the table at the end of the annex, except for the time band 3–6 months in Zone 1 and the time band of 7.3–9.3 years, where there are off-setting positions of (–) 0.22 and 2.79, there is no offsetting position in any other time band. The sum of long positions in the 3–6 months time band is + 0.47 and the sum of short positions in this time band is (–) 0.22. This offsetting position of 0.22 is subjected to a capital charge of 5% i.e. 0.01. The sum of long positions in the 7.3–9.3 years time band is + 2.79 and the sum of short positions in this time band is (–) 3.08. This off-setting position of 2.79 is subjected to a capital charge of 5% i.e. 0.1395. It may be mentioned here that if a bank does not have both long and short positions in the same time band, there is no need for any vertical disallowance. Banks in India are not allowed to take any short position in their books, except in derivatives. Therefore, banks in India will generally not be subject to vertical disallowance unless they have a short position in derivatives.

3.2. Calculation of Horizontal Disallowance

While calculating capital charge for general market risk on interest rate related instruments, banks must subject their positions to a second round of off-setting across time bands with a view to give recognition to the fact that interest rate movements are not perfectly correlated across maturity bands (yield curve risk and spread risk) i.e matched long and short positions in different time bands may not perfectly off-set. This is achieved by a “Horizontal Disallowance”.

An off-setting position, for horizontal disallowance, will be either the sum of long positions and or the short positions within a Zone, whichever is lower. In the above example, except in Zone 3 (7.3 to 9.3 years) where there is an off-setting (matched) position of (–) 0.29, there is no off-setting position in any other Zone. The sum of long positions in this Zone is 9.74 and the sum of short positions in this Zone is (–) 0.29. This off-setting position of 0.29 is subject to horizontal disallowance as under:

Within the same Zone (Zone 3) 30% of 0.29 = 0.09

Between adjacent Zones (Zone 2 & 3) = Nil

Between Zones 1 and Zone 3 = Nil

It may be mentioned here that if a bank does not have both long and short positions in different time zones, there is no need for any horizontal disallowance. Banks in India are not allowed to take any short position in their books except in derivatives. Therefore, banks in India will generally not be subject to horizontal disallowance unless they have short positions in derivatives.

Total capital charge for interest rate related instruments is shown below:

For overall net position	16.06
For vertical disallowance	0.15
For horizontal disallowance in Zone 3	0.09
For horizontal disallowance in adjacent zones	nil
For horizontal disallowance between Zone 1 & 3	Nil
Total capital charge for interest rate related instruments	16.30

(4) The total capital charge in this example for general market risk for interest rate related instruments is computed as under:

Sl. No.	Capital charge	Amount (₹)
1	For the vertical disallowance (under 3–6 month time band)	1, 12,500
2	For the vertical disallowance (under 7.3–9.3 year time band)	13,95,000
3	For the horizontal disallowance (under Zone 3)	9,00,000
4	For the horizontal disallowances between adjacent zones	0
5	For the overall net open position ($17.82 - 2.61 + 0.84$)	16,06,00,000
6	Total capital charge for general market risk on interest rate related instruments ($1 + 2 + 3 + 4 + 5$)	16,30,07,500

(5) Equities: Capital charge for General Market Risk for equities is 9%.

Thus, general market risk capital charge on equities would work out to ₹27 crore.

(6) Forex/Gold Open Position Capital charge on forex/gold position would be computed at 9%.

Thus the same works out to ₹9 crore

(7) Capital charge for market risks in this example is computed as under:

(Amount in ₹ crore)

Details	Capital charge for Specific Risk	Capital charge for General Market Risk	Total
Interest instruments Rate Related	32.33	16.30	48.63
Equities	27.00	27.00	54.00
Forex/Gold	-	9.00	9.00
Total	59.33	52.30	111.63

2.3 Computing Capital Ratio

To facilitate computation of CRAR for the whole book, this capital charge for market risks in the Trading Book needs to be converted into equivalent risk weighted assets. As in India, a CRAR of 9% is required, the capital charge could be converted to risk weighted assets by multiplying the capital charge by $(100 \div 9)$, i.e., ₹111.63*(100 ÷ 9) = ₹1240.33 crore. Therefore, risk weighted assets for market risk is: ₹1240.33 crore.

(Amount in ₹ crore)

1	Total Capital	400.00
2	Risk weighted assets for Credit Risk	2548.25
3	Risk weighted assets for Market Risk	1240.33
4	Total Risk weighted assets (2+3)	3788.58
5	CRAR [(1÷4)*100]	10.56 %

Note: The reporting format for the purpose of monitoring the capital ratio is given in Annex 12 to the Master Circular dated 1st July, 2009 on Prudential Norms on Capital Adequacy-Basel I Framework.

Example for computing the Capital Charge including the vertical and horizontal disallowances on interest rate related instruments

(Para No 2.2. (b) (3) of Example 2 above)

Time-band	Zone 1			Zone 2			Zone 3						Capital Charge		
	0–1 month	1–3 month	3–6 month	6m – 1y	1–1.9y	1.9–2.8y	2.8–3.6y	3.6–4.3y	4.3–5.7y	5.7–7.3y	7.3–9.3y	9.3–10.6y	10.6–12y		
Position		0.72		2.51		1.35	1.77	2.29		2.75	2.79		3.63		17.82
Derivatives (long)			0.47					1.07							1.54
Derivatives (short)			(–)0.22								(–)3.08				(–)3.30
Net Position		0.72	0.25	2.51		1.35	1.77	3.36		2.75	(–)0.29		3.63		16.06
Vertical Disallowance (5%)			0.01**								0.14@				0.15
Horizontal Disallowance 1 (under Zone)											0.09#				0.09
Horizontal Disallowance 2															
Horizontal Disallowance 3															

** 0.22 x 5% = 0.01 @ 2.79 x 5% = 0.14 # 0.29 x 30% = 0.09

Appendix
B

EXAMPLES/PROBLEMS

1. DEBT INSTRUMENTS-FUNDAMENTALS

1. On value date 10 June 2017, what is the term to maturity in years, of a government security maturing on 23 March 2021?

Use the “yearfrac” function in Excel, with the following specifications:

Settlement date: 10 June 2017

Maturity Date: 23 March 2021

Basis: 4 (Government securities trade on 30/360 European basis. We therefore use ‘4’, in the Excel function, which applies this day count convention.)

Answer: 3.786 years

2. Which of the following about a callable bond is true?

- (a) Callable bonds always trade at a discount to non-callable bonds
- (b) Callable bonds expose issuers to the risk of reduced re-investment return
- (c) Callable bonds are actually variable tenor bonds
- (d) Callable bonds are not as liquid as non-callable bonds

Answer: c

3. Coupon of a floating rate bond is _____

- (a) Modified whenever there is a change in the benchmark rate
- (b) Modified at pre-set intervals with reference to a benchmark rate
- (c) Modified for changes in benchmark rate beyond agreed levels
- (d) Modified within a range, for changes in the benchmark rate

Answer: b

2. INDIAN DEBT MARKETS

1. Which of the following about the market capitalization of corporate bonds in the NSE WDM is true?

- (a) Corporate bonds account for over 10% of the total market capitalization
- (b) Corporate bonds represent the second largest segment of bonds, after Government securities
- (c) Market capitalization of corporate bonds is lower than that of listed state loans

- d) None of the above

Answer: c

2. The most active participants in the WDM segment of the NSE are:

- (a) Primary dealers
- (b) Scheduled banks
- (c) Trading members
- (d) Mutual Funds

Answer: b

3. Which of the following statements are true about NDS-OM?

- (a) NDS-OM is a screen-based anonymous order matching system
- (b) NDS-OM became operational with effect from 1 August 2005
- (c) NDS-OM is faster, transparent and cheaper and provides benefits like audit trail
- (d) All of the above

Answer: d

3. CENTRAL GOVERNMENT SECURITIES-BONDS

1. Which of the following is true about a uniform price auction?

- (a) An auction in which all successful bids are made for the same price.
- (b) An auction in which all bidders have bid a uniform price.
- (c) An auction in which all successful bidders are allotted bonds at the same price.
- (d) An auction in which the cut-off price is derived as the weighted average of all successful bids.

Answer: c

2. Which of the following is false about the devolvement of treasury issues on the primary dealer?

- (a) PDs can set-off the accepted bids in an auction against the devolvement on them.
- (b) Devolvement on PDs is on pro-rata basis, depending on the underwriting obligation of each PD.
- (c) Underwriting fee is payable on the net amount, after accounting for the devolvement on PDs.
- (d) Devolvement on pro-rata basis is done after setting off successful bids in the auction.

Answer: c

3. The bids received in a treasury auction are as follows:

<i>Number of Bonds</i>	<i>Price quoted by bidders (₹)</i>
20,000,000	110.25
12,000,000	109.50
10,000,000	109.25
14,000,000	109.00
25,000,000	108.95

If the notified amount is ₹500 crore, what is the cut-off price, assuming there is no devolvement?

Answer: Since it is a price-based auction, the bids will be filled from the highest price downwards. If the bids at the cut-off price exceed the notified amount, pro-rata allotments will be made. On computing the amount (product of number of bonds and quoted price, and cumulating the amounts so arrived, we can reach the cut-off price). The cut-off price is ₹109.00.

The allotments are as follows:

Quantity	Price Quoted by bidders (₹)	Amount bid (₹)	Allotment (₹)
20,000,000	110.25	2,205,000,000	2,205,000,000
12,000,000	109.5	1,314,000,000	1,314,000,000
10,000,000	109.25	1,092,500,000	1,092,500,000
14,000,000	109	1,526,000,000	388,500,000
25,000,000	108.95	2,723,750,000	Nil

The allotment at the cut-off price is arrived at by finding the difference between the notified amount and the cumulative allotments up to the previous bid.

4. Using the same data as in question 3, at what price non-competitive bids will be allotted?

Answer: Non-competitive bids will get allotment at the weighted average price of successful bids. The price and quantity for successful bids are as follows:

Number of Bonds	Price (₹)	Bid Amount	Weightage	Weighted Price
20,000,000.00	110.25	2,205,000,000	0.441	48.6203
12,000,000.00	109.5	1,314,000,000	0.2628	28.7766
10,000,000.00	109.25	1,092,500,000	0.2185	23.8711
3,564,220.18	109.38	8,500,000	0.0777	8.4693
109,7373				

Note: The weighted average price is ₹109.7373.

4. CENTRAL GOVERNMENT SECURITIES-T BILLS

1. A treasury bill maturing on 28 June 2018 is trading in the market on 3 July 2017 at a price of ₹92.8918. What is the discount rate inherent in this price?

Answer:

The yield is computed as:

$$\begin{aligned}
 &= [(100 - \text{price}) * 365] / (\text{Price} * \text{No of days to maturity}) \\
 &= [(100 - 92.8918) * 365] / (92.8918 * 360) = 7.7584\%
 \end{aligned}$$

2. What is the price at which a treasury bill maturing on 23 March 2018 would be valued on 13 July 2017 at a yield of 6.8204%?

Answer:

The price can be computed as

$$\begin{aligned}
 &= 100 / \{1 + [\text{yield\%} * (\text{No of days to maturity}/365)]\} \\
 &= 100 / \{1 + [6.8204 \% * (253/365)]\} = ₹95.4858
 \end{aligned}$$

3. What is the day count convention in the Treasury bill markets?

- (a) 30/360
- (b) Actual/Actual
- (c) Actual/360
- (d) Actual/365

Answer: d

4. Calculation of yield on Treasury Bills:

$$\text{Yield} = \frac{\text{Face Value} - 1}{\text{Price}} \times \frac{365}{\text{days to maturity}}$$

Presently RBI issues T Bills for three different maturities namely 91 days, 182 days and 364 days. The treasury bills are available for a minimum amount of ₹25,000/- and in multiples of ₹25,000/- thereafter.

The T Bills do not carry a coupon rate but are issued at a discount to the face value. Though the yields on T Bills are lower as compared to other Money Market instruments, risk averse investors and banks prefer to invest in these securities. Yields on the T Bills set the benchmark for arriving at the interest rate or yield on any other short term instruments. As these instruments are risk free, all other instruments in the money market do provide higher yields.

- (i) Calculate the yield on the basis of the following facts:

Face value of a 364 day T Bill is ₹100.00

Purchase price is ₹88.24

Calculate the Yield

$$\text{Yield} = \frac{(100 - 88.24)}{88.24} \times \frac{365}{364} = 13.36\%$$

- (ii) What is the yield on a 91 day, Face Value ₹100 T bill purchased at ₹98.25?

$$\text{Yield} = \{100 - 98.25\}/98.25 \times (365/91) = 7.14\%$$

- (iii) What is the price of a 182 day T Bill of face value ₹100 yielding 3.57%?

$$\{100 - X\}/X \text{ multiplied by } (365/182) = 3.57\%$$

$$X = ₹98.25$$

5. STATE GOVERNMENT BONDS

1. Which of the following about state government borrowings is true?

- (a) State government bonds are issued by the respective Finance Department of the States.
- (b) State government bonds are fully guaranteed by the central government.
- (c) Most state government bonds are issued by the RBI.
- (d) State government bonds are issued by the RBI, at the same rates, along with central government bonds.

Answer: c

6. CALL MONEY MARKETS

1. Which of the following participants in the call markets are allowed to lend as well as borrow?
 - (a) Mutual Funds
 - (b) Banks and Primary Dealers
 - (c) Corporates
 - (d) Financial Institutions

Answer: b
2. The non-bank entities are allowed to participate in the call money market? Is the statement true or false?
 - (a) True
 - (b) False

Answer: b
3. What are the features of NDS-Call System?
 - (a) Electronic Dealing Platform
 - (b) Direct one to one negotiation
 - (c) Online Exposure Monitoring
 - (d) All of the Above

Answer: d

7. CORPORATE DEBT BONDS

1. Which of the following statements is true about the offer document?
 - (a) An offer document has to be filed with SEBI for all debenture issues, whether public or privately placed.
 - (b) Offer document has to be filed for all public issues only.
 - (c) An offer document need not be filed if the debentures are issued for maturities below 18 months.
 - (d) In the case of private placement, an abridged offer document is to be filed with SEBI.

Answer: b
2. Which of the following statements is false regarding credit rating of corporate debentures?
 - (a) All public issues of debentures should be compulsorily credit rated.
 - (b) Ratings have to be sought from agencies registered with SEBI.
 - (c) Debentures with maturity less than 18 months need not be rated.
 - (d) Mutual funds are not permitted to subscribe to unrated corporate paper.

Answer: c
3. Which of the following statement is false regarding the SEBI 'Issue and Listing of Debt Securities Regulation, 2008'?
 - (a) Provides for issuance and listing of non-convertible debt securities (excluding bonds issued by Governments) issued by company, PSU or statutory corporations.
 - (b) These regulations apply to public issue of debt securities and listing of debt securities through public issue or on private placement basis on a recognized stock exchange.

- (c) These regulations apply to issue and listing of securitized debt instruments and security receipts for which separate regulatory regime is in place.
- (d) The Regulations provide for rationalized disclosure requirements.

Answer: c

8. COMMERCIAL PAPER AND CERTIFICATE OF DEPOSITS

1. Which of the following is the largest investor in CPs?

- (a) Mutual Funds
- (b) Corporate Treasuries
- (c) Financial Institutions
- (d) Scheduled Banks

Answer: d

2. Which of the following entities cannot issue CPs?

- (a) Banks
- (b) All-India Financial Institutions
- (c) Primary Dealers
- (d) A Company whose borrowing account has been classified as sub-standard.

Answer: d

3. Example to calculate the Issue Price of CP:-

CPs/CDs

$$\text{Issue Price} = \frac{F}{1 + (I/100 \times N/365)}$$

Where F = Face Value, I = Effective interest rate per annum and N is Usance period.

X Ltd. is planning to issue a CP of ₹25 lakhs. The following additional details are provided:

- Maturity period – 3 months
 - Effective rate of interest – 10.5%
- Calculate the Issue Price.

Answer: The formula to calculate the Issue Price is as under:-

$$\text{Issue Price} = \frac{F}{1 + (I/100 \times N/365)}$$

where F = Face Value

I = Effective Interest Rate

N = Usance period

In the extant case, F = ₹25 lakhs, I = 10.5% and U = 3 months meaning 90 days.

Using these values, the Issue Price comes to ₹24,36,907.46.

4. What is the issue price of a 182-day commercial paper of Face Value ₹100 at an effective interest rate of 9.25%?

Answer: Issue price = $F/\{1 + (9.25\%/365) \times 182\}$
 $= 100/1 + 0.046123$
 $= 100/1.046123$
 $= 95.59$

9. REPOS

- If the RBI announces that it has done repos of ₹3000 crore, what does this imply?**
 - RBI has lent securities worth ₹3000 crore through the repo markets to the participants.
 - RBI has reversed the repo deals of participants who entered into a repo with RBI.
 - RBI has inducted funds amounting to ₹3000 crores into the market.
 - RBI has borrowed securities from the banking system, and lent them onward in the repo markets.

Answer: c

- A 3-day repo is entered into on 10 July 2017, on an 11.99% 2025 security, maturing on 7 April 2025. The face value of the transaction is ₹3,00,00,000. The price of the security is ₹116.42. If the repo rate is 7%, what is the settlement amount on 10 July 2017?**

Answer: Settlement amount on 10 July 2017 is the transaction value for the securities plus accrued interest.

Transaction Value:

$$3,00,00,000 * 116.42/100 = ₹3,49,26,000$$

Accrued Interest:

The security's maturity date is 7 April 2025. Using the Coupdaybs function, we can find the number of days from last coupon date. (Settlement: 10 July 2001; Maturity: 7 April 2009; Frequency: 2; Basis: 4; The number of days is 93.

$$\text{Accrued interest} = 3,00,00,000 * 11.99\% * 93/360 = ₹9,29,225.00$$

Therefore, the settlement amount is: ₹3,49,26,000 + ₹9,29,225.00 = ₹3,58,55,225.00

- Using the same data as in Question 2, determine the settlement amount for the second leg of the repo transaction. The settlement amount for the second leg involves the following:**

Interest on the Amount borrowed

$$= 35855225 * .07 * 3/365$$

$$= ₹20629.03$$

Amount to be settled: $35855225 + 20629.03 = ₹35875854.03$

- Repo Transaction**

Bank A agrees to borrow approximately ₹10 crores from Bank B for a period of 3 days at an interest rate of 5%.

Borrower:	Bank A
Lender:	Bank B
Tenor:	3 days
Repo Rate:	5.75%
Security:	6.85%GOI 2019 (Government of India Security with a coupon rate of 6.85% and maturing on 5 April 2019)

Ready Leg date: 25 August 2017

Forward Leg Date: 28 August 2017

Ready Leg Computation

Ready Leg Price of Security: ₹100

Face Value of Security: ₹10,00,00,000/-

Principal Value of Security: ₹10,00,00,000/- A

Last Interest Date:	5 April 2010	
Accrued Interest on Security:	₹2682916.66 B
Ready Leg Proceeds (A+B):	₹102682916.66 C
Forward Leg Computation		
Repo Interest Amount:	$(₹102682916.66) \times .0575 \times 3/365$	
	₹48528.22 D
Forward Leg Proceeds (C+D):	₹102731444.88 E
Accrued Interest on Security:	₹2740000 F
Principal Value of Security(E-F):	₹99991444.88 G
Forward Leg Price of Security:	[G/(100000000)]X100	
	₹99.99914	

This example illustrates how the forward leg price is derived for a repo transaction.

10. BOND MARKET INDICES AND BENCH MARKS

1. What does re-balancing of a bond index mean?

- (a) Changing the weightages in the index so that the market capitalization of bonds is kept constant.
- (b) Adjusting the index for changes in the composition of the index portfolio to ensure that artificial capital gains or losses are not included in the index.
- (c) Adjusting the composition of the index, whenever coupons are paid, such that the index is not impacted by changes in accrued interest.
- (d) Changing the composition of the index when yield alters, such that duration of the index is kept constant.

Answer: b

2. What is the information gathered from market participants in the poll to determine NSE MIBOR?

- (a) The rate at which they would be able to lend and borrow in the markets.
- (b) The rate at which they are willing to lend and borrow amongst one another.
- (c) Their view of the market rates for lending and borrowing.
- (d) Their view of the lending and borrowing rates of specific market participants.

Answer: c

11. TRADING MECHANISM

1. Which of the following statements about negotiated trade entry is false?

- (a) If a trading member represents both the buyer and the seller, negotiated trade orders can be entered in a single screen.
- (b) Trading members can invoke the security descriptor, and fill up the code and transaction details of the selling participants, and confirm the trade.
- (c) All negotiated trades require approval of the exchange, only after which trading members receive confirmation slips.
- (d) Negotiated trade entries can be made outside of set counter-party limits, and sent for approval within the end of the trading day.

Answer: d

- 2. A trading member on the WDM segment of NSE sets up a counter party limit of ₹400 lakh against a counter party and utilize ₹280 lakh on a given day which is outstanding in current asset limit. The next day, he modifies the CP limit to ₹150 lakh. Which of the following will hold good?**
- The CP limits cannot be modified to a level lower than amounts in current asset limit.
 - The counter party has to be notified about the reduction in the CP limit.
 - The new CP limit will result in the counterparty canceling or reversing that amount of transaction that exceed the new CP limit.
 - The earlier transaction will remain in the system as utilized CP limit until those trades are settled; the new CP limit will apply for fresh trades.

Answer: a

- 3. Repo trades on the NEAT are matched in terms of**

- Rates, volume and other order conditions
- Price, volume and other order conditions
- Price-time priority
- Rates-time priority

Answer: a

12. REGULATORY & PROCEDURAL ASPECTS

- 1. The day count convention for corporate bonds is**

- | | |
|--------------------|--------------------|
| (a) 30/360 US NASD | b) Actual/365 |
| (c) Actual/360 | d) 30/360 European |

Answer: b

- 2. A 364-day CP, maturing on 28 June 2018, is trading on 17 July 2017, at a price of ₹93.3375. What is the Yield inherent in this price?**

Answer:

$$\text{Yield} = 93.3375 * 346$$

$$(100 - 93.3375) * 365$$

= 7.5300% (Number of days between 17/07/2017 and 28/06/2018 is 346 days)

- 3. A 90 day CP is issued on 2 July 2017, when the price of a t-bill of same tenor is ₹97.5675. If the CP was issued at a price of ₹97.45028, what is the spread at which it has been issued?**

Answer: The implicit yield for treasury bills and CPs can be found using the formula

$$\text{Yield} = ((100 - \text{price}) * 365) / (\text{Price} * \text{no of days to maturity})$$

$$\begin{aligned} \text{The yield implicit in the price of the T-bill is} &= ((100 - 97.5675) * 365) / (97.5675 * 90) \\ &= 10.1111\% \end{aligned}$$

$$\begin{aligned} \text{The yield implicit in the price of the CP is} &= ((100 - 97.45028) * 365) / (97.45028 * 90) \\ &= 10.6111\% \end{aligned}$$

The spread at which the CP has been issued is = 10.6111 – 10.1111 = 50 basis points.

- 4. Compute the Rupee value of an SGL transaction, with the following data:**

Coupon Rate: 11.68%

Maturity date: 6 August 2018

Settlement Date: 11 July 2017

Price: ₹105.4025

Transaction amount: ₹50000000

Answer: Value of the transaction = number of securities * trade price
 $= (50000000/100) * 105.4025 = ₹5,27,01,250$

Accrued Interest for the period since the last coupon is

$$\begin{aligned} &= \text{days since the last coupon}/360 * \text{coupon rate} * \text{face value} \\ &= (155/360) * 0.1168 * 50000000 = ₹25,14,444 \end{aligned}$$

Settlement amount = Value of transaction + Accrued Interest
 $= ₹5,27,01,250 + 25,14,444 = ₹5,52,15,694$

(Number of days since the last coupon date can be computed using the *coupdays* function in Excel. Specify Settlement date; maturity date; frequency = 2; and basis = 4)

5. The details of a transaction in G-Secs is as under:

Coupon Rate: 10.50%

Maturity Date: 21 May 2021

Settlement Date: 29 July 2017

Price: ₹111.9125

Transaction Amount: ₹63500000

The buyer is unable to lodge the SGL on the settlement date. The transaction is settled 1 day later. If the NSE overnight MIBOR on the previous day was 8.25%, what is the amount for which this SGL will settle?

Answer: Value of the transaction is = number of securities * trade price
 $\begin{aligned} &= (63500000/100) * 111.9125 \\ &= ₹7,10,64,438 \end{aligned}$

Accrued Interest for the period since the last coupon

$$\begin{aligned} &= \text{days since the last coupon}/360 * \text{coupon rate} * \text{face value} \\ &= (68/360) * 0.1050 * 63500000 \\ &= ₹12,59,417 \end{aligned}$$

Settlement amount = ₹7,10,64,438 + 12,59,417
 $= ₹7,23,23,855$

(Number of days since the last coupon date can be computed using the *coupdays* function in Excel. Specify Settlement date; maturity date; frequency = 2; and basis = 4)

The amount of interest to be paid for 1 day delay in settlement will be the overnight MIBOR applied to the settlement amount, on actual/365 day basis.

Interest to be paid = $7,23,23,855 * 0.0825 * 1/365$
 $= ₹16,347.17$

Therefore settlement amount with interest will be = ₹7,23,40,201

13. VALUATION OF BONDS

1. A GOI security with coupon of 11.68%, maturing on 6 August 2019, is to be settled on 1 Feb 2018. What are the number of days from the previous coupon date?

- (a) 179
- (b) 176
- (c) 178

(d) 175

Answer: d.

We use the *coupdaybs* function in Excel and specify the following:

Settlement date: 1 February 2018

Maturity Date: 6 August 2019

Frequency: 2

Basis: 4

The answer is: 175 days

- 2. What is the accrued interest on a 11.68% GOI security, maturing on 6 August 2019, trading on 1 June 2018 at a YTM of 7.7395%?**

(a) ₹3.6901

(b) ₹3.7311

(c) ₹3.7105

(d) ₹3.7520

Answer: b

Accrued interest is computed as Coupon payment * (number of days from previous coupon days in the coupon period)

We use the *coupdaybs* and *coupday* functions to ascertain days from previous coupon and days in the coupon period.

The amount of coupon is ₹11.68/2.

Therefore, the accrued interest is

$$= 5.84 * (115/180)$$

$$= ₹3.7311$$

- 3. A 11.68% GOI security maturing on 6 August 2019, is being priced in the market on 11 July 2018 at ₹104.34. The YTM of the bond is**

(a) 7.3728%

(b) 7.3814%

(c) 7.3940%

(d) 7.3628%

We use the *Yield* function in Excel, specifying settlement (11 July 2018) and maturity dates (6 Aug 2019), coupon (0.1168), price of the security (104.34), redemption (100) frequency (2), basis (4).

The answer obtained is 7.3728%.

Answer: a

- 4. The following is the description of bonds held in a portfolio. What is the portfolio yield, using the weighted yield method?**

Coupon (% p.a.)	Maturity Date	Market Price on 11 July 2018 (₹)	Number of Bonds
11.68	6-Aug-2019	104.34	5400
11.15	1-Sep-2019	104.03	5560
13.82	30-May-2019	105.5	5720
12.69	10-May-2019	104.9	5880
11.00	23-May-2020	105.74	6040

Answer: The yield of each of the bonds can be computed using the ‘yield’ function (see solved example 3 above). The market value of each bond can be computed as the product of number of bonds and market price as on 11 July 2018.

Coupon (% p.a.)	Maturity Date	Price (₹)	Yield (%)	Number of Bonds	Market Value (₹)
11.68	6-Aug-2019	104.34	7.3728%	5400	563436
11.15	1-Sep-2019	104.03	7.3770%	5560	578406.8
13.82	30-May-2019	105.5	7.2731%	5720	603460
12.69	10-May-2019	104.9	6.5056%	5880	616812
11.00	23-May-2020	105.74	7.6309%	6040	638669.6

The yield of the portfolio can be found by weighting each bond’s yield by the market value of the bond in the portfolio. This is done as:

$$\{(7.3728*563436) + (7.3770*578406.8) + (7.2731*603460) + (6.5056*616812) + (7.6309*638669.6)\}/(563436 + 578406.8 + 603460 + 616812 + 638669.6)$$

We can do the same in Excel, using the formula

$$= \text{sumproduct}(\text{yield array}, \text{market value array})/\text{sum}(\text{market value array})$$

The answer in both cases is 7.2302%, which is the portfolio yield.

5. **On 12 April 2018, a dealer purchases a 11.68% GOI bond maturing on 6 August 2019 for ₹104.34. He holds the bond for 1 year, and sells it on 11 April 2019, for ₹100.90. If the coupons received during the holding period are re-invested at 8.2405% (1st coupon) and 6.7525% (2nd coupon), what is the realized yield on the investment?**

Answer: The components of realized yield are:

Coupon income, re-investment of coupons and capital gains/losses.

Coupon income: The number of coupons between the acquisition date and date of sale of the bond can be found with the *coupnnum* function. In this case there are two coupons. Therefore the coupon received is ₹11.68.

Re-investment Income: We can find the first coupon date, by using the ‘coupncd’ function in Excel. The first coupon is due on 6 August 2018. Since the bond will be sold on 11 April 2019, the number of days for which the coupon will be re-invested will be 248 days. The interest rate applicable to this coupon, as given in the question, is 8.2405%. Therefore the re-investment income can be computed as

$$= (11.68/2) * (248/365) * 0.082405 = 0.3270$$

Similarly, the second coupon is due on 6 Feb 2019. It will be reinvested for 65 days, at 6.7525%. The reinvestment income will be

$$= (11.68/2) * (64/365) * 0.067525 = 0.0691$$

Capital gain/loss:

$$₹100.90 - 104.34 = -3.44$$

The total rupee return from holding the bond for a year is

$$= 11.68 + 0.3270 + 0.0691 - 3.44 = 8.6361$$

The released yield therefore is

$$= (8.6361/104.34) * 100 = 8.2769\%$$

14. YIELD CURVE AND TERM STRUCTURE OF INTEREST RATES

- The NSE ZCYC estimates for July 11, 2001 are as follows:

Beta 0 = 11.4652

Beta 1 = - 2.2510

Beta 2 = - 10.7202

Tau = 1.4197

What is the spot rate for a term to maturity of 3.5 years?

Answer:

We use the ZCYC valuation equation

$$r(m,b) = \beta_0 + (\beta_1 + \beta_2) * [1 - \exp(-m/\tau)]/(m/\tau) - \beta_2 * \exp(-m/\tau)$$

where 'm' denotes related maturity for the cash flows in a bond and 'b' = [$\beta_0, \beta_1, \beta_2$ and tau] are parameters to be estimated. Here β_0 is the level parameter and commonly interpreted as long term (long term in mathematical sense – approaching infinity) rate, β_1 is slope parameter, β_2 is curvature parameter and tau (τ) is scale parameter while ($\beta_0 + \beta_1$) gives the short term rate.

We can take the values provided by NSE to an Excel Spreadsheet, and key in the formula above, substituting 3.5 for m in the equation, and substituting the NSE estimates for β_0, β_1 and β_2 and Tau. We then get

$$= 11.4652 + ((-2.2510 - 10.7202) * (1 - \exp(-3.5/1.4197))/(3.5/1.4197) - (-10.7202 * \exp(-3.5/1.4197))) = 7.56185\%$$

- If there are 2 bonds trading in the market as follows, on 11 July 2018 as detailed below:

i. 11.98% 2021 (Maturity 8 Sep 2021): ₹111.8

ii. 11.19% 2022 (Maturity 12 Aug 2022): ₹111.83

What is the linearly interpolated rate for 3.5 years, using the above data?

Answer: Using the *Yield* function, we can find out the YTM of the above bonds as 7.6917% and 7.7524% respectively. Using the *yearfrac* function, we can find the term to maturity of these bonds as 3.1583 years and 4.0861 years respectively. To find the YTM for a 3.5 year bond, we can do a linear interpolation, as follows:

$$= 7.6917 + (7.7524 - 7.6917) * ((3.5 - 3.1583)/(4.0861 - 3.1583)) = 7.7141\%$$

- If the yield curve is upward sloping, which of the following is false?

(a) The market expects short term interest rates to increase

(b) The liquidity premium is increasing with increase in tenor

(c) There is an excess of demand over supply in shorter maturities

(d) The interest rates are positively related to term, along the yield curve

Answer: c

- The NSE-ZCYC estimate of the spot rate for the term 7.2876 years is 9.1648%. What is the discounted value of a cash flow of ₹100, receivable at the end of that term?

Answer: We can use the ZCYC estimates to arrive at the discounted value of any cash flow, by using the formula:

$$d(m,b) = \exp\{r(m,b) * m\}/100$$

Therefore the discount factor to be applied to the cash flow of ₹100, receivable at the end of 7.2876 years is (Excel recognises the term exp in the formula)

$$= \exp((-9.1684 * 7.2876)/100)$$

$$= 0.512787$$

Therefore, the discounted value of ₹100 will be

$$\begin{aligned} &= 100 * 0.5128 \\ &= ₹51.2787 \end{aligned}$$

5. The following term structure of interest rates is given to you:

Tenor (in years)	yield (% p.a.)
0.30	7.0257
0.35	7.0487
0.40	7.0847
0.45	7.1589
0.50	7.1905
0.55	7.2025
0.60	7.2368
0.65	7.2604
0.70	7.2928
0.75	7.3138
0.80	7.3388
0.85	7.3704
0.90	7.3939
0.95	7.4181
1.00	7.4379

On 15 June 2018, you are required to value a bond with a coupon of 11.04%, maturing on 10 April 2019. The face value of the bond is ₹100. Given the yield curve information in the table above, what is the value of the bond? (Use linear interpolation to find discounting rates for each of the component cash flows.)

Answer: We have to first find the cash flows of the bond up to the date of maturity, and the distance in years of each of the cash flows to the settlement date. We use the coupncd function and find that there are 115 days to the first coupon and 295 days to the next coupon, which translate into 0.319444 years and 0.819444 years respectively.

The discount rate for these two tenors can be found by interpolation from the term structure information that is given in the table above. The rate for the tenor of 0.319444 years can be found by linear interpolation between the tenors 0.3 and 0.35 years, as follows:

$$= 7.0257 + (7.0487 - 7.0257) * (0.31944 - 0.3) / (0.35 - 0.3) = 7.0346\%$$

Similarly the rate for the tenor of 0.819444 can be found by interpolation between the tenors 0.8 and 0.85 years, as follows:

$$= 7.3388 + (7.3704 - 7.3388) * (0.81944 - 0.8) / (0.85 - 0.8) = 7.3511\%$$

We can now value the bond by discounting the cash flows using these rates, as follows:

$$\begin{aligned} &5.52 / (1.070346)^{0.319444} + 105.52 / (1.073511)^{0.819444} \\ &= ₹104.9627 \end{aligned}$$

This is the value of the bond, computed by discounting each cash flow by the interpolated yield from the term structure of interest rates.

15. DURATION

- The duration of a coupon paying bond is always lower than its term to maturity, because:**
 - Since duration is the measure of average maturity, it has to be lower than the tenor.
 - Duration measures the weighted maturity, and therefore cannot be compared to tenor of a bond.
 - As long as some cash flows are received prior to maturity, the weightage of the terminal cash flow cannot be 1.

Answer: c

- On 11 July 2018, the following is the market value of the bonds in your portfolio. (Assume equal holdings in all the bonds.) What is the duration of the portfolio?**

Coupon (%)	Maturity date	Price on 11 July 2018 (₹)
11.68	6-Aug-2019	104.34
11.00	23-May-2020	105.74
12.50	23-Mar-2021	111.63
11.98	8-Sep-2022	111.8
11.19	12-Aug-2023	111.83
11.68	10-Apr-2024	114.4
11.90	28-May-2025	116.6

Answer: We can use the Yield function to find the YTM and the Duration Function to compute duration, as follows:

Coupon (%)	Maturity Date	Market Price on 11-Jul-2018 (₹)	YTM (%)	Duration (Yrs)
11.68	6-Aug-2019	104.34	7.3728%	0.990695
11.00	23-May-2020	105.74	7.6309%	1.720562
12.50	23-Mar-2021	111.63	7.6399%	2.318881
11.98	8-Sep-2022	111.8	7.6917%	2.653983
11.19	12-Aug-2023	111.83	7.7524%	3.297774
11.68	10-Apr-2024	114.4	7.9700%	3.753991
11.90	28-May-2025	116.6	8.2733%	4.463083

Portfolio Value: 776.34

Portfolio Duration: 2.781662

The portfolio duration is the weighted duration of the bonds, using the market values as weights. It is computed as Sum product (market price, duration)/sum (market price) = 2.7816

- Using the same data as in Question 2, if the expectation is that yield would increase by 50 basis points, what would be the expected change in the value of the portfolio?**

Answer: We can use the *mduration* function in Excel, and compute the modified duration of all the bonds, and find the portfolio modified duration, using a similar method as in Answer 2. We would arrive at a number **2.6763** as the portfolio's modified duration.

A 50bp increase in yield will reduce the value of the portfolio by $2.6763 * .50 = 1.3381\%$

In rupee terms that would be ₹776.34 * 1.3381% = ₹10.3888
The portfolio price will reduced by ₹10.3888/-.

16. FIXED INCOME DERIVATIVES

1. An interest rate swap transforms the nature of _____.

- (a) an existing liability only
- (b) an existing asset only
- (c) a notional liability or an asset
- (d) an existing liability or an asset

Answer: d

2. A swap can be interpreted as a strip of _____.

- (a) fixed rate agreements only
- (b) future contracts only
- (c) fixed rate agreements or future contracts
- (d) None of the above

Answer: c

3. Forward rates cannot be _____.

- (a) positive
- (b) negative
- (c) zero
- (d) higher than spot rate

Answer: b

Appendix **C**

INDIAN SECURITIES MARKETS

'Securities' and 'Securities Markets'

Securities are financial instruments issued to raise funds. The primary function of the securities markets is to enable the flow of capital from those that have it to those that need it. Securities market help in transfer of resources from those with idle resources to others who have a productive need for them. Securities markets provide channels for allocation of savings to investments and thereby decouple these two activities. As a result, the savers and investors are not constrained by their individual abilities, but by the economy's abilities to invest and save respectively, which inevitably enhances savings and investment in the economy.

Concept of 'Risk' and 'Return'

Return refers to the benefit the investor will receive from investing in the security. Risk refers to the possibility that the expected returns may not materialise. For example, a company may seek capital from an investor by issuing a bond. A bond is a debt security, which means it represents a borrowing of the company. The security will be issued for a specific period, at the end of which the amount borrowed will be repaid to the investor. The return will be in the form of interest, paid periodically to the investor, at a rate and frequency specified in the security. The risk is that the company may fall into bad times and default on the payment of interest or return of principal.

The Structure of Indian Securities Markets

The market in which securities are issued, purchased by investors, and subsequently transferred among investors is called the securities market. The securities market has two interdependent and inseparable segments, viz., the primary market and secondary market. The primary market, also called the new issue market, is where issuers raise capital by issuing securities to investors. The secondary market also called the stock exchange facilitates trade in already-issued securities, thereby enabling investors to exit from an investment. The risk in a security investment is transferred from one investor (seller) to another (buyer) in the secondary markets. The primary market creates financial assets, and the secondary market makes them marketable.

The Issuers in Indian Securities Markets

Issuers are organizations that raise money by issuing securities. They may have short-term and long-term need for capital, and they issue securities based on their need, their ability to service the securities. Some of the common issuers in the Indian Securities Markets are:

1. Companies issue securities to raise short and long term capital for conducting their business operations.
2. Central and state governments issue debt securities to meet their requirements for short and long term funds to meet their deficits. Deficit is the extent to which the expense of the government is not met by its income from taxes and other sources.
3. Local governments and municipalities may also issue debt securities to meet their development needs. Government agencies do not issue equity securities.
4. Financial institutions and banks may issue equity or debt securities for their capital needs beyond their normal sources of funding from deposits and government grants.
5. Public sector companies which are owned by the government may issue securities to public investors as part of the disinvestment program of the government, when the government decides to offer its holding of these securities to public investors.
6. Mutual funds issue units of a scheme to investors to mobilise money and invest them on behalf of investors in securities.

Role of Stock Brokers and Sub-brokers in the Securities Markets

Stock brokers are registered trading members of stock exchanges. They sell new issuance of securities to investors. They put through the buy and sell transactions of investors on stock exchanges. All secondary market transactions on stock exchanges have to be conducted through registered brokers. Sub-brokers help in reaching the services of brokers to a larger number of investors. Several brokers provide research, analysis and recommendations about securities to buy and sell, to their investors. Brokers may also enable screen-based electronic trading of securities for their investors, or support investor orders over phone. Brokers earn a commission for their services.

Asset Management Company & Portfolio Managers

Asset management company and portfolio managers are investment specialists who offer their services in selecting and managing a portfolio of securities. Asset management companies are permitted to offer securities (called units) that represent participation in a pool of money, which is used to create the portfolio. Portfolio managers do not offer any security and are not permitted to pool the money collected from investors. They act on behalf of the investor in creating and managing a portfolio. Both asset managers and portfolio managers charge the investor a fee for their services, and may engage other security market intermediaries such as brokers, registrars, and custodians in conducting their functions.

Role of Merchant Bankers in Securities Markets

Merchant bankers also called as issue managers, investment bankers, or lead managers help an issuer access the security market with an issuance of securities. They evaluate the capital needs, structure an appropriate instrument, get involved in pricing the instrument, and manage the entire issue process until the securities are issued and listed on a stock exchange. They engage other intermediaries such as registrars, brokers, bankers, underwriters and credit rating agencies in managing the issue process.

Role of Underwriters in the Securities Markets

Underwriters are primary market specialists who promise to pick up that portion of an offer of securities which may not be bought by investors. They serve an important function in the primary market, providing the issuer the comfort that if the securities being offered do not elicit the desired demand, the underwriters will step in and buy the securities. The specialist underwriters in the government bond market are called primary dealers.

The role of Credit Rating Agencies in the Securities Markets

Credit rating agencies evaluate a debt security to provide a professional opinion about the ability of the issuer to meet the obligations for payment of interest and return of principal as indicated in the security. They use rating symbols to rank debt issues, which enable investors to assess the default risk in a security.

The role of an Investment Adviser

Investment adviser work with investors to help them make a choice of securities that they can buy, based on an assessment of their needs, time horizon return expectation and ability to bear risk. They may also be involved in creating financial plans for investors, where they define the goals for which investors need to save money and propose appropriate investment strategies to meet the defined goals.

Various regulators of the Indian Securities Markets

Securities and Exchange Board of India (SEBI)

The Securities and Exchange Board of India (SEBI), a statutory body appointed by an Act of Parliament (SEBI Act, 1992), is the chief regulator of securities markets in India. SEBI functions under the Ministry of Finance. The main objective of SEBI is to facilitate growth and development of the capital markets and to ensure that the interests of investors are protected. The Securities Contracts Regulation Act, 1956 is administered by SEBI.

SEBI has codified and notified regulations that cover all activities and intermediaries in the securities markets.

The Reserve Bank of India (RBI)

The Reserve Bank of India regulates the money market segment of securities market. As the manager of the government's borrowing program, RBI is the issue manager for the government. It controls and regulates the government securities market. RBI is also the regulator of the Indian banking system and ensures that banks follow prudential norms in their operations. RBI also conducts the monetary, forex and credit policies, and its actions in these markets influences the supply of money and credit in the system, which in turn impact the interest rates and borrowing costs of banks, government and other issuers of debt securities.

Commonly used indicators while investing in Equity Markets

- (a) **Price Earning Multiple:** The price-earnings ratio or the PE multiple is a valuation measure that indicates how much the market values per rupee of earning of a company. It is computed as:

Market price per share/Earnings per share

Earnings per share are the profit after taxes divided by the number of shares. It indicates the amount of profit that company has earned, for every share it has issued. PE is represented as a multiple. When one refers to a stock was trading at 12x, it means the stocks is trading at twelve times its earnings.

- (b) **Price to Book Value (PBV):** The PBV ratio compares the market price of the stock with its book value. It is computed as market price per share upon book value per share.

The book value is the accounting value per share, in the books of the company. It represents the net worth (capital plus reserves) per share. If the market price of the stock were lower than the book value and the PBV is less than one, the stock may be undervalued. In a bullish market when prices move up rapidly, the PBV would drop, indicating rich valuation in the market.

- (c) **Dividend Yield:** Dividend is declared as a percentage of the face value of the shares. A 40% dividend declared by company will translate into a dividend of ₹4 per share with a face value of ₹10 ($10 \times 40\% = .4$). If the share was trading in the stock market for a price of ₹200 per share, this means a dividend yield of 2%.

The dividend declared by a company is a percentage of the face value of its shares. When the dividend received by an investor is compared to the market price of the share, it is called the dividend yield of the share.

Zero Coupon Bonds

A zero coupon bond does not pay any coupons during the term of the bond. The bond is issued at a discount to the face value, and redeemed at face value. The effective interest earned is the difference between face value and the discounted issue price. A zero coupon bond with a long maturity is issued at a very big discount to the face value. Such bonds are also known as deep discount bonds.

Floating Rate Bonds

Floating rate bonds are instruments where the interest rate is not fixed, but re-set periodically with reference to a pre-decided benchmark rate. For instance, a company can issue a 5-year floating rate bond, with the rates being reset semi-annually at 50 basis points above the 1-year yield on central government securities. Every six months, the 1-year benchmark rate on government securities is ascertained from the prevailing market prices. The coupon rate the company would pay for the next six months is calculated as this benchmark rate plus 50 basis points.

Floating rate bonds are also known as variable rate bonds and adjustable rate bonds.

Callable Bonds and Puttable Bonds

Callable bonds allow the issuer to redeem the bonds prior to their original maturity date. Such bonds have a call option in the bond contract, which lets the issuer alter the tenor of the security. For example, a 10-year bond may be issued with call options at the end of the 5th year. Such options give issuers more flexibility in managing their debt capital. If interest rates decline, an issuer can redeem a callable bond and re-issue fresh bonds at a lower interest rate.

A Puttable bond gives the investor the right to seek redemption from the issuer before the original maturity date. For example, a 7-year bond may have a put option at the end of the 5th year. If interest rates have risen, Puttable bonds give investors the ability to exit from low-coupon bonds and re-invest in higher coupon bonds.

Various Money Market Securities

- a) **Repos/reverse repos:** A repo is a transaction in which one participant borrows money at a pre-determined rate against the collateral of eligible security for a specified period of time. A reverse repo is a lending transaction; a repo in the books of the borrower is a reverse repo in the books of the lender. Eligible collateral for repos and reverse repos are central and state government securities and select corporate bonds.
- b) **Collateralized Borrowing and Lending Obligation (CBLO):** A Collateralized Borrowing and Lending Obligation (CBLO) is an instrument used to lend and borrow for short periods, typically one to three days. The debt is fully secured against the collateral of government securities. CBLO is a standardized and traded repo.
- c) **Certificates of Deposits (CDs):** Certificates of Deposits (CDs) are short term tradable deposits issued by banks to raise funds. CDs are different from regular bank deposits because they involve creation of securities. This makes the CD transferable before maturity. However, actual trading in CDs is extremely limited with most investors preferring to hold them to maturity.
- d) **Treasury Bills:** The central government borrows extensively in the money market for its daily operations through the issue of short-term debt securities called Treasury bills (T-bills). T-bills are issued for maturities of 91 days, 182 days and 364 days. They are issued through an auction process managed by the RBI and listed soon after issue. Banks, mutual funds, insurance companies, provident funds, primary dealers and FIs bid in these auctions.

- e) **Commercial Paper:** Companies and institutions raise short-term funds in the money market through the issue of commercial paper (CP). Though CPs are required to have a credit rating, they are unsecured corporate loans with a limited secondary market. They can be issued for various maturities of up to 364 days, but the 90-day CP is the most popular.

Concept of Time Value of Money

A rupee in hand today is more valuable than a rupee obtained in future. For example, let us compare receiving ₹1000 today, and receiving it after 2 years. If today's ₹1000 is placed in a 2 year bank deposit earning simple interest of 8%, then it will be worth ₹1080 (principal 1000 + interest 80) at the end of 2 years. This makes today's ₹1000 more valuable than the future ₹1000. The value of currently available funds over funds received in the future is due to the return that can be earned by investing current funds. If cash flows that are receivable at different points in time have to be compared, the time value of money has to be taken into account.

Relationship between Bond Yields and prices

The bond price is the present value of cash inflows from the bond, discounted by the market yield. So bond price, coupon rate and yield are all connected. Given any two, the third can be easily calculated.

In the bond markets, it is the price of a bond that is known and quoted. Information on coupon rate and redemption are also available. Given the bond price and its coupon, the yield can be computed.

If the investor purchases the bond at a price lower than the face value, then he has acquired it at a price cheaper than the originally issued price. As a result yield will be higher than the coupon rate. If the investor purchases the bond at a price higher than the face value, then he has acquired it at a higher price than the original face value, so his yield will be lower than the coupon rate.

There is an inverse relationship between yield and price of a bond. As bond price falls, the yield to the investor goes up. This is because as the discounting rate (or yield) is increased, the final present value (price) reduces.

Yield to Maturity

The rate which equates the present value of future cash flows from a bond with the current price of the bond is called the Yield to Maturity (YTM) of the bond. As bond price changes, so does the YTM. Thus, YTM is the discount rate implied in the bond value at a point in time. YTM is a popular and widely used method for computing the return on a bond investment. Yield quotations in the debt market usually refer to YTM.

Initial Public Offer (IPO)

The first public offer of shares made by a company is called an Initial Public Offer (IPO). When a company makes an IPO the shares of the company becomes widely held and there is a change in

the shareholding pattern. The shares which were privately held by promoters are now held by retail investors, institutions, promoters etc. An IPO can either be a fresh issue of shares by the company or it can be an offer for sale to the public by any of the existing shareholders, such as the promoters or financial institutions.

- **Fresh Issue of Shares**

New shares are issued by the company to public investors. The issued share capital of the company increases. The percentage holding of existing shareholders will come down due to the issuance of new shares.

- **Offer for Sale**

Existing shareholders such as promoters or financial institutions offer a part of their holding to the public investors. The share capital of the company does not change since the company is not making a new issue of shares. The proceeds from the IPO go to the existing shareholders who are selling the shares and not to the company. The holding of the existing shareholders in the share capital of the company will reduce.

Follow-on Public Offer (FPO)

A follow-on public offer is made by an issuer that has already made an IPO in the past and now makes a further issue of securities to the public. A company can make a further issue of shares if the aggregate of the proposed issue and all the other issues made in a financial year does not exceed 5 times the pre-issue net worth.

When a company wants additional capital for growth or to redo its capital structure by retiring debt, it raises equity capital through a fresh issue of capital in a follow-on public offer.

Rights Issue of Shares

Whenever a company makes a fresh issue of shares, it has an impact on the existing shareholders since their proportionate holding in the share capital of the company gets diluted. For example, a company may have 10 lakhs shares of ₹10 each, amounting to an issued and paid-up capital of ₹1 crore. If it issues another 10 lakhs shares, to increase its capital, the proportion held by existing shareholders will come down by half, as the issued and paid up capital has doubled. This is called as dilution of holdings. To prevent this, section 81 of the Company's Act requires that a company which wants to raise more capital through an issue of shares must first offer them to the existing shareholders. Such an offer of shares is called a rights issue.

'Green Shoe Option'

The Green Shoe Option (GSO) in a public offer is used by companies to provide stability to price of the share in the secondary market immediately on listing. A company, which opts for Green Shoe

option can allot additional shares not exceeding 15% of the issue size, to the general public who have subscribed in the issue. The proceeds from this additional allotment will be kept in a separate bank account and used to buy shares in the secondary markets once the shares are listed, in case the price falls below the issue price. This is expected to provide support to the price of the shares. This price stabilization activity will be done by an entity appointed for this purpose.

Mutual Fund

Mutual fund is a vehicle to mobilize moneys from investors, to invest in different markets and securities, in line with the investment objectives agreed upon, between the mutual fund and the investors. In other words, through investment in a mutual fund, a small investor can avail of professional fund management services offered by an asset management company.

Equity Mutual Funds

Equity funds invest in a portfolio of equity shares and equity related instruments. The return and risk of the fund will be similar to investing in equity. Investors in equity funds seek growth and capital appreciation as the primary objective and should ideally have a long investment horizon that will allow time for the investment to appreciate in value and not be affected by short-term fluctuations.

- Diversified equity funds invest across segments, sectors and sizes of companies. An index fund is a passive diversified equity fund, invested in the same stocks in the same weighting as an equity market index. An actively managed diversified equity fund modifies the weights across sectors, and may also choose non-index stocks to outperform the index.
- Large-cap equity funds invest in stocks of large, liquid blue-chip companies with stable performance and returns. The performance of a large stock fund is compared with a narrow index such as the Sensex or Nifty, which the fund seeks to beat.
- Mid-cap funds invest in mid-cap companies that have the potential for greater growth and returns. However, the risk in the funds is higher because the companies they invest in have a greater risk to their revenues and profits.
- Small-cap funds invest in companies with small market capitalisation with intent of benefitting from the higher gains in the price of stocks of smaller companies they may benefit from newer business opportunities. The risks are also higher in small-cap funds.
- Sector funds invest in companies that belong to a particular sector such as technology or banking. The risk is higher in sector funds because of lesser diversification since such stocks are by definition concentrated in a particular sector.
- Thematic funds invest in stocks of companies which may be defined by a unifying underlying theme. For example, infrastructure funds invest in stocks in the infrastructure sector, across construction, cement, banking and logistics. They are more diversified than sector funds but more concentrated than a diversified equity fund.
- Equity funds may also feature specific investment strategies. Value funds invest in stocks of good companies selling at cheaper prices; dividend yield funds invest in stocks that pay a regular dividend; special situation funds invest in stocks that show the promise of a turnaround.

Debt Mutual Funds

Debt funds invest in debt securities issued by the government, public sector units, banks and private limited companies. Debt securities may have different features. They may have credit risk or risk of default, short-term or long-term duration. Debt funds are offered in three broad categories:

- **Short term funds:** These funds focus primarily on accrual income and shorter maturity, and have a lower risk and stable return.
 - i. Liquid funds can only invest in securities with not more than 91 days to maturity. This is a regulatory requirement. These funds primarily earn coupon income in line with current market rates
 - ii. Ultra-short term funds hold a portfolio similar to liquid funds but with a slightly higher maturity to benefit from higher coupon income.
 - iii. Short-term Gilt funds invest in short-term government securities such as treasury bills of the government.
 - iv. Short-Term Plan invest in a portfolio of short-term debt securities primarily to earn coupon income but may also hold some longer term securities to benefit from appreciation in price.
- **Long term funds:** These funds focus on MTM gains and longer maturity, and have a higher risk and higher return.
 - i. Gilt funds invest in a portfolio of long-term government securities. The coupon income earned is lower than corporate bonds of comparable tenor since there is no credit risk in the securities. The MTM gains and losses can be high since these securities have long tenors.
 - ii. Income funds invest in a combination of corporate bonds and government securities. They earn a higher coupon income from the credit risk in corporate bonds held. The gains or losses from MTM will depend upon the tenor of the securities held.
- **Dynamic funds:** These funds shift their focus between short and long term debt instruments, depending on the expectation for interest rate, and provide moderately higher return than short term funds, at a moderately lower risk than long term debt funds

Fixed Maturity Plans

Fixed Maturity Plans (FMP) are closed-end funds that invest in securities whose maturity matches the term of the scheme. The scheme and the securities that it holds mature together at the end of the stated tenor. The fund pays out the maturity proceeds of the portfolio on the closing date. Investors who are able to hold the scheme to maturity will be able to benefit from the returns of the FMP that are locked in when the portfolio is created. There is no risk of the value of the securities being lower at the time the fund matures (unless there is a default) since the instruments will also be redeemed at their face value on maturity.

- i. The time for which the investor is willing to invest must match the term of the fund.
- ii. The primary risk in FMPs is credit risk from a possible default by the issuer.
- iii. As closed-end funds these schemes are listed on stock exchanges where they may be traded at prices related to the NAV.

Hybrid Funds

Hybrid funds hold a portfolio of equity and debt securities. The investment objective of the fund will determine the allocation of the portfolio between the two asset classes. A hybrid fund is a debt and an equity fund, rolled into one. The risk in a hybrid fund will primarily depend upon the allocation between equity and debt, and the relative performance of these asset classes. The higher the equity component in the portfolio, the greater will be the overall risk.

- **Equity-Oriented Hybrid Funds**

Equity-oriented hybrid funds have a greater exposure to equity in their portfolio as compared to debt. Balanced funds are an example of equity-oriented funds. The coupon income from the debt portion will stabilize the risky returns from the equity component. However the higher equity component in the portfolio means the fund's overall returns will depend on the performance of the equity markets and will also fluctuate more.

- **Debt-Oriented Hybrid Funds**

Debt-oriented hybrid funds have a higher proportion of their portfolio allotted to debt. Monthly Income Plans are such funds. The returns are primarily from the debt portion and will depend upon the type debt securities held: short or long term, low or high credit risk. The equity portion augments the return from debt so that the fund is able to generate better returns than a pure debt fund.

- **Asset Allocation Funds**

These funds invest in both equity and debt but without a pre-specified allocation as in the case of other hybrid funds. The fund manager takes a view on which type of investment is expected to do well and will tilt the allocation towards either asset class. Such funds may also hold 100% in equity or debt. Examples of asset allocation fund include life stage funds that invest across asset classes suitable to the age of the investor. Such funds will have a higher allocation to equity in the initial years and reduce equity exposure and increase debt exposure as the age advances.

Equity Linked Savings Schemes (ELSS)

Equity Linked Savings Schemes (ELSS) are equity funds that provide tax benefits in the form of deductions under section 80(c) for the amount invested.

- The limit for claiming deduction is ₹1 lakh.
- ELSS have to hold at least 80% of the investment portfolio in equity securities.
- Investments are subject to a three-year lock-in on the investments made to get the tax benefit.

Exchange Traded Funds

Exchange traded funds (ETF) are a type of mutual fund that combines features of an open-ended fund and a stock. Following are its features:

- Units are issued directly to investors when the scheme is launched.
- Post this period, units are listed on a stock exchange like a stock and traded.

- Units purchased at the time of launch or bought from the stock markets are credited to the demat account of the investor.
- Transactions are done through brokers of the exchange. Investors need a broking account and a demat account to invest in ETFs.
- The prices of the ETF units on the stock exchange will be linked to the NAV of the fund, but prices are available on a real-time basis depending on trading volume on stock exchanges.

Gold Exchange Traded Funds

Gold Exchange Traded Funds (ETFs) are ETFs with gold as the underlying asset. The following are the features:

- It provides a way to hold gold in electronic rather than in physical form.
- Typically each unit of ETF represents one gram of gold.
- The fund holds physical gold and gold receipts representing the units issued.
- Price of the units will move in line with the price of gold.

International Funds

International funds invest in securities listed on markets outside India. The type of securities that the fund can invest in is specified by the regulator SEBI and includes equity shares and debt -listed abroad, units of mutual funds and ETFs issued abroad and ADRs and GDRs of Indian companies listed abroad. The funds can also invest part of the portfolio in the Indian markets.

Fund of Funds (FoFs)

FoFs invests in other funds. The FoF selects funds that meets its investment objectives and invests in them. Its portfolio is not made up of securities, but is a portfolio of other funds. Most FoFs invest in schemes of the same mutual fund. Some FoFs consider schemes across fund houses which meets the FoFs investment objective for inclusion in the portfolio.

Appendix **D**

BASICS OF DEBT MARKETS

1. Q. What is the Debt Market?

- A. The Debt Market is the market where fixed income securities of various types and features are issued and traded. Debt Markets are therefore, markets for fixed income securities issued by Central and State Governments, Municipal Corporations, Govt. bodies and commercial entities like Financial Institutions, Banks, Public Sector Units, Public Ltd. companies and also structured finance instruments.

2. Q. What is the Money Market?

- A. The Money Market is basically concerned with the issue and trading of securities with short term maturities or quasi-money instruments. The Instruments traded in the money-market are Treasury Bills, Certificates of Deposits (CDs), Commercial Paper (CPs), Bills of Exchange and other such instruments of short-term maturities (i.e., not exceeding 1 year with regard to the original maturity)

3. Q. Why should one invest in fixed income securities?

- A. Fixed Income securities offer a predictable stream of payments by way of interest and repayment of principal at the maturity of the instrument. The debt securities are issued by the eligible entities against the moneys borrowed by them from the investors in these instruments. Therefore, most debt securities carry a fixed charge on the assets of the entity and generally enjoy a reasonable degree of safety by way of the security of the fixed and/or movable assets of the company.

- The investors benefit by investing in fixed income securities as they preserve and increase their invested capital and also ensure the receipt of regular interest income.
- The investors can even neutralize the default risk on their investments by investing in Govt. securities, which are normally referred to as risk-free investments due to the sovereign guarantee on these instruments.
- The prices of Debt securities display a lower average volatility as compared to the prices of other financial securities and ensure the greater safety of accompanying investments.

- Debt securities enable wide-based and efficient portfolio diversification and thus assist in portfolio risk-mitigation.

4. Q. What are the advantages of investing in Government Securities (G-Secs)?

- A. The Zero Default Risk of the G-Secs. offer one of the best reasons for investments in G-secs so that it enjoys the greatest amount of security possible. The other advantages of investing in G-Secs are:
- Greater safety and lower volatility as compared to other financial instruments.
 - Variations possible in the structure of instruments like Index linked Bonds, STRIPS
 - Higher leverage available in case of borrowings against G-Secs.
 - No TDS on interest payments.
 - Tax exemption for interest earned on G-Secs. up to ₹3000/- over and above the limit of ₹12000/- under Section 80L (as amended in the latest Budget).
 - Greater diversification opportunities.
 - Adequate trading opportunities with continuing volatility expected in interest rates the world over.

5. Q. Who can issue fixed income securities?

- A. The Zero Default Risk of the G-Secs. offer one of the best reasons for investments in G-secs so that it enjoys the greatest amount of security possible. The other advantages of investing in G-Secs are:
- Greater safety and lower volatility as compared to other financial instruments.
 - Variations possible in the structure of instruments like Index linked Bonds, STRIPS
 - Higher leverage available in case of borrowings against G-Secs.
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 - Tax exemption for interest earned on G-Secs. up to ₹3000/- over and above the limit of ₹12000/- under Section 80L (as amended in the latest Budget).
 - Greater diversification opportunities.
 - Adequate trading opportunities with continuing volatility expected in interest rates the world over.

6. Q. What are the different types of instruments, which are normally traded in this market?

- A. The instruments traded can be classified into the following segments based on the characteristics of the identity of the issuer of these securities: The G-secs are referred to as SLR securities in the Indian markets as they are eligible securities for the maintenance of the SLR ratio by the Banks. The other non-Govt securities are called Non-SLR securities.

7. Q. What are the benefits of an efficient Debt Market to the financial system and the economy?

- A. The key role of the debt markets in the Indian Economy stems from the following reasons:
- Efficient mobilization and allocation of resources in the economy.
 - Financing the development activities of the Government.
 - Transmitting signals for implementation of the monetary policy.
 - Facilitating liquidity management in tune with overall short term and long term objectives.

Since the Government Securities are issued to meet the short term and long term financial needs of the government, they are not only used as instruments for raising debt, but have emerged as key instruments for internal debt management, monetary management and short term liquidity management. The returns earned on the government securities are normally taken as the benchmark rates of returns and are referred to as the risk free return in financial theory. The Risk Free rate obtained from the G-sec rates are often used to price the other non-govt. securities in the financial markets.

- Reduction in the borrowing cost of the Government and enable mobilization of resources at a reasonable cost.
- Provide greater funding avenues to public-sector and private sector projects and reduce the pressure on institutional financing.
- Enhanced mobilization of resources by unlocking illiquid retail investments like gold.
- Development of heterogeneity of market participants.
- Assist in development of a reliable yield curve and the term structure of interest rates.

9. Q. What are the risks in the case of debt securities?

- A. The following are the risks associated with debt securities:
- Default Risk: This can be defined as the risk that an issuer of a bond may be unable to make timely payment of interest or principal on a debt security or to otherwise comply with the provisions of a bond indenture and is also referred to as credit risk.
 - Interest Rate Risk: can be defined as the risk emerging from an adverse change in the interest rate prevalent in the market so as to affect the yield on the existing instruments. A good case would be an upswing in the prevailing interest rate scenario leading to a situation where the investors' money is locked at lower rates whereas if he had waited and invested in the changed interest rate scenario, he would have earned more.
 - Reinvestment Rate Risk: can be defined as the probability of a fall in the interest rate resulting in a lack of options to invest the interest received at regular intervals at higher rates at comparable rates in the market.

The following are the risks associated with trading in debt securities:

- Counter Party Risk: is the normal risk associated with any transaction and refers to the failure or inability of the opposite party to the contract to deliver either the promised security or the sale-value at the time of settlement.
- Price Risk: refers to the possibility of not being able to receive the expected price on any order due to an adverse movement in the prices.

MARKET STRUCTURE

10. Q. What is the trading structure in the Wholesale Debt Market?

- A. The Debt Markets in India and all around the world are dominated by Government securities, which account for between 50–75% of the trading volumes and the market capitalization in all markets. Government securities (G-Secs) account for 70–75% of the outstanding value of issued securities and 90–95% of the trading volumes in the Indian Debt Markets. State Government securities & Treasury Bills account for around 3–4 % of the daily trading volumes. The trading activity in the G-Sec. Market is also very concentrated currently (in terms of liquidity of the outstanding G-Secs.) with the top 10 liquid securities accounting for around 70% of the daily volumes.

11. Q. Who are the main investors of Govt. Securities in India?

- A. Traditionally, the Banks have been the largest category of investors in G-secs accounting for more than 60% of the transactions in the Wholesale Debt Market. The Banks are a prime and captive investor base for G-secs as they are normally required to maintain 25% of their net time and demand liabilities as SLR but it has been observed that the banks normally invest 10% to 15% more than the normal requirement in Government Securities because of the following requirements:
- Risk Free nature of the Government Securities.
 - Greater returns in G-Secs as compared to other investments of comparable nature.

12. Q. Who regulates the fixed income markets?

- A. The issue and trading of fixed income securities by each of these entities are regulated by different bodies in India. For eg: Government securities and issues by Banks, Institutions are regulated by the RBI. The issue of non-government securities comprising basically issues of Corporate Debt is regulated by SEBI.

13. Q. What are the main features of G-Secs and T-Bills in India?

- A. All G-Secs in India currently have a face value of ₹100/- and are issued by the RBI on behalf of the Government of India. All G-Secs are normally coupon (Interest rate) bearing and have semi-annual coupon or interest payments with a tenor of between 5 to

30 years. This may change according to the structure of the Instrument. Eg: a 11.50% GOI 2005 security will carry a coupon rate(Interest Rate) of 11.50% p.a. on a face value per unit of ₹100/- payable semi-annually and maturing in the year 2005. Treasury Bills are for short-term instruments issued by the RBI for the Govt. for financing the temporary funding requirements and are issued for maturities of 91 Days and 364 Days. T-Bills have a face value of ₹100 but have no coupon (no interest payment). T-Bills are instead issued at a discount to the face value (say @ ₹95) and redeemed at par (₹100). The difference of ₹5 (100 – 95) represents the return to the investor obtained at the end of the maturity period. State Government securities are also issued by RBI on behalf of each of the state governments and are coupon-bearing bonds with a face value of ₹100 and a fixed tenor. They account for 3–4 % of the daily trading volumes.

14. Q. What are the segments in the secondary debt market?

- A. The segments in the secondary debt market based on the characteristics of the investors and the structure of the market are:
- Wholesale Debt Market – where the investors are mostly Banks, Financial Institutions, the RBI, Primary Dealers, Insurance companies, MFs, Corporates and FIIs.
 - Retail Debt Market involving participation by individual investors, provident funds, pension funds, private trusts, NBFCs and other legal entities in addition to the wholesale investor classes.

15. Q. What is the structure of the Wholesale Debt Market?

- A. The Debt Market is today in the nature of a negotiated deal market where most of the deals take place through telephones and are reported to the Exchange for confirmation. It is therefore in the nature of a wholesale market.

16. Q. Who are the most prominent investors in the Wholesale Debt Market in India?

- A. The Commercial Banks and the Financial Institutions are the most prominent participants in the Wholesale Debt Market in India. During the past few years, the investor base has been widened to include Co-operative Banks, Investment Institutions, cash rich corporates, Non-Banking Finance companies, Mutual Funds and high net-worth individuals. FIIs have also been permitted to invest 100% of their funds in the debt market, which is a significant increase from the earlier limit of 30%. The government also allowed in 1998–99 the FIIs to invest in T-bills with a view towards broadbasing the investor base of the same.

17. Q. What is the issuance process of G-secs?

- A. G-secs are issued by RBI in either a yield-based (participants bid for the coupon payable) or price-based (participants bid a price for a bond with a fixed coupon) auction basis.

The Auction can be either a Multiple price (participants get allotments at their quoted prices/yields) Auction or a Uniform price (all participants get allotments at the same price). RBI has recently announced a non-competitive bidding facility for retail investors in G-Secs through which non-competitive bids will be allowed up to 5 percent of the notified amount in the specified auctions of dated securities.

18. Q. What are the types of trades in the Wholesale Debt Market?

- A. There are normally two types of transactions, which are executed in the Wholesale Debt Market:
 - An outright sale or purchase and
 - A Repo trade

19. Q. What is a Repo trade and how is it different from a normal buy or sell transaction?

- A. An outright Buy or sell transaction is a one where there is no intended reversal of the trade at the point of execution of the trade. The Buy or sell transaction is an independent trade and is in no way connected with any other trade at the same or a later point of time. A Ready Forward Trade (which is normally referred to as a Repo trade or a Repurchase Agreement) is a transaction where the said trade is intended to be reversed at a later point of time at a rate which will include the interest component for the period between the two opposite legs of the transactions. So in such a transaction, one participant sells securities to other with an agreement to purchase them back at a later date. The trade is called a Repo transaction from the point of view of the seller and it is called a Reverse Repo transaction from point of view of the buyer. Repos therefore facilitate creation of liquidity by permitting the seller to avail of a specific sum of money (the value of the repo trade) for a certain period in lieu of payment of interest by way of the difference between the two prices of the two trades. Repos and reverse repos are commonly used in the money markets as instruments of short-term liquidity management and can also be termed as a collateralised lending and borrowing mechanism. Banks and Financial Institutions usually enter into reverse repo transactions to manage their reserve requirements or to manage liquidity.

BOND ANALYTICS

20. Q. What is Yield?

- A. Yield refers to the percentage rate of return paid on a stock in the form of dividends, or the effective rate of interest paid on a bond or note. There are many different kinds of yields depending on the investment scenario and the characteristics of the investment. Yield To Maturity (YTM) is the most popular measure of yield in the Debt Markets and is the percentage rate of return paid on a bond, note or other fixed income security if

you buy and hold the security till its maturity date. Current Yield is the coupon divided by the Market Price and gives a fair approximation of the present yield. Therefore, Current Yield = Coupon of the Security(in %) x Face Value of the Security (viz. 100 in case of G-Secs.)/Market Price of the Security Eg: Suppose the market price for a 10.18% G-Sec 2012 is ₹120. The current yield on the security will be $(0.1018 \times 100)/120 = 8.48\%$. The yield on the government securities is influenced by various factors such as level of money supply in the economy, inflation, future interest rate expectations, borrowing program of the government & the monetary policy followed by the government.

21. Q. How is the Yield to Maturity computed?

- A. The calculation for YTM is based on the coupon rate, length of time to maturity and market price. It is the Internal Rate of Return on the bond and can be determined by equating the sum of the cash-flows throughout the life of the bond to zero. A critical assumption underlying the YTM is that the coupon interest paid over the life of the bond is assumed to be reinvested at the same rate. The YTM is basically obtained through a trial and error method by determining the value of the entire range of cash-flows for the possible range of YTMs so as to find the one rate at which the cash-flows sum up to zero. So, say, a G-Sec – 8.00% GOI Loan 2004 with only 2 cash flows remaining to maturity as under: Maturity Date: 30th January 2004 Interest Payment Dates: 30th January, 30th July and trading currently at ₹115 for 1 Unit, will have a YTM as follows: Settlement Date: 17th March 2003 (Date at which ownership is transferred to the Buyer) Frequency of Interest Payments: 2 Day Count Convention: 30/360 (which in MS-EXCEL is taken as Basis 4) Yield To Maturity: 4.8626%. The same can be computed from MS-EXCEL through the YIELD Formula by input of the parameters given above. It can be checked by discounting the said cash-flows, i.e., the two coupons of ₹8.00 each and the principal repayment of ₹100/- from the interest payment dates and maturity dates to the date of settlement.

22. Q. How is the price determined in the debt markets?

- A. The price of a bond in the markets is determined by the forces of demand and supply, as is the case in any market. The price of a bond in the marketplace also depends on a number of other factors and will fluctuate according to changes in
- Economic conditions
 - General money market conditions including the state of money supply in the economy
 - Interest rates prevalent in the market and the rates of new issues
 - Future Interest Rate Expectations
 - Credit quality of the issuer

There is however, a theoretical underpinning to the determination of the price of the bond in the market based on the measure of the yield of the security.

23. Q. How is Yield related to the price?

- A. Yields and Bond Prices are inversely related. So a rise in price will decrease the yield and a fall in the bond price will increase the yield. There will be an immediate and mostly predictable effect on the prices of bonds with every change in the level of interest rates. (The predictability here however refers to the direction of the price change rather than the quantum of the change) When the prevailing interest rates in the market rise, the prices of outstanding bonds will fall to equate the yield of older bonds into line with higher-interest new issues. This will happen as there will be very few takers for the lower coupon bonds resulting in a fall in their prices. The prices would fall to an extent where the same yield is obtained on the older bonds as is available for the newer bonds. When the prevailing interest rates in the market fall, there is an opposite effect. The prices of outstanding bonds will rise, until the yield of older bonds is low enough to match the lower interest rate on the new bond issues. These fluctuations ensure that the value of a bond will never be the same throughout the life of the bond and is likely to be higher or lower than its original face value depending on the market interest rate, the time to maturity (or call as the case may be) and the coupon rate on the bond.

MARKET STRUCTURE AND TRADING METHODOLOGY IN WDS**24. Q. What is the concept of the broken period interest as regards the Debt Market?**

- A. The concept of the Broken period interest or the accrued interest arises as interest on bonds are received after certain fixed intervals of time to the holder who enjoys the ownership of the security at that point of time. Therefore an investor who has sold a bond which makes half-yearly interest payments three months after the previous interest payment date would not receive the interest due to him for these three months from the issuer. The interest on these previous three months would be received by the buyer who has held it for only the next three months but receive interest for the entire six month periods as he happens to be holding the security at the interest payment date. Therefore, in case of a transaction in bonds occurring between two interest payment dates, the buyer would pay interest to the seller for the period from the last interest payment date up to the date of the transaction. The interest thus calculated would include the previous date of interest payment but would not include the trade date.

25. Q. What are the conventions followed for the calculation of Accrued Interest?

- A. The Day Count Convention to be followed for the calculation of Accrued Interest in case of transactions in G-Secs is 30/360. i.e., each month is to be taken as having 30 days and each year is to be taken as having 360 days, irrespective of the actual number of days in the month. So, months like February, March, January, May, July, August, October and December are to be taken as having 30 days.

26. Q. What is the Clean Price and the Dirty Price in reference to trading in G-Secs?

- A. G-Secs are traded on a clean price (Trade price) but settled on the dirty price (Trade price + Accrued Interest). This happens, as the coupon payments are not discounted in the price, as is the case in the other non-govt. debt instruments.

27. Q. How are the Face Value, Trade Value and the settlement value different from each other?

- A. The Cumulative face Value of the securities in a transaction is the face Value of the Transaction and is normally the identifiable feature of each transaction. Say, a transaction of ₹5,00,000 worth of G-Secs will comprise a trade of 5000 G-Secs of ₹100 each. The Trade value is the cumulative price of the traded G-Secs (i.e., no. of securities multiplied by the price) Say, the G-Secs referred to above may be traded at ₹102 each so that the Trade Value is ₹5,10,000 (102×5000). The Settlement value will be the trade value plus the Accrued Interest. The Accrued Interest per unit of the Bond is calculated as = Coupon of Bond x Face Value of the G-Sec. $(100) \times (\text{No. of Days from Interest Payment Date to Settlement Date})/360$ In computing the no. of days between the Interest Payment Date and the Settlement Date of the trade, only one of the two days is to be included.

28. Q. How can investors in India hold G-Secs?

- A. G-Secs can be held in either of the following forms:
- Physical Security (which is mostly outdated & not used much)
 - SGL (Subsidiary General Ledger) A/c with the Public Debt Office of the RBI. The SGL A/cs are however restricted only to few entities like the Banks & Institutions.
 - Constituent SGL A/c with Banks or PDs who hold the G-secs on behalf of the investors in their SGL-II A/cs of RBI, meant only for client holdings.
 - Same Demat A/c as is used for equities at the Depositories. NSDL & CDSL will hold them in their SGL-II A/cs of RBI, meant only for client holdings.

29. Q. What are the type of transactions which take place in the market?

- A. The following two types of transactions take place in the Indian markets:
- Direct transactions between banks and other wholesale market participants which account for around 25% of the Wholesale Market volumes: Here the Banks and the Institutions trade directly between themselves either through the telephone or the NDS system of the RBI.
 - Broker intermediated transactions, which account for around 70–75% of the trades in the market. These brokers need to be members of a Recognized Stock Exchange for RBI to allow the Banks, Primary Dealers and Institutions to undertake dealings through them.

30. Q. What is the role of the Exchanges in the WDS?

- A. BSE and other Exchanges offer order-driven screen based trading facilities for Govt. securities. The trading activity on the systems is however restricted with most trades today being put through in the broker offices and reported to the Exchange through their electronic systems which provide for reporting of “Negotiated Deals” and “Cross Deals”.

BSE WHOLESALE DEBT SEGMENT (WDS)**31. Q. When was the BSE accorded regulatory permission for the WDS?**

- A. Government securities market the largest and oldest component of Indian debt market was very active segment on BSE since beginning of the 19th century. Government papers were traded actively at BSE however wholesale debt market segment for government securities for institutional investors was further introduced by BSE pursuant to following notifications issued by RBI. DBOD. FSC. BC. No. 39/24.76.002/2000 dated October 25, 2000 IDMC. PDRS. PDS. No PDS-2/03.64.00/2000-01 dated November 13, 2000 DBS. FID No. C 10/01.08.00/2000-0122 dated November, 2000 The above notifications permitted Banks, Primary Dealers and Financial Institutions in India to undertake transactions in debt instruments among themselves or with non-bank clients through the members of BSE Limited. The Wholesale Debt Market Segment of BSE commenced its operations on June 15, 2001.

32. Q. How is the settlement carried out in the Wholesale Debt Market?

- A. The settlement for the various trades is finally carried out through the Clearing Corporation of India (CCIL). As far as the Broker Intermediated transactions are concerned, the settlement responsibility for the trades in the Wholesale market is primarily on the clients, i.e., the market participants and the broker has no role to play in the same. The member only has to report the settlement details to the Exchange for monitoring purposes. The Exchange reports the trades to RBI regularly and monitors the settlement of these trades.

33. Q. What are the trading and reporting facilities offered by the BSE Wholesale Debt Segment?

- A. The BSE Wholesale Debt Segment offers reporting facilities through the ICDM System, a browser based system, which is an efficient and reliable reporting system for all the debt instruments of different types and maturities including Central and State Govt. securities, T-Bills, Institutional bonds, PSU bonds, Commercial Paper, Certificates of Deposit, Corporate debt instruments and the new innovative instruments like Repos.

34. Q. What are the varied deal reporting modules in the ICDM G-sec system?

- A. The system permits reporting in the Wholesale Debt Market through the two following avenues:

- Negotiated Deal Module – which permits the reporting of trades undertaken by the market participants through the members of the Exchange.
- Cross Deal Module – permitting reporting of trades undertaken by two different market participants through a single member of the Exchange.

35. Q. What is the membership criteria and charges for the membership of the BSE Wholesale Debt Segment?

- A. The membership of the debt market segment is being granted to the Existing Members of the Exchange. The members need to have a minimum net worth of ₹30 lacs for admission to undertaking dealings on the debt segment. No security deposit is applicable for the membership of the Debt Segment as in other Exchanges. The annual approval/renewal charges of ₹25,000/- have been waived at present.

36. Q. What is the settlement mode allowed in GILT?

- A. The settlements for all the trades executed on the system are on T+1 basis, as mandated by the Reserve Bank of India.

37. Q. What are the aspects for settlement of trades in G-secs in GILT?

- A. The Settlement for the securities traded in the Debt Segment would be on a Trade by Trade DVP basis. The primary responsibility of settling trades concluded in the wholesale segment rests directly with the participants who would settle the trades executed in the GILT system on their behalf through the Subsidiary Ledger Account of the RBI. Each transaction is settled individually and netting of transaction is not allowed. The Exchange would monitor the Clearing and Settlement process for all the trades executed or reported through the ‘GILT’ system. The Members need to report the settlement details to the Exchange for all the trades undertaken by them on the GILT system.

CORPORATE DEBT MARKET

38. Q. What is the structure of the Corporate Debt Market in India?

- A. The Indian Primary market in Corporate Debt is basically a private placement market with most of the corporate bond issues being privately placed among the wholesale investors i.e. the Banks, Financial Institutions, Mutual Funds, Large Corporates & other large investors. The proportion of public issues in the total quantum of debt capital issued annually has decreased in the last few years. Around 92% of the total funds mobilized through corporate debt securities in the Financial Year 2002 was through the private placement route. The Secondary Market for Corporate Debt can be accessed through the electronic order-matching platform offered by the Exchanges. BSE offers trading in Corporate Debt Securities through the automatic BOLT system of the Exchange. The Debt Instruments issued by Development Financial Institutions, Public Sector Units and

the debentures and other debt securities issued by public limited companies are listed in the ‘F Group’ at BSE.

39. Q. What are the various kinds of debt instruments available in the Corporate Debt Market?

- A. The following are some of the different types of corporate debt securities issued:
- Non-Convertible Debentures
 - Partly-Convertible Debentures/Fully-Convertible Debentures (convertible in to Equity Shares)
 - Secured Premium Notes
 - Debentures with Warrants
 - Deep Discount Bond
 - PSU Bonds/Tax-Free Bonds

40. Q. How is the trading, clearing and settlement in Corporate Debt carried out at BSE?

- A. The trading in corporate debt securities in the F Group are traded on the BOLT order-matching system based on price-time priority. The trades in the ‘F Group’ at BSE are to be settled on a rolling settlement basis with a T+2 Cycle with effect from 1st April 2003. Trading continues from Monday to Friday during the week. The Trade Guarantee Fund (TGF) of the Exchange covers all the trades in the ‘F’ Group undertaken on the electronic BOLT system of the Exchange.

BSE RETAIL DEBT SEGMENT (REDS)

41. Q. What are the securities/instruments traded in the Retail Debt Segment (REDS) at the Exchange?

- A. The Retail trading in Central Government Securities commenced on January 16, 2003 through the BOLT System of the Exchange. Central Government Securities (G-Secs.) are currently listed at the Exchange under the G Group. The Exchange may introduce, in due course of time, retail trading in other debt securities like the following, subject to the receipt of regulatory approval for the same:
- State Government Securities
 - Treasury Bills
 - STRIPS
 - Interest Rate Derivative products

42. Q. Who are the participants in the Retail Debt Market?

- A. The following are the main investor segments who could participate in the Retail Debt Market:
- Mutual Funds
 - Provident Funds
 - Pension Funds
 - Private Trusts.
 - Religious Trusts and charitable organizations having large investible corpus
 - State Level and District Level Co-operative Banks
 - Housing Finance Companies
 - NBFCs and RNBCs
 - Corporate Treasuries
 - Hindu-Undivided Families (HUFs)
 - Individual Investors

43. Q. What is the membership criteria and procedure for the membership of the BSE Retail Debt Segment (REDS)?

- A. **Eligibility Criteria for Members:** The Members of the Segment possessing a net-worth of ₹1 crore and above are eligible to trade in the Retail Debt segment. The members are required to submit additional contribution of ₹5 lakhs as refundable contribution towards the separate Trade Guarantee Fund for this Segment. This contribution of ₹5 lakhs towards the Trade Guarantee Fund could be submitted in terms of cash or FDR or Bank Guarantee. However, the Exchange has permitted the Members to earmark ₹5 lakhs from their additional capital for a period of one month or till such time separate contribution for TGF is provided by them, whichever is earlier

44. Q. How are the Retail Transactions in G-Secs. executed at the Exchange?

- A. **Eligibility Criteria for Members:** The Members of the Segment possessing a net-worth of ₹1 crore and above are eligible to trade in the Retail Debt segment. The members are required to submit additional contribution of ₹5 lakhs as refundable contribution towards the separate Trade Guarantee Fund for this Segment. This contribution of ₹5 lakhs towards the Trade Guarantee Fund could be submitted in terms of cash or FDR or Bank Guarantee. However, the Exchange has permitted the Members to earmark ₹5 lakhs from their additional capital for a period of one month or till such time separate contribution for TGF is provided by them, whichever is earlier.

45. Q. What is the listing procedure for G-Secs. in respect of the Retail Debt Market?

- A. • Eligible Securities: All outstanding and newly issued central government securities are eligible to be traded on the automated, anonymous, order driven system of the eligible stock exchange. The Rules, Bye-Laws and Regulations of the Exchange provide for trading in Government securities as all G-secs are deemed to be admitted to dealings on the Exchange from the date on which they are issued as per Bye-Law 22(a) and 22(b) of the Exchange.
- Group: The Government securities have been introduced as a new group of securities – “G” Group in the BOLT system. The G-secs are allotted a 6-digit scrip code (in the 800000 series) and a 11 characters alpha-numeric scrip ID. The interpretation for the Scrip IDs of G-Secs. in BOLT is as under:
- o First 2 characters signify Central Government Security – CG.
 - o Next 4 Digits signify the coupon or interest rate of the G-Sec.
 - o Next 1 character is a differentiator which would be ‘S’ in case of a normal security and ‘A’ incase there exists another security with the same coupon and maturity year.
 - o Next 2 Digits signify the Issue Year and the last 2 digits signify the Maturity Year.

The date in the Scrip Name stands for the Maturity Date of the Security. The Exchange will implement and monitor the suspension of trading during the shut down period so that no settlements fall due in the no-delivery period which is on the T-3, T-2 and T-1 days for Government Securities (where T is the interest payment date for the security).

46. Q. What is the trading methodology in case of the Retail trading in G-Secs.?

- A. • Trading Methodology: The G-Secs shall be traded on the system and settled at the same price, which will be inclusive of the accrued interest, i.e., the Dirty Price as per the market parlance in the Wholesale Debt Market. This is similar to the trading on the cum-interest price as is witnessed in the case of corporate debentures. The minimum order size shall be 10 units of G-Secs with a face value ₹100/- each equivalent to an order value of ₹1000/- and the subsequent orders will be in lots of 10 securities each.
- Trading & Exposure Limits: The members of the Retail Debt Segment are permitted gross exposure in government securities along their gross exposure in equity segment upto 15 times of their additional capital deposited by them with the Exchange. However, no gross exposure is permitted to the members against their Base Minimum Capital + contribution of ₹10 lakhs towards TGF in the cash segment. Transactions done by the members in this segment along with their transactions in the equity segment would form part of their Intra-day Trading Limits and are subject to a limit of 33.33 times of the capital deposited with the Exchange. However, institutional business would not form part of these Intra-Day & Gross Exposure limits.

47. Q. How does the Clearing & Settlement of the Retail G-Sec. transactions take place in REDS?

- A. The Clearing and Settlement mechanism for the Retail trading in G-Secs is based on the existing institutional mechanism available at the Stock Exchanges for the Equity Markets. The trades executed throughout the continuous trading sessions will be netted out at the end of the trading hours through a process of multilateral netting. The transactions will be netted out member-wise and then scrip-wise so as to determine the net settlement and payment obligations of the members.

The Delivery obligations and the payment orders in respect of these members are generated by the Clearing and Settlement system of the Exchange. These statements indicate the pay-in and pay-out positions of the members for securities and funds who would then give the necessary instructions to their Clearing Banks and depositories.

Custodial confirmation of the retail trades in G-Secs. by using 6A-7A mechanism as available in the Equity segment is also available. The schedule of various settlement related activities like obligation download, custodial confirmation, pay-in/pay-out of funds and securities is similar to what is at present applicable in the equities segment. As per an RBI Circular, the RBI regulated entities are to settle their transactions in the Retail Debt Segment at the Exchange through a Custodian.

48. Q. How are the security delivery shortages treated in the Retail Debt Segment?

- A. In the event of failure/shortage in delivery of securities, the Exchange would close-out such shortages at the ZCYC valuation for prices plus a 5% penalty factor which would be debited to the account of the member who has failed to deliver the securities against his sale obligation. The buyer in the event of non-delivery of securities by the seller would be eligible to receive the compensation/consideration which would be computed at the higher of either the highest trade price from the trade date to the date of close out or closing price of the security in the normal market on the close-out date plus interest calculated at the rate of overnight FIMMDA-NSE MIBOR for the close-out date. The difference between the amount debited to the seller and amount payable to the buyer on the basis discussed above would be credited to the Investor Protection Fund of the Exchange. The Exchange has also set up a separate Trade Guarantee Fund (Settlement Guarantee Fund) for the Retail Trading in G-Secs. as was mandated by SEBI through its circular.

49. Q. How is the margining structure at the Exchange for the Retail Debt Market?

- A. • **Margining – Mark to Market:** The positions in the Retail Debt segment are marked to market until settlement and mark to market margin on net outstanding position of the members is collected on all open net positions. The mark to market margin is calculated based on the prices derived from the Zero Coupon Yield Curve (ZCYC). This margin is to be collected on the T+1 day along with the margin on the outstanding positions in cash segment.

- **Margin exemption to Institutional business:** Institutional business (i.e., business done by members on behalf of Indian Financial Institutions, Foreign Institutional Investors, Scheduled Commercial Banks, Mutual Funds registered with SEBI) would be exempted from margin, as is applicable in the case of transactions in the equity segment, as the institutions are required under the relevant regulations to transact only on the basis of giving and taking delivery. The members would, however, be required to mark client type 'FI' at the time of order entry for availing of exemption from payment of margins and also exclusion of such trades from Intra-day Trading and Gross Exposure Limits. Custodial trades on behalf of Provident Funds transacting through a SGL-II account (Constituent SGL a/c) would also be eligible for margin exemption.
- **Margin Exemption against delivery:** Margin exemption for early pay-in of securities in case of sale transactions as applicable for the equities segment would also be available for this segment.

INVESTOR SAFEGUARDS

50. Q. What are the main points to be kept in mind by the investor while investing in the Debt Markets?

- A. The main features which you need to check for any debt security is:
- Coupon (or the discount implied by the price as in the case of zero coupon bonds) and the frequency of interest payments. The securities can also be chosen in such a manner so that the interest payments coincide with any requirements of funds at that point of time.
 - Timing of Cash Flows – In case the interest and redemption proceeds, at one single point or at different points of time, are planned to be used for meeting certain planned expenses in the future.
 - Information about the Issuer and the Credit Rating – It is essential to obtain enough information about the background, the business operations, the financial position, the use of the funds being collected and the future projections to satisfy oneself of the suitability of the investment. As per the regulations in force in the capital markets, it is essential for any corporate debt security to obtain a credit rating from any of the major credit rating agencies. A proper analysis of the background and the financials of the issuer of any non-govt. debt instrument and especially the credit rating would lend greater safety to your investments.
 - Other Terms of particular Issue – It is also advisable to check on certain terms of the issue like the use of the issue proceeds, the monitoring agency, the formation of trustees, the secured or unsecured nature of the bonds, the assets underlying the security and the credit-worthiness of the organization.

Most of the said information can be available from the prospectus of the said issue (In case of and any required and relevant details can also be obtained on demand from the lead manager of the issue

- Obtain all the relevant knowledge on the debt security like the coupon, maturity, interest payments, put and call options (if any), Yield To Maturity (at the particular price at which the trade is intended to be carried out) and the Duration of the Instrument.
- Check the Yield To Maturity (YTM) of the debt security with the YTMs of other comparable debt securities of the same class and features.
- Remember that the Yield and the Price are inversely related. So, you will be able to obtain a higher yield at a lower price.
- It is desirable to check on the liquidity of any corporate debt instrument before investing in it so as to ensure the availability of satisfactory exit options.
- The Debt Markets are suited for investors who seek decent returns over a longer time horizon with periodic cash flows. There is also a tax exemption for interest earned on G-Secs. up to ₹3000/- under Section 80L of the Income Tax Act.

The investor should be well aware of the set of risks associated with the Debt Markets like the default risk (non-receipt or delay in receipt of interest or principal), price risk, interest rate risk (risk of rates moving adversely after investment), settlement risk (or risk of non-delivery of securities and funds in the secondary market) and the re-investment risk (interest payments fetching a lower return when re-invested). Investors in the Debt Markets should follow a process of judicious investing after a careful study of the economic and money market condition, various instruments available for investment, the desired returns and its compatibility with existing investment opportunities, alternative modes available for investments and the relevant transaction costs.

51. Q. What is the future scenario for the Retail Debt Market in India?

A. The Retail Debt Market is set to grow tremendously in India with the broadening of the market participation and the availability of a wide range of debt securities for retail trading through the Exchanges. The following are the trends, which will impact the Retail Debt Market in India in the near future:

- Expansion of the Retail Trading platform to enable trading in a wide range of government and non-government debt securities.
- Introduction of new instruments like STRIPS, G-Secs. with call and put options, securitised paper etc.
- Development of the secondary market in Corporate Debt.
- Introduction of Interest Rate Derivatives based on a wide range of underlying in the Indian Debt and Money Markets.
- Development of the Secondary Repo Markets.

The BSE vision for the Indian Debt Market foresees the markets growing in leaps and bounds in the near future, soon attaining global standards of safety, efficiency and transparency. This will truly help the Indian capital markets to attain a place of pride among the leading capital markets of the world.

Source: BSE site

Appendix
E

IMPORTANT EXCEL FUNCTIONS

Important Excel functions for bond related calculations (Sourced from RBI site)

Function *Syntax*

1. PRESENT VALUE

PV (rate, nper, pmt, fv, type)

This function is used to find the present value of a series of future payments given the discount rate. This forms the basis for pricing a bond

Rate is the interest rate per period.

Nper is the total number of payment periods in an annuity.

Pmt is the payment made each period and cannot change over the life of the annuity.

Fv is the future value, or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (the future value of a loan, for example, is 0).

Type is the number 0 or 1 and indicates when payments are due.

Set type equal to	If payments are due
0 or omitted	At the end of the period
1	At the beginning of the period

Example: To calculate the present value of ₹100 after every year for three years at an interest rate of 9%, the values would be;

Rate – 9% or 0.09; Nper – 3 (3 years); Pmt – 100; Fv – 0 as there is no balance left at the end of three years; Type – 0 (at the end of the period)

The answer would be **253.13**

2. FUTURE VALUE

FV (rate, nper, pmt, pv, type)

This function is used to calculate the future value of a series of investments made, given the interest rate.

Rate is the interest rate per period. Nper is the total number of payment periods in an annuity. Pmt is the payment made each period; it cannot change over the life of the annuity. Typically, pmt contains principal and interest but no other fees or taxes. If pmt is omitted, you must include the pv argument. Pv is the present value, or the lump-sum amount that a series of future payments is worth right now. If pv is omitted, it is assumed to be 0 (zero), and you must include the pmt argument.

Type is the number 0 or 1 and indicates when payments are due. If type is omitted, it is assumed to be 0.

Example: To calculate the future value of ₹100 paid every year for three years at an interest rate of 9%, the values would be;

Rate – 9% or 0.09; Nper – 3 (3 years); Pmt – 100; Pv – 0 as there is no lumpsum payment at the beginning; Type – 1 (at the beginning of the period) The answer would be **357.31**

3. COUPON DAYS

COUPDAYBS (settlement, maturity, frequency, basis)

This function is used to workout the number of days from the beginning to the end of the coupon period that contains the settlement date.

Settlement is the security's settlement date. The security settlement date is the date after the issue date when the security is traded to the buyer.

Maturity is the security's maturity date. The maturity date is the date when the security expires.

Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.

Basis is the type of day count basis to use. Appropriate code for the day count convention has to be provided as shown below;

Basis	Day count basis	Basis	Day count basis
0 or omitted	US (NASD) 30/360	3	Actual/365
1	Actual/actual	4	European 30/360
2	Actual/360		

Example: In the case of security maturing on February 2, 2019, and settlement date May 27, 2009, the values in the formula would be;

Maturity – 2/2/2019; settlement – 27/5/2009; frequency – 2 (half yearly coupon) and basis – 4 (day count convention 30/360)

The result would be **180** (number of coupon days in the coupon period)

4. YEARFRAC

YEARFRAC (start_date, end_date, basis) (to find residual maturity)

This function is used to find the residual maturity of a security in years.

Start_date is a date that represents the start date.

End_date is a date that represents the end date.

Basis is the type of day count basis to use.

Example: For a security maturing on February 6, 2019, the residual maturity in number of years as on May 27, 2009 can be calculated as;

Start date – May 27, 2009; End date – 2/2/2019, basis – 4

The result would be **9.68 years**

5. PRICE

PRICE (settlement, maturity, rate, yld, redemption, frequency, basis)

This function is used to find the price of security that pays periodic interest.

Settlement is the security's settlement date. The security settlement date is the date on which the security and funds are exchanged.

Maturity is the security's maturity date. The maturity date is the date when the security expires.

Rate is the security's annual coupon rate.

Yld is the security's annual yield.

Redemption is the security's redemption value per ₹100 face value.

Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.

Basis is the type of day count basis to use.

Example: 6.05%2019 security maturing on February 2, 2019. It is yielding 6.68% in secondary market on June 1, 2009. Settlement date is June 2, 2009. Values in the price formula would be;

Settlement – 2/6/2009; maturity – 2/2/2019; rate – 6.05%; Yield – 6.68%; Redemption – 100 (face value); frequency – 2 (half yearly coupon); basis – 4. The result would be **95.55**

6. YIELD

YIELD(settlement,maturity,rate,pr,redemption,frequency,basis)

This function is used to find the Yield to Maturity of a security given the price of the security.

Settlement is the security's settlement date. The security settlement date is the date on which the security and funds are exchanged. Maturity is the security's maturity date. The maturity date is the date when the security expires.

Rate is the security's annual coupon rate.

Pr is the security's price per ₹100 face value. Redemption is the security's redemption value per ₹100 face value. Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4. Basis is the type of day count basis to use.

Taking the same example as above, and price at 95.55, the result for the yield would be **6.68%**.

7. DURATION

DURATION (settlement, maturity, coupon, yld, frequency, basis)

This function is used to find the Duration of a security in number of years.

Settlement is the security's settlement date. The security settlement date is the date on which the security and funds are exchanged. Maturity is the security's maturity date. The maturity date is the date when the security expires.

Coupon is the security's annual coupon rate.

Yld is the security's annual yield.

Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.

Basis is the type of day count basis to use.

Example: 6.05%2019 security maturing on February 2, 2019. It is yielding 6.68% in secondary market on June 1, 2009. Settlement date is June 2, 2009. Values in the Duration formula would be;

Settlement – 2/6/2009; maturity – 2/2/2019; Coupon – 6.05%; Yield – 6.68%; frequency – 2 (half yearly coupon); basis – 4.

The result will be 7.25 years.

8. MODIFIED DURATION

MDURATION (settlement, maturity, coupon, yld, frequency, basis)

This function is used to calculate the Modified Duration of a security.

Settlement is the security's settlement date. The security settlement date is the date on which the security and funds are exchanged. Maturity is the security's maturity date. The maturity date is the date when the security expires.

Coupon is the security's annual coupon rate.

Yld is the security's annual yield.

Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.

Basis is the type of day count basis to use.

Taking the same example given above for Duration and feeding the values in the excel function, the formula result will be 7.01.

Appendix
F

UNDERTAKINGS OF FEDAI

Reg: Observing confidentiality/using services of brokers

1. As a dealer, I have access to/come to possess important/sensitive information on the Bank during the normal discharge of my responsibilities in the Dealing Room. I very clearly understand that the information may be of interest to our competitors, brokers, our clients, consultants and other players in the market. I also understand that any tipping off/sharing of this sensitive information with any of the market players may jeopardize the interests of our Bank.

Hence, I hereby affirm and undertake to observe utmost confidentiality/fidelity of information coming in my way during the discharge of my responsibilities. I also affirm and undertake not to share the information with any outside agency, save with the explicit written permission from the competent authority.

2. Further, I know that the Bank utilizes the services of accredited FX brokers for facilitating forex deals during the normal course of business. I also understand that I should not utilize the services of brokers for any other purpose, save for the benefit of the Bank.

Hence, I hereby affirm and undertake not to utilize the services of FX accredited brokers for any other purpose save for the benefit of the Bank.

Further the Banks have a practice of obtaining a comprehensive undertaking from the dealers covering various aspects of the dealing room. This is one of the best practices of the industry. The draft proforma of one such undertaking is provided here below.

9.1 Comprehensive Undertaking Letter From Dealers

9.1 Reg: Comprehensive undertaking with reference to my duties and responsibilities in the Dealing Room.

I acknowledge my familiarity with FEDAI Code of Conduct and I hereby undertake to adhere to the code of Conduct in letter and spirit.

I am aware of the limits governing my authority to commit the Bank to risk exposures as they apply to my own particular risk responsibilities and the level of my seniority. I hereby undertake to adhere to the limits as instructed/advised from time to time.

I hereby undertake to adhere to the responsibilities to remain within the RBI limits and guidelines in the area of my activities.

I am fully aware of, acknowledge and provide an undertaking to remain within the guidelines governing the banks activities with brokers including conducting business only with brokers authorised by Bank's Risk Management Committee on the Bank's brokers' panel.

I further assure and undertake that I conduct my activities with the brokers in such a way that I do not allow the brokers to act as principals in transactions but they remain strictly in their authorised role as market intermediaries.

I require brokers to provide all broker notes and confirmations of transactions before close of business each day (or exceptionally by the beginning of the next business day, in which case the note must be prominently marked by the broker as having been transacted the previous day and Back Office must recast the previous nights position against limits reports) to the Bank's Back Office for reconciliation with the transaction data.

I hereby undertake that I shall ensure that all brokerage payments and statements are received, reconciled and paid by the Bank's Back Office Department and under no circumstances, I authorize or make a payment directly.

I understand and I am fully aware that acceptance of gifts, gratifications or other favors from brokers is strictly prohibited in terms of the guidelines. If there is any such case of acceptance of gifts, gratifications or other favors, the Bank is free to report the details to RBI's Department of Banking Supervision.

I understand that I am prohibited from nominating a broker in transaction not done through that broker.

I understand and I am fully aware of the fact that the present rules permit prompt investigation of complaints against me and any malpractices by the brokers and reporting to FEDAI/RBI.

I hereby affirm that I am aware of the Bank's normal trading hours, cut-off time for overnight positions and rules governing transactions done after dealing hours. I am also aware of the fact that offsite trading is/not allowed by our Bank at present.

I undertake that I shall maintain confidentiality of our Bank's dealings and its customers trading activities as well as the responsibility for secure maintenance of access media, keys, passwords and PINs.

I am also aware that I should take at least one period of leave of not less than 14 days continuously per annum. I am also aware of the Bank's internal policy with regard to staff rotation.

I hereby submit this comprehensive undertaking to the Bank to be kept on its record and also I hereby undertake to adhere strictly to all the rules and regulations governing the Dealing Room functioning as they are in force for the time being.

I hereby agree to give any other undertaking that you may require in the context of changing business practices, changing regulatory directives and changes in any other procedures and policies of the Bank.

Appendix **G**

GLOSSARY OF DEBT MARKET TERMS

Accrued Interest

If a coupon bearing security is traded between two coupon dates, the buyer has to compensate the seller by paying him that part of the interest which is due to him for the period for which he has held the security after the immediately preceding coupon date. The calculation of accrued interest is done according to the day-count convention of the security or market (See Day Count).

Ask Price

In Financial Markets, market makers quote both bid (buy) price and ask (offer) price. This indicates that the market-maker, not knowing the intention of the price-taker is quoting him rates for both buying as well as for selling. The bid price is generally lower than the sell price, as dictated by normal profit motive (Sometimes a dealer would quote the same bid and ask, in which case the price is called a ‘choice-price’). The difference between the bid and the ask price is normally called the ‘bid-ask spread’. The spread depends on many factors like liquidity in the instrument quoted, the bias of the dealer, his eagerness or otherwise on trade, market volatility, etc. A small difference is considered to be a very fine price as the dealer is keeping very little of his profits. For example: A dealer quoting 12.50% 2024 might quote 105.15/20. This implies that the dealer is willing to buy the paper at 105.15 while he is willing to sell it at 105.20. In actual practice the price may be given as 15/20. It is understood that market participants are aware of the big figure. It should be kept in mind that while quoting interest rate rates, the bid is in fact higher than the offer. For example, a USD 3x6 FRA can be quoted as 5.75/70, implying that the dealer is willing to buy the FRA at a yield of 5.75% while he will sell the same FRA at a yield of 5.70%.

Asset Backed Security

Any security that offers to the investor an asset as the collateral is called Asset Backed Security. The rate of return required by the investor for such types of bonds is generally less compared to bonds that offer no collateral.

Auction

It is the process of issuing a security through a price-discovery mechanism by asking for bids. This is the process followed by the RBI for all types of issues of debt market paper by it.

Balance Tenor

It is the un-expired life of the security.

Bank Rate

Bank Rate is a direct instrument of credit control. It is that interest rate or discount rate at which banks, financial institutions and other approved entities in the interbank market can get financial accommodation from the central bank of the country. By hiking the bank rate the central bank makes credit expensive and by lowering the same central bank make credit cheaper.

Basis Point

It is one hundredth of a percentage (i.e. 0.01). As interest rates are generally sensitive in the second place after the decimal point, the measure has large importance for the debt market.

Benchmark Rate

Benchmark rates are rates or the prices of instruments that are traded in the market and are used for pricing of other instruments. These rates or prices are used as benchmark for floating rate instruments. Typically, a benchmark rate should satisfy the following criteria:

1. The rate should be available readily and should either be directly observable in the market or made available by a credible agency.
2. The benchmark should be liquid so that counter-hedging strategies are readily available.
3. The rate should be unique and leave no scope for ambiguity.

The benchmark should be representative of the market. Internationally, the most popular benchmarks are the LIBOR and the US Treasury. In India, given the paucity of rates that satisfy the above criterion, not many benchmarks exist, save the MIBOR announced by either the NSE or Reuters.

Bid Price

See Ask Price

Bond

A bond is a promise in which the Issuer agrees to pay a certain rate of interest, usually as a percentage of the bond's face value to the Investor at specific periodicity over the life of the bond. Sometimes

interest is also paid in the form of issuing the instrument at a discount to face value and subsequently redeeming it at par. Some bonds do not pay a fixed rate of interest but pay interest that is a mark-up on some benchmark rate.

Bootstrapping

Bootstrapping is an iterative process of generating a Zero Coupon Yield Curve from the observed prices/yields of coupon bearing securities. The process starts from observing the yield for the shortest-term money market discount instrument (i.e., one that carries no coupon). This yield is used to discount the coupon payment falling on the same maturity for a coupon-bearing bond of the next higher maturity. The resulting equation is solved to give the zero yield (also called spot yield) for the higher maturity period. This process is continued for all securities across the time series. If represented algebraically, the process would lead to a nth degree polynomial that is generally solved using numerical methods. The most popular one being the Newton-Raphson technique.

Call Money

Borrowing or lending for one day up to 14 days, in the interbank market is known as call money. Entry into this segment of the market is restricted to notified participants which include scheduled commercial banks, primary dealers, development financial institutions and mutual funds.

Call Option

See Option

Callable Bond

A Bond which has a Call covenant in its terms of issue, i.e., one in which the Issuer reserves the right to buy-back the issue is called a Callable Bond.

Clean Price

A Clean Price of a bond or security is the discounted value of all its future cash flows (using a suitable discount rate, which can be the YTM or the relevant spot rate). However, if the bond is traded between two coupon dates, the buyer of the bond will have to compensate the seller for that part of the period between coupons for which the seller was owning the bond (See Accrued Interest). The price arrived at after adjusting the Clean Price for this factor is called the Dirty Price.

Collateralized Bond

Any fixed income instrument which has collateral as a back up to the issue is called a Collateralized Bond. In India, related terminology is secured bonds or unsecured bonds.

Commercial Paper (CP)

A Commercial Paper is a short-term unsecured promissory note issued by the raiser of debt to the investor. In India Corporates, Primary Dealers (PD) and All India Financial Institutions (FI) can issue these notes. For a corporate to be eligible, it must have a tangible net worth of ₹4 crore or more and have a sanctioned working capital limit sanctioned by a bank/FI. It is generally companies with very good rating which are active in the CP market, though RBI permits a minimum credit rating of Crisil-P2. The tenure of CPs can be anything between 15 days to one year, though the most popular duration is 90 days. These instruments are offered at a discount to the face value and the rate of interest depends on the quantum raised, the tenure and the general level of rates besides the credit rating of the proposed issue. While most of the issuing entities have established working capital limits with banks, they still prefer to use the CP route for flexibility in interest rates. The credit ratings for CP are issued by leading rating agencies. Recently, the quantum raised by the issuer through the CP has been excluded from the ambit of bank finance, but banks continue to prefer earmarking either their own limits for the corporate or the consortium limits while subscribing to the commercial paper.

Constituent SGL A/c

SGL account holders can have two SGL accounts with RBI – SGL account no.1 and SGL account no.2. SGL account no. 1 is the account for the own holdings of the bank or the PD who has the direct account. SGL account no.2 is for their constituents. Those who are not eligible for direct SGL account with RBI, say, for example, a Provident Fund Trust, which is not eligible for an SGL account can hold securities in demat form by opening a constituent SGL account with a Bank, PD. Through the SGL account no.2 of the party, who has direct account with RBI, the facility will be made available to the PF.

Convertible Bond

A bond that is partially or fully convertible into equity within a specified period of time from the date of issue is known as a convertible bond. In such cases, the bond does not pay the holder that part of the maturity value that is earmarked for conversion to equity.

Convexity

See in conjunction with Duration, PVBP and Immunization. Convexity is another measure of bond risk. The measure of Duration assumes a linear relationship between changes in price and duration. However, the relationship between change in price and change in yield is not linear and hence the estimated price change obtained by duration will give only an approximate value. The error is insignificant when the change in yield is small but does not hold true for larger changes in yield, as the actual price-yield relationship is convex. Convexity is the measure of the curvature of the price-yield relationship. It is also the rate of change of duration with a change in yield. A high convexity is often a desired characteristic as for a given change in yield, positive or negative, a bond's percentage rise in price is greater than the percentage price loss.

While modified duration is used to predict the bond's % change in price, small change in yields, modified duration and convexity together are used to calculate a bond's % change in price for a large change in yield, as per this relationship.

Coupon

The rate of interest paid on a security, generally a fixed percentage of the face value, is called the coupon. The origin of the term dates back to the time when bonds had coupons attached to them, which the investor had to detach and present to the issuer to receive the money.

Credit Rating

Credit Rating is an exercise conducted by a rating organization to explore the credit worthiness of the issuer with respect to the instrument being issued or a general ability to pay back debt over specified periods of time. The rating is given as an alphanumeric code that represents a graded structure or creditworthiness. Typically the highest credit rating is that of AAA and the lowest being D (for default). Within the same alphabet class, the rating agency may apply '+' (plus) or '-' (minus) signs as suffixes to reflect comparative standing within the rating category.

CRR

This is the acronym for Cash Reserve Ratio. That part of their assets which banks in India are required to hold as Cash in balances with the Reserve Bank of India is called the Cash Reserve Ratio.

Current Yield

Current Yield on a bond is defined as the coupon rate divided by the price of the bond. This is a very inadequate measure of yield, as it does not take into account the effect of future cash flows and the application of discounting factors on them.

Day Count

The market uses quite a few conventions for calculation of the number of days that have elapsed between two dates. It is interesting to note that these conventions were designed prior to the emergence of sophisticated calculating devices and the main objective was to reduce the math in complicated formulae. The conventions are still in place even though calculating functions are readily available even in hand-held devices. The ultimate aim of any convention is to calculate (days in a month)/(days in a year).

The conventions used are as below:

We take the example of a bond with Face Value 100, coupon 12.50%, last coupon paid on 15 June, 2000 and traded for value 5 October, 2000.

A/360

In this method, the actual number of days elapsed between the two dates is divided by 360, i.e., the year is assumed to have 360 days. Using this method, accrued interest is 3.8888.

A/365

In this method, the actual number of days elapsed between the two dates is divided by 365, i.e., the year is assumed to have 365 days. Using this method, accrued interest is 3.8356.

A/A

In this method, the actual number of days elapsed between the two dates is divided by the actual days in the year. If the year is a leap year and the 29th of February is included between the two dates, then 366 is used in the denominator, else 365 is used. Using this method, accrued interest is 3.8356.

30/360

U.S. (NASD) method. If the starting date is the 31st of a month, it becomes equal to the 30th of the same month. If the ending date is the 31st of a month and the starting date is earlier than the 30th of a month, the ending date becomes equal to the 1st of the next month; otherwise the ending date becomes equal to the 30th of the same month.

30/360 European

European method. Starting dates and ending dates that occur on the 31st of a month become equal to the 30th of the same month. In Indian bond markets the 30/360 European convention is used. RBI while calculating yield in the SGL Transactions for T-Bills uses 364 as basis. This is probably because 364 is the longest tenure bill issued by it.

Derivatives

A Derivative is any instrument that derives its value from the price movement of an underlying asset. The most popular derivatives include Options, Futures and Swaps. Given the steep progress made by computing devices and the increased importance of quantitative techniques to the financial markets, the structure of derivatives have become severely complicated. It is not uncommon to find a combination of several options on a swap which pay-out depending on the occurrence of some event. The main input for pricing is volatility in the price of the underlying asset, which has given rise to the curious situation where the asset volatility is more heavily traded than the derivative itself. The application of derivative pricing has found its way in valuation of any contingent claim, floating rate notes, corporate valuation and project finance.

Dirty Price

Dirty Price of a security is its Clean Price plus Accrued Interest. Also see Clean Price, Accrued Interest.

Discount

The quantum by which a security is issued or is traded below its par value is called Discount. Also see Discount Basis.

Discount Basis

Securities that do not carry a coupon are generally issued at a discount to their face value. Examples of such securities are T-Bills and Commercial Papers (CP).

Discriminatory Price Auction

See French Auction

Duration

Duration is a measure of a bonds' price risk. It is weighted average of all the cash-flows associated with a bond, weighed by the proportion of value due to the jth payment in the cash-flow stream, with sum of all j's equaling one. Duration measures the sensitivity of a bond's price to a change in yield.

Dutch Auction

This is the process of auction in which after receiving all the bids, a particular yield is determined as the cut-off rate. All bids received at yields higher than the cut-off rate (i.e., at higher prices) are rejected. All bids received at yields below the cut-off rate are given allotment at the cut-off rate. The process is identical to that of the French Auction, except for the fact that there is no concept of allotment at a premium. The Liquidity adjustment Facility (LAF) of RBI is an example of such auction. Also see French Auction, Winner's Curse.

Floating Rate Note

A Floating Rate Note is an instrument that does not pay a fixed rate of interest on its face value. The interest paid on such instruments is dependent upon the value of a benchmark rate. The benchmark rate is mutually agreed upon by the issuer and the investor and has to satisfy some criteria (See Benchmark Rates). The interest paid is typically a mark-up on the benchmark so agreed. An example would be a AAA rated corporate issuer who issues a Note that pays 30 bps above the U.S. Treasury. In India a very common instrument of late has been an issue that pays a specified markup above the MIBOR.

French Auction

This is a process of auction in which after all the bids are received, a particular yield is decided as the cut-off rate. All bids that have been received at yields higher than the cut-off rate (i.e., at lower prices) are rejected. All bids that have been received at below the cut-off rate (i.e., at higher prices) are given full allotment but at a premium from the price at the cut-off yield.

Gilts

This is another name for government securities. The term reflects the superior quality of the papers issued by the government. The papers issued by the Bank of England used to have gilt-edged borders and the term gilts originated from there.

Gross Price

See Dirty Price

Junk Bond

It is any bond which has a credit rating below Baa/BBB. These are bonds that are below investment grade and carry very attractive rates of return, commensurate with the high credit risk.

LAF

This is a facility by which the RBI adjusts the daily liquidity in the domestic markets (India) either by injecting funds or by withdrawing them out. This method was made effective on 5 June 2000 and is open for Banks and Primary Dealers. This method has replaced the traditional method of refinance based on fixed rates.

LIBOR

It stands for London Interbank Offered rate. This is a very popular bench mark and is issued for US Dollar, GB Pound, Euro, Swiss Franc, Canadian Dollar and the Japanese Yen. The maturity covers overnight to 12 months. The methodology, very briefly – the British Bankers Association (BBA) at 1100 hrs GMT asks 16 banks to contribute the LIBOR for each maturity and for each currency. The BBA weeds out the best four and the worst four, calculates the average of the remaining eight and the value is published as LIBOR. The figures are put up in Reuters on page LIBO and SWAP. The same is available on TeleRate page 3170.

Mark To Market

Mark to Market or MTM is a very popular reporting and performance measurement tool for any investment. In this technique, the price at which the investment was made is compared with the

price of which the asset can be realized if liquidated in the market at that moment. The difference is either the MTM gain or MTM loss depending upon the current worth vis-à-vis the original price. Liabilities can also be made subject to the same analysis as assets. Periodicity of MTM depends on the liquidity of the market in which the asset is a class. For example, currency and bond investments are MTM-ed online while other investments like real estate may be MTM-ed at higher intervals.

MIBOR

This stands for Mumbai Inter-Bank Offered Rate and it is closely modeled on the LIBOR. Currently there are two calculating agents for the benchmark – Reuters and the National Stock Exchange (NSE). The FIMMDA NSE MIBOR benchmark is the more popular of the two, reflected by the larger number of deals that are transacted using this benchmark.

Modified Duration

This is a slight variation to the concept of Duration. Modified Duration can be defined as the approximate percentage change in price for a 1% change in yield. Mathematically it is represented as $\text{Mod. Duration} = \text{Duration}/(1+y/n)$, where n = number of coupon payments in the year and y = yield to maturity.

Multiple Price Auction

See French Auction

Net Price

See Clean Price

Non-Convertible Debenture (NCD)

A Non-Convertible debenture, as against a convertible debenture, is not convertible, either in part or the whole, into equity on its maturity.

Notice Money

It is money borrowed or lent in the interbank market for a period beyond one day and up to 14 days.

Open Market Operations

One of the major instruments of monetary policy by which the central bank of a country manipulates short-term liquidity and thereby the interest rates to desired levels. Generally open market operations involve purchase and sale of treasury bills in the open market or conducting repos.

Options

Options are of two types: Call Option and Put Option.

Call Option gives the buyer the right but not obligation to buy a given quantity of the underlying asset, at a given price on or before a given future date.

Put Option gives the buyer the right but not the obligation to sell a given quantity of the underlying asset, at a given price on or before a given future date.

PLR

This is the acronym for Prime Lending Rate. This is the rate at which a bank in India lends to its prime customer. The bank usually follows an internal credit rating system and charges a spread over the PLR for non-prime customers.

Price Value of a Basis Point

See PVBP

Primary Dealer (PD)

A Primary Dealer in the securities market is an entity licensed by the RBI to carry on the business of securities and act as market maker in securities. In turn the Primary Dealer will enjoy certain privileges from the RBI like refinance from RBI at concessional rates, access to the interbank call money market, etc. The PD has to give an annual undertaking to the RBI on his level of participation in the primary issues of government securities. To qualify for Primary Dealership the applicant company should have a net worth of ₹50.00 crore and a few years of experience in the securities market.

PVBP

Also called the Price Value of a Basis Point or Dollar Value of 01. This is one way of quantifying the sensitivity of a bond to changes in the interest rates. If the current price of the bond is $P(0)$ and the price after a one basis point rise in rates is $P(1)$, then PVBP is $-[P(1)-P(0)]$. This can be estimated with the help of the modified duration of a bond, as (Price of the bond * modified duration * .0001)

Repo

Repo or Repurchase Agreements are short-term money market instruments. Repo is nothing but collateralized borrowing and lending. In a repurchase agreement, securities are sold in a temporary sale with a promise to buy back the securities at a future date at specified price. In reverse repos, securities are purchased in a temporary purchase with a promise to sell it back after a specified number of days at a pre-specified price. When one is doing a repo, it is reverse repo for the other party.

Reverse Repo

See Repo

Risk Free Rate

An interest rate given out by an investment that has a zero probability of default. Theoretically this rate can never exist in practice but sovereign debt is used as the nearest proxy.

SGL

Subsidiary General Ledger Account is the demat facility for government securities offered by the Reserve Bank of India. In the case of SGL facility the securities remain in the computers of RBI by credit to the SGL account of the owner. RBI offers SGL facility only to banks and primary dealers.

SLR

This is the acronym for Statutory Liquidity Ratio. That part of their Net Demand and Time liabilities (NDTL) that a bank is required by law to be kept invested in approved securities is known as SLR. The approved securities are typically sovereign issues. The maintenance of SLR ensures a minimum liquidity in the bank's assets.

Spread

Spread is the difference between two rates of interests. It is often generalized to imply the difference between either price or yield. Spreads can be between two risk classes or can be between tenors in the same risk class. For example 130 bps between AAA and GOI means a 1.30% spread between a AAA issue and that made by the Government of India. 5 paisa spread between bid and ask means that in the two way price quoted, the difference between the buy and sell price is 5 paisa 60 bps spread between 3 months T Bill over 10 Year means that the difference between the yield in the 3 month Treasury Bill and that on a 10 Year paper of the same risk class is 60 basis points.

STRIPS

STRIPS is the acronym for Separate Trading of Registered Interest and Principal of Securities. The STRIPS program lets investors hold and trade the individual interest and principal components of eligible Treasury notes and bonds as separate securities. When a Treasury fixed-principal or inflation indexed note or bond is stripped, each interest payment and the principal payment becomes a separate zero-coupon security. Each component has its own identifying number and can be held or traded separately. For example, a Treasury note with 10 years remaining to maturity consists of a single principal payment at maturity and 20 interest payments, one every six months for 10 years. When this note is converted to STRIPS form, each of the 20 interest payments and the principal payment becomes a separate security.

STRIPS are also called zero-coupon securities because the only time an investor receives a payment during the life of a STRIP is when it matures. A financial institution, government securities broker, or government securities dealer can convert an eligible Treasury security into interest and principal components through the commercial book-entry system. Generally, an eligible security can be stripped at any time from its issue date until its call or maturity date. Securities are assigned a standard identification code known as a CUSIP number. CUSIP is the acronym for Committee on Uniform Security Identification Procedures. Just as a fully constituted security has it a unique CUSIP number, each STRIPS component has a unique CUSIP number. All interest STRIPS that are payable on the same day, even when stripped from different securities, have the same generic CUSIP numbers. However, the principal STRIPS from each note or bond have a unique CUSIP number.

STRIPS components can be reassembled or ‘reconstituted’ into a fully constituted security in the commercial book-entry system. To reconstitute a security, a financial institution or government securities broker or dealer must obtain the appropriate principal component and all un-matured interest components for the security being reconstituted. The principal and interest components must be in the appropriate minimum or multiple amounts for a security to be reconstituted. The flexibility to strip and reconstitute securities allows investors to take advantage of various holding and trading strategies under changing financial market conditions that may tend to favor trading and holding STRIPS or fully constituted Treasury securities.

Term Money

Money borrowed and lent for a period beyond 14 days is known as term money

Treasury Bills

Treasury Bills are short-term obligations of the Treasury/Government. They are instruments issued at a discount to the face value and form an integral part of the money market. In India, treasury bills are issued for two maturities 91 days and 364 days.

Uniform Price Auction

See Dutch Auction

WDM Segment

The National Stock Exchange of India has three trading segments, one is the Capital Markets Segment, Future & Option Segment and the other is the Wholesale Debt Market Segment. The Capital Markets Segment is meant for equities trading whereas all the trades in debt instruments are put through the WDM Segment. The WDM represents a formal screen-based trading and reporting mechanism for secondary market trades in debt instruments. The F&O segment is meant for trading in equity and interest rate derivatives.

Winners Curse

In a French auction, every successful bidder is one whose bid is equal or higher than the cut-off price. Therefore, successful bidders have to pay a premium on the cut-off price, on being successful in the auction. This is called the winners curse in treasury auctions.

Yield Curve

The relationship between time and yield on a homogenous risk class of securities is called the Yield Curve. The relationship represents the time value of money – showing that people would demand a positive rate of return on the money they are willing to part today for a payback into the future. It also shows that a Rupee payable in the future is worth less today because of the relationship between time and money. A yield curve can be positive, neutral or flat. A positive yield curve, which is most natural, is when the slope of the curve is positive, i.e., the yield at the longer end is higher than that at the shorter end of the time axis. This results as people demand higher compensation for parting their money for a longer time into the future. A neutral yield curve is that which has a zero slope, i.e. is flat across time. This occurs when people are willing to accept more or less the same returns across maturities. The negative yield curve (also called an inverted yield curve) is one of which the slope is negative, i.e. the long-term yield is lower than the short-term yield. It is not often that this happens and has important economic ramifications when it does. It generally represents an impending downturn in the economy, where people are anticipating lower interest rates in the future.

Yield Pick-Up

Yield pick-up or yield give up refers to the yield gained or lost at the time of initiation of a trade primarily in bonds and debentures. Suppose one sold 12.50 % GOI 2024 at a yield of 10.00 per cent and moved into 11.83 % GOI 2019 at a yield of 11.25 per cent, the yield pickup is to the tune of 125 basis points. If one did exactly the reverse of this, the yield give up is to the extent of 125 bps. These concepts are ordinarily used in bond swap evaluation.

Yield To Maturity

Yield to Maturity (YTM) is that rate of discount that equates the discounted value of all future cash flows of a security with its current price. In a way, it is another way of stating the price of a security as other things remaining constant the price is a direct function of the YTM. The deficiency of YTM is that it assumes that all intermediate and final cash flow of the security is reinvested at the YTM, which ignores the shape of the yield curve. This makes YTM applicable as a measure for an individual security and to different bonds in the same risk class. The YTM, given its instrument-specific nature does not provide unique mapping from maturity to interest rate space. It is used primarily for its simplicity of nature and ease of calculation. More sophisticated traders would use the Zero Coupon Yield Curve (ZCYC) for valuation. See Zero Coupon Yield Curve.

Zero Coupon Bond

A Zero Coupon Bond (ZCB) is one that pays no periodic interest (does not carry a coupon). These bonds are typically issued at a discount and redeemed at face value. The discount rate, appropriated over the life of the bond is the effective interest paid by the issuer to the investor. In India, the spectrum of ZCB is virtually non-existent beyond one year. Up to one year, the Treasury Bills issued are proxies for ZCB. Also see Zero Coupon Yield Curve.

Zero Coupon Yield Curve

The Zero Coupon Yield Curve (also called the Spot Curve) is a relationship between maturity and interest rates. It differs from a normal yield curve by the fact that it is not the YTM of coupon bearing securities, which gets plotted. Represented against time are the yields on zero coupon instruments across maturities. The benefit of having zero coupon yields (or spot yields) is that the deficiencies of the YTM approach (See Yield to Maturity) are removed. However, zero coupon bonds are generally not available across the entire spectrum of time and hence statistical estimation processes are used. The NSE computes the ZCYC for treasury bonds using the Nelson-Seigel procedure, and disseminates this information on an everyday basis. The zero coupon yield curve is useful in valuation of even coupon bearing securities and can be extended to other risk classes as well after adjusting for the spreads. It is also an important input for robust measures of Value at Risk (VaR).

