

Theory and Practice of Forex and Treasury Management

Module - I



Committee on Capital Market & Investors Protection
The Institute of Chartered Accountants of India

(Set up by an Act of Parliament)

New Delhi

Certificate Course on Forex and Treasury Management

Module-I



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Foreword to the Second Edition

By definition, Treasury is a depository where wealth and precious objects can be stored safely. However, in business parlance the term is much broader to cover different aspects of funds management. In view of functional importance, even governments of various countries have segregated treasury management as a separate specialised activity. In business, main treasury management function is related to managing funds in most optimum manner and covers activities such as raising of long-term capital, raising working capital and investing surplus funds. The treasury function has been a challenging area to everybody connected with it as it is important to take quick decisions to mitigate the risks, optimize returns and at the same to ensure adequate financial liquidity for normal functioning of organisation.

Historically, large banks have the stronghold on the provision of treasury management products and services banks and have dedicated departments of treasury management for supporting their clients' needs in this area. Now, smaller banks are also increasingly launching and expanding their treasury management functions and offerings. All this is possible in view of the market opportunities accorded by the recent economic environment, availability of highly seasoned treasury management professionals, access to industry standard, third-party technology providers', products and services made according to the needs of smaller clients, and investment in education and other best practices.

I am glad that the Committee on Capital Market & Investors' Protection of the Institute of Chartered Accounts of India is bringing out the second edition of the 'Theory and Practice of Forex and Treasury Management'. This publication covers various facets of Treasury Management in three modules. I take this opportunity to congratulate CA. Rajesh Sharma, Chairman, CA. Sushil Kumar Goyal, Vice Chairman and the entire team of the Committee on Capital Market & Investors Protection for their initiatives and endeavours.

Date: 05. 02.2019

Place: New Delhi

CA. Naveen ND Gupta

President, ICAI

Preface to the Second Edition

Treasury department of an organization is a subset of broader financial system of an organization. Treasury management is an important function in big size corporate houses, banks and organizations which is why we have a separate treasury department in such entities.

The strategic importance of the treasury organization has increased steadily over the past few years and has impacted their structure and scope. Treasury organizations have become more important reflecting the increasing complexity of business strategies and are expected to continue to respond to the increasing pace of change. Finding the right response to the right questions on the treasurer's and CFO's agenda can make the difference between a thriving company with a solid credit rating and an organization struggling with liquidity and credit downgrades. Therefore, having a scalable and clearly defined target treasury organization, as well as a forward-looking governance structure, is crucial.

Companies have also come under increased pressure from shareholders and regulators to increase transparency and improve financial performance. These expectations are leading to a significant change to the treasury function as activities are increasingly being centralized. Many organizations have just begun designing future target operating models for their treasury organization.

In any department or function which requires specialized skills and knowledge in that area, we need to be an expert of that particular area. To understand the complex treasury system in financial market we come across treasury functions. We have tried to cover most of the treasury functions into this background material that it will cater in understanding the treasury functions.

I wish to place on record my sincere gratitude to CA. Naveen N D Gupta, President, ICAI and CA. CA. Prafulla Premsukh Chhajed, Vice-President, ICAI for their vision and support to the Committee on Capital Market and Investors Protection.

I would like to thank CA. Sushil Kumar Goyal, Vice Chairman and all the members of the Committee on Capital Market and Investors Protection, CA. Anil Satyanarayan Bhandari, CA. Dhiraj Kumar Khandelwal, CA. Shiwaji Bhikaji Zaware, CA. M. Devaraja Reddy, CA. G Sekar, CA. K Sripriya, CA. Ranjeet Kumar Agarwal, CA. Kemisha Soni, CA. Atul Kumar Gupta who have extended their support and encourage in all committee activities.

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Date: 06.02.2019

Place: New Delhi

CA. Rajesh Sharma

Chairman,
Committee on Capital Market & Investors Protection,
ICAI

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Treasury – Organisational Structure

Treasury – Its Evolution and Objectives

Evolution of the Treasury Function

In the early stages, the treasury function was undertaken by banks, which managed the inflow and outflow of cash. As economies grew complex, the regulators rolled out guidelines for the management of funds. The role of the treasury in banks was then enhanced but still restricted to dealing in permissible securities and managing the funds flow.

Over a period of time, the role of the treasury in Indian banks has evolved from just being the cash manager to the risk manager. The departments have now assumed a strategic role and undertake profit-making activities within the stipulated risk framework so as to reduce the cost of funds.

Typically, a bank treasury would be organised into:

- Money market desk
- Forex desk
- Capital market desk
- Asset liability management desk
- Risk management desk
- Transfer pricing desk

The desire to reduce the cost has led to mammoth growth of the corporate treasury in large and mid-sized corporates. A corporate treasury department can be viewed as an in-house solution for managing the funds of the business house. The corporate treasury performs functions such as cash management, liquidity planning, procuring finance and managing risk for the business. The turbulent and unstable global economic environment is a contributing factor in the growth of the corporate treasury in India. Companies now aim at preserving wealth along with riskless profit making. The corporate treasury can be viewed as an in-house bank, providing services to various departments of the organisation.

However, the scale of operations is much larger for banks. Corporate treasurers are continuously battling with issues such as cash visibility, exposure recognition as well as the absence of a long-term treasury strategy.

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Treasury management (or treasury operations) include management of an enterprise's holdings, with the ultimate goal of maximizing the firm's liquidity and mitigating its operational, financial and reputational risk. Treasury Management includes a firm's collections, disbursements, concentration, investment and funding activities. In larger firms, it may also include trading in bonds, currencies, financial derivatives and the associated financial risk management.

Most banks have whole departments devoted to treasury management and supporting their clients' needs in this area. Until recently, large banks had the stronghold on the provision of treasury management products and services. However, smaller banks are increasingly launching and/or expanding their treasury management functions and offerings, because of the market opportunity afforded by economic environment (Banks of all sizes focusing on the clients they serve best), availability of highly-seasoned treasury management professionals, access to industry standard, third-party technology providers' products and services tiered according to the needs of smaller clients, and investment in education and other best practices.

For non-banking entities, the terms *Treasury Management* and *Cash Management* are sometimes used interchangeably, while in fact, the scope of treasury management is larger (and includes funding and investment activities mentioned above). In general, a company's treasury operations come under the control of the CFO, Vice-President / Director of Finance or Treasurer, and are handled on a day-to-day basis by the organization's treasury staff, controller, or comptroller.

Bank Treasuries may have the following departments:

- A Fixed Income or Money Market desk that is devoted to buying and selling interest bearing securities.
- A Foreign exchange or "FX" desk that buys and sells currencies.
- A Capital Markets or Equities desk that deals in shares listed on the stock market.
- A commodity Desk to deal in commodities like crude, gold and metals.

In addition, the Treasury function may also have a "Proprietary Trading" desk that conducts trading activities for the bank's own account and capital, an Asset Liability Management (ALM) desk that manages the risk of interest rate mismatch and liquidity and a Transfer Pricing or Pooling function, Price liquidity business lines (Liability & Asset sales teams) within the bank.

As businesses recover from the global meltdown, treasury management is becoming essential. Treasury management has long been an important aspect of many corporations' financial management. It ensures that the business is accurately tracking its daily sales and payments in an effective manner, while also having sufficient liquidity to meet both expected and unexpected financial obligations.

Treasury – Organisational Structure

Significant changes to regulations that will be coming into force in the following years are set to transform the way in which treasury managers do their jobs. These regulations, in particular Basel III of Banks, will affect how Treasury Management Systems (TMS) are utilized, and how important they are perceived to be.

The industry is facing a period of change as the way companies employ treasury management is shifting. There are more systems from among which a company may choose one to use, as well as how they install it. The cloud is opening up opportunities for outsourcing at lower costs than creating or buying an in-house treasury management system. Companies can opt for ever-more customizable systems that particularly suit their business model and needs, in order to ensure they get the most from treasury management.

More companies are realizing the importance of treasury management. A global survey by Accenture, the professional services consultancy, found that the top-performing companies considered their levels of liquidity risk as either their primary or secondary concerns. After all cash only has value when it is easily accessed.

Treasury Management Objectives

- Maintaining Liquidity
- Optimizing Cash Resources
- Establishing and Maintaining Access to Short-Term Financing
- Maintaining Access to Medium- and Long-Term Financing
- Maintaining Shareholder Relations
- Managing Risk
- Coordinating Financial Functions and Sharing Financial Information

The Treasury function in any corporate has always been important in making sure that the business has sufficient liquidity to meet its obligations, whilst managing payments, receipts and financial risks effectively.

With the ever increasing pace of change to regulation, compliance and technology in the financial sector, Treasury has increasingly become a strategic business partner across all areas of the business, adding value to the operating divisions of the company. For example, working with the sales department to establish good financial contract terms so that any trade discounts offered and the payment method agreed to are beneficial to the business. Current market conditions also reinforce the need for corporates to ensure that their financial position is managed as efficiently as possible, with no excess working capital tied up in the business. The old adage 'Cash is King' is certainly as relevant today as it has always been.

Treasury departments need to cover the complete financial environment from capital structure and long term investments to liquidity and working capital management. If Treasury can drive

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improvements in the Purchase-To-Pay and Order-To-Cash Cycles, there can be a direct effect on the overall debt and investment requirements and thus on the capital structure required in the business.

The question is: if the Treasury function is becoming more of a business partner, how can the department manage its time to ensure that day-to-day administration, processing and transaction execution is completed using the minimum of resource?

The answer is that larger companies automate the majority of their daily financial processing and administration tasks, supported by policy standards, control and monitoring processes, embedding financial best practices across the whole business. Integrating corporate systems with those of their banks can achieve significant levels of automation, reducing the amount of time that needs to be spent on tasks such as calculating the daily cash position.

Cash and liquidity management has always been a key task in every company to ensure debtor, creditor and stock levels are managed as efficiently and effectively as possible. When the business environment is more challenging, corporates can gain a competitive advantage through optimal management of every aspect of their financial position.

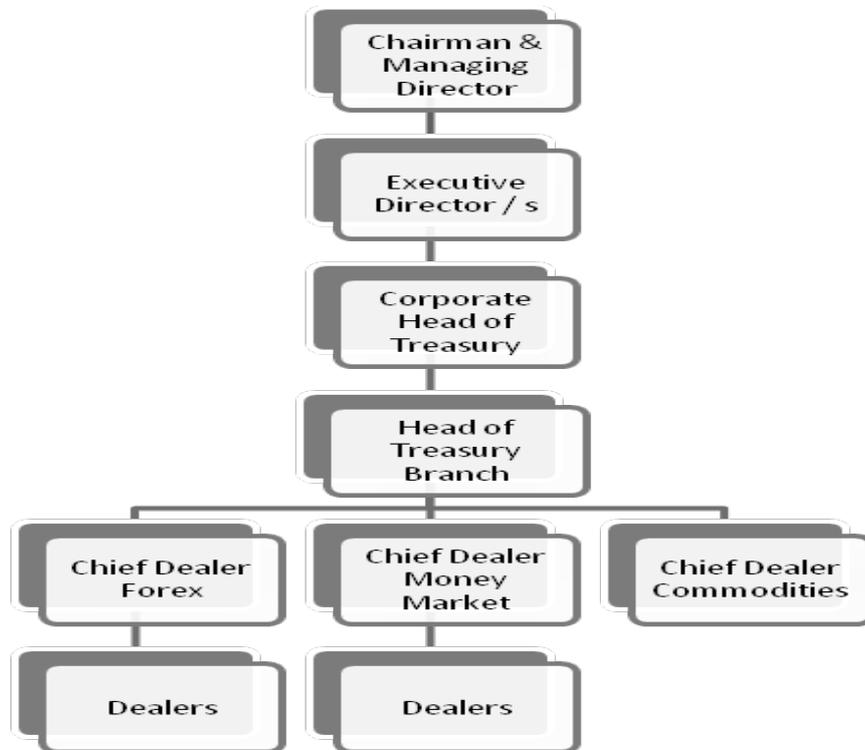
At the same time, the efficient use of secure systems can minimize operational risk, increase operational security and maximize straight through processing. Add to this automatic reconciliation of bank account data, and Treasury can then manage exceptions rather than every item, giving them the time to devote to delivering value-added services across the company.

Technology development is continually providing new and enhanced ways for corporates to manage their financial position. An example of this is the development of SWIFT Corporate Access, enabling corporates to use SWIFT channels to communicate directly with their banks. This, together with the development of more standardized file formats, for example XML, has the potential to change radically the systems and processes used in the business where the benefits outweigh the cost of introduction.

Organisation Structure of Treasury Front, Back & Mid Office

The organization of Treasury depends on the volume of activities handled. Basically, Treasury has three distinct functions which work as water-tight compartments. They are: Front, Back and Mid Office. The dealers are not supposed to handle settlement or accounts. The Back Office would not perform dealing but may perform accounting function, and accounting section would not perform dealing but may perform Back Office function. A typical organization structure is depicted through the following chart.

Treasury – Organisational Structure



Corporate / Apex Treasury Organization Structure

The Corporate Treasury Department is headed by Treasury Manager with an appropriate substantive rank who should be Senior Executive who directs controls and co-ordinates the activities of treasury. He also co-ordinates the work between the Chief Dealer, the Head of Back Office, Head of Research and is totally responsible for management of funds, investments and forex activity. Quite often, an additional Senior Executive with a lower substantive rank is posted to oversee the Back Office Operations and compliances. He is also a member of Assets Liability Management Committee (ALCO) and helps the committee in deciding various policies in the matter of treasury management.

Banks which have separate forex operations will have dealers for forex operations. Head of Research will be assisted by Officers to carry out Research Activities / Analysis in various types of securities. Research Department would be common for Money Market, Debt, Equities and Forex. Market Analysis would also be provided by Research Department.

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Different Sections of Treasury Department

Front Office	Dealing and Investment – Risk Taking
Mid-Office	Risk Management and Management Information
Back-Office	Deals with Confirmations, Settlements, Accounting and Reconciliation
Reporting-Office	Reporting to CFO

Front Office: The front office of the treasury has a responsibility to manage investment and market risks in accordance with instructions 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 given 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 risks.

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 companies 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.

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

- Limit setting and monitoring exposures in relation to limits;
- Assessing likely market movements based on internal assessments and external / internal research;
- Evolving hedging strategies for assets and liabilities;
- Interacting with the bank's Risk Management Department on liquidity and market risk;
- Monitoring open currency positions;
- Calculating and reporting VaR;
- Stress testing and back testing of investment and trading portfolios;
- Risk-return analysis; and
- Marking open positions to market to assess unrealized gain and losses.

Treasury – Organisational Structure

Back-Office: The key functions of back-office are:

- Deal slip verification;
- Generation and dispatch of interbank confirmations;
- Monitoring receipt of confirmations from counterparty banks;
- Monitoring receipt of confirmations of forward contracts and derivatives;
- Effecting / receiving payments;
- Settlement through CCIL or direct through Nostro, RTGS as applicable;
- Monitoring receipt of forex funds in interbank contracts;
- Statutory reports to the RBI;
- Management of Nostro Funds to advise latest funds position to enable the Front Office to take the decision for the surplus / short fall of funds.
- Reconciliation of Nostro / Vostro Other accounts.
- Monitoring approved exposure and position limits; and
- Accounting.

Use of Information Technology is necessary for treasury as the Operations / Transactions. It requires modifying software to suit changing circumstances and volatility.

Computerization of Investment and Fund operations is absolutely necessary as some of the risk return models can be implemented only through software packages. This will also facilitate the introduction of risk-hedging techniques.

A Fund Manager looks into liquidity position, funds flows, and maintains reserve requirement. The number of Staff for dealings in back office operations will depend on the volume / size of operations.

Banks having large volumes should post Risk Managers 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, Performance (Operational) Risk in the transactions and give guidance to front line viz., dealers to remain in touch with product and market developments.

Delegation of powers should be consistent with the market requirements and risks. Head of Treasury (Treasury Manager) could be given adequate powers to enable him to take on-the-spot decisions, whereas powers of the dealers could be limited to normal volume in the market.

Consistent improvement of skills is a must for the Treasury Manager, dealers and other staff to take care of market risk, as market moves at a rapid pace. Hence, Banks should take care of this aspect.

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Reporting-Office: Treasurers are increasingly assuming more strategic roles in companies. They have moved beyond managing working capital to becoming increasingly involved in working with a company's senior management to manage risk and boost the bottom line.

Functions of Treasury Department

The general mission of the treasury department is to manage the liquidity of a business. This means that all current and projected cash inflows and outflows must be monitored to ensure that there is sufficient cash to fund company operations, as well as to ensure that excess cash is properly invested. While accomplishing this mission, the treasurer must exercise considerable prudence to ensure that existing assets are safeguarded through the use of safe forms of investment and hedging activities.

Centralisation and Decentralisation of Treasury

Today, every cash manager must look after not only to keeping things running smoothly but also efficiently. Companies around the globe are looking for ways to streamline their operations and pull out cash tied up as a result of business process inefficiencies. With the advent of global business, corporates need to decide whether to position the treasury as a centralised department or a decentralised department.

In a centralised set-up, the key decisions and functions shall be taken by a single team on behalf of all the group companies located elsewhere. In such cases, risk management and fund management for the entire group is handled centrally. In contrast to this set-up, the decentralised set-up vests the decision-making power in the smaller unit, which may be located geographically apart, and cash management is done locally. Only reporting could be centralised for the purpose of group consolidation.

Companies benefit from decentralised control when it comes to their treasury operations, because handing over the control and management to local people helps to reap the benefits of familiarity with the business, customs, language, and the culture. However, the advantages of centralised operations outshine those of the decentralised set-up. The greatest benefit of pooling operations at a centralised location is the reduction in the costs for services, increased professional treasury knowledge, and increase in buying power.

Although a fully centralised environment may appear to be the most suitable structure for multinational corporations, in reality, this may not be the case. Many companies end up with a hybrid or decentralised arrangement, simply because it is impractical to operate in any other way. The better idea is to have a hybrid state of management and reap the benefits of both setups. In larger firms, the treasury is usually centralised at the head office and provides services to all parts of the business. This allows it to achieve economies of scale for example, by obtaining better borrowing rates. The financial control function is often delegated to individual units, where it can respond more easily to customers and suppliers

Treasury – Organisational Structure

and relate more specifically to the units' competitors. As a result, the treasury and financial control tend to be separated by location as well as responsibility.

Details of Treasury Functions

In order to accomplish its mission, the treasury department must engage in the following activities:

1. *Cash forecasting.* Compile information from around the company to create ongoing cash forecast. This information may come from the accounting records, the budget, capital budget, board minutes (for dividend payments) and even the CEO (for expenditures related to acquisitions).
2. *Working capital monitoring.* Review the corporate policies related to working capital, and model their impact on cash flows. For example, loose credit results in a larger investment in accounts receivable, which consumes cash.
3. *Cash concentration.* Create a system for funneling cash into a centralized investment account, from which cash can be most effectively invested. This may involve the use of notional pooling or cash sweeps.
4. *Investments.* Use the corporate investment policy for allocating excess cash to various types of investments, depending on their rates of return and how quickly they can be converted into cash.
5. *Grant credit.* Issue credit to customers, which involves management of the policy under which credit terms are granted.
6. *Fund raising.* Determine when additional cash is needed, and raise funds through the acquisition of debt, sale of stock, or changes in company policies that impact the amount of working capital required to run the business.
7. *Risk management.* Use various hedging and netting strategies to reduce risk related to changes in asset values, interest rates, and foreign currency holdings.
8. *Credit rating agency relations.* Keep any credit rating agencies informed of the company's financial results and condition, if these agencies are providing ratings on the company's marketable debt issuances.
9. *Bank relations.* Keep the company's bankers apprised of the company's financial condition and projections, as well as any forthcoming changes in its need for borrowed funds. The discussion may extend to the various services provided by the banks to the company, such as wire transfers, and so forth.
10. *IT systems.* The department maintains treasury workstations that provide it with information about cash holdings, projections, market conditions, and other information.

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11. *Reporting.* The treasurer provides the senior management team with reports concerning market conditions, funding issues, return on investment, cash-related risks, and similar topics.
12. *Mergers and acquisitions.* The department may advise on the company's acquisition activities, and may be called upon to integrate the treasury functions of entity being merged.

In essence, treasury functions revolve around the monitoring of cash, the use of cash, and the ability to raise more cash. All other tasks of the department support these functions.

Role of Treasury and Treasurer

(a) Raising Capital

The treasury manager arranges funds for the unit. It is the duty of the treasury manager to ensure required quantity of funds. The term quantity refers to the amount of funds required for day to day functioning of the unit. The quantity is available to the firm either as external loans or as internal generation. The loan quantity is arranged in the form of working capital by treasury against the security of inventory and trade receivables.

Availability of funds in the right quantity is the core objective of treasury management. Alongside, the treasury manager has also to ensure that the funds are just adequate for the requirements, neither more nor less. In case funds are kept in excess of the requirement, the excess portion imposes an opportunity cost over the system, i.e., the cost represented by the earnings which these funds would have obtained instead of being left idle. Again, the adequacy of funds has to be determined carefully. For this purpose, the cash flows for the relevant period have to be accurately charted out. Cash flows are the actual cash flows in this case as there can be a lag in terms of less realization of the projected flows. Thus, actual cash flows only have to be considered while determining adequacy. Further, while actual inflows should be ascertained, as regards outflows, a margin of contingency should be maintained to take care of the uncertainties. Cash is understood here to include both cash and bank balances plus that portion of highly liquid securities that can be converted into cash within a stipulated time period.

(b) Managing Bank Relationships

A company needs a small number of relationship banks from whom it can purchase its treasury products. The banks need to be clearly differentiated according to the products/services they offer. Some banks for instance bring powerful balance sheets and the ability to provide substantial amounts of finance at short notice. Others have very extensive capital market distribution capabilities and hence, in addition to providing effective delivery for capital market transactions, are able to provide constructive advice on the appropriate capital

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market products for a company. Others may have very efficient derivative businesses or specialization in certain derivative products that meet the company's particular needs.

The essence of good banking relationships is for the company to exploit the favoured products and market positions of banks to the mutual benefit of the company and the banks.

How many banking relationships?

A company probably needs at least one bank in any territory where it has major operations. This bank will need to be able to offer the administration of current accounts, short-term credit facilities and efficient international payments. There is no rule for the number of banking relationships. Many treasury teams believe that there is no point in establishing relationships with investment banks. Should major acquisitions or disposals be effected, then advice will come from the company's merchant banks where officials are close to the company's senior executives. This is probably true, but today most banks that have advisory arms to their business are also part of a large banking group. In these circumstances the company should be able to 'lever off' the existing relationship to access products that interest and concern it.

Relationships are never stable. Rightly or wrongly, a bank usually achieves the status of a relationship bank by participating in one of the company's major bank financings. This financing for most companies is a revolving credit that provides the company's core finance to meet working capital, capital and small acquisition needs. Banks are continually changing the perception of their desire to be involved in such financings. In addition, they are continually comparing the returns from the total business generated by the relationship with the cost of capital required to support it. If banks consider the returns are inadequate they will reduce support to the company. As such, a treasurer needs to be continually open to new potential relationships, and ever sensitive to the possibility of any existing relationship withering.

Most banks that participate in major financing, maintain that the returns from traditional bank lending are insufficient to cover the cost of capital required to support their commitment. As a result, they are continually looking for ancillary business from a company to subsidize the bank lending activities effectively. This is a real problem for many treasurers since many companies do not have that volume of ancillary business. Unfortunately, there is not much that can be done other than to be extra sensitive to ensuring that all treasury business goes to relationship banks. Additionally, treasurers need to ensure that relationship banks have, wherever possible, an opportunity to bid for all relevant treasury business.

What each side must give the relationship?

Most treasurers would probably see the key elements to a successful relationship as being:

- Product compatibility
- Personal chemistry
- Integrity: The ability to see each other's point of view

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- Open information and understanding
- Credit standing by the bank and credit consciousness by the company.

(c) Money Management

The treasury function is concerned with management of funds at the micro level. It means that once the funds have been arranged and investments identified, handling of the funds generated from the activities of the firm should be monitored with a view to carrying out the operations smoothly. Since funds or cash is the lubricant of all business activity, availability of funds on day-to-day basis is to be ensured by the treasury manager. The role of the treasury management is to manage funds in an efficient manner, so that the operations in the area of finance are facilitated in relation to the business profile of the firm. The treasury function is thus supplemental and complementary to the finance function. As a supplemental function, it reinforces the activities of the finance function by taking care of the finer points while the latter delineates the broad contours. As a complementary function, the treasury manager takes care of even those areas which the finance function does not touch. Looked at from this point of view, the treasury function integrates better with manufacturing and marketing functions than the finance function. This is because the treasury department of a firm is involved in more frequent interaction with other departments. For the purpose of performing this role, the treasury manager operates in various financial markets including the inter-corporate market, money market, G-sec market, forex market etc.

(d) Treasury Performance Management

One of the prime objectives of a treasury manager is to ensure timely procurement of right amount of funds and timely deployment of right amount of funds. This objective results in administrative smoothing and paves the way for easier achievement of performance targets of the firm. A modern day treasury manager has another objective, which is to profit from such sourcing and deployment. Profit from this function is derived as under:

- Sourcing of funds at the right time and in right quantity is a result of realization of debtors and financing of borrowings. Realization of debtors in time has a direct impact upon profitability of the firm through decrease in cost of holding debtors. Financing of borrowings is a capital structure decision but the actual availing of these borrowings is the domain of the treasury manager. Adequate and timely utilization of the borrowed funds results in the avoidance of strain on other sources of funds.
- Once the funds have been sourced in correct measure, the deployment adds further to the profitability of the firm which has come about with the pace of sourcing. Correct deployment ensures that there is no unnecessary accumulation of funds in the firm at any point in time. Needs of every department are met as per schedule. This action results in avoidance of special and extraordinary costs, interests and the like. With costs being in control, surplus funds emerge from the system which is deployed profitably either as long

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term investments or as short-term parking tools. Both ways, the net result for the firm is an addition to profits.

The treasury plays a pivotal role in any organisation. It is therefore imperative to decide the position of the department as a cost centre or a profit centre. Treating the treasury department as a cost centre would mean that the entire cost of operations will be allocated to the various other revenue-generating units. Cost centre treasuries focus on providing a service to the business units, much like a client-supplier relationship. Rather than working to a profit goal, a number of metrics are used that vary depending on the organisation and its focus on analysing the effectiveness of the treasury. The treasury then reports on the costs of cash management, the net hedging and interest expenses and so on. On the other hand, if the treasury is positioned as a profit centre, it needs to generate profits to absorb its own cost. While a few companies may define their treasuries in terms of the classic profit centre model of the late 1980s and 1990s, some are now self-defining as profit centres with a completely different profit model.

A) 1980s – The Rise of the Profit Centre

From a global perspective, the treasury department was viewed as a profit centre in this decade. With the goal of reducing transaction costs, combined with the necessity of handling trade and hedging for other core treasury functions, these companies began allocating capital to the treasury to bring in a profit from trading activities. Many of these companies looked more like banks than corporates when it came to finance and treasury, with some even seeing more profit from trading activities than from core businesses.

B) 1990s Crisis and the Shift towards the Cost Centre

The 1990s can be termed as the decade of crisis as the European crisis in 1992–93 was swiftly followed by the Latin crisis in 1994–95, and the Asian crisis followed that in 1997. After a number of treasuries ran into difficulties with trades going bad, the profit centre treasury model became less attractive. As the cost of capital gradually increased, there was a rise in the internal competition for capital allocation between different business units. Companies actually began focusing on core competencies and resources were first allocated to those competencies seen as core. With all that happened during and after the crises, corporate scandals, the advent of Sarbanes-Oxley and tightening reporting standards around the globe, a few corporate treasurers or finance managers didn't wish to have anything to do with the world of speculation and, hence, the approach of treating the treasury as a profit centre took a backseat.

The role of the treasurer reverted to helping protect the interests of the company and reducing risk wherever possible rather than seeking profits. The cost centre model, with no specific profit goals and no trading except for cash management purposes, became the popular approach.

C) The Revised Profit Centre Model and the way forward

Recently, there has been a resurgence of interest in the idea of a profit centre treasury. But what exactly this means has completely changed. Rather than being allocated funds and having a

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profit goal, the new profit centre treasury is all about adding value through process efficiency and improved working capital management through the following ways:

By combining the banking needs of all business units, this model allows savings through economies of scale.

Putting in place cash centralisation structures, such as cash pools.

Margins, and thus treasury profits, can also be created by better managing banking relationships. This would involve demanding competitive bids and requiring credit from those banks that wish to benefit from a share of the cash management business.

The treasury can use its skills in risk management in order to help push forward corporate strategy while still bringing in profit.

Hence, though the treasury function was traditionally viewed as a profit centre and a cost centre, the trend in recent years has been to emphasise the need for the conversion of the treasury function into a value creation centre by treating it as a hybrid of both the cost centre and profit centre.

(e) Liquidity Management

Cash forecasts are generally made over three time horizons: Short, Medium and Long term.

Short-term cash forecasts

Generally, these cover approximately 30 days. Short-term forecasts are usually used exclusively by the treasury department to manage liquidity on a day-to-day basis. Their purpose is to aid decisions on the management of short-term borrowings and deposits, to ensure that there are no idle balances sitting in bank accounts and that shortages are detected and financed in the most cost-effective manner.

Short-term cash forecasts are generally prepared on a daily basis for the following five to ten days. Opening cleared cash balances at banks are calculated and adjusted for anticipated daily cash receipts and cash payments. This day-by-day forecast is ideally updated daily. The following days are often prepared on a week-by-week basis, since trends, as opposed to daily movements, are more important. Short-term forecasts are usually prepared by the treasury department from records at their disposal, or information supplied by other parts of the business. Those companies with stable and predictable cash flows, sometimes, prepare parts of these forecasts from historic data, updated for known circumstances.

Preparation of short-term cash forecasts

It is normally the responsibility of the cash manager to prepare short-term cash forecasts. The opening balance will be the cleared balance reported through the company's bank balance reporting system. It will represent the total of cleared balances at the start of the day on the banking pool, or the net of different individual accounts with a particular bank. The bank

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balance reporting system will also inform the company of those payments or receipts that are being cleared through the clearing system that day, and for which their accounts will be debited or credited by the end of the day.

Medium-term forecasts

Medium-term cash forecast is generally prepared for financial management purposes by the various finance departments within the organization. Equity analysts are putting more and more emphasis on cash flow as an indicator of the financial health of a company. Company directors also are seeing cash control as one of the primary tools in the creation of value. As a result the management of cash, effected through a whole series of controls over every aspect of working capital and capital expenditure, becomes a key management issue. Central to these controls is the efficient and effective forecasting of cash over the budget or current financial year and beyond.

Most companies will produce medium-term cash forecasts on a month by-month basis, which are then updated at regular intervals. Many will produce medium-term cash forecasts that cover a rolling 12–18 months. Such rolling forecasts ensure that the control of cash does not just go from financial year to financial year, but that a consistent control is taken over a 12-month cycle.

Medium-term cash forecasts are usually prepared on a receipts- and- payments basis, with emphasis being placed on the key drivers in cash management.

Use by treasury of medium-term forecasts

Medium-term cash forecasts are used by the treasury department for a number of purposes. Treasury also uses medium-term forecasts to:

- Strategically manage short-term liquidity. For instance, a treasury department with some cash surpluses, if it believes interest rates may decline more rapidly than the market predicts, may use the medium term cash forecasts to determine whether to deposit those funds for a more extended period than usual.
- Manage the actual interest cost, which for many treasury departments is one of their annual objectives. The medium-term forecast aids the management of derivative and liquidity instruments in meeting this objective.

Long-term cash forecasts

Long-term cash forecasts generally cover a period of three to five years and are produced during the strategic planning process. These cash forecasts are only indicative of the likely trend of a company's cash generation. Long-term cash forecasts are little used in the management of liquidity, but have a greater significance in the management of a company's debt structure.

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Aspects of cash forecasting

Most companies accept the need for accurate cash forecasts but few are able to produce them on a consistent basis. One of the main reasons for this is the difficulty of forecasting the timing of certain major items of cash expenditure and receipt. For instance, a company may have planned the purchase of certain items of capital equipment, but identifying the exact timing of the payments for the plant may be extremely difficult. If the assets are being specifically manufactured, timing of payment depends on delivery of the order by the company, the design and production at the supplier, and then delivery, testing and acceptance by the company. Alternatively, expenditure may relate to the development of freehold premises, with all the problems of planning, consent, and construction progress. Working capital in some companies can fluctuate quite substantially. While companies can forecast the total cash outflow or inflow for the year as a whole, it is extremely difficult to achieve the same accuracy on a month-by-month basis. There are however, a number of general principles that, when applied, can lead to more efficient cash forecasting:

- Are full variances produced of actual cash flow against that budgeted or most recently forecast? This analysis should give an understanding as to permanent variances and those that are due to timing. What lessons for cash forecasting can be learned from these variances?
- Are the forecasts being prepared in sufficient detail to enable meaningful variance analysis to be undertaken? Is there a continual review of the underlying assumptions used in the preparation of the forecasts? Who vets and reviews these assumptions?
- Is sensitivity analysis used to determine the possible boundaries of cash inflows and outflows? Is the sensitivity analysis sensible and related to the historic volatility of the business?
- Who prepares the forecasts and for what purpose? Sometimes, medium-term cash forecasts are prepared for treasury by the finance function. If the finance function has no involvement in managing actual cash flow to that budgeted, then it is unlikely they will give the exercise high priority and may not be too concerned with its accuracy.
- Are the time horizons used in the forecast appropriate? This very much depends on the volatility of the cash cycles in the business.
- How frequently are forecasts, actual cash flow and variance analysis reports prepared? The more regularly they are undertaken, the more accurate they, generally, become. Specific forecasting techniques should be applied to each component of the cash forecast. For instance, to forecast the timing of cash receipts from customer trade payments requires an understanding of the payment methods used by customers (Cheque, Bills of Exchange, RTGS, NEFT and Cash Management Product of Banks etc.), the company's payment terms and billing cycle, and the payment routines on their receivables ledger used by customers. It may also require an analysis of the comparative

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importance of different customers and different payment terms attached to different groups of customers.

- Do other related items need to be forecast? This may include foreign exchange receipts and payments that are related to forecasts for overseas sales.
- Are incentives aligned to the management of cash against that budgeted and forecast, and does a cash management culture pervade the whole organization? It needs to be remembered that successful cash forecasting is often heavily reliant on the individuals preparing the forecasts, and their experience, skill and knowledge of the business and its current operations.

(f) Credit Management

Credit Management Group within the Treasury Department is responsible for implementing and ensuring compliance with credit policies established by the organization for the management of derivative credit exposures. Through strategic, tactical and risk-oriented teams of professionals, Treasury Credit delivers the highest quality service and expertise to its stakeholders.

The most crucial part of credit management is to manage credit risk. Most of the institutions have faced difficulties over the years for a multitude of reasons, the major cause of serious problems continues to be directly related to lax credit standards for borrowers and counterparties, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of an organization's counterparties.

Credit risk is most simply defined as the potential that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms. The goal of credit risk management is to maximize organization's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Organizations need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Organizations should also consider the relationships between credit risk and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any organization.

For most organizations, debtors (loans in case of banking organization) are the largest and most obvious source of credit risk. Banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, and in the extension of commitments and guarantees, and the settlement of transactions.

Since exposure to credit risk continues to be the leading source of problems in banks world-wide, banks and their supervisors should be able to draw useful lessons from past

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experiences. Banks should now have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred. The Basel Committee is issuing this document in order to encourage banking supervisors globally to promote sound practices for managing credit risk. Although the principles contained in Basel Committee are most clearly applicable to the business of lending, they should be applied to all activities where credit risk is present.

A further particular instance of credit risk relates to the process of settling financial transactions. If one side of a transaction is settled but the other fails, a loss may be incurred that is equal to the principal amount of the transaction. Even if one party is simply late in settling, then the other party may incur a loss relating to missed investment opportunities. Settlement risk (i.e. the risk that the completion or settlement of a financial transaction will fail to take place as expected) thus includes elements of liquidity, market, operational and reputational risk as well as credit risk. The level of risk is determined by the particular arrangements for settlement. Factors in such arrangements that have a bearing on credit risk include the timing of the exchange of value payment / settlement finality and the role of intermediaries and clearing houses.

(g) Forex Management

Deployment of foreign currency resources needs to be managed in such a way that it would not create any excess position i.e., "Overbought" or "Oversold" and at the same time cash flow is not affected. There are various funding alternatives available for Forex Cash Management, such as Currency Swaps i.e., lending in one currency and borrowing in another currency, foreign exchange i.e., swapping of one currency into other foreign currency or local currency for deployment so as to maximize the yield without creating the position and affecting the cash flow.

Bank's customer i.e., importers, exporters and other customers approach Authorized Dealers (AD) for handling their foreign currency payments and receipts, and so ask them to provide such services for immediate delivery i.e., on cash or ready terms or for delivery at a future date or during a future option period according to the rules of the Foreign Exchange Dealers Association of India (FEDAI). Risk of exposure arises for authorized dealers only on business concluded with customers at firm rates and not on business for which indicative rates have been given.

When an Authorized Dealer (AD) contracts with a customer to buy or sell foreign currency for Spot or Forward delivery, the Authorized Dealer takes over the risk of change in exchange rate for the foreign currency against the Rupee that might change subsequent to the time when the contract is made. The AD then turns to Interbank Markets (both in India and abroad) to acquire the cover necessary to protect the bank against loss on such contracts. Similar risk is also undertaken by AD while trading in foreign currency against the Rupee or in other

foreign currencies in the market. ADs are also very often exposed to fluctuation in costs for operations of a funding nature, when they are faced with surplus spot assets over spot liabilities and vice versa. There is also a risk related to the creditworthiness of counterparties.

The risks are managed by ADs by maintaining surveillance over Net Position, maturity mismatching, funding accounts, payments under documentary credits, export bills, overdue export bills, maturity gaps, market conditions.

(h) Risk Management

All the organizations aim to run risk-free operations. However, the truth is that no matter how careful they are, there is always a danger of exposure to unexpected and unplanned threats.

Implementing a risk management policy throughout an organization is the best way of identifying and managing these threats before they become costly problems.

Embedding such a policy within daily operations also helps in making well informed choices as decision-makers better understand and evaluate the wider impact their actions have. A good risk management policy builds a sound framework for (i) Risk assessment and identification (ii) Risk ranking (iii) Action Plan (iv) Assessment and review (v) Compliance and (vi) Feedback and Improvement,

Considering risk management from the standpoint of the corporate treasurer, and the concept of financial risk that was used is what the treasurer has the responsibility of managing. Companies have come to pay particular attention to the management of risks throughout their organization due to a combination of legal and compliance requirements on companies. The increasing need is to communicate a company's risk management processes to various stakeholders and recognition of the benefits that an active, and corporate-wide, risk management programme can have on achieving the strategic aims of the organization and building shareholder value.

An assessment of the system of internal control is as relevant for the smaller listed company as it is for larger ones, since the risks facing such companies are generally increasing. Risk management is essential for reducing the probability that corporate objectives will be jeopardized by unforeseen events. It involves proactively managing those risk exposures that can affect everything the company is trying to achieve.

Among the steps involved in implementing and maintaining an effective risk management system are:

- Identifying risks
- Ranking those risks
- Agreeing control strategies and risk management policy
- Taking action

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- Regular monitoring
- Regular reporting and review of risk and control.

The process for managing risks on an enterprise-wide basis is essentially the same as that established by the treasurer for managing treasury-related financial risks.

Identifying risks

Risks are often classified into business, operational, financial and compliance risks.

Business risks

These arise from being in a particular industry and geographical area, and from the strategy the company has chosen to undertake. The risks can range from wrong business strategy, bad or failed acquisitions, and inability to obtain further capital to competitive pressures on price and market share, political risks or the decline of an industry sector.

Operational risks

These relate to the various administrative and operational procedures that the business uses to implement its strategy. They may include skills shortages, stock-out of raw materials, physical disasters, loss of physical assets, quality problems, loss of key contracts, or poor brand management.

Financial risks

Financial risks can also comprise going concern problems, overtrading, misuse of financial resources and occurrence of fraud, misstatement risk relating to published financial information, unrecorded liabilities and penetration of IT systems by hackers.

Compliance risks

These derive from the necessity to ensure compliance with those laws and regulations that, if infringed, can damage a company. They can include breach of listing rules, breach of Companies Act requirements, GST problems, tax penalties, health and safety risks and environmental problems.

In identifying risks, it is important to avoid selecting them from some form of generic list. The risks need to be specific to the industry sector and specific circumstances of the company. It is also useful to relate them to the likely obstacles facing the critical success factors that underpin the achievement of the company's objectives.

Quantifying and ranking risks

As with the measurement of treasury related financial risks, the company is faced with the problem of quantifying or measuring the identified risks. While many treasury financial risks relate to movement in market prices and thus the possible impact of adverse price movements within certain ranges can be calculated, many of the identified enterprise risks are incapable of such direct measurement. Most organizations therefore rank such risks according to:

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- High likelihood of occurrence–high impact: Consider for immediate action.
- Low likelihood of occurrence–high impact: Consider for action and have a contingency plan.
- High likelihood of occurrence–low impact: Consider action.
- Low likelihood of occurrence–low impact: Keep under periodic review.

The impacts should be considered not merely in financial terms, but more importantly in terms of their potential effect on the achievement of the company's objectives.

Agreeing on control strategies

Various methods can be used to deal with risks identified and ranked. The directors need to ask themselves the following questions:

- Do we wish to accept the risk?
- What is the control strategy for avoiding or mitigating the risk?
- What is the residual risk remaining after the application of controls?
- What is the early warning system?

Generally, there are four main ways of dealing with risks:

- Accept them. Some risks may be inherent to the business (e.g. economic risks or volatility), and investors may actively have sought securities reflecting them. In addition, there may be some cases where the costs of managing risks are greater than the benefits from risk reduction.
- Transfer them. This is usually done through insurance or derivatives.
- Reduce or manage them by improving controls within existing processes; for example, by improving production control techniques to reduce the likelihood of stock-out of raw materials.
- Eliminate them, generally through the pursuit of existing strategies.

For instance, the risk of market share pressures may be handled through an existing strategy of repositioning products and expanding the product range.

Taking action and reporting

Not only does the agreed action need to be taken, but a regular reporting procedure needs to be put in place. In a small organization, responsibility for this may be delegated to the finance director or chief executive, but in larger organizations, this role is likely to be undertaken by a risk management committee, led by senior executives or board directors.

Implications for the treasurer

What implications does an organization-wide risk management system and process have for

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the treasurer? It can be seen that the steps adopted in such a process are essentially the same as those adopted by the treasurer in identifying and managing risks within the scope of the treasury department. The treasurer's risk management routines will in most organizations be part of the organization-wide risk management routines. Treasury risks and action to identify, measure, manage and report them need to be set within the framework of corporate-wide risk management.

Responsibilities of A Treasurer

Treasury Manager is also called Head of the Treasury and he looks after the day-to-day treasury and investment operations. He is responsible for formulation of detailed investment policy, and to get it approved by the Board. His note to the Board should consist of the following points:

a. Preamble	b. Review of Investment Portfolio
c Investment plan for the year	d. Investment Policy
e. Objectives	f. Modalities for Investment Transactions
g. Exposure limit for bankers / FIs and others	h. Business through brokers
i. Internal Control System	j. Transactions on Government Securities
k. Transaction relating to PMS Clients	l. RBI Guidelines
m. Accounting Standards	n. Valuation of Securities
o. Reconciliation & Periodical Verification of Securities	p. Audit Review & Reporting
q. FEDAI, FIMMDA Guidelines	r. General

With a view to facilitating quick decision in security transactions, he should arrange through the Board of Directors delegation of Powers to various functionaries at Corporate Office / Investment Department and Treasury with respect to:

- Purchase, Sale, Switch Transactions in respect of Central and State Government Securities and other Securities including shares and debentures of companies, bonds of PSUs etc.
- Money Market operations like Call and Notice, Money, Term Money, CPs, CDs, IBPCs, Discounting of Bills etc.
- He should ensure proper functioning of Treasury, clearly defining job, roles / functions of various officials working in the treasury, training the people for updating their knowledge, technical skills, job rotation, proper manpower planning, providing necessary infrastructure and computerizing the work procedures. He is also responsible for

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compliance of various regulations of RBI on Treasury and Investment Operations. He shall ensure that Dealing Office and Back Office functions are totally segregated to ensure that dealers do not have access to the records maintained by back-up staff. He is responsible for running this department in a professional manner subject to Company's own norms and RBI Guidelines from time to time.

- Trading in Forex Products.
- Trading in Commodity Market Products.
- Use of Derivatives Products, OTC / Online Products.
- His responsibilities will include to properly direct, control / supervise and co-ordinate the activities of all the dealers. He should also properly direct, control/ supervise the work of Head of Research and Risk Management. He should get the assistance of an executive to control and supervise the back office work for achieving short as well as long term financial and commercial objectives and goals set by Top Management / Board.
- His responsibilities include ensuring liquidity and liquidity management. In case of Banks, maintenance of CRR and SLR, optimum utilization and deployment of funds, sale and purchase of money market instruments like CPs and CD, maximization of yield on investment, analysis of maturity profile of securities and Interest Rate Risk Management, maintaining optimum interest spread – (difference between yield on assets and cost of funds) transaction processing risk such as implication of errors in back office or remittance of funds. He should put in place proper internal control system. He should have proper co-ordination with the Credit Department so as to have proper control on observation of prudential exposure norm limits on Institutions / Corporates who enjoy credit limits and in which an investment in money market instruments or securities also have been made.
- To put in place a system of Concurrent Audit of Investment and Funds Department.
- To work as a member of Asset Liability Management Committee and taking necessary steps for avoiding large mismatches between liabilities and assets of the Bank as guided and decided by the Bank's ALCO. He should abide by the decisions of ALCO.
- He should ensure submission of periodical reports on entire working of department to the Board of Directors or Board Committee and Submission of necessary returns to RBI, and Compliance of RBI Guidelines on Investment duly certified by Auditors every year.
- In short, the Corporate Treasurer is responsible for the proper functioning of the department as per the objectives set by the Top Management.

Submission of Information to Board of Directors and Top Management should include the following:

- Maturity Profile of Investments in Approved Securities.

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- Investment Rate / Coupon-wise pattern of Investment in all Approved Securities and classified information on different securities.
- The comparative position of Investment in permanent and current category.
- Investment in Approved SLR Securities in case of Banks.
- Yield on Investment with comparative position during the last 2 Years.
- Statement of Yield on investment and profit on Sale.
- Statement showing Non-performing Investment.
- Industry-wise classification of Non SLR Investment.
- Money Market operations.

A daily report to the Top Management should include daily call / notice money and investment transactions / liquidity position of the Bank / organization indicating inflows / outflows on the account of deposits, float funds, refinance, the CRR and SLR position etc.

Integrated Treasury - Cost Centre and Profit Centre

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 capitalise 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 centre specifically devoted to reserve management (CRR and SLR) and consequent funds 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.

Functions of Integrated Treasury

- (a) Reserve Management and Investment
- (b) Liquidity and Funds Management
- (c) Asset Liability Management

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- (d) Risk Management
- (e) Transfer Pricing
- (f) Derivative Products
- (g) Arbitrage
- (h) Capital Adequacy

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.

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 centre. 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.

To Sum up

Treasury management or treasury operations are a common term in banking parlance. With the growth of large corporate houses, treasury departments have created a place for themselves in sectors other than banking. In essence, treasury management is all about handling funding requirements for the business and management of financial risk, which primarily involves raising and managing money, commodities, interest rates and, in some organisations, the related areas of insurance, pension, property and taxation. The function of the department is now dynamic and it is responsible for identifying risks associated with this activity and for controlling the risks that could erode financial strength, using mitigation and hedging techniques and encouraging a culture of sound financial practice. This translates into a need to ensure that the company, at all times, has the liquidity and cash to meet its obligations as they become due, arranging funding through equity or debt capital market activities, bank borrowings, through to day-to-day cash management and investment. The

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treasury function is an integral part of every business, although in small firms it may be part of a department that's responsible for other functions, such as accounting. In larger organisations, it is likely to be a separate department reporting to the chief financial officer, but it needs to communicate well with the rest of the organisation if it is to provide effective services. This treasury function may be a centralised or decentralised function depending on the size and nature of business activities.

Treasury management represents one of the two main aspects of financial management, the other being financial control. The treasury is concerned with the relationship between the entity and its financial stakeholders, who include shareholders, fund lenders and tax authorities. Financial control, on the other hand, is concerned with the relationship between the entity and stakeholders such as customers, suppliers and employees.

Check Your Progress

1. What are the main objectives of Treasury Management?
2. What factors should be taken into consideration while framing the Policy guidelines of Treasury Management?
3. Briefly explain the functions of Treasury.
4. Briefly mention the responsibilities of Treasury Manager.
5. Briefly explain the function of Front Office and Back Office of a Treasury.
6. What do you understand by Treasury Management? What are its main objectives?
7. What is the significance of Treasury Management for the top management of a company?
8. Distinguish between Treasury Management and Financial Management.
9. Describe the various tools of Treasury Management.
10. Bring out the importance of control in the Treasury function.

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

1. Capital market is a market for:
 - (a) Raising Capital for long term use and trading in the same*
 - (b) Lending and borrowing money
 - (c) Dealing in foreign currency
 - (d) Dealing in derivatives
2. Derivatives are basically:
 - (a) Instruments for gambling in shares

Treasury – Organisational Structure

- (b) OTC exchange for shares
 - (c) Financial products for hedging risk*
 - (d) Negotiable Instruments for protection under NI Act
3. Money Market is a market for:
- (a) Securities of long term nature
 - (b) Laundering money
 - (c) Securities of short term nature*
 - (d) Keeping all cash with security
4. A primary dealer (PD):
- (a) Manages initial public offering of shares
 - (b) Is a broker for retail share trader
 - (c) Manages public deposits
 - (d) Deals in the primary and secondary market for government securities*
5. What is the underlying principle in treasuries undertaking arbitrage transactions?
- (a) Acceptance of deals by counterparty banks
 - (b) Reciprocal arrangements with counter parties
 - (c) Regulatory approvals
 - (d) Opportunities where LIBOR plus forward premium on USD / INR is more than domestic interest rates*
6. Treasury assets are:
- (a) Not negotiable or tradable
 - (b) Marketable and tradable
 - (c) Perpetual
 - (d) Marketable but not tradable*
7. The following are treasury assets:
- (a) Cash with Reserve Bank of India
 - (b) G-Secs., CDs, CPs and SLR Bonds*
 - (c) Bills Purchased and Discounted
 - (d) Fixed Assets of the Bank

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- 8.** The following are examples of derivatives which are treasury products:
- (a) Tier II bonds issued by bank
 - (b) Floating rate bonds
 - (c) External commercial borrowing
 - (d) IRS, SWAPS, FUTURES and OPTIONS*
- 9.** Treasury Front-Office handles the following functions:
- (a) Dealing, Risk Taking*
 - (b) Customer Service, Depository Functions
 - (c) MIS, Reconciliation
 - (d) Risk Management
- 10.** Mid-Office and Back-Office handle the following functions:
- (a) Day-to-day dealing
 - (b) Branch account maintenance
 - (c) MIS, Risk Management, Confirmations and Settlements*
 - (d) Arbitrage Operations
- 11.** Foreign exchange risk is defined as:
- (a) Variance in the value of assets, liabilities and operating income due to unanticipated changes in exchange rates*
 - (b) Variance in operating income due to expected changes in exchange rates
 - (c) Variance in operating income, value of assets and liabilities due to unfavourable movement of exchange rates
 - (d) Possibility of loss a firm may sustain due to changes in the exchange rates
- 12.** Which of the following is true for Asset Liability Management for Bank (ALM)?
- (a) ALM is part of the risk management*
 - (b) ALM is separate of the risk management
 - (c) ALM is sometimes part of the risk management and sometimes outside risk management
 - (d) ALM is more granular than overall risk management
- 13.** The treasury of a bank in India is
- (a) Subject to annual audit

Treasury – Organisational Structure

- (b) Audited on concurrent basis as per RBI Guidelines*
 - (c) The sole profit centre of any bank
 - (d) Invariably situated in Mumbai
14. Primary purpose of establishing Internal Control in an organization is to
- (a) Prevent misappropriations and frauds*
 - (b) Ensure that risk taking is made difficult
 - (c) Bring out the flaws in the working of various functions
 - (d) All of the above
15. Primary dealers are
- (a) Merchant bankers for the Government of India*
 - (b) Agents who deal in primary market
 - (c) Brokers in government securities market
 - (d) The first point of contract for an investment in a market
16. The Bank's balance sheet is funded not only by deposits, but also by
- (a) Assistance from Head Office
 - (b) Help from RBI
 - (c) Market borrowings*
 - (d) Contributions from peer banks
17. The New Basel Capital Accord is likely to improve the competitive position of:
- (a) Big Banks with sophisticated Risk Management Systems*
 - (b) Universal Banks
 - (c) Banks that maintain a High Risk Weighted Capital Asset Ratio
 - (d) German Banks and their subsidiaries engaged in securities trading
18. The Regulator for Chit Funds is
- (a) Reserve Bank of India
 - (b) Respective State Government*
 - (c) Ministry of Corporate Affairs Government of India
 - (d) SEBI

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19. Treasury Profits are increasingly derived from market operations involving (which one is NOT true)
- (a) Buying and Selling of Securities
 - (b) Borrowing and Lending on Securities
 - (c) Investing in Loans*
 - (d) All of the above
20. Which of the following statements is correct?
- (a) A foreign bank in India has only international treasury
 - (b) All AD Banks have international treasury*
 - (c) An Indian Bank has only domestic treasury in India
 - (d) Co-operative Banks have domestic and forex treasury desks.

2

Treasury — Process

Treasury Management — Systems and Techniques

A treasury is either:

“A government department related to finance and taxation”.

Or

A place where currency or precious items (Gold, Diamonds, etc.) is / are kept.

The term was first used in Classical times to describe the votive building erected to house gifts to the gods, such as the Siphnian Treasury in Delphi or many similar buildings erected in Olympia, Greece by competing city-states to impress others during the ancient Olympic Games. In Ancient Greece treasuries were almost always physically incorporated within religious buildings such as temples, thus making state funds sacrosanct and adding moral constraints to the penal ones to those who would have access to these funds.

Did you know that the Bank of Scotland started using the title ‘treasurer’ from 1695?

Did you know that that in early New England textile companies in the 19th century, the treasurer as the principal officer was more important than the company president?

Evidently, the corporate treasury function has evolved a lot since then!

Historically, the key focus of treasurers was around collections, handling and usage of cash and hence was called ‘Cash Management’. The corporate treasurer was usually seen as the bill payer of the company, the manager of cash flows but little else. As cash management got increasingly complex and involved bank relationship management, global cash currencies, liabilities, forex investments, and hedging, it began to be increasingly called ‘Treasury Management’.

Today, the corporate treasurer’s key objectives are around efficient cash management, low cost funding and effective risk management. The corporate treasurer is a key decision-maker and strategic partner to the business, and typically handles debt management, capital management and regulatory reporting. While the expectations, role and responsibilities are increasing by the day, is the new age corporate treasurer equipped to handle all of these functions?

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Some of the challenges that corporate treasurers are facing today revolve around a lack of global cash visibility, lack of accuracy of global cash forecasts, multiple risk dimensions and direct / indirect impact of regulatory compliance. Lack of a long term 'treasury strategy', limited technology adoption and the prevalence of manual processing / use of spreadsheets / outdated technologies, multiple banking relationships, diverse ERP (Enterprise Resource Planning) systems and organization structures / silos within an enterprise all contribute to the challenges a treasury faces.

Modern banks are huge entities employing thousands of people in their workforce. However, amongst the various departments present at banks, treasury department has the most important function to perform.

Asset Liability Management

The primary function of the treasury department of any banks is to ensure that its assets match its liabilities in every possible way. It is the job of the treasury department to prepare various financial models which help in forecasting the amount of net interest income that the bank stands to make if different economic scenarios play out. It is also the job of the treasury department to predict exactly how sensitive this non-interest income is to external shocks like changes in the interest rate.

The treasury department collates this critical information and then passes the same on to decision makers who then decide the kind of assets that they want on the bank's balance sheet. These decisions are then further translated into loan targets which bank officials have to meet. Also, based on the information received from the treasury, the bank refrains from using certain kinds of deposit liabilities. Hence, treasury department profoundly influences both deposit taking and loan sanctioning functions of the bank.

Capital and Reserve Requirements

Since the treasury department is basically in charge of the bank's balance sheet, it is also responsible for setting aside reserves to meet the reserve requirements prescribed by the Central Bank. Also, the capital requirements prescribed by the Basel norms have to be met. Failing to meet these requirements has detrimental consequences since penalties are levied by the Central Bank. At the same time, holding an excess amount in reserves provides no benefit since such amount does not earn interest at the market rate and therefore represents opportunity loss for the bank.

Liaising with Regulatory Bodies

The treasury department of banks is highly regulated. Since they are the ones that are supposed to maintain the capital adequacy ratios and reserve ratios, they are also the ones that are supposed to liaise with regulatory agencies on such issues. Executives from the treasury department are usually invited by the government when decisions regarding the banking industry need to be made.

Liquid Investments in Government Securities

Treasury departments at banks are also in charge of maintaining a certain portion of their portfolio in highly liquid government securities. In countries like the United States, this is done because the banks act as broker-dealers to the governments and are expected to hold these securities before they can be further sold. In other countries like India, banks are required by law to maintain a certain percentage of their portfolio in liquid government securities. This lends safety to the bank's portfolio while simultaneously creating a highly liquid market for government securities.

Disaster Management

The treasury operations of any bank are responsible for managing its operations in the event of a disaster. Thus, to be prepared for the same, the treasury department has to anticipate the risks that can materialize over time. The treasury department is responsible for using tools such as derivatives to hedge the bank's exposure to different kinds of risks. The late 2000's have seen the proliferation of credit derivatives in the market which allow the banks to hedge even their basic risk i.e. the risk of non-payment by counterparties. Apart from that, treasury departments are also important for insuring all the physical assets, the destruction of which can have a material impact on the bank's business.

Back Office Functions-Treasury departments also have to perform a lot of normal back-office activities.

They are supposed to regularly communicate with their branches regarding the extent of deposits that have been taken and the extent of loans that can be made. They also have to liaise with Forex department and proprietary trading department to monitor the amount of risk that the bank can take in real time. At the same time, the treasury department is responsible for ensuring that all branches, as well as ATM's, are well- stocked with cash to meet the service levels.

When banks run out of cash, it severely affects their reputation. In order to avoid such a situation, the treasury department conducts complex calculations to ensure that adequate amount of cash is always available.

The treasury department is, therefore, the heart of the banking industry.

Traditionally, the role of treasury in Indian Banking set-up was limited to ensuring the maintenance of CRR (cash reserve ratio) and SLR (statutory liquidity ratio). However, post-liberalization, the volatility in interest rates (yields) has been the major reason for transactions of treasuries to stretch 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. The sources of profits of treasury are:

- Investments

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- Spreads
- Arbitrage
- Relative Value
- Proprietary Trading

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 in place customized structures in the market.

The functions of an integrated treasury include reserve management, liquidity and funds management, Assets liability management, risk management, transfer pricing, using derivative products, taking advantage of arbitrage between domestic and foreign exchange markets and achieving capital efficiency. The basic objective of integration is to improve portfolio profitability, provide risk insulation and synergize banking assets.

Treasury Policy and Procedure Manual

People should behave rationally, especially when it comes to finance. They often do not. One of the effective ways to prevent this from happening in your investment portfolio is writing, implementing, and abiding by something known as an investment policy manual. In essence, it is a set of ground rules and guidelines as to how a specific pool of assets will be managed. It details the parameters under which a portfolio will be established, managed, tracked, and protected. A comprehensive Investment or Treasury policy manual ideally covers following areas:

Investments

I. Purpose

The Investment Policy document of an organization sets forth the policies and procedures to guide the day- to-day administration of all investment activities.

II. Responsibility

The Board of Directors is responsible for the formulation and implementation of investment policies. The Board may delegate its decision- making authority with respect to specific investments to the President, for implementing investment policies consistent with its policy document. The Board may also appoint an Investment Committee to act as liaison between the Board and Management. The main functions of the Committee could be:

- Working with the management on investment issues and problems.
- Monitoring and reviewing investments in financial institutions.

- Monitoring investment decisions for compliance with the Policy Document, and
- Reviewing the Policy Document and recommend changes to the Board when appropriate.

III. Investment Objective

The Investment policy document will enumerate the financial and investment objectives of the organization in detail and the boundaries within which the investments can be made by the treasurer.

IV. Portfolio Composition

In the light of the investment objective, the policy document should prescribe the portfolio composition e.g. the portfolio should be comprised of securities with the following characteristics:

- A low degree of default risk.
- A low degree of interest risk resulting from changes in the level of interest rates.
- A high degree of liquidity.

The policy document may further contain guidelines related to Authorized types of Investments, Maturity of Investments (Short term or long term), Diversification requirements etc.

Delegation with Accountability

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. The 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 the markets. If not covered, they add to the bank’s open position.

Thus, the forex deal book of the bank is the 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 six months or even a year.

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Open Positions Limits

Daylight: Daylight open positions, as the name suggests, are exposures that are opened in the course of 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 the 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 Rs.48.75 and sell USD 1 Mio., buying INR, for Rs.48.80 at 11 a.m. for a profit of Re.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. Over Night exposures are monitored on a real time basis. All Over Night open positions carry hundred percent risk weight.

Asset Position Limit: The most common way of protecting against risk is to deal only with creditworthy counterparties. This is easier said than done! It is the responsibility of the lender to understand and evaluate the risk. Gaining this understanding can be achieved through identifying the categories of risk and then addressing the issues associated with each of these categories. One of the measures that could be adopted is 'risk exposure analyses'.

A sound system of integrated institution-wide limits and risk-taking guidelines is an essential component of the risk management process. Global Limits for various assets should be set for each major type of risk involved. These limits should be consistent with the Bank's overall risk measurement approach and should be integrated to the fullest extent possible with institution-wide limits on those risks as they arise in all other activities of the firm. The Asset limits system should provide the capability to allocate limits down to individual business units. At times, especially when markets are volatile, traders may exceed their limits.

When such exceptions occur, the facts should be made known to the senior management and got approved only by authorized personnel.

Intra-day Limit (IDL): This, so called "technical" limit is a very important parameter for the real cash pooling. It allows the client to execute payment transactions on the connected account even if there is zero balance as a result of last night automatic transfer. The level of IDL is updated automatically every day based on the available balance on the master account.

Deal Size

Dealing Limits: Dealing limits can be created to facilitate monitoring and management of a dealers Value at Risk Net, Present Value and Asset and Liability Gap. These can be

configured by the dealer, desk or for wider positions. More granular restrictions can also be applied i.e. maximum deal size, by way of a configurable deal management rules engine.

Individual Dealer's Limit: In progressive Treasury operations, individual dealer's limits fluctuate with their hot and cold streaks. A smart Manager increases dealer's limits when they are on a roll, and then reduces them when his profit run turns cold. The dealer of course is affected as a result, but this is the only way to keep the traders' egos in check. It is a fluid thing and if not monitored daily with respect to profits and losses, revaluations, and listening to tape conversations, the traders' mental capacity and results becomes the trigger for Management to act accordingly.

Stop Loss Limits

Stop loss is a limit that acts as a safety valve if something starts to go wrong with a trade or a position. Specifically it is the amount that a portfolio's single - period trading or mark-to-market loss should not exceed. These limits state that specified action (reduction in exposure or close-out position) must take place if the loss exceeds a threshold amount.

Tight 'stop loss limits' reduce the maximum possible loss and therefore reduce the capital required. However, if the limits are too tight they reduce the trader's ability to make a profit.

The art of setting 'stop loss limit' therefore lies in determining the right balance between risks, reward and limits. 'Stop loss limits' are therefore calibrated on a more frequent basis than market risk policy documents. This is primarily because market risk volatility levels change on a daily basis. When market and price volatility is high, 'stop loss limits' are tightened. When market and price volatility is low, 'stop loss limits' can be relaxed.

'Stop loss orders' are orders that come into play when a 'stop loss limit' is breached. They turn limit order linked to a market price into market orders that can then be executed at the available market price if the stop loss threshold has been hit.

Control and Reporting Requirements

While the treasury policies and authority levels help to manage the treasury department in an overall context, certain controls and division of duties are necessary to ensure effective control over the company's assets and the smooth running of the day-to-day operations within the department. The following controls ensure the efficient running of the department.

Controls over dealing, deal recording and confirmations

These controls ensure that the organization obtains the best available price for its transactions and that all dealing activities are properly recorded and accounted for. It is necessary to ensure the following:

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- Multiple quotes are obtained wherever feasible to ensure that the company gets the best price. A record of the quotes obtained, along with execution of the deals should be maintained.
- It is a best practice to maintain a tape recording for all the telephonic deal confirmations. The recordings should be preserved for a reasonable period of time as discussed in the manual earlier. Recorded tapes provide a speedy resolution in case of disputes.
- When deals are separately recorded (for example, in a diary or on deal tickets) there should be a check in place to ensure that all the deals have been recorded in Treasury Management System (TMS).
- Deal confirmations should be generated on a separate system. This ensures that confirmations are produced for all deals recorded in the treasury management system.
- Deal confirmations should be sent out immediately on the same day.
- Deal confirmation should not be undertaken by anyone connected with front office. If electronic deal confirmation is used, the information should be posted on a secure website. Counterparties can access this website and confirm all deals posted.

The objective of these controls is to ensure that the dealer has no role in the recording of the transaction and procedures are designed to ensure that deals are accurately recorded in the system. Ideally there should be a separation of duties between the dealers and those responsible for recording the transactions, for checking counterparty confirmations and resolving discrepancies and for settling transactions.

Where the treasury department is too small to allow for such a division of duties, then the organization should consider using a separate department to handle some part of the workflow, such as checking counterparty confirmations and resolving discrepancies. Should the organization decide not to implement such a division of duties, it should be aware of the risks it is facing.

It is also worth considering whether the dealer(s) should work on their own or in organization, and whether access to dealing facilities and payment facilities should be restricted for the dealers. This prevents staff from attempting to deal on their own behalf.

Procedures

In addition to controls over dealing, there are a number of procedural controls that an organization should put in place. These controls ensure that the administration of the department is efficiently conducted. Important controls are:

- The access to the treasury department should be limited.
- There should be Job descriptions detailing every individual's responsibilities and authorities.

Treasury — Process

- It should be clear how holidays, promotions and resignations are catered for, to ensure that any such events cause the minimum disruption.
- Insurance policies covering the treasury function should be in place. These should cover losses from fraud and error by treasury staff.
- Procedures within the department such as cash management should be recorded, to ensure that absences, holidays and resignations can be handled efficiently.

Payment controls

Most companies make treasury payments, such as interest and principal payments and settlement of derivative contracts, via an electronic banking system. Access to these machines needs to be strictly controlled.

- Payment requests should be written and appropriately authorized.
- Requests should be reviewed by the treasury team to ensure they are properly authorized.
- Different staff should be responsible for input, verification and authorization of payments into the electronic banking systems. It is important to ensure that no one person can make payments without proper supervision and checks.
- Pre-formatted input screens should be used for regular payments.
- Cash books should be maintained outside the treasury department.
- Reconciliation of bank accounts should be undertaken by a function outside the treasury. Bank reconciliations should be produced daily for all treasury accounts and discrepancies investigated immediately.
- Machines used for payment should be subject to restricted access. Ideally they should be in a separate room with access restricted to authorized individuals. Users should log out of systems when they leave their desks.
- Systems administrator should be the person independent of those authorized for input verification and authorization.
- All systems should have passwords and should be locked before being left unattended.
- There should be set authority levels for payments. All large payments should require the authority of senior functionaries within the organization.

Reporting

Debt management, banking facilities, company debt maturity profile reports, debt source analysis reports are required to be prepared on pre-determined intervals. These reports cover the principal treasury-related financial risks that the organization faces and the action the

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treasury team has taken to manage these risks. It is good practice if this report is prepared by the treasury middle office.

Dealing and Trading Operations

Ethics to be observed by dealers in respect of confidential information, gifts and pleasantries, new recruitment, compliance culture, conflict of interest, misspelling, poaching and whistle blowing. The code of conduct formulated by FEDAI should be followed by the Banks.

Control and Orderly Conduct

The Management should put in place appropriate controls and procedures in respect of their dealings in the markets, covered by the hand-book. It should be ensured that the staff members who deal in the market and other support staff follow the controls and procedures so laid down.

The Management should periodically review the controls and procedures.

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:

Function	Responsible For
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 over each other, the managements of individual institutions may resort to any other level of segregation that it thinks fit.

Personnel in back office function and mid-office function should functionally be segregated from those in the front office. Persons who deal with trades must not be involved in the confirmation or settlement of trades.

Moral and Ethical Codes

All principals / dealers 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 in which they deal.

All individuals must comply with the rules and regulations governing the market and be up to-date with changes that may happen from time to time.

Trades done outside the Negotiated Deal Settlement (NDS), between institutions which are members of the NDS should be entered in the NDS within 15 minutes from the time of conclusion of the trade.

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 subject to market conventions laid down by the FIMMDA, irrespective of the counterparty being a member of FIMMDA.

Checks and Balances

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 NDS’, qualifying conditions cannot be specified after the conclusion of the deal.

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.

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 counterparty 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

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no deal has been missed. They should then promptly advise the back office of the counterparty of the absence of the trade.

- A discrepancy between a confirmation and significant details of the trade and even the existence of a trade should be brought to the attention of the management. Management should satisfy themselves of the genuineness and accuracy of the trade. It is important that discrepancies are promptly sorted out within a few minutes of the deal.

Signing Ethical Code Agreement

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 a high degree of integrity and honesty. The dealers are generally advised to sign and execute a Code of Conduct Agreement designed and prepared by a Self Regulating 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 (SAR), has come out with a code of conduct for dealers and brokers which all the banks follow. The code of conduct contains the following aspects:

- Confidentiality
- Dealing Procedures
- Difference Payable by Brokers
- Frivolous Quotations
- Quotation of Fictitious Rates
- After-Hours Dealing
- Enquiry into the Conduct of Brokers
- Brokerage Payment by Banks
- Market Irregularities
- Entertainments, Gifts or Favours
- Penalties

In compliance with FEDAI guidelines, Banks generally obtain undertaking letters from dealers to ensure strict adherence to high ethical standards and integrity.

An Insight into:

Float

Float can be defined as the time delay between a company preparing a payment instrument to pay a supplier and the supplier having usable funds. In the case of cheques, float arises from the time it takes to produce the cheque and post it, for the cheque to be delivered, for the supplier to handle the cheque and pay it into the bank, for the cheque to pass through the clearing system, and finally for the supplier to get value from its bank. Any one of these factors can cause float in respect of cheque payments to vary from four to ten days or more. When interest rates were generally high across the world, the float for the payer provided by cheques was comparatively valuable. Nowadays, with very low interest rates across the globe, the value of float has all but vanished.

Availability

Selection of an appropriate cheque clearing channel is a function of deposit bank i.e., processing time, geographic location and the availability schedules of clearing agents. Availability is granted to the clearing bank if the cheque reaches the endpoint (or location established by the clearing agent) prior to a pre-arranged deposit deadline. Availability schedules define the number of days delay for each endpoint. The assignment is usually in whole business days, and cheques are generally assigned zero, one or two day's availability. Banks have availability schedules for their customers. Many banks have multiple availability schedules. To construct the availability schedule, the clearing bank examines clearing times for important endpoints, determines the clearing channels for each endpoint, calculates costs, and works back from deposit deadlines for those endpoints to establish its own deposit deadlines for customers.

The following factors influence the availability a bank assigns to a particular cheque:

- *Drawee location.* Cheques drawn on banks in remote locations generally have a longer availability time than those drawn on nearby banks.
- *Time of deposit.* Cheques must reach the processing centre by a certain time of the day in order to receive the designated availability.

Swaps

A swap is an OTC contractual agreement between counter-parties to exchange cash flows at specified future times according to pre-specified conditions:

Typically, with a notional principal and a stated maturity, often close to the date of the last cash flow. Each set of cash flows might be:

- A fixed percentage of the notional principal;

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- A floating percentage depending on some interest or currency rate, such as 3-month Libor or 1-month Libor plus 25 bps;
- Or otherwise determined.

Swap terminology

Trade date: The date on which the parties commit to the swap and agree to its terms.

Effective date: The date on which interest starts to accrue, often 2 days after the trade date.

Payer: The party who pays the fixed rate.

Receiver: The party who receives the fixed rate.

Account Analysis

Account analysis is a tool to effectively manage the day-to-day treasury operations. Account Analysis statement provides a detailed report of treasury management service activity. It includes information on transaction volumes, services used and costs. Account analysis provides the functionality of dividing the services in to sub sets and gives a complete control over every operation at micro level.

Clearing Houses

A clearing house is an Institution engaged in the activities of offsetting transactions with one another in order to limit payment settlements to net balances. Clearinghouses play an important role in settling international payments and the transactions of banks, railroads, and stock and commodity exchanges. Bank clearing houses are usually voluntary associations of local banks set up to simplify the exchange of checks, drafts, and notes, as well as to settle balances. Clearing in other countries around the world can vary as cheques are not used for corporate payments and most payments take place through bank transfers. The important concern for the treasurer is to understand the payment and collection instruments available in his/her country, how quickly value can be obtained for different instruments, and the relative cost of each one.

Lockboxes

(For quick collection of cheques / demand drafts of the Corporates, Lockboxes system helps in improving the Liquidity position. After introduction of Information Technology i.e., IT Systems in the Financial / Banking Sectors like RTGS, NEFT etc. the importance of lockboxes system is gradually reducing)

A Brief on Lockboxes: Companies receive cheques from customers in the mail or through lockboxes. With a lockbox, a processor receives mail at a specified lockbox address, processes the remittances and deposits them in the payee's account. There are a number of advantages of lockboxes as opposed to receiving cheques through the mail.

- Mail float is usually reduced because a processor uses its own unique PIN code to speed the mail delivery. A lockbox processor may also make more frequent mail pickups.
- Processing float can be reduced because cheques are mailed directly to the lockbox processor. This eliminates company handling time. Also many processors operate 24 hours a day, seven days a week. In effect, they specialize in the efficient processing of receipts and deposits.
- Availability of float is also reduced because the processor works to meet critical availability deadlines. These are deadlines by which cheques must reach the bank's proof and transit area. For example, 9 a.m. could be the deadline for receiving same-day availability for cheques drawn on banks in the same city. Different processors will have different availability schedules.

In addition, lockboxes provide efficient processing through economies of scale, and an audit trail and control.

Lockbox costs

These consist of a fixed monthly cost and a variable cost, which may be a per-item deposit and processing charge.

Collection studies

The location of lockboxes and the choice of lockbox processor are established after a collection study.

The following data are analyzed:

Location and geographic concentration of remitting customers, location of customers with largest payments, intercity mail times, bank availability schedules and administrative costs associated with using lockboxes. Lockbox networks may involve several processors in different cities or a single processor with multiple locations.

Still these services will be relevant for treasurers of telecom, electricity and other utility service corporates.

Disbursement

Disbursement is the function of deployment of funds in the business segments. Timely information about corporate cash flow, protection against unauthorized disbursements and elimination of idle balances are key requisites of an efficient treasury management.

Efficient disbursement solutions of a treasury should be designed to help it improve the funds management, expand information access and control and increase visibility into transactions, including:

- Timely notification of the cheques that will be charged to controlled disbursement account
- Detailed data to help reduce account reconciliation time

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- Fraud prevention tools that enable identification of potentially fraudulent cheques before they are paid
- Quick access to important cheque information via digitized images
- Flexible card payment options
- Outsourced cheque printing and mailing

Benchmark Rates for Discounting Cash Flows

A discount rate is the percentage by which the value of a cash flow in a discounted cash flow (DCF) valuation is reduced for each time period by which it is removed from the present.

The estimation of a suitable discount rate is often the most difficult and uncertain part of a DCF. This is worsened by the fact that the final result is very sensitive to the choice of discount rate; a small change in the discount rate causes a large change in the value.

For listed securities, the discount rate is most often calculated by using Capital Assets Pricing Model (CAPM). The availability of both data to calculate betas and of services that provide beta estimates makes this convenient.

Cash flows other than listed securities:

For unlisted securities and for other streams of cash flows, it becomes even more difficult. If listed securities exist that are similar in terms of un-diversifiable risk, then these can be used as benchmark to estimate what the appropriate discount rate should be.

A comparatively simple approach is to find a pure play company in as similar a business as possible and calculate its WACC (weighted average cost of capital). This may be the appropriate discount rate, or it may need further adjustment. If further adjustments are needed it is usually best to work from the WACC, using the CAPM, to calculate what the beta would be, given only equity funding, and adjust the beta. This is correct because of capital structure irrelevance.

Sometimes it is possible to make simple adjustments. For example, if the cash flows face a similar (un-diversifiable component of) revenue volatility to the benchmark, but a different level of operational gearing, simply multiply the beta by the ratio of $(1 + \text{fixed costs as a percentage of revenues})$ for the cash flows being evaluated to the same for the benchmark.

In many cases, it will be necessary to use detailed modelling to estimate the difference in the sensitivity to un-diversifiable elements. In practice this means modelling the relationship between economic growth (the economy is the main un-diversifiable risk) and both sets of cash flows. It may be simpler to use the market as the benchmark, in which case the ratio is the beta.

A last resort approach is to simply use what appears to be a sensible risk premium over the market or the risk free rate.

In all cases, especially the last, it is useful to calculate a DCF with several different discount rates, so that the sensitivity of the final result to this assumption can be clearly seen.

Liquidity and Cash Flow Management — CRR

Liquidity refers to the ability of the banks to meet the legitimate funds outflow at reasonable cost. Such liquidity may be provided by both the existing and prospective assets and liabilities and by augmenting capital funds. For managing liquidity it is very much essential to analyze the existing assets and liabilities before estimating the future trend. Existing assets and liabilities maturing during the next defined time period may not be equal and there is bound to be a gap. Such a gap may be positive or negative. Hence this gap may be defined as the difference between the volume of assets and volume of liabilities getting re-priced, within a given time period. The current trend in market and industry will have an impact on the pricing. Further interest rate sensitivity of assets and liabilities will decide the future composition of liquidity.

Banks maintain liquid funds to meet payments arising out of a legitimate demand for funds and at the same time try to maximize profits. Liquidity may be sourced out of assets or liabilities, but the major source is public deposits. Factors like banking reforms and stiff competition have brought severe pressure on the bottom line of the banks and hence efficient deployment of idle funds, without impairing liquidity, is very important. Assets and liabilities maturing during a given period may not be matching, leaving a positive or negative gap. Management of such liquidity gap is guided by the objectives, which may vary in priority according to the time frame of liquidity plan. ALCO should formulate specific guidelines about composition of assets and liabilities to facilitate liquidity management.

Objectives, Sources and Deployment

The objectives of Liquidity Management are:

- Maintain adequate funds for business.
- Maintain liquidity at payment point.
- Maintain statutory reserves without default.
- Effective deployment and profit maximization.
- Ensure Liquefying assets.
- Judicious use of discretionary liabilities.
- Flexibility for asset re-mix and re-composition.

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:

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- Cash in excess of CRR.
- Investments in SLR securities over and above the mandatory requirements (these can be used for CBLO / REPO) borrowing through CCIL or from the RBI's LAF and market).
- Prime Assets: Investments in T-Bills, Top Rates Short Term Paper and Loans to Top Rates Companies.
- Swapping forex funds to INR.
- Undrawn lines from the RBI – Export Credit Refinance (ECR) and
- Undrawn lines from specialized FIs – IDBI, SIDBI, NABARD, EXIM Bank, NHB etc.

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

In extraordinary situations, the bank may seek RBI liquidity support, on merits against the collateral of securities. In a situation of surplus liquidity, the bank would look at the following options:

- Money market lending.
- Reverse REPO.
- Buying T-Bills, CP or Securities, depending upon the tenures of surplus liquidity.
- Repaying refinance (if any).

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 the yield 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).

Internal Control, Netting, Gap Management

Internal Control: A sound Internal Control System should exist for proper management of risk. The control should be such that it does not affect the business and at the same time limits the potential loss, if any.

Planning is a continuous and dynamic process. The results of the business have to be constantly evaluated in relation to the objectives or goals. To achieve this, the control process should be such that the information on results should automatically flow to the right body of people involved in framing goals. In modern times, changes are so swift in the market that before the impact of the business activity is understood, damage would have already been

caused. Hence only flow of information for review with respect to goals is not enough in a dynamic situation, but additionally the system should have in-built checks to give sufficient 'early warning signals'. The damage may be in the form of loss, losing opportunity for attentive deployment, increasing cost of funds, reducing the existing margin, risk factor beyond tolerance limit and even too much of deviation from objectives. Hence control plays a vital role in modern day business.

When banks plan for liquidity, it should evolve suitable control system, so that appropriate and meaningful feedback is received in time for corrective action. The controls may be in the form of establishing maximum or minimum levels for certain components of liquidity cycle, so that in case there is wide deviation from the prescribed level the functional authorities can take remedial action.

Netting: A considerable part of the supply chain often consists of the company's own subsidiaries. Inter-company invoices often generate the same challenges as third-party invoices. These may include FX exposure is driven by many small transactions, expensive processes, liquidity / funding deficiencies, dispute resolution, local hedging activities or a lack of visibility at corporate level because of fragmented accounts payable and accounts receivable systems. Netting can help to alleviate some of these pressures. Introducing a netting system would also capture and separate the inter-company flow and help to minimize the exposed volume.

Such a netting system can be designed to offset payable inter-company invoices against receivable inter-company invoices even in different currencies. This means that each participating subsidiary can end up with a single, netted position in their own base currency. At the same time, the aggregated FX volume reduces and can be managed at corporate treasury level resulting in better margins. According to the treasury manager of a well-known multinational healthcare imaging specialist, access netting is a solution that ...' met our priorities in terms of quickly establishing a global, robust and easy-to-manage netting system because of the outsourced nature of the solution, it requires few resources to run and allows us to settle transactions and manage FX across our global organization'.

Netting can also simplify the invoice administration and payment process, reduce operational and financial risks and reduce internal company costs and bank charges such as payment fees, float and FX costs. Netting is often implemented with outsourcing of operational activities, such as active reconciliation resulting in. For example: Contacting the company's subsidiaries to make timely, payments correctly.

Outsourcing ensures that inter-company payment procedures are being adhered to and allows the company's scarcity-prone treasury or accounting resources to focus on value-added activities.

Although netting has been in vogue since the late 70s, it has become clear in the last few years that companies are looking for solutions that go beyond the core function of netting.

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Using outsourced netting offering for this very specific purpose helped the company to reduce both its payment costs and administrative workload drastically. Netting itself is becoming more sought after as a facility that can be combined with other liquidity management solutions.

In a global, complex and diversified environment, there is no specific solution that can suit all companies. However, a carefully balanced mix of tailored advice, market-leading products and consistent support can significantly reduce the risk and complexity, save costs or maximize profits and energize trade. Netting resides at the heart of liquidity management and it takes a banking partner who has the expertise to understand a company's working capital cycle to provide a successful solution.

Gap Management: Gap Management enables banks to monitor and manage interest rate risks from transactions so they can make strategic decisions with regard to gap positions for defined points in time. Liquidity analysis and the cash flow evaluation enable banks to manage their liquidity requirements and NPV risks.

In contrast to NPV analysis, where risks are recorded using NPVs and future values, in gap management, the position and maturity volumes as well as cash flows and liquidities are displayed on key dates or for periods. The gap positions, interest rate risk, currency risk, and liquidity risk that are disclosed in this way are then displayed.

The Strategy Analyzer gap analysis includes the following evaluations:

Position evaluation: The system compares the development of lending and borrowing positions from both the balance sheet and off-balance-sheet areas. You can carry out both a key date position evaluation and an average position evaluation.

Maturity evaluation: The system shows the NPV interest rate risk by using the fixed-rate cash flows. You can restrict the evaluation to particular currencies.

Cash flow evaluation: The system displays the NPV interest rate risk; the cash flows are displayed only up to the time point at which the interest rate was fixed. You can restrict the evaluation to particular currencies.

Liquidity evaluation: The system depicts the incoming and outgoing payments for the capital tie-up. In contrast to the cash flow evaluation, only incoming and outgoing payments that are expected to be realized are displayed.

NPV evaluation: The system displays the NPVs of a portfolio or the associated cash flows in the maturity band. You can also use market data scenarios in the analysis. You can calculate full scenarios and delta scenarios.

Net interest income evaluation: The system calculates the potential net interest income for each maturity band. The capital tie-up is used as the basis for this. For variable items, the interest revenue or the interest expenses that has not been determined is calculated by using the forward interest rate.

Gap Management is as follows:

- To display the interest rate risk as a potential negative deviation in the net interest income per period from the expected net interest income per period.
- To display position volumes for key dates and for periods and maturity volumes for key dates and periods in terms of their fixed interest rates and capital tie-up, and to display fixed-rate cash flows and incoming and outgoing liquidity.
- To display gap positions as a comparison of the volume of lending and borrowing positions, and maturity volumes, as well as incoming and outgoing cash flows or liquidity flows.
- To analyze positions, maturity, and cash flows from fixed-rate items for any sub-portfolio on a daily basis.
- To display the net interest income for old business whilst using scenarios.
- To include variable items without a fixed-interest period by means of due date scenarios (demand deposits and savings deposits) and forwards (for example, floaters, the variable side of swaps and forward rate agreements) in the analyses.
- To include non-interest-bearing items without a fixed-interest period by using due date scenarios (for example, equity, provisions, land, and buildings) in the analyses.
- To include optional interest rate instruments and their underlying or delta-weighted underlying (for example, forward swaps for swaption, (fictitious) bonds for OTC interest rate options, options on futures) in the analyses.
- To display the results distributed over maturity bands, which can be subdivided into any time period, for example, day, month, quarter, half-year, and year.

Treasury Management Processes

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, etc., and / or can be assigned or negotiated, it becomes a part of the treasury portfolio. 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 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 of the bank. Some of the loan / assets can, however, become part of the treasury activity.

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Treasury liabilities are distinguished from other liabilities by the fact that they are borrowings from the money (or bond) market. Deposits (current and savings account and fixed deposits) are not treasury liabilities, as they are not created by market borrowing.

(a) Domestic Treasury Remittances: At the domestic or national level, the scope of treasury management function is to channelize the savings of the community into profitable investment avenues. This job is performed by the Commercial Banks. Treasury management is a crucial activity of banks and financial institutions as they deal with the funds, borrowing and lending and investments. By nature of their activity, they earn their profits through operations in money / near money claims. They borrow from the public in the form of deposits which along with other borrowings constitute their liabilities. Their assets are mostly in the form of loans, advances and investments. As their liabilities are mostly short and medium term in nature, funds management becomes critical for ensuring a proper matching of assets and liabilities according to the maturity of each and their costing. Commercial banks being the creators of credit have an additional responsibility of maintaining their image of creditworthiness, safety and integrity.

The flow of funds i.e., sale or purchase of investment remittances that are happening in domestic treasury through:

- Call / Notice Money lending.
- Term Money Lending / Inter-bank Deposits.
- Investment in CDs.
- Commercial Paper.
- Inter-bank Participation Certificates.
- Derivative Usance Promissory Notes / Banker's or Corporate Acceptances.
- Reverse Repos / CBLO – backed Lending through CCIL.
- SLR Bonds (Notified as such by the RBI).
 - Issued by the Government of India as Securities and T Bills.
 - Issued by State Governments.
 - Guaranteed by Government of India.
 - Guaranteed by State Governments.
- Bonds (Issued by)
 - Financial Institutions.
 - Banks / NBFCs (Tier II Capital).
 - Corporates.

- State-level Enterprises.
- Infrastructure Projects.
- Asset-backed Securities (PTCs).
- Private Placements.
- Floating Rate Bonds.
- Tax-free Bonds.
- Preference Shares.
- Listed / Unlisted Equity.
- Mutual Funds.

The other Liabilities Product remittances are:

- Call / Notice Money Borrowing.
- Term Money Borrowing.
- CD Issues.
- Inter-Bank Participation Certificates.
- Repos / CBLO – backed Borrowing through CCIL.
- Refinance (RBI, SIDBI, NABARD, EXIM Bank, NHB).
- Tier II Bonds (Issued by Bank).

(b) International Treasury Remittances: At the international level, the function of treasury management is concerned with management of funds in foreign currencies. Foreign exchange as a subject refers to the means and methods by which the rights to income and wealth in one currency are converted into similar rights in terms of another country's currency. Such exchanges may be in the form of one currency to another or of conversion of credit instruments denominated in different currencies such as cheques, drafts, telegraphic transfers, bills of exchange, trade bills or promissory notes. Exchange is done through dealers in foreign exchange regulated by the Central Bank of a country. Banks are usually the dealers apart from other specialized agencies.

One of the important components of the international financial system is the foreign exchange market. Various trade and commercial transactions between countries result in receipts and payments between them. These transactions are carried out in the currencies of the concerned countries -any one of them or in a mutually agreed common currency. Either way, the transactions involve the conversion of one currency to the other. Foreign exchange market facilitates such operations. The demand for goods and services from one country to another is the basis for demand for currencies in the market. Thus basically, demand for supply of foreign currencies arises from exporters or importers or the public having some transactions

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with foreign countries. Companies having an import or export component in their business profile have to frequently deal in forex operations.

The flow of funds i.e., sale or purchase of investment remittances that are taking place in International treasury through:

- Spot Currencies (this could be in the form of buy or sell or 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).

Merchant Transactions (Initiated in Branches, arranged by Forex Treasury) like:

- 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).

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.

Payment & Settlement Systems

(a) CCIL

Clearing Corporation of India Limited (CCIL) is an institution set up to clear outright and repo trades on a guaranteed basis. Negotiated Deal Settlement (NDS) is a trading platform while CCIL is a Clearing House Settling trades. Products handled by CCIL are:

(a) Domestic:

G-Secs. / Central / State Government Securities / T-Bills

Outrights

Repos / CBLOs

RBI Auctions

(b) Forex:

USD / INR

Spot

Cash

TOM

Forward

CCIL has also introduced a dealing and trading platform for forex called FX Clear. FX Clear is a concept similar to operation of the NDS and enables Straight Trough 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 counterparties.

CCIL is providing clearing and settlement services, for Triparty Repo trades in Government Securities, under its Securities Segment. CCIL would act as a Central Counterparty to all the borrow and lend Triparty Repo trades received by it for settlement. CCIL would also be performing the role responsibilities of Triparty Repo Agent, in terms of Repurchase transactions (Repo) (Reserve Bank) Directions, 2018 as amended from time to time. CCIL would settle the Triparty Repo trades, in terms of its Securities Segment Regulations.

The Funds settlement of members is achieved by multilateral netting of the funds position in Triparty Repo with the funds position in Outright and Market Repo and settling in the books of RBI for members who maintain an RBI Current Account. In respect of other members, Funds settlement is achieved in the books of Settlement Bank. Securities settlement for Triparty Repo trades, shall be achieved in the Gilt Account of the Member maintained with CCIL. Securities obligation for outright and market repo trades shall be settled in the SGL / CSDL account of the Member with RBI.

CCIL's reporting platform for the transactions in OTC Interest Rate Derivatives (Interest Rate Swaps and Forward Rate Agreements (IRS/FRA)) became operational w.e.f. November 12, 2007.

FX-CLEAR

FX-CLEAR, a forex dealing system, which was launched by Clearcorp on August 7, 2003, offers two modes of dealing i.e. Order Matching mode and Negotiation mode. FX-CLEAR covers the inter-bank US Dollar-Indian Rupee (USD- INR) Spot, Swap and other transactions. The USD-INR deals constitute about 85% of the transactions of the total Forex transactions in India in terms of value.

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.

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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.

(b) CLS

CCIL started the settlement of cross currency deals of banks in India through the CLS Bank in April 2005. Through this arrangement, CCIL aggregates trades reported by all Member banks and enables banks to collectively enjoy the benefits of cross currency settlement through CLS Bank. This is a unique experiment whereby cross border settlement of an entire country is being achieved through a third party arrangement. Settlement through the CLS mechanism is on a payment versus payment basis.

Continuous Linked Settlement (CLS) plays a fundamental role in the foreign exchange (FX) market – it operates the largest multicurrency cash settlement system to mitigate settlement risk for the FX transactions of its Members and their customers.

Owned by the world's leading financial institutions, CLS settles payment instructions relating to underlying FX transactions in 18 major currencies and certain other transactions that result in one-way payments in a subset of those currencies.

The FX market is a key component of global economic activity. It is the largest financial market by value and is integral to global commerce. The reasons for exchanging currencies are as diverse as the communities which trade them. This community includes central banks, commercial banks, small and large corporations and the fund management industry.

All members of the FX community potentially bear the risk of loss of principal due to settlement risk. Settlement risk, also known as “Herstatt Risk,” is widely recognized as the most significant systemic risk to participants in the FX market, meaning the mitigation of it is a high priority for the community as a whole.

(c) RTGS

Real Time Gross Settlement (RTGS) is a system of clearing trades in securities immediately on completion of a deal. This is possible on STP platform. RBI/NDS/CCIL plan to move to RTGS mode in the near future in the G-Secs. market.

(d) NEFT

Payment and settlement systems in India are regulated by the Payment and Settlement Systems Act, 2007 (PSS Act), legislated in December 2007.

Payments are an indispensable part of our daily transactions, be it a consumer to a business, a business to a consumer or a business to business. Payments raise the GDP of a country; thus it is mandatory that the payment systems of the country are “safe, secure, sound, efficient, accessible and authorized,” as stated by the mission statement of the Reserve Bank of India’s publication on Payment Systems in India (2009–12). The Reserve Bank of India continually strives towards ensuring the smooth progress of the payments system. In India it is the BPSS (Board for Regulation of Payment and Settlement Systems) which is in charge of regulating these systems.

India has multiple payments and settlement systems. RBI Still continues to evolve new payment methods and slowly revamping the payments and settlement capability in India.

India supports a variety of electronic payments and settlement system, both Gross (RTGS) as well as Net settlement systems (NEFT).

National Electronic Funds Transfer (NEFT) is one of the most prominent electronic funds transfer systems of India. Started in Nov.2005, NEFT is a facility provided to bank customers to enable them to transfer funds easily and securely on a one-to-one basis. It is done via electronic messages. This is not on real-time basis like RTGS (Real Time Gross Settlement). This is a "net" transfer facility which is executed in half hourly batches resulting in a time lag. NEFT facilities are available in almost 100% i.e., 1,00,000 bank branches all over the country and work on a batch mode.

NEFT has gained popularity due to its time saving and the ease with which the transactions can be concluded.

(e) SWIFT

‘Society for Worldwide Interbank Financial Telecommunication’ is a co-operative society created under Belgian law having its Corporate Office at Brussels. The Society, which has been in operation since May 1977 and covers most of the banks in Western Europe and North America, operates a computer-guided communication system to rationalize international payment transfers. It comprises of a computer network system between participating banks with two operating centres, in Amsterdam and Brussels, where messages can be stored temporarily before being transmitted to the relevant bank’s terminal.

Dealing Room Operations

(a) Nostro

Nostro accounts are foreign currency accounts maintained with Correspondent banks to facilitate clearing forex transactions of the bank.

(b) Vostro

Vostro accounts are rupee accounts maintained by banks outside India with a bank in India to clear and settle their rupee transactions.

(c) Loro

If any other bank for the purpose of a transaction refer to an account maintained by yet another bank in some other countries it is known as LORO Account. In other words, Loro Account is a Nostro Account for one bank that opened the bank and Loro Account for other bank which refers to first one account. For Example: SBI opened Current Account with Swiss bank. If PNB refers to that account of SBI for its correspondence, then it is called Loro Account for PNB and it is Nostro Account for SBI.

(d) Mirror A/Cs

Nostro mirror accounts are shadow accounts maintained by the banks corresponding to the Nostro accounts maintained with the correspondent banks. Transactions in the Nostro accounts are replicated in mirror accounts in exactly the opposite manner, i.e., debits in nostro accounts are matched by credits in mirror accounts and vice versa.

(e) Open Currency Position

The sum of the open currency spot position and the open currency forward position is the measure of the foreign exchange risk. The open currency position is the difference between balance assets and liabilities in foreign currency plus the forward (conditional and unconditional) forex purchased and sales. The open currency position is the measure of the foreign exchange risk. The first one is for inquiry purposes and shows the open currency position per currency. The Head Office provides the network with separate limits for currency groups and the total open currency position and therefore two positions are created to assign these limits. Both positions are the total of all positions in each currency irrespective of whether the position is positive or negative.

(f) Cash Position by Dealers

Cash position by Dealers refers to a broad area of finance involving the collection, handling and usage of cash. It involves assessing market liquidity, cash flow and investment.

Within the treasury function, cash management is an activity that clearly benefits from economies of scale and process reengineering. By centralizing its cash management operations, a corporation can achieve better management of internal cash flows, reduce its float and transaction fees, and, of course, pare its operating costs. By standardizing liquidity management processes, significant improvements can also be obtained in terms of control and security of cash.

Automatic Cash Management transfers. These transfers are the very last transactions carried out on the accounts at the end of the business day. The purpose is to bring the balance on the connected account to zero, or requested target amount. The bank settles all incoming and outgoing transactions first, and after it executes upstream transfers that sweep the credit balance to the master account or downstream transfers that settle up negative balance on the connected account.

RBI GUIDELINES ON NOP AND NOOPL

The Foreign Exchange Exposure Limits of Authorised Dealers would be dual in nature.

- (i) Net Overnight Open Position Limit (NOOPL) for calculation of capital charge on forex risk
- (ii) Limit for positions involving Rupee as one of the currencies (NOP-INR) for exchange rate management.

For banks incorporated in India, the exposure limits fixed by the Board should be the aggregate for all branches including their overseas branches and Off-shore Banking Units. For foreign banks, the limits will cover only their branches in India.

(i) Net Overnight Open Position Limit (NOOPL) for calculation of capital charge on forex risk

NOOPL may be fixed by the boards of the respective banks and communicated to the Reserve Bank immediately. However, such limits should not exceed 25 percent of the total capital (Tier I and Tier II capital) of the bank.

The Net Open position may be calculated as per the method given below:

1. Calculation of the Net Open Position in a Single Currency

The open position must first be measured separately for each foreign currency. The open position in a currency is the sum of (a) the net spot position, (b) the net forward position and (c) the net options position.

(a) Net Spot Position

The net spot position is the difference between foreign currency assets and the liabilities in the balance sheet. This should include all accrued income/expenses.

(b) Net Forward Position

This represents the net of all amounts to be received less all amounts to be paid in the future as a result of foreign exchange transactions, which have been concluded. These

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transactions, which are recorded as off-balance sheet items in the bank's books, would include:

- (i) spot transactions which are not yet settled
- (ii) forward transactions
- (iii) Guarantees and similar commitments denominated in foreign currencies which are certain to be called
- (iv) Net future income/expenses not yet accrued but already fully hedged (at the discretion of the reporting bank)
- (v) Net of amounts to be received/paid in respect of currency futures, and the principal on currency futures/swaps.

(c) Net Options Position

The options position is the "delta-equivalent" spot currency position as reflected in the authorized dealer's options risk management system, and includes any delta hedges in place which have not already been included under 1(a) or 1(b) (i) and (ii) above.

2. Calculation of the Overall Net Open Position

This involves measurement of risks inherent in a bank's mix of long and short position in different currencies. It has been decided to adopt the "shorthand method" which is accepted internationally for arriving at the overall net open position. Banks may, therefore, calculate the overall net open position as follows:

- (i) Calculate the net open position in each currency (paragraph 1 above).
- (ii) Calculate the net open position in gold.
- (iii) Convert the net position in various currencies and gold into Rupees in terms of existing RBI / FEDAI Guidelines. All derivative transactions including forward exchange contracts should be reported on the basis of Present Value (PV) adjustment.
- (iv) Arrive at the sum of all the net short positions.
- (v) Arrive at the sum of all the net long positions.

Overall net foreign exchange position is the higher of (iv) or (v). The overall net foreign exchange position arrived at as above must be kept within the limit approved by the bank's Board.

Note: Authorised Dealer banks should report all derivative transactions including forward exchange contracts on the basis of PV adjustment for the purpose of calculation of the net open position. Authorised Dealer banks may select their own yield curve for the purpose of PV adjustments. The banks, however, should have an internal policy approved by its ALCO regarding the yield curve/(s) to be used and apply it on a consistent basis.

3. Offshore exposures

For banks with overseas presence, the offshore exposures should be calculated on a standalone basis as per the above method and should not be netted with onshore exposures. The aggregate limit (on-shore + off-shore) may be termed Net Overnight open Position (NOOP) and will be subjected to capital charge. Accumulated surplus of foreign branches need not be reckoned for calculation of open position. An illustrative example is as follows:

If a bank has, let us say, three foreign branches and the three branches have open position as below-

Branch A: + Rs 15 crores

Branch B: + Rs 5 crores

Branch C: - Rs 12 crores

The open position for the overseas branches taken together would be Rs 20 crores.

4. Capital Requirement

As prescribed by the Reserve Bank from time to time.

5. Other Guidelines

- (i) ALCO / Internal Audit Committee of the Authorized Dealers should monitor the utilization of and adherence to the limits.
 - (ii) Authorized Dealers should also have a system in place to demonstrate, whenever required, the various components of the NOOP as prescribed in the guidelines for verification by the Reserve Bank.
 - (iii) Transactions undertaken by Authorized Dealers till the end of business day may be computed for calculation of Foreign Exchange Exposure Limits. The transactions undertaken after the end of business day may be taken into the positions for the next day. The end of day time may be approved by the bank's Board.
- (ii) Limit for positions involving Rupee as one of the currencies (NOP-INR) for exchange rate management**
- (a) NOP-INR may be prescribed to Authorised Dealers at the discretion of the Reserve Bank of India depending on the market conditions.
 - (b) The NOP-INR positions may be calculated by netting off the long & short onshore positions (as arrived at by the short hand method) plus the net INR positions of offshore branches.
 - (c) Positions undertaken by banks in currency futures / options traded in exchanges will not form part of the NOP-INR.

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(d) As regards option position, any excesses on account of large option Greeks during volatile market closing / revaluations may be treated as technical breaches. However, such breaches are to be monitored by the banks with proper audit trail. Such breaches should also be regularized and ratified by appropriate authorities (ALCO / Internal Audit Committee).

B. Aggregate Gap Limits (AGL)

- (i) AGL may be fixed by the boards of the respective banks and communicated to the Reserve Bank immediately. However, such limits should not exceed 6 times the total capital (Tier I and Tier II capital) of the bank.
- (ii) However, Authorized Dealers who have instituted superior measures such as tenor wise PV01 limits and VaR to aggregate foreign exchange gap risks are allowed to fix their own PV01 and VaR limits based on their capital, risk bearing capacity etc. in place of AGL and communicate the same to the Reserve Bank. The procedure and calculation of the limit should be clearly documented as an internal policy and strictly adhered to.

The above directions have been issued by RBI under sections 10(4) and 11(1) of the Foreign Exchange Management Act 1999 (42 of 1999).

To Sum up

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:

1. Front- Office: Dealing–Risk Taking.
2. Mid-Office: Risk Management and Management Information.
3. Back-Office: Confirmations, Settlements, Accounting and Reconciliation.

The organization of a treasury depends on the volume of activities handled. It is important that the above three functions are distinct and work in water-tight compartments. The dealers are not supposed to handle settlement or accounts. 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 is headed by an appropriate senior executive who directs controls and co-ordinates the activities of the treasury. He / She also co-ordinates the work between the chief dealer, the Head of Back Office, Head of Research, and is totally responsible for the management of funds, investments and forex activity.

He / She will also be a member of Assets Liability Management Committee (ALCO) and help the committee in deciding on various policies on treasury management. Banks which have separate forex operations will have dealers for forex operations.

Treasury will have a separate research division. Head of Research will be assisted by officers to carry out research activities/analysis in various types of securities. Research department may be common for money market, debt, equities and forex. Market analysis would also be provided by the research Department.

Appropriate Information technology (process, package and infrastructure) 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 modify the software to suit their needs, changing circumstances and volatility.

The fund manager 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 like 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.

Check Your Progress

1. How can a gap statement be used to measure risk to profitability?
2. Indicate some of the measures for gauging liquidity risks.
3. What are the various risk exposure limits?
4. How is interest rate risk managed?
5. Name the four basic components of any risk management policy statement.

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

1. What is unethical when the dealers handle confidential information?
 - (a) Not revealing the information to anybody
 - (b) Destroying the information
 - (c) Keeping and storing the information with themselves
 - (d) Using the information for competitive advantage knowing that it was privileged*
2. What do the prudential trading limits reflect?
 - (a) They reflect merely the directives of management
 - (b) They reflect the understanding with the counterparties

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- (c) They reflect risk appetite of the management*
 - (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*
5. When there is a suspicion of improper conduct of Forex Transactions on the part of a participant in the market, what should the banks / brokers do?
- (a) Inform Reserve Bank of India immediately
 - (b) Complain to Bank for International Settlements
 - (c) Bring the matter to the attention of FEDAI promptly*
 - (d) Confront the market participant
6. Which of the following functions does not pertain to Treasury of Corporate?
- (a) Treasury Front Office
 - (b) Treasury Middle Office
 - (c) Treasury Back Office
 - (d) Loan Department*
7. A Modern Corporate Treasury performs each of the following functions except
- (a) Arranging financing for domestic and international trade
 - (b) Consolidating and managing the financial flows of the firm
 - (c) Identifying risks of domestic and international financial transactions
 - (d) .Setting sales targets and monitoring progress towards these targets*

8. The independent Risk Assessment of Treasury Function is done by
 - (a) Back Office
 - (b) Front Office
 - (c) Mid Office*
 - (d) Both (a) and (b).
9. Which of the following statements most accurately describes the modern approach to Cash Management
 - (a) Cash Management involves the efficient disbursement of Cash
 - (b) Cash Management involves the efficient collection and disbursement of Cash
 - (c) Cash Management involves efficient processing, collection & depositing of Cash.*
 - (d) Cash Management involves temporary investment of Cash
10. One of the main role of Back Office in Treasury Management is:
 - (a) Calculating and Reporting VaR
 - (b) Monitoring Open Currency Positions
 - (c) Risk Return Analysis
 - (d) .Statutory Reports to RBI*
11. One of the main responsibility of treasurer handling Front Office in Treasury department of a Company is:
 - (a) Managing Investment and Market Risk*
 - (b) Auditing, Reviewing and Reporting
 - (c) Effecting / Receiving Payments
 - (d) Evolving hedging strategies for Assets and Liabilities
12. Advantage(s)of Centralization of Treasury Function in multi-divisions Corporation is / are
 - (a) Increases the effectiveness of Cash Management through Netting
 - (b) Increases the Total Amount of Cash to be maintained
 - (c) Allows the Corporation to benefit from Lending and / or Lagging
 - (d) Both (a) and (c) above*
13. Forecasting inconsistencies can be minimized by
 - (a) Allowing managers to establish their own forecasts
 - (b) Establishing economic forecast to be used by the firm, Year in- Year out

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- (c) Generating current economic forecasts that are used throughout the firm*
 - (d) Requiring managers to establish their own forecasts
14. The/One of the main characteristic(s) of a company with regional offices using a centralized treasury function is:
- (a) High Level of Control*
 - (b) Increased borrowing costs
 - (c) To maintain decentralized depository accounts
 - (d) Increased operating costs
15. Integrated Treasury in Banking set up refers to:
- (a) Computerization of all bank branches
 - (b) Computerization of all treasury operations
 - (c) Centralization of all back office operations of forex branches
 - (d) Integration of Money Market, Securities Market and Forex Market*
16. A Treasury transaction with customers is known as:
- (a) Trading business
 - (b) Merchant Banking Business*
 - (c) Investment Business
 - (d) None of the above
17. Which of the following is helpful if we want to examine the efficiency of a firm,?
- (a) Current Ratio
 - (b) Dividend Ratio
 - (c) Stock Turnover Ratio*
 - (d) Debt / Equity Ratio
18. Primary dealers are:
- (a) Merchant bankers for the Government of India*
 - (b) Agents who deal in Primary Market
 - (c) Brokers in Government Securities Market
 - (d) The first point of contact for an investment in a market

Treasury — Process

19. An internal auditor discovers that employees can enter and approve their own wire transfers. What Internal Control does this practice violate?
- (a) Adequate segregation of Duties*
 - (b) Accurate reporting of cash transaction
 - (c) Appropriate monitoring of covenant compliance
 - (d) .Proper authorization of investment transactions
20. Interest Rate Risk is not faced by:
- (a) Debenture Holders
 - (b) Lenders
 - (c) Borrowers
 - (d) Ordinary Shareholders*

Treasury — Domestic

Classification of Treasury Market

National Treasury Market primarily consists of capital market, money market, commodity market, and government securities market.

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. It enables a bank to optimize its asset-liability management and also capitalize on arbitrage opportunities.

Traditionally, the forex dealing room of a bank managed the foreign exchange dealings that mainly arose 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 integrating forex dealing 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 the traditional role of forex dealing and treasury unit and many other functions.

Domestic or National Treasury Market

At the domestic or national level, the scope of treasury management function is to channelize the savings of the community into profitable investment avenues. This job is performed by commercial banks. Treasury management is a crucial activity performed by them and other financial institutions as they deal with funds, borrowings and lending and investments. By this activity, they earn their profits through operations in money or near money claims. They borrow from the public in the form of loans, advances and investments. As their liabilities are mostly of short and medium term nature, fund management becomes critical for ensuring a proper matching of assets and liabilities according to the maturity of each and their costing. Commercial Banks being the creators of credit have the additional responsibility of maintaining their image of creditworthiness, safety and integrity.

Commercial banks are also required to observe capital adequacy norms and (provide for the same, non-performing assets on a strict basis, which puts a limit on expanding their credit

portfolio. They are also enjoined by regulations to maintain Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) of their net demand and time liabilities. While the CRR is required to be maintained with the RBI in the form of cash balance, the SLR is maintained in the form of investment in Central and State Government Securities. It has been observed that during times of slack credit demand, banks invest in Government Securities to a higher extent than the statutory requirement as stipulated by RBI i.e., on Net DTL. This activity is more pronounced when the interest rates are falling because the yield on Government Securities falls in such a period, driving up their prices. Banks, which do their Treasury management astutely, gain tremendously during such periods.

Forex or International Treasury Markets

The main market participants can broadly be put into four main groups. The first consists of domestic and international banks that act on their own behalf or for their customers. They are market makers, always quoting a two-way price for a number of currency pairs to their customers. The second is of central banks. They generally let the market determine the value of their currencies, but sometimes they intervene to buy or sell their domestic currency if it is substantially undervalued or overvalued. The third group is of the customers of banks. These are varied and include corporates settling receipts or payments arising from overseas trade, fund managers buying or selling foreign currency as a result of shifts in their portfolio allocations, government agencies, hedge funds taking positions in currencies or other assets and, finally, high net-worth individuals either entering the market on their own behalf or through the private banking arm of a bank. The last group is of brokers, who do not trade on their own account, but act as intermediaries.

Currency Trading

The foreign exchange market or forex market is the one where currencies are traded. Currency trading is the world's largest market consisting more than \$6 trillion in daily volume and as investors learn more and become more interested in it, the market continues to grow rapidly. Not only is the forex market the largest market in the world, it is also the most liquid, which makes it different from other markets.

Foreign exchange market is the term given to the worldwide financial market which is both decentralized and over-the-counter, which specializes in trading back and forth between different types of currencies. This market is also known as the forex market. In recent times, both investors and traders located all around the world have begun to notice and recognize the foreign exchange market as an area of interest, which is speculated to contain opportunity.

The following are the currency pairs that are traded most often in the market:

- EUR / USD – Euro
- GBP / USD – Pound

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- USD / CAD – Canadian Dollar
- USD / JPY – Yen
- USD / CHF – Swiss Franc and
- AUD / USD – Australian Dollar

These pairs generate up to 85% of the volume of the market.

In each currency pair, the former currency is the base currency, where the latter currency is typically in reference to the quote or the counter currency. Each pair is generally expressed in units of the quote or the counter currency which are needed in order to receive a single unit of the base currency.

To illustrate, if the quote or the price of a EUR / USD currency pair is 1.13, this would mean that one would require 1.13 United States Dollars to receive a single Euro.

Bid / Ask Spread

It is common for any currency pair to be quoted with both a bid and an ask price. The former, which is always lower than the ask price is the price at which a broker is ready and willing to buy, which is the price at which the trader should sell. The ask price, on the other hand, is the price at which the broker is ready and willing to sell, meaning the trader should jump at that price and buy.

To illustrate, if the following pair were provided as such:

EUR / USD 1.2545/48 OR 1.2545/8

Then the bidding price is set for 1.2545 with the ask price set to 1.2548.

Pip

The minimum incremental move that is made possible by a currency pair is otherwise known as a pip, which simply stands for price interest point. For example, a move in the EUR / USD currency pair from 1.2545 to 1.2560 would be equivalent to 15 pips, whereas a move in the USD / JPY currency pair from 112.05 to 113.05 would be equivalent to 105 pips.

Money Market

Money market is a market for short-term financial assets that are close substitutes of money. The most important feature of a money market instrument is that it is liquid and can be turned into money quickly at a low cost and provides an avenue for equilibrating the short-term surplus funds of lenders and the requirements of borrowers.

As money became a commodity, the money market became a component of the financial markets for assets involved in short-term borrowing, lending, buying and selling with original maturities of one year or less. Trading in the money markets is done over the counter and is wholesale. It consists of various instruments, such as Treasury bills, commercial paper,

deposits and certificates of deposits, bills of exchange, and asset-backed securities. It provides liquidity funding for the global financial system. Money markets and capital markets are parts of financial markets. The instruments bear differing maturities, currencies, credit risks, and structure; therefore they may be used to distribute the exposures.

Need for the Market - Participants

Money markets provide an equilibrating mechanism for demand and supply of short-term funds and in the process an avenue for central bank intervention in influencing both the quantum and cost of liquidity in the financial system. In the process, money market plays a central role in the monetary policy transmission mechanism by providing a key link in the operations of monetary policy to financial markets and, ultimately, to the real economy. Money markets are the first and the most important stage in the chain of monetary policy transmission. Following are the major functions played by a developed money market:

(i) Financing Trade: Money Market plays a crucial role in financing both internal as well as international trade. Commercial finance is made available to the traders through bills of exchange, which are discounted by the bill market. The acceptance houses and discount markets help in financing foreign trade.

(ii) Financing Industry: Money market contributes to the growth of industries in two ways:

- (a) Money market helps industries in securing short-term loans to meet their working capital requirements through the system of finance bills, commercial papers, etc.
- (b) Industries generally need long-term loans, which are provided in the capital market. However, capital market depends upon the nature of and the conditions in the money market. The short-term interest rates of the money market influence the long-term interest rates of the capital market. Thus, money market indirectly helps industries through its link with and influence on the long-term capital market.

(iii) Profitable Investment: Money market enables commercial banks to use their excess reserves in profitable investment. The main objective of commercial banks is to earn income from their reserves as well as to maintain liquidity to meet the uncertain cash demand of their depositors. They invest their excess reserves in near-money assets (e.g. short-term bills of exchange) which are highly liquid and can be easily converted into cash. Thus, commercial banks earn profits without losing liquidity.

(iv) Self-Sufficiency of Commercial Banks: Developed money market helps commercial banks to become self-sufficient. In a situation of emergency, when they have scarcity of funds, they need not approach the central bank and borrow at a higher interest rate. They can meet their requirements by recalling their old short-run loans from the money market.

(v) Help to the Central Bank: Though the central bank can function and influence the banking system in the absence of a money market, the existence of a developed money market smoothens its functioning and increases its efficiency.

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Money market helps the central bank in two ways:

- (a) The short-run interest rates of the money market serves as an indicator of the monetary and banking conditions in the country and, in this way, guide the central bank to adopt an appropriate banking policy.
- (b) The sensitive and integrated money market helps the central bank to secure quick and widespread influence on the sub-markets, and thus implement its policy effectively.

Types of Interest / Yield Rate Quotations

The concept of Yields is important for understanding the Government Securities market. Yield is the Rate of Return of an Investment. In case of lending by the banks, they stipulate a Rate of Interest per annum which becomes the benchmark for their return. The actual yield may vary from the benchmark depending upon whether the periodicity of interest is monthly, quarterly or half yearly. In the case of government securities, however, the yields are determined on the basis of the price at which the security is auctioned in the primary market or the prices determined in the secondary market through sale and purchase.

Nominal Yield: Coupon rate is the rate of interest payable per annum per Rs.100/- or the face value. If the purchase price is different from the face value then the return is equal to coupon rate / purchase price x 100. This return is called the nominal Yield.

Real Yield: Nominal yields deflated by the index of inflation rate, such as WPI or CPI will give real yields, which reflect the true purchasing power of the return on these securities.

Net Yield: Nominal yields adjusted for the tax rate or payment of relevant taxes at which deduction of tax at source takes place are called the net yield.

Current Yield: Coupon Rate is the rate at which bonds carry interest. This is the nominal yield payable on the face value of the bond regularly and remains unaltered, say for example 7.75% loan 2015. Current Yield is equal to (coupon rate x face value) / Cost or market price.

Redemption Yield or Yield to Maturity: This takes into account the price paid for the bond, the length of time to maturity and the coupon rate of the bond. This is the yield which the holder gets per annum if he holds it until maturity and is the same as current yield if the bond is purchased at par. Redemption yield is equal to the current Yield +/- average annual capital gain or loss (for the bond purchased at a discount or premium as the case may be).

The RBI is responsible for public debt management of the government. It does this by underwriting and subscribing to new issues not subscribed by public, by the use of Open Market Operations (OMO) as a technique of sale and purchase of government securities to control the liquidity and the interest rate structure and by the use of SLR and CRR as methods of controlling the liquidity of banking system and their contributions to government debt.

FIMMDA

The Fixed Income Money Market and Derivatives Association of India (FIMMDA), an association of Scheduled Commercial Banks, Public Financial Institutions, Primary Dealers and Insurance Companies was incorporated as a Company under section 25 of the Companies Act 1956 on June 3, 1998. FIMMDA is a voluntary market body for the bond, money and derivatives markets.

FIMMDA has members representing all major institutional segments of the market. The membership includes nationalized banks such as the State Bank of India, private sector banks such as the ICICI Bank, HDFC Bank, IDBI Bank; foreign banks such as the Bank of America, ABN Amro, Citibank, financial institutions such as IDFC (An integrated infrastructure finance company), EXIM Bank, NABARD, insurance companies like the Life Insurance Corporation of India (LIC), ICICI Prudential Life Insurance Company, Birla Sun Life Insurance Company and all Primary dealers.

Role of CCIL and Products

The Clearing Corporation of India (CCIL) was set up to improve efficiency in the transaction settlement process, insulate the financial system from shocks emanating from operations related issues, and to undertake other related activities that would help to broaden and deepen the Money, Gilts and Forex markets in India. The role of CCIL is unique, as it provides guaranteed settlement of three different products under one umbrella. It has been instrumental in setting up and running NDS-OM, NDS-Call and NDS-Auction system for the central bank that had helped the Indian market to evolve and grow immensely. It has bolstered CCIL's image to provide transparent, efficient robust and cost effective end- to- end solutions to market participants in various markets. The success of its money market product 'CBLO' has helped the market participants as well as the central bank to find a solution to unusual dependence on uncollateralized call market. CCIL has also introduced many innovative products/tools like Zero Coupon Yield Curve (ZCYC), Bond and T Bills indices, Sovereign Yield Curve, Benchmark reference rates like CCIL-Mumbai Interbank Bid Rate (MIBID/MIBOR) and Collateralized Benchmark Offer Rate (CCBOR)/ Collateralized Benchmark Bid Rate (CCBID).

CBLO (Collateralized Borrowing and Lending Obligation)

Collateralized Borrowing and Lending Obligation (CBLO)", as the name implies, is a fully collateralized and secured instrument for borrowing / lending money. It is a product conceived and developed by CCIL for facilitating deployment in a collateralized environment. It aims to benefit those entities that have been phased out of Call/ Notice money market and / or those entities on whom restrictions have been placed on the borrowing / lending in call / notice money market.

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CBLO Dealing system is hosted and maintained by Clearcorp Dealing Systems (India) Ltd, a fully owned subsidiary of CCIL. CCIL becomes Central Counterparty to all CBLO trades and guarantees settlement of CBLO trades. CBLO is an RBI approved money market instrument which can be issued for a maximum tenor of one year. It is a discounted instrument traded on Yield Time priority, and is generally made available for trading of those with maturity of next seven business days and three months with end dates. The balances are maintained in electronic book entry. The access to CBLO Dealing system for NDS Members is made available through The INdian Financial NETwork (INFINET) and for non- NDS Members through the Internet. The Funds settlement of members in CBLO segment is achieved in the books of RBI for members who maintain an RBI Current Account and are allowed to operate that for settlement of their secondary market transactions. In respect of other members, CBLO Funds settlement is achieved in the books of the Settlement Bank.

It,

- Is an RBI approved Money Market instrument;
- Is an instrument backed by Gilts as Collaterals;
- Creates an Obligation on the borrower to repay the money borrowed along with interest on a predetermined future date;
- A Right and Authority to the lender to receive money lent along with interest on a predetermined future date;
- Creates a charge on the Collaterals deposited by the Borrower with CCIL for the purpose;

Membership to CBLO segment is generally extended to Repo eligible entities as per the RBI guidelines. CBLO Membership is granted to NDS Members and non-NDS Members.

The entities eligible for CBLO Membership are Nationalized Banks, Private Banks, Foreign Banks, Co-operative Banks, Financial Institutions, Insurance Companies, Mutual Funds, Primary Dealers, Bank cum Primary Dealers, NBFC, Corporate, Provident/ Pension Funds etc. Entities that have been granted CBLO Membership are classified on the basis of their NDS Membership. CBLO Members who are also NDS Members are CBLO (NDS) Members and other CBLO Members are CBLO (Non NDS) Members or Associate Members. Eligible securities are Central Government securities including Treasury Bills as specified by CCIL from time to time.

NDS-OM

The Reserve Bank introduced the Negotiated Dealing System-Order Matching system or NDS-OM, as it is called, in August 2005. It 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, and matches the oldest order first. The system ensures complete anonymity among the participants as the 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 authorized 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 settle their trades on NDS-OM directly. 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 trade on NDS-OM only indirectly, through banks and PDs. Banks and PDs provide custodial services to indirect members by opening their securities and funds accounts. Indirect members can place orders through their custodian, who is a direct member, using client accounts. Such trades would finally settle through the Constituent Subsidiary General Ledger (CSGL) account and current account of the custodian.

NDS-OM currently has a direct membership of more than 130 financial institutions.

SGL (Subsidiary General Ledger) Account – It is the securities account maintained by banks and primary dealers with the RBI for holding their Government securities. Only their proprietary holdings are allowed to be held in the SGL account.

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CSGL (Constituent SGL) Account – Banks and primary dealers are allowed to maintain securities accounts of their customers. The holdings of the customers are held in a pooled account in the RBI which is called CSGL account.

Who can be a member of NDS-OM?

For obtaining membership of the NDS-OM, entities should have:

- SGL account with the Reserve Bank
- Current account with the Reserve Bank*
- INFINET (Indian Financial Network) connectivity
- Membership of the CCIL

*Entities such as mutual funds and insurance companies, which are not eligible to open current account with the Reserve Bank, need to open a funds account with one of the Designated Settlement Banks (DSBs) appointed by the CCIL for settlements.

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, they 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 a standardized lot size of Rs.5 crore and in multiples of Rs.5 crores, 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 a minimum trading lot size of Rs.10,000 only) 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 are they accepted for settlement.
- Reporting happens simultaneously with trades on NDS-OM; whereas in the OTC market participants are required to report the transactions separately.

CROMS

Clearcorp Repo Order Matching System (CROMS) is an STP enabled anonymous Order Matching Platform launched by the Clearcorp Dealing Systems (India) Ltd on 27th January 2009 for facilitating dealing in Market Repos in all kinds of Government Securities.

It enables dealing in two kinds of Repos:

- (1) Basket and
- (2) Special Repos.

Building on the internationally popular Standard Repo Model, Basket Repos enable dealing in baskets wherein repoable securities have been classified, based on the instrument type, liquidity and outstanding tenor and clustered together. While borrowers can raise funds through a Basket Repo against any of security forming part of the concerned basket, the lender is assured that he will receive only any of the securities forming part of the concerned basket. Details of security allocated are known to both counterparties post trade. As for Special Repos, which is the conventional repo, both borrower and lender are aware of the underlying security against which a deal is sought to be concluded. **CROMS** provides better transparency, repo rate discovery and operational efficiency and has thus become the preferred avenue for market repo dealing. About 70% of all market repo action against Government Securities is concluded on the Platform consistently.

Money Market Instruments

Money Market means market where money or its equivalent can be traded. Money is synonymous with liquidity. Money Market consists of financial institutions and dealers in money or credit who wish to generate liquidity through short term borrowing and lending. It is better known as a place where large institutions and governments manage their short term cash needs. Money Market is a part of the financial market where instruments with high liquidity and very short term maturities are traded safely. In short, money market is a market where short term obligations such as treasury bills, commercial papers and banker's acceptances are bought and sold.

Benefits and Functions of Money Market

Money Markets facilitate efficient transfer of short-term funds between holders and borrowers of cash assets. For the lender / investor, it provides a good return on their funds. For the borrower, it enables rapid and relatively inexpensive acquisition of cash to cover short-term liabilities. One of the primary functions of Money Market is to provide a focal point for RBI's intervention for influencing liquidity and general levels of interest rates in the economy. As the main constituent in the Money Market, the RBI aims at ensuring that liquidity and short term interest rates are consistent with monetary policy objectives.

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Money Market & Capital Market

Money Market is a place for short term lending and borrowing, typically within a year. It deals in short term debt financing and investments. On the other hand, Capital Market refers to stock market, which refers to trading in shares and bonds of companies on recognized stock exchanges. Individual players cannot invest in money market as the value of investments is large; on the other hand, in capital market, anybody can make investments through a broker. Stock Market is associated with high risk and high return while the Money Market is safe and secure. In money market, deals are transacted on phone or through electronic systems; in the capital market trading is done through recognized stock exchanges.

Government Securities

The market for Government Securities comprises the Centre, State and State-sponsored securities. But now even local bodies, such as municipal corporations, tap the debt markets for funds. The market for government securities is the oldest and most dominant in terms of market capitalization, outstanding securities, trading volume and number of participants. It not only provides resources to the government for meeting its short term and long term needs, but also sets benchmark for pricing corporate paper of varying maturities and is used by the RBI as an instrument of monetary policy. The instruments in this segment are fixed coupon bonds, commonly referred to as dated securities, treasury bills, floating rate bonds, zero coupon bonds. Both Central and State government securities comprise this segment of the debt market.

Developing a government securities market is a complex undertaking that depends on the financial and market system development of each country. For many governments, this involves immense challenges, as the problems that inhibit the development of securities market run deep in the economy. For example, some governments rely on a few domestic banks for funding, which makes competition scarce and transaction costs high. In addition, a proliferation of government agencies issuing securities can fragment national government securities markets. Absence of a sound market infrastructure may also hinder specific actions that are essential for developing a government securities market. . A paucity of institutional investors, low domestic savings rates, and lack of interest from international investors can result in a small, highly homogeneous investor group, which goes against the heterogeneity needed for an efficient market. Furthermore, economic instability, often fed by high fiscal deficits, rapid growth of money supply, and a deteriorating exchange rate, can weaken investor confidence and increase the risks associated with the development of a market for government securities.

While the RBI regulates the issuance of government securities, corporate debt securities fall under the regulatory purview of the SEBI. NSE and BSE provide a trading platform for most debt instruments issued in India.

Trading pattern for Domestic Securities

The total outright volume of G-Secs traded during Q2 of FY17-18 was Rs.34.29 lakh crore, an increase of 10.2% compared to volume of Rs.31.12 lakh crore during Q1 (Mentioned in the following Table). The G-Secs trading saw the increase of 8.79% while T-Bills and SDLs trading activity improved by 15.1% and 25.4% respectively during the quarter. The annualized outright turnover ratio¹ for G-Secs for Q2 of FY17-18 improved to 4.73 from 4.48 during Q1. The annualized total turnover ratio² including the repo transactions, for Q2 of FY 17-18 also increased to 12.18 from 11.83 during Q1.

Transactions in Government Securities (Volume in Rs. Crore)

Period	Outright				Repo			
	G-Sec	T-Bills	SDL	Total	G-Sec	T-Bills	SDL	Total
Oct-Dec 13	13,12,75	2,10,20	33,062	15,56,02	7,23,963	9,78,151	5,018	17,07,13
Jan-Mar 14	15,99,76	1,99,69	41,768	18,41,22	6,84,264	9,89,645	14,168	16,88,07
Apr-Jun 14	23,67,77	2,28,29	49,700	26,45,76	9,50,413	10,13,22	6,726	19,70,36
July-Sept 14	18,06,27	2,01,53	24,824	20,32,63	10,12,13	9,24,362	26,401	19,62,89
Oct-Dec 14	26,90,53	2,04,13	43,601	29,38,26	11,83,00	5,80,690	60,785	18,24,47
Jan-Mar 15	22,85,02	1,89,50	64,959	25,39,49	13,26,35	7,40,729	50,431	21,17,51
Apr-Jun 15	22,80,74	2,25,23	56,618	25,62,60	12,67,88	7,73,487	10,096	20,51,47
July-Sept 15	21,54,20	2,26,05	77,147	24,57,40	14,56,16	5,33,733	41,476	20,31,37
Oct-Dec 15	19,31,99	2,15,03	87,086	22,34,11	16,22,56	4,95,476	45,462	21,63,50
Jan-Mar 16	21,90,73	1,88,06	95,627	24,74,42	18,84,07	4,45,508	45,731	23,75,31
Apr-June 16	28,27,81	2,35,85	1,13,27	31,76,94	20,64,06	4,35,971	1,18,26	26,18,30
July-Sept 16	52,05,35	2,76,67	1,87,32	56,69,35	26,81,22	3,27,322	1,80,49	31,89,03
Oct-Dec 16	45,92,86	2,60,52	1,42,80	49,96,20	24,44,86	3,78,260	1,34,36	29,57,48
Jan-Mar 17	25,72,43	3,00,40	1,58,80	30,31,64	23,09,65	6,61,235	99,290	30,70,17
Apr-June 17	26,64,38	2,94,36	1,53,17	31,11,92	21,86,20	6,37,634	1,96,87	30,20,71
Jul-Sep 17	28,98,61	3,38,69	1,92,11	34,29,42	22,84,48	7,91,658	2,26,21	33,02,36

¹ Annualized Outright Turnover Ratio = $4 \times [\text{Quarterly Outright Volume} * 2 / (\text{Average of outstanding stock})]$.

² Annualized Total Turnover Ratio = $4 * [(\text{Quarterly Outright Volume} * 2 + \text{Quarterly Repo Volume} * 4) / (\text{Average of outstanding stock})]$

Treasury Bills

Treasury bills are instruments of short-term borrowing by the Government of India, issued as promissory notes under discount. The interest received on them is the discount which is the difference between the price at which they are issued and their redemption value. They promise assured yield and negligible risk of default. Under one classification, treasury bills are categorized as ad hoc, tap and auction bills; under another classification, they are classified on the basis of their maturity period, such as 91-days TBs, 182-days TBs, 364-days TBs. During 2002–03, and 2003–04, the Reserve Bank of India issued only 91-day and 364-day

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treasury bills. The auction format of 91-day Treasury Bill has changed from uniform price to multiple price to encourage more responsible bidding from the market players. The bills are of two kinds, ad hoc and regular.

The ad hoc bills are issued for investment by the state governments, semi government departments and foreign central banks for temporary investment. They are not sold to banks and general public. The treasury bills sold to the public and banks are called regular treasury bills. They are freely marketable. Commercial banks buy entire quantities of such bills issued on tender. They are bought and sold on discount basis. The Adhoc treasury bills were converted by replacing new T Bills .So it became ineffect borrowing beyond budgetary limit .So in order to enforce financial discipline Govt. discontinued ad hoc treasury bills and it was discontinued from 1.4.1997.

Promissory Notes

Government Securities are securities issued by the Government for raising a public loan as notified in the official Gazette. They consist of Government Promissory Notes, Bearer Bonds, Stocks or Bonds held in Bond Ledger Account. They may be in the form of Treasury Bills or Dated Government Securities.

Government Securities are mostly interest- bearing dated securities issued by the RBI on behalf of the Government of India. GOI uses these funds to meet its expenditure commitments. These securities are generally fixed maturity and fixed coupon securities carrying semi-annual coupon rate. Since the date of maturity is specified in the securities, these are known as dated Government Securities, e.g. 8.24% GOI 2018 is a Central Government Security maturing in 2018, which carries a coupon of 8.24% payable half yearly.

Features of Government Securities

1. Issued at face value (The Term "Government Securities" should include both long- term (dated Securities) and short- term securities (treasury bills) issued by the government. Of these, treasury bills are always issued at a discount to the face value and dated securities may be issued via either multiple price auction or uniform price auction.
2. No default risk as the securities carry sovereign guarantee.
3. Ample liquidity as the investor can sell the security in the secondary market.
4. Interest payment on a half-yearly basis on face value.
5. No tax deducted at source.
6. Can be held in Demat form.
7. Rate of interest and tenor of the security is fixed at the time of issuance and is not subject to change (unless intrinsic to the security like FRBs - Floating Rate Bonds).
8. Redeemed at face value on maturity.

9. Maturity ranges from of 2-30 years.
10. Securities qualify as SLR (Statutory Liquidity Ratio) investments (unless otherwise stated).

The dated Government securities market in India has two segments:

Primary Market: The Primary Market consists of the issuers of the securities, viz., Central and State Governments and buyers include Commercial Banks, Primary Dealers, Financial Institutions, Insurance Companies and Co-operative Banks. The RBI also has a scheme of non-competitive bidding for small investors.

Secondary Market: The Secondary Market includes Commercial banks, Financial Institutions, Insurance Companies, Provident Funds, Trusts, Mutual Funds, Primary Dealers and Reserve Bank of India. Even Corporates and Individuals can invest in Government Securities. The eligibility criteria are specified in the relevant Government notification.

Auctions: Auctions for government securities are either multiple-price auctions or uniform-price auctions, which are either yield- based or price- based.

Yield Based: In this type of auction, RBI announces the issue size or notified amount and the tenor of the paper to be auctioned. The bidders submit bids in term of the yield at which they are ready to buy the security. If the bid is more than the cut-off yield then it is rejected, otherwise it is accepted

Price- Based: In this type of auction, RBI announces the issue size or notified amount and the tenor of the paper to be auctioned, as well as the coupon rate. The bidders submit bids in terms of the price. This method of auction is normally used for reissuing of existing Government Securities. Bids at prices lower than the cut off price are rejected and bids higher than the cut off price are accepted. Price- based auction leads to a better price realization than the yield based auction.

Underwriting in Auction: A day prior to the auction, bids are received from the Primary Dealers (PD) indicating the amount they are willing to underwrite and the fee expected. The auction committee of RBI then examines the bid on the basis of the market condition and takes a decision on the amount to be underwritten and the fee to be paid. In case of devolvement, the bids put in by the PD's are set off against the amount underwritten while deciding the amount of devolvement and in case the auction is fully subscribed, the PD need not subscribe to the issue unless they have bid for it.

G-Secs, State Development Loans & T-Bills are regularly sold by RBI through periodic public auctions. SBI DFHI Ltd. is a leading Primary Dealer in Government Securities. SBI DFHI Ltd gives investors an opportunity to buy G-Sec / SDLs / T-Bills at primary market auctions of RBI through its SBI DFHI Invest scheme. Investors may also invest in high yielding Government Securities through "SBI DFHI Trade" where "buy- and- sell price" and a buy- and- sell facility for select liquid scrips in the secondary markets is offered.

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Fixed Income Securities

Securities are financial instruments that represent value. A Debt or Fixed Income Security represents a creditor relationship with a corporation, government, bank, etc. Generally debt instruments represent agreements to receive cash flows, based on the terms contained within the agreement. Fixed-income securities are investments where the cash flows are according to a predetermined amount of interest, paid on a fixed schedule. The different types of fixed income securities include government securities, corporate bonds, debentures, etc. Brief details about some of these investment options are given below:

Government Securities: G-Secs are issued by the Reserve Bank of India on behalf of the Government of India. Normally the dated Government Securities have a period of one to thirty years. These are sovereign instruments generally bearing a fixed interest rate with interest payable semi-annually and principal as per schedule. G-Secs provide risk-free return to investors.

Corporate Bonds: Corporate Bonds are issued by public sector undertakings and private corporations for a wide range of tenors normally up to fifteen years although some corporates have also issued perpetual bonds. Compared with government bonds, corporate bonds generally have a higher risk of default. This risk depends, of course, upon the particular corporation issuing the bond, the current market conditions, the industry in which it operates and the rating of the company. Corporate bond holders are compensated for this risk by receiving a higher yield than that of government bonds.

Debentures: Debentures are instruments for raising loans by a Company. They evidence an acknowledgement of debt with an obligation to repay the sum along with interest as specified. They are subject to provisions of the Companies Act relating to issue, appointment of debenture trustees, creation of Debenture Redemption Reserve Account, etc., specifically applied to them. As per the Companies Act, registration of charge for the purpose of issuing debentures is mandatory. Debentures form a part of the Company's capital structure but not a part of its share capital.

Inter-Bank Participation Certificate: Inter-Bank Participation Certificates are instruments issued by scheduled commercial banks only to raise funds or to deploy short term surplus. This instrument is issued as per RBI guidelines for two purposes:

- (a) on risk sharing basis
- (b) without risk sharing

Inter-Bank Participation without risk sharing can have tenure of 90 days only where, the issuing bank as borrowing and the participating bank advances to the banks. In case of risk sharing basis, the lender bank shares losses with the borrowing banks by mutually determining the interest rate. The tenure may be from 90 to 180 days.

It has been decided by RBI that Regional Rural Banks (RRBs) can also issue Inter-Bank Participation Certificates (IBPCs) of a tenor of 180 days on risk sharing basis to scheduled commercial banks against their priority sector advances in excess of 60% of their outstanding advances.

Repurchase Agreements (REPOS / Reverse Repo)

Repo or repurchase option is a means of short-term borrowing, wherein banks sell approved government securities to RBI and get funds in exchange. In other words, in a repo transaction, RBI repurchases government securities from banks, depending on the level of money supply it decides to maintain in the country's monetary system.

Repo rate is the discount rate at which banks borrow from RBI. Reduction in repo rate will help banks to get money at a cheaper rate, while increase in repo rate will make bank borrowings from RBI more expensive. If RBI wants to make it more expensive for the banks to borrow money, it increases the repo rate. Similarly, if it wants to make it cheaper for banks to borrow money, it reduces the repo rate.

Reverse repo is the exact opposite of repo. In a reverse repo transaction, banks purchase government securities from RBI and lend money to the banking regulator, thus earning interest. Reverse repo rate is the rate at which RBI borrows money from banks. Banks are always happy to lend money to RBI since their money is in safe hands with a good interest rate.

Thus, repo rate is always higher than the reverse repo rate.

RBI Money Market Operations like Sterilization and Non-Sterilization

An increase in the international reserves directly affects the assets side of the balance sheet of the central bank because the total monetary base or reserve money (RM) comprises two assets, namely, net domestic assets (NDA) and net foreign assets (NFA). The purchase of foreign currency by the central bank to avoid the appreciation of the domestic currency during periods of capital inflows leads to an increase in NFA and in turn to an equivalent increase in RM, which is known as non-sterilized intervention.

At the same time, these monetary expansionary effects of reserve accumulation can be neutralized by reducing the domestic component of monetary base, i.e., NDA. This process is known as sterilized intervention and can be implemented through sale of domestic bonds equivalent to increase in NFA or an increase in 'reserve requirements' of commercial banks.

The dynamics of the sterilization operation of the RBI by analyzing the sources of changes in reserve money. This indicates that the reserve money growth is mainly on account of the growth in NFA. At the same time, it is also seen that RBI's credit to the commercial sector (RBICC) is adjusted to offset the increase in NFA till the year 1996- 97. This implies that

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during this period the RBI sterilized the monetary effect of reserve accumulation by squeezing the availability of credit to the commercial sector.

This is consistent with the monetary targeting policy framework followed by the RBI during that period, when the broad money was projected and bank reserves requirements, such as CRR and SLR, were used as instruments of monetary policy. The CRR was continuously revised during this period to manage the availability of credit to the commercial sector.

After 1997-98, the increase in NFA was largely offset by reduction in RBI credit to the Govt. This is due to the high open market operation (OMO) followed by the RBI for liquidity management during this period, as part of the adoption of multiple indicator approach in its monetary policy. Under this approach, short term interest rate is considered a major instrument of monetary policy, and liquidity is managed through OMO in the form of outright purchase / sale of Govt. securities. The increased sale of gov. securities under OMO to offset increase in NFA resulted in the reduction of RBI credit to the Govt., RBICG, after 1998-99.

In addition to OMO, the RBI introduced the Liquidity Adjustment Facility (LAF) in June 2000 to manage liquidity on a daily basis. It consists of Repo and Reverse Repo auctions of government securities to inject and absorb liquidity from the system. Though the main objective of the LAF is very short-term liquidity management and to provide stability in the overnight money market, it was widely used for sterilizing the impact of reserve accumulation during the period 2001 to 2003. Subsequently, the RBI introduced Market Stabilization Scheme (MSS) to supplement the LAF to sterilize the monetary impact of reserve accumulation in April 2004. MSS is an arrangement between the Government of India and RBI to absorb excess liquidity generated by the reserve accumulation for neutralizing the monetary impact of capital flows. Under the scheme, RBI issues Treasury Bills / dated government securities by way of auctions and the cost of sterilization is borne by the Government.

During the period of high reserve accumulation, the RBI may be required to offer high interest rates to carry out its massive sterilization policies. RBI revised the CRR extensively during 1995-96 and OMO and Repos thereafter. It is argued that the existence of high interest rate differential in the developing countries is the major reason for capital flows and, therefore, an increase in the domestic interest rate due to the sterilized intervention in India may attract capital flows and lead to further accumulation of reserves. This process may offset the initial sterilization policy carried by the RBI and thus it may affect the effectiveness of its sterilization policy.

LAF

On the basis of the recommendations of the second Narsimham Committee, 1998, an interim LAF was introduced in 1999 to provide a ceiling and fixed rate repos were continued to provide a floor for money market rates. Liquidity Adjustment Facility was introduced for the first time from June 2000 onwards, and revised in 2001 and 2004. The committee had recommended that RBI's support to the market should be through a Liquidity Adjustment

Facility (LAF) operated by way of repo and reverse repo providing a reasonable corridor to market players.

How does Liquidity Adjustment Facility work?

As mentioned above, the two components of LAF are repo rate and reverse repo rate. Under repo, banks borrow money from RBI to meet short term needs by putting government securities (G-secs) as collateral. Under reverse repo, RBI borrows money from banks by lending securities. While repo injects liquidity into the system, the reverse repo absorbs liquidity from the system. RBI announces only repo rate.

The reverse repo rate is linked to repo rate and is 100 basis points (1%) below repo rate. RBI makes decisions regarding repo rate on the basis of prevalent market conditions and relevant factors.

When is the repo and reverse repo auctions conducted?

RBI conducts the repo auctions and reverse repo auctions on a daily basis from Monday to Friday, except on holidays. The tenure of the repo is seven working days.

Which banks participate in LAF auctions?

All the scheduled commercial banks are eligible to participate in auctions, except the Regional Rural Banks. Primary Dealers (PDs) having Current Account and SGL Account (Subsidiary General Ledger Account) with the Reserve Bank, Mumbai are also eligible to participate in the repo and reverse repo auctions.

What are the bid sizes?

Under the Liquidity Adjustment Facility, bids need to be for a minimum amount of Rs.5 crore and in multiples of Rs. 5 Crore thereafter.

What kinds of securities are auctioned?

Only Government of India dated Securities / Treasury Bills are used for collateral under LAF as of now.

Commercial Paper (CP)

Commercial paper is an unsecured promissory note with a fixed maturity ranging from seven days to one year. Commercial Paper is a money market security issued (sold) by highly rated corporate borrowers, primary dealers and large financial institutions to raise funds to meet their short term debt obligations, and is backed by the issuers' promise to pay the face amount on the maturity date specified on the note.

Since it is not backed by collateral, only firms with excellent credit ratings from a recognized rating agency are able to sell their commercial paper at a reasonable price. Commercial paper is usually sold at a discount to the face value and is redeemed at the face value at the maturity. The difference between the purchase price (i.e., discounted face value) and the face value is the return earned by the buyer of the commercial paper.

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Certificate of Deposit (CD)

With a view to further widening the range of money market instruments and giving investors greater flexibility in the deployment of their short term surplus funds, Certificates of Deposits (CDs) were introduced in India in 1989. They are essentially securitized short term time deposits issued by banks and all-India Financial Institutions during the period of tight liquidity at relatively higher discount rates as compared to term deposits.

Certificates of Deposits (CDs) are short-term borrowings by banks. CDs differ from term deposit because they involve the creation of paper, and hence have the facility for transfer and multiple ownerships before maturity.

CD rates are usually higher than the rates of term deposits because of low transactions costs. Banks use the CDs for borrowing during a credit pick-up, to the extent of shortage in incremental deposits. Most CDs are held until maturity, and there is limited secondary market activity. 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 institutions for a specified time period. Guidelines for issue of CDs are presently governed by various directives issued by the Reserve Bank of India.

Alternative Investments

Treasury management means “To plan, organize and control cash and borrowings so as to optimize interest and currency flows, and minimize the cost of funds” or, in other words, “the handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows, and the complex strategies, policies, and procedures of corporate finance”. It involves ensuring that proper funds are available with the company at the time of outflow required and also that funds are not kept unutilized for a good long time. This requires investing / disinvesting funds in open ended mutual fund schemes. The scope of Treasury management includes the management of cash flows, banking, money-market and capital-market transactions, the effective control of the risks associated with those activities, and the pursuit of optimum performance consistent with those risks.

Bill discounting

While discounting a bill, a bank buys it (i.e., a Bill of Exchange or Promissory Note) before it is due and credits its value after a discount charge to the customer's account. The transaction is practically an advance against the security of the bill and the discount represents the interest on the advance from the date of purchase of the bill until it is due for payment.

Under certain circumstances, a bank may discount a bill of exchange instead of negotiating it. The amount that a bank advances also depends on the past record and reputation of the drawee.

Usually, a bank may want some conditions to be fulfilled to be able to discount a bill:

- A bill must be a usance bill.
- It must have been accepted and bear at least two good signatures (e.g., of reputable individuals, companies or banks etc.)
- A bank will normally only discount trade bills
- Where a usance bill is drawn at a fixed period after sight, the bill must be accepted to establish the maturity

The advising or confirming bank will hide the reimbursement instruction from the beneficiary so that his/her bank must present the documents to the nominated bank for negotiation in order to obtain payment under the BD terms.

Bills which are financed by the receiving branch, whether drawn under a BD or not, are treated as Bills Receivable by both the remitting branch and the receiving branches.

Refinance and Rediscounting Facilities

There are various types of refinance offered by RBI. It permits the banks to offer refinance on various loans like home, auto, etc. However, refinance companies can use floating provisions instead of specific provisioning. Refinance by RBI is also offered to boost the growth of SMEs (Small and Medium Enterprises), especially those which are currently facing credit crunch. RBI also offers refinance facility to help out exporters. In 2008, RBI offered credit lines of ₹ 5,000 crore to Export-Import Bank of India (EXIM Bank) to support the export sector.

Export Credit Refinance Facility

RBI offers export credit refinance facility to the scheduled banks under Section 17(3A) of RBI Act 1934. Presently, credit refinance is offered up to 15% of the outstanding export credit. Repo rate is applicable on the export credit refinance. The monthly payable interest is calculated on daily balances, which gets debited to the account. The maximum duration for repayment is 180 days. One can apply for an export credit refinance of Rupees one lakh and multiples of thereof.

Special Refinance Facility (SRF)

Special refinance facility was introduced under Section 17(3B) of RBI Act, 1934. It allows scheduled commercial banks (except Regional Rural Banks) to refinance up to 1% of Net Demand and Time Liabilities (NDTL) of each bank. Repo rate under LAF (Liquidity Adjustment Facility) is applicable to this facility.

Definition of 'Rediscount'

It means the act of discounting a short-term negotiable debt instrument for the second time. Banks may rediscount these short-term debt securities to assist the movement of a market that has a high demand for loans. When there is low liquidity in the market, banks can generate cash by rediscounting short-term securities.

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Rediscounting Facility of Export Bills by RBI

“Rediscounting of Export Bills Abroad” is post- shipment credit facility extended to exporters who have availed PCFC (Pre- Shipment credit in foreign currency) or Rupee EPC.

It is a concessional interest rate facility to provide post shipment finance to exporters at international rates of interest.

Under this scheme the exporter’s bills are discounted at the post- shipment stage and simultaneously rediscounted abroad by the Bank for raising foreign currency funds which are or used to liquidate the PCFC Loan.

Both Sight and Usance bills can be discounted under EBR scheme.

Eligibility: All exporters are eligible for availing discount on their bills drawn under LC and non-credit bills under sanctioned limits. This is a mandatory facility linked with PCFC and any exporter availing PCFC has also to avail EBR facility for discounting the relative export bills. Even without availing PCFC/EPC, an exporter can avail bill discounting under EBR.

Tenor: Maximum 180 days.

Currency: USD/GBP/EURO/JPY

Cross currency: If an exporter has a bill drawn in any other currency, he can also avail EBR in the above mentioned currency.

ROI: Linked to Libor and similar to PCFC rates.

Inter- Bank Dealings

The **interbank market** dealing is the top-level foreign exchange market where banks exchange different currencies. They can either deal with one another directly, or through the electronic brokering platforms. The Electronic Broking (EBS) and Thomson Reuters Dealing are the two competitors in the electronic brokering platform business and together connect over 1000 banks. The currencies of most developed countries have floating exchange rates. These currencies do not have fixed values but, rather, values that fluctuate relative to other currencies.

The interbank market is an important segment of the foreign exchange market. It is a wholesale market through which most currency transactions are channeled. It is mainly used for trading among bankers.

The interbank market is unregulated and decentralized. There is no specific location or exchange where these currency transactions take place. However, foreign currency options are regulated in a number of countries and trade on a number of different derivatives exchanges. The central banks of many countries publish closing spot prices on a daily basis.

Factoring

Management of receivables has been one of the major aspects of working capital management, besides cash and inventory management. As the accounts receivable amount to the blocking of a firm's funds, the need for an outlet to impart these liquidity is obvious. Other than the lag between the date of sale and the date of receipt of dues, collection of receivables involves a cost of inconvenience associated with tapping every individual debtor. Thus, if a firm could contract out the collection of accounts receivable, it would be saved from administration of sales ledger, collection of debt and the management of associated risk of bad-debts, etc.

Factoring is a type of financial service which involves an outright sale of the receivables of a firm to a financial institution called the factor which specializes in the management of trade credit. Under a typical factoring arrangement, a factor collects the accounts on the due dates, effects payments to a firm on these dates (irrespective of whether the customers have paid or not) and also assumes the credit risks associated with the collection of the accounts. As such, factoring is nothing but a substitute for in-house management of receivables.

A factor not only enables a firm to get rid of the work involved in handling credit and collection of receivables, but also helps it in placing its sales *in effect* on a cash basis.

Origin

Factoring has a long and fascinating history and the word factor has its etymological origin in the Latin word "Facere", which means to make or do. During the 15th and 16th centuries, factors were appointed by manufacturers in England, France and Spain to arrange for sales and distribution of goods in their colonies in the New World. The first credit factors in modern times were textile agents in the eighteenth century. Thus, the earlier factors used to provide services under marketing, distribution, administration and finance. From 1920s, however, the factors began to specialize in performing credit and collection function for their clients.

Definition and functions

"Factoring may be defined as a relationship between the financial institution or banker ('factor') and a business concern (the 'supplier') selling goods or providing services to trade customers (the customer) whereby the factor purchases book debts with or without recourse ('with a recourse' means that in the event of bad debts factor can approach the 'supplier') to the supplier and in relationship thereto controls the credit extended to the customers and administers the sales ledger of the supplier."

Though the purchase of book debts is fundamental to the functioning of factoring, there are a number of functions associated with this unique financial service. A proper appreciation of these functions would enable one to distinguish it from other sources of finance against receivables. They are:

- Assumption of credit and collection function;

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- Credit protection;
- Encashing of receivables;
- Collateral functions, such as:
 - (a) Loans on inventory,
 - (b) Loans on fixed assets, other security and on open credit,
 - (c) Advisory services to clients.

Factoring vs. Accounts Receivable Loans

Accounts receivable loan is a loan secured by a firm's accounts receivable by way of hypothecation or assignment of such receivables with the power to collect debts under a power of attorney. In case of factoring, however, there is an outright sale of receivables. Thus in the case of the former, a bank may debit a client's account for 'handling charges' if the debt turns out to be bad as against non-recourse factoring.

Mechanics of factoring

Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The dynamics of factoring comprises the sequence of events:

- (1) A Seller (client) negotiates with the factor for establishing a factoring relationship.
- (2) A Seller requests a credit check on the buyer (client).
- (3) A factor checks credit credentials and approves a buyer. For each approved buyer, a credit limit and period of credit are fixed.
- (4) A Seller sells goods to a buyer.
- (5) A Seller sends invoice to a factor. The invoice is accounted in the buyer's account in the factor's sales ledger. Factor sends a copy of the invoice to the buyer.
- (6) Factor advises the amount to which a seller is entitled after retaining a margin, say 20%, the residual amount paid later.
- (7) On expiry of the agreed credit period, the buyer makes payment of invoice to the factor.
- (8) The Factor pays the residual amount to the seller.

Forfeiting

Forfeiting is purchasing by discounting the receivables secured with payment of bank Guarantees and Letters of Credit with differed payment, that are due for payment on a future date and that arise from delivery of goods and services. It is a method of export trade financing, especially when dealing in capital goods (which have long payment periods) or with high risk countries. In forfeiting, a bank advances cash to an exporter against invoices or

promissory notes guaranteed by the importer's bank. The amount advanced is always 'without recourse' to the exporter, and is less than the invoice or note amount as it is discounted by a bank. The discount rates depend on the terms of the invoice / note and the level of the associated risk. Banks primarily forfait receivables of export companies under export Letters of Credit issued in their favor with differed payment clause, where they are an advising bank.

Mutual Funds

A mutual fund is a professionally managed form of collective investment that pools money from many investors and invests it in stocks, bonds, short-term money market instruments, and / or other securities.

Some of the advantages of investing in Mutual Funds are:

- Professional Management
- Diversification of Risks (by holding a number of stocks)
- Low costs on account of economies of scale
- Liquidity
- Flexibility regarding tenor
- Choice of schemes depending on risk appetite
- Tax benefits
- Transparency
- Well- Regulated

Money market mutual funds invest money in specifically, high-quality and very short maturity-based money market instruments. The RBI has approved the establishment of very few such funds in India. In 1997, only one MMMF was in operation, and that too with very small amount of capital.

Systematic Investment Plan (SIP)

This is now a popular method of investment in India where an investor contributes a fixed amount every month.

Investment can be as low as Rs. 500 per month for some funds.

Buy more when the price is down and less when the prices are high- this method reduces the average unit cost compared to buying in lump sum as SIP ensures averaging of rupee cost in the lower range of average market price.

Since one is investing a fixed amount regularly for a long term one can enjoy the benefit of tax (capital gains) and reinvestment.

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Tax Benefit

Tax Saving Schemes of mutual fund offer Tax Rebates to investors under Section 80c of Income Tax Act 1961 as government offers incentives for investment in special avenues. For example, Equity Linked Saving Scheme. (ELSS). From Finance Bill 2005, tax saving can be made up to an amount of Rs. 1.50 Lakhs.

Capital Markets

Capital markets are financial markets for buying and selling of long-term debt or equity backed securities. They channel the wealth of savers to those who can put it to long-term productive use, such as companies or governments making long-term investments.

The capital market comprises the complex of institutions and mechanisms through which intermediate term funds and long term funds are pooled and made available to business, government and individuals. It also encompasses the process by which already outstanding securities are transferred.

The capital market and the stock exchange are considered the barometer of an economy. Government's policy is so molded that creation of wealth through products and services is facilitated and surpluses and profits are channelized into productive uses through capital market operations. Reasonable opportunities and protection are afforded by the Government through special measures in the capital market to get new investments from the public and institutions and to ensure their liquidity.

A key division within the capital markets is between the primary markets and secondary markets. In primary markets, new stock or bond issues are sold to investors, often via a mechanism known as underwriting. The main entities seeking to raise long-term funds on the primary capital markets are governments (which may be municipal, local or national) and business enterprises (companies). Governments tend to issue only bonds, whereas companies often issue either equity or bonds. The main entities purchasing the bonds or stock include pension funds, less commonly wealthy individuals, and investment banks trading on their own behalf. In the secondary markets, existing securities are sold and bought among investors or traders, usually on an exchange, over-the-counter, or elsewhere. The existence of secondary markets increases the willingness of investors in primary markets, as they know that they are likely to be able to swiftly cash out their investments, if the need arises.

A second important division falls between the stock markets (for equity securities, also known as shares, where investors acquire ownership of companies) and the bond markets (where investors become creditors).

Need for a Capital Market

Capital market plays an extremely important role in promoting and sustaining the growth of an economy.

- It is an important and efficient conduit to channel and mobilize funds to enterprises, both private and public.
- It provides an effective source of investment in the economy.
- It plays a critical role in mobilizing savings for investment in productive assets, with a view to enhancing a country's long-term growth prospects, and thus acts as a major catalyst in transforming its economy into a more efficient, innovative and competitive marketplace within the global arena.
- In addition to resource allocation, capital markets also provide a medium for risk management by allowing the diversification of risk in the economy.
- A well-functioning capital market improves information quality as it plays a major role in encouraging the adoption of stronger corporate governance principles, thus supporting a trading environment which is founded on integrity.
- Capital market has played a crucial role in supporting periods of technological progress and economic development throughout history.
- Among other things, liquid markets make it possible to obtain financing for capital-intensive projects with long gestation periods. This certainly held true during the Industrial Revolution in the 18th century and continues to apply even as we move towards the so-called "New Economy".
- Capital markets make it possible for companies to give shares to their employees via ESOPs
- Capital markets provide a currency for acquisitions via share swaps.
- Capital markets provide an excellent route for disinvestments. .
- Venture Capital and Private Equity funds investing in unlisted companies get an exit option when they get listed on the capital markets.
- The existence of deep and broad capital market is absolutely crucial in spurring the growth of our country. An essential imperative for India has been to develop its capital market to provide alternative sources of funding for companies and thus to achieve more effective mobilization of investors' savings. Capital market also provides a valuable source of external finance.

For a long time, the Indian market was considered too small to warrant much attention. However, this view has changed rapidly as vast amounts of both international and domestic investment have poured into our markets during the last decade. The Indian market is no longer viewed as a static universe but as a constantly evolving one providing attractive opportunities to the investing community.

Functions of the Capital Market

- To mobilize resources for investments.

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- To facilitate buying and selling of securities.
- To facilitate the process of efficient price discovery.
- To facilitate settlement of transactions in accordance with the predetermined time schedules.

Primary & Secondary Markets for Money Market Instruments

The main features of the Primary market are listed below:

- New borrowing made on behalf of the Government is decided by RBI and terms such as tenor and coupon rates are announced.
- The RBI acts as underwriter and contributes to the loans unsubscribed by the public. The work of the RBI is shared with a class of primary dealers.
- The timing and conditions and the amounts involved are discussed by RBI with banks and FIs and sometimes prior commitments are enlisted.
- The floatation of bonds is effected throughout the year depending on the conditions of the market and requirements of the government.
- The timing and quantum is also adjusted on the basis of overall liquidity in the market.
- The subscription to the loans can be in cash as well as in the form of rolling over of existing securities which have fallen due for repayment.

In the secondary market, which is a retail market, trading is over the counter. Main operators in the secondary market are the Discount and Finance House of India (DFHI), Banks, FIs, PFs etc. This market is over-the-counter (OTC) market where trading is done through phones, fax, etc.

Principles of Valuation - Settlements of Transactions

Banks should frame Internal Investment Policy Guidelines and obtain the Board's approval with regard to Valuation and Settlement of Transactions of Various Investment Products of the Treasury Department. The investment policy may be suitably framed / amended to include Primary Dealer (PD) activities also. Within the overall framework of the investment policy, the PD business undertaken by a bank will be limited to dealing, underwriting and market making in Government Securities. Investments in Corporate / PSU / FI bonds, Commercial Papers, Certificate of Deposits, debt mutual funds, and other fixed income securities will not be deemed to be part of PD business.

The investment policy guidelines should be implemented to ensure that operations in securities are conducted in accordance with sound and acceptable business practices. While framing their investment policy, the following guidelines should be followed by the banks:

- (a) Banks may sell a government security already contracted for purchase, provided:
 - (i) The purchase contract is confirmed prior to the sale,

- (ii) The purchase contract is guaranteed by the Clearing Corporation of India Ltd.(CCIL) or the security is contracted for purchase from the Reserve Bank, and
- (iii) The sale transaction will settle either in the same settlement cycle as the preceding purchase contract, or in a subsequent settlement cycle so that the delivery obligation under the sale contract is met by the securities acquired under the purchase contract (e.g., when a security is purchased on T+0 basis, it can be sold on either T+0 or T+1 basis on the day of the purchase; if, however, it is purchased on T+1 basis, it can be sold on T+1 basis on the day of purchase or on T+0 or T+1 basis on the following day).

For purchasing securities from the Reserve Bank through open market operations (OMO), no sale transactions should be contracted prior to receiving the confirmation of the deal/advice of allotment from the Reserve Bank.

Further, the NDS-OM members have been permitted to transact on 'When Issued' basis in Central Government dated securities, subject to the guidelines of RBI.

- (b) Banks successful in the auction of primary issue of Government Securities may enter into contracts for the sale of allotted securities in accordance with the terms and conditions as per the guidelines of RBI.
- (c) The settlement of all outright secondary market transactions in Government Securities is being done on a standardized T+1 basis effective May 24, 2005.
- (d) All the transactions put through by a bank, either on outright basis or ready forward basis and whether through the mechanism of Subsidiary General Ledger (SGL) Account or Bank Receipt (BR), should be reflected on the same day in its investment account and, accordingly, for SLR purpose wherever applicable. With a view to bringing in uniformity in the methodology of accounting for investments in Government securities, banks should follow 'Settlement Date' accounting for recording purchase and sale of transactions in Government Securities.
- (e) The brokerage on the deal payable to the broker, if any, (if the deal was put through with the help of a broker) should be clearly indicated on the notes / memoranda put up to the top management seeking approval for putting through the transaction and a separate account of brokerage paid, broker-wise, should be maintained.
- (f) For the issue of Bank Receipts (BRs), the banks should adopt the format prescribed by the Indian Banks' Association (IBA) and strictly follow the guidelines prescribed by them in this regard. The banks, subject to the above, could issue BRs covering their own sale transactions only and notion behalf of their constituents, including brokers.
- (g) The banks should be circumspect while acting as agents of their broker clients for carrying out transactions in securities on their behalf.

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- (h) Any instance of return of SGL from the Public Debt Office (PDO) of the Reserve Bank for want of sufficient balance in the account should be immediately brought to the notice of the Reserve Bank with details of the transactions.
- (i) Banks desirous of making investment in equity shares / debentures should observe the following guidelines:
 - (i) Build up adequate expertise in equity research by establishing a dedicated equity research department, as warranted by their scale of operations;
 - (ii) Formulate a transparent policy and procedure for investment in shares, etc., with the approval of the Board; and
 - (iii) The decision in regard to direct investment in shares, convertible bonds and debentures should be taken by the Investment Committee set up by the bank's Board. The Committee should be held accountable for investments made by the bank.
 - (iv) Banks should clearly lay down the broad investment objectives to be followed while undertaking transactions in securities on their own investment account and on behalf of clients, and clearly define the authority to put through deals, procedures to be followed for obtaining the sanction of the appropriate authority, procedures to be followed while putting through deals, various prudential exposure limits and the reporting system. While laying down such investment policy guidelines, banks should obtain the approval of their Boards and strictly observe Reserve Bank's detailed instructions on the following aspects:
 - (v) STRIPS
 - (vi) Ready Forward (buy back) deals in G-Sec
 - (vii) Transactions through Subsidiary General Ledger A/c
 - (viii) Use of Bank Receipts
 - (ix) Retailing of Government Securities
 - (x) Internal Control System
 - (xi) Dealings through Brokers
 - (xii) Audit, Review and Reporting

The aforesaid instructions will be applicable mutatis mutandis, to the subsidiaries and mutual funds established by banks, except where they are contrary to or inconsistent with, specific regulations of Securities and Exchange Board of India (SEBI) and the Reserve Bank, governing their operations.

Bond Market: Types and its Future

Debt market (also referred to as Bond Market or Credit Market) is a financial market where participants can issue new debt, known as the primary market or buy and sell debt securities, known as the secondary market. Debt markets are, therefore, markets for fixed income securities issued by Central and State Governments, Govt. bodies and commercial entities, Public Sector Units.

Debt instruments are contracts in which one party lends money to another on pre-determined terms with regard to rate of interest to be paid by the borrower to the lender, the periodicity of such interest payment, and the repayment of the principal amount borrowed. In the Indian securities markets, the term 'bond' is generally used for debt instruments issued by the Central and State governments and public sector organizations, and the term 'debentures' for instruments issued by the private corporate sector. In this Manual, bonds, debentures and debt instruments are used inter-changeably (going forward).

Main Features of Debt Instruments

1. Maturity.
2. Coupon Rate.
3. Principal.

In the bond markets, the terms **maturity** and **term-to-maturity**, are used quite frequently. Maturity of a bond refers to the date on which the borrower has agreed to repay the principal amount to the lender. The borrowing is extinguished with redemption, and the bond ceases to exist after that date. Term to maturity, on the other hand, refers to the number of years remaining for the bond to mature. Term to maturity of a bond changes every day, from the date of issue of the bond until its maturity.

Coupon Rate refers to the periodic interest payments that are made by the borrower to the lender and the coupons are stated upfront either directly specifying the rate (e.g.8.50%) or indirectly tying it with a benchmark rate (e.g. MIBOR+0.5% - **details mentioned below**). Coupon rate is the rate at which interest is paid, and is usually represented as a percentage of the par value of a bond.

Principal is the amount that has been borrowed, and is also called the **par value** or **face value** of the bond. Typical face values in the bond market are Rs. 100 though there are bonds with face values of Rs. 1000 and above. In many cases, the name of the bond itself conveys the key features of a bond. For example, a GS CG2018 11% bond refers to a Central Government bond maturing in the year 2018, and paying a coupon of 11%. Since Central Government bonds have a face value of Rs.100, and normally pay coupon semi-annually, this bond will pay Rs. 5.50 as six- monthly coupon, until maturity, when the bond will be redeemed. The term to maturity of a bond can be calculated on any date, as the distance between such a date and the date of maturity. It is also called the term or the tenor of the bond. There is no

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rigid classification of bonds on the basis of their term to maturity. Generally bonds with tenors of 1-5 years are called short-term bonds, bonds with tenors ranging from 4 to 10 years are medium term bonds and 10 years and above are long term bonds. In India, the Central Government has issued up to 30 year bonds.

FBIL-Overnight Mibor

FBIL Overnight Mumbai Interbank Outright Rate' (commonly called as **FBIL-Overnight MIBOR** (Mumbai Inter-Bank Offer Rate) is the new benchmark rate for unsecured loans of one day duration fixed by the Board of Financial Benchmarks India Pvt. Ltd (FBIL) based on the actual transactions in the inter-bank call money market. It reflects the short term funding costs to banks in India and indicates the rate at which banks in India borrow and lend money amongst themselves. MIBOR based on 'polled rates' administered by Fixed Income Money Market and Derivative Association of India (FIMMDA) and National Stock Exchange (NSE) has been replaced by this new Benchmark with effect from July 22, 2015.

FBIL overnight MIBOR is a financial benchmark and is mainly used for pricing, settlement, and valuation of financial contracts. The International Organisation of Securities Commissions (IOSCO's) Report on Principles for Financial Benchmarks describes financial benchmarks as:

"Prices, estimates, rates, indices or values that are:

- *Made available to users, whether free of charge or for payment;*
- *Calculated periodically, entirely or partially by the application of a formula or another method of calculation to, or an assessment of the value of one or more underlying Interests;*
- *Used for reference for purposes that includes one or more of the following:*
- *Determining the interest payable, or other sums due, under loan agreements or under other financial contracts or instruments;*
- *Determining the price at which a financial instrument may be bought or sold or traded or redeemed, or the value of a financial instrument; and/or*
- *Measuring the performance of a financial instrument."*

Financial Benchmarks India Private Limited (FBIL)

Financial benchmarks are indices, values or reference rates used for the purpose of pricing, settlement and valuation of financial contracts. Globally huge volumes of financial transactions are referenced to or valued using various such benchmarks. Financial benchmarks play a very critical role in promoting efficient and transparent financial markets and ensuring financial stability.

The manipulation and complicity involved in the method of computation of LIBOR and EURIBOR benchmarks in the recent period led to imposition of huge penalties on banks by regulators. It drew global attention to various aspects of the benchmark calculation and administration. The sovereign authorities, central banks and many international bodies are concerned about the governance process of the financial benchmarks and have commissioned working groups and committees to comprehensively look into the existing benchmarks setting process in their respective jurisdictions and suggest policies and procedures for bringing about robust improvement in the benchmark governance framework.

Reserve Bank of India set up a Committee on Financial Benchmarks in June 2013 to review the existing systems governing major financial benchmarks in India. The Committee headed by Shri Vijaya Bhaskar, the then Executive Director, Reserve Bank of India made wide-ranging recommendations to reform the benchmark administration in India. These were accepted by the Reserve Bank of India in early 2014, who identified FIMMDA and FEDAI as the benchmark administrators for the Indian rupee interest rates and Forex benchmarks respectively. It was suggested that these associations may jointly or independently form a separate entity to administer the benchmarks. This is the first major step for formation of Financial Benchmark India Pvt. Ltd (FBIL) as an independent benchmark administrator for interest rates and foreign exchange.

FBIL, jointly owned by FIMMDA, FEDAI and IBA, was formed in December 2014 as a private limited company under the Companies Act 2013. Its aim is to develop and administer benchmarks relating to money market, government securities and foreign exchange in India. It is responsible for all the aspects relating to the benchmarks to be issued by it, namely, collection and submission of market data and information including polled data, formulation, adoption and periodic review of benchmark calculation methodologies, calculation, publication and administration of benchmarks conforming to the highest standards of integrity, transparency and precision.

Overnight MIBOR

FBIL announces the benchmark rate for Overnight Mumbai Interbank Outright Rate (MIBOR) on a daily basis, except Saturdays, Sundays and local holidays. The benchmark rate is calculated based on the actual call money transactions data obtained from the NDS-call platform of Clearing Corporation of India Ltd (CCIL). The CCIL acts as the Calculating Agent. The rate is announced at 10.45 AM every day. However, if the time is extended due to non-fulfillment of threshold criteria, the dissemination time may get suitably extended.

Market Repo Overnight Rate (FBIL – MROR)

FBIL announces the benchmark for Market Repo Overnight Rates (FBIL- MROR) on a daily basis, except Saturdays, Sundays and local holidays. The benchmark rate is calculated based on the Basket Repo trades executed on the Basket Repo segment on the CROMS Platform of Clearing Corporation of India (CCIL) in the first hour of trading between 9.00 AM to 10 AM.

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The CCIL acts as the Calculating Agent. The rate is announced by 10.45 AM every day. However, if the time is extended due to non-fulfillment of threshold criteria, the dissemination time may get suitably extended.

FBIL has developed the FBIL-MROR, as a new benchmark for near risk free rate for the money market. The publication of MROR commences from 12th December, 2017.

Term MIBOR

FBIL announces the benchmark rates for Term MIBOR for three tenors of 14-day, 1-month and 3-month on a daily basis except Saturdays, Sundays and public holidays. The benchmark rates are determined through a polling-based submission by the participating banks and Primary Dealers [PDs] out of the FBIL's list of identified submitters. The CCIL acts as the Calculating Agent. The rates are announced at 11.45 AM every day. However, if the rate submission time is extended due to non-fulfillment of threshold criteria, the dissemination time may get suitably extended.

Forward Premia Curve

FBIL announces the benchmark rates for US Dollar - Indian Rupee Forward Premia for Overnight and from 1 month to 12 months tenor on a daily basis except Saturdays, Sundays and public holidays. The benchmark rates are determined based on the USD/INR transactions data reported upto 3 PM on the CCIL platform. For calculation of Overnight rate, the Cash-Tom transactions upto 12 noon are used. The Rolling Forward Premia in rupees and percentage term are calculated from the month-end forward transactions and the rolling forward transactions.

MIFOR Curve

The MIFOR (Mumbai Interbank Forward Outright Rate) for Overnight, 1 month, 2 months, 3 months, 6 months and 12 months tenor is calculated using the rolling forward premia in percentage term and the USD LIBOR for the relevant tenor. MIFOR is published upto two decimal points. The CCIL is the calculating agent. The USD/INR rolling forward rates are published by 4.15 PM, and the MIFOR is published by 5 PM subject to availability of LIBOR.

Treasury Bills

FBIL announces the benchmark rates for Treasury Bills (FBIL-TBILL) on a daily basis except Saturdays, Sundays and public holidays at 5.30 PM. FBIL has developed the FBIL-TBILL, a new benchmark for the money market based on Treasury bills traded in the market. FBIL-TBILL is announced for seven tenors of 14 days, 1 month, 2 months, 3 months, 6 months, 9 months and 12 months. FBIL-TBILL is calculated on the basis of secondary market trades executed and reported up to 5 PM on the NDS-OM Platform. All trades having a value of Rs.5 crores and above and a minimum of three trades in each tenor are considered for calculating the benchmark for each tenor. If there are less than 3 trades in a particular tenor, the data is

augmented by including the executable orders on the NDS –OM Platform. The CCIL is the Calculating Agent.

Certificates of Deposit

FBIL announces the benchmark rates for Certificates of Deposit (FBIL-CD) on a daily basis except Saturdays, Sundays and public holidays at 5.30 PM. FBIL has developed the FBIL-CD, a new benchmark for the money market based on traded CDs reported on the FTRAC platform of CCIL up to 5 PM. FBIL-CD is announced for seven tenors of 14 days, 1 month, 2 months, 3 months, 6 months, 9 months and 12 months. All trades having a value of Rs.5 crores and above and a minimum of three trades in each tenor are considered for calculating the benchmark for each tenor. In the event of the threshold criteria not being met for any tenor, the benchmark rate thereof is calculated using the FBIL- TBILL rates for that tenor plus a spread. The CCIL is the Calculating Agent.

MIBOR - OIS

FBIL announces the benchmark rates for MIBOR-OIS for tenors from 6 months to 5 years on a daily basis except Saturday, Sunday and public holidays. The benchmark rates for 6 months, 9 months, 1 year, 2 years, 3 years, 4 years and 5 years tenors are calculated based on the MIBOR-OIS transactions data reported to the CCIL upto 5 PM. The rate for each tenor is calculated as the volume weighted average rate of the surviving trades after removing the outliers. The rates are published upto two decimal points. The CCIL is the calculating agent. The rates are published by 5.45 PM.

FC-Rupee Options Volatility Matrix

FBIL announces the benchmark matrix of FC-Rupee Options Volatilities for five tenors of 1-week, 1-month, 3-month, 6-month and 12-month on a daily basis except Saturdays, Sundays and public holidays. The matrix is determined on the basis of data obtained through a poll among participating banks out of FBIL's list of identified submitters. The CCIL acts as the Calculating Agent. The matrix is announced at 6 PM every day. However, if the rate submission time is extended due to non-fulfillment of threshold criteria, the dissemination time may get suitably extended.

(Source: FBIL)

Corporate Bonds

These are bonds issued by a corporation. Corporate bonds often pay higher rates than government or municipal bonds, because they tend to be riskier.

The bond holder receives interest payments (yield) and the principal, usually Rs.1,000, on a fixed maturity date (bonds can mature anywhere between 1 to 30 years). Generally, changes in interest rates are reflected in bond prices. Bonds are considered to be less risky than stocks, since the company has to pay off all its debts (including bonds) before it handles

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its obligations to stockholders. Corporate bonds have a wide range of ratings and yields because the financial health of the issuers can vary widely.

A high-quality Blue Chip company might have bonds carrying an investment-grade rating such as AA (with a low yield but a lower risk of default), while a startup company might have bonds carrying a "junk bond" rating (with a high yield but a higher risk of default). Corporate bonds are traded on major exchanges and are taxable (Corporate bond fund for less than 3 years, short term capital gains tax based on tax slab. On the other hand, Section 112 of the Indian Income Tax mandates 20% long-term capital gains tax for larger investment horizon).

Zero Coupon Bonds

In such a bond, no coupons are paid. The bond is instead issued at a discount to its face value, at which it will be redeemed. There are no intermittent payments of interest. When such a bond is issued for a very long tenor, the issue price is at a steep discount to the redemption value. Such a zero coupon bond is also called a *deep discount bond*. The effective interest earned by the buyer is the difference between the face value and the discounted price at which the bond is bought.

Perpetual Bonds

A **perpetual bond** is a debt with no maturity date. Such a bond is also referred to as a "consol."

A company may issue a perpetual bond which offers a coupon payment forever, at least theoretically. The issuer does not have to redeem perpetual bonds, but is responsible for coupon payments.

Perpetual bonds are used as a source of subordinated debt. Since they are not to be repaid, they are considered a source of Tier 1 capital (i.e., equity capital and disclosed reserves) for banks. Perpetual bonds help the banks to fulfill their capital reserve requirements. Even though they are technically a form of debt, they qualify as "equity" on the bank's balance sheet.

Although there is usually no set maturity date for them, perpetual bonds may be structured to allow them to be callable after a set period of time, usually between 5 and 10 years. This is especially important if the interest rates fall sharply and the issuer needs to reduce the interest cost.

Historically, *perpetual bonds* have paid a higher than normal yield on comparable debt quality. As a result, in a competitive market, they are an attractive source of capital.

NCDs

Debentures are long-term financial instruments which acknowledge a debt obligation towards the issuer. Some debentures can be convertible into shares after a certain point of time at the

discretion of the owner. The debentures which can't be converted into shares or equities are called non-convertible debentures (or NCDs).

Non-convertible debentures are used as tools to raise long-term funds by companies through a public issue. To compensate for this drawback of non-convertibility, lenders are usually given a higher rate of return on them than on the convertible debentures.

Besides, NCDs offer various other benefits to the owner, such as high liquidity through stock market listing, tax exemptions at source and safety, since they can be issued by companies with a good credit rating, as specified in the norms laid down by RBI for the issue of NCDs. In India, usually these have to be issued for a minimum maturity of 90 days.

STRIPS

A STRIP is the acronym for "Separate Trading of Registered Interest and Principal Securities". Stripping is the process of separating a standard coupon-bearing bond into its individual coupon and principal components.

For example, a 5 year coupon bearing bond can be stripped into 10 coupons and one principal instrument, all of which thenceforth would become zero coupon bonds.

In an *official STRIPS market* for the Government securities, these stripped securities i.e., the newly created zero coupon bonds remain the *direct obligation of the Government* and are *registered* in the books of the agent meant for this purpose. Thus the mechanics of stripping neither impacts the direct cost of borrowing nor changes the timing or quantum of the underlying cash flows. Stripping only facilitates transferring the right to ownership of individual cash flows.

When STRIPS made a beginning in the early seventies in the US, the initial motivation came in the form of tax benefits. The process of stripping facilitated the holders of a US Treasury Bond to separate the component pieces, and then to sell the principal component which by then became a zero coupon bond and then claim capital loss on the transaction. Furthermore, while the holders of the coupon STRIPS continued to enjoy the income stream, tax was paid not on the accrued income but only when these coupon STRIPS matured or were sold. Such market behaviour, apart from resulting in significant revenue losses, also led to deferment of tax. The anomaly was ultimately rectified through the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982, which required the holders of zero coupon bonds to accrue a portion of the discount towards par each year.

Advantages

STRIPS facilitate the availability of zero coupon bonds (ZCBs) to investors and traders. They provide the most basic cash flow structure, thus offering the advantage of accurate matching of liabilities without reinvestment risk and a precise management of cash flows. Thus to some investors who set the incoming inflows against an actuarial book (e.g., available with

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Insurance companies), STRIPS offer excellent investment choices. Apart from the advantages they offer to low risk investors like pension funds and insurance companies, STRIPS offer much greater leverage to hedge funds, since the zero coupon bonds are more volatile than the underlying coupon bearing bonds. Due to the divergent interests of different segments of investors in the market, demand for each component of the STRIPS could be so great that the sum of the values of the constituent parts exceeded the value of the whole bond. Last but not the least, STRIPS offer an excellent scope to construct a zero yield curve for the sovereign bond market.

Need and Scope

The government securities market in India is dominated by captive investors like banks, insurance companies and provident funds, of which the banking system continues to be the predominant holder of and investor in Government securities. While earlier it used to be mainly the statutory requirements which compelled the banking system to invest a major portion of their liabilities in Government securities, in the recent past, their investment decisions have been guided by the capital adequacy, income recognition and provisioning norms. With a significant portion of banks' assets in dated government securities and most of the liabilities up to 3 years,, there is a growing concern about the asset liability mismatches and their impact on the banks' balance sheets.

On the other hand, an efficient and long-term debt management strategy needs to ensure that the debt profile does not have an over-concentration at the short-end and would try to even out the redemption pattern, thereby minimizing the refinancing risk. STRIPS, through the creation of securities of varied maturities from a single coupon bearing instrument, offer investment opportunities for diverse investor groups having different investment horizons.

In the past, RBI introduced several non-conventional government securities, such as zero coupon bonds, floating rate bonds, index linked bonds etc., of which the zero coupon bonds were quite popular in the markets. However, being discounted bonds, the cash inflows were smaller for a specific issue size that goes by the face or nominal value, the lesser the amount the greater the term to maturity of the bond. The existing budget accounting does not have a system of providing for amortized payments. STRIPS, essentially zero coupon securities, created by the markets and not by the issuer circumvents these problems while offering all the benefits of investing in a zero coupon security.

Apart from providing an instrument to handle the ALM / Interest Rate Mismatches of banks on account of their large portfolios of Government securities, other reasons that favour a STRIPS market for Government securities in India are the scope offered by the insurance sector and the private pension funds and individual pension provisions. Their investment strategies are guided by their primary objective of matching their assets to an actuarial book. Besides, STRIPS add to the menu of investment avenues presently available to the market.

Venture Capital

Venture Capital (also known as VC or Venture) is a type of private equity capital typically provided for early-stage, high potential, growth companies in the interest of generating a return through an eventual realization event such as an IPO or the trade sale of a company. Venture capital investments are generally made as cash in exchange for shares in the invested company. It is typical for venture capital investors to identify and back companies in high technology industries, such as Biotechnology and ICT (Information and Communication Technology).

Venture capital typically comes from institutional investors and high net worth individuals and is pooled together by dedicated investment firms.

Venture capital firms typically comprise small teams with technology backgrounds (Scientists, Researchers) or those with business training or deep industry experience.

A Core skill within VC is the ability to identify novel technologies that have the potential to generate high commercial returns at an early state. By definition, VCs also have a role in managing entrepreneurial companies at an early state, thus adding skills as well as capital (thereby differentiating VC from buyout private equity which typically invest in companies with proven revenue), and thereby potentially realizing much higher rates of returns. Inherent in realizing abnormally high rates of returns is the risk of losing all of one's investment in a given startup company. As a consequence, most venture capital investments are made in a pool format where several investors combine their investments into one large fund that invest in many different startup companies, which spreads out their risk to many different investments versus taking the chance of putting all of their money in one startup firm.

A venture capitalist (also known as VC) is a person or investment firm that makes venture investments, and these capitalists are expected to bring managerial and technical expertise as well as capital to their investments. A Venture capital fund refers to a pooled investment vehicle (often a Limited Partnership or Limited Liability Company) that primarily invests the financial capital of third-party investors in enterprises that are too risky for the standard capital markets or bank loans.

Venture Capital is also associated with job creation, the knowledge economy and as a proxy measure of innovation within an economic sector or geography.

Venture capital is most attractive for new companies with limited operating history that are too small to raise capital in the public markets and have not reached the point where they are able to secure a bank loan or complete a debt offering. In exchange for the high risk that venture capitalists assume by investing in smaller and less mature companies, they usually get significant control over company decisions, in addition to a significant portion of the company's ownership (and consequently value).

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Young companies wishing to raise venture capital require a combination of extremely rare yet sought after qualities, such as innovative technology, potential for rapid growth, a well developed business mode, and an impressive management team. VCs typically reject 98% of opportunities presented to them, reflecting the rarity of this combination.

Private Equity

Private equity or PE is the provision of medium to long-term financing to a company in exchange for an equity stake, usually in an unlisted and so hard-to-trade company. In the typical PE of older days, targets were young, high-growth companies but this has changed, as more innovative financing mechanisms are used together with PE.

The motivation for private equity is that the public equity market sometimes finds it difficult to assess the growth prospects of new companies. This is a classic *agency problem* most investors need to do significant due diligence on these situations, but it is too expensive for everyone to do this separately. As there is no trusted source for this information, no investor buys the stock, or those that do put a significant discount on it for the information they do not have. A single experienced owner of a large stake can afford to do the necessary due diligence and pay more for the stock than a multitude of smaller players.

Venture capital developed originally to fund high growth, high risk opportunities in unlisted companies. Typical situations in the early days of private equity were:

- New technology companies;
- Firms with new marketing concepts;
- Spin offs or startups designed to exploit a new product or potentially high growth spin- offs of physical assets, brands or ideas from existing corporates.

Methodology

PE investors typically take a significant, although not necessarily controlling equity stake. They, typically, prefer situations with:

- Good existing staff. As the industry phrase goes, '*bet the jockey, not the horse*'.
- Products or processes which have passed through at least the early prototype stage and are adequately protected by patents or copyrights.
- The potential of an exit within a few years via either an initial public offering or a trade sale.
- The opportunity for the venture capitalist to make a value added contribution to the management and / or funding of the company.

Private equity terminology

Some financial institutions use the term *principal investment* for their PE activities, as a bank's capital is committed (sometimes alongside its clients). One motivation here is to lock in

investment banking fees once the private company is taken from public or sold. Principal investment activities were very profitable in the high-tech boom of the late 1990s, but this form of proprietary risk-taking is going out of favour as the new Basel III regulatory capital rules considerably increase the capital required for them. The stages of PE are typically called *seed*, *early stage*, *development* and *buyout*. A seed stage business is often just an idea. Many PE players are reluctant to invest at this stage; funding, instead, comes, typically, from the management team, bank loan finance, and private individuals. An early-stage business is a company that has been in business for a short period of time, but may not have a product ready for market and probably will not have a sales history.

Some PE players will get involved at this stage, but most prefer to wait until the business has proved its concept and needs further funding for development or marketing, that is, the development phase. Finally, buyout-stage firms are situations where an existing firm, often a struggling one, has taken private equity. Sometimes this happens because the management team or others believe that a restructuring is best achieved away from the scrutiny of the public market, sometimes because this is the easiest way of obtaining funding for corporate development or restructuring and sometimes because a dominant owner believes that the public market does not properly value the firm.

In Europe, the term *venture capital* is used to cover all stages of PE investment. In the United States, in contrast, 'venture capital' refers only to investments in seed, early and development stages.

Angel Funds

Definition of Angel Funds: An angel investor invests in a new business, offering capital for startup or expansion. They're drawn to startups for a higher rate of return than they might get in the stock, bond or real estate market.

Pros

- Angels are a good fit for many startups.
- An angel could be one's neighbor. Accessibility isn't a big issue with angel investors, most cities and large towns have angel groups or associations.
- Due diligence is usually fast, and investment also usually comes in the form of a lump sum.

Cons

- Angel investors expect a high rate of return – often 25 percent or more.
- Angel investors tend to be somewhat risk-averse, and will rarely make "follow-up" investments.
- Depending on "angel," one might find oneself wrestling with one's financier over key company decisions.

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After all, now that he or she is an investor, angel can feel entitled to some control over company's future.

Investment in ARCs

Asset reconstruction companies (ARCs), which are in the business of buying bad loans from banks, are facing funding challenges as the proportion of such loans on the books of banks has reached record levels this financial year, even as resources available to them to buy these loans is limited.

These companies expect that the Reserve Bank of India (RBI) will make it easier for them to raise capital when it releases final guidelines on asset reconstruction companies that relax restrictions on the equity that a single entity can hold in them and allow banks to loan money to them against future receivables.

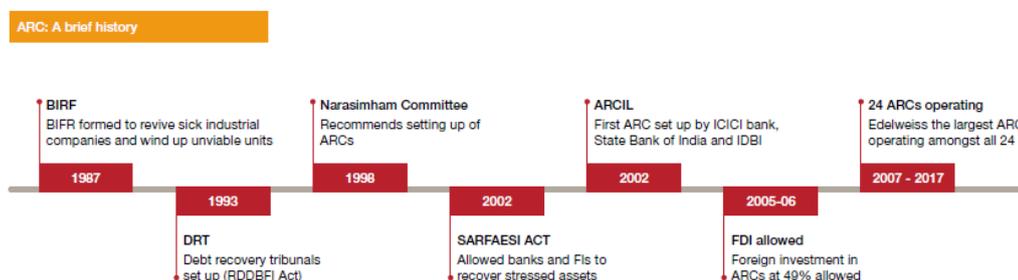
Capital is now a big challenge for asset reconstruction companies in the context of large scale sale of bad loans.

Security receipts (SRs) are issued to banks pending recovery from a bad account. These SRs are then encashed after the loan is recovered.

Evolution of ARCs

The late 1990s and early 2000s marked the emergence of a new problem in the Indian banking industry, that of low recoveries from NPAs. In 1998, the 2nd Narasimham Committee Report highlighted that the huge backlog of NPAs was continuing to exert pressure on the banking sector and had severely impacted profitability.

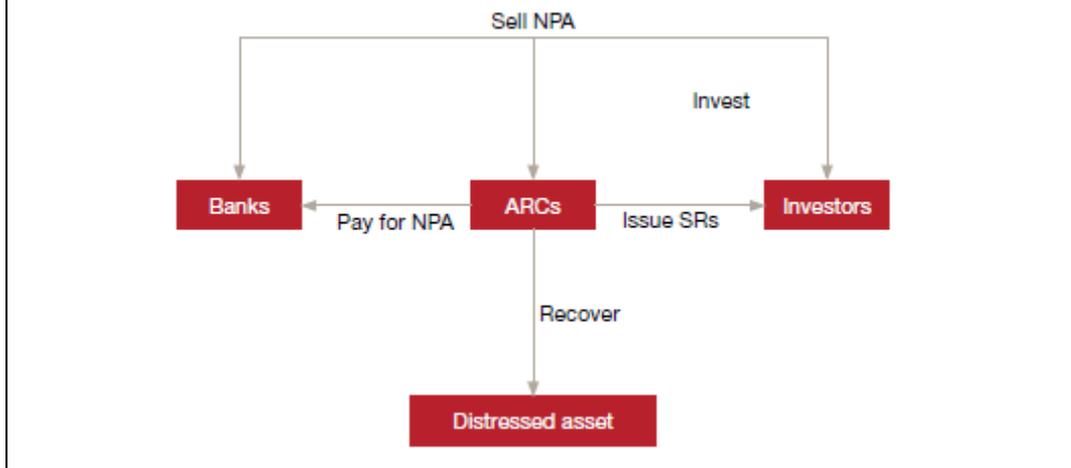
The report also recommended the creation of an asset recovery fund which would acquire and recover stressed assets and enable banks to focus on their core business. Pursuant to this and the enactment of the SARFAESI Act, many ARCs were formed in India, with ARCIL being the first. These ARCS were set up as private entities, mostly with the support of banks and as on November 2017, there were 24 operating ARCs. The evolution of the ARC landscape in India is summarised in the figure below.



Under the SARFAESI Act, a bank puts up stressed assets for auction after applying a haircut but with a reserve price and sells them to the highest bidding ARC. ARCs acquire these

assets by paying in cash or by issuing security receipts or 'hope notes' whose redemption is contingent on the recoveries made. Since security receipts (SRs) are backed by impaired assets, without predictable cash flows, they have the characteristics of both debt and equity. An ARC considers a number of different routes to maximise realisation from the assets, including liquidation / settlement / restructuring or rehabilitation and turnaround to ensure payment from the improved operating cash flows of the company. Proceeds, if any, are distributed according to the shareholding of the SRs.

As an intermediary recovering dues on behalf of SR holders, ARCs charge a management fee. The distribution of recovery proceeds follows a so called waterfall structure, with legal and resolution expenses being met first, followed by the deduction of management fees from proceeds before the balance recoveries are distributed among SR holders.



Understanding Current Yields

A simple yield calculation that is often used to calculate the yield on both bonds and dividends for stocks is the current yield. The current yield calculates the percentage return that the annual coupon payment provides to investors. In other words, this yield calculates what percentage the actual Rupee coupon payment is of the price the investor pays for the bond. The multiplication by 100 in the formulas below converts the decimal into a percentage, allowing us to see the percentage return:

$$\text{Current Yield} = \frac{\text{Annual Interest Paid}}{\text{Market Price}} * 100$$

So, if one purchased a bond with a par value of Rs100 for Rs95.92 and it paid a coupon rate of 5%, this is how its current yield would be calculated:

$$= \frac{(0.05 * 100)}{95.92} * 100 = 5.21\%$$

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Notice how this calculation does not include any capital gains or losses the investor would make if the bond were bought at a discount or premium. Because the comparison of the bond price to its par value is a factor that affects the actual current yield, the above formula would give a slightly inaccurate answer - unless of course the investor pays par value for the bond. To correct this, investors can modify the current yield formula by adding the result of the current yield to the gain or loss the price gives the investor: $[(\text{Par Value} - \text{Bond Price})/\text{Years to Maturity}]$. The **modified current yield** formula then takes into account the discount or premium at which the investor bought the bond. This is the full calculation:

$$\text{Adjusted Current Yield} = \left[\frac{\text{Annual Coupon}}{\text{Market Price}} \right] * 100 + \left[\frac{(100 - \text{Market Price})}{\text{Years of Maturity}} \right]$$

The yield of the bond in our example, which matures in 30 months and has a coupon payment of Rs 5 can be recalculated thus:

$$= \frac{5}{95.92} * 100 + \frac{(100 - 95.92)}{2.5} = 6.84\%$$

The adjusted current yield of 6.84% is higher than the current yield of 5.21% because the bond's discounted price (Rs 95.92 instead of Rs 100) gives the investor more gain on the investment.

YTM, Changes in Yields

The term *Yield- to- Maturity* is also called Redemption Yield, often abbreviated as YTM, and used when it comes to bond funds, and is defined as the rate of return obtained by buying a bond at the current market price and holding it to maturity. Yield- to- Maturity is the index for measuring the attractiveness of bonds. When the price of the bond is low, the yield is high and vice versa. YTM is beneficial to a bond buyer because a rising yield would decrease the bond price. Hence the same amount of interest is paid but for less money. Where the coupon payment refers to the total interest per year on a bond, Yield- to- maturity can be mathematically derived and calculated from the formula:

$$\text{Yield to Maturity (Approx.)} = \frac{\text{Annual Interest} + \frac{\text{Par Value} - \text{Market Price}}{\text{Number of Years to Maturity}}}{\frac{\text{Par Value} + \text{Market Price}}{2}}$$

YTM is therefore a good measurement gauge for the expected investment return of a bond. When it comes to online calculation, this Yield- to- Maturity calculator can help to determine the expected investment return of a bond according to the respective input values. YTM deals only with the time-value-of-money calculations between price, coupons and face value of the bond at hand, and not with other potential future investments. If the coupons and face value are paid as promised, the bond earns its yield-to-maturity.

Different Maturities of Treasury Bonds

A Government security is a tradable instrument issued by the Central Government or the State Governments. It acknowledges the Government's debt obligation. Such securities are short term (usually called treasury bills, with original maturities of less than one year), or long term (usually called Government bonds or dated securities with original maturity of one year or more). In India, the Central Government issues both, treasury bills and bonds or dated securities while the State Governments issue only bonds or dated securities, which are called the State Development Loans (SDLs). Government securities carry practically no risk of default and, hence, are called risk-free gilt-edged instruments. Government of India also issues savings instruments (Savings Bonds, National Saving Certificates (NSCs), etc.) or special securities (oil bonds, Food Corporation of India bonds, fertiliser bonds, power bonds, etc.). They are, usually not fully tradable and are, therefore, not eligible to be SLR securities.

Fixed Rate Bonds – These are bonds on which the coupon rate is fixed for the entire life of the bond. Most Government bonds are issued as fixed rate bonds.

For example – 8.24%GS2018 was issued on April 22, 2008 for a tenor of 10 years maturing on April 22, 2018. Coupon on this security will be paid half-yearly at 4.12% (half yearly payment being the half of the annual coupon of 8.24%) of the face value on October 22 and April 22 of each year.

Floating Rate Bonds – Floating Rate Bonds are securities which do not have a fixed coupon rate. The coupon is re-set at pre-announced intervals (say, every six months or one year) by adding a spread over a base rate. In the case of most floating rate bonds issued by the Government of India so far, the base rate is the weighted average cut-off yield of the last three 364 days Treasury Bill auctions preceding the coupon re-set date and the spread is decided through the auction. Floating Rate Bonds were first issued in September 1995 in India.

For example, a Floating Rate Bond was issued on July 2, 2002 for a tenor of 15 years, thus maturing on July 2, 2017. The base rate on the bond for the coupon payments was fixed at 6.50% being the weighted average rate of implicit yield on 364-day Treasury Bills during the preceding six auctions. In the bond auction, a cut-off spread (markup over the benchmark rate) of 34 basis points (0.34%) was decided. Hence the coupon for the first six months was fixed at 6.84%.

Valuation of securities

Illustration for valuation of State Government Bonds

Security – 7.32% A.P.SDL 2014

Issue date – December 10, 2004

Maturity date – December 10, 2014

Coupon – 7.32%

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Date of valuation – March 31, 2008

Procedure

Valuation of the above bond involves the following steps

1. Find the residual maturity of the bond to be valued.
2. Find the Central Government security yield for the above residual maturity.
3. Add appropriate spread to the above yield to get the yield for the security

Calculate the price of the security using the derived yield above.

Step i.

Since valuation is being done on March 31, 2008, we need to find out the number of years from this date to the maturity date of the security, December 10, 2014 to get the residual maturity of the security. This could be done manually by counting the number of years and months and days. However, an easier method is to use MS. Excel function, 'Yearfrac', wherein we specify the two dates and basis. This gives us the residual maturity of 6.69 years for the security.

Step ii.

To find the Central Government yield for 6.69 years, we derive it by interpolating the yields between 6 years and 7 years, which are given out by FIMMDA. As on March 31, 2008, FIMMDA yields for 6 and 7 years are 7.73% and 7.77% respectively. The yield for the 6.69 years is derived by using the following formula.

$$0.0773 + \left\{ (6.69-6) \times \frac{(0.0777-0.0773)}{(7-6)} \right\} = 0.077577 = 7.7577\%$$

Here we are finding the yield difference for 0.69 year and adding the same to the yield for 6 years to get the yield for 6.69 years. Also, notice that the yield has to be used in decimal form (e.g., 7.73% is equal to 7.73/100 which is 0.0773)

Step iii.

Having found the Central Government yield for the particular residual maturity, we have to now load the appropriate spread to get the yield of the security to be valued. Since the security is State Government security, the applicable spread is 25 basis points (0.25%). Hence the yield would be 7.76%+0.25% = 8.01%.

Step iv.

The price of the security will be calculated using the MS Excel function 'Price'. Here, we specify the valuation date as March 31, 2008, maturity date as December 10, 2014, rate as 7.32% which is the coupon, yield as 8.01%, redemption as 100 which is the face value,

frequency of coupon payment as 2 and basis as '4'. The price we get in the formula is Rs.96.47 which is the value of the security.

If the bank is holding Rs.10 crore of this security in its portfolio, the total value would be $10 \times (96.47/100) = 9.647$ crore.

In the case of corporate bonds, the procedure of valuation is similar to the illustration given above. The only difference is the spread that need to be added to the corresponding yield on central government security will be higher (instead of the fixed 25 bps for State Government securities), as published by the FIMMDA from time to time. FIMMDA gives out the information on corporate bonds spreads for various rated bonds. While valuing a bond, the appropriate spread has to be added to the corresponding CG yield and the bond has to be valued using the standard 'Price' formula.

For example, assuming that a 'AAA' rated corporate bond is having same the maturity as the State Government bond mentioned above, the applicable yield for valuation will be 7.73%+ 2.09% (being the spread given by FIMMDA) which is 9.82%. With the same parameters mentioned above, the value of the bond works out to Rs.87.92.

Revaluation

With the introduction of prudential norms on capital adequacy, income recognition, asset classification and provisioning requirements, transparency of quality of Assets has improved during the last few years.

Simultaneously, trading in securities market has improved in terms of turnover and the range of maturities dealt with. In view of these developments and taking into consideration the evolving international practices, Reserve Bank of India (RBI) has issued guidelines on classification, valuation and operation of investment portfolio by banks from time to time as detailed below.

Mark to Market and Profit Calculations

Mark-to-market (MTM) is a method of valuing positions and determining profit and loss which is used by Interactive Brokers for Trader Workstation system (TWS) and statement reporting purposes. Under MTM, positions are valued in the Market Value section of the TWS Account Window based on the price which they would currently realize in the open market. Positions are also valued using the MTM method for statement purposes, and it is one of the methods by which profit or loss is computed. Other methods available include First In, First out (FIFO), Last In, First out (LIFO), and Maximum loss.

MTM P&L shows how much profit or loss was made over the statement period, regardless of whether positions are open or closed and with no requirement that closing transactions be matched to an opening transaction. The MTM methodology rather assumes that all open

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positions and transactions are settled at the end of each day and new positions are opened the following day. For purposes of simplification, MTM calculations are split into two:

- (1) Calculations for transactions which took place during the statement period, referred to as Transaction MTM on the statement; and
- (2) Calculations for positions which were open prior to the start of the period, referred to as Prior Period MTM on the statement.

VaR (Value at Risk)

VaR measures the possible adverse change in the market value of a financial instrument, based on what is regarded as the largest likely adverse move in rates or prices over a given time frame. It also includes the correlation between different financial instruments to measure the volatility of a financial portfolio of instruments.

Macaulay Duration is the weighted average term to maturity of the cash flows from a bond.

The weight of each cash flow is determined by dividing the present value of the cash flow by price, and it is a measure of bond price volatility with respect to interest rates.

Macaulay duration can be calculated by:

$$\text{Macaulay Duration} = \frac{\sum_{t=1}^n \frac{t * C}{(1 + y)^t} + \frac{n * M}{(1 + y)^n}}{\text{Current Bond Price}}$$

Where:

t = respective time period

C = periodic coupon payment

y = periodic yield

n = total number of periods

M = maturity value

The metric is named after its creator, Frederick Macaulay. Macaulay duration is frequently used by portfolio managers as an immunization strategy. It is also used to measure how sensitive a bond or a bond portfolio's price is to changes in interest rates.

Negative list of investments

Investments may be categorized based on the performance of Yield Rate, Liquidity, and Trading Turnover etc. Among these parameters, the Key Factor in Investments Portfolio is Return on Investment (ROI).

ROI stands for Return on Investment and is one of the most versatile measures in the field of finance. ROI essentially shows if one is getting sufficient profit on the amount of capital committed to a project or a corporation. It makes cross-project and cross-corporation comparisons easy and meaningful, allowing the investor to determine where to place his / her surplus funds.

The Treasury has to maintain the list of Negative Investments and circulate the same to dealers for alertness, so that losses in bad investments can be arrested. Every Treasury Department, from time to time, circulates the Negative List of Investments among all the Staff Members of the Front, Back and Mid-office of the Treasury Department.

Guidelines on Non-performing investments

In respect of securities included in any of the three categories where interest / principal is in arrears, banks should not reckon income on the securities and should make appropriate provisions for depreciation in the value of the investment. Banks should not set-off the depreciation requirement in respect of these non-performing securities against appreciation in respect of other performing securities.

An NPI, similar to a non performing advance (NPA), is one where:

- (i) Interest / installment (including maturity proceeds) are due and remain unpaid for more than 90 days.
- (ii) The above would apply mutatis-mutandis to preference shares where the fixed dividend is not paid. If the dividend on preference shares (cumulative or non-cumulative) is not declared / paid in any year it would be treated as due/unpaid in arrears and the date of balance sheet of the issuer for that particular year would be reckoned as due date for the purpose of asset classification.
- (iii) In the case of equity shares, if the investment in the shares of any company is valued at Re.1 on account of the non-availability of the latest balance sheet in accordance with the instructions contained in paragraph 28 of the Annex to the circular DBOD.BP.BC.32/ 21.04.048/ 2000-01 dated October 16, 2000, those equity shares would also be reckoned as NPI.
- (iv) If any credit facility availed by the issuer is NPA in the books of the bank, investment in any of the securities, including preference shares issued by the same issuer would also be treated as NPI and vice versa. However, if only the preference shares are classified as NPI, the investment in any of the other performing securities issued by the same issuer may not be classified as NPI and any performing credit facilities granted to that borrower need not be treated as NPA.
- (v) Investments in debentures / bonds, which are deemed to be in the nature of advance will also be subjected to NPI norms as applicable to investments.

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- (vi) In cases of conversion of principal and / or interest into equity, debentures, bonds, etc., such instruments should be treated as NPA abinitio in the same asset classification category as the loan if the loan's classification is substandard or doubtful on implementation of the restructuring package and provision should be made as per the norms.

Commodity Market

EVOLUTION OF COMMODITY MARKETS IN INDIA

The history of commodity market can be traced back to the 17th century when cotton producers, buyers, and traders used it for hedging against price fluctuations, non-delivery of physical cotton and low production. The contract specifications were set by the two parties involved and were settled post-expiry. However, this system failed due to counter party risk. Disputes became common as it didn't involve a party to settle the contract. This led to the establishment of commodity exchange, which guaranteed settlement of derivative contracts. The Chicago Board of Trade (or CBOT) started in 1848. It became the first organized trading exchange in the world.

In India, organized trading in commodities started with the constitution of the Bombay Cotton Trade Association in the year 1875. The commodities futures market discontinued in the mid-1960's due to war, natural calamities, and the resultant shortages.

The economic liberalization in the early nineties laid the foundation of the Indian commodity trading. By 2002, there were 20 commodity exchanges in India, trading in 42 commodities. In 2002, the Indian Government re-introduced commodity futures. Commodity futures contracts and the exchanges they trade are governed by the Forward Contracts Regulation Act, 1952. The Forward Markets Commission (FMC) approved multi-commodity exchanges. The FMC merged with Securities Exchange Board of India (or SEBI) in 2015. The commodity exchanges set up by the FMC include:

National Commodity & Derivative Exchange (or NCDEX)

This exchange was promoted by National Stock Exchange (NSE), National Bank for Agriculture and Rural Development (NABARD), ICICI Bank, and Life Insurance Corporation of India (LIC). NCDEX is popular for trading in agricultural commodities.

National Multi Commodity Exchange of India (or NMCE)

NMCE was promoted by Kailash Gupta, an Ahmedabad based trader, and the Central Warehousing Corporation (CWC). NMCE is popular for trading in spices and plantation crops.

Multi Commodity Exchange (or MCX)

This exchange was originally promoted by Financial Technologies Limited. MCX is a professionally managed public company. It is well known for trading in metals and energy

contracts. MCX is the largest commodity futures exchange in India, with 70% market share. The market share of NCDEX is 25%, while NMCE has the remaining market share. MCX will introduce options trading in commodities from 2017. This will increase the turnover of MCX.

Commodity market refers to markets that trade in primary rather than manufactured products. Soft commodities are agricultural products such as wheat, coffee, cocoa and sugar. Hard commodities are mined, such as (gold, rubber and oil). Commodity markets can include physical trading and derivatives trading using spot prices, forwards, futures, and options on futures. Futures contracts are the oldest way of investing in commodities. Futures are secured by physical assets. The advent of economic liberalization helped in emphasizing the importance of commodity trading. By the beginning of 2002, there were about 20 commodity exchanges in India, trading in 42 commodities, some being traded internationally.

Commodities futures contracts and the exchanges they trade in are governed by the Forward Contracts (Regulation) Act, 1952. The regulator is the Forward Markets Commission (FMC), a division of the Ministry of Consumer Affairs, Food and Public Distribution.

In 2002, the Government of India allowed the re-introduction of commodity futures in India. Together with this, three screens based, nation-wide multi-commodity exchanges were also permitted to be set up with the approval of the Forward Markets Commission.

On 28th September, 2015 the FMC was merged with Securities and Exchange Board of India (SEBI).

Structure of the Commodity Market

India, a commodity-based economy where two-thirds of the one billion population depends on agricultural commodities, surprisingly has an underdeveloped commodity market. Unlike the physical market, futures markets trades in commodity are largely used as risk management (hedging) mechanism on either physical commodity itself or open positions in commodity stock. In fact, it was one of the most vibrant markets till early 70s. Its development and growth was shunted due to several earlier restrictions.

Now that most of these restrictions have been removed, there is tremendous potential for the growth of this market in the country.

Indian Commodity Exchange Limited (ICEX) is SEBI regulated online Commodity Derivative Exchange. Headquartered at Mumbai, the exchange provide nationwide trading platform through its appointed brokers.

Some of Prominent shareholders are MMTC Ltd, Indian Potash Ltd, KRIBHCO, IDFC Bank Ltd, Reliance Exchangenext Ltd and Indiabulls Housing Finance Ltd.

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The exchange launched world's first ever Diamond derivative contracts. ICEX aims to provide futures trading products in India's all economically relevant commodity. At present it offers futures contract in Diamond. Providing desired price risk hedging solution to the trade through innovative contract designing forms core value of ICEX.

This exchange is ideally positioned to leverage the huge potential of commodities market and encourage participation of actual users to benefit from the opportunities of hedging, risk management and supply chain management in the commodities markets.

ICEX is the first exchange in India to adopt global hi-tech platform that ensures automatic and seamless switch-over from its Data Center (DC) to the Disaster Recovery (DR) site with zero data loss in case of exigencies. The technology platform has highly optimized processing techniques, which enables the system to handle very large orders with latencies under 300 microseconds.

Leading Commodity Exchanges in India

Indian Commodity Exchange Limited is a screen-based on-line derivatives exchange for commodities and has established a reliable, time-tested, and a transparent trading platform. It is also in the process of putting in place robust assaying and warehousing facilities in order to facilitate deliveries.

- (a) **National Commodity & Derivatives Exchange Ltd.:** This exchange was originally promoted by the ICICI Bank, National Stock Exchange (NSE), National Bank for Agriculture and Rural Development (NABARD) and Life Insurance Corporation of India (LIC). Subsequently, other institutional shareholders have been added on. NCDEX is known for trading in agricultural commodities.
- (b) **Multi Commodity Exchange of India Ltd.:** This exchange was originally promoted by the Financial Technologies Limited, a software company in the capital markets. Subsequently, many other institutional shareholders have been added on. MCX is known for trading in metals and energy contracts.
- (c) **National Multi Commodity Exchange of India Limited:** This exchange was originally promoted by Kailash Gupta, an Ahmadabad-based trader and the Central Warehousing Corporation (CWC). Subsequently, other institutional shareholders have been added on. NMCE is known for trading in spices and plantation crops, especially, from Kerala.

In terms of market share, MCX is today the largest commodity futures exchange in India, with a market share of close to 90%. NCDEX follows with a market share of around 9%, leaving the balance 1% for NMCE.

Commodity Futures Trading in India

Major reforms have been initiated in commodity futures markets in India during the last few years. It has been observed that though derivatives trading commenced in the securities

market only in June 2000, it grew at a great speed while the commodity derivatives markets which had been operational for about 48 years by then was only gradually waking up. However, subsequent years have witnessed major changes in the commodity spectrum despite several institutional constraints in which commodity derivatives markets still function. Commodity futures trading in India was in a state of hibernation for four decades, which was marked by suspicion on the benefits of futures trading. This has been replaced by a firm policy and institutional and market activism in the last few years.

This is partly a response to the predominant role being assigned to the market forces in price determination and the consequent need for providing market-based de-risking tools. It is also the result of a growing awareness that derivatives' trading does perform substantial risk mitigating functions. This resurgence of interest in commodity derivatives is timely, since global commodity cycle is on the upswing, and experts have predicted that we are in the decade of the commodities. Concomitant to the newfound policy initiatives, the market has responded by setting up modern institutions (Nation-wide Multi-Commodity Exchanges, (NMCE) and adapting some of the "best" practices such as electronic trading and clearing. The projections of commodity derivatives trading, though widely variant in the range of Rs. 30-50 trillion, needs to be calibrated with sound assumptions, because of the enormous potential of this sector not only for trading but also for opportunities it provides for developing value-added services in terms of quality warehousing, gradation and certification services, financial intermediation, modern marketing practices, modern clearing and settlement mechanism. Once the market becomes liquid, the old complaint, that the Indian commodity derivatives markets do not meet the basic objectives of price discovery and risk management may also vanish. The most important changes that have taken place in the commodity futures space were the removal of prohibition on futures trading in a large number of commodities and the facilitation of setting up modern, demutualised exchanges by the Government of India. These two initiatives together are instrumental in changing the contours of the commodity futures markets in India in terms of both participation and practices. There are, however, still a number of obstacles in fully exploiting the opportunities available to the commodity ecosystem.

Now that the commodity derivatives markets have not only been liberalized but have also entered the convergence mode, it is time to start thinking big. The limitations still haunting the commodity markets have to be removed to facilitate seamless integration of physical and futures markets as well as between the markets for physicals and financials. The ultimate objective of all these initiatives should be to reap the economies of scale and scope not only for its own sake but also for facing the challenges thrown up by a "borderless" global market. The market participants and the regulator(s) have to brace themselves to face the challenges thrown up by the global developments of ever growing exchanges and integration of markets.

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Earlier Initiatives of Government of India

The Government of India has undertaken various activities and assistance programmes to promote our commodities market. During the year 2015-16, the Forward Markets commission conducted 872 awareness programs, out of which 535 programmes were for the benefit of the farmers and 337 programs for other stakeholders. There were 100 capacity programmes conducted with the aim to build capacities of the important take holders in the eco-system of commodity future markets and to sensitize the policy makers about the utility of the futures markets. Out of the total, 183 programs were conducted for the general states and 17 were for the NER (North Eastern **Region**) states. FMC in association with Commodity Exchange initiated a process of dissemination of futures and spot prices of an agricultural commodity by installing Price Ticker board at various locations. This may have helped get a group like farmers in the improving and post-harvest decision making process and hedging their price risks in the market. The officers of the Commission participated in various international conferences and were also deputed for training/symposium organized by international organizations/training institutes. Further, the commission with the National exchange has facilitated the participation of hedgers in various exchange programs, exhibitions, and expos.

Linkage of Domestic with Foreign Operations

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 linkage or integration is to improve portfolio, risk insulation and synergize banking assets.

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

Linkage of different operations of 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 banks to optimize their 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 the selling to customers) and consequent cover operations interbank market (forex buying from and selling to customers). The domestic treasury / investment operations were independent of forex dealings of a bank. The treasury operations were treated as a cost centre, specifically devoted to reserve management (CRR and SLR) and also fund management. The treasury also undertook investment in government and non-government securities.

The need for **LINKAGE** 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.

To Sum up

Every bank has a treasury department. Particularly in the last five years, Treasury Department has been at the heart of all major financial institutions.

One of the main functions of a treasury department is to control and manage the bank's money (in terms of capital and liquidity) and to make sure that all parts of the bank can readily access the cash they need for their business activities. By doing so, it makes sure that the bank remains financially secure, stable and able to function effectively to help its clients.

A treasury department is also responsible for liaising with the bodies that regulate banks, which set rules regarding banks' capital and liquidity.

In order to ensure that banks are better able to withstand any future market stresses, their capital and liquidity requirements have become an area of increasing focus. Banks' treasury departments work closely on these issues and have a critical role to play. The treasury function of a bank is now an even more challenging and interesting place.

Working in Treasury gives you the opportunity to interact with all the different parts of the bank. It's important for people across the bank to understand the implications of their trading activity on the bank's capital, the cost of the funding they use, and how our capital and liquidity are regulated and controlled.

The integrated treasury function in banks and financial institutions has grown manifold and become very complex when it comes to organizing and managing it. Further, because of increasing business competition and expectations from the shareholders, banks and financial institutions are under pressure to improve their bottom-line performance. In this context, treasury managers have to play a significant role in improving the overall financial performance of their organizations through efficient management of treasury operations.

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

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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 to trade, market volatility etc. A small difference is considered to be a very fine price as the dealer is keeping very little by way of his profits. As example: A dealer quoting 12.50% 2018 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: The process of issuing a security through a price-discovery mechanism through asking for bids. This is the process followed by the RBI for all types of issues of debt market paper by it.

Balance Tenor: The unexpired 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 makes credit cheaper

Basis Point: 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 great importance for the debt market.

Benchmark Rate: Benchmark rates are rates or the prices of instruments that are traded in the market, which 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 yields (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 an 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 who 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 buyback 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 owned the bond (See Accrued Interest). The price arrived at after adjusting the Clean Price for this factor is called the Dirty Price.

Collateralised Bond: Any fixed income instrument which has collateral as a backup to the issue is called a Collateralised 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. These instruments are offered at a discount to the face value and the rate of interest depends on the quantum raised, the tenure

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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 which 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, in terms of 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 organisation 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 is 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 abbreviation for Cash Reserve Ratio. The 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 15th June, 2018 and traded for value 5th October, 2018.

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 as 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 end date is the 31st of a month and the starting date is earlier than the 30th of a month, the end date becomes equal to the 1st of the next month; otherwise the end date becomes equal to the 30th of the same month.

30/360: European method: Starting dates and end 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.

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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 has 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 j th payment in the cash-flow stream, with sum of all j 's equalling 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 an 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 mark- up 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: 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: 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. This method was made effective on the 5th June 2000 and is open for Banks and Primary Dealers. This method has replaced the traditional method of refinance based on fixed rates.

LIBOR: 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 Tele Rate page 3170.

Macaulay Duration: See Duration.

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 which the asset can realise 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: Stands for Mumbai Inter Bank Offered Rate. It is closely modelled 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 of the concept of Duration. Modified Duration can be defined as the approximate percentage change in price for a 1% change in yield.

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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 in whole into equity on its maturity.

Notice Money: Money borrowed or lent in the interbank market for a period beyond one day and upto 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.

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 Rs.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 them 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: It is an abbreviation for Statutory Liquidity Ratio. That part of their Net Demand and Time liabilities (NDTL) that a bank is required by law to keep 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 generalised 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 an 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-month 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: A STRIP 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 an acronym for Committee on Uniform Security Identification Procedures. Just as a fully constituted security has a unique CUSIP number, each STRIPS component has a unique CUSIP number. All interest STRIPS that are payable

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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 unmatured 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 favour 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 viz., the Capital Markets Segment, Future & Option Segment and 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.

Winner's 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 winner's 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 happens as people demand higher compensation for parking 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 picks- 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 2008 at a yield of 10.00 per cent and moved into 11.83 % GOI 2018 at a yield of 11.25 per cent, the yield pick-up 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. Upto one year, the Treasury Bills issued are proxies for ZCB. 9Also 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).

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Check Your Progress

1. Briefly mention how Funds Department works out CRR and SLR in Commercial Banks.
2. What are permanent category securities and how are they valued for the purpose of balance sheet in Commercial Banks?
3. What are the merits and demerits of Profit Center Approach versus Service Centre Approach? Which Model of Treasury Management will suit your organization?
4. Who are the key players in the investment market in India? How is the sovereign issuer different from other issuers?
5. What is the difference between short term and long term investments? Illustrate with any two instruments recently issued in the market.
6. What is the impact of globalization on Indian investment markets?
7. What are the factors that influence interest rates? Does budgetary deficit have any impact on interest rates?
8. What services are included in treasury services?
9. Briefly explain the changes in global scenario and treasury functions.
10. Briefly explain the present and future Indian scenario and treasury functions.

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

1. From an organizational point of view, Treasury is considered to be:
 - (a) Investment Centre
 - (b) Fund Management Department
 - (c) Service Centre*
 - (d) None of the above
2. The scope of treasury has expanded considerably due to:
 - (a) Economic reforms, economic development, declining disintermediation
 - (b) Deregulation of markets, economic reforms competition*
 - (c) Competition, increasing intermediation, economic conditions
 - (d) All of the above
3. Which of the following was not a function of treasury in the earlier days?
 - (a) Maintenance of adequate cash balance
 - (b) Deploying surplus funds

- (c) Maintaining CRR and SLR
 - (d) Selling hedging products to customers*
4. Treasury essentially deals with short- term funds flow; which of the following are exceptions?
- (a) Part of SLR requirement is held till maturity exceeding one year
 - (b) Investment in some securities is held till maturity exceeding one year
 - (c) Both a and b*
 - (d) None of the above
5. Integrated treasury refers to integration of which of the following is not correct?
- (a) Money Market
 - (b) Securities Market
 - (c) Foreign Exchange Operations
 - (d) Credit Appraisal*
6. Today's treasury is a,
- (a) Service centre
 - (b) Accounting centre
 - (c) Profit centre*
 - (d) None of the above
7. A Treasury transaction with customers is known as
- (a) Merchant transactions*
 - (b) Trading business
 - (c) Investment business
 - (d) None of the above
8. Which of the following have contributed to deepening the debt market and eliminating counterparty risks in treasury dealings?
- (a) Mutual funds
 - (b) Domestic Investment Institutions
 - (c) Foreign Investment Institutions
 - (d) All of the above*

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9. Which of the Payment and settlement system working in India is comparable to any Global system?
- (a) Clearing Corporation of India Limited
 - (b) National Securities Depository Corporation Limited
 - (c) A and B both*
 - (d) None of the above
10. Which of the following financial transactions of the treasury has been facilitated by the Payment and Settlement System?
- (a) Foreign Exchange, Money Market, Commodity Market
 - (b) Money Market, Forex Market, Securities*
 - (c) Securities Market, Commodity Market
 - (d) All the above
11. 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
12. 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 with a range, for changes in the benchmark rate
13. 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 August 1, 2005
 - (c) NDS-OM is faster, transparent and cheaper and provides benefits like audit trail
 - (d) All of the above*
14. Which of the following is false about the devolvement of treasury issues on the primary dealer?
- (a) Devolvement on PDs is on pro-rata basis, depending on the underwriting obligation of each PD.

Treasury — Domestic

- (b) Underwriting fee is payable on the net amount, after accounting for the devolvement on PDs.*
 - (c) Devolvement on pro-rata basis is done after setting off successful bids in the auction.
 - (d) PDs can set-off the accepted bids in auction against the devolvement on them.
15. What is the day count convention in the Treasury bill markets?
- (a) 30 / 360
 - (b) Actual / Actual
 - (c) Actual / 360
 - (d) Actual / 365*
16. Which of the following about state government borrowings is true?
- (a) State Government bonds are issued by the respective Finance Departments 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.
17. 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
18. 'The Non-bank entities are allowed to participate in the call market' is the statement true or false?
- (a) True
 - (b) False*
19. What are the features of NDS System?
- (a) Electronic Dealing Platform
 - (b) Direct one to one negotiation

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- (c) Online Exposure Monitoring
 - (d) All of the above*
20. 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.
21. 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
22. Which of the following is the largest investor in CPs?
- (a) Mutual Funds
 - (b) Corporate Treasuries
 - (c) Financial Institutions
 - (d) Scheduled Banks*
23. Which of the following institution(s) issue CPs?
- (a) Banks
 - (b) Finance Companies
 - (c) Primary Dealers
 - (d) All of the above*
24. If the RBI announces that it has done Repos of Rs.3000 Crores, what does this imply?
- (a) RBI has lent securities worth Rs.3,000 Crore through the Repo Markets to the participants
 - (b) RBI has reversed the Repo deals of participants who entered into a Repo with RBI
 - (c) RBI has inducted funds amounting to Rs.3,000 Crores into the market*

Treasury — Domestic

- (d) RBI has borrowed securities from the Banking System, and lent them onward in the Repo Markets
25. The duration of a coupon paying bond is always lower than its term to maturity because:
- (a) Since duration is the measure of average maturity, it has to be lower than the tenor
 - (b) Duration measures the weighted maturity, and therefore cannot be compared to tenor of a bond.
 - (c) As long as some cash flows are received prior to maturity, the weightage of the terminal cash flow cannot be 1*
 - (d) None of the above
26. Forward foreign exchange rates cannot be -----
- (a) Positive
 - (b) Negative*
 - (c) Zero
 - (d) Higher than spot rate
27. Which of the following is not a discounted Money Market Instrument
- (a) Commercial Paper
 - (b) Certificate of Deposits
 - (c) Treasury Bills
 - (d) Treasury Notes*
28. The Commercial Paper issued with low interest rate thus the Commercial Papers are categorized as
- (a) Payables Rating
 - (b) Commercial Rating
 - (c) Poor Credit Rating
 - (d) Better Credit Rating*
29. Which of the following money market securities is backed by specified collaterals?
- (a) Negotiable CDs
 - (b) Banker's acceptances
 - (c) Repurchase Agreements*
 - (d) Commercial Paper

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30. The rate of return on a bond held to maturity is known as its:

- (a) Interest Yield
- (b) Running Yield
- (c) Duration
- (d) Redemption Yield*

Foreign Exchange Markets

The foreign exchange market in India started in earnest less than four decades ago when in 1978 the government allowed banks to trade in foreign exchange with one another. Today over 70% of the trading in foreign exchange continues to take place in the inter-bank market. The market consists of over 90 Authorized Dealers (mostly banks) who transact currency among themselves and come out “square” or without exposure at the end of the trading day. Trading is regulated by the Foreign Exchange Dealers Association of India (FEDAI), a self-regulatory association of dealers. Since 2001, clearing and settlement functions in the foreign exchange market are largely carried out by the Clearing Corporation of India Limited (CCIL) that handles transactions of more than 3.5 billion US dollars a day, about 80% of the total transactions. The liberalization process has significantly boosted the foreign exchange market in the country by allowing both banks and corporations greater flexibility in holding and trading foreign currencies. The Sodhani Committee set up in 1994 recommended greater freedom to participating banks, allowing them to fix their own trading limits, interest rates on FCNR deposits and the use of derivative products. The growth of the foreign exchange market in the last few years has been nothing less than phenomenal.

Different Kinds of Inter-Bank Forex Markets

The **interbank market** is the top-level foreign exchange market where banks exchange different currencies. The banks can either deal with one another directly, or through electronic brokering platforms. The Electronic Broking Services (EBS) and Thomson Reuters Dealing are the two competitors in the electronic brokering platform business and together connect over 1000 Banks. The currencies of most developed countries have floating exchange rates. These currencies do not have fixed values but, rather, values that fluctuate relative to other currencies.

The interbank market is an important segment of the foreign exchange market. It is a wholesale market through which most currency transactions are channeled. It is mainly used for trading among bankers. The interbank market are:

- the spot market
- the forward market

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The interbank market is unregulated and decentralized. There is no specific location or exchange where these currency transactions take place. However, foreign currency options are regulated in a number of countries and trade on a number of different derivatives exchanges. Central Banks in many countries publish closing spot prices on a daily basis.

Highly Traded Markets – Cash / OTC

Cash Market: Cash market is a market for sale of security against immediate delivery, as opposed to the futures market.

Forward Markets: Forward markets are over-the-counter marketplace that sets the price of a financial instrument or asset for future delivery. Contracts entered into in the forward market are binding on the parties involved. Forward markets are used for trading a range of instruments including currencies and interest rates, as well as assets such as commodities and securities. While forward contracts, like futures contracts, may be used for both hedging and speculation, there are some notable differences between the two. Forward contracts can be customized to fit a customer's requirements, while futures contracts have standardized features in terms of their contract size and maturity.

The lack of standard features means that forward contracts seldom trade on exchanges, whereas futures contracts are generally exchange-listed. Since forward contracts generally tend to be large in size, the forward market is dominated by financial institutions, government bodies and large corporations.

Futures and Options Market: Futures is a financial contract obligating the buyer to purchase an asset (or the seller to sell an asset), such as a physical commodity or a financial instrument, at a predetermined future date and price. Futures contracts detail the quality and quantity of the underlying asset, they are standardized to facilitate trading on a futures exchange. Some futures contracts may call for physical delivery of the asset, while others are settled in cash. The futures markets are characterized by the ability to use very high leverage relative to stock markets. Futures can be used either to hedge or to speculate on the price movement of the underlying asset.

Exchange Traded and Over-the-counter Market: An exchange-traded fund is an investment fund that is traded on a stock exchange, just like stocks. An ETF holds assets such as stocks, commodities or bonds and trades in value, around its (NAV) over the course of the trading day. Most ETFs track an index such as a stock index or a bond index. ETFs are attractive investments because of their low costs, diversified holdings, tax efficiency and stock-like features. ETFs are the most popular type of exchange-traded products in the USA and Europe.

Exchange Traded Funds are simple and easy to understand. Most ETFs also have an intrinsically lower risk due to their diversified portfolio. This diversification coupled with low expenses allows the smallest of the investors to reap the benefits of market based returns.

Retail investors can use ETF's as an easy entry vehicle into the capital markets. Equity investments are most likely to give you attractive long term growth. And, this growth is reflected in market indices, like the NSE Nifty. Seven asset management companies have launched ETFs on CNX Nifty Index which are listed on NSE. Indian stock exchanges have been witnessing high trading volumes in Gold ETFs in the recent past.

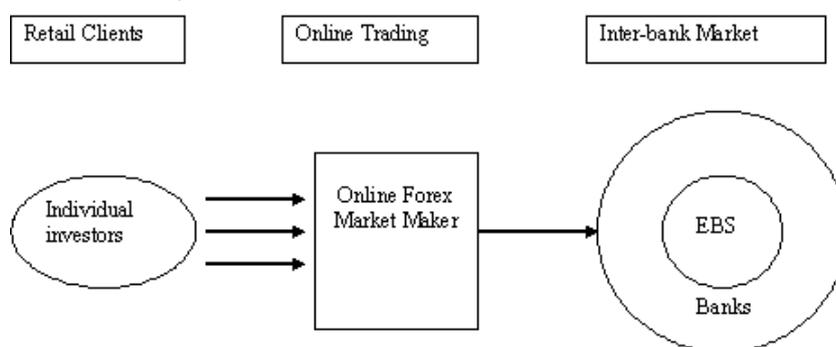
Over the counter market: The OTC markets are informal markets where trades are negotiated. Most of the trades in government securities take place in the OTC market. All the spot trades where securities are traded for immediate delivery and payment occur in the OTC market. The other option is to trade using the infrastructure provided by the stock exchanges. The exchanges in India follow a systematic settlement period. Since OTC markets are informal markets and most of the trades take place over the phone, it is difficult to track volumes.

Nature of Transactions

The Foreign Exchange Market is an over-the-counter (OTC) market, which means that there is no central exchange and clearing house where orders are matched. With different levels of access, currencies are traded in different market makers:

The Inter-bank Market - Large commercial banks trade with each other through the Electronic Brokerage System (EBS). Banks will make their quotes available in this market only to those banks with which they trade. This market is not directly accessible to retail traders.

The Online Market Maker - Retail traders can access the FX market through online market makers that trade primarily out of the US and the UK. These market makers typically have a relationship with several banks on EBS, the larger the trading volume of the market maker, the more relationships it likely has.



Market Hours

Forex is a market that trades actively as long as there are banks open in one of the major financial centers of the world. This is effectively from the beginning of Monday morning in Tokyo until the afternoon of Friday in New York. In terms of GMT, the trading week occurs from Sunday night until Friday night or roughly 5 days, 24 hours per day.

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Price Reporting Trading Volume

Unlike many other markets, there is no consolidated tape in Forex, and trading prices and volume are not reported. It is, indeed, possible for trades to occur simultaneously at different prices between different parties in the market. Good pricing through a market maker depends on that market maker being closely tied to the larger market. Pricing is usually relatively close between market makers, however, and the main difference between Forex and other markets is that there is no data on the volume that has been traded in any given time frame or at any given price. Open interest and even volume on currency futures can be used as a proxy, but they are by no means perfect.

Cash

The marketplace for immediate settlement of transactions involving commodities and securities is called cash market. In a cash market, the exchange of goods and money between the seller and the buyer takes place in the present, as opposed to the futures market where such an exchange takes place on a specified future date.

Also known as the spot market, since such transactions are settled "on the spot."

Cash market transactions can take place either on a regulated exchange or over-the-counter (OTC). In contrast, transactions involving futures are conducted exclusively on exchanges, while forward transactions, such as currency forwards, are generally executed on the OTC market.

For a specific commodity, the price in the cash market is usually less than its price in the futures market. This is because there are carrying costs, such as storage and insurance, involved in holding a commodity until it can be delivered at some point in the future.

OTC

Over-The-Counter (or OTC) is a security traded in some context other than on a formal exchange such as the NYSE, TSX, AMEX, etc. The phrase "over-the-counter" can be used to refer to stocks that trade via a dealer network as against on a centralized exchange. It also refers to debt securities and other financial instruments such as derivatives, which are traded through a dealer network.

In general, the reason why a stock is traded over-the-counter is usually that because the company is small, it is unable to meet exchange listing requirements. Also known as "unlisted stock", these securities are traded by broker-dealers who negotiate directly with one another over computer networks and by phone.

Although NASDAQ operates as a dealer network, NASDAQ stocks are generally not classified as OTC because the NASDAQ is considered a stock exchange. As such, OTC stocks are generally unlisted stocks which trade on the Over the Counter Bulletin Board (OTCBB) or on the pink sheets. Be very wary of some OTC stocks, however. The OTCBB stocks are either penny stocks or are offered by companies with bad credit records.

Instruments such as bonds do not trade on a formal exchange and are, therefore, also considered OTC securities. Most debt instruments are traded by investment banks making markets for specific issues. If an investor wants to buy or sell a bond, he or she must call the bank that makes the market in that bond and asks for quotes.

Cross Border Currency Flows

A feature of the economy that is intricately related with the exchange rate regime followed is the freedom of cross-border capital flows. This relationship comes from the so-called “impossible trinity” or “trilemma” of international finance, which essentially states that a country may have any two but not all of the following three things i.e., a fixed exchange rate, free flow of capital across its borders and autonomy in its monetary policy. Since liberalization, India has been having close to a de facto peg to the dollar and simultaneously has been liberalizing its foreign currency flow regime. Close on the heels of the adoption of market determined exchange rate (within limits) in 1993, came current account convertibility in 1994. In 1997, the Tarapore committee on Capital Account Convertibility defined the concept as “the freedom to convert local financial assets into foreign financial assets and vice versa at market determined rates of exchange” and laid down fiscal consolidation, a mandated inflation target and strengthening of the financial system as its three main preconditions. Meanwhile capital flows have been gradually liberalized, allowing, on the inflow side, foreign direct and portfolio investments, and tapping foreign capital markets by Indian companies as well as considerably better remittance privileges for individuals and on the outflow side, international expansion of domestic companies. In 2000, the infamous Foreign Exchange Regulation Act (FERA) was replaced with the much milder Foreign Exchange Management Act (FEMA) that gave participants in the foreign exchange market a much greater leeway.

Liberalization of Exchange Control

The exchange control regulations have been liberalized over the years to facilitate the remittance of funds both into and out of India. The changes have been introduced on a continuous basis in line with the government policy of economic liberalization. Still, in a few cases, specific approvals are required from the regulatory authorities for foreign exchange transactions / remittances.

The exchange control regulations in India are governed by the Foreign Exchange Management Act (FEMA). The apex exchange control authority in India is the Reserve Bank of India (RBI) which regulates the law and is responsible for all key approvals.

FEMA is not only applicable to all parts of India but is also applicable to all branches, offices and agencies outside India which are owned or controlled by a person resident in India. FEMA regulates all aspects of foreign exchange and has direct implications on external trade and payments.

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FEMA is an important legislation which impacts foreign nationals who are working in India and also Indians who have gone outside India. It is important to be compliant with the exchange control regulations.

Role of Banks in Forex Market

Commercial banks do not create money, they are simply the intermediaries that move money from the capital markets to businesses and institutions. Banks get their money through business checking or deposit accounts, service fees and by issuing Certificates of Deposit (CD) and banker's acceptances, money market instruments that are collateralized by letters of credit (LOC) used in trade finance and commercial paper. Commercial banks offer services such as trade finance, project finance, payroll, foreign exchange transactions and trading, lock boxes for collecting payments and general corporate finance.

Significance

Without commercial banks, the international finance and import-export industry would not exist. Commercial banks make possible the reliable transfer of funds and translation of business practices between different countries and different customs all over the world. The global nature of commercial banking also makes possible the distribution of valuable economic and business information to customers and the capital markets of all countries. Commercial banking also serves as a worldwide barometer of economic health and business trends.

Trade Finance

Commercial banks doing international business are also called merchant banks because they finance trade between companies and customers located in different countries. This is done by issuing LOCs that indicate the customer has deposited the full amount due on an order with a company located in a different country. The seller company can then feel assured of being paid if it ships goods to its offshore customer. The LOC may also be used by the company to guarantee a manufacturer's loan, allowing it to finance the manufacture of the goods to be delivered. Without LOCs, companies would face considerable expense in investigating their foreign customers to make sure they are legitimate and creditworthy, and complying with laws and regulations of the different countries in which they do business.

Foreign Exchange

In order to facilitate international trade and development, commercial banks convert and trade foreign currencies. When a company is doing business in another country, it may be paid in the currency of that country. While some of these revenues will be used to pay workers in that country and for administrative expense such as office rent, utilities and supplies, the company may need to purchase goods from a neighboring country in that country's currency, or convert cash to its native currency for return to the home office.

Factors Impacting Forex Market

Like most commodities, demand and supply forces in the market influence currency prices. These forces, in turn, are influenced by many factors which increase demand at times and supply at others, causing the currency values to fluctuate.

There are several factors which influence forex prices in this way. Anything that affects the flow of money in a country or between countries may impact currency values. Here are some of the key factors that affect the value of a currency:

Economy

The state of a country's economy determines its currency value. A growing economy is generally the foundation for a stable currency that is valued highly in comparison with others. Any factors which impact the growth of the economy, either positively or negatively also affect currency prices. For example, during inflation, currency values typically fall. Inflation reduces the purchasing power of money so that less can be bought for each unit of money.

There are many economic indicators that need to be considered before making a forex trade decision. These indicators represent various aspects of the economy. As the general economic condition influences the currency value, these indicators are very useful in determining how the currency prices will fare given the current economic conditions.

- **GDP** – The Gross Domestic product of a country measures the industrial growth and production. This figure is a good indicator of how active the economy is. A steady GDP is the indication of a healthy, growing economy. Currency values are likely to rise when such circumstances prevail.
- **Purchasing Power Parity** – PPP measures the comparative power of a currency to purchase goods and services in a country. Consider two countries, A and B. 100 units of currency of A are equal to 1 unit of currency of B as per prevailing exchange rates in the market. PPP aims to measure the purchasing power of A's currency with respect to B's currency.

What can be bought for 100 units of local currency in country A should be available for 1 unit of local currency in country B. Then the countries are at par as far as purchasing power is concerned. If the countries are not evenly matched with respect to PPP and one currency has greater purchasing power than the other then it has a higher value in the forex market.

- **Interest Rate Parity** – The interest rates prevalent in both countries must also be comparable so that investments yield similar returns. The ability of a country's currency to multiply in this way ultimately determines its own value. This is why interest rate parity is also an important factor in determining currency prices.

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- **Employment Levels** – Employment levels determine the productivity of a nation. This is an indicator of future growth in the economy. A high level of employment means that most of the country's population is engaged in contributing to economic growth. A good employment rate is a sign of a healthy economy and forms the basis for more investments.

This, in turn, increases the currency value. A low employment rate shows that fewer people are contributing to the economy. Production of goods and services is being carried out by a smaller proportion of the population, although consumption is at the same level. Currency value will be subdued when employment levels are low.

- **Consumer Spending** – The amount of money which the people of a country are spending gives an idea of what they think about the economy. If spending is low and saving is high, then it shows that people fear an economic downturn. This indicates that the currency value may fall in future.

Increased consumer spending shows that people are confident of their future earnings and investment yields. Consumer spending is also an indicator of the purchasing power of the average citizen and the standard of living. A prosperous economy is one where consumer spending is at a sustainable level. Such an economy is likely to have a stable currency with a high value.

Government Policies

The government constantly assesses the economy and takes necessary action. Government policies are created and implemented to encourage prevailing economic conditions during a positive trend and to correct the imbalance if the economy is not doing well.

Most economic policies fall under two categories – fiscal policies and monetary policies. Fiscal policies are those which outline the spending of the government. The annual budget is a part of the fiscal policy. It determines the areas where the government will be spending money. Government spending boosts the prospects of industries and segments of the economy.

Monetary policies are those which influence the various components of the country's financial fabric to improve or sustain the economy. The central bank of a country implements the government's policies by using various investment strategies in the markets.

Given the huge amount of funds the central bank can control, any action by the bank has a huge impact on the market. An inflationary trend can be curbed, falling prices can be shored up and many other economic imbalances can be set right by central banks through their market activities.

Both monetary and fiscal policies affect currency prices, though the impact of monetary policies is almost immediate.

Natural Factors

A natural disaster like floods, famine or drought in a country will have a negative impact on its currency value. The flow of money within the country's boundaries is restricted severely under adverse circumstances like these.

The general public is more cautious in spending and there is likely to be a dramatic reduction in the overall amount of funds which are being used for investments. High risk investments like forex do not find many takers during these times. Government spending is also reduced because of huge expenditure on relief measures. Any excess funds are diverted toward rehabilitation programs because the government's focus is on getting the country back on its feet.

International Trade

Countries trade with each other to buy and sell products and services. As with any transaction, this too requires an exchange of money. In fact, the level of international trade is a good indicator of demand for a country's currency. When countries with different currencies trade, the trade deals influence the value of currencies of both the countries.

Such international trade is a permanent feature of any economy with goods and services being bought and sold from many different countries at any given point in time. When imports are higher than exports, the economy is said to have a trade deficit and when exports are higher than imports, there is a trade surplus. Governments publish the balance of trade figures showing this status every month.

A government has to pay for its purchases or imports and it receives money for its exports. In a trade deficit situation, it will be spending more of the domestic currency to buy foreign currency to fund the purchases. In this case, the domestic currency will fall in value in comparison with the foreign one. When exports exceed imports, there is a trade surplus which also translates into a higher domestic currency value. The status of this equation is given by the capital flow of a country.

Both capital flow and balance of trade are combined into the balance of payments statistics, which are released by the government. Three components make up the balance of payments of a country:

- Current account – Measures the goods bought and sold in international trade.
- Capital account – Measures the acquisition or disposal of assets that are non-financial in nature.
- Financial account – Measures the cross-border flow of money.

The balance of payments statistics play an important role in determining currency value of any country. This is one of the most important factors that a forex trader must consider when he makes investment decisions, especially long-term ones.

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Market Sentiment

Market sentiments play an important role in determining currency values. These directly influence demand and supply within the market. During times of global economic unrest, values will increase for stronger currencies which are linked to countries viewed as stable.

A country whose inflation levels are high will be viewed as a poor prospect for forex trading because future economic growth is likely to be hampered by high prices. Investors' perception of an economy and interpretation of various economic indicators determine the overall market sentiment for a currency.

Political Factors

Politics often determines the direction which an economy will take. Political unrest brings a lot of uncertainty about the future and subdues both economic growth and currency value. An upcoming election or war may give rise to a cautious investment approach, reducing the capital flow into a country.

A change in leadership also often subdues the price movement of a currency in the forex market. Until the new leadership's political views, monetary and fiscal policies and views on international trade become clear, the markets do not show a clear trend in the currency's value.

A country that is considered politically unstable will not be a favored trading partner. This will affect its forex trade and the value of its currency in the market. On the other hand, a progressive political leader and a stable leadership pave the way for increased investments as investor confidence becomes strong.

Convertibility and BOP

Convertibility

In a country's balance of payments, the capital account features transactions that lead to changes in the overseas financial assets and liabilities. These include investments abroad and inward capital flows. Capital account convertibility implies the freedom to convert domestic financial assets into overseas financial assets at market determined rates.

It can also imply conversion of overseas financial assets into domestic financial assets. Broadly, it would mean freedom for firms and residents to freely buy into overseas assets such as equity, bonds, property and acquire ownership of overseas firms besides, free repatriation of proceeds by foreign investors.

How does easing of capital controls benefit economies?

- Once a country eases capital controls, typically, there is a surge of capital flows. For, countries that face constraints on savings and capital can utilize such flows to finance their investment, which in turn stokes economic growth.

- The inflow of capital can help augment domestic resources and boost growth. Local residents would be in a position to diversify their portfolio of assets, which helps them insulate themselves, better from the consequences of any shocks in the domestic economy.
- For global investors, capital account convertibility helps them to seek higher returns by sharing risks. It also offers countries better access to global markets, besides resulting in the emergence of deeper and more liquid markets. Capital account convertibility is also supposed to bring with it greater discipline on the part of governments in terms of reducing excess borrowings and rendering fiscal discipline.

What are the pitfalls of easing of capital controls?

- One of the main problems an economy that has opted for a free-float has to contend with is the prospects of outflow of what is termed as speculative short-term flows. Denomination of a substantial part of local assets in foreign currencies poses the threat of outward flows and higher interest rates, which could destabilize economies.
- The volatility in exchange and interest rates in the wake of capital inflows can lead to unsound funding and large un-hedged foreign liabilities. This is especially so for those economies that go in for a free-float without following prudent macro-economic policies, and ensuring financial reforms.

How far has India moved towards capital account convertibility?

- Capital account convertibility is in practice in terms of freedom to take out proceeds relating to FDI, portfolio investment for overseas investors and NRIs, besides leeway for firms to invest abroad in JVs or acquisition of assets, and for residents and mutual funds to invest abroad in stocks and bonds with some restrictions. India seems to be taking the approach that easing of capital controls would be effected by removal of capital outflow restrictions on NRIs first, corporates next, followed by banks and freedom for residents in the last stage.

Balance of Payments

The Reserve Bank of India (RBI) has been compiling and publishing Balance of Payments (BoP) data for India since 1948.

India's current account deficit (CAD) worsened to USD 15.8 billion in Apr-Jun'18 (Q2 FY19), highest in nearly five years. In terms of the share to GDP, the current account deficit stood at 2.4% of GDP, rising from 1.9% of GDP in FY18. The rise in current account deficit will surely pose a concern as the economy struggles with the weakening rupee (hitting an all-time low of 72 against the USD) amidst global trade tensions.

The widening of CAD was led by an increase in not just oil imports (due to rising crude oil prices) but even the non-oil-non-gold imports amidst moderate growth in exports leading to a higher trade deficit of USD 45.7 billion in Q2 FY19, from USD 41.9 billion a year ago.

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The capital and financial account surplus just improved by USD 1.1 billion in the last one year to USD 16.6 billion in Q2 FY19, thus proving inadequate to fund the soaring CAD. The strengthening of USD against all the emerging market currencies since the beginning of 2018 resulted in the valuation loss of forex reserves. Further, the outflow of funds on account of monetary tightening by the Fed exacerbated the reduction of forex reserves. Consequently, India recorded a decline in the forex reserves by USD 18.8 billion in Q2 FY19 in contrast to the addition of USD 16.6 billion to the forex reserves pool in Q2 FY18.

The depreciating rupee is not likely to help the export pickup soon, while threats of cost-push inflation loom as the rupee continues to depreciate and the global crude oil prices remain elevated. The higher inflation would surely pose a headwind to the growth recovery India is going through, expanding at a two-year high pace of 8.2% year-on-year (YoY) in Q2 FY19.

The RBI in its annual report of 2017-18 stated that the CAD is expected to be largely financed by higher FDI inflows. However, as of now, the FDI in India stood at USD 13 billion in Q2 FY19, just USD 3 billion higher since Q2 FY18. In addition, the portfolio investments have also been disappointing with money being pulled out both from the debt and equity market resulting in a net outflow of USD 8.1 billion as against a net inflow of USD 12.5 billion in Q2 FY18.

The threat of rising CAD coupled with the risks of fiscal slippage (fiscal deficit at 86.5% of the budgeted estimate of FY19 in Apr-Jul'18) in the pre-election year might reinstate the twin-deficit situation, consequently, adding to the worsening of the macroeconomic situation. The only respite seems to be in terms of increasing growth led by consumption and investment demand, improvement in the manufacturing growth, and the comforting level of forex reserves (over USD 400 billion).

Quick actions need to be mooted over reducing CAD in order to preserve macroeconomic stability in the domestic economy and mitigate any further depreciation of the rupee.

The Balance of Payments (BoP) records all economic transactions between residents of a country and the rest of the world. The BoP account consists of Current account, Capital account, and Financial Account.

The current account includes flows of goods, services, primary income, and secondary income between residents and non-residents and thus constitutes an important segment of BoP. The primary income account reflects the amounts payable and receivable in return for providing temporary use of labour, financial resources, or non-produced non-financial assets (natural resources). The secondary income account shows redistribution of income between resident and non-residents, i.e. when resources for current purposes are provided without economic value being exchanged in return (transfers).

On the other hand, the capital account comprises credit and debit transactions under non-produced non-financial assets and capital transfers between residents and non-residents. Thus, acquisitions and disposals of non-produced non-financial assets, such as land sold to

embassies and sales of leases and licenses, as well as transfers which are capital in nature, are recorded under this account.

The financial account reflects net acquisition and disposal of financial assets and liabilities during a period. Further, it shows how the net lending to or borrowing from the rest of the world has occurred. Conversely, it shows how the current account surplus is used or the current account deficit is financed.

Forex Concepts

Forex is a commonly used abbreviation for "foreign exchange". It typically describes the buying and selling of currency in the foreign exchange market, especially by investors and speculators. The familiar expression, "buy low and sell high," certainly applies to currency trading. A forex trader purchases currencies that are undervalued and sells currencies that are overvalued, just as a stock trader purchases stock that is undervalued and sells stock that is overvalued.

Exchange Rate Quotes

One of the biggest sources of confusion for those new to the currency market is the standard for quoting currencies. In this section, we'll go over currency quotations and how they work in currency pair trades.

Reading a Quote

When a currency is quoted, it is done in relation to another currency so that the value of one is reflected through the value of another. Therefore, if you are trying to determine the exchange rate between the U.S. dollar (USD) and the Japanese yen (JPY), the forex quote would look like this:

USD/JPY = 119.50

This is referred to as a currency pair. The currency to the left of the slash is the base currency, while the currency on the right is called the quote or counter currency. The base currency (in this case, the U.S. dollar) is always equal to one unit (in this case, US\$1), and the quoted currency (in this case, the Japanese yen) is what that one base unit is equivalent to in the other currency. The quote means that US\$1 = 119.50 Japanese yen. In other words, US\$1 can buy 119.50 Japanese yen. The forex quote includes the currency abbreviations for the currencies in question.

Direct Currency Quote vs. Indirect Currency Quote

There are two ways to quote a currency pair, either directly or indirectly. A direct currency quote is simply a currency pair in which the domestic currency is the base currency, while an indirect quote, is a currency pair where the domestic currency is the quoted currency. So if

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you were looking at the Canadian dollar as the domestic currency and U.S. dollar as the foreign currency, a direct quote would be CAD/USD, while an indirect quote would be USD/CAD. The direct quote varies the foreign currency, and the quoted, or domestic currency, remains fixed at one unit. In the indirect quote, on the other hand, the domestic currency is variable and the foreign currency is fixed at one unit.

For example, if Canada is the domestic currency, a direct quote would be 0.85 CAD/USD, which means with C\$1, you can purchase US\$0.85. The indirect quote for this would be the inverse ($1/0.85$), which is 1.18 USD/CAD and means that USD\$1 will purchase C\$1.18.

In the forex spot market, most currencies are traded against the U.S. dollar, and the U.S. dollar is frequently the base currency in the currency pair. In these cases, it is called a direct quote. This would apply to the above USD/JPY currency pair, which indicates that US\$1 is equal to 119.50 Japanese yen.

However, not all currencies have the U.S. dollar as the base. The Queen's currencies - those currencies that historically have had a tie with Britain, such as the British pound, Australian Dollar and New Zealand dollar - are all quoted as the base currency against the U.S. dollar. The euro is quoted the same way as well. In these cases, the U.S. dollar is the counter currency, and the exchange rate is referred to as an indirect quote. This is why the EUR/USD quote is given as 1.25, for example, because it means that one euro is the equivalent of 1.25 U.S. dollars.

Most currency exchange rates are quoted out to four digits after the decimal place, with the exception of the Japanese yen (JPY), which is quoted out to two decimal places.

Cross Currency

When a currency quote is given without the U.S. dollar as one of its components, this is called a cross currency. The most common cross currency pairs are the EUR/GBP, EUR/CHF and EUR/JPY. These currency pairs expand the trading possibilities in the forex market, but it is important to note that they do not have as much of a following (for example, not as actively traded) as pairs that include the U.S. dollar, which also are called the majors.

Bid and Ask

As with most trading in the financial markets, when you are trading a currency pair there is a bid price (buy) and an ask price (sell). Again, these are in relation to the base currency. When buying a currency pair (going long), the ask price refers to the amount of quoted currency that has to be paid in order to buy one unit of the base currency, or how much the market will sell one unit of the base currency for in relation to the quoted currency.

The bid price is used when selling a currency pair (going short) and reflects how much of the quoted currency will be obtained when selling one unit of the base currency, or how much the market will pay for the quoted currency in relation to the base currency.

The quote before the slash is the bid price and the two digits after the slash represent the ask price (only the last two digits of the full price are typically quoted). Note that the bid price is always smaller than the ask price. Let's look at an example:

USD/CAD	=	1.2000/05
Bid	=	1.2000
Ask	=	1.2005

If you want to buy this currency pair, this means that you intend to buy the base currency and are therefore looking at the ask price to see how much (in Canadian dollars) the market will charge for U.S. dollars. According to the ask price, you can buy one U.S. dollar with 1.2005 Canadian dollars.

However, in order to sell this currency pair, or sell the base currency in exchange for the quoted currency, you would look at the bid price. It tells you that the market will buy US\$1 base currency (you will be selling the market the base currency) for a price equivalent to 1.2000 Canadian dollars, which is the quoted currency.

Whichever currency is quoted first (the base currency) is always the one in which the transaction is being conducted. You either buy or sell the base currency. Depending on what currency you want to use to buy or sell the base with, you refer to the corresponding currency pair sport exchange rate to determine the price.

Spreads and Pips

The difference between the bid price and the ask price is called a spread. If we were to look at the following quote: EUR/USD = 1.2500/03, the spread would be 0.0003 or 3 pips, also known as points. Although these movements may seem insignificant, even the smallest point change can result in thousands of dollars being made or lost due to leverage. Again, this is one of the reasons that speculators are so attracted to the forex market; even the tiniest price movement can result in huge profits.

The pip is the smallest amount a price can move in any currency quote. In the case of the U.S. dollar, euro, British pound or Swiss franc, one pip would be 0.0001. With the Japanese yen, one pip would be 0.01, because this currency is quoted to two decimal places. So, in a forex quote of USD/CHF, the pip would be 0.0001 Swiss francs. Most currencies trade within a range of 100 to 150 pips a day.

Currency Quote Overview		
USD/CAD = 1.2232/37		
Base Currency	Currency to the left (USD)	
Quote/Counter Currency	Currency to the right (CAD)	

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Bid Price	1.2232	Price for which the market maker will buy the base currency. Bid is always smaller than ask.
Ask Price	1.2237	Price for which the market maker will sell the base currency.
Pip	One point move, in USD/CAD it is .0001 and 1 point change would be from 1.2231 to 1.2232	The pip/point is the smallest movement a price can make.
Spread	Spread in this case is 5 pips/points; difference between bid and ask price (1.2237-1.2232).	

Currency Pairs in the Forwards and Futures Markets

One of the key technical differences between the forex markets is the way currencies are quoted. In the forwards or futures markets, foreign exchange is always quoted against the U.S. dollar. This means that pricing is done in terms of how many U.S. dollars are needed to buy one unit of the other currency. Remember that in the spot market some currencies are quoted against the U.S. dollar, while for others, the U.S. dollar is being quoted against them. As such, the forwards / futures market and the spot market quotes will not always be parallel to one another.

For example, in the spot market, the British pound is quoted against the U.S. dollar as GBP / USD. This is the same way it would be quoted in the forwards and futures markets. Thus, when the British pound strengthens against the U.S. dollar in the spot market, it will also rise in the forwards and futures markets.

On the other hand, when looking at the exchange rate for the U.S. dollar and the Japanese Yen, the former is quoted against the latter. In the spot market, the quote would be 115 for example, which means that one U.S. dollar would buy 115 Japanese yen. In the futures market, it would be quoted as (1/115) or .0087, which means that 1 Japanese yen would buy .0087 U.S. dollars. As such, a rise in the USD / JPY spot rate would equate to a decline in the JPY futures rate because the U.S. dollar would have strengthened against the Japanese yen and therefore one Japanese yen would buy less U.S. dollars.

Factors affecting Exchange Rates

Foreign Exchange rate (Forex rate) is one of the most important means through which a country's relative level of economic health is determined. A country's foreign exchange rate provides a window to its economic stability, which is why it is constantly watched and

analyzed. If you are thinking of sending or receiving money from overseas, you need to keep a keen eye on the currency exchange rates.

The exchange rate is defined as "the rate at which one country's currency may be converted into another". It may fluctuate daily with the changing market forces of supply and demand of currencies from one country to another. For these reasons, when sending or receiving money internationally, it is important to understand what determines exchange rates.

1. Inflation Rates: Changes in market inflation cause changes in currency exchange rates. A country with a lower inflation rate than another will see an appreciation in the value of its currency. The prices of goods and services increase at a slower rate where the inflation is low. A country with a consistently lower inflation rate exhibits a rising currency value while a country with higher inflation typically sees depreciation in its currency and is usually accompanied by higher interest rates.

2. Interest Rates: Changes in interest rate affect currency value and dollar exchange rate. Forex rates, interest rates, and inflation are all correlated. Increases in interest rates cause a country's currency to appreciate because higher interest rates provide higher rates to lenders, thereby attracting more foreign capital, which causes a rise in exchange rates.

3. Country's Current Account / Balance of Payments: A country's current account reflects balance of trade and earnings on foreign investment. It consists of total number of transactions including its exports, imports, debt, etc. A deficit in current account due to spending more of its currency on importing products than it is earning through sale of exports causes depreciation. Balance of payments in a country can cause fluctuations in exchange rate of its domestic currency.

4. Government Debt: Government debt is public debt or national debt owned by the central government. A country with government debt is less likely to acquire foreign capital, leading to inflation. Foreign investors will sell their bonds in the open market if the market predicts government debt within a certain country. As a result, a decrease in the value of its exchange rate will follow.

5. Terms of Trade: Related to current accounts and balance of payments, the terms of trade is the ratio of export prices to import prices. A country's terms of trade improve if its export prices rise at a greater rate than its import prices. This results in higher revenue, which causes a higher demand for the country's currency and an increase in its currency's value. This results in an appreciation of exchange rate.

6. Political Stability & Performance: A country's political state and economic performance can affect its currency strength. A country with less risk for political turmoil is more attractive to foreign investors, as a result drawing investment away from other countries with more or less political and economic stability. Increase in foreign capital, in turn, leads to an appreciation in the value of its domestic currency. A country with sound financial and trade

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policy does not give any room for uncertainty in value of its currency. But, a country prone to political confusions may see depreciation in exchange rates.

7. Recession: When a country experiences a recession, its interest rates are likely to fall, decreasing its chances to acquire foreign capital. As a result, its currency weakens in comparison to that of other countries, thereby lowering the exchange rate.

8. Speculation: If a country's currency value is expected to rise, investors will demand more of that currency in order to make a profit in the near future. As a result, the value of the currency will rise due to the increase in demand. With this increase in currency value, comes a rise in the exchange rate as well.

Exchange Rate Mechanism

Introduction- Major Currencies dominating the international financial and foreign exchange market today are on float. Their value is subject to variations depending upon changes in macroeconomic variables and market forces. Determination of exchange rate is of utmost importance for floating rate regime and for those who deal in foreign exchange.

Exchange rate quotations – different currencies are bought and sold in the exchange market. It is important to know the ratio between different currencies or how many units of one currency will equal one unit of another currency. The ratio between two currencies is known as exchange rate.

Spot Rates

The spot foreign exchange markets are those in which the commodity is bought or sold for an immediate delivery or delivery in the very near future. The trades in the spot markets are settled on the spot. The spot foreign currency market is among the most popular foreign currency instrument around the globe, contributing more than 37 percent of the total activity happening in all other types of foreign exchange markets. Spot forex currency market is opposite to other kinds of foreign exchange market such as the future market, in which a set date is mentioned.

A spot deal in foreign exchange market comprises of a bilateral contract between two parties in which a party transfers a set amount of a particular given currency against the receipt of a specified amount of another currency from the counterparty, based on an agreed exchange rate, within two business days of the date when the deal gets finalized. However, there is an exception in case of Canadian dollar. In Canadian dollar, the Spot delivery happens the very next business day. The name 'spot' does not mean that the currency exchange happens the same business day on which the deal is executed.

The most traded currency in spot markets in terms of volume is US dollar. The reason: U.S. dollar is the currency of reference. The other major most common currencies traded in spot markets are the euro, followed by the Japanese yen, the British pound, and the Swiss Franc.

A spot contract is a contract that involves the purchase or sale of a commodity, security or currency for immediate delivery and payment on the spot date, which is normally two business days after the trade date. The spot rate, or spot price, is the price quoted for the immediate settlement of the spot contract. For example, say an investor believes orange juice is more expensive in the winter due to supply and demand. However, the investor cannot buy a spot contract for delivery in December because the commodity will spoil. A forward contract is a better fit for the investment.

Cross Rates

The currency exchange rate between two currencies, both of which are not the official currencies of the country in which the exchange rate quote is given in is called cross rate. This phrase is also sometimes used to refer to currency quotes which do not involve the U.S. dollar, regardless of which country the quote is provided in.

For example, if an exchange rate between the Euro and the Japanese Yen was quoted in an American newspaper, this would be considered a cross rate in this context, because neither the euro nor the yen is the standard currency of the U.S. However, if the exchange rate between the euro and the U.S. dollar were quoted in that same newspaper, it would not be considered a cross rate because the quote involves the U.S. official currency.

In simple terms, a cross currency forward is a forward contract where a specified amount of one currency will be exchanged for a specified amount of another currency. The need for cross-currency forwards arises from a number of different situations:

- To convert a loan rose in a foreign currency into the company's domestic currency.
- To hedge a foreign-denominated asset into a domestic currency.
- To convert foreign currency cash balances to a domestic currency for a period of time.

Pricing: The "forward rate" or the price of a forward contract is based on the spot rate at the time the deal is booked, with an adjustment for "forward points" which represents the interest rate differential between the two currencies concerned.

Using the example of the U.S. Dollar and the Ethiopian Birr with a spot exchange rate of USD-ETB=9.8600 and one-year interest rates of 3.23% and 6.50% respectively for the U.S. and Ethiopia, we can calculate the one year forward rate as follows:

Forward Rate: (Multiplying Spot Rate with the Interest Rate Differential):

$$\frac{\text{ETB}}{\text{USD}} = \text{Spot} \times \frac{(1+r_{\text{ETB}})}{(1+r_{\text{USD}})} = 9.8600 \times \frac{(1+0.0650)}{(1+0.0323)} = 10.1720$$

Forward Points = Forward Rate – Spot Rate

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$$= 10.1720 - 9.8600$$

$$= 0.312 \text{ (traders refer to these points as 31.2 pips)}$$

The forward points reflect interest rate differentials between two currencies. They can be positive or negative depending on which currency has the lower or higher interest rate. In effect, the higher yielding currency will be discounted going forward and vice versa.

Constraints: If the underlying reason for wishing to set the exchange rate for a future delivery date no longer exists, the forward exchange contract may need to be cancelled at prevailing market rates. The unwinding of the position may incur a profit or a loss. (I.e. the 'mark to market' value of the contract). Currency markets are highly volatile and the prices of the underlying currencies can fluctuate rapidly and over wide ranges and may reflect unforeseen events or changes in conditions.

Forward Rates

Unlike a spot contract, a forward contract is a contract that involves an agreement of contract terms on the current date with the delivery and payment at a specified future date. Contrary to a spot rate, a forward rate is used to quote a financial transaction that takes place on a future date and is the settlement price of a forward contract. However, depending on the security being traded, the forward rate can be calculated using the spot rate.

Premium and Discount

The spread on a forward currency quotation is calculated in the same manner as the spread for a spot currency quotation.

The reasons that spreads vary with forward foreign currency quotations are similar to the reasons for the variability of spreads with spot foreign currency quotations. The unique factor associated with spreads for forward foreign currency quotations is that spreads will widen as the length of time until settlement increases. Currency exchange rates would be expected to have a higher range of fluctuations over longer periods of time, which increases dealer risk. Also, as time increases, fewer dealers are willing to provide quotes, which will also tend to increase the spread.

Calculating a Forward Discount or Premium, Expressed as an Annualized Rate.

Forward currency exchange rates often differ from the spot exchange rate. If the forward exchange rate for a currency is higher than the spot rate, there is a premium on that currency. A discount exists when the forward exchange rate is lower than the spot rate. A negative premium is equivalent to a discount.

Example: Forward Discount Premium

If the ninety day ¥ / \$ forward exchange rate is 109.50 and the spot rate is ¥ / \$ = 109.38, then

the dollar is considered to be "strong" relative to the yen, as the dollar's forward value exceeds the spot value. The dollar has a premium of 0.12 yen per dollar. The Yen would trade at a discount because its forward value in terms of dollars is less than its spot rate.

The annualized rate can be calculated by using the following formula:

Formula

$$\text{Annualized Forward Premium} = \frac{\text{Forward Price} - \text{Spot Price}}{\text{Spot Price}} \times \frac{12}{\text{\# of months}} \times 100\%$$

Answer: So in the case listed above, the premium would be calculated as:

$$\text{Annualized forward premium} = \frac{(109.50 - 109.38)}{109.38} \times (12 \div 3) \times 100\% = 0.44\%$$

Similarly, to calculate the discount for the Japanese Yen, we first want to calculate the forward and spot rates for the Japanese Yen in terms of dollars per Yen. Those numbers would be $(1/109.50 = 0.0091324)$ and $(1/109.38 = 0.0091424)$, respectively.

So the annualized forward discount for the Japanese Yen, in terms of U.S. dollars, would be:

$$\frac{(0.0091324 - 0.0091424)}{0.0091424} \times (12 \div 3) \times 100\% = -0.44\%$$

Forward Market

Forward markets are over-the-counter marketplace that sets the price of a financial instrument or asset for future delivery. Contracts entered into in the forward market are binding on the parties involved. Forward markets are used for trading a range of instruments including currencies and interest rates, as well as assets such as commodities and securities. While forward contracts, like futures contracts, may be used for both hedging and speculation, there are some notable differences between the two. Forward contracts can be customized to fit a customer's requirements, while futures contracts have standardized features in terms of their contract size and maturity.

The lack of standard features means that forward contracts seldom trade on exchanges, whereas futures contracts are generally exchange-listed. Since forward contracts generally tend to be large in size, the forward market is dominated by financial institutions, government bodies and large corporations.

Limitations of forward markets

Forward markets world-wide are faced with several problems:

- Lack of centralization of trading.
- Illiquidity and
- Counterparty risk.

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In the first two of these, the basic problem is that of too much flexibility and generality. The forward market is like a real estate market, in which any two consenting adults can form contracts with each other. This often makes them design the terms of the deal which are convenient in that specific situation, but makes the contracts non-tradable.

Counterparty risk arises from the possibility of default by any one party to the transaction. When one of the two sides to the transaction declares bankruptcy, the other suffers. When forward markets trade standardized contracts, though it avoids the problem of illiquidity, the counterparty risk still remains a very serious issue.

Forward Contracts

A forward contract is an agreement to buy or sell an asset on a specified date for a specified price. One of the parties to the contract assumes a long position and agrees to buy the underlying asset on a certain specified future date for a certain specified price. The other party assumes a short position and agrees to sell the asset on the same date for the same price. Other contract details like delivery date, price and quantity are negotiated bilaterally by the parties to the contract. The forward contracts are normally traded outside the exchanges. The salient features of forward contracts are as given below:

- They are bilateral contracts and hence exposed to counter party risk.
- Each contract is custom designed, and hence is unique in terms of contract size, expiration date and the asset type and quality.
- The contract price is generally not available in public domain.
- On the expiration date, the contract has to be settled by delivery of the asset.
- If the party wishes to reverse the contract, it has to compulsorily go to the same counterparty, which often results in high prices being charged.

Booking

Booking refers to a cash market transaction in which a seller agrees to deliver a specific cash commodity to a buyer at some point in the future. Unlike futures contracts (which occur through a clearing firm), cash forward contracts are privately negotiated and are not standardized. Further, the two parties must bear each other's credit risk, which is not the case with a futures contract. Also, since the contracts are not exchange traded, there is no marking-to-market requirement, which allows a buyer to avoid almost all capital outflow initially (though some counterparties might set collateral requirements). Given the lack of standardization in these contracts, there is very little scope for a secondary market in forwards. The price specified in a cash forward contract is for a specific commodity. The forward price makes the forward contract have no value when the contract is written. However, if the value of the underlying commodity changes, the value of the forward contract becomes

positive or negative, depending on the position held. Forwards are priced in a manner similar to futures. As in the case of a futures contract, the first step in pricing a forward is to add the spot price to the cost of carry (interest forgone, convenience yield, storage costs and interest / dividend received on the underlying). Unlike a futures contract though, the price may also include a premium for counterparty credit risk, and the fact that there is no daily marking-to-market process to minimize default risk. If there is no allowance for these credit risks, then the forward price will equal the futures price.

Extension

Extend the contract

It is the responsibility of the customer to effect delivery or to request the bank for extension / cancellation as the case may be on or before the maturity date of the contract.

Banks will levy a minimum charge for every request for a cancellation of a contract.

Early delivery

If a bank accepts or gives early delivery, the bank shall recover / pay swap difference, if any.

Extension

Forward contract, whether short-term or long-term contract where extension is sought by the customers (or rolled over) shall be cancelled (at T.T. Selling or Buying Rate as on the date of cancellation) and rebooked only at current rate of exchange. The difference between the contracted rate and the rate at which the contract is cancelled should be recovered from/ paid to the customer at the time of extension. Such request for extension should be made on or before the maturity date of the contract.

Cancellation

In the case of cancellation of a contract at the request of the customer, the bank shall recover / pay, as the case may be, the difference between the contacted rate and the rate at which the cancellation is affected.

Rate at which cancellation is to be effected:

- i. Purchase contracts shall be cancelled at the contracting bank spot T.T. selling rate current on the date of cancellation.
- ii. Sale contracts shall be cancelled at the contracting bank spot T.T. buying rate current on the date of cancellation.
- iii. Where the contract is cancelled before maturity, the appropriate forward T.T. rate shall be applied.

In case a purchase contract becomes overdue, due to the bank inability to accept the bills tendered as approved bills, the exporter takes up the contract by tendering other approved bills or cancels the contract within a reasonable time.

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Notwithstanding the fact that the exchange contract between the customer and the bank becomes impossible of performance, for whatever reason, including Government prohibitory order, the exchange contract shall not be deemed to have become void and the customer shall forthwith apply to the bank for cancellation.

- i. In the absence of any instructions from the customer, contracts which have matured, shall, on the 15th day from the date of maturity, be automatically cancelled. In case the 15th day falls on a Saturday or holiday, the contract will be cancelled on the next succeeding working day.

Note: The customer cannot effect delivery, extend or cancel the contract after the maturity date and the procedure for automatic cancellation on the 15th day from maturity date should be adhered to in all cases of default by the customer.

- ii. Swap cost, if any, shall be recovered from the customer under advice to him.
- iii. In case, the contract is ultimately cancelled, the customer will not be entitled to the exchange difference, if any, in his favour, since the contract is cancelled on account of his default.
- iv. In case of delivery subsequent to automatic cancellation the appropriate current rate prevailing on such delivery date shall be applied.
- v. Swap cost
 - (a) Swap cost to be recovered from customers: In all cases of early delivery of purchase or sale contracts, swap cost shall be recovered from customers irrespective of whether an actual swap is made or not. Such recoveries should be made either back-ended or front- ended at the discretion of banks.
 - (b) Swap Gain: Payment of swap gain to the customer will normally be made at the end of the swap period.

Outlay and inflow of funds

- (a) Interest at not below the prime lending rate of the respective bank on outlay of funds by the bank for the purpose of arranging the swap shall be recovered in addition to the swap cost in case of early delivery of purchase or sale contracts and early realization of export bills negotiated. The amounts of funds earmarked for outlay shall be arrived at by taking the difference between the original contract rate and the rate at which the swap could be arranged.
- (b) If such a swap leads to inflow of funds, the amount shall be arrived at as above and interest shall be paid at the discretion of banks to the customer at the appropriate rate applicable for term deposits for the period for which the funds remained with the bank deposits.

NON-DELIVERABLE FORWARD CONTRACT:

A cash-settled, short-term forward contract on a thinly traded or non-convertible foreign currency, where the profit or loss at the time at the settlement date is calculated by taking the difference between the agreed upon exchange rate and the spot rate at the time of settlement, for an agreed upon notional amount of funds.

All NDFs have a fixing date and a settlement date. The fixing date is the date at which the difference between the prevailing market exchange rate and the agreed upon exchange rate is calculated. The settlement date is the date by which the payment of the difference is due to the party receiving payment.

NDFs are commonly quoted for time periods of one month up to one year, and are normally quoted and settled in U.S. dollars. They have become a popular instrument for corporations seeking to hedge exposure to foreign currencies that are not internationally traded.

International Treasury

Deployment of foreign currency resources needs to be managed in such a way that it would not create any excess position i.e., “Over bought” or “Oversold” and at the same time cash flow is not affected. There are various funding alternatives available for Forex Cash Management such as Currency Swaps i.e., lending in one currency and borrowing in another currency, foreign exchange swaps i.e., swapping of one currency into other foreign currency or local currency for deployment so as to maximize the yield without creating the position and affecting the cash flow.

Market Participants

Unlike the stock market, where investors often only trade with institutional investors (such as mutual funds) or other individual investors, there are more parties that trade on the forex market for completely different reasons than those in the stock market. Therefore, it is very important to identify and understand the functions and motivations of these main players in the forex market.

Governments and Central Banks

Probably the most influential participants involved in the forex market are the central banks and federal governments. In most countries, the central bank is an extension of the government and conducts its policy in unison with the government. However, some governments feel that a more independent central bank is more effective in balancing the goals of managing inflation and keeping interest rates low, which usually increases economic growth. Whatever the degree of independence that a central bank may have, government representatives usually have regular meetings with central bank representatives to discuss monetary policy. Thus, central banks and governments are usually on the same page when it comes to monetary policy.

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Central banks are often involved in maintaining foreign reserve volumes in order to meet certain economic goals. For example, ever since pegging its currency (the yuan) to the U.S. dollar, China has been buying up millions of dollars worth of U.S. Treasury Bills in order to keep the Yuan at its target exchange rate. Central banks use the foreign exchange market to adjust their reserve volumes. They have extremely deep pockets, which allow them to have a significant impact on the currency markets.

Banks and Other Financial Institutions

Along with central banks and governments, some of the largest participants concerned with forex transactions are banks. Most people who need foreign currency for small-scale transactions, like money for travelling, deal with neighborhood banks. However, individual transactions pale in comparison to the dollars that are traded between banks, better known as the interbank market. Banks make currency transactions with each other on electronic brokering systems that are based on credit. Only banks that have credit relationships with each other can engage in transactions. The larger banks tend to have more credit relationships, which allow those banks to receive better foreign exchange prices. The smaller the bank, the fewer credit relationships it has and lower the priority it has on the pricing scale.

Banks, in general, act as dealers in the sense that they are willing to buy/sell a currency at the bid/ask price. One way that banks make money on the forex market is by exchanging currency at a higher price than they paid to obtain it. Since the forex market is a world-wide market, it is common to see different banks with slightly different exchange rates for the same currency.

Hedgers

Some of the biggest clients of these banks are international businesses. Whether a business is selling to an international client or buying from an international supplier, it will inevitably need to deal with the volatility of fluctuating currencies.

If there is one thing that management (and shareholders) hates, it is uncertainty. Having to deal with foreign exchange risk is a big problem for many multinational corporations. For example, suppose that a German company orders some equipment from a Japanese manufacturer that needs to be paid in yen one year from now. Since the exchange rate can fluctuate in any direction over the course of a year, the German company has no way of knowing whether it will end up paying more or less euros at the time of delivery.

One choice that a business can make to reduce the uncertainty of foreign exchange risk is to go into the spot market and make an immediate transaction for the foreign currency that they need.

Unfortunately, businesses may not have enough cash on hand to make such transactions in the spot market or may not want to hold large amounts of foreign currency for long periods of time. Therefore, businesses quite often employ hedging strategies in order to lock in a specific exchange rate for the future, or to simply remove all exchange-rate risk for a transaction.

For example, if a European company wants to import steel from the U.S., it would have to pay for this steel in U.S. dollars. If the price of the euro falls against the dollar before the payment is made, the European company will end up paying more than the original agreement had specified. As such, the European company could enter into a contract to lock in the current exchange rate to eliminate the risk of dealing in U.S. dollars. These contracts could be either forwards or futures contracts.

Speculators

Another class of participants in forex is speculators. Instead of hedging against changes in exchange rates or exchanging currency to fund international transactions, speculators attempt to make money by taking advantage of fluctuating exchange rate levels.

Various Forex Treasury Products

The various Forex Treasury Products in Treasury Department are:

- Foreign Exchange
- Forex Options
- Dual Currency Deposits

Authorized dealers in India have to conduct their foreign exchange business within the constraints imposed by several internal factors such as the business ethos of the bank, its geographical spread and availability of trained personnel apart from environmental factors like communications. In addition, the authorized dealers should adhere to the trade and exchange controls. The involvement of the personnel coupled with accountability also is necessary.

Volatility of Major Currencies

Volatility is a frequently misunderstood concept even by seasoned financial market professionals. While investors are reasonably wary of rapidly moving assets because of the increased level of risk they represent, they frequently overlook volatility's benefits for generating trading opportunities. To the uninitiated, trading currencies seems to intuitively trigger fears of erratic price swings. A deeper look at how volatility levels compare across various asset classes reveals FX to be a sensible component for both long and short-term portfolios.

However, the trader can control that gearing as well as position size more finely than in many other asset classes. Overall, volatility is an important tool for all market participants as both a measure of return and risk. For the tactical and shorter-term "trader, volatility is pursued more as a source of opportunity. In contrast, the passive and longer-term "investor" looks to minimize volatility relative to projected returns (Income) as much as possible. From both perspectives, FX is an asset class that deserves an important place in portfolios.

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Currency Trading

Majority of the volume in currency trading is confined to only 18 currency pairs compared to the thousands of stocks that are available in the global equity markets. Although there are other traded pairs outside of the 18, the eight currencies most often traded are the U.S. dollar (USD), Canadian dollar (CAD), euro (EUR), British pound (GBP), Swiss franc (CHF), New Zealand dollar (NZD), Australian dollar (AUD) and the Japanese yen (JPY). Although nobody would say that currency trading is easy, having far less trading options makes trade and portfolio management an easier task.

What Moves Currency?

An increasing amount of stock traders are taking interest in the currency markets because many of the forces that move the stock market also move the currency market. One of the largest is supply and demand. When the world needs more dollars, the value of the dollar increases and when there are too many circulating, the price drops.

Other factors like interest rates, new economic data from the largest countries and geopolitical tensions, are just a few of the events that may affect currency prices.

The Bottom Line

Much like anything in the investing market, learning about currency trading is easy but finding the winning trading strategies takes a lot of practice. Most forex brokers will allow you to open a free virtual account that allows you to trade with virtual money until you find strategies that work.

Global Securities – Portfolio Management

Managing investment risk starts and ends with our portfolio managers, who look at both risk and return from every angle as they navigate today's complex investment landscape. Dedicated risk management specialists support our portfolio managers in conjunction with oversight committees and the application of sophisticated risk-management tools.

Portfolio management

Employ a fundamental, research-driven approach to managing assets.

Assess risk at each stage of the investment life-cycle including investment selection, portfolio construction and ongoing portfolio evaluation.

Are backed by the strength and stability of their global organization, which enables them to maintain a long-term perspective.

Managing a portfolio requires a significant amount of time and investment expertise. As a result, many investors choose to engage with an experienced Financial Advisor who can work closely with them.

Goals of Portfolio Management

While the portfolio methods vary greatly from company to company, the common denominator across firms is the goals executives are trying to achieve. According to 'best-practice' research by Dr. Cooper and Dr. Edgett, five main goals dominate the thinking of successful firms:

- 1. Value Maximization:** Allocate resources to maximize the value of the portfolio via a number of key objectives such as profitability, ROI, and acceptable risk. A variety of methods are used to achieve this maximization goal, ranging from financial methods to scoring models.
- 2. Balance:** Achieve a desired balance of projects via a number of parameters: risk versus return; short-term versus long-term; and across various markets, business arenas and technologies. Typical methods used to reveal balance include bubble diagrams, histograms and pie charts.
- 3. Business Strategy Alignment:** Ensure that the portfolio of projects reflects the company's product innovation strategy and that the breakdown of spending aligns with the company's strategic priorities. The three main approaches are top-down (strategic buckets), bottom-up (effective gate keeping and decision criteria) and top-down and bottom-up (strategic check).
- 4. Pipeline Balance:** Obtain the right number of projects to achieve the best balance between the pipeline resource demands and the resources available. The goal is to avoid pipeline gridlock (too many projects with too few resources) at any given time. A typical approach is to use a rank-ordered priority list or a resource supply and demand assessment.
- 5. Sufficiency:** Ensure that the revenue (or profit) goals set out in the product innovation strategy are achievable given the projects currently underway. Typically, this is conducted via a financial analysis of the pipeline's potential future value.

What are the benefits of Portfolio Management?

When implemented properly and conducted on a regular basis, Portfolio Management is a high impact, high value activity:

- Maximizes the return on your product innovation investments.
- Maintains your competitive position.
- Achieves efficient and effective allocation of scarce resources.
- Forges a link between project selection and business strategy.
- Achieves focus.
- Communicates priorities.
- Achieves balance.
- Enables objective project selection.

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Top performers emphasize the link between project selection and business strategy.

Why is it so important?

Companies without effective new product portfolio management and project selection face a slippery road downhill. Many of the problems that plague new product development initiatives in businesses can be directly traced to ineffective portfolio management. According to benchmarking studies conducted by Dr. Cooper and Dr. Edgett, some of the problems that arise when portfolio management is poor are:

- Projects are not high value to the business.
- Portfolio has a poor balance in project types.
- Resource breakdown does not reflect the product innovation strategy.
- A poor job is done in ranking and prioritizing projects.
- There is a poor balance between the number of projects underway and the resources available.
- Projects are not aligned with the business strategy.

As a result, too many companies have:

- Too many projects underway (often the wrong ones).
- Resources are spread too thin and across too many projects.
- Projects are taking too long to get to market, and
- The pipeline has too many low value projects.

Portfolio Management is about doing the right projects. If you pick the right projects, the result is an enviable portfolio of high value projects: a portfolio that is properly balanced and most importantly, supports your business strategy.

External Commercial Borrowings (ECBs)

FEMA guidelines provide Indian companies to access funds from abroad by following methods:-

- (a) External Commercial Borrowings (ECB): It refers 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) availed of from non-resident lenders with a minimum average maturity of 3 years.
- (b) Foreign Currency Convertible Bonds (FCCBs): It refers to a bond issued by an Indian company expressed in foreign currency, and the principal and interest in respect of which is payable in foreign currency.

- (c) Preference shares: (*i.e. non-convertible, optionally convertible or partially convertible*) : These instruments are considered as debt and denominated in Rupees and rupee interest rate will be based on the swap equivalent of LIBOR plus spread.
- (d) Foreign Currency Exchangeable Bond (FCEB): FCEB is a bond expressed in foreign currency, the principal and interest in respect of which is payable in foreign currency, issued by an Issuing Company and subscribed to by a person who is a resident outside India, in foreign currency and exchangeable into equity shares 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. The FCEB may be denominated in any freely convertible foreign currency.

Guidelines on ECBs

ECB refers to commercial loans [in the form of bank loans, buyers credit, suppliers credit, securitized instruments (e.g. floating rate notes and fixed rate bonds)] availed from non-resident lenders with minimum average maturity of 3 years

ECBs can be accessed under two routes, viz,

- Automatic Route
- Approval Route

AUTOMATIC ROUTE

The following types of proposals for ECBs are covered under the Automatic Route.

Eligible borrowers

- Corporates, including those in the hotel, hospital, software sectors (registered under the Companies Act) and Infrastructure Finance Companies (IFCs) except financial intermediaries, such as banks, financial institutions (FIs), Housing Finance Companies (HFCs) and Non-Banking Financial Companies (NBFCs) are eligible to raise ECB. Individuals, Trusts and Non-Profit making organizations are not eligible to raise ECB.
- Units in Special Economic Zones (SEZ) are allowed to raise ECB for their own requirement.
- Non-Government Organizations (NGOs) engaged in micro finance activities are eligible to avail of ECB. Such NGOs (i) should have a satisfactory borrowing relationship for at least 3 years with a scheduled commercial bank authorized to deal in foreign exchange in India and (ii) would require a certificate of due diligence on `fit and proper status of the Board / Committee of management of the borrowing entity from the designated AD bank.
- Micro Finance Institutions (MFIs) engaged in micro finance activities are eligible to avail of ECBs. MFIs registered under the Societies Registration Act, 1860, MFIs registered under Indian Trust Act, 1882, MFIs registered either under the conventional state-level

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cooperative acts, the national level multi-state cooperative legislation or under the new state-level mutually aided cooperative acts (MACS Act) and not being a co-operative bank, Non-Banking Financial Companies (NBFCs) categorized as Non Banking Financial Company-Micro Finance Institutions (NBFC-MFIs) and complying with the norms prescribed and are involved in micro- finance activities.

Recognized Lenders

- Borrowers can raise ECB from internationally recognized sources such as
- International banks
- International capital markets
- Multilateral financial institutions (such as IFC, ADB, CDC, etc.) / regional financial institutions and Government owned development financial institutions, (iv) export credit agencies
- Suppliers of equipments
- Foreign collaborators
- Foreign equity holders (other than erstwhile Overseas Corporate Bodies (OCBs).

Amount and Maturity

- The maximum amount of ECB which can be raised by a corporate other than those in the hotel, hospital and software sectors is USD 750 million or its equivalent during a financial year.
- Corporates in the services sector viz. hotels, hospitals and software sector are allowed to avail of ECB up to USD 200 million or its equivalent in a financial year for meeting foreign currency and/ or Rupee capital expenditure for permissible end-uses. The proceeds of the ECBs should not be used for acquisition of land..
- ECB up to USD 20 million or its equivalent in a financial year with minimum average maturity of three years.
- ECB above USD 20 million or equivalent and up to USD 750 million or its equivalent with a minimum average maturity of five years.
- NGOs engaged in micro- finance activities and Micro- Finance Institutions (MFIs) can raise ECB up to USD 10 million or its equivalent during a financial year. Designated AD bank has to ensure that at the time of drawdown the forex exposure of the borrower is fully hedged.

All-in-cost ceilings

All-in-cost includes rate of interest, other fees and expenses in foreign currency except

Treasury — Forex

commitment fee, pre-payment fee, and fees payable in Indian Rupees. The payment for withholding tax in Indian Rupees is excluded for calculating the all-in-cost.

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

Average Maturity Period	All-in-cost Ceilings over 6 month LIBOR*
Three years and up to five years	350 basis points
More than five years	500 basis points

*for the respective currency of borrowing or applicable benchmark In the case of fixed rate loans, the swap cost plus margin should be the equivalent of the floating rate plus the applicable margin.

End-use

- ECB can be raised for investment [such as import of capital goods (as classified by DGFT in the Foreign Trade Policy), new projects, modernization/expansion of existing production units] in real sector - industrial sector including small and medium enterprises (SME), infrastructure sector and specified service sectors namely hotel, hospital, software in India.
- Overseas direct investment in Joint Ventures (JV)/ Wholly Owned Subsidiaries (WOS) subject to the existing guidelines on Indian Direct Investment in JV/ WOS abroad.
- Utilization of ECB proceeds is permitted for first stage acquisition of shares in the disinvestment process and also in the mandatory second stage offer to the public under the Governments disinvestment programme of PSU shares.
- For lending to self-help groups or for micro-credit or for bonafide micro finance activity including capacity building by NGOs engaged in micro finance activities.
- Payment for Spectrum Allocation.
- Infrastructure Finance Companies (IFCs) i.e. Non Banking Financial Companies (NBFCs) categorized as IFCs by the Reserve Bank, are permitted to avail of ECBs, including the outstanding ECBs, up to 50 per cent of their owned funds, for on-lending to the infrastructure sector as defined under the ECB policy, subject to their complying with the following conditions: i) compliance with the norms prescribed in the DNBS Circular DNBS.PD.CCNo.168 / 03.02.089 / 2009-10 dated February 12, 2010 ii) hedging of the currency risk in full. Designated Authorised Dealer should ensure compliance with the extant norms while certifying the ECB application.
- Interest during Construction (IDC) for Indian companies which are in the infrastructure sector, where infrastructure is defined as per the extant ECB guidelines, subject to IDC being capitalized and forming part of the project cost.

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- Maintenance and operations of toll systems for roads and highways for capital expenditure provided they form part of the original project.

End-uses not permitted

- For on-lending or investment in capital market or acquiring a company (or a part thereof) in India by a corporate [investment in Special Purpose Vehicles (SPVs), Money Market Mutual Funds (MMMFs), etc., are also considered as investment in capital markets).
- For real estate sector
- For working capital, general corporate purpose and repayment of existing Rupee loans.

Guarantees

- Issuance of guarantee, standby letter of credit, letter of undertaking or letter of comfort by banks, Financial Institutions and Non-Banking Financial Companies (NBFCs) from India relating to ECB is not permitted.

Security

- The choice of security to be provided to the lender/supplier is left to the borrower. However, creation of charge over immoveable assets and financial securities, such as shares, in favour of the overseas lender is subject to Regulation 8 of Notification No. FEMA 21/RB-2000 dated May 3, 2000 and Regulation 3 of Notification No. FEMA 20/RB-2000 dated May 3, 2000, respectively, as amended from time to time. AD Category - I banks have been delegated powers to convey no objection under the Foreign Exchange Management Act (FEMA), 1999 for creation of charge on immovable assets, financial securities and issue of corporate or personal guarantees in favour of overseas lender / security trustee, to secure the ECB to be raised by the borrower.

Procedure

- Borrowers may enter into loan agreement complying with the ECB guidelines with recognized lender for raising ECB under Automatic Route without the prior approval of the Reserve Bank. The borrower must obtain a Loan Registration Number (LRN) from the Reserve Bank of India before drawing down the ECB..

APPROVAL ROUTE

Eligible borrowers

The following types of proposals for ECB are covered under the Approval Route

- On lending by the EXIM Bank for specific purposes will be considered on a case by case basis.
- Banks and financial institutions which had participated in the textile or steel sector restructuring package as approved by the Government are also permitted to the extent of

their investment in the package and assessment by the Reserve Bank based on prudential norms. Any ECB availed for this purpose so far will be deducted from their entitlement.

- ECB with minimum average maturity of 5 years by Non-Banking Financial Companies (NBFCs) from multilateral financial institutions, reputable regional financial institutions, official export credit agencies and international banks to finance import of infrastructure equipment for leasing to infrastructure projects.
- Infrastructure Finance Companies (IFCs) i.e. Non-Banking Financial Companies (NBFCs), categorized as IFCs, by the Reserve Bank, are permitted to avail of ECBs, including the outstanding ECBs, beyond 50 per cent of their owned funds, for on-lending to the infrastructure sector as defined under the ECB policy, subject to their complying with the following conditions:

Compliance with the norms prescribed in the DNBS Circular DNBS.PD.CCNo.168 / 03.02.089 /2009-10 dated February 12, 2010 ii) hedging of the currency risk in full. Designated Authorised Dealer should ensure compliance with the extant norms while certifying the ECB application.

- Foreign Currency Convertible Bonds (FCCBs) by Housing Finance Companies satisfying the following minimum criteria: (i) the minimum net worth of the financial intermediary during the previous three years shall not be less than Rs. 500 crore, (ii) a listing on the BSE or NSE, (iii) minimum size of FCCB is USD 200 million and (iv) the applicant should submit the purpose / plan of utilization of funds.
- Special Purpose Vehicles, or any other entity notified by the Reserve Bank, set up to finance infrastructure companies / projects exclusively, will be treated as Financial Institutions and ECB by such entities will be considered under the Approval Route.
- Multi-State Co-operative Societies engaged in manufacturing activity and satisfying the following criteria i) the Co-operative Society is financially solvent and ii) the Co-operative Society submits its up-to-date audited balance sheet.
- SEZ developers can avail of ECBs for providing infrastructure facilities within SEZ, as defined in the extant ECB policy like
 - (i) Power,
 - (ii) Telecommunication,
 - (iii) Railways,
 - (iv) Roads including bridges,
 - (v) Sea port and airport,
 - (vi) Industrial parks,

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- (vii) Urban infrastructure (water supply, sanitation and sewage projects), (viii) mining, exploration and refining and
- (ix) Cold storage or cold room facility, including for farm level pre-cooling, for preservation or storage of agricultural and allied produce, marine products and meat.
- Corporates in the services sector viz. hotels, hospitals and software sector can avail of ECB beyond USD 200 million per financial year.
- Corporates which have violated the extant ECB policy and are under investigation by the Reserve Bank and / or Directorate of Enforcement are allowed to avail of ECB only under the approval route.
- Cases falling outside the purview of the automatic route limits and maturity period to be followed.
- Eligible borrowers under the automatic route other than corporates in the services sector viz. hotel, hospital and software can avail of ECB beyond USD 750 million or equivalent per financial year

Recognized Lenders:

- Borrowers can raise ECB from internationally recognized sources such as (i) international banks, (ii) international capital markets, (iii) multilateral financial institutions (such as IFC, ADB, CDC, etc.)/ regional financial institutions and Government owned development financial institutions, (iv) export credit agencies, (v) suppliers' of equipment, (vi) foreign collaborators and (vii) foreign equity holders (other than erstwhile OCBs).
- From 'foreign equity holder' where the minimum paid-up equity held directly by the foreign equity lender is 25 per cent but ECBs: equity ratio exceeds 4:1 (i.e. the proposed ECB exceeds four times the direct foreign equity holding).

Amount and Maturity

- Eligible borrowers under the automatic route other than corporates in the services sector viz. hotel, hospital and software can avail of ECB beyond USD 750 million or equivalent per financial year. Corporates in the services sector viz. hotels, hospitals and software sector are allowed to avail of ECB beyond USD 200 million or its equivalent in a financial year for meeting foreign currency and/ or Rupee capital expenditure for permissible end-uses. The proceeds of the ECBs should not be used for acquisition of land.
- Indian companies which are in the infrastructure sector, as defined under the extant ECB guidelines, can avail of ECBs in Renminbi (RMB), subject to an annual ceiling of USD one billion for the entire sector, pending further review

All-in-cost ceilings

All-in-cost includes rate of interest, other fees and expenses in foreign currency except

commitment fee, pre-payment fee, and fees payable in Indian Rupees. The payment for withholding tax in Indian Rupees is excluded for calculating the all-in-cost.

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

Average Maturity Period	All-in-cost Ceilings over 6 month LIBOR*
Three years and up to five years	350 basis points
More than five years	500 basis points

*for the respective currency of borrowing or applicable benchmark In the case of fixed rate loans, the swap cost plus margin should be the equivalent of the floating rate plus the applicable margin.

End-use

- ECB can be raised only for investment [such as import of capital goods (as classified by DGFT in the Foreign Trade Policy), implementation of new projects, modernization / expansion of existing production units] in real sector - industrial sector including small and medium enterprises (SME) and infrastructure sector - in India. Infrastructure sector is defined as (i) power (ii) telecommunication (iii) railways (iv) roads including bridges (v) sea port and airport (vi) industrial parks (vii) urban infrastructure (water supply, sanitation and sewage projects) (viii) mining, exploration and refining and (ix) cold storage or cold room facility, including for farm level pre-cooling, for preservation or storage of agricultural and allied produce, marine products and meat.
- Overseas direct investment in Joint Ventures (JV)/Wholly Owned Subsidiaries (WOS) subject to the existing guidelines on Indian Direct Investment in JV/WOS abroad.
- The payment by eligible borrowers in the Telecom sector, for spectrum allocation may, initially, be met out of Rupee resources by the successful bidders, to be refinanced with a long-term ECB, under the approval route, subject to the following conditions
 - The ECB should be raised within 12 months from the date of payment of the final installment to the Government;
 - The designated AD - Category I bank should monitor the end-use of funds;
 - Banks in India will not be permitted to provide any form of guarantees; and
 - All other conditions of ECB, such as eligible borrower, recognized lender, all-in-cost, average maturity, etc, should be complied with.
- The first stage acquisition of shares in the disinvestment process and also in the mandatory second stage offer to the public under the Government's disinvestment programme of PSU shares.

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- Repayment of Rupee loans availed of from domestic banking system : Indian companies which are in the infrastructure sector(except companies in the power sector), as defined under the extant ECB guidelines , are permitted to utilize 25 per cent of the fresh ECB raised by them towards refinancing of the Rupee loan/s availed by them from the domestic banking system, subject to the following conditions
 - at least 75 per cent of the fresh ECB proposed to be raised should be utilized for capital expenditure towards a new infrastructure project(s)
 - in respect of remaining 25 per cent, the refinance shall only be utilized for repayment of the Rupee loan availed of for capital expenditure of earlier completed infrastructure project(s); and
 - the refinance shall be utilized only for the Rupee loans which are outstanding in the books of the financing bank concerned.
- Companies in the power sector are permitted to utilize up to 40 per cent of the fresh ECB raised by them towards refinancing of the Rupee loan/s availed by them from the domestic banking system subject to the condition that at least 60 per cent of the fresh ECB proposed to be raised should be utilized for fresh capital expenditure for infrastructure project(s).
- Interest during Construction (IDC) for Indian companies which are in the infrastructure sector, as defined under the extant ECB guidelines subject to IDC being capitalized and forming part of the project cost.
- Bridge Finance : Indian companies which are in the infrastructure sector, as defined under the extant ECB policy are permitted to import capital goods by availing of short term credit (including buyers / suppliers credit) in the nature of 'bridge finance', under the approval route, subject to the following conditions
 - The bridge finance shall be replaced with a long- term ECB
 - The long- term ECB shall comply with all the extant ECB norms; and
 - Prior approval shall be sought from the Reserve Bank for replacing the bridge finance with a long- term ECB.
- ECB for working capital for civil aviation sector: Airline companies registered under the Companies Act, 1956 and possessing scheduled operator permit license from DGCA for passenger transportation are eligible to avail of ECB for working capital. Such ECBs will be allowed based on the cash flow, foreign exchange earnings and the capability to service the debt and the ECBs can be raised with a minimum average maturity period of three years. The overall ECB ceiling for the entire civil aviation sector would be USD one billion and the maximum permissible ECB that can be availed by an individual airline company will be USD 300 million. This limit can be utilized for working capital as well as

refinancing of the outstanding working capital Rupee loan(s) availed of from the domestic banking system. ECB availed for working capital/refinancing of working capital as above will not be allowed to be rolled over. The foreign exchange for repayment of ECB should not be accessed from Indian markets and the liability should be extinguished only out of the foreign exchange earnings of the borrowing company.

- Repayment of Rupee loans and/or fresh Rupee capital expenditure for companies with forex earnings : Indian companies in the manufacturing and infrastructure sector can avail of ECBs for repayment of Rupee loans availed of for capital expenditure from the domestic banking system which are still outstanding and/or fresh Rupee capital expenditure provided they are consistent foreign exchange earners during the past three financial years and not in the default list/caution list of the Reserve Bank of India. The overall limit for such ECBs is USD 10 billion and the maximum permissible ECB that can be availed of by an individual company will be limited to 50 per cent of the average annual export earnings realized during the past three financial years. The foreign exchange for repayment of ECB should not be accessed from Indian markets and the liability arising out of ECB should be extinguished only out of the foreign exchange earnings of the borrowing company.

End-uses not permitted

- For on-lending or investment in capital market or acquiring a company (or a part thereof) in India by a corporate except Infrastructure Finance Companies (IFCs), banks and financial institutions eligible under paragraph I (B) (i) (a), (b) and (d)
- For real estate
- For working capital and general corporate purpose and repayment of existing Rupee loans except as specifically permitted as per details given hereinabove

Guarantees:

- Issuance of guarantee, standby letter of credit, and letter of undertaking or letter of comfort by banks, financial institutions and NBFCs relating to ECB is not normally permitted. Applications for providing guarantee/standby letter of credit or letter of comfort by banks, financial institutions relating to ECB in the case of SME will be considered on merit subject to prudential norms.

Security

- Issuance of guarantee, standby letter of credit, and letter of undertaking or letter of comfort by banks, financial institutions and NBFCs relating to ECB is not normally permitted. Applications for providing guarantee/standby letter of credit or letter of comfort by banks, financial institutions relating to ECB in the case of SME will be considered on merit subject to prudential norms.

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- With a view to facilitating capacity expansion and technological up gradation in Indian textile industry, issue of guarantees, standby letters of credit, letters of undertaking and letters of comfort by banks in respect of ECB by textile companies for modernization or expansion of textile units will be considered under the Approval Route subject to prudential norms.

Security

- The choice of security to be provided to the lender / supplier is left to the borrower. However, creation of charge over immovable assets and financial securities, such as shares, in favour of the overseas lender is subject to Regulation 8 of Notification No. FEMA 21/RB-2000 dated May 3, 2000 and Regulation 3 of Notification No. FEMA 20/RB-2000 dated May 3, 2000 as amended from time to time, respectively. Powers have been delegated to Authorised Dealer Category I banks to issue necessary NOCs under FEMA as detailed in para I (A) (viii) *ibid*.

Parking of ECB proceeds

Borrowers are permitted to either keep ECB proceeds abroad or to remit these funds to India, pending utilization for permissible end-uses.

ECB proceeds parked overseas can be invested in the following liquid assets (a) deposits or Certificate of Deposit or other products offered by banks rated not less than AA (-) by Standard and Poor's/ Fitch IBCA or Aa3 by Moody's; (b) Treasury bills and other monetary instruments of one year maturity having minimum rating as indicated above and (c) deposits with overseas branches / subsidiaries of Indian banks abroad. The funds should be invested in such a way that the investments can be liquidated as and when funds are required by the borrower in India.

ECB funds may also be repatriated to India for credit to the borrowers' Rupee accounts with AD Category I banks in India pending utilization for permissible end-uses.

The proceeds of the ECB raised abroad meant for Rupee expenditure in India, such as, local sourcing of capital goods, on-lending to Self-Help Groups or for micro credit, payment for spectrum allocation, etc. should be repatriated immediately for credit to their Rupee accounts with AD Category I banks in India. In other words, ECB proceeds meant only for foreign currency expenditure can be retained abroad pending utilization. The rupee funds, however, will not be permitted to be used for investment in capital markets, real estate or for inter-corporate lending.

Prepayment

- Prepayment of ECB up to USD 500 million may be allowed by the AD bank without prior approval of the Reserve Bank subject to compliance with the stipulated minimum average maturity period as applicable to the loan.

- Pre-payment of ECB for amounts exceeding USD 500 million would be considered by the Reserve Bank under the Approval Route.

Refinance of existing ECB:

- Existing ECB may be refinanced by raising a fresh ECB at a higher all-in-cost subject to the condition that the enhanced all-in-cost does not exceed the all-in-cost ceiling prescribed as per the extant guidelines.
- An existing ECB can be rescheduled at a higher all-in-cost subject to the condition that the enhanced all-in-cost does not exceed the all-in-cost ceiling prescribed as per the extant guidelines.

Debt Servicing:

The designated AD bank has general permission to make remittances of installments of principal, interest and other charges in conformity with the ECB guidelines issued by Government / Reserve Bank from time to time.

FEMA Regulations for Import / Export Transactions - Current A/c Rules –Capital Account Transactions

Import / Export Transactions – FEMA Regulations: Foreign Exchange Management Act or in short (FEMA) is an act that provides guidelines for the free flow of foreign exchange in India. It has brought a new management regime of foreign exchange consistent with the emerging frame work of the World Trade Organization (WTO). Foreign Exchange Management Act was earlier known as FERA (Foreign Exchange Regulation Act), which has been found to be unsuccessful with the pro-liberalization policies of the Government of India.

FEMA is applicable all over India and to even branch, offices and agencies located outside India, if it relates to a person who is a resident of India.

Some Highlights of FEMA

- It prohibits foreign exchange dealing undertaken other than by an authorized person.
- It also makes it clear that if any person residing in India, received any Forex payment (without there being a corresponding inward remittance from abroad) the concerned person shall be deemed to have received the payment from a non-authorized person.
- There are 7 types of current account transactions, which are totally prohibited, and therefore no transaction can be undertaken relating to them. These include transactions relating to lotteries, football pools, banned magazines and a few others.
- FEMA and the related rules give full freedom to Residents of India (ROI) to hold or own or transfer any foreign security or immovable property situated outside India.
- Similar freedom is also given to a resident who inherits such security or immovable property from an ROI.

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- An ROI is permitted to hold shares, securities and properties acquired by him while he was a Resident or inherited such properties from a Resident.
- The exchange drawn can also be used for purposes other than for which it is drawn provided drawal of exchange is otherwise permitted for such purpose.
- Certain prescribed limits have been substantially enhanced. For instance, residents now going abroad for business purpose or for participating in conferences seminars will not need the RBI's permission to avail foreign exchange up to US\$. 25,000 per trip irrespective of the period of stay. Basic travel quota has been increased to US\$ 10,000 per calendar year.

Buyer's /Supplier's Credit:

The Reserve Bank of India has decided to discontinue issuance of letters of undertaking (LoU) and letters of comfort (LoC) for trade credit for imports into India.

Authorised dealer-1 (AD-1) category banks will not be allowed to issue LoCs and LoUs for this line of business, the regulator said in a notification on its website. Most universal banks, domestic and foreign, come under this category, according to two bankers in the know.

Banks may continue to issue letters of credit and bank guarantees for trade credit for imports into India as per the current guidelines applicable, the notification added.

- Issuance of LoUs was banned in March by RBI after their misuse was detected in the Punjab National Bank (PNB) scam.
- Terming the ban by RBI a 'knee jerk' reaction to the PNB fraud, the Parliamentary Standing Committee on Commerce has sought immediate restoration of issuance of LoUs and LoCs with proper safeguards.

Highlights

- The Committee feels that the RBI got unnerved by the PNB fraud and it hastened to ban LoU/LoC without much thought and consideration.
- The Committee said that RBI should have engaged in more consultations with stakeholders on the matter before resorting to discontinuation of LoUs and LoCs.
- The discontinuation of LoUs and LoCs as a response to the fraud has set an effect of conservatism in the banking sector.
- The committee stressed the need for streamlining and simplifying the processing of LoUs and LoCs issued by the banks.
- The committee said in present times when the currency is witnessing high depreciation, it is imperative that the cost of credit for imports must be minimal.
- The ban on LoU / LoC takes away the benefit of cheap source of funds availed by the importers.

- The panel suggested that SBI must ensure that small and medium enterprises (SMEs) borrowers are not left out and hoped other banks would also come up with products, which would provide similar benefits as LoU / LoC.

Reasons for restoring LoUs and LoCs

- The discontinuation of the LoU and LoC facility had resulted in a 2-2.5% increase in the cost of credit.
- This will affect the cost competitiveness of the country's trade and industry and have a cascading effect on jobs.
- The country cannot afford the job loss.
- All the stakeholders, including banks, were of the opinion that LoUs and LoCs were accepted globally.
- They are efficient as a source of cost-effective short term credit of foreign currency for importers.
- Rating agencies, too, had sounded caution on the LoU ban.
- The Indian unit of global rating agency, Fitch, had said that banning LoUs will reduce the financial flexibility of importers, lead to liquidity pressure and result in higher funding costs for small companies.
- Indian traders are facing global restrictions (protectionist policies in developed markets/ trade wars), problems in the domestic market (demand, labour), currency imbalances across markets.
- The banning of LoUs also hit exporters hard since they use these instruments heavily to buy raw materials that are used to make export materials.

Benefits of restoring LoU and LoC

- They will benefit number of companies engaged in cross-border trade, particularly SMEs.
- Their restoration assumes more significance because the content of imports is over 20% of India's total exports.

What is Letter of Undertaking (LoU)?

- LoUs are used in international banking transactions.
- LoU is a bank guarantee under which a bank allows its customer to raise money from another Indian bank's foreign branch in the form of short-term credit.
- The loan is used to make payment to the customer's offshore suppliers in foreign currency.

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- The overseas bank usually lends to the importer based on the LoU issued by the importer's bank.
- The messages are sent through SWIFT-an inter-bank messaging network for securely transmitting instructions for financial transactions.
- The LoU is akin to a letter of credit or a guarantee.
- A LoU involves four parties-an issuing bank, a receiving bank, an importer and a beneficiary entity overseas.

What is a 'Letter Of Credit'?

- A letter of credit is a letter from a bank guaranteeing that a buyer's payment to a seller will be received on time and for the correct amount.
- In the event that the buyer is unable to make payment on the purchase, the bank will be required to cover the full or remaining amount of the purchase.

Difference between LoU and LoC

- A letter of credit is more secure because it has the details of the purchase by the importer, date of issue, expiry date, the material purchase and other transaction details.
- LoU does not have these details and when it is not linked to the banking system it cannot be traced like it happened with PNB.

What is SWIFT?

- When LoU is issued, the message of credit transfer is conveyed to overseas banks through the Society for Worldwide Interbank Financial Telecommunication (SWIFT) system.
- Such SWIFT information needs to be recorded in a bank's core banking system.
- This is significant information as it puts on record the bank's consent and guarantee.

What is CBS?

- Core Banking System is where all branches are inter-connected to ensure that the bank customers - regardless of their home branch - are able to operate their account and transact in any of the member branch located anywhere in the world.

Why is it important?

- LoUs are important instruments that allow those in the import trade to transact their business.
- As an importer in India cannot simply buy dollars and send it abroad to make payments to his supplier, instruments such as LoUs and LoCs are required to carry out the transaction.

- LoUs, which are essentially a form of guarantee, have come to be a far cheaper and convenient way for importer to raise credit.
- RBI must strengthen and tighten regulations rather than discontinuing a legitimate product and tool.

CURRENT ACCOUNT TRANSACTIONS

Current Account Transaction is a transaction other than a capital account transaction and includes:

- (a) Payment due in connection with foreign trade, other current business, services and short term banking and credit facilities in the ordinary course of business
- (b) Payments due as interest on loans and as net income from investments
- (c) Remittances for living expenses of parents, spouse and children residing abroad
- (d) Expenses in connection with foreign travel, education and medical care of parents, spouse and children.

The definition of current account transaction is inclusive and any expenditure which is not covered under capital account transaction will be current account transaction even if the transaction is not specified above.

All the current account transactions are free from restrictions, unless specifically restricted by Central Government as per section 6(4) of the Foreign Exchange Management Act, 1999 and Foreign Exchange Management (Current Account Transactions) Rules, 2000.

1. Restrictions on Current Account Transactions

A. Prohibitions

- (i) Remittances out of lottery winnings
- (ii) Remittance of income from racing/ riding etc. or any other hobby
- (iii) Remittance for purchase of lottery tickets, banned/ prescribed magazines, football pools, sweepstakes, etc.
- (iv) Payment of commission on exports made towards equity investment in Joint Ventures/ Wholly Owned Subsidiaries abroad of Indian companies
- (v) Remittance of dividend by any company to which the requirement of dividend balancing is applicable
- (vi) Payment of commission on exports under Rupee State Credit Route, except commission up to 10% of invoice value of exports of tea and tobacco
- (vii) Payment related to "Call Back Services" of telephones

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(viii) Remittance of interest income on funds held in Non-Resident Special Rupee (Account) Scheme

(ix) Drawal of foreign exchange by any person is prohibited for travel to Nepal and/ or Bhutan and/ or a transaction with a person resident in Nepal or Bhutan

B. Remittances subject to prior approval of the Central Government

S. No.	Purpose of Remittance	Approval of
1.	Cultural Tours	Ministry of Human Resources Development (Department of Education and Culture)
2.	Advertisement in foreign print media for the purposes other than promotion of tourism, foreign investments and international bidding (exceeding USD 10,000) by a State Government and its PSUs	Ministry of Finance (Department of Economic Affairs)
3.	Remittance of freight of vessel chartered by a PSU	Ministry of Surface Transport (Chartering Wing)
4.	Payment of import through ocean transport by a government department or a PSU on CIF basis	Ministry of Surface Transport, (Chartering Wing)
5.	Multi-modal transport operators making remittance to their agents abroad.	Registration Certificate from the Director General of Shipping
6.	Remittance of hiring charges of transponders by: <ul style="list-style-type: none"> • TV Channels • Internet Service Providers 	Ministry of Information and Broadcasting (Ministry of Communication and Information Technology)
7.	Remittance of container detention charges exceeding the rate prescribed by Director General of Shipping	Ministry of Surface Transport (Director General of Shipping)
8.	Remittance of prize money/ sponsorship of sports activity abroad by a person other than International/ National/ State Level sports bodies, if the amount involved exceeds USD 100,000	Ministry of Human Resources Development
9.	Remittance for membership of P & I Club	Ministry of Finance (Insurance Division)

However, if the payment is made out of funds held in Resident Foreign Currency (RFC) Account of the remitter, prior approval of Government of India will not be required.

C. Remittance Facilities subject to the limits specified

For Resident Individuals

Individuals can avail of foreign exchange facility within the limit of USD 250,000 for the following purposes:

- a. Private visits to any country (except Nepal and Bhutan)
- b. Gift or donation
- c. Going abroad for employment
- d. Emigration
- e. Maintenance of close relatives abroad
- f. Travel for business, or attending a conference or specialized training or for meeting medical expenses or check-up abroad for medical treatment/ check-up
- g. Expenses in connection with medical treatment abroad
- h. Studies abroad
- i. Any other current account transaction
- j. For the purposes mentioned in point d, g and h the individual may avail of exchange facility for an amount in excess of the limit prescribed under LRS, if it is so required by such country. However, release of foreign exchange exceeding USD 250,000 requires prior permission from the Reserve Bank of India.

If an individual remits any amount under the LRS in a financial year, then the applicable limit for such individual would be reduced from USD 250,000. The procedure for drawal or remit of any foreign exchange shall be the same as applicable for remitting any amount under LRS.

The aforesaid restrictions are not applicable for use of the International Credit Cards by residents for making payment towards expenses while on a visit outside India.

- If a person who is resident but not permanently resident in India and is
 - a. a citizen of a foreign State other than Pakistan; or
 - b. a citizen of India, who is on deputation to the office or branch of a foreign country or subsidiary or joint venture in India of such foreign company may make remittance up to his net salary (after deductions).

“Drawal means drawal of foreign exchange from an authorized person and includes

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opening of Letter of Credit or use of International Credit Card or International Debit Card or ATM Card or any other thing by whatever name called which has the effect of creating foreign exchange liability”.

i. For other than Individuals

The prior approval of Reserve Bank of India is required in the following events:

- . Donations exceeding 1% of their foreign exchange earnings during the previous 3 (three) financial years or USD 5,000,000 whichever is less, for-
 - Creation of Chairs in reputed educational institutions
 - Contribution to funds (not being an investment fund) promoted by educational institution
 - Contribution to a technical institution or body or association in the field of activity of the donor company
- a. Commission, per transaction, to agents abroad for sale of residential flats or commercial plots in India exceeding USD 25,000 or 5 % of the inward remittance whichever is more.
- b. Remittance exceeding USD 10,000,000 per project for any consultancy services in respect of infrastructure projects and USD 1,000,000 per project, for other consultancy services procured from outside India.
- c. Remittances exceeding 5 % of investment or USD 100,000 whichever is higher brought into India by an entity in India by way of reimbursement of pre-incorporation expenses.

However, if the payment is made out of funds held in Resident Foreign Currency (RFC) Account of the remitter, above mentioned limits will not be applicable.

D. Other Restrictions

Remittances in any form towards participation in lottery schemes/ fictitious schemes and offers are prohibited under FEMA.

2. Bids in Foreign Currency for Projects to be executed in India

Persons resident in India are permitted to make or to receive payments in foreign exchange, in respect of global bids where the Central Government has authorized such projects to be executed in India.

3. Liberalization of Foreign Technical Collaboration Agreements

AD Category I bank may permit drawal of foreign exchange by persons for payment of royalty and lump sum payment under technical collaboration agreements without any approval of Ministry of Commerce and Industry, Government of India.

4. Remittance for Purchase of Trademark or Franchise in India

AD Category I bank may permit drawal of foreign exchange by person for purchase of trademark or franchise in India without approval of RBI.

5. Issue of Guarantee - Import of Service

AD Category I banks are permitted to issue guarantee, to secure a direct contractual liability arising out of a contract between a resident and a non-resident, for amount not exceeding USD 500,000 or its equivalent in favour of a non-resident service provider, on behalf of a resident customer who is a service importer.

CAPITAL ACCOUNT TRANSACTIONS

Under Foreign Exchange Management Act ('FEMA'), each transaction has to be categorized as either a capital account transaction or a current account transaction for applicability of relevant regulation thereon. The two have been defined unambiguously which avoids any chance of shortcoming in our understanding.

Section 2(e) of FEMA provides an exhaustive definition of the term '*Capital Account Transaction*' which means a transaction which alters the assets or liabilities, including contingent liabilities, outside India of person resident in India or assets or liabilities in India of persons resident outside India, and includes a transaction referred in sub-section (3) of section 6.

As per the provision of section 6(4) of FEMA 1999, all capital account transactions are prohibited unless specifically permitted.

Permissible capital account transactions

The permissible capital account transactions are defined under the following two categories:

1. For persons resident in India
2. For person resident outside India

Category I - Permissible capital account transactions for persons resident in India

Presented below is the list of capital account transactions which are specifically permitted for the persons resident outside India:

(a) Investment by a person resident in India in foreign securities

The transaction must be within the limit specified in the Foreign Exchange Management (Transfer or Issue of Foreign Security by a Person Resident in India) Regulations, 2004

For example, remittance of upto USD 1 billion (or its equivalent) in a financial year is allowed towards investment in foreign securities subject to a stipulation which requires that the remittance should not exceed 400% of the net worth as per the last audited balance sheet of the India Party.

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(b) Foreign currency loans raised in India and abroad by a person resident in India

The transaction must be within the limit specified in the Foreign Exchange Management (Borrowing or Lending in Foreign Exchange) Regulations, 2000.

The limit of foreign currency loans is specified in two broad heads:

- **On the basis of maturity period:**

Foreign currency loans may be raised under different tracks depending upon the maturity period. Under track I and track III, the said loan upto USD 50 million (or its equivalent) may be raised if the average maturity period is 3 years. In the event the average maturity period is 5 years, the limit of borrowing may be enhanced to an indefinite amount (however, relaxation is granted to certain classes of borrowers). Under track II, if the average maturity period is 10 years, unrestricted foreign currency loans may be raised.

- **On the basis of eligibility of borrowers:**

The limit of foreign currency loans differs with the category of borrowers. For Infrastructure Companies, Core Investments Companies, certain NBFCs, etc. may raise upto USD 750 million (or its equivalent). Software development sector and entities engaged in micro financier activities may raise upto USD 200 million or USD 100 million (or its equivalent) respectively. However, other entities as provided may raise upto USD 500 million (or its equivalent).

(c) Transfer of immovable property outside India by a person resident in India

Such transfers shall be governed by the provisions contained in the Foreign Exchange Management (Acquisition and Transfer of Immovable Property outside India) Regulations, 2015.

(d) Guarantees issued by a person resident in India in favour of a person resident outside India

Pursuant to Foreign Exchange Management (Guarantee) Regulations, 2000, an authorised dealer may provide guarantee upto USD 5,00,000 (or its equivalent) in favour of a non-resident service provider, on behalf of a resident customer who is a service importer (other than PSU or Government undertaking) on prescribed terms. In case the resident service exporter is a PSU or a Government undertaking, the limit of guarantee shall be upto USD 1,00,000.

No limit has been prescribed in the said regulations for other transactions.

(e) Export, import and holding of currency/currency notes

Foreign Exchange Management (Export and Import of Currency) Regulations, 2015 prescribed the following limits:

For export of currency/currency notes:

- A person resident in India may take outside India (other than Nepal and Bhutan) Indian currency notes up to an amount of Rs. 25,000 per person.
- A person resident in India may take or send outside India (other than Nepal and Bhutan) commemorative coins upto 2 coins each.

For import of currency/currency notes:

- A person resident in India who had gone out of India on a temporary visit may bring currency notes of India up to an amount of Rs. 25,000 per person at the time of his return (from a place other than Nepal and Bhutan)
- Aggregate value of the foreign exchange in the form of currency notes, bank notes or travelers' cheques brought in India by any person in aggregate at one time is up to USD 10,000 (or its equivalent)
- Aggregate value of foreign currency notes brought in India by any person at one time is up to USD 5,000 (or its equivalent).

Export and import of currency to or from Nepal and Bhutan:

- An individual travelling from India to Nepal or Bhutan may carry Indian currency notes of denomination Rs. 500 and or Rs. 2,000 upto a limit of Rs. 25,000.
- Other than above, a person may take or send out of India to Nepal or Bhutan, Indian currency notes (other than notes of denominations of above Rs. 100)
- A person may bring into India from Nepal or Bhutan, India Currency notes (other than notes of denominations of above Rs. 100)

The limit for holding of currency notes is specified in Foreign Exchange Management (Possession and Retention of Foreign Currency) Regulations, 2015

- Foreign exchange in the form of currency notes, bank notes and travelers' cheque in aggregate upto USD 2,000 (or its equivalent) subject to acquisition of such foreign exchange in the modes prescribed in the said regulations.

(f) Loans and overdrafts (borrowings) by a person resident in India from a person resident outside India

This transaction covers the limits specified in the Foreign Exchange Management (Borrowing or Lending in Foreign Exchange) Regulations, 2000 along with the limits specified in the Foreign Exchange Management (Borrowing or Lending in Rupees) Regulations, 2000

It is to be taken into consideration that Rupee Denominated Bonds can also be categorized under such transactions. For minimum average maturity period of 3 years, upto USD 50 million equivalents in INR per financial year may be raised. However, in case the minimum

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average maturity period is of 5 years, above USD 50 million equivalents in INR per financial year.

(g) Maintenance of foreign currency accounts in India and outside India by a person resident in India

Foreign currency account means an account held or maintained in currency other than the currency of India or Nepal or Bhutan.

No limit has been prescribed for credit to or debit from such Foreign Currency Accounts.

(h) Taking out of insurance policy by a person resident in India from an insurance company outside India

The limit of aggregate remittance including the amount of premium by person resident in India to an insurance company outside India should be up to USD 2,50,000 per financial year pursuant to Foreign Exchange Management (Insurance) regulations, 2015. However, this limit is not applicable if the insurer is under the specific/ general permission of Indian Government.

(i) Loans and overdrafts by a person resident in India to a person resident outside India

Lending in foreign exchange by person in India is governed by Foreign Exchange Management (Borrowing or Lending in Foreign Exchange) Regulations, 2000 and Foreign Exchange Management (Borrowing or Lending in Rupees) Regulations, 2000.

In case, the rupee loan is granted to a close non-resident Indian relative by crossed cheque / electronic transfer, the loan amount shall be within the overall limit of USD 2,50,000 per financial year.

(j) Remittance outside India of capital assets of a person resident in India

Pursuant to Foreign Exchange Management (Remittance of Assets) Regulations, 2016, prescribed classes of persons may remit amount through Authorised Dealer upto USD 1 million per financial year.

(k) Sale and purchase of foreign exchange derivatives in India and abroad and commodity derivatives abroad by a person resident in India

Such transactions shall be governed by Foreign Exchange Management (Foreign Exchange Derivatives Contracts) Regulations, 2000.

Note: A resident Individual may draw from AD foreign exchange up to USD 2,50,000 per financial year for capital account transactions where no other limit has been prescribed in the relevant regulations.

Category 2 : Permissible capital account transactions for persons resident outside India

(a) Investment in India by a person resident outside India, that is to say,

- (i) Issue of security by a body corporate or an entity in India and investment therein by a person resident outside India; and

- (ii) Investment by way of contribution by a person resident outside India to the capital of a firm or a proprietorship concern or an association of persons in India.

The limits are governed by Foreign Exchange Management (Transfer or Issue of Security by a Person Resident outside India) Regulations, 2000. The sectoral caps are provided in the Annex B to the said regulations. However, it is to be noted that no foreign direct investment is permitted to be made in the sectors specifically prohibited in the Annex. A.

(b) Acquisition and transfer of immovable property in India by a person resident outside India

No limit has been prescribed in Foreign Exchange Management (Acquisition and Transfer of Immovable Property in India) Regulations, 2000. However the acquisitions and transfers are subject to the conditionalities prescribed.

(c) Guarantee by a person resident outside India in favour of, or on behalf of, a person resident in India

The Foreign Exchange Management (Guarantee) Regulations, 2000 provide restrictions for Indian companies to avail overseas guarantees in the form of domestic rupee denominated structured obligations by obtaining credit enhancement from international banks, international financial institutions or joint venture partners.

However, this restriction does not apply to eligible borrowers (under ECB regulations) for guarantee for similar transaction for domestic debts raised by such companies through issue of capital market instruments.

(d) Import and export of currency/currency notes into/from India by a person resident outside India

Foreign Exchange Management (Export and Import of Currency) Regulations, 2015 prescribed the following limits:

For export of currency/ currency notes

- A person resident outside India (other than citizen of Pakistan or Bangladesh) and visiting India, may take outside India, Indian currency notes up to an amount not exceeding INR 25,000 per person.

For import of currency/ currency notes

- A person resident outside India (other than citizen of Pakistan or Bangladesh) and visiting India, may bring into India, India currency notes up to an amount not exceeding INR 25,000 per person.
- Aggregate value of the foreign exchange in the form of currency notes, bank notes or travelers' cheques brought in India by any person in aggregate at one time is up to USD 10,000 (or its equivalent)

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- Aggregate value of foreign currency notes brought in India by any person at one time is upto USD 5,000 (or its equivalent).

Export and Import of currency to or from Nepal and Bhutan:

- An individual travelling from India to Nepal or Bhutan may carry Indian currency notes of denomination Rs. 500 and or Rs. 2,000 upto a limit of Rs. 25,000.
- Other than above, a person may take or send out of India to Nepal or Bhutan, Indian currency notes (other than notes of denominations of above Rs. 100)
- A person may bring into India from Nepal or Bhutan, India Currency notes (other than notes of denominations of above Rs. 100)

(e) Deposits between a person resident in India and a person resident outside India

The deposits between a person resident in India and a person resident outside India are governed by Foreign Exchange Management (Deposits) Regulations, 2016.

The regulations nowhere restrict the amount of the deposits; they rather provide that the amount of deposits accepted shall not be allowed to be repatriated outside India. Further, an Indian company may accept deposits by issue of commercial paper to a non-resident Indian or a person of Indian origin or foreign portfolio investor registered under SEBI subject to prescribed conditions.

(f) Foreign currency accounts in India of a person resident outside India

NRI and PIO are eligible to obtain NRE, NRO and FCNR accounts with AD: Maximum amount of remittance allowed from NRO account is USD 1 million per financial year.

(g) Remittance outside India of capital assets in India of a person resident outside India.

An NRI or a PIO may remit through AD upto USD 1 million per financial year.

Prohibition on person resident outside India

A person resident outside India shall not make investment in the following sectors:

- Business of chit fund (may be allowed subject to authorization given by Registrar Of Chits or officer authorised by concerned State Government)
- Nidhi company
- Agricultural or plantation activities
- Real estate business or construction of farm house
- Trading in transferable development rights

Mode of payment for investment

Normal banking channels or debit to an account of the investor maintained with AD in India.

Declaration

Declaration shall be furnished by each person at the time of selling or drawing the foreign exchange to or from AD for capital account transactions as prescribed under relevant regulations.

FDI / FPI Guidelines in India and impact of Inflows & Outflows on Forex Treasury

To promote Foreign Direct Investment (FDI), the Government has put in place an investor friendly policy, wherein except for a small negative list, most sectors are open for 100% FDI under the Automatic route. Further, the policy on FDI is reviewed on an ongoing basis, to ensure that India remains attractive & investor friendly destination. Changes are made in the policy after having intensive consultations with stakeholders including apex industry chambers, Associations, representatives of industries / groups and other organizations taking into consideration their views/comments. The FDI policy is applicable across the sectors/ industries and equally applies to SME sector.

Apart from being a critical driver of economic growth, foreign direct investment (FDI) is a major source of non-debt financial resource for the economic development of India. Foreign companies invest in India to take advantage of relatively lower wages, special investment privileges such as tax exemptions, etc. For a country where foreign investments are being made, it also means achieving technical know-how and generating employment.

The Indian government's favourable policy regime and robust business environment have ensured that foreign capital keeps flowing into the country. The government has taken many initiatives in recent years such as relaxing FDI norms across sectors such as defence, PSU oil refineries, telecom, power exchanges, and stock exchanges, among others.

Understanding of Some Key Terms

'AD Category-I Bank' means a bank(Scheduled Commercial, State or Urban Cooperative) which is authorized under Section 10(1) of FEMA to undertake all current and capital account transactions according to the directions issued by the RBI from time to time.

'Authorized Bank' means a bank including a co-operative bank (other than an authorized dealer) authorized by the Reserve Bank to maintain an account of a person resident outside India.

'Authorized Dealer' means a person authorized as an authorized dealer under subsection (1) of section 10 of FEMA.

'Authorized Person' means an authorized dealer, money changer, offshore banking unit or any other person for the time being authorized under sub-section (a) of section 10 of FEMA to deal in foreign exchange or foreign securities.

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'Capital' means equity shares; fully, compulsorily & mandatorily convertible preference shares; fully, compulsorily & mandatorily convertible debentures and warrants.

The equity shares issued in accordance with the provisions of the Companies Act, as applicable, shall include equity shares that have been partly paid. Preference shares and convertible debentures shall be required to be fully paid, and should be mandatorily and fully convertible. Further, 'warrant' includes Share Warrant issued by an Indian Company in accordance to provisions of the Companies Act, as applicable.

'Capital account transaction' means a transaction which alters the assets or liabilities, including contingent liabilities, outside India of persons resident in India or assets or liabilities in India of persons resident outside India, and includes transactions referred to in sub-section (3) of section 6 of FEMA.

'Competent Authority' means the concerned Administrative Ministry/Department empowered to grant government approval for foreign investment under the extant FDI Policy and FEMA Regulations.

'Control' shall include the right to appoint a majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements. For the purposes of Limited Liability Partnership, 'control' will mean right to appoint majority of the designated partners, where such designated partners, with specific exclusion to others, have control over all the policies of the LLP.

'Convertible Note' means an instrument issued by a startup company evidencing receipt of money initially as debt, which is repayable at the option of the holder, or which is convertible into such number of equity shares of such startup company, within a period not exceeding five years from the date of issue of the convertible note, upon occurrence of specified events as per the other terms and conditions agreed to and indicated in the instrument.

'Depository Receipt' (DR) means a negotiable security issued outside India by a Depository bank, on behalf of an Indian company, which represent the local Rupee denominated equity shares of the company held as deposit by a Custodian bank in India. DRs are traded on Stock Exchanges in the US, Singapore, Luxembourg, etc. DRs listed and traded in the US markets are known as American Depository Receipts (ADRs) and those listed and traded anywhere/elsewhere are known as Global Depository Receipts (GDRs). DRs are governed by Notification No. FEMA 330/ 2014-RB, issued by Reserve Bank of India.

'Employees' Stock Option' means the option given to the directors, officers or employees of a company or of its holding company or joint venture or wholly owned overseas subsidiary / subsidiaries, if any, which gives such directors, officers or employees, the benefit or right to purchase, or to subscribe for, the shares of the company at a future date at a pre-determined price.

'Erstwhile Overseas Corporate Body' (OCB) means a company, partnership firm, society and other corporate body owned directly or indirectly to the extent of at least sixty percent by non-resident Indians and includes overseas trust in which not less than sixty percent beneficial interest is held by non-resident Indians directly or indirectly but irrevocably and which was in existence on the date of commencement of the Foreign Exchange Management (Withdrawal of General Permission to Overseas Corporate Bodies (OCBs)) Regulations, 2003 (the Regulations) and immediately prior to such commencement was eligible to undertake transactions pursuant to the general permission granted under the Regulations.

'Foreign Currency Convertible Bond' (FCCB) means a bond issued by an Indian company expressed in foreign currency, the principal and interest of which is payable in foreign currency. FCCBs are issued in accordance with the Foreign Currency Convertible Bonds and ordinary shares (through depository receipt mechanism) Scheme, 1993 and subscribed by a non-resident entity in foreign currency and convertible into ordinary shares of the issuing company in any manner, either in whole, or in part.

'FDI' means investment by non-resident entity/person resident outside India in the capital of an Indian company under Schedule 1 of Foreign Exchange Management (Transfer or Issue of Security by a Person Resident Outside India) Regulations, 2000

'FDI linked performance conditions' means the sector specific conditions for companies receiving foreign investment.

'FEMA' means the Foreign Exchange Management Act, 1999 (42 of 1999).

'Foreign Institutional Investor' (FII) means an entity established or incorporated outside India which proposes to make investment in India and which is registered as a FII in accordance with the Securities and Exchange Board of India (SEBI) (Foreign Institutional Investor) Regulations 1995.

'Foreign Portfolio Investor'(FPI) means a person registered in accordance with the provisions of Securities and Exchange Board of India (SEBI) (Foreign Portfolio Investors) Regulations, 2014, as amended from time to time.

'Foreign Venture Capital Investor' (FVCI) means an investor incorporated and established outside India, which is registered under the Securities and Exchange Board of India (Foreign Venture Capital Investor) Regulations, 2000 {SEBI(FVCI) Regulations} and proposes to make investment in accordance with the regulations.

'Government route' means that investment in the capital of resident entities by non-resident entities can be made only with the prior approval of Government (Competent Ministry/Department for grant of approval).

'Group Company' means two or more enterprises which, directly or indirectly, are in a position to:

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- (i) Exercise twenty-six percent or more of voting rights in other enterprise; or
- (ii) Appoint more than fifty percent of members of board of directors in the other enterprise.

'Holding Company' would have the same meaning as defined in Companies Act, as applicable.

'Indian Company' means a company incorporated in India under the Companies Act, as applicable.

'Indian Venture Capital Undertaking' (IVCU) means an Indian company:

- (i) whose shares are not listed in a recognised stock exchange in India;
- (ii) which is engaged in the business of providing services, production or manufacture of articles or things, but does not include such activities or sectors which are specified in the negative list by the SEBI, with approval of Central Government, by notification in the Official Gazette in this behalf.

'Investment Vehicle' shall mean an entity registered and regulated under relevant regulations framed by SEBI or any other authority designated for the purpose and shall include Real Estate Investment Trusts (REITs) governed by the SEBI (REITs) Regulations, 2014, Infrastructure Investment Trusts (Invlts) governed by the SEBI (Invlts) Regulations, 2014 and Alternative Investment Funds (AIFs) governed by the SEBI (AIFs) Regulations, 2012.

'Investing Company' means an Indian Company holding only investments in other Indian company/(ies), directly or indirectly, other than for trading of such holdings/ securities.

'Investment on repatriable basis' means investment, the sale proceeds of which, net of taxes, are eligible to be repatriated out of India and the expression 'investment on non-repatriable basis' shall be construed accordingly.

'Joint Venture' (JV) means an Indian entity incorporated in accordance with the laws and regulations in India in whose capital a non-resident entity makes an investment.

'Limited Liability Partnership' means a Limited Liability Partnership firm, formed and registered under the Limited Liability Partnership Act, 2008.

'Manufacture', with its grammatical variations, means a change in a non-living physical object or article or thing- (a) resulting in transformation of the object or article or thing into a new and distinct object or article or thing having a different name, character and use; or (b) bringing into existence of a new and distinct object or article or thing with a different chemical composition or integral structure.

'Non-resident entity' means a 'person resident outside India' as defined under FEMA.

'Non-Resident Indian' (NRI) means an individual resident outside India who is a citizen of India or is an 'Overseas Citizen of India' cardholder within the meaning of section 7 (A) of the Citizenship Act, 1955. 'Persons of Indian Origin' cardholders registered as such under

Notification No. 26011/4/98 F.I. dated 19.8.2002 issued by the Central Government are deemed to be 'Overseas Citizen of India' cardholders'

A company is considered as 'Owned' by resident Indian citizens if more than 50% of the capital in it is beneficially owned by resident Indian citizens and / or Indian companies, which are ultimately owned and controlled by resident Indian citizens. A Limited Liability Partnership will be considered as owned by resident Indian citizens if more than 50% of the investment in such an LLP is contributed by resident Indian citizens and/or entities which are ultimately 'owned and controlled by resident Indian citizens' and such resident Indian citizens and entities have majority of the profit share.

'Person' includes

- (i) an individual,
- (ii) a Hindu undivided family,
- (iii) a company,
- (iv) a firm,
- (v) an association of persons or a body of individuals whether incorporated or not,
- (vi) every artificial juridical person, not falling within any of the preceding subclauses, and
- (vii) any agency, office, or branch owned or controlled by such person.

'Person of Indian Origin' (PIO) means a citizen of any country other than Bangladesh or Pakistan, if

- (i) he at any time held Indian Passport; or
- (ii) he or either of his parents or any of his grandparents was a citizen of India by virtue of the Constitution of India or the Citizenship Act, 1955 (57 of 1955); or
- (iii) the person is a spouse of an Indian citizen or a person referred to in sub-clause (i) or (ii).

'Person resident in India' means

- (i) a person residing in India for more than one hundred and eighty-two days during the course of the preceding financial year but does not include-
 - A. A person who has gone out of India or who stays outside India, in either case
 - a. for or on taking up employment outside India, or
 - b. for carrying on outside India a business or vocation outside India, or
 - c. for any other purpose, in such circumstances as would indicate his intention to stay outside India for an uncertain period;
 - B. A person who has come to or stays in India, in either case, otherwise than

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- a. for or on taking up employment in India; or
 - b. for carrying on in India a business or vocation in India, or
 - c. for any other purpose, in such circumstances as would indicate his intention to stay in India for an uncertain period;
- ii. any person or body corporate registered or incorporated in India,
 - iii. an office, branch or agency in India owned or controlled by a person resident outside India,
 - iv. an office, branch or agency outside India owned or controlled by a person resident in India.

'Person resident outside India' means a person who is not a Person resident in India. 'Portfolio Investment Scheme' means the Portfolio Investment Scheme referred to in Schedules 2, 2A & 3 of FEMA (Transfer or Issue of Security by a Person Resident Outside India) Regulations, 2000.

'RBI' means the Reserve Bank of India established under the Reserve Bank of India Act, 1934.

'Resident Entity' means 'Person resident in India' excluding an individual.

'Resident Indian Citizen' shall be interpreted in line with the definition of 'person resident in India' as per FEMA, 1999, read in conjunction with the Indian Citizenship Act, 1955.

'SEBI' means the Securities and Exchange Board of India established under the Securities and Exchange Board of India Act, 1992.

'SEZ' means a Special Economic Zone as defined in Special Economic Zone Act, 2005.

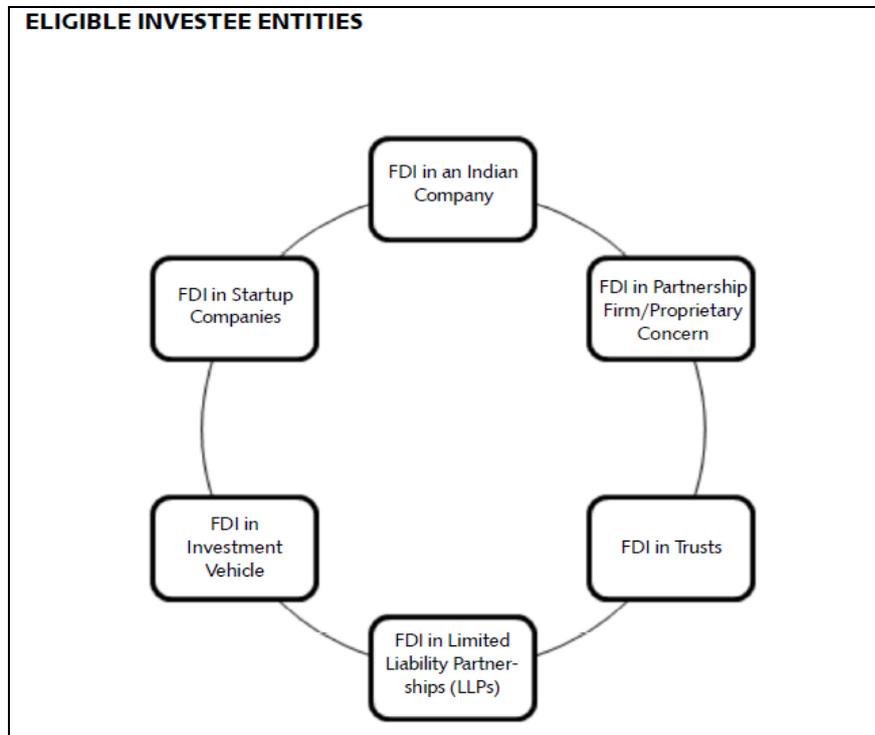
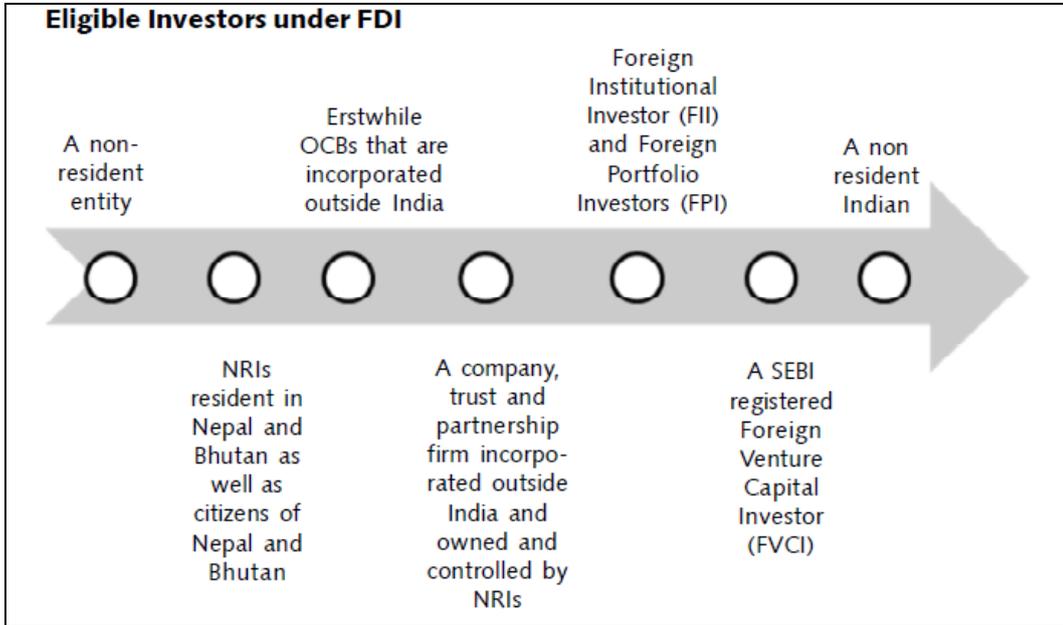
'SIA' means Secretariat of Industrial Assistance in DIPP, Ministry of Commerce & Industry, and Government of India.

'Sweat Equity Shares' means such equity shares as issued by a company to its directors or employees at a discount or for consideration other than cash, for providing their know-how or making available rights in the nature of intellectual property rights or value additions, by whatever name called.

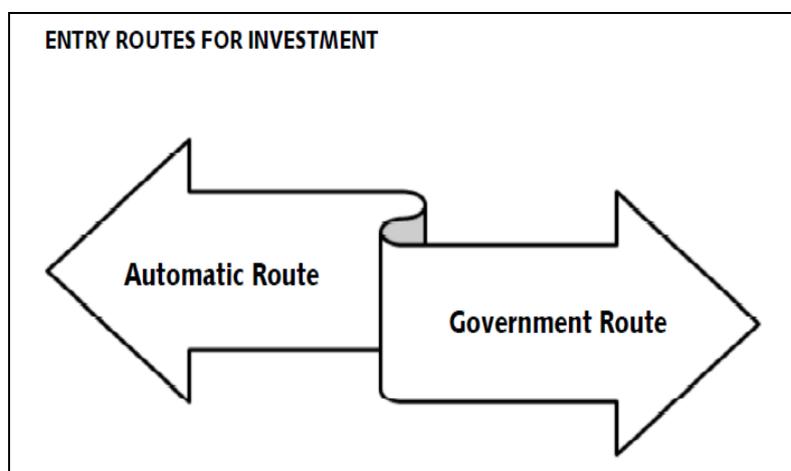
'Transferable Development Rights' (TDR) means certificates issued in respect of category of land acquired for public purposes either by the Central or State Government in consideration of surrender of land by the owner without monetary compensation, which are transferable in part or whole.

'Unit' shall mean beneficial interest of an investor in the Investment Vehicle and shall include shares or partnership interests.

'Venture Capital Fund' (VCF) means a Fund registered as a 'venture capital fund' under SEBI (Venture Capital Funds) Regulations, 1996.



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An Indian company may receive Foreign Direct Investment under the two routes as given under:

Automatic Route

FDI is allowed under the automatic route without prior approval either of the Government or the Reserve Bank of India in all activities/sectors as specified in the consolidated FDI Policy, issued by the Government of India from time to time.

Government Route

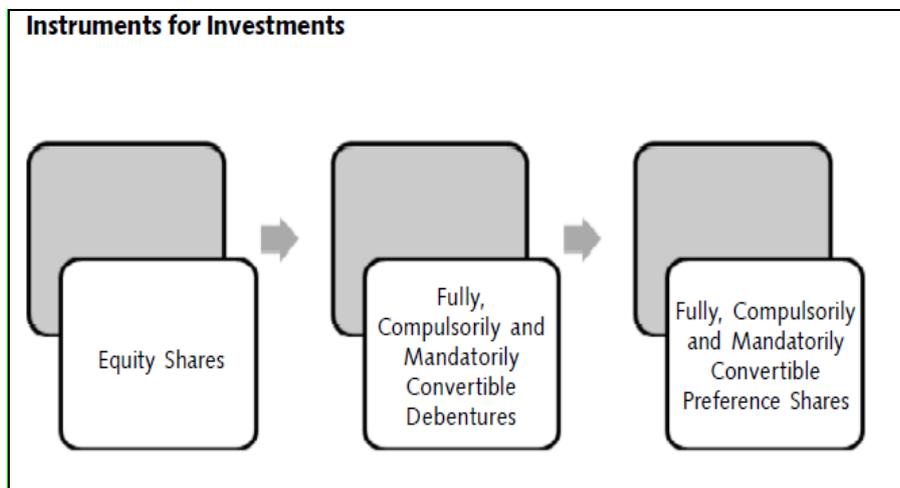
FDI in activities not covered under the automatic route requires prior approval of the Government. Proposals for foreign investment under Government route are considered by respective Administrative Ministry/Department.

Foreign investment in sectors/activities under government approval route will be subject to government approval where:

- i. An Indian company is being established with foreign investment and is not owned by a resident entity or
- ii. An Indian company is being established with foreign investment and is not controlled by a resident entity or
- iii. The control of an existing Indian company, currently owned or controlled by resident Indian citizens and Indian companies, which are owned or controlled by resident Indian citizens, will be/is being transferred/passed on to a nonresident entity as a consequence of transfer of shares and/or fresh issue of shares to non-resident entities through amalgamation, merger/demerger, acquisition etc. or
- iv. The ownership of an existing Indian company, currently owned or controlled by resident Indian citizens and Indian companies, which are owned or controlled by resident Indian

citizens, will be/is being transferred/passed on to a nonresident entity as a consequence of transfer of shares and/or fresh issue of shares to non-resident entities through amalgamation, merger/demerger, acquisition etc.

- v. It is clarified that Foreign investment shall include all types of foreign investments, direct and indirect, regardless of whether the said investments have been made under Schedule 1 (FDI), 2 (FII), 2A (FPI), 3 (NRI), 6 (FVCI), 9 (LLPs), 10 (DRs) and 11(Investment Vehicles) of FEMA (Transfer or Issue of Security by Persons Resident Outside India) Regulations. FCCBs and DRs having underlying of instruments which can be issued under Schedule 5, being in the nature of debt, shall not be treated as foreign investment. However, any equity holding by a person resident outside India resulting from conversion of any debt instrument under any arrangement shall be reckoned as foreign investment.
- vi. Investment by NRIs under Schedule 4 of FEMA (Transfer or Issue of Security by Persons Resident outside India) Regulations will be deemed to be domestic investment at par with the investment made by residents.
- vii. A company, trust and partnership firm incorporated outside India and owned and controlled by non-resident Indians will be eligible for investments under Schedule 4 of FEMA (Transfer or issue of Security by Persons Resident Outside India) Regulations, and such investment will also be deemed domestic investment at par with the investment made by residents.



Investments can be made by non-residents in the equity shares/fully, compulsorily and mandatorily convertible debentures/fully, compulsorily and mandatorily convertible preference shares of an Indian company, through the Automatic Route or the Government Route. The Indian company having received FDI either under the Automatic route or the Government route is required to comply with provisions of the FDI policy including reporting the FDI to the Reserve Bank.

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PROHIBITED SECTORS

FDI is prohibited in:

Lottery Business including Government/private lottery, online lotteries, etc.

Gambling and Betting including casinos etc.

Chit Funds

Nidhi Company

Trading in Transferable Development Rights (TDRs)

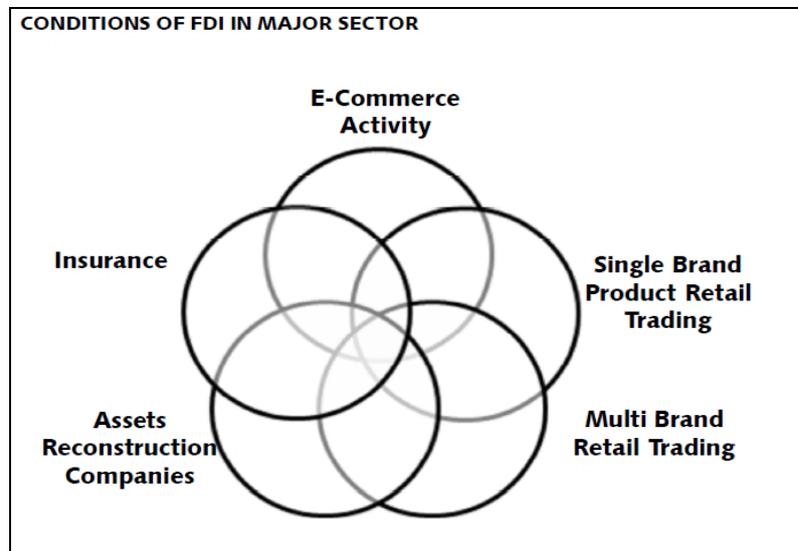
Real Estate Business* or Construction of Farm Houses

Manufacturing of cigars, cheroots, cigarillos and cigarettes, of tobacco or of tobacco substitutes

Activities/sectors not open to private sector investment e.g.(I) Atomic Energy and (II) Railway operations(other than permitted activities).

Foreign technology collaboration in any form including licensing for franchise, trademark, brand name, management contract is also prohibited for Lottery Business and Gambling and Betting

Note:- 'Real estate business' shall not include development of townships, construction of residential /commercial premises, roads or bridges and Real Estate Investment Trusts (REITs) registered and regulated under the SEBI (REITs) Regulations 2014.*



TYPES OF INSTRUMENTS THAT CAN BE USED UNDER FDI

1. Indian companies can issue equity shares, fully, compulsorily and mandatorily convertible debentures and fully, compulsorily and mandatorily convertible preference shares subject to pricing guidelines/valuation norms prescribed under FEMA Regulations. The price/conversion formula of convertible capital instruments should be determined upfront at the time of issue of the instruments. The price at the time of conversion should not in any case be lower than the fair value worked out, at the time of issuance of such instruments, in accordance with the extant FEMA regulations [as per any internationally accepted pricing methodology on arm's length basis for the unlisted companies and valuation in terms of SEBI (ICDR) Regulations, for the listed companies]. Optionality clauses are allowed in equity shares, fully, compulsorily and mandatorily convertible debentures and fully, compulsorily and mandatorily convertible preference shares under FDI scheme, subject to the following conditions:

- (a) There is a minimum lock-in period of one year which shall be effective from the date of allotment of such capital instruments.
- (b) After the lock-in period and subject to FDI Policy provisions, if any, the non-resident investor exercising option/right shall be eligible to exit without any assured return, as per pricing/valuation guidelines issued by RBI from time to time.

2. Other types of Preference shares/Debentures i.e. non-convertible, optionally convertible or partially convertible for issue of which funds have been received on or after May 1, 2007 are considered as debt. Accordingly, all norms applicable for ECBs relating to eligible borrowers, recognized lenders, amount and maturity, end-use stipulations, etc. shall apply. Since these instruments would be denominated in rupees, the rupee interest rate will be based on the swap equivalent of London Interbank Offered Rate (LIBOR) plus the spread as permissible for

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ECBs of corresponding maturity. 3. The inward remittance received by the Indian company vide issuance of DRs and FCCBs are treated as FDI and counted towards FDI.

3. Acquisition of Warrants and Partly Paid Shares - An Indian Company may issue warrants and partly paid shares to a person resident outside India subject to terms and conditions as stipulated by the Reserve Bank of India in this behalf, from time to time.

4. Issue of Foreign Currency Convertible Bonds (FCCBs) and Depository Receipts (DRs):

(a) FCCBs/DRs may be issued in accordance with the Scheme for issue of Foreign Currency Convertible Bonds and Ordinary Shares (Through Depository Receipt Mechanism) Scheme, 1993 and DR Scheme 2014 respectively, as per the guidelines issued by the Government of India there under from time to time.

(b) DRs are foreign currency denominated instruments issued by a foreign depository in a permissible jurisdiction against a pool of permissible securities issued or transferred to that foreign depository and deposited with a domestic custodian.

(c) A person will be eligible to issue or transfer eligible securities to a foreign depository, for the purpose of converting the securities so purchased into depository receipts in terms of Depository Receipts Scheme, 2014 and guidelines issued by the Government of India thereunder from time to time.

(d) A person can issue DRs, if eligible to issue eligible instruments to person resident outside India under Schedules 1, 2, 2A, 3, 5 and 8 of the FEM (Transfer or Issue of Security by a person Resident outside India) Regulations, 2000, as amended from time to time.

(e) The aggregate of eligible securities which may be issued or transferred to foreign depositories, along with eligible securities already held by persons resident outside India, shall not exceed the limit on foreign holding of such eligible securities under the relevant regulations framed under FEMA, 1999.

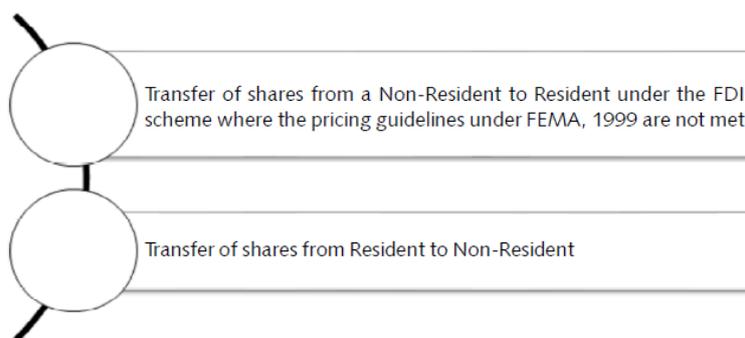
(f) The pricing of eligible securities to be issued or transferred to a foreign depository for the purpose of issuing depository receipts should not be at a price less than the price applicable to a corresponding mode of issue or transfer of such securities to domestic investors under the relevant regulations framed under FEMA, 1999.

(g) The issue of depository receipts as per DR Scheme 2014 shall be reported to the Reserve Bank by the domestic custodian as per the reporting guidelines for DR Scheme 2014.

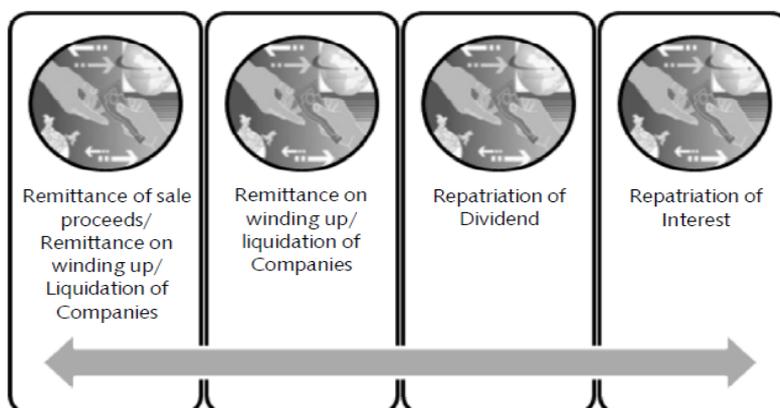
5. (i) Two-way Fungibility Scheme: A limited two-way Fungibility scheme has been put in place by the Government of India for ADRs/GDRs. Under this Scheme, a stockbroker in India, registered with SEBI, can purchase shares of an Indian company from the market for conversion into ADRs/GDRs based on instructions received from overseas investors. Re-issuance of ADRs/GDRs would be permitted to the extent of ADRs/GDRs which have been redeemed into underlying shares and sold in the Indian market.

(ii) Sponsored ADR/GDR issue: An Indian Company can also sponsor 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 resident shareholders who have tendered such shares for conversion into ADRs/GDRs.

In the Following Cases, Approval of RBI is not Required



REMITTANCE AND REPATRIATION



Remittance of sale proceeds

(i) Sale proceeds of shares and securities and their remittance is 'remittance of asset' governed by The Foreign Exchange Management (Remittance of Assets) Regulations, 2000 under FEMA.

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- (ii) AD Category-I bank can allow the remittance of sale proceeds of a security (net of applicable taxes) to the seller of shares resident outside India, provided the security has been held on repatriation basis, the sale of security has been made in accordance with the prescribed guidelines and NOC / tax clearance certificate from the Income Tax Department has been produced.

Remittance on Winding Up/Liquidation of Companies

AD Category-I banks have been allowed to remit winding up proceeds of companies in India, which are under liquidation, subject to payment of applicable taxes. Liquidation may be subject to any order issued by the court winding up the company or the official liquidator in case of voluntary winding up under the provisions of the Companies Act, , as applicable.

AD Category-I banks shall allow the remittance, provided the applicant submits:

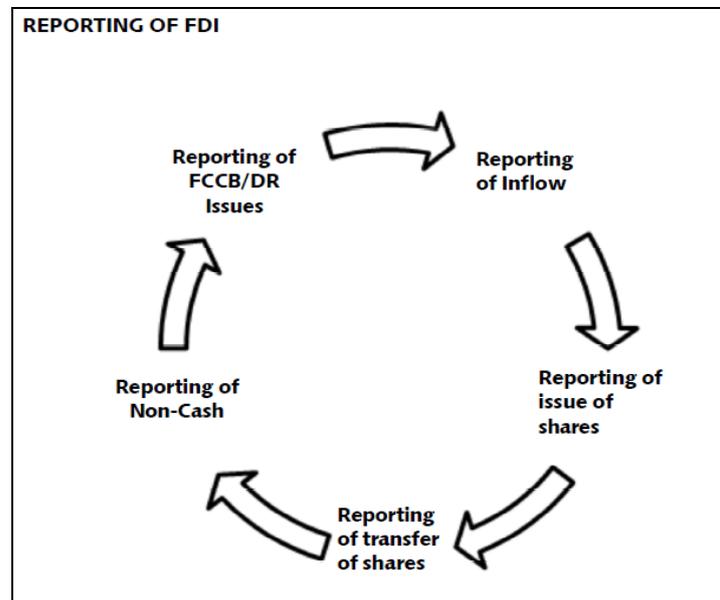
- (a) No objection or Tax clearance certificate from Income Tax Department for the remittance.
- (b) Auditor's certificate confirming that all liabilities in India have been either fully paid or adequately provided for.
- (c) Auditor's certificate to the effect that the winding up is in accordance with the provisions of the Companies Act, as applicable.
- (d) In case of winding up otherwise than by a court, an auditor's certificate to the effect that there are no legal proceedings pending in any court in India against the applicant or the company under liquidation and there is no legal impediment in permitting the remittance.

Repatriation of Dividend

- (i) Dividends are freely repatriable without any restrictions (net after Tax deduction at source or Dividend Distribution Tax, if any, as the case may be).
- (ii) The repatriation is governed by the provisions of the Foreign Exchange Management (Current Account Transactions) Rules, 2000, as amended from time to time.

Repatriation of Interest

- (i) Interest on fully, mandatorily & compulsorily convertible debentures is also freely repatriable without any restrictions (net of applicable taxes).
- (ii) The repatriation is governed by the provisions of the Foreign Exchange Management (Current Account Transactions) Rules, 2000, as amended from time to time.



Reporting of Inflow

- (i) An Indian company receiving investment from outside India for issuing shares/ convertible debentures/preference shares under the FDI Scheme, should report the details of the amount of consideration to the Regional Office concerned of the Reserve Bank not later than 30 days from the date of receipt in the Advance Reporting Form.
- (ii) Indian companies are required to report the details of the receipt of the amount of consideration for issue of shares/convertible debentures, through an AD Category-I bank, together with a copy/ies of the FIRC/s evidencing the receipt of the remittance along with the KYC report on the non-resident investor from the overseas bank remitting the amount. The report would be acknowledged by the Regional Office concerned, which will allot a Unique Identification Number (UIN) for the amount reported.
- (iii) An Indian company issuing partly paid equity shares, shall furnish a report not later than 30 days from the date of receipt of each call payment.

Reporting of issue of shares

- (i) After issue of shares (including bonus and shares issued on rights basis and shares issued under ESOP and against Convertible Notes)/fully, mandatorily & compulsorily convertible debentures/fully, mandatorily & compulsorily convertible preference shares, the Indian company has to file Form FC-GPR, not later than 30 days from the date of issue of shares.
- (ii) Form FC-GPR has to be duly filled up and signed by Managing Director/Director/Secretary of the Company and submitted to the Authorized Dealer of the company, who

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will forward it to the Reserve Bank. The following documents have to be submitted along with the form:

- (a) A certificate from the Company Secretary of the company certifying that:
 - (A) All the requirements of the Companies Act, as applicable, have been complied with;
 - (B) Terms and conditions of the Government of India approval, if any, have been complied with;
 - (C) The company is eligible to issue shares; and
 - (D) The company has all original certificates issued by authorized dealers in India evidencing receipt of amount of consideration.

Note: For companies with paid up capital with less than Rs.5 crore, the above mentioned certificate can be given by a practicing company secretary.

- (b) A certificate from SEBI registered Merchant Banker or Chartered Accountant indicating the manner of arriving at the price of the shares issued to the persons resident outside India.
- (c) The report of receipt of consideration as also Form FC-GPR have to be submitted by the AD Category-I bank to the Regional Office concerned of the Reserve Bank under whose jurisdiction the registered office of the company is situated.

Note: An Indian company issuing partly paid equity shares shall file a report in form FC-GPR to the extent they become paid up.

- (d) Annual return on Foreign Liabilities and Assets should be filed on an annual basis by the Indian company, directly with the Reserve Bank. This is an annual return to be submitted by 15th of July every year, pertaining to all investments by way of direct/portfolio investments/reinvested earnings/ other capital in the Indian company made during the previous years (i.e. the information submitted by 15th July will pertain to all the investments made in the previous years up to March 31). The details of the investments to be reported would include all foreign investments made into the company which are outstanding as on the balance sheet date. The details of overseas investments in the company both under direct/portfolio investment may be separately indicated.
- (e) Issue of bonus/rights shares or stock options to persons resident outside India directly or on amalgamation/merger/demerger with an existing Indian company, as well as issue of shares on conversion of ECB/royalty/lump sum technical know-how fee/import of capital goods by units in SEZs, has to be reported in Form FC-GPR.

Reporting of transfer of shares

- (i) Reporting of transfer of shares between residents and non-residents and vice versa is to be done in Form FC-TRS.
- (ii) The Form FC-TRS should be submitted to the AD Category-I bank, within 60 days from the date of receipt of the amount of consideration.
- (iii) The onus of submission of the Form FC-TRS within the given timeframe would be on the transferor/transferee, resident in India.
- (iv) In cases where the NR investor, including an NRI, acquires shares on the stock exchanges under the FDI scheme, the investee company would have to file form FC-TRS with the AD Category-I bank. The AD Category-I bank, would forward the same to its link office. The link office would consolidate the Form FC-TRS and submit a monthly report to the Reserve Bank.

Reporting of Non-Cash Details of issue of shares against conversion of ECB has to be reported to the Regional Office concerned of the RBI, as indicated below:

- (i) In case of full conversion of ECB into equity, the company shall report the conversion in Form FC-GPR to the Regional Office concerned of the Reserve Bank as well as in Form ECB-2 to the Department of Statistics and Information Management (DSIM), Reserve Bank of India, Bandra-Kurla Complex, Mumbai 400 051, within seven working days from the close of month to which it relates. The words "ECB wholly converted to equity" shall be clearly indicated on top of the Form ECB-2. Once reported, filing of Form ECB-2 in the subsequent months is not necessary.
- (ii) In case of partial conversion of ECB, the company shall report the converted portion in Form FC-GPR to the Regional Office concerned as well as in Form ECB-2 clearly differentiating the converted portion from the non-converted portion. The words "ECB partially converted to equity" shall be indicated on top of the Form ECB-2. In the subsequent months, the outstanding balance of ECB shall be reported in Form ECB-2 to DSIM.

Reporting of FCCB/DR Issues

The domestic custodian shall report the issue/transfer of sponsored/unsponsored depository receipts as per DR Scheme 2014 in 'Form DRR' within 30 days of close of the issue/ program.

ADHERENCE TO GUIDELINES/ORDERS

- (i) FDI is a capital account transaction and thus any violation of FDI regulations is covered by the penal provisions of the FEMA.
- (ii) Reserve Bank of India which administers the FEMA and Directorate of Enforcement under the Ministry of Finance is the authority for the enforcement of FEMA. The Directorate takes up investigation in any contravention of FEMA.

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Capital is a vital ingredient for economic growth, but since most nations cannot meet their total capital requirements from internal resources alone, they turn to foreign investors to supply capital. Foreign Direct Investment (FDI) and foreign portfolio investment (FPI) are two of the most common routes for overseas investors to invest in an economy. FDI implies investment by foreign investors directly in the productive assets of another nation. FPI means investing by investors in financial assets such as stocks and bonds of entities located in another country. FDI and FPI are similar in some respects but very different in others. As retail investors increasingly invest overseas, they should be clearly aware of the differences between FDI and FPI, since nations with a high level of FPI can encounter heightened market volatility and currency turmoil during times of uncertainty.

Examples of FDI and FPI

Imagine that you are a multi-millionaire based in the U.S. and are looking for your next investment opportunity. You are trying to decide between (a) acquiring a company that makes industrial machinery, and (b) buying a large stake in a company or companies that makes such machinery. The former is an example of direct investment, while the latter is an example of portfolio investment.

Now, if the machinery maker were located in a foreign jurisdiction, say Mexico, and if you did invest in it, your investment would be considered as FDI. As well, if the companies whose shares you were considering buying were also located in Mexico, your purchase of such stock or their American Depositary Receipts (ADRs) would be regarded as FPI.

Evaluating Attractiveness for FDI / FPI

Because capital is always in short supply and is highly mobile, foreign investors have standard criteria when evaluating the desirability of an overseas destination for FDI and FPI, which include:

- Economic factors – the strength of the economy, GDP growth trends, infrastructure, inflation, currency risk, foreign exchange controls etc.
- Political factors – political stability, government's business philosophy, track record, and so on.
- Incentives for foreign investors – taxation levels, tax incentives, property rights, etc.
- Other factors – education and skills of the labor force, business opportunities, local competition etc.

FDI versus FPI

Although FDI and FPI are similar in that they both originate from foreign investors, there are some very fundamental differences between the two.

The first difference arises in the degree of control exercised by the foreign investor. FDI

investors typically take controlling positions in domestic firms or joint ventures, and are actively involved in their management. FPI investors, on the other hand, are generally passive investors who are not actively involved in the day-to-day operations and strategic plans of domestic companies, even if they have a controlling interest in them.

The second difference is that FDI investors perforce have to take a long-term approach to their investments, since it can take years from the planning stage to project implementation. On the other hand, FPI investors may profess to be in for the long haul but often have a much shorter investment horizon, especially when the local economy encounters some turbulence.

Which brings us to the final point: FDI investors cannot easily liquidate their assets and depart from a nation, since such assets may be very large and quite illiquid. FPI investors have an advantage here in that they can exit a nation literally with a few mouse clicks, as financial assets are highly liquid and widely traded.

FDI and FPI – Pros and Cons

FDI and FPI are both important sources of funding for most economies. Foreign capital can be used to develop infrastructure, set up manufacturing facilities and service hubs, and invest in other productive assets such as machinery and equipment, which contributes to economic growth and stimulates employment

However, FDI is obviously the route preferred by most nations for attracting foreign investment, since it is much more stable than FPI and signals long-lasting commitment to an economy. But for an economy that is just opening up, meaningful amounts of FDI may only result once overseas investors have confidence in its long-term prospects and the ability of the local government.

Though FPI is desirable as a source of investment capital, it tends to have a much higher degree of volatility than FPI. In fact, FPI is often referred to as “hot money” because of its tendency to flee at the first signs of trouble in an economy. These massive portfolio flows can exacerbate economic problems during periods of uncertainty.

Recent Trends

According to Department of Industrial Policy and Promotion (DIPP), the total FDI investments in India April-June 2018 stood at US\$ 12.75 billion, indicating that government's efforts to improve ease of doing business and relaxation in FDI norms is yielding results.

Data for April-June 2018 indicates that the services sector attracted the highest FDI equity inflow of US\$ 2.43 billion, followed by trading – US\$ 1.63 billion, telecommunications – US\$ 1.59 billion and computer software and hardware – US\$ 1.41 billion. Most recently, the total FDI equity inflows for the month of June 2018 touched US\$ 2.89 billion.

During April-June 2018, India received the maximum FDI equity inflows from Singapore (US\$ 6.52 billion), followed by Mauritius (US\$ 1.49 billion), Japan (US\$ 0.87 billion), Netherlands (US\$ 0.84 billion), and United Kingdom (US\$ 0.65 billion).

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Cautionary Signs for Investors

Investors should be cautious about investing heavily in nations with high levels of FPI, and deteriorating economic fundamentals. Financial uncertainty can cause foreign investors to head for the exits with this capital flight, putting downward pressure on the domestic currency and leading to economic instability.

The Asian crisis of 1997 remains the textbook example of such a situation. The plunge in currencies like the Indian rupee and Indonesian rupiah in the summer of 2013 is another recent example of the havoc caused by “hot money” outflows. In May 2013, after Federal Reserve chairman Ben Bernanke hinted at the possibility of winding down the Fed’s massive bond-buying program, foreign investors began closing out their positions in emerging markets, since the era of near-zero interest rates (the source of cheap money) appeared to be coming to an end.

Foreign portfolio managers first focused on nations like India and Indonesia, which were perceived to be more vulnerable because of their widening current account deficits and high inflation. As this hot money flowed out, the rupee sank to record lows against the U.S. dollar, forcing the Reserve Bank of India to step in and defend the currency.

The Bottom Line

While FDI and FPI can be sources of much-needed capital for an economy, FPI is much more volatile, and this volatility can aggravate economic problems during uncertain times. Since this volatility can have a significant negative impact on their investment portfolios, retail investors should familiarize themselves with the differences between these two key sources of foreign investment.

GDRs / ADRs, Pass- through Certificates

Global Depository Receipts (GDRs)

A GDR is issued and administered by a **depository bank** for the corporate issuer. The depository bank is usually located, or has branches, in the countries in which the GDR will be traded. The largest depository banks in the United States are JP Morgan, the Bank of New York Mellon, and Citibank.

A GDR is based on a **Deposit Agreement** between the depository bank and the corporate issuer, and specifies the duties and rights of each party, both to the other party and to the investors. Provisions include setting record dates, voting the issuer’s underlying shares, depositing the issuer’s shares in the custodian bank, the sharing of fees, and the execution and delivery or the transfer and the surrender of the GDR shares.

A separate **custodian bank** holds the company shares that underlie the GDR. The depository bank buys the company shares and deposits the shares in the custodian bank, and then

issues the GDRs representing an ownership interest in the shares. The DR shares actually bought or sold are called **depository shares**.

The **custodian bank** is located in the home country of the issuer and holds the underlying corporate shares of the GDR for safekeeping. The custodian bank is generally selected by the depository bank rather than the issuer, and collects and remits dividends and forwards notices received from the issuer to the depository bank, which then sends them to the GDR holders. The custodian bank also increases or decreases the number of company shares held per instructions from the depository bank.

The voting provisions in most deposit agreements stipulate that the depository bank will vote the shares of a GDR holder according to its instructions; otherwise, without instructions, the depository bank will not vote the shares.

GDRs, like ADRs, allow investors to invest in foreign companies without worrying about foreign trading practices, different laws, accounting rules, or cross-border transactions. GDRs offer most of the same corporate rights, especially voting rights, to the holders of GDRs that investors of the underlying securities enjoy.

Other benefits include easier trading, the payment of dividends in the GDR currency, which is usually the United States dollar (USD), and corporate notifications, such as shareholders' meetings and rights offerings, are in English. Another major benefit of GDRs is that institutional investors can buy them even when they may be restricted by law or investment objective from buying shares of foreign companies.

GDRs also overcome limits on restrictions on foreign ownership or the movement of capital that may be imposed by the country of the corporate issuer, avoid risky settlement procedures, and eliminate local or transfer taxes that would otherwise be due if the company's shares were bought or sold directly. There are also no foreign custody fees, which can range from 10 to 35 basis points per year for foreign stock bought directly.

GDRs are liquid because the supply and demand can be regulated by creating or canceling GDR shares.

GDRs do, however, have foreign exchange risk, if the currency of the issuer is different from the currency of the GDR, which is usually USD.

The main benefit of GDR issuance to the company is increased visibility in the target markets, which usually garners increased research coverage in the new markets, a larger and more diverse shareholder base, and the ability to raise more capital in international markets.

As derivatives, depository receipts can be created or canceled depending on supply and demand. When shares are created, more corporate stock of the issuer is purchased and placed in the custodian bank in the account of the depository bank, which then issues new GDRs based on the newly acquired shares. When shares are cancelled, the investor turns in

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the shares to the depositary bank, which then cancels the GDRs and instructs the custodian bank to transfer the shares to the GDR investor. The ability to create or cancel depositary shares keeps the depositary share price in line with the corporate stock price, since any differences will be eliminated through arbitrage.

The price of a GDR primarily depends on its **depository ratio**, which is the number of GDRs to the underlying shares, which can range widely depending on how the GDR is priced in relation to the underlying shares; one GDR may represent an ownership interest in many shares of corporate stock or fractional shares, depending on whether the GDR is priced higher or lower than corporate shares.

Most GDRs are priced so that they are competitive with shares of like companies trading on the same exchanges as the GDRs. Typically, GDR prices range from \$7 - \$20. If the GDR price moves too far from the optimum range, more GDRs will either be created or cancelled to bring the GDR price back within the optimum range determined by the depositary bank. Hence, more GDRs will be created to meet increasing demand or more will be cancelled if demand is lacking or the price of the underlying company shares rises significantly.

Most of the factors governing GDR prices are the same that affect stocks: company fundamentals and track record, relative valuations and analysts' recommendations, and market conditions. The international status of the company is also a major factor.

On most exchanges, GDRs trade just like stocks, and also have a T+3 settlement time in most jurisdictions, where a trade must be settled within 3 business days of the trading exchange.

The exchanges on which the GDR trades are chosen by the company; Currently, the stock exchanges trading GDRs are the:

1. London stock Exchange
2. Luxembourg Stock Exchange
3. NASDAQ Dubai
4. Singapore Stock Exchange
5. Hong Kong Stock Exchange

Companies choose a particular exchange because it feels the investors of the exchange's country know the company better, because the country has a larger investor base for international issues, or because the company's peers are represented on the exchange. Most GDRs trade on the London or Luxembourg exchanges because they were the 1st to list GDRs and because it is cheaper and faster to issue a GDR for those exchanges.

Many GDR issuers also issue privately placed ADRs to tap institutional investors in the United States. The market for a GDR program is broadened by including a 144A private placement

offering to Qualified Institutional Investors in the United States. An offering based on SEC Rule 144A eliminates the need to register the offering under United States security laws, thus saving both time and expense.

The Details of a GDR Purchase by an Investor

1. An investor calls her broker to buy GDRs for a particular company.
2. The broker fills the order by either buying the GDRs on any of the exchanges that it trades, or by buying ordinary company shares in the home market of the company by using a broker in the issuer's country. The foreign broker then delivers the shares to the custodian bank.
3. The investor's broker notifies the depository bank that ordinary shares have been purchased in the issuer's market and will be delivered to the custodian bank and requests depository shares to be issued in the investor's account.
4. The custodian notifies the depository bank that the shares have been credited to the depository bank's account.
5. The depository bank notifies the investor's broker that the GDRs have been delivered.
6. The broker then debits the account of the investor for the GDR issuance fee.

The Details of a GDR Sale by an Investor

1. An investor instructs his broker to sell his GDRs. The investor must deliver the shares within 3 business days if the shares are not in the street name of the broker.
2. The broker can either sell the shares on the exchanges where the GDR trades, or the GDRs can be cancelled, and converted into the ordinary shares of the issuing company.
3. If the broker sells the shares on an exchange, then the broker uses the services of a broker in the issuer's market.
4. If, instead, the shares are cancelled, then the broker will deliver the shares to the depository bank for cancellation and provide instructions for the delivery of the ordinary shares of the company issuer. The investor pays the cancellation fees and any other applicable fees.
5. The depository bank instructs the custodian bank to deliver the ordinary shares to the investor's broker, who then credits the account of its customer.

Technical Notes

- GDRs issued by a United States depository bank are issued pursuant to **Regulation S (Reg. S)** of the Securities Act of 1933.
- A GDR certificate is not delivered to the GDR holder, but is based on a master certificate held by a Common Depository for clearing purposes.

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- Most depositary receipts (DRs) are held in the street name of a bank or broker in a securities depositary institution, such as the Depositary Trust Company (DTC), Euroclear, or Clearstream, which expedites the trading and settlement of DR trades for the beneficial interest of the owners. The benefitting DR owners are the owners who receive the actual benefits of holding a depositary receipt, such as the capital gains from trading shares, dividends, and voting rights.
- Most GDR programs require that the issuing company notify the relevant exchanges of any information that may cause the underlying shares to greatly change in price.

American Depositary Receipts (ADRs)

An abbreviation for American Depositary Receipt, ADRs are currently popular because of the rush of Indian firms to issue ADRs. Technically, it is an instrument traded at exchanges in the US representing a fixed number of shares of a foreign company that is traded in the foreign country. By trading in ADRs, U.S. investors manage to avoid some of the problems of dealing in foreign securities markets. The ADR route enables companies to raise funds in the U.S. financial markets, provided they meet the stringent regulatory norms for disclosure and accounting.

An American Depositary Receipt, or ADR, is a security issued by a U.S. depositary bank to domestic buyers as a substitute for direct ownership of stock in foreign companies. An ADR can represent one or more shares, or a fraction of a share, of a non-U.S. company. Individual shares of a foreign corporation represented by an ADR are called American Depositary Shares ('ADS'). An ADR is a convenient way for companies whose stock is listed on a foreign exchange to cross-list their stock in the United States and make their stock available for purchase by U.S. investors, as these receipts can be traded on U.S. exchanges. Some ADRs are traded on major stock exchanges such as the NASDAQ Stock Market and the New York Stock Exchange, which require these foreign companies to conform to many of the same reporting and accounting standards as U.S. companies. Other ADRs are traded on over-the-counter exchanges that impose fewer listing requirements. ADR programs frequently make a non-US company's common shares a more appealing investment for US investors. Such programs create a new security (the ADR) that trades and settles in US dollars in the United States, in accordance with US market practice. In addition, the ADR program's depositary will typically convert all dividend payments into dollars before disbursing them to investors. As a consequence, for certain institutional investors, ADRs are deemed to be US domestic securities and are, therefore, subject to fewer restrictions under internal investment guidelines. For similar reasons, ADRs may also attract US retail investor interest.

Companies often find that the establishment of a depositary receipt program brings additional benefits. The increased visibility and investor base they gain by stepping outside their home market can enhance their international reputation, increase their share value, and heighten the profile of their company among the international investment community. It,

- Creates, broadens or diversifies investor base to include investors in other capital markets.
- Enhances visibility and global presence among investors, consumers and customers.
- Increases liquidity by tapping new investors.
- Develops and increases research coverage of your company.
- Improves communication with shareholders globally.
- Enables price parity with global peers.
- Offers a new venue for raising equity capital.
- Facilitates merger and acquisition activity by creating a desirable stock-swap “acquisition currency”.

Pass - Through Certificates

A pass - through certificate (PTC) is a certificate that is given to an investor against certain mortgage-backed securities that lie with the issuer. The certificate can be compared to securities (like bonds and debentures) that may be issued by banks and other companies to investors.

The only difference is that they are issued against underlying securities. The interest that is paid to the issuer on these securities comes to the investor in the form of a fixed income.

Investors in such instruments are usually financial institutions like banks, mutual funds and insurance companies. However, to understand this better, you need to delve a little deeper into how exactly the assets are securitized.

Many banks and private organizations have incomes or receivables that are due to them in lieu of loans or services that they have offered in the past. Securitization involves the conversion of these incomes or receivables into debt instruments which are then sold to investors. For this purpose, the parent organization sets up a Special Purpose Vehicle (SPV) which issues these debt instruments.

By making these debt instruments available in the markets, the organization manages to make their assets liquid and can then use the funds for some other productive business. When an investor buys these debt instruments, the investor is given a PTC. However, this does not mean that the investor owns the assets. Rather, when the original lender recovers money from the original borrower (as interest or otherwise), it is then passed on to the SPV, which then disburses it to the investor in the form of a fixed income.

What is the difference between pass-through certificates and pay-through certificates?

In a pass-through certificate, interest earned on the receivable is directly passed on to the

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holders, whereas, in a pay-through certificate, interest received from the receivables is not passed on to the holder of the unit. Instead, the SPV issues new securities to them.

Why are PTCs important? Why are they in the news?

All the PTCs in the market are rated by agencies like CRISIL or FITCH ratings, among others. The ratings tell the investor about the quality of the underlying securities. However, PTCs have recently been in the news after CRISIL downgraded the ratings of PTCs issued by Wockhardt. The main reason given for this is that Wockhardt defaulted on the interest payment on its PTCs.

Loan Syndications and FRN

Loan Syndications

Loan syndication is a lending process in which a group of lenders provide funds to a single borrower.

How it works – Example:

When a project is unusually large or complex, it may exceed the capacity of a single lender. For example, the amount of the loan may be too large, the risks too high, the collateral may be in different locations, or the uses of capital may require special expertise to understand and manage it. In these cases, a financial institution may bring other lenders into the deal.

Usually, the loan syndication limits the liability of each lender to its share of the loan interest. In this way, each lender limits its loan amount to a manageable size and limits its risk exposure. Additionally, each lender may have a collateral interest in a unique or specialized asset from the borrower, such as a piece of equipment.

Loan syndications involve a large amount of coordination and negotiation. Typically, loan syndications involve a lead financial institution, or syndicate agent, which organizes and administers the transaction, including repayments, fees, reporting and compliance, and loan monitoring. Often, such transactions require the services of a specialist who syndicates the loan on behalf of the borrower; identifying lenders while negotiating terms and conditions, and even representing the borrower throughout disbursements. Loan syndication fees can be expensive, ranging from 5% to 10% of the loan principal.

Why it Matters:

Loan syndications can be a useful tool for banks to maintain a balanced portfolio of loan assets among a variety of industries. If one loan is too large, it may make the bank's portfolio overweight. Therefore, banks may pursue a syndication to accommodate a loan and keep their portfolio in balance. At the same time, loan syndications may cause a large expense to the borrower. While the syndication fee is usually financed, the burden of repaying the loan and syndication fee is shouldered ultimately by the borrower.

Floating Rate Notes (FRN)

Floating Rate Notes are simply investment vehicles that have interest rates that fluctuate approximately every six months. At that time, the interest rate resets to equal the short-term interest rate plus a specific percent that was determined when the floating rate note was issued.

The floating rate benefits to investors include:

- (1) They protect against interest rate hikes and
- (2) They have higher yields than fixed bonds.

Floating rate notes are structures similar to adjustable-rate mortgages, except that a floating rate note is not a type of loan, it's a type of investment. Having a floating rate note is similar to investing in a money market or fixed annuity. Simply defined as bonds with variable interest rates, floating rate notes coupons directly relate to a specific short-term interest rate. Consider the following key characteristics of floating rate notes to determine if these notes are a wise investment choice for your business.

1. Floating rate notes have little interest rate risk.
2. A company or government entity can issue floating rate notes.
3. Notes tend to have maturities of approximately five years.

Interest Rates and Volumes

India, after years of low economic growth and after facing a financial crisis in 1991, has had a dramatic change in economic growth: the real GDP growth was on an average 6.5% in 1990-2006, while it was 3.1% in 1971-1980 and 4.7% in 1981-1990. Although India still has an enormous lack of infrastructure, investment rate has increased from around 22% in the first half of the 1990s to around 24% during the 2000s. This good economic performance has been the result, among other factors, of the enormous potential of its domestic consumer market, the existence of a segment of well-qualified workers, the strong productivity growth (more than 3.5% over the course of the 1990s), the management of a well-coordinated economic policy, and the implementation of economic reforms. Capital account liberalization has been part of a broad-based programme of economic reforms, which included the abolishment of industrial licensing, the sharp reduction in the import taxes, liberalization of the transactions related to the current account and a more limited liberalization of the capital flows related to the capital account.

Economic liberalization accelerated after the external debt crisis of 1991, when *rupee*, the domestic currency, was depreciated in two steps by almost 20% vis-à-vis the US dollar, liberalization began with a dramatic process of trade liberalization. As a result, the imports tariffs reduced from 87.0% on average in 1991 to 25.0% on average in 1997. In the context of

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economic reforms, capital account has been gradually liberalized and the exchange rate regime changed from a pegged exchange rate to a managed floating exchange regime. This change began with the transition of a managed floating rate related to basket of currencies to a dual exchange rate regime in March 1992. Finally, India adopted a floating and unified exchange rate regime in March 1993. The change in the exchange rate regime was followed step-by-step by flexibility on current account transactions that resulted in the acceptance of full convertibility of current account in August 1994, which is the formal acceptance of the obligations of the IMF's Article VII. Although India adopted formally a floating exchange regime, in practice it is a quasi-managed float where the Reserve Bank of India (RBI) plays a crucial role in the foreign exchange market. Indeed, RBI has been an important player in the foreign exchange market, acting to pre-empt some big transactions in this market increasing the exchange rate volatility, and at the same time seeking to affect the real effective exchange rate trajectory in the long run. For this purpose, RBI makes use of a very large range of tools operating in the spot and derivative markets, and even making use of administered measures. Such management has been possible due to the existence of extensive capital controls that result in a limited integration into international financial markets.

Compared to other countries that adopted floating exchange regime, the volatility of nominal exchange rate has been lower in India. Exchange rate has been used in India, combined with other extra-exchange rate tools, to absorb external shocks. As a general trend, nominal exchange rate has been gradually devaluated since 1996. Real effective exchange rate has been most of the time stable, while recently there has been a gradual appreciation trend. Indeed, during the 1990s, RBI followed a PPP rule whereby the nominal exchange rate was indexed to the price level to target the real exchange rate. Since the end of the 1990s, exchange rate policy has begun to change course a little, shifting from stabilizing the exchange rate towards a more flexible rate regime with no fixed target, but still concerned in curbing excessive volatility and calibrating temporary mismatches in the demand and supply of foreign exchange.

As we have already stressed, after 1991 external debt crisis, India began a gradual but rapid process of liberalization of current account that included the end of the foreign exchange budget and the elimination of controls on current transactions. Although some norms related to long term capital flows have been loosened, including the limits of ownership share related to foreign direct investment, short term capital controls are still significant. The approach to capital account liberalization in India has been cautious, what was liberalized has been specified while everything else remained restricted or prohibited. The contours of liberalization were in large part shaped by the lessons of the 1991 external debt crisis mainly problems related to roll over short-term debt and capital flight due to deposit withdrawals by non-resident Indian.

The Indian approach of gradual and limited liberalization of capital account has emphasized opening up of the economy to foreign direct investment and portfolio equity investment,

instead of external debt, with the objective to reduce the country's vulnerability to external crises by reducing reliance on volatile short-term debt flows that characterized the 1980s. First, concerning capital inflows, financial liberalisation began with a more flexible policy related to foreign direct investment (FDI) in July 1991 when FDI with up to 51% equity was to receive automatic approval in 35 selected high priority industries subject only to a registration procedure with the RBI, while access through the automatic route has been progressively enlarged over time. Second, liberalization was extended to portfolio investment in September 1992, when foreign institutional investors were allowed to invest in the domestic capital market, first in the secondary market for equity, subject a ceiling of 5%, and later in the primary market (maximum limit of 15% for the new issue). Third, liberalisation in the sphere of external commercial borrowings (ECBs) has been limited, selective and variable. Commercial borrowings require case by case approval from the government where the decision depends upon the amount borrowed, the maturity period and the proposed utilization. Deregulation of ECBs has been subject to annual ceilings decided on the basis of the country's external debt and balance of payments position. Finally, concerning non-resident deposits, in order to avoid capital flight, Indian government reduced the interest rate differentials so that interest rates offered to these deposits were gradually aligned with international rates, and RBI has no longer underwritten the exchange rate risk.

Capital controls in India have been well-designed and clearly effective in limiting measured capital flows. There has been a predominance of quantitative capital controls rather than market based, administratively enforced, and clearly demarcating the distinction between resident (with more strict controls) and non-resident transactions. On the other hand, there are more extensive controls on capital outflows and considerable liberalisation on capital inflows. In particular, capital outflows related to residents are more limited: while they are very restricted to individuals, for domestic firms capital outflows are possible within some limits stipulated by the government. More recently, restrictions on individuals and domestic corporates have been loosened to allow investments abroad.

Capital controls in India have also been dynamic, that is, government tends to tighten capital controls on outflows during speculative periods and to loosen them after that. Due to the increase in foreign exchange reserves and the limits to accumulation of foreign debt (mostly short-term ones), most external vulnerability indicators show a remarkable and continuous improvement since 1991; the ratio of current account over GDP has been below -2.0%, and since 2001 the ratio has been positive, mainly due to the increase of services and income and current transfers.

Although the traditional external solvency indicator (external debt over exports) has gradually increased during the 1990s, the external indebtedness declined markedly, from a peak of 38% of GDP in 1992 to less than 25% in 1996, while the ratio of income debt over exports declined sharply in the first-middle of the 1990s. Furthermore, since 1993, the share of the long-term debt on the total external debt has been more than 90%-clear evidence that the reorientation of capital account policy toward non-debt creating inflows and FDI since 1991 has succeeded.

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Finally, the international reserves-to-imports ratio increased to more than 100% by 2002 compared to less than 40% in the beginning of the 1990s. Indeed international reserves rose from US\$ 30.2 billion in 1998 to US\$ 136.9 billion in 2005—an increase of 453% in just seven years – due to a more aggressive RBI's exchange reserve accumulation policy. Summing up, the improvement of external vulnerability indexes in India resulted mainly from the low current account deficit, a declining external debt and the increasing level of foreign reserves.

The nature and the pace of capital account liberalisation exercised an influence on the dimensions and the composition of the private foreign capital inflows to, and outflows from, India—a shift from debt creating to non-debt creating capital flows. Capital flows have risen a great deal during the 1990s, followed by a sharp change in their composition: until 1993 there was a predominance of other investments (that include, among others item, non-resident Indian deposits—NRI and foreign loans) while other types of capital flows were almost non-existent. Since 1994, capital flows have risen and diversified due the increase of portfolio investments, other investments and foreign direct investment. However, financial integration of the India economy into international capital markets has been rather slow and limited, FDI increased during 1990s, but it is low compared to other 'big' emerging countries; according to IMF, the ratio of FDI over GDP in 2002 was 3.7% in China, 3.1% in Brazil, 2.1% in Mexico and only 0.6% in India.

Due to the adoption of a managed floating exchange regime that has resulted in a stable nominal exchange rate, domestic interest rate has had a more unstable behaviour, probably because interest rate has been used as a tool to stabilize nominal exchange rate and also due to non-sterilized operations related to foreign exchange accumulation policy.

It seems that in India capital controls have been used not only to reduce external vulnerability and to avoid currency crises, but also to drive a wedge between domestic and external interest rates in order to provide RBI discretion to achieve some monetary policy autonomy.

Tax Implications

All-in-cost ceilings

All-in-cost includes rate of interest, other fees and expenses in foreign currency except commitment fee, pre-payment fee, and fees payable in Indian Rupees. The payment of withholding tax in Indian Rupees is excluded for calculating the all-in-cost. The existing all-in-cost ceilings for ECB are as under:

Average Maturity Period	All-in-cost Ceilings over 6 month LIBOR*
Three years and up to five years	350 basis points
More than five years	500 basis points

*for the currency of borrowing or applicable benchmark

In the case of fixed rate loans, the swap cost plus margin should be the equivalent of the floating rate plus the applicable margin.

The rate of penal interest should not be more than 2 per cent of the all-in-cost of ECB.

Amended regime:

The pass-through tax system introduced for Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (InvITs), intends to provide for a reduced withholding tax of 5% in case of non-resident unit holders, and 10% in case of resident unit holders.

Impact & issues: The Finance Minister, Arun Jaitley, in his budget speech, indicated that this measure is one of the many, proposed to boost Indian capital markets, as well as the financial services sector. The Memorandum to Finance Bill, 2014, further substantiates the intent behind extension of this clause, stating that the lower withholding tax rate should help “to further incentivize low cost long-term foreign borrowings by Indian companies”. Thus, this move should incentivize long-term foreign borrowings, and lift some pressure from domestic banks especially since FCEBs and FCCBs (which also fall within the ECB regime and are available for limited sectors) shall also be subject to the lower withholding tax rate.

Interestingly, the lower withholding tax rate is only available to foreign currency denominated bonds, and a withholding tax of 20% (under domestic law) continues to apply to any rupee-denominated bond issued to FIIs and FPIs. This Bill has not extended the lower withholding tax rate available under Section 194LD of the Income Tax Act, when such interest income was payable on or after June 1, 2013 but before June 1, 2015. Thus, while this move may encourage ECBs, denial of lower withholding tax rate to rupee denominated bonds is likely to dis-incentivize growth of domestic debt capital markets, which were pegged as a priority by the previous Finance Minister.

Rupee denominated loans such as subscription to / purchase of listed non-convertible debentures issued by Indian companies form a major chunk of foreign debt investment in the real estate space. It was expected that the concessional withholding tax rate would be extended beyond the original sunset period of June 1, 2015. However, the Bill has left section 194LD unchanged. In the absence of such extension, interest payments to FIIs / FPIs are otherwise subject to a withholding tax rate of 20% subject to benefits that may be available under the provisions of a tax treaty entered into between India and the jurisdiction in which the FII / FPI is resident. On the other hand, non-FPIs / non-FIIs shall be subject to a withholding tax of 40% in respect of rupee-denominated bonds, under Indian domestic law.

Despite this minor glitch, the move to reduce withholding taxes for long-term foreign borrowings comes as a welcome move and is in line with the bigger picture that this Budget seeks to achieve rationalization and promotion of the Indian capital markets.

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International Funding Organizations

The following is a list of funding organizations during a financial crisis to various countries in the world:

- Asian Development Bank
- International Monetary Fund
- Shanghai Cooperation Organization
- United Nations
- World Bank
- World Trade Organization

Impact of Recent Global Crises – Role of IMF, FEDAI / WORLD BANK / NEW DEVELOPMENT BANK / AIIB BANK

India could not insulate itself from the adverse developments in the international financial markets, despite having a banking and financial system that had little to do with investments in structured financial instruments carved out of subprime mortgages, whose failure had set off the chain of events culminating in a global crisis.

To counter the negative fallout of the global slowdown on the Indian economy, the federal Government responded by providing three focused fiscal stimulus packages in the form of tax relief to boost demand and increased expenditure on public projects to create employment and public assets. India's Central Bank, the Reserve Bank of India (RBI) took a number of monetary easing and liquidity enhancing measures to facilitate flow of funds from the financial system to meet the needs of productive sectors.

Considering the current inflationary strains, the as yet excessive pre-emption of the community's savings by the government, the potential for crowding out the requirements of the enterprise sector, and rising interest payments on government debt, it is extremely essential to reduce the fiscal deficit, and more aggressively, mainly by lowering the revenue deficit. Correction of these deficits would, inter alia, require considerable refocusing and reduction of large hidden subsidies associated with under-pricing in crucial areas, such as power, irrigation, and urban transport. Food and fertilizer subsidies are other major areas of expenditure control.

The step-up in India's growth rate over much of the last two decades was primarily due to the structural changes in industrial, trade and financial areas, among others, over the 1990s as the reforms in these sectors were wide and deep and hence contributed significantly to higher productivity of the economy. Indeed, there is potential for still higher growth on a sustained

basis of 9+ percent in the years ahead, but among other things, this would require the following:

- 1) Revival and a vigorous pursuit of economic reforms at the center and in the states.
- 2) A major effort at raising the rate of domestic savings, especially by reducing government dis-savings at the central and state levels through cuts in, and refocusing of, explicit and implicit subsidies, stricter control over non-developmental expenditures, improvements in the tax ratio through stronger tax enforcement, and strengthening incentives for savings.
- 3) Larger investments in, and better performance of, infrastructural services, both in the public and private sectors; and
- 4) Greater attention to, and larger resources for, agriculture, social sectors and rural development programs to increase employment, reduce poverty and for creating a mass base in support of economic reforms.

Role of IMF

The current global financial crisis, which began with the downturn of the U.S. subprime housing market in 2007, tested the ability of the International Monetary Fund (IMF), in its role as the central international institution for oversight of the global monetary system. Though the IMF is unlikely to lend to the developed countries most affected by the crisis and must compete with other international financial institutions as a source of ideas and global macroeconomic policy coordination, the spillover effects of the crisis on emerging and less-developed economies gives the IMF an opportunity to reassert its role in the international economy on two key dimensions of the global financial crisis:

- (1) Immediate crisis management and
- (2) Long-term systemic reform of the international financial system.

The role of the IMF has changed significantly since its founding in July 1944. Late in World War II, delegates from 44 nations gathered in Bretton Woods, New Hampshire to discuss the post-war recovery of Europe and create a set of international institutions to resolve many of the economic issues such as protectionist trade policies and unstable exchange rates that had ravaged the international economy between the two world wars. As the global financial system has evolved over the decades, so has the IMF. From 1946 to 1973, the main purpose of the IMF was to manage the fixed system of international exchange rates agreed on at Bretton Woods. The U.S. dollar was fixed to gold at \$35 per ounce and all other member countries' currencies were fixed to the dollar at different rates. The IMF monitored the macro-economic and exchange rate policies of member countries and helped countries overcome balance of payments crises with short term loans that helped bring currencies back in line with their determined value. This system came to an abrupt end in 1973 when the United States floated its currency and subsequently introduced the modern system of floating exchange rates. Over

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the past three decades, floating exchange rates and financial globalization have contributed, in addition to substantial wealth and high levels of growth for many countries, to an international economy marred by exchange rate volatility and semi-frequent financial crises. The IMF adapted to the end of the fixed-exchange rate system by becoming the lender of last resort for countries afflicted by such crises.

Since the onset of the global economic crisis in 2007 the IMF has mobilized on many fronts to support its 188 member countries. It increased and deployed its lending firepower, used its cross-country experience to offer policy solutions, and introduced reforms that made it better equipped to respond to countries' needs. To better support countries during the global economic crisis, the IMF beefed up its lending capacity and approved a major overhaul of how it lends money by offering higher amounts and tailoring loan terms to countries' varying strengths and circumstances.

Measures taken by IMF to counter global economic crisis can be summarized as follows:

- **Flexibility in liquidity:** Heightened regional or global stress can affect countries that would not likely be at risk of crisis. Providing rapid and adequate short-term liquidity to such crisis bystanders during periods of stress could bolster market confidence, limit contagion, and reduce the overall cost of crises. The Precautionary and Liquidity Line (PLL) is designed to meet the liquidity needs of member countries with sound economic fundamentals but with some remaining vulnerabilities-Macedonia and Morocco have used the PLL.
- **Reformed terms of lending:** Structural performance criteria have been discontinued for all IMF loans, including for programs with low-income countries. Structural reforms will continue to be part of IMF-supported programs, but have become more focused on areas critical to a country's recovery.
- **Emphasis on social protection:** The IMF is helping governments to protect and even increase social spending, including social assistance. In particular, the IMF is promoting measures to increase spending on, and improve the targeting of, social safety net programs that can mitigate the impact of the crisis on the most vulnerable in society.
- **Creating a crisis firewall:** As a key part of efforts to overcome the global financial crisis, the Group of Twenty industrialized and emerging market economies (G-20) agreed in April 2009 to increase borrowed resources available to the IMF (complementing its quota resources) by up to \$500 billion (which tripled the total pre-crisis lending resources of about \$250 billion) to support growth in emerging markets and developing countries.
- **Sharpening IMF analysis and policy advice:** In the wake of the 2011 Triennial Surveillance Review (TSR), the IMF has undertaken major initiatives to strengthen surveillance to respond to a more globalized and interconnected world. These initiatives include revamping the legal framework for surveillance to cover spillovers (how economic

policies in one country can affect others), deepening analysis of risks and financial systems, stepping up assessments of members' external positions, and responding more promptly to concerns of the membership.

FEDAI

When the Reserve Bank issues instructions, it is expected that the instructions are understood, interpreted and implemented in a uniform and customer-friendly manner by all ADs without building up system level stresses. In the absence of unambiguous clarity of instructions to the base-level official, the objectives of various measures initiated by the Reserve Bank may not yield the desired results. With the advent of FEMA, which aims at facilitating external trade and payments besides promoting orderly development and maintenance of forex market in India, the economy has been witnessing rapid liberalization.

In such a scenario, FEDAI is playing a crucial role in monitoring the level of customer service and consumer protection provided by its members and ensuring to fill the gaps arising out of inadequate knowledge or operational bottlenecks.

FEDAI acts as a facilitating body and in consultation with Reserve Bank of India, frames rules / regulations for ADs in India for conduct of the foreign exchange business related transactions. Since FEDAI is the Association of the member Banks, it has been issuing guidelines and rules to its member banks related to management of foreign exchange business from time to time.

World Bank

The global economic crisis of 2008-2009 led to a sharp reduction of growth worldwide with an increase in millions of poor people. The World Bank Group responded with an unprecedented expansion of support that included the majority of countries suffering high levels of stress. The bulk of crisis support focused on moderately affected countries. Due to its unprecedented support, largely through traditional rather than crisis specific instruments, the World Bank now has constrained headroom for future crisis response should it become necessary.

This second phase evaluation of World Bank Group's response to the economic crisis reaffirms some of the findings of the first phase, particularly sharply increased financing at the World Bank, as well as greater processing efficiency and disbursement speed; the positive role in crisis response of well-established country dialogue and country knowledge; and the value, for crisis response, of the Bank's comfortable financial position at the start of the crisis. At the International Finance Corporation (IFC), the Phase II response reaffirms the broadly constant levels of investment and creative crisis initiatives that were sometimes difficult to implement rapidly. The study also confirms that the Multilateral Investment and Guarantees Agency (MIGA) provided countercyclical support to key financial institutions in Eastern Europe during this crisis.

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New themes in the Phase II evaluation include the distribution of Bank Group support across its client countries measured in multiple dimensions; the appropriateness of its instruments; and the quality of its intervention in fiscal, financial and social protection sectors. The evaluation also reviews the choice of instruments used, in the broader context of other international financial institutions (IFIs) and multilateral development banks (MDBs).

The report finds that the World Bank provided lending to the majority of countries suffering high levels of stress and supported relevant financial sector and fiscal management policies in these countries. The bulk of crisis support focused on countries that turned out to be moderately affected. Crisis operations had in many cases limited short-term crisis-response policy content and in some cases fell short of solid medium-term engagement. Although the Bank provided substantial support in social protection to a number of countries, it was hampered by limited country capacity to target those who were made poor by the crisis, and, as a result, the bulk of support went to the chronically poor.

The evaluation finds that the International Bank for Reconstruction and Development (IBRD) now has considerably more limited capacity to accommodate further crisis response, if this becomes necessary. This is partly a result of the magnitude of IBRD's lending response, the predominant use of traditional instruments, a decline in lending rates to middle income countries just before the crisis, and a decline in global interest rates; as such, IFC's crisis response reflected a strategic choice to protect its portfolio. It also overestimated the deterioration in portfolio quality. MIGA could have used the crisis situation to increase new crisis guarantees in line with other political risk insurers.

New Development Bank

The New Development Bank BRICS (NDB BRICS), formerly referred to as the BRICS Development Bank, is multilateral development bank operated by the BRICS states (Brazil, Russia, India, China and South Africa) as an alternative to the existing US-dominated World Bank and International Monetary Fund. The Bank has been set up to foster greater financial and development cooperation among the five emerging markets. Together, the four original BRICS countries had in 2014 more than 3 billion people or 41.4 percent of the world's population, cover more than a quarter of the world's land area over three continents, and account for more than 25 percent of global GDP. NDB BRICS will be headquartered in Shanghai, China. Unlike the World Bank, which assigns votes based on capital share, in the New Development Bank, each participant country will be assigned one vote, and none of the countries will have veto power.

AIIB Bank

What is the Asian Infrastructure Investment Bank?

The Asian Infrastructure Investment Bank (AIIB) is a multilateral development bank (MDB) conceived for the 21st century. Through a participatory process, its founding members are

developing its core philosophy, principles, policies, value system and operating platform. The Bank's foundation is built on the lessons learnt from the experience of existing MDBs and the private sector. Its modus operandi will be lean, clean and green: lean, with a small efficient management team and highly skilled staff; a clean, ethical organization with zero tolerance for corruption; and green, an institution built on respect for the environment. The AIIB will put in place strong policies on governance, accountability, financial, procurement and environmental and social frameworks.

The AIIB, a modern knowledge-based institution, will focus on the development of infrastructure and other productive sectors in Asia, including energy and power, transportation and telecommunications, rural infrastructure and agriculture development, water supply and sanitation, environmental protection, urban development and logistics, etc. The operational strategy and priority areas of engagement may be revised or further refined by its governing boards in the future as circumstances may warrant.

AIIB will complement and cooperate with the existing MDBs to jointly address the daunting infrastructure needs in Asia. The Bank's openness and inclusiveness reflect its multilateral nature. AIIB welcomes all regional and non-regional countries, developing and developed countries that seek to contribute to Asian infrastructure development and regional connectivity.

History: Chinese President Xi Jinping and Premier Li Keqiang announced the AIIB initiative during their respective visits to Southeast Asian countries in October 2013. The Bank was envisaged to promote interconnectivity and economic integration in the region and cooperation with existing multilateral development banks.

Following this announcement, bilateral and multilateral discussions and consultations commenced on core principles and key elements for establishing the AIIB. In October 2014, 22 Asian countries gathered in Beijing to sign Memorandum of Understanding (MOU) to establish the AIIB. At a Special Ministerial Meeting following the signing of the MOU, Mr. Jin Liqun was appointed as the Secretary General of the Multilateral Interim Secretariat.

Status: Discussions among Prospective Founding Members (PFMs) on the establishment of AIIB commenced with the 1st Chief Negotiators' Meeting (CNM) in Kunming, China, in November 2014. Discussions about the proposed Articles of Agreement (AOA) were launched at the second CNM, which was held in Mumbai, India, in January 2015. The AOA was discussed further at the 3rd CNM meeting that was held in Almaty, Kazakhstan, in March 2015 and at the 4th CNM meeting which took place in Beijing in April 2015. The final text of the AOA was adopted on May 22, 2015 at the 5th CNM held in Singapore.

Representatives from the 57 PFMs gathered on June 29, 2015 in Beijing at a Signing Ceremony of the Bank's Articles of Agreement at the Great Hall of the People and 50 PFMs signed the Articles, including: Australia, Austria, Azerbaijan, Bangladesh, Brazil, Brunei Darussalam, Cambodia, China, Egypt, Finland, France, Georgia, Germany, Iceland, India, Indonesia, Iran, Israel, Italy, Jordan, Kazakhstan, Republic of Korea, Kyrgyz Republic, Lao

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PDR, Luxembourg, Maldives, Malta, Mongolia, Myanmar, Nepal, Netherlands, New Zealand, Norway, Oman, Pakistan, Portugal, Qatar, Russia, Saudi Arabia, Singapore, Spain, Sri Lanka, Sweden, Switzerland, Tajikistan, Turkey, the United Arab Emirates, the United Kingdom, Uzbekistan, and Vietnam.

Derivative Markets

Financial derivatives have emerged as one of the biggest markets of the world during the past two decades. A rapid change in technology has increased the processing power of computers and has made them a key vehicle for information processing in financial markets. Globalization of financial markets has forced several countries to change laws and introduce innovative financial contracts which have made it easier for the participants to undertake derivatives transactions.

Early forward contracts in the US addressed merchants' concerns about ensuring that there were buyers and sellers for commodities. 'Credit risk', however remained a serious problem. To deal with this problem, a group of Chicago businessmen formed the Chicago Board of Trade (CBOT) in 1848. The primary intention of the CBOT was to provide a centralized location (which would be known in advance) for buyers and sellers to negotiate forward contracts. In 1865, the CBOT went one step further and listed the first 'exchange traded' derivatives contract in the US. These contracts were called 'futures contracts'. In 1919, Chicago Butter and Egg Board, a spin-off of CBOT, was reorganized to allow futures trading. Its name was changed to Chicago Mercantile Exchange (CME). The CBOT and the CME remain the two largest organized futures exchanges, indeed the two largest "financial" exchanges of any kind in the world today.

The first exchange-traded financial derivatives emerged in 1970's due to the collapse of fixed exchange rate system and adoption of floating exchange rate systems. As the system broke down, currency volatility became a crucial problem for most countries. To help participants in foreign exchange markets hedge their risks under the new floating exchange rate system, foreign currency futures were introduced in 1972 at the Chicago Mercantile Exchange. In 1973, the Chicago Board of Trade (CBOT) created the Chicago Board Options Exchange (CBOE) to facilitate trading in options on selected stocks. The first stock index futures contract was traded at Kansas City Board of Trade. Currently, the most popular stock index futures contract in the world is based on S&P 500 index, traded on Chicago Mercantile Exchange. During the mid-eighties, financial futures became the most active derivative instruments generating volumes many times more than the commodity futures. Index futures, futures on T-bills and Euro Dollar futures are the three most popular futures contracts traded today. Other popular international exchanges that trade derivatives are LIFFE in England, DTB in Germany, SGX in Singapore, TIFFE in Japan, MATIF in France, Eurex etc.

Futures contracts on interest-bearing government securities were introduced in mid-1970s. The option contracts on equity indices were introduced in the USA in early 1980's to help fund

managers to hedge their risks in equity markets. Afterwards, a large number of innovative products have been introduced in both exchange-traded format and the Over-the-Counter (OTC) format. The OTC derivatives have grown faster than the exchange-traded contracts in the recent years.

Regulatory Framework

The trading of derivatives is governed by the provisions contained in the SC(R)A, the SEBI Act, the rules and regulations framed under that and the rules and bye-laws of the stock exchanges.

Some uses of derivatives

There is always a misconception that derivatives are used for speculation. While speculators can use, and do use derivatives, they can also be used and are used by businessmen and investors to *hedge* their risks.

There can be a variety of uses of derivatives. We will discuss a few of them. We will use simple examples for an easy understanding of the subject.

A manufacturer Mr. X has received an order for supply of his products after six months. Price of the product has been fixed. Production of goods will start after four months. He fears that in case the price of raw material goes up in the meanwhile, he will suffer a loss on the order. To protect himself against the possible risk, he buys the raw material in the '*futures*' market for delivery and payment after four months at an agreed price, say, Rs.100 per unit. Let us take the case of another person Mr. Y who produces the raw material. He does not have advance orders. He knows that his produce will be ready after four months. He roughly knows the estimated cost of his produce. He does not know what will be the price of his produce after four months. If the price goes down, he will suffer a loss. To protect himself against the possible loss, he makes a 'future' sale of his produce, at an agreed price, say, Rs.100 per unit. At the end of four months, Mr. Y delivers the produce and receives payment at the rate of Rs.100 per unit of contracted quantity. The actual price may be more or less than the contracted price at the end of contracted period. A businessman may not be interested in such speculative gains or losses. His main concern is to make profits from his main business and not through rise and fall of prices. He wants to work with peace of mind and some assurance.

Let us take another example. Suppose a person is going to retire after one year. He wants to invest a part of his retirement dues, to be received after one year, in shares. He feels that share prices ruling at present are quite reasonable, and after one year the prices might go up. He enters a '*futures*' contract for one year to buy the shares at an agreed price of, say, Rs. 100 per share. After one year, he will make payment at the contracted rate and will receive the shares. There is another person who holds investments in shares. He desires to sell his investments after one year, to use for his daughter's marriage. He is afraid that if prices of his investments fall after one year, he will suffer a loss. He cannot sell them now as he has

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pledged them with a bank as security for a loan. He hedges the risk by selling his investments through a 'futures' contract for one year at a contracted price of, say, Rs. 100 per share.

In the above two examples, at the end of one year, ruling price may be more than Rs.100 or less than Rs.100. If the price is higher(say, Rs.125), the buyer is gainer, for, he pays Rs.100 and gets shares worth Rs.125, and the seller is the loser for he gets Rs.100 for shares worth Rs.125 at the time of delivery. On the other hand, in case the price is lower (say, Rs.75), the purchaser is loser; and the seller is the gainer. There is a method to cut a part of such loss by buying a 'futures' contract with an 'option', on payment of a fee. The option gives a right to the buyer/seller to walk out of the 'futures' contract. Naturally, a person will exercise option only if beneficial. In the above example, suppose the option fee is Rs.10, and the price of shares at the time of exercise is Rs.75, it will be advantageous for the buyer of shares to exercise the option. Thus, if he directly buys shares in the spot market, his cost will be only Rs.85 (Rs.75+Rs.10 fee) as against Rs.100 which he had to pay under the 'futures' contract. In case the current price at the time of delivery is higher (say, Rs.125) than the contracted price (Rs.100) plus option fee, the seller of shares will be similarly benefited in opting out of the futures contract, for he can realize a higher price in the spot market.

We have noticed from the earlier discussion that one's gain is another's loss. That is why derivatives are a 'zero sum game'. The mechanism helps in distribution of risks among the market players.

The retiring gentleman referred to above also wants to invest a part of his retirement dues in bonds. He is quite comfortable with the present level of yield. He hedges the risk of fall in yield by entering into a 'forward rate agreement' of one year at an agreed rate. At the time of actual investment after one year, he will get the contracted yield on his investment.

Let us see one of the uses of 'interest rate swap'. Suppose a financial institution has some floating rate liabilities but all its assets are on fixed rate basis. In case the floating rate goes up, it will be a loser. The institution can protect its position by *swapping* (exchanging) floating rate on its liabilities with fixed rate. There may be another person holding floating rate assets. He fears that the floating rate may go down in future. He may exchange his floating rate receipts with fixed rate receipts.

An example of 'currency swap': Suppose a person is holding one million Dollars. He does not need them now. But he will need them after six months for purchase of machinery. His calculation is that he can earn a better return on his funds by investing in Rupee bonds. What he does is to sell the Dollars in spot market for Rupees. Simultaneously, he buys Dollars 'forward' for delivery after six months. At the end of six months, he sells his Rupee bonds and takes delivery of Dollars against payment of Rupees. He makes payment for the machine in Dollars. (The difference between 'forwards' and 'futures' is that while the former take place between two counter-parties in the OTC market, the latter are transacted on stock exchanges.)

It is also possible to hedge the risk of default on a bond/loan through a '*credit derivative*'.

Derivatives can also be undertaken for *speculation*. Speculators, as you know, are of two types. One type is the optimist who sees a rise in prices in future. He is known as 'bull'. The other type is a pessimist who sees a fall in prices in future. He is known as 'bear'. They undertake 'futures' transactions with the intention of making gains through difference in contracted prices and future prices. If, in future, their expectations turn out to be true, they gain. If not, they lose. Of course, they may limit their losses through options.

Futures

Futures Forex currency markets are specific types that constitute the forward outright deals which in general take up small part of the foreign exchange currency trading market. Since futures contracts are derivatives of spot price, they are also known as derivative instruments. They are specific with regard to the expiration date and the size of the trade amount. In general, the forward outright deals which get mature past the spot delivery date will mature on any valid date in the two countries whose currencies are being traded; standardized amounts of foreign currency futures mature only on the third Wednesday of March, June, September, and December.

Although the futures and spot markets trade closely together, certain differences between the two occur that provide arbitraging opportunities. Gaps, volume, and open interest are important technical analysis tools solely available in the futures markets. Because of these benefits, currency futures trading regularly attract a large number of forex traders into this market. The most common pages regarding future markets are available with Reuters, Bridge, Telerate, and Bloomberg. The rates are presented on composite pages by the Telerate, while the currency futures are represented on individual pages showing the convergence between the futures and spot prices by Reuters and Bloomberg.

Options

A basic option strategy to be familiar with and learn the advantages and disadvantages of is Buying a Put Option (Long Put). Buying a Put option is the opposite of buying a call option, in that a Put gives you the right, but not the obligation to sell the underlying futures contract at a specific strike price. When you buy or go long on a Put your outlook is bearish on the market, and you expect a fall in the underlying asset price.

Advantages:

Leverage: Options allow you to employ considerable leverage. This is an advantage to disciplined traders who know how to use leverage.

Risk / Reward Ratio: Some strategies, like buying options, allow you to have unlimited upside with limited downside.

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Unique Strategies: Options allow you to create unique strategies to take advantage of different characteristics of the market like volatility and time decay.

Low Capital Requirements: Options allow you to take a position with very low capital requirements. Someone can do a lot in the options market with \$1,000.

Disadvantages:

Lower liquidity: Many individual stock options don't have much volume at all. The fact that each optionable stock will have options trading at different strike prices and expirations means that the particular option you are trading will be very low volume unless it is one of the most popular stocks or stock indexes. This lower liquidity won't matter much to a small trader who is trading just 10 contracts.

Higher spreads: Options tend to have higher spreads because of the lack of liquidity. This means it will cost you more in indirect costs when doing an option trade because you will be giving up the spread when you trade.

Higher commissions: Options trades will cost you more in commission per dollar invested. These commissions may be even higher for spreads where you have to pay commissions for both sides of the spread.

Complicated: Options are very complicated to beginners. Most beginners, and even some advanced investors, think they understand them when they don't.

Time Decay: When buying options, you lose the time value of the options as you hold them. There are no exceptions to this rule.

Less information: Options can be a pain when it is harder to get quotes or other standard analytical information like the implied volatility.

Options not available for all stocks: Although options are available on a good number of stocks, this still limits the number of possibilities available to individuals.

What is an NDO?

A Non Deliverable Option (NDO) is a financial agreement where the buyer of the NDO pays the seller of the NDO a Premium in return for receiving protection against unfavorable exchange rate movements during the term.

An NDO may be useful in managing the currency risk associated with exporting or importing goods denominated in foreign currency, investing or borrowing overseas, repatriating profits, converting foreign currency denominated dividends, or settling other foreign currency contractual arrangements.

An NDO should only be used where you have a genuine commercial need to manage the currency risk associated with a particular Currency Pair. It should not be used for trading or speculative purposes.

Swaps

Swaps are private agreements between two parties to exchange cash flows in the future according to a prearranged formula. They can be regarded as portfolios of forward contracts.

The two commonly used swaps are:

- *Interest rate swaps*: These entail swapping only the interest related cash flows between the parties in the same currency.
- *Currency swaps*: These entail swapping both principal and interest between the parties, with the cash flows in one direction being in a different currency from those in the opposite direction.

A foreign exchange swap is usually a combination of a spot and a forward transaction, entered into simultaneously. Swaps are mostly inter-bank contracts and are neutral with respect to position as well as impact on the volatility of the exchange rate. Swaps do not have a separate regulatory framework and are covered by the foreign exchange regulations applicable to forward / spot contracts.

A Foreign currency swap is an agreement between two parties to exchange cash flows (viz., the principal and/or interest payments) of a loan in one currency for equivalent cash flows of an equal (in net present value) loan in another. Globally, foreign currency swaps constitute a large segment of foreign currency derivatives. Resident Indians may enter into foreign currency-rupee swap within regulatory limits.

Deliverable Swaps / Non Deliverable Swaps

Hedging products can be classified in accordance with the nature of the settlement of the cash flows. Two formats can be offered depending on the currency:

Non-Deliverable

The Non-Deliverable feature of the swap refers to the way the cash flows of the swap agreed at inception will be settled between the counterparties. **Non-Deliverable products have all cash flows settled on an agreed hard currency (USD), regardless of the currency denomination of the obligation.** That the product traded is a floating or fixed rate product does not matter. In a Non-Deliverable Swap, at each settlement period, the difference between the value of the local currency leg and the hard currency leg of the swap is settled in hard currency by the counterparty having to settle a negative market value.

Deliverable

Cash flows settled through Deliverable contracts are done in the currency of each obligation and are therefore not netted. The Conditional Deliverable Swap implies that all cash flows are settled onshore for the local currency leg of the swap while the hard currency leg is settled either on an onshore or offshore account. The 'conditional' term refers to the

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mechanism whereby the swap reverts to a non-deliverable swap upon the occurrence of certain disruption events, which alter or prevent the settlement of the cash flows onshore.

DOLLARIZATION

Dollarization is the adoption of a foreign country's currency as legal tender for monetary transactions.

Unofficial dollarization means that citizens prefer the foreign currency for some transactions, although it may not be legal tender. Official dollarization means that the foreign currency becomes the preferred tender within the country, while the domestic currency may also be accepted.

The usual reason for dollarization is to substitute a more stable currency for a less stable one. Dollarization frequently involves the United States dollar, although it can be based on other currencies, such as the euro. Countries that use the U.S. dollar include El Salvador, Ecuador, the Marshall Islands, Micronesia, Palau, and the British Virgin Islands.

What is significant, however, from a geopolitical standpoint is that China and Russia are developing a ruble-Yuan swap, negotiated between the Russian Central Bank, and the People's Bank of China.

The situation of the other three BRICS member states (Brazil, India, South Africa) with regard to the implementation of (rial, rand, rupiah) currency swaps is markedly different. These three highly indebted countries are in the straightjacket of IMF-World Bank conditionality. They do not decide on fundamental issues of monetary policy and macro-economic reform without the green light from the Washington based international financial institutions.

China has signed currency swap agreements with Canada and Qatar in order to conduct trade without the dollar acting as the middle man. Currency swap means that two countries exchange large bags of their own money, so they can buy goods and services from each other in their own currency. This could double or even triple Chinese-Canadian trade. The remarkable thing of course is that Qatar and certainly Canada are allies of the US. But the deal with Qatar is likely to be most consequential, threatening the petro-dollar system.

Price Calculation of Various Instruments

Now that you know the basics of options, here is an example of how they work:

Let's say that on May 1, the stock price of Cory's Tequila Co. is \$67 and the premium (cost) is \$3.15 for a July 70 Call, which indicates that the expiration is the third Friday of July and the strike price is \$70. The total price of the contract is $\$3.15 \times 100 = \315 . In reality, you'd also have to take commissions into account, but we'll ignore them for this example.

Remember, a stock option contract is the option to buy 100 shares; that's why you must multiply the contract by 100 to get the total price. The strike price of \$70 means that the stock

price must rise above \$70 before the call option is worth anything; furthermore, because the contract is \$3.15 per share, the break-even price would be \$73.15.

When the stock price is \$67, it's less than the \$70 strike price, so the option is worthless. But don't forget that you've paid \$315 for the option, so you are currently down by this amount.

Three weeks later, the stock price is \$78. The options contract has increased along with the stock price and is now worth $\$8.25 \times 100 = \825 . Subtract what you paid for the contract, and your profit is $(\$8.25 - \$3.15) \times 100 = \$510$. You almost doubled your money in just three weeks! You could sell your options, which is called "closing your position," and take your profits-unless, of course, you think the stock price will continue to rise. For the sake of this example, let's say we let it ride.

By the expiration date, the price drops to \$62. Because this is less than our \$70 strike price and there is no time left, the option contract is worthless. We are now down to the original investment of \$315.

To recap, here is what happened to our option investment:

Date	May 1	May 21	Expiry Date
Stock Price	\$67	\$78	\$62
Option Price	\$3.15	\$8.25	worthless
Contract Value	\$315	\$825	\$0
Paper Gain/Loss	\$0	\$510	-\$315

The price swing for the length of this contract from high to low was \$825, which would have given us over double our original investment. This is leverage in action.

Exercising Versus Trading-Out

So far, we've talked about options as the right to buy or sell (exercise) the underlying. This is true, but in reality, a majority of options are not actually exercised.

In our example, you could make money by exercising at \$70 and then selling the stock back in the market at \$78 for a profit of \$8 a share. You could also keep the stock, knowing you were able to buy it at a discount to the present value.

However, the majority of the time holders choose to take their profits by trading out (closing out) their position. This means that holders sell their options in the market, and writers buy their positions back to close. According to the CBOE, about 10% of options are exercised, 60% are traded out, and 30% expire worthless.

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Intrinsic Value and Time Value

At this point it is worth explaining more about the pricing of options. In our example, the premium (price) of the option went from \$3.15 to \$8.25. These fluctuations can be explained by intrinsic value and time value.

Basically, an option's premium is its *intrinsic value* + *time value*. Remember, 'intrinsic value' is the amount in-the-money, which, for a call option, means that the price of the stock equals the strike price. 'Time value' represents the *possibility* of the option increasing in value. So, the price of the option in our example can be thought of as the following:

$$\begin{array}{rclcl} \text{Premium} & = & \text{Intrinsic Value} & + & \text{Time Value} \\ \$8.25 & = & \$8 & + & \$0.25 \end{array}$$

In real life, options almost always trade above intrinsic value. If you are wondering, we just picked the numbers for this example out of the air to demonstrate how options work.

SWAPS:

Plain vanilla swaps, like most derivative instruments, have zero value at initiation. This value changes over time, however, due to changes in factors affecting the value of the underlying rates. Like all derivatives, swaps are zero sum instruments, so any positive value increase to one party is a loss to the other.

Valuation of Interest Rate Swaps

Interest rate swaps are derivative instruments that enable the parties involved to exchange fixed and floating cash flows. The parties may want to enter into such exchange transactions for several reasons. One of the reasons would be to change the nature of the assets or liabilities to protect against anticipated adverse movements of interest rates.

For example, in 2014 Apple Inc. (AAPL) sold \$2.5 billion of 3.45 percent, 10-year bonds, and Apple may want to convert the fixed rate liability into floating rate liability in anticipation of a future interest rate decline. In fact, Apple did exactly that as its Form 10-K SEC filings state: "In the third quarter of 2014, the Company entered into interest rate swaps with an aggregate notional amount of \$9.0 billion, which effectively converted the fixed-rate notes due 2017, 2019, 2021 and 2024 into floating-rate notes".

In order to convert fixed rate liability to floating rate liability, a company should enter into an interest rate swap contract where it receives fixed cash flows and pays floating cash flow that may be tied to, for example, LIBOR rates.

How Is the Fixed Rate Determined?

Here is a hypothetical example. As we mentioned above, the value of the swap at the initiation date will be zero to both parties. For this statement to be true, the values of the cash flow

streams that the swap parties are going to exchange should be equal. Let the value of the fixed leg and floating leg of the swap be V_{fix} and V_{fl} respectively. Thus, at initiation:

$$V_{fix} = V_{fl}$$

Notional amounts are not exchanged in interest rate swaps because these amounts are equal and it does not make sense to exchange them. If we assume that parties also decide to exchange the notional amount at the end of the period, the process will be similar to an exchange of a fixed rate bond to a floating rate bond with the same notional amount. Therefore we can value swap contracts in terms of fixed and floating rate bonds.

Swap - Outright Deals, Dealer Operations

An ORF i.e. Outright Forward instrument has only one leg of settlement for the month-end date. Trading on ORF instruments will be on the basis of the Outright Forward rate. For the first month ORF, and the second month ORF instruments, the settlement will happen on the last business day of the first month and the second month respectively.

A Trade Cancellation facility has been provided on both FX-CLEAR and FX-SWAP Dealing Systems to act as a safeguard for the dealers from erroneous trades getting concluded on the system. The trade cancellation is allowed on the system within the stipulated time as specified by Clearcorp. However, for Cash deals on FX-SWAP platform, the trade cancellation is allowed on the system within the stipulated time as specified by Clearcorp or the Cash Session, whichever is earlier.

Initiation of Trade Cancellation Request

FX-CLEAR - The dealer can initiate the trade cancellation request by selecting "Cancel Trade" option available on right click on the deal in the Self- trades static screen.

FX-SWAP - The dealer can initiate the trade cancellation request by selecting the particular deal he wishes to cancel and clicking on the "Cancel Trade" button provided in the Previous Trades query screen.

Outright Deals

The term "outright" is used in the forex (FX) market to describe a type of transaction in which two parties agree to buy or sell a given amount of currency at a predetermined rate at some point in the future. This type of transaction is also known as a forward outright, an FX forward or a currency forward. A forward outright transaction is mainly used by parties who are seeking to hedge against adverse currency fluctuations or to stabilize a stream of future cash flows by taking advantage of the current rate.

For example, let's say a U.S company known as ZXY imports most of its materials from the U.K. every six months and the executives believe that the value of the domestic currency is going to decrease. If the domestic currency's value does decrease, it will take more U.S.

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dollars to buy the same amount of materials. In this case, a forward outright transaction would be appropriate; the two parties involved can agree on a certain exchange rate today, and when ZXY needs to purchase materials in six months, it will not be affected by adverse changes in the exchange rate.

An outright rate differs from the rate used in the spot market because the parties factor in characteristics such as the volatility of the currencies and their mutual opinion of where they think the exchange rate will be in the future. The disadvantage of using a forward outright is seen when the exchange rate moves in what would have been a favorable direction had the hedge not been implemented. Because the investor agreed to pay a predetermined exchange rate - regardless of what the rate ends up being when the investor makes the purchase - the investor doesn't stand to gain from favorable changes in the exchange rate.

Dealer Operations

Swap dealer is an individual who acts as the counterparty in a swap agreement for a fee called a spread. Swap dealers are the market makers for the swap market. The spread represents the difference between the wholesale price for trades and the retail price. Because swap arrangements aren't actively traded, swap dealers allow brokers to standardize swap contracts to some extent.

Historically, swaps have been traded in the over-the-counter market, mainly between firms and financial institutions, in largely unregulated transactions. In 2011, the SEC proposed requiring security-based swap dealers and participants to register with the commission, as part of the Dodd-Frank Wall Street Reform and Consumer Protection Act. The swap market would be overseen by the SEC and the CFTC. Swap dealers would have to change their business models and more trades would occur via exchange-like mechanisms. *The Wall Street Journal* stated that the proposed regulations would increase competition among swap dealers and decrease their profits, increase market liquidity and make trading more efficient for customers.

Trends in Futures Market

Derivative products initially emerged as hedging devices against fluctuations in commodity prices, and commodity-linked derivatives remained the sole form of such products for almost three hundred years. Financial derivatives came into spotlight in the post 1970 period due to growing instability in the financial markets. However, since their emergence, these products have become very popular and by 1990s, they accounted for about two-thirds of total transactions in derivative products. In recent years, the market for financial derivatives has grown tremendously in terms of variety of instruments available, their complexity, and also turnover. In the class of equity derivatives the world over, futures and options on stock indices have gained more popularity than on individual stocks, especially among institutional investors, who are major users of index-linked derivatives. Even small investors find these

useful due to high correlation of the popular indexes with various portfolios and ease of use. The lower costs associated with index derivatives vis-à-vis derivative products based on individual securities is another reason for their growing use.

The past decade has witnessed a manifold growth in the volume of international trade and business due to the wave of globalization and liberalization all over the world. As a result, the demand for the international money and financial instruments increased significantly at the global level. In this respect, changes in exchange rates, interest rates and stock prices of different financial markets have increased the financial risk to the corporate world. Adverse changes have even threatened the very survival of business world. It is, therefore, to manage such risk that the new financial instruments have been developed in the financial markets, which are also popularly known as financial derivatives. The basic purpose of these instruments is to provide commitments to prices for future dates for giving protection against adverse movements in future prices, in order to reduce the extent of financial risks. Today, the financial derivatives have become increasingly popular and most commonly used in the world of finance. This has grown at such a phenomenal speed all over the world that now it is called the derivatives revolution. In India, the emergence and growth of derivatives market is relatively a recent phenomenon.

Short Term Interest Rate Futures

Most short-term contracts, like most financial futures, have as delivery months the March quarterly cycle March, June, September, and December plus the nearest 4 consecutive months that are not in the March quarterly cycle. For instance, before the last settlement day in December, there will be contracts for December, January, February, March, April, and May, with January, February, April, and May being the 4 months that are not part of the March quarterly cycle. Most contracts are quoted in terms of the prices of the contracts rather than their interest rates at a notional value of 100, which is the price index. The price of the futures contract is equal to 100 minus the interest rate:

$$\text{Price} = 100 - \text{Annualized Interest Rate as a Percentage}$$

Most short-term interest rate futures are based on a 3-month, or 90-day period; nonetheless, the interest rate is annualized, so for a 90-day period, the actual interest earned on a futures contract would be 25% of the annualized interest rate.

There are many types of short-term interest rate futures, including T-bills, sterling, fed funds, Euribor (3-month LIBOR contract for the Euro), Euroswiss, Eurodollar, and Euroyen; only a few are discussed here.

The seller of the futures contract is given a choice of bonds from which to deliver, so that at least some of them will be available during the delivery month. The conversion factor is calculated thus:

$$\text{Conversion Factor} = \text{Bond Value} / 100 = \text{Present Value of the Bond's Cash Flows} / 100$$

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Practical Concepts of Options Market

An 'Option' is a type of security that can be bought or sold at a specified price within a specified period of time, in exchange for a non-refundable upfront deposit. An options contract offers the buyer the right to buy, not the obligation to buy at the specified price or date. Options are a type of derivative product.

The right to sell a security is called a 'Put Option', while the right to buy is called the 'Call Option'.

They can be used as:

Leverage: Options help you profit from changes in share prices without putting down the full price of the share. You get control over the shares without buying them outright.

Hedging: It, too, can be used to protect yourself from fluctuations in the price of a share and letting you buy or sell the shares at a pre-determined price for a specified period of time.

Though they have their advantages, trading in options is more complex than trading in regular shares. It calls for a good understanding of trading and investment practices as well as constant monitoring of market fluctuations to protect against losses.

Just as futures contracts minimize risks for buyers by setting a pre-determined future price for an underlying asset, options contracts do the same, however, without the obligation to buy in a futures contract.

The seller of an options contract is called the 'options writer'. Unlike the buyer in an options contract, the seller has no rights and must sell the assets at the agreed price if the buyer chooses to execute the options contract on or before the agreed date, in exchange for an upfront payment from the buyer.

There is no physical exchange of documents at the time of entering into an options contract. The transactions are merely recorded in the stock exchange through which they are routed.

Comparison on Options & Synthetics

Options are touted as one of the most common ways to profit from swings in the market. Whether you are interested in trading futures, currencies or want to buy shares of a corporation, options are considered a low-cost way to make an investment without fully committing. While options have the ability to limit a trader's total investment, options can also open traders up to volatility risk, and increase opportunity costs. Because these serious limitations affect options investing, a synthetic option may be the best choice when making exploratory trades or establishing trading positions.

Options "Greeks" complicate this risk equation. The Greeks - delta, gamma, vega, theta and rho - measure different levels of risk in an option. Each one of the Greeks adds a different

level of complexity to the decision-making process. The Greeks are designed to assess the various levels of volatility, time decay and the underlying asset in relation to the option. The Greeks make choosing the right option a difficult task because there is the constant fear that you may pay too much for the option or that it may lose value before you have a chance to gain profits.

Finally, purchasing any type of option is a mixture of guesswork and forecasting. There is a talent for being able to discern what makes one option strike price better than another option strike price. Once an option strike price is chosen, it is a definitive financial commitment. The trader must assume that the underlying asset will not only achieve the strike price level, but will exceed it in order for a profit to be made. If the wrong strike price is chosen, the entire option investment is lost. This can be quite frustrating, particularly when a trader is right about the market's direction, but picks the wrong strike price.

Options Derivatives

In simple terms, the options premium is determined by the three factors mentioned earlier, intrinsic value, time value, and volatility.

But there are other, more sophisticated tools used to measure the potential variations of options premiums. They are generally employed by professional options traders and may be of a little interest to the individual investor.

These four tools are known as options derivatives. They are:

Delta

Gamma

Theta

Vega

Delta: An options delta is used to measure the anticipated percentage of change in the premium in relation to a change in the price of the underlying security. If a particular call option had a delta of 60% we would expect the option premium to vary by 60% of the change in the underlying stock. If that stock rose 1 point, the option premium should rise approximately 6/10 (60%) of 1 point.

Gamma: Gamma measures the expected change in the delta factor of an option when the value of the price of the underlying security rises. If a particular option had a delta of 60% and a gamma of 5%, an increase of 1 point in the value of the stock would increase the delta factor by 5% from 60% to 65%.

Theta: The theta derivative attempts to measure the erosion of an option's premium caused by the passage of time. We know that at expiration, an option will have no time value and will be worth only the intrinsic value if, in fact, it has any. Theta is designed to predict the daily

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rate of erosion of the premium. Naturally, other factors such as changes in the value of the underlying stock will alter the premium. Theta is concerned only with the time value. Unfortunately, we cannot predict with accuracy changes in a stock's market value, but we can measure exactly the time remaining until expiration.

Vega: The fourth derivative, Vega is concerned with the volatility factor of the underlying stock. We have pointed out that the volatility varies among different securities. Vega measures the amount by which the premium will rise when the volatility factor of the stock increases. Vega measures the sensitivity of the premium to these changes in volatility. Delta, gamma, theta and vega are very sophisticated tools for predicting changes in an option's premium. They merely take the three factors which determine a premium (price of the stock, passage of time, and volatility), and measure each in an exacting manner. The derivatives vary for each series of options.

The World of Synthetic Options

Many of the problems mentioned above can be minimized or eliminated when a trader decides to use a synthetic option instead of simply purchasing an option. A synthetic option is less affected by the problem of options expiring worthless; in fact, the CME statistics can work in a synthetic's favor. Volatility, decay and strike price play a less important role in a synthetic option's ultimate outcome.

When deciding to execute a synthetic option there are two types available: synthetic calls and synthetic puts. Both types of synthetics require a cash or futures position combined with an option. The cash or futures position is the primary position and the option is the protective position. Being long in the cash or futures position and purchasing a put option is known as a synthetic call. A short cash or futures position combined with the purchase of a call option is known as a synthetic put.

A synthetic call or put mimics the unlimited profit potential and limited loss of a regular put or call option without the restriction of having to pick a strike price. At the same time, the synthetic positions are able to curb the unlimited risk that a cash or futures position has when traded by itself. A synthetic option essentially has the ability to give traders the best of both worlds, while diminishing some of the pain. While synthetic options have many superior qualities compared to regular options, that doesn't mean that they don't come with their own set of problems.

Disadvantages of Synthetics

The first problem involves the cash or futures position. Because you are holding on to a cash position or futures contract, if the market begins to move against a cash or futures position, it is losing money in real time. With the protective option in place, the hope is that the option will move up in value at the same speed to cover the losses. This is best accomplished if you purchase an option at-the-money.

This leads to a second problem: in order to have the best protection, an at-the-money option must be purchased, but at-the-money options are more expensive than out-of-the-money options. This can have an adverse effect on the amount of capital that you may want to commit to a trade.

Thirdly, even with an at-the-money option protecting you against losses, you must have a money management strategy to help you determine when to get out of the cash or futures position. Without a money management strategy to limit the losses of the cash or futures position, an opportunity to switch from a losing synthetic position to a profitable option position can be missed.

Rules of Options – OTC / Exchange-Traded

In finance, an **option** is a contract which gives the *buyer* (the owner) the right, but not the obligation, to buy or sell an underlying asset or instrument at a specified strike price on or before a specified date. The *seller* has the corresponding obligation to fulfill the transaction that is to sell or buy if the buyer (owner) "exercises" the option. The buyer pays a premium to the seller for this right. An option that conveys to the owner the right to buy something at a certain price is a "call option", "An option that conveys the right of the owner to sell something at a certain price is a "put option"". Both are commonly traded, but for clarity, the call option is more frequently discussed. Options valuation is a topic of ongoing research in academic and practical finance. In basic terms, the value of an option is commonly decomposed into two parts:

- The first part is the "intrinsic value", defined as the difference between the market value of the underlying and the strike price of the given option.
- The second part is the "time value", which depends on a set of other factors which, through a multivariable, non-linear interrelationship, reflect the discounted expected value of that difference at expiration.

Although options valuation has been studied since the 19th century, the contemporary approach is based on the Black-Scholes Model, which was first published in 1973.

OTC

Derivatives that trade on an exchange are called exchange-traded derivatives, whereas privately negotiated derivative contracts are called OTC contracts. The OTC derivatives markets have the following features compared to exchange-traded derivatives:

- (i) The management of counter-party (credit) risk is decentralized and located within individual institutions.
- (ii) There are no formal centralized limits on individual positions, leverage, or margining.

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- (iii) There are no formal rules for risk and burden-sharing.
- (iv) There are no formal rules or mechanisms for ensuring market stability and integrity, and for safeguarding the collective interests of market participants, and
- (v) The OTC contracts are generally not regulated by a regulatory authority and the exchange's self-regulatory organization. They are however, affected indirectly by national legal systems, banking supervision and market surveillance.

Many derivative instruments such as forwards, swaps and most exotic derivatives are traded OTC.

- OTC Options are essentially unregulated.
- Act like the forward market described earlier.
- Dealers offer to take either a long or short position in options and then hedge that risk with transactions in other options derivatives.
- Buyer faces credit risk because there is no clearing house and no guarantee that the seller will perform.
- Buyers need to assess sellers' credit risk and may need collateral to reduce that risk.
- Price, exercise price, time to expiration, identification of the underlying, settlement or delivery terms, size of contract, etc. are customized.
- The two counterparties determine terms.

Exchange-Traded

An option traded on a regulated exchange where the terms of each option are standardized by the exchange. The contract is standardized so that underlying asset, quantity, expiration date and strike price are known in advance. Over-the-counter options are not traded on exchanges, and allow for the customization of the terms of the option contract.

- All terms are standardized except price.
- The exchange establishes expiration date and expiration prices as well as minimum price quotation unit.
- The exchange also establishes whether the option is American or European, its contract size and whether settlement is in cash or in the underlying security.
- Usually, trade in lots in which 100 shares of stock = 1 option
- The most active options are the ones that trade at the money, while deep-in-the-money and deep-out-of-the money options don't trade very often.
- Usually, have short-term expirations (one to six months out in duration) with the exception of LEAPS, which expire years in the future.

- Can be bought and sold with ease, and holder decides whether or not to exercise. When options are in-the-money or at-the-money they are typically exercised.
- Most have to deliver the underlying security.
- Regulated at the federal level

Types of Exchange-Traded Options

1. Financial Options: Financial options have financial assets, such as an interest rate or a currency, as their underlying assets. There are several types of financial options:

Stock Option - Also known as equity options, these are a privilege sold by one party to another. Stock options give the buyer the right, but not the obligation, to buy (call) or sell (put) a stock at an agreed-upon price during a certain period of time,, or on a specific date.

Index Option - A call or put option on a financial index, such as the NASDAQ or S&P 500. Investors trading index options are essentially betting on the overall movement of the stock market as represented by a basket of stocks.

Bond Option - An option contract in which the underlying asset is a bond. Other than the different characteristics of the underlying assets, there is no significant difference between stock and bond options. Just as with other options, a bond option allows investors to hedge the risk of their bond portfolios or speculate on the direction of bond prices with limited risk.

A buyer of a bond call option expects a decline in interest rates and an increase in bond prices. The buyer of a put bond option expects an increase in interest rates and a decrease in bond prices.

Interest Rate Option - Option in which the underlying asset is related to the change in an interest rate. Interest rate options are European-style, cash-settled options on the yield of U.S. Treasury securities. Interest rate options are options on the spot yield of U.S. Treasury securities. They include options on 13-week Treasury bills, options on the five-year Treasury note and options on the 10-year Treasury notes. In general, the call buyer of an interest rate option expects interest rates will go up (as will the value of the call position), while the put buyer hopes rates will go down (increasing the value of the put position). Interest rate options and other interest rate derivatives make up the largest portion of the worldwide derivatives market.

Currency Option - A contract that grants the holder the right, but not the obligation to buy or sell currency at a specified price during a specified period of time. Investors can hedge against foreign currency risk by purchasing a currency option put or call.

2. Options on Futures: Like other options, an option on a futures contract is the right but not the obligation, to buy or sell a particular futures contract at a specific price on or before a certain expiration date. These grant the right to enter into a futures contract at a fixed price. A call option gives the holder (buyer) the right to buy (go long) a futures contract at a specific

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price on or before an expiration date. The holder of a put option has the right to sell (go short) a futures contract at a specific price on or before the expiration date.

3. Commodity Options: These are options in which the underlying asset is a commodity such as wheat, gold, oil and soybeans.

4. Other Options: As with most things, as time goes on, procedures and products undergo drastic changes. The same goes for options. New options have underlying assets such as the weather. Weather derivatives are used by companies to hedge against the risk of weather-related losses. The investor who sells a weather derivative agrees to bear this risk for a premium. If nothing happens, the investor makes a profit. However, if the weather turns bad, the company that owns the derivative claims the agreed amount.

Another option gaining popularity is real options. These options are not actively traded. The real-options approach applies financial options theory to large capital expenditures such as manufacturing plants, product line extensions and research and development. Where a financial option gives the owner the right, but not the obligation, to buy or sell a security at a given price, a real option gives companies that make strategic investments the right, but not the obligation, to exploit these opportunities in the future.

Option Strategies like KIKOs

KIKO options are a new and simple trading instrument in which the trader predicts which of the upper or lower price targets (barriers) the asset price will hit first.

If it first hits the price target that the trader has chosen (Knock-In), the option will expire "In the Money" (ITM) and they will receive a payout.

If the asset price first hits the opposite price target, the option will expire "Out of the Money" (OTM) and there will be no payout.

There is NO set expiry time. This means that the trade will continue until the asset hits one of the barriers.

The Advantages of Trading KIKO Options:

- High Payouts – up to 80%.
- No Expiry – no need to choose duration and commit to a time frame.
- Simple and Intuitive - easy to use and easy to learn.
- Controlled Risk - the payout is shown when entering a trade, no margin calls or leverage.
- No Commissions or Hidden Costs - what you see is what you get.
- Variety of assets - choose from a large array of assets to trade on.

Black-Scholes and Beyond – In Options

The model is named after Fischer Black and Myron Scholes, who developed it in 1973. Robert Merton also participated in the model's creation, and this is why the model is sometimes referred to as the Black-Scholes-Merton model. All three men were college professors working at both the University of Chicago and MIT at that time.

The model assumes the option price and follows a Geometric Brownian motion with constant drift and volatility. Among other more complicated variables, the formula takes into consideration the price of the underlying stock, the strike price of the option, and the amount of time before the option expires. Clearly, computers have greatly eased and extended the use of the *Black-Scholes Model*.

The basic mission of the Black-Scholes model is to calculate the probability that an option will expire in the money. To do this, the model looks beyond the simple fact that the value of a call option increases when the underlying stock price increases or when the exercise price decreases. Rather, the model assigns value to an option by considering several other factors, including the volatility of XYZ Company stock, the time left until the option expires, and interest rates. For example, if XYZ Company stock is considerably volatile, there is more potential for the option to go in- the- money before it expires. Also, the longer the investor has to exercise the option, the greater the chance that an option will go in-the-money and the lower the present value of the exercise price. Higher interest rates raise the price of the option because they lower the present value of the exercise price.

It is important to note that the Black-Scholes model is geared toward European options. American options, which allow the owner to exercise at any point up to and including the expiration date, command higher prices than European options, which allow the owner to exercise only on the expiration date. This is because the American options essentially allow the investor several chances to capture profits, whereas the European options allow the investor only one chance to capture profits.

Why it Matters:

Empirical studies show that the Black-Scholes model is very predictive, meaning that it generates option prices that are very close to the actual price at which the options trade. However, various studies show that the model tends to overvalue deep out-of-the-money calls and undervalue deep in-the-money calls. It also tends to misprice options that involve high-dividend stocks. Several of the model's assumptions also make it less than 100% accurate. First, the model assumes that the risk-free rate and the stock's volatility are constant. Second, it assumes that stock prices are continuous and that large changes (such as those seen after a merger announcement) don't occur. Third, the model assumes a stock pays no dividends until after expiration. Fourth, analysts can only estimate a stock's volatility instead of directly observing it, as they can for the other inputs. Analysts have developed variations of the Black-Scholes model to account for these limitations.

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Ultimately, however, the Black-Scholes model represents a major contribution to the efficiency of the options and stock markets, and it is still one of the most widely used financial tools on Wall Street. Besides providing a dependable way to price options, it helps investors understand how sensitive an option's price is to stock price movements. This in turn helps investors maximize the efficiency of their portfolios by giving them a way to calculate hedge ratios and more effectively implement portfolio insurance.

Despite the tremendous efficiencies created by the Black-Scholes model, many financial theorists claim the model's introduction indirectly increased the volatility of the stock and options markets by encouraging more trading (as investors sought to constantly fine-tune their hedge positions). Others claim the model actually steadies the markets because of its ability to measure equilibrium pricing relationships. When these relationships are violated, arbitrageurs are usually the first to discover and exploit mispriced options.

Settlement of Futures / Option Contract

In derivatives markets, the price used for determining profit or loss for the day, as well as margin requirements, the settlement price is the average price at which a contract trades, calculated at both the open and close of each trading day. Additionally, it is important because it determines whether a trader may be required to post additional margins. It is generally set by defined procedures that differ slightly with each exchange and the instrument traded.

Futures

Future contracts have two types of settlements-MTM settlement and the final settlement.

MTM Settlement for Futures: All futures contracts for each member are mark-to-market to the daily settlement price of the relevant futures contract at the end of each day. The profits/losses are computed as the difference between:

- (i) The trade price and the day's settlement price in respect of contracts executed during the day but not squared up,
- (ii) The previous day's settlement price and the current day's settlement price in respect of brought- forward contracts,
- (iii) The buy price and the sell price in respect of contracts executed during the day and squared up.

The Clearing Members (CMs) who have suffered a loss are required to pay the mark-to-market (MTM) loss amount in cash which is in turn passed on to the CMs who have made a MTM profit. This is known as daily mark-to-market settlement. CMs are responsible for collecting and settling the daily MTM profits/losses incurred by the Trading Members (TMs) and their clients clearing and settling through them. Similarly, TMs are responsible for collecting/paying losses/profits from/to their clients by the next day. The pay-in and pay-out of

the mark-to-market settlement are effected on the day following the trade day. After completion of daily settlement computation, all the open positions are reset to the daily settlement price. Such position becomes the open position for the next day.

Final Settlement for Futures: On the expiry day of the futures contracts, after the close of trading hours, The National Securities Clearing Corporation Limited (NSCCL) marks all positions of a CM to the final settlement price and the resulting profit / loss is settled in cash. Final settlement loss / profit amount is debited/credited to the relevant CM's clearing bank account on the day following expiry day of the contract.

Settlement Prices for Futures: Daily settlement price on a trading day is the closing price of the respective futures contracts on a particular day. The closing price for a futures contract is currently calculated as the last half-an-hour weighted average price of the contract executed in the last half hour of trading hours. In case future contract is not traded in the last half an hour, the theoretical future price is computed and used as daily settlement price in the F&O segment of NSE. Final settlement price is the closing price of the relevant underlying index / security in the Capital market segment of NSE, on the last trading day of the contract. The closing price of the underlying Index / security is currently its last half- an- hour weighted average value in the Capital Market Segment of NSE.

Options

Daily Premium Settlement for Options: Buyer of an option is obligated to pay the premium towards the options purchased by him. Similarly, the seller of an option is entitled to receive the premium for the option sold by him. The premium payable amount and the premium receivable amount are netted to compute the net premium payable or receivable amount for each client for each option contract.

Interim Exercise Settlement: Interim exercise settlement takes place only for option contracts on securities. An investor can exercise his in- the- money options at any time during trading hours, through his trading member. Interim exercise settlement is effected for such options at the close of the trading hours, on the day of exercise. Valid exercised option contracts are assigned to short positions in the option contract with the same series (i.e. having the same underlying, same expiry date and same strike price), on a random basis, at the client level. The CM who has exercised the option receives the exercise settlement value per unit of the option from the CM who has been assigned the option contract.

Final Exercise Settlement: Final Exercise settlement is effected for all open long in the money strike price options existing at the close of trading hours, on the expiration day of an option contract. All such long positions are exercised and automatically assigned to short positions in option contracts with the same series, on a random basis. The investor who has long in- the- money options on the expiry date will receive the exercise settlement value per unit of the option from the investor who has been assigned the option contract.

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Swaps Market

A swap is an agreement between two parties to exchange sequences of cash flows for a set period of time. Usually, at the time the contract is initiated, at least one of these series of cash flows is determined by a random or uncertain variable, such as an interest rate, foreign exchange rate, equity price or commodity price. Conceptually, one may view a swap as either a portfolio of forward contracts, or as a long position in one bond coupled with a short position in another bond. This article will discuss the two most common and most basic types of swaps: the plain vanilla interest rate and currency swaps.

Unlike most standardized options and futures contracts, swaps are not exchange-traded instruments. Instead, swaps are customized contracts that are traded in the Over-the-Counter (OTC) market between private parties. Firms and financial institutions dominate the swaps market, with few (if any) individuals ever participating. Because swaps occur on the OTC market, there is always the risk of a counterparty defaulting on the swap.

OIS Swap

Overnight Index Swaps (OIS) are instruments that allow financial institutions to swap the interest rates they are paying without having to refinance or change the terms of the loans they have taken from other financial institutions.

Typically, when two financial institutions create an overnight index swap (OIS), one of the institutions is swapping an overnight interest rate and the other institution is swapping a fixed short-term interest rate. This may sound a bit strange, but here is how it works.

Imagine Institution #1 has a \$10 million loan that it is paying interest on, and the interest is calculated based on the overnight rate. Institution #2, on the other hand, has a \$10 million loan that it is paying interest on, but the interest on this loan is based on a fixed, short-term rate of 2 percent. As it turns out, Institution #1 would much rather be paying a fixed interest rate on its loan, and Institution #2 would much rather be paying a variable interest rate—based on the overnight rate—on its loan, but neither institution wants to go out and get a new loan, and they can't renegotiate the terms of their current loans. In this case, these two institutions could create an overnight index swap (OIS) with each other.

To set up the swap, both institutions would agree to continue servicing their loans, but at the end of a specified time period—one month, three months and so on, whoever ends up paying less interest will make up the difference to the other institution. For example, if Institution #1 ends up paying an average interest rate of 1.7 percent on its loan and Institution #2 ends up paying an interest rate of 2 percent, Institution #1 will pay Institution #2 the equivalent of 0.3 percent ($2.0 - 1.7 = 0.3$) because, according to their agreement, they swapped interest rates. Of course, if Institution #1 ends up paying an average interest rate of 2.2 percent on its loan

and Institution #2 ends up paying an interest rate of 2 percent, Institution #2 will pay Institution #1 the equivalent of 0.2 percent ($2.2 - 2.0 = 0.2$) because, according to their agreement, they swapped interest rates.

The overnight index swap (OIS) market is quite large, and the movements in this market can provide a lot of information for economists and analysts who are trying to understand what is happening in the global financial markets. One of the key pieces of information analyst's watch is the interest rate the institutions that have loans with variable interest rates are paying.

The question is how you determine what rate to use when each institution is paying a slightly different rate based on what time of day they have to determine their payment. You see, the overnight rate is constantly changing, and you will pay a different interest rate at 6:00 am from what you will pay at 11:00 am.

To resolve this issue, an overnight index swap rate is calculated each day. This rate is based on the average interest rate institutions with loans based on the overnight rate have paid for that day.

What Does the Overnight Index Swap Rate Tell Us?

By itself, the overnight index swap rate doesn't tell us much, other than what the overnight rate is. However, when you combine the overnight index swap rate with another indicator, like LIBOR, and create a spread like the LIBOR OIS spread, you can get a glimpse of the health of the global credit markets.

MIFOR Swap

A rate those Indian banks and other derivative market participants used as a benchmark for setting prices on forward rate agreements and interest rate derivatives. Mumbai Interbank Forward Offer Rate (MIFOR) was a mix of the London Interbank Offer Rate (LIBOR) and a forward premium derived from Indian forex markets.

The Reserve Bank of India (RBI) grew concerned over the potential economic downside risk by having an abundance of speculative off-balance-sheet entities (such as currency swaps). The RBI did ban the use of MIFOR and other non-rupee denominated benchmarks on May 20, 2005 hoping that doing so will lower the amount of currency speculation. However, the RBI did relax the ban somewhat on May 30 of the same month and allowed MIFOR to be only used in interbank-related transactions.

An Overnight Indexed Swap (OIS) is an agreement between two parties in which one party pays a fixed interest rate and receives a floating rate which is linked to a daily overnight reference rate index i.e., NSE MIBOR (Mumbai Inter-Bank Offer Rate). The two parties agree to exchange at maturity/pre-decided fixed intervals, on the agreed notional amount, the difference between interest accrued at the agreed fixed rate and interest accrued through the self-compounding floating rate.

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Purpose of Transaction: The OIS can be used to manage interest rate risk for flexible periods, without much of a liquidity risk. For a risk manager, OIS allows the interest rate risk profile to be altered as if by the addition of a cash asset or borrowing. In this transaction, the Bank / Corporate executes his view of rising interest rates by paying fixed rate or receiving a floating rate (linked to O/N NSE MIBOR which is compounded daily), thereby, aiming to benefit when interest rates remain higher. On the other hand, if he expects interest rates to fall, he receives fixed rate and pays floating thus benefiting if interest rate falls, else he incurs loss.

Structure Party B will pay a Fixed Coupon Rate of 7.92% p.a. on the INR principal amount and receive from Party A the floating coupon rate of the O/N NSE MIBOR (compounded daily) on the INR principal. Both coupons will be settled Semi-annually, Notional INR 200 Crs, Tenor 5Year. Floating Rate Option INR-MIBOR-OIS-COMP which means that the rate for a Reset Date, calculated in accordance with the formula set forth below in this sub-paragraph, will be the rate of return of a daily compound interest investment (it being understood that the reference rate for the calculation of interest is the arithmetic mean of the daily rates of the day-to-day inter-bank INR offered rate). "INR-MIBOR-OIS-COMPOUND" will be calculated as follows, and the resulting percentage will be rounded, if necessary, in accordance with method set forth in Section 8.1(a), but to the nearest one ten-thousandth of a percentage point (0.0001%):

$$[\pi(1+(R_i \times n_i / 365))-1] \times 365/d$$

where:

"i" is a series of whole numbers from one to do, each representing the relevant Business Days in chronological order from, and including, the first Business Day in the relevant Calculation Period;

"ni" is the number of calendar days in the relevant Calculation Period on which the rate is Ri;

"d" is the number of calendar days in the relevant Calculation Period; and

"Ri", for any Business Day "i" in the relevant Calculation Period is the Mumbai Inter-Bank Offered Rate, as published jointly by FIMMDA and the National Stock Exchange of India for a period of the Designated Maturity which appears on Reuters Screen by International Swaps and Derivatives Association, Inc.

"MIBR=NS" (the heading "MIBOR" on Reuters Screen "MIBR=NS" as of 9:40 a.m. Indian Standard Time on that Business Day) under the heading "MIBOR" as of 9:40 a.m., Indian Standard Time on that Business Day. If such rate does not appear on Reuters Screen "MIBR=NS" as of 9:40 a.m. Indian Standard Time on that Business Day, then the rate for that Business Day will be the MIBOR rate for a period of the Designated Maturity as published at 9.40 a.m. on that Business Day as published by the National Stock Exchange of India on its internet website page under the "WDM" menu or as published by FIMMDA on the internet

website page under the “Benchmark” menu, or on such other part of the respective website as may be reorganized from time to time.

Saturday not being a business day for OIS swaps, in relation to INR-OIS-COMPOUND, while a 1 day MIBOR will be used for compounding on week days, the 3- day MIBOR will be used for such compounding on Fridays.

If such rate does not appear on the internet website page of FIMMDA or NSE, as of 10:40 a.m. Indian Standard Time on that Business Day, the rate for that Business Day will be the rate which appears on Reuters Screen “MIBR=” next to the caption “ FIXING@940AM” . If such rate does not appear on Reuters Screen “MIBR=” as of 10:40 a.m. Indian Standard Time on that Business Day, the rate for that Business Day will be determined as if the parties had specified “INR-Reference Banks” as the applicable Floating Rate Option for purposes of determining Ri.

Scenario Analysis

Scenario 1: For semiannual coupon period

Assumption: If the Daily compounded Floating O/N NSE MIBOR for the period is below 7.92%, say 7.42% then the Bank/Corporate will lose around $(7.42\%-7.92\%) * 2,000,000,000.00 * 183/365 = \text{Rs } 5,013,698.63$ for the relevant period.

Scenario 2: For semi- annual coupon period

Assumption: If the Daily compounded Floating O/N NSE MIBOR for the period is above 7.92% say 8.42%, then the Bank / Corporate will gain around $(7.92\%-8.42\%) * 2,000,000,000.00 * 183/365 = \text{Rs. } 5,013,698.63$ on the INR notional for the relevant period.

INBMK Swap (Indian Benchmark Swap)

The INBMK swap of Indian markets is a unique one. There is decent volume and interest in the product, but over a period of time, it has become a totally one-sided market with wide spreads (both bid-offer and spread to G-sec).

A typical 10 yr INBMK [A fixed rate vs. floating one year G-sec for a tenor of ten years] would get quoted today at say 7.45 - 7.75% if not wider as against the prevailing 10 yr G-sec yield of around 8% (semi-annual).

Going by the fair value, the swap should have been quoted around the 10 yr G-sec annualized rate, say something like 8.00-8.25.

This doesn't happen because, firstly, traders cannot short the underlying and hence when the typical receivers (usually PSU institutions and large corporates) receive, there is no way traders can hedge trading positions. Secondly, the quote drifts to the left, since some of these corporates do not mind receiving little lower levels in a composite deal including placement of their fixed rate NCDs.

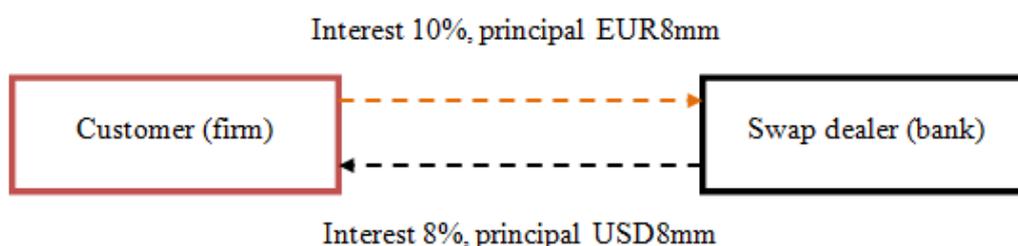
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This can be changed by banks which have large SLR portfolios by looking at the INBMK market and the SLR portfolio in a synergistic manner. Will not a sale from the SLR book for the required durations serve as a hedge? The typical answer to this has been that the SLR book is run by balance sheet desk while the Swap book is run by the trading desk. And unless banks with large SLR books (Nationalized Banks) get into this market as traders, or unless perhaps the active traders start seeing much higher rates on the G-secs, this one-sided trending will continue. In any case, it does not appeal to common sense that a bank sitting on a large surplus of G-sec investments will be reluctant to pay a lower fixed rate

Such a pity, since the outstanding underlying is huge and banks do not view these spreads as gainful. And an important link in credit spreads and corporate debt market remains strained.

Coupon - Only Swap

A form of cross-currency swap that entails no exchange of principal in two different currencies at maturity, and only the interest payments (i.e., coupons) are exchanged. In this sense, a coupon-only coupon swap (CoS) is like an exchange of a strip of coupons in one currency for another strip of coupons in another currency. This swap structure is typically a cost-reduction strategy with a conservative risk-reward ratio. The following is a graphical illustration of a coupon- only swap:



The payoff of CoS is measured as a spread adjusted with a barrier condition (assuming the exchange rate range to be 1.1250-1.3550): 5% per annum if USD EUR trades in a particular range and 0% per annum if USD EUR breaks outside the preset range. The above illustration shows that the company faces a maximum interest rate risk of 2.00% if the specified range is broken. However, it will receive a maximum gain of 3.00% in the opposite case.

This swap is also known as an interest-only swap or an annuity swap.

Hedging of Buyer Credit / ECB

Corporations in which individual investors place their money have exposure to fluctuations in all kinds of financial prices as a natural by-product of their operations.

These may include foreign exchange rates, interest rates, commodity prices and equity prices. The effect of changes in these prices on reported earnings can be overwhelming, so

companies will seek out transactions whose sensitivity to movements in financial prices offsets the sensitivity of their core business to such changes, or hedging.

The most sophisticated players in this field recognize that a business's financial risks present a powerful opportunity to add to their bottom line while shielding the firm from the negative effects of those movements.

Buyer's Credit

Buyer's credit is the credit availed by domestic importer from overseas banker / financial institution. Banks are providing buyer's credit without the obligation of letter of comfort and thus the competition in this segment has intensified. The maximum period of buyer's credit can be (Recent guidelines of RBI mentioned elsewhere in this Chapter):

Revenue exposure: One year

Capital expenditure: Upto three years

For infrastructure sector: Upto five years

Present ceiling for buyer's credit is: 6M Libor + 350

Maximum amount of buyer credit per transaction is restricted to USD 20 mio

What is the mechanism to avail buyer's credit?

Step 1: Importer should have foreign LC limits and buyer's credit limits with a recognized bank in India.

Step 2: The importer will open a LC which could be sight or usance as per the requirement of the company.

Step 3: On due date of LC payment, the Importer will approach its bank in India and request to arrange buyer's credit.

Step 4: The Importer's bank will arrange for buyer's credit quotes from overseas banks including domestic bank's foreign branches and pass on the quote to customer for acceptance.

Step 5 : On acceptance by Importer, the domestic bank will communicate to the foreign bank, and will provide Letter of comfort to the foreign bank / branch, which, in turn, will make payment to the Exporter's bank and on due date of buyer's credit, the Importer, through its bank in India, will pay the buyer's credit amount to foreign bank.

Total cost involved:

1. LIBOR (it could be 3M/6M/1Y depending on the period of buyers credit) + Spread
2. Letter of comfort charges : it ranges from 0% to 2.5 %

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3. Commitment charges/processing charges.
4. Withholding tax

What is Withholding tax?

As per Section 195 of Income tax act 1961, a certain percentage of tax is required to be deducted on interest amount paid by the domestic corporate to overseas lender on loan taken from overseas lenders. It varies from country to country depending on India's double taxation avoidance agreements with those countries. But no withholding tax would be charged on loans raised from overseas branches of domestic banks.

Hedging of Buyer's Credit: It is very important to understand the risks involved in buyer's credit business. Primarily, there are two important risks inherent in this business:

Exchange risk

Interest rate risk

Thus, if the importer /buyer's credit taker does not have natural hedge by means of exports, then he needs to hedge the buyer's credit repayment, and thus the arbitrage available will get reduced.

External Commercial Borrowings - Hedging

ECBs are the most popular instrument for Indian companies raising debt overseas. For lenders, including foreign banks and agencies such as the World Bank and International Monetary Fund, the ECB route makes sense, as it is the borrower who assumes currency risk as opposed to rupee-denominated overseas bonds, in which the lender takes on risk.

Currently, it is not mandatory for companies to hedge their ECB loans. Though it leads to some savings, in case of a weakness in the rupee, it hurts the companies' ability to pay back the loan.

Is it necessary that ECBs be fully hedged?

The forex exposure of the following borrowers needs to be fully hedged:

- ECB by NGOs engaged in micro-finance activities and MFIs.
- In case of ECB availed by NBFCs categorized as IFCs, the currency risk needs to be fully hedged.
- If IFCs have availed of credit enhancement facility and the same gets invoked, then in case the novated loan is designated in foreign currency, the IFCs should hedge the entire foreign currency exposure.
- ECB availed by the HFCs.

- In case of on-lending to MSME sector in INR, by SIDBI, the foreign currency risk shall be hedged in full.
- In case of other borrowers, hedging of ECB can be optional.

Hedge Accounting

All entities are exposed to some form of market risk. For example, gold mines are exposed to the price of gold, airlines to the price of jet fuel, borrowers to interest rates, and importers and exporters to exchange rate risks.

Many financial institutions and corporate businesses (entities) use derivative financial instruments to hedge their exposure to different risks (for example interest rate risk, foreign exchange risk, commodity risk, etc.).

Accounting for derivative financial instruments under International Accounting Standards is covered by IAS39 (Financial Instrument: Recognition and Measurement).

IAS39 requires that all derivatives are marked-to-market with changes in the mark-to-market being taken to the profit and loss account. For many entities this would result in a significant amount of profit and loss volatility arising from the use of derivatives.

An entity can mitigate the profit and loss effect arising from derivatives used for hedging through an optional part of IAS39 relating to hedge accounting.

What are the hedge accounting options available to an entity that wants to manage foreign currency exposure?

The specific type of hedging transaction that an entity can engage in aims to manage foreign currency exposure. These hedges are undertaken for the economic aim of reducing potential loss from fluctuations in foreign exchange rates. However, not all hedges are designated for special accounting treatment. Accounting standards enable hedge accounting for three different designated forex hedges:

A cash flow hedge may be designated for a highly probable forecasted transaction, a firm commitment (not recorded on the balance sheet), foreign currency cash flows of a recognized asset or liability, or a forecasted inter-company transaction.

A fair value hedge may be designated for a firm commitment (not recorded) or foreign currency cash flows of a recognized asset or liability.

A net investment hedge may be designated for the net investment in a foreign operation.

The aim of hedge accounting is to provide an offset to the mark-to-mark movement of the derivative in the profit and loss account. For a fair value hedge this is achieved either by marking-to-market an asset or a liability which offsets the P&L movement of the derivative. For a cash flow, hedge some of the derivative volatility into a separate component of the entity's equity called the cash flow hedge reserve.

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Where a hedge relationship is effective, most of the mark-to-market derivative volatility will be offset in the profit and loss account.

Achieving hedge accounting requires a large amount of compliance work involving documenting the hedge relationship and both prospectively and retrospectively proving that the hedge relationship is effective.

Standard International Agreements

Although India has steadily opened up its economy, its tariffs continue to be high when compared to other countries, and its investment norms are still restrictive. This leads some to see India as a 'rapid globalizer' while others still see it as a 'highly protectionist' economy.

Till the early 1990s, India was a closed economy: average tariffs exceeded 200 percent, quantitative restrictions on imports were extensive, and there were stringent restrictions on foreign investment. The country began to cautiously reform in the 1990s, liberalizing only under conditions of extreme necessity.

India is now aggressively pushing for a more liberal global trade regime, especially in services. It has assumed a leadership role among developing nations in global trade negotiations, and played a critical part in the Doha negotiations.

Regional and Bilateral Trade Agreements

India has recently signed trade agreements with its neighbors, and is seeking new ones with the East Asian countries and the United States. Its regional and bilateral trade agreements - or variants of them - are at different stages of development:

- India-Sri Lanka Free Trade **Agreement**,
- Trade Agreements with Bangladesh, Bhutan, Sri Lanka, Maldives, China, and South Korea.
- India-Nepal Trade **Treaty**,
- Comprehensive Economic Cooperation Agreement (CECA) with Singapore.
- Framework **Agreements** with the Association of Southeast Asian Nations (ASEAN), Thailand and Chile.
- Preferential **Trade Agreements** with Afghanistan, Chile, and Mercosur (the latter is a trading zone between Brazil, Argentina, Uruguay, and Paraguay).

Check Your Progress

1. Explain in brief what is Net Open Position?
2. How are Nostro Accounts funded?

3. How do swap deals help to bridge the maturity gaps?
4. Explain various types of risks in foreign exchange business.
5. How are risks arising in foreign exchange business?
6. What is daylight open position and how are limits fixed for controlling the exposure?
7. What is hedging and what is its utility?
8. In what way is the currency risk managed?
9. How is the interest rate risk managed?
10. Describe characteristic features of various hedging instruments.

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

1. Owing to the interface with markets, managing market risk for the entire bank has become an integral part of Treasury.
 - (a) True*
 - (b) False
2. Risk Management covers underlying assets and liabilities across,
 - (a) Short Term maturities
 - (b) Medium Term maturities
 - (c) Long Term maturities
 - (a) A and B only
 - (b) A and C only
 - (c) B and C only
 - (d) A, B, C only*
3. Which of the following statements is not correct?
 - (a) Rupee is freely convertible on current account.
 - (b) Rupee is not freely convertible on Capital Account.
 - (c) Rupee is, to a large extent, also convertible on Capital Account.
 - (d) Rupee is not freely convertible on Current Account*
4. Rupee is convertible on capital account due to which of the following relaxations by RBI (i.e., which is not true)?

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- (a) Foreign Direct Investment
 - (b) Overseas direct investment by Indian Corporates
 - (c) Foreign Currency Operations of Resident Indians
 - (d) Speculative Investments on stock markets abroad*
5. Banks look for interest arbitrage across the currency markets and are in a position to:
- (a) Shift swiftly from a placement in Rupee denominated commercial paper to lending in USD in Global Inter-bank market
 - (b) Source funds in Global market and swap the funds into domestic currency or vice-versa
 - (c) B only
 - (d) A and B both*
6. Banks have gained wider access to foreign currency funds through which of the following?
- (a) Deposits maintained by NRIs
 - (b) Cash Balances in EEFC accounts of exporters
 - (c) Float Funds from External commercial borrowings
 - (d) All of the above*
7. The Banks distinguish between rupee cash flows and foreign currency cash flows, and an integrated cash flow has become the basis for treasury operations?
- (a) True
 - (b) False*
8. Globalization is the process of integrating domestic market with global markets, characterized by free capital flows and minimum regulatory requirements?
- (a) True*
 - (b) False
9. Which of the following has Globalization process in India influenced directly?
- (a) Interest Rates
 - (b) Exchange Rates
 - (c) Both of the above*
 - (d) None of the above

10. Which of the following involves interest arbitrage?
- (a) Buying securities with a view to selling later at a higher price
 - (b) Borrowing in one currency and lending in another currency*
 - (c) Borrowing in a different currency and lending the same
 - (d) None of the above
11. A foreign currency account maintained by a bank abroad is its
- (a) Nostro Account*
 - (b) Vostro Account
 - (c) Loro Account
 - (d) Foreign Bank Account
12. Exchange Rate between currency A and Currency B, given the values of Currencies A and B with respect to a third currency is known as:
- (a) Golden Standard
 - (b) Flexible Exchange Rate
 - (c) Fixed Exchange Rate
 - (d) Cross Exchange Rate*
13. For booking a forward sale contract, the bank should verify -
- (a) The letter of credit
 - (b) The import licence
 - (c) The letter of credit or purchase order*
 - (d) None of the above
14. Forward contracts without production of documentary evidence and on the declaration of the customer can be booked
- (a) Only for exporters
 - (b) Upto 50% of the limits worked on previous performance basis*
 - (c) Upto 100% of the limits worked on previous performance basis
 - (d) Without any limit
15. Integrated Treasury in Banking set-up refers to
- (a) Computerization of all bank branches
 - (b) Computerization of all treasury operations

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- (c) Centralization of all back office operations of forex branches
 - (d) Integration of money market, securities market and foreign exchange operations*
16. Following transaction is a Current Account transaction under FEMA
- (a) Issue of ADRs by an Indian Company
 - (b) Buying a flat in Switzerland by an Indian Resident
 - (c) ECB loan availed by L&T Ltd, Mumbai
 - (d) Import of Capital Goods by an Indian Company*
17. Under FEDAI Rules, an option period is available for delivery of documents to
- (a) Exporters*
 - (b) Importers
 - (c) Both Exporters & Importers
 - (d) There is no such concept
18. Foreign Exchange Risk is defined as:
- (a) Variance in the value of Assets, Liabilities and Operating Income due to unanticipated changes in Exchange Rates*
 - (b) Variance in Operating Income due to expected changes in exchange rates
 - (c) Variance in operating income, Value of Assets and Liabilities due to unfavorable movement of Exchange Rates
 - (d) Possibility of loss a firm may sustain due to changes in the Exchange Rates
19. A Swap can be interpreted as a Strip of
- (a) Fixed Rate Agreements or Future Contracts*
 - (b) Future Contracts only
 - (c) Fixed Rate Agreements only
 - (d) None of the above
20. The features of forward rates are:
- (a) They are not projected on the basis of exchange rate movement in the market
 - (b) Forward rates are decided on the basis of interest rate differential of two currencies.
 - (c) The interest rate differential is added to the spot rate for low interest yielding currency and deducted from the spot rate for high interest yielding currency
 - (d) All the above*

21. A derivative product can be structured based on the following criteria:
- (a) Risk Appetite
 - (b) Size of Transactions
 - (c) Maturity Requirements
 - (d) All of these*
22. Which of the following is not a feature of OTC Product?
- (a) Cost of option is to be paid up front
 - (b) Cost is not loaded in the agreed rates*
 - (c) Market is not liquid
 - (d) Cancellation of contract may become expensive
23. The following is the Benchmark Rate:
- (a) For US dollars, it is LIBOR
 - (b) For Indian Rupee Market, it is MIBOR
 - (c) MIFOR for foreign currency Borrowings swapped into Rupee
 - (d) All these*
24. What is significant about MIBOR?
- (a) It is one- day money market rate in the Inter-Bank market announced by NSE daily at 9.50 a.m
 - (b) NSE pools the rate from various participating Banks and averages out after extreme top and bottom rates
 - (c) It is a base rate for short term and medium term lending also
 - (d) All these*
25. The features of MIFOR are:
- (a) It combines LIBOR and forward premium
 - (b) It is based on active forex market dealings
 - (c) It is linked to domestic and global markets
 - (d) All of the above*
26. Asset Liability mismatches can be reduced through use of derivatives in Treasury Operations because

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- (a) Derivatives can be used to hedge high value transactions
 - (b) It can also minimize aggregate risk in Asset Liability mismatches
 - (c) (a) and (b)*
 - (d) None of the above
27. Suppose a Bank borrows US dollars at 3% and lends in domestic market at 8.5%. The Bank pays forward premium of 1.5% to cover Exchange Risk. What is the overall impact?
- (a) The Bank earns a spread of 2% without any Exchange Risk.
 - (b) A Bank through Treasury operations can supplement domestic liquidity
 - (c) The above process is known as arbitrage
 - (d) All of these*
28. Which of the following statements is correct regarding transfer pricing under Treasury Operations?
- (a) If Bank procures deposit at 7% but the Treasury buys at a lower cost, the difference being the cost would be borne by the Bank
 - (b) If the Bank lends at Higher rate and sells the loan to Treasury at lower rate, the Balance being Risk premium would be the income for the Bank
 - (c) (a) and (b) both*
 - (d) None of the these
29. A Run on the Bank signifies:
- (a) A situation where depositors lose confidence and start withdrawing their balances*
 - (b) A Bank running in continuous loss
 - (c) A Bank where non-performing Assets level is high
 - (d) All of the above
30. Investment Policy need not contain:
- (a) Derivative Trading
 - (b) Trading in Securities and Repos
 - (c) Valuation and Accounting Policy
 - (d) Classification of Investments*

APPENDIX-I

OVERVIEW OF FOREIGN EXCHANGE MANAGEMENT ACT, 1999 (FEMA)

Historical Background

The Parliament had enacted the Foreign Exchange Management Act, 1999 (FEMA) to replace the Foreign Exchange Regulation Act, 1973. The emphasis has shifted from 'regulation' to 'management'. FEMA came into force on the 1st day of June, 2000.

Exchange Control in India dates back to 1939 when for the first time it was introduced as a war measure under the Defence of India Rules. During World War II September 1939, there was a shortage of foreign exchange resources. A system of exchange control was for the first time introduced through a series of rules under the Defence of India Act, 1939 on a temporary basis. The foreign exchange crisis persisted for a long time and finally it was sought to be managed in the statute under the title "Foreign Exchange Regulation Act, 1947." This was meant to last for 10 years. However, 10 years of economic development did not ease the foreign exchange constraint, it only made things worse. Thus, FERA permanently entered the statute book in 1957.

Subsequently, this Act was replaced by the Foreign Exchange Regulation Act, 1973 (FERA, 1973), which came into force with effect from January 1, 1974. In 1974, FERA was completely overhauled with all offences being considered as criminal offences with mens rea. The Enforcement Directorate could arrest any person without even arrest warrant.

In the 1990s, consistent with the general philosophy of economic reforms, a sea change relating to the broad approach to reform in the external sector came about. In 1991 the government of India initiated the policy of economic liberalization. Foreign investments in many sectors were permitted. This resulted in increased flow of foreign exchange in India and foreign exchange reserves increased substantially.

In 1997, the Tarapore Committee on Capital Account Convertibility (CAC), constituted by the Reserve Bank, had indicated the preconditions for Capital Account Convertibility. The three crucial preconditions were fiscal consolidation, a mandated inflation target and, strengthening of the financial system. The Tarapore Committee had also recommended change in the legislative framework governing foreign exchange transactions.

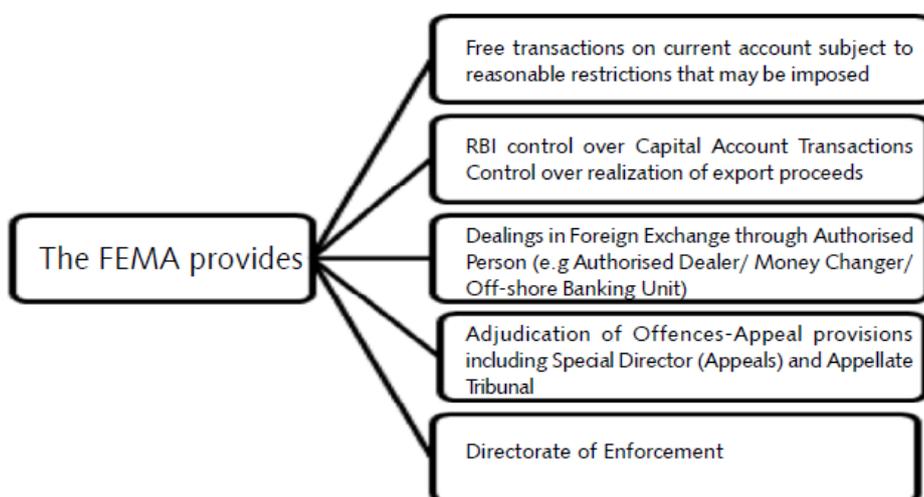
A Bill was introduced in the Lok Sabha on 4 August, 98. The Bill was referred to the Standing Committee on Finance which submitted its report to the House on 23 December'98 with suggestions and modifications. The 12th Lok Sabha was dissolved before any decision could be taken on the bill. The Bill subsequently lapsed. The Bill was again introduced in the 13th Lok Sabha on 25th Oct'99 and was passed in the winter session of Parliament in 1999. The Presidential Assent was received on 29th December, 1999. Finally FEMA came into operation w.e.f. 1st June 2000 vide G.S.R 371 (E), dated 1st May, 2000.

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Accordingly, the Foreign Exchange Regulation Act (FERA) was repealed and replaced by the new Foreign Exchange Management Act (FEMA) with effect from June 2000. The philosophical approach was shifted from that of conservation of foreign exchange to one of facilitating trade and payments as well as developing orderly foreign exchange market.

Overview of FEMA

The Foreign Exchange Management Act, 1999 was enacted to consolidate and amend the law relating to foreign exchange management with the objective of facilitating external trade and payments and for promoting the orderly development and maintenance of foreign exchange market in India. In fact it is the central legislation that deals with inbound investments into India and outbound investments from India and trade and business between India and the other countries.



Applicability

Foreign Exchange Management Act, 1999 extends to the whole of India. The Act also applies to all branches, offices and agencies outside India owned or controlled by a person resident in India and also to any contravention thereunder committed outside India by any person to whom this Act applies.

FEMA has considerably liberalized provisions in respect of foreign exchange. However, sometimes an extraordinary situation may arise. In such cases, Central Government can suspend operation of any or all of the provisions of FEMA in public interest, by issuing a notification. The suspension can be relaxed by issuing a notification.

Overall Scheme

FEMA makes provisions for dealings in foreign exchange. Broadly, all Current Account Transactions are free. However Central Government can impose reasonable restrictions by

issuing rules (Section 3 FEMA). Capital Account Transactions are permitted to the extent specified by RBI by issuing Regulations (Section 6 of FEMA).

FEMA envisages that RBI shall have a controlling role in management of foreign exchange. Since RBI cannot directly handle foreign exchange transactions, it authorizes “Authorised Persons” to deal in foreign exchange as per directions issued by RBI. (Section 10 FEMA). RBI is empowered to issue directions to such “Authorised Persons” under Section 11.

FEMA also makes provisions for enforcement, penalties, adjudication and appeal. The FEMA 1999 contains only basic legal framework. The practical aspects are covered in Rules made by Central Government and Regulations made by RBI.

FDI Policy announced by the Department of Industrial Policy & Promotion, Ministry of Industries and Commerce directly relevant to understanding the provisions of FEMA. Instructions/Guidelines etc. of Ministry of Finance and Securities and Exchange Board of India (SEBI) become relevant when (ECB) /ADR/GDR and capital market are involved.

Structure

The legislations, rules and regulations, regulating Foreign Exchange Management are covered under the following enactments/details/clarifications etc.

- (i) FEMA Bare Act of 49 sections (Supreme Legislation) 5 Sets of Rules made by Ministry of Finance under section 46 of FEMA (Subordinate or delegated Legislations)
- (ii) Sets of Regulations made by RBI under section 47 of FEMA (Subordinate or delegated Legislations)
- (iii) Master Direction issued by RBI on every year
- (iv) Foreign Direct Investment policy issued by Department of Industrial Policy and Promotion.
- (v) Reserve Bank of India Notifications and Circulars
- (vi) FEMA contains 7 Chapters divided into 49 sections of which 12 sections cover operational part and the rest contravention, penalties, adjudication, appeals, enforcement directorate, etc.
- (vii) As far as transactions on account of trade in goods and services are concerned, FEMA has by and large removed the restrictions except for the enabling provision for the Central Government to impose reasonable restrictions in public interest.
- (viii) The Capital Account Transactions will be regulated by RBI / Central Government for which necessary circulars / notifications will have to be issued under FEMA.

CHAPTER I – Preliminary (Section 1&2)

CHAPTER II- Regulation and Management of Foreign Exchange (Section 3 –9)

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CHAPTER III – Authorised Person (Section 10 –12)

CHAPTER IV – Contravention and Penalties (Section 13-15)

CHAPTER V – Adjudication and Appeal (Section 16- 35)

CHAPTER VI – Directorate of Enforcement (Section 36-38)

CHAPTER VII- Miscellaneous (Section 39 – 49)

Besides the FEMA, there are Set of Rules, Regulations and Master Directions under the Act which help in implementation of the Act.

The Rules under FEMA

1. FEM (Encashment of Draft, Cheque, Instrument and Payment of Interest) Rules, 2000
2. FEM (Authentication of Documents) Rules, 2000
3. FEM (Current Account Transaction) Rules, 2000
4. FEM (Adjudication Proceedings and Appeal) Rules, 2000
5. FEM (Compounding Proceedings) Rules, 2000
6. The Appellate Tribunal for Foreign Exchange (Recruitment, Salary and Allowances and Other Conditions of Service of Chairperson and Members) Rules, 2000.

The Regulations under FEMA

1. FEM (Acquisition and Transfer of Immovable Property Outside India) Regulations, 2015
2. FEM (Borrowing and Lending in Rupees) Regulations, 2000
3. FEM (Borrowing or Lending in Foreign Exchange) Regulations, 2000
4. FEM (Deposit) Regulations, 2016
5. FEM (Export and Import of Currency) Regulations, 2015
6. FEM (Guarantees) Regulations, 2000
7. FEM (Acquisition and Transfer of Immovable Property in India) Regulations, 2000
8. FEM (Establishment in India of Branch office or a Project office or any other Place of Business) Regulations, 2016
9. FEM (Export of Goods and Services) Regulations, 2015
10. FEM (Foreign Currency Accounts by a Person Resident in India) Regulations, 2015
11. FEM (Insurance) Regulations, 2015
12. FEM (Investment in Firm or Proprietary Concern in India) Regulations, 2000

13. FEM (Manner of Receipt and Payment) Regulations, 2016
14. FEM (Permissible Capital Account Transactions) Regulations, 2000
15. FEM (Possession and Retention of Foreign Currency) Regulations, 2015
16. FEM (Realization, Repatriation and Surrender of Foreign Exchange) Regulations, 2015
17. FEM (Remittance of Assets) Regulations, 2016
18. FEM (Transfer or Issue of Security by a Person Resident outside India) Regulations, 2000
19. FEM (Foreign Exchange Derivative Contracts) Regulations, 2000
20. FEM (Transfer or Issue of any Foreign Security) Regulations, 2004
21. FEM (Crystallization of inoperative Foreign Currency Deposits) Regulations, 2014
22. FEMA. 120 (Original Notification 19)-120. F.E.M (Transfer or Issue of any foreign Security) Regulations, 2004
23. FEM (International Financial Services Centre) Regulations, 2015
24. FEM (Regularization of Assets Held Abroad by a Person Resident in India) Regulations, 2015

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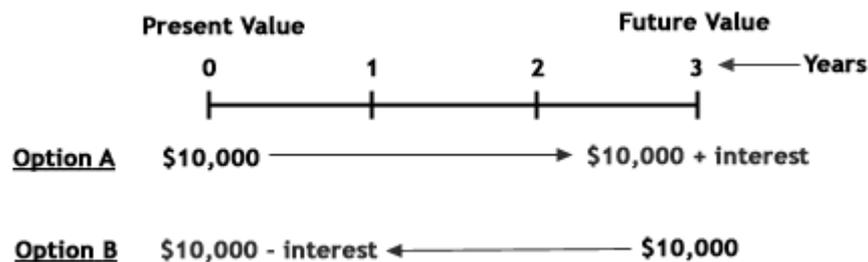
Treasury – Mathematics

Concept of Time Value of Money

If you're like most people, you would choose to receive the \$10,000 now. After all, three years is a long time to wait. Why would any rational person defer payment into the future when he or she could have the same amount of money now? For most of us, taking the money in the present is just plain instinctive. So at the most basic level, the time value of money demonstrates that, all things being equal, it is better to have money now rather than later.

But why is this? A \$100 bill has the same value as a \$100 bill one year from now, doesn't it? Actually, although the bill is the same, you can do much more with the money if you have it now because over time you can earn more interest on your money.

Back to our example: By receiving \$10,000 today, you are poised to increase the future value of your money by investing and gaining interest over a period of time. For Option B, you don't have time on your side, and the payment received in three years would be your future value. To illustrate, we have provided a timeline:



Future Value Basics

If you choose Option A and invest the total amount at a simple annual rate of 4.5%, the future value of your investment at the end of the first year is \$10,450, which, of course, is calculated by multiplying the principal amount of \$10,000 by the interest rate of 4.5% and then adding the interest gained to the principal amount:

Future value of investment at end of first year:

$$= (\$10,000 \times 0.045) + \$10,000 = \$10,450$$

You can also calculate the total amount of a one-year investment with a simple manipulation of the above equation:

- Original equation: $(\$10,000 \times 0.045) + \$10,000 = \$10,450$
- Manipulation: $\$10,000 \times [(1 \times 0.045) + 1] = \$10,450$
- **Final equation: $\$10,000 \times (0.045 + 1) = \$10,450$**

The manipulated equation above is simply a removal of the like-variable \$10,000 (the principal amount) by dividing the entire original equation by \$10,000.

If the \$10,450 left in your investment account at the end of the first year is left untouched and you invested it at 4.5% for another year, how much would you have?

To calculate this, you would take the \$10,450 and multiply it again by 1.045 (0.045 + 1). At the end of two years, you would have \$10,920:

Future value of investment at end of second year:

$$= \$10,450 \times (1+0.045) = \$10,920.25$$

The above calculation, then, is equivalent to the following equation:

$$\text{Future Value} = \$10,000 \times (1+0.045) \times (1+0.045)$$

In the above equation, the two like terms are (1+0.045), and the exponent on each is equal to 1. Therefore, the equation can be represented as the following:

$$\begin{aligned} \text{Future Value} &= \$10,000 \times (1+0.045)^{(1+1)} \\ &= \$10,000 \times (1+0.045)^2 \\ &= \$10,920.25 \end{aligned}$$

We can see that the exponent is equal to the number of years for which the money is earning interest in an investment. So, the equation for calculating the three-year future value of the investment would look like this:

$$\begin{aligned} \text{Future Value} &= \$10,000 \times (1+0.045)^{(1+1+1)} \\ &= \$10,000 \times (1+0.045)^3 \\ &= \$11,411.66 \end{aligned}$$

If you know how many years you would like to hold the present amount of money in an investment, the future value of that amount is calculated by the following equation:

$$\begin{aligned} \text{Future Value} \\ &= \text{Original Amount} \times (1 + \text{interest rate per period})^{\text{Number of periods}} \end{aligned}$$

Or

$$= P * (1 + i)^n$$

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Present Value Basics

If you received \$10,000 today, the present value would, of course, be \$10,000 because present value is what your investment gives you now if you were to spend it today. If \$10,000 were to be received in a year, the present value of the amount would not be \$10,000 because you do not have it in your hand now, in the present. To find the present value of the \$10,000 you will receive in the future, you need to pretend that the \$10,000 is the total future value of an amount that you invested today. In other words, to find the present value of the future \$10,000, we need to find out how much we would have to invest today in order to receive that \$10,000 in the future.

To calculate present value, or the amount that we would have to invest today, you must subtract the (hypothetical) accumulated interest from the \$10,000. To achieve this, we can discount the future payment amount (\$10,000) by the interest rate for the period. In essence, all you are doing is rearranging the future value equation above so that you may solve for P. The above future value equation can be rewritten by replacing the P variable with present value (PV) and manipulated as follows:

- Original equation : $FV = PV * (1 + i)^n$
- Manipulation : Divide both sides by $(1 + i)^n$
- **Final equation** : $PV = \frac{FV}{(1+i)^n}$ or $PV = FV * (1 + i)^{-n}$

Let's walk backwards from the \$10,000 offered in Option B. Remember, the \$10,000 to be received in three years is really the same as the future value of an investment. If today we were at the two-year mark, we would discount the payment back by one year. At the two-year mark, the present value of the \$10,000 to be received in one year is represented as the following:

$$\begin{aligned} & \text{Present value of future payment of \$10,000 at end of year two:} \\ & = \$10,000 \times (1 + 0.045)^{-1} \\ & = \$9569.38 \end{aligned}$$

Note that if today we were at the one-year mark, the above \$9,569.38 would be considered the future value of our investment one year from now.

Continuing on, at the end of the first year we would be expecting to receive the payment of \$10,000 in two years. At an interest rate of 4.5%, the calculation for the present value of a \$10,000 payment expected in two years would be the following:

$$\begin{aligned} & \text{Present value of \$10,000 in one year:} \\ & = \$10,000 \times (1 + 0.045)^{-2} \\ & = \$9157.30 \end{aligned}$$

Of course, because of the rule of exponents, we don't have to calculate the future value of the investment every year counting back from the \$10,000 investment at the third year. We could put the equation more concisely and use the \$10,000 as FV. So, here is how you can calculate today's present value of the \$10,000 expected from a three-year investment earning 4.5%:

$$\begin{aligned} \text{PV of these year investment} &= \$ 10,000 \times (1 + 0.045)^{-3} \\ &= \$8762.97 \end{aligned}$$

So the present value of a future payment of \$10,000 is worth \$8,762.97 today if the interest rate is 4.5% per year. In other words, choosing Option B is like taking \$8,762.97 now and then investing it for three years. The equations above illustrate that Option A is better not only because it offers you money right now but because it offers you \$1,237.03 (\$10,000 - \$8,762.97) more in cash! Furthermore, if you invest the \$10,000 that you receive from Option A, your choice gives you a future value that is \$1,411.66 (\$11,411.66 - \$10,000) greater than the future value of Option B.

Present Value of a Future Payment

What if the payment in three years is more than the amount you'd receive today?

Say, you could receive either \$15,000 today or \$18,000 in four years. Which would you choose? The decision is now more difficult. If you choose to receive \$15,000 today and invest the entire amount, you may actually end up with an amount of cash in four years that is less than \$18,000. You could find the future value of \$15,000, but since we are always living in the present, let's find the present value of \$18,000 if interest rates are currently 4%. Remember that the equation for present value is the following:

$$\text{PV} = \text{FV} * (1 + i)^{-n}$$

In the equation above, all we are doing is discounting the future value of an investment. Using the numbers above, the present value of an \$18,000 payment in four years would be calculated as the following:

$$\begin{aligned} \text{Present Value} \\ &= \$18,000 \times (1 + 0.04)^{-4} \\ &= \$15,386.48 \end{aligned}$$

From the above calculation we now know our choice is between receiving \$15,000 or \$15,386.48 today. Of course we should choose to postpone payment for four years!

Hypothesis Testing – Time Series Analysis

A **statistical hypothesis** is a scientific hypothesis that is testable on the basis of observing a process that is modeled via a set of random variables. A **statistical hypothesis test** is a method of statistical inference used for testing a statistical hypothesis.

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A test result is called statistically significant if it has been predicted as unlikely to have occurred by sampling error alone, according to a threshold probability—the significance level. Hypothesis tests are used in determining what outcomes of a study would lead to a rejection of the null hypothesis for a pre-specified level of significance.

An alternative framework for statistical hypothesis testing is to specify a set of statistical models, one for each candidate hypothesis, and then use model selection techniques to choose the most appropriate model.

Statistical hypothesis testing is sometimes called **confirmatory data analysis**. It can be contrasted with exploratory data, which may not have pre-specified hypotheses.

Hypothesis Testing

Hypothesis Testing (or significance testing) is a mathematical model for testing a claim, idea or hypothesis about a parameter of interest in a given population set, using data measured in a sample set. Calculations are performed on selected samples to gather more decisive information about characteristics of the entire population, which enables a systematic way to test claims or ideas about the entire dataset.

Example: (A) A school principal reports that students in her school score an average of 7 out of 10 in exams. To test this “hypothesis”, we record marks of say 30 students (sample) from the entire student population of the school (say 300) and calculate the mean of that sample. We can then compare the (calculated) sample mean to the (reported) population mean and attempt to confirm the hypothesis.

Another example: (B) The annual return of a particular mutual fund is 8%. Assume that this mutual fund has been in existence for 20 years. We take a random sample of annual returns of the mutual fund for, say, five years (sample) and calculate its mean. We then compare the (calculated) sample mean to the (claimed) population mean to verify the hypothesis.

Different methodologies exist for hypothesis testing. These involve the following four basic steps:

Step 1: Define the hypothesis

Usually, the reported value (or the claim statistics) is stated as the hypothesis and presumed to be true. For the above examples, hypothesis will be:

- Example A: Students in the school score an average of 7 out 10 in exams.
- Example B: Annual return of the mutual fund is 8% per annum.

This stated description constitutes the “**Null Hypothesis (H_0)**” and is **assumed** to be true. It is like a jury trial that starts by assuming the innocence of the suspect followed by determining whether the assumption is true or false. Similarly, hypothesis testing starts by stating and assuming the “Null Hypothesis”, and then the process to determine whether the assumption is likely to be true or false.

The important point to note is that we are testing the null hypothesis because there is an element of doubt about its validity. Whatever information that is against the stated null hypothesis is captured in the **Alternative Hypothesis (H_1)**. For the above examples, alternative hypothesis will be:

- Students score an average which is *not* equal to 7.
- Annual return of the mutual fund is *not* equal to 8% per annum.

In summary, alternative hypothesis is a direct contradiction of the null hypothesis.

As in a trial, jury assumes suspect's innocence (null hypothesis). The prosecutor has to prove otherwise (alternative). Similarly, the researcher has to prove that the null hypothesis is either true or false. If the prosecutor fails to prove the alternative hypothesis, the jury has to let go the "suspect" (basing the decision on null hypothesis). Similarly, if a researcher fails to prove alternative hypothesis (or simply does nothing), then null hypothesis is assumed to be true.

Step 2: Set the decision criteria

The decision-making criteria have to be based on certain parameters of datasets and this is where the connection to normal distribution comes into picture.

For example, to determine if the average daily return of any stock listed on XYZ stock market around New Year's time is greater than 2%.

H_0 : Null Hypothesis: mean = 2%

H_1 : Alternative Hypothesis: mean > 2% (This is what we want to prove)

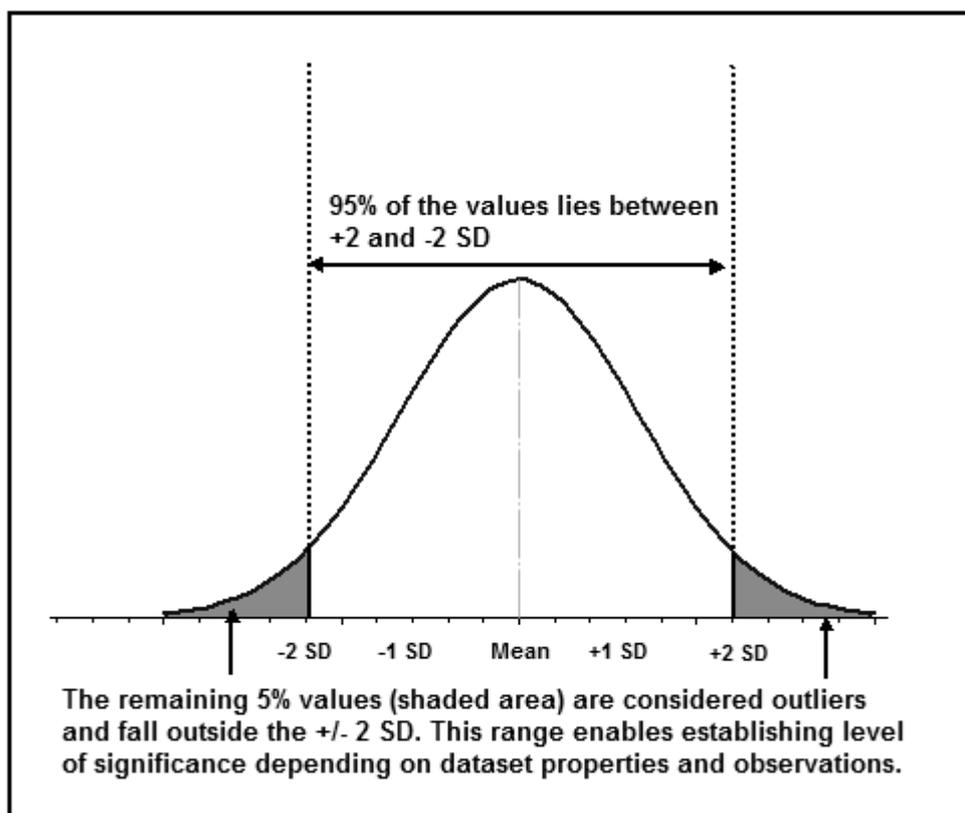
Take the sample (say of 50 stocks out of total 500) and compute the mean of the sample.

For a normal distribution, 95% of the values lie within 2 standard deviations of the population mean. Hence, this normal distribution and central limit assumption for the sample dataset allows us to establish 5% as a significance level. It makes sense as under this assumption there is less than a 5% probability (100-95) of getting outliers that are beyond 2 standard deviations from the population mean. Depending upon the nature of datasets, other significance levels can be taken at 1%, 5% or 10%. For financial calculations (including behavioral finance), 5% is the generally accepted limit.

If we find any calculations that go beyond the usual 2 standard deviations, then we have a strong case of outliers to reject the null hypothesis. Standard deviations are extremely important for understanding statistical data.

Graphically, it is represented as follows:

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In the above example, if the mean of the sample is much larger than 2% (say 3.5%), then we reject the null hypothesis. The alternative hypothesis (mean >2%) is accepted, which confirms that the average daily return of the stocks is indeed above 2%.

However, if the mean of the sample is not likely to be significantly greater than 2% (and remains at say around 2.2%), then we cannot reject the null hypothesis. The challenge is how to decide on such close range cases.

To draw a conclusion from selected samples and results, a **level of significance** is to be determined, which enables us to make a conclusion about the null hypothesis. The alternative hypothesis enables establishing of the level of significance or the "critical value" concept for deciding on such close range cases. As per the standard definition, "A critical value is a cutoff value that defines the boundaries beyond which less than 5% of sample means can be obtained if the null hypothesis is true. Sample means obtained beyond a critical value will result in a decision to reject the null hypothesis". In the above example, if the critical value is 2.1%, and the calculated mean comes to 2.2%, then we reject the null hypothesis. A critical value establishes a clear demarcation between acceptance and rejection.

Step 3: Calculate the test statistics

This step involves calculating the required figure(s), known as test statistics (like mean, z-score, p-value etc.), for the selected sample.

Step 4: Make conclusions about the hypothesis

With the computed value(s), decide on the null hypothesis. If the probability of getting a sample mean is less than 5%, then the conclusion is to *reject* the null hypothesis. Otherwise, *accept* and retain the null hypothesis.

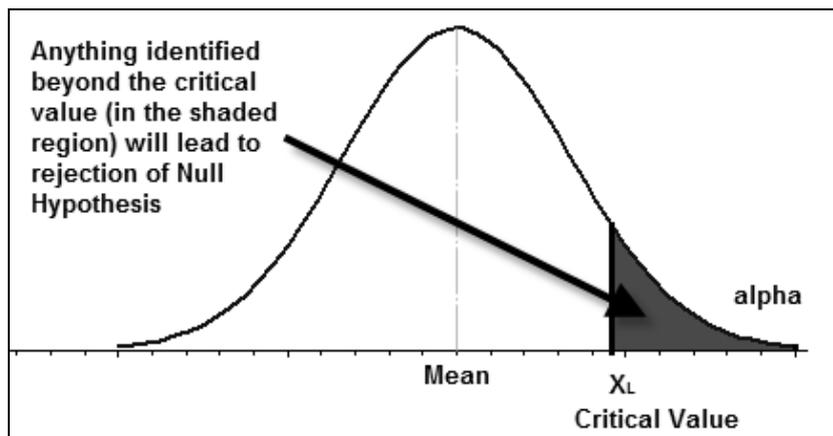
Types of Errors in decision making

There can be four possible outcomes in a sample-based decision making, with regards to the correct applicability to entire population:

	Decision to Retain	Decision to Reject
Applies to entire population	Correct	Incorrect (TYPE 1 Error - a)
Does not apply to entire population	Incorrect (TYPE 2 Error - b)	Correct

The “Correct” cases are the ones where the decisions taken on the samples are truly applicable to the entire population. The cases of errors arise when one decides to retain (or reject) the null hypothesis based on sample calculations, but that decision does not really apply to the entire population. These cases constitute Type 1 (alpha) and Type 2 (beta) errors, as indicated in the table above.

Selecting the correct critical value allows eliminating the type-1 alpha errors or limiting them to an acceptable range.



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Alpha denotes the error on the level of significance, and is determined by the researcher. To maintain the standard 5% significance or confidence level for probability calculations, this is retained at 5%.

As per the applicable decision-making benchmarks and definitions:

- “This (alpha) criterion is usually set at 0.05 ($\alpha = 0.05$), and we compare the alpha level to the p value. When the probability of a Type I error is less than 5% ($p < 0.05$), we decide to reject the null hypothesis; otherwise, we retain the null hypothesis.”
- The technical term used for this probability is **p-value**. It is defined as “the probability of obtaining a sample outcome, given that the value stated in the null hypothesis is true. The p value for obtaining a sample outcome is compared to the level of significance”.
- A Type II error, or beta error, is defined as “the probability of incorrectly retaining the null hypothesis, when in fact it is not applicable to the entire population.”

A few more examples will demonstrate this and other calculations.

Example 1. A monthly income investment scheme promises variable monthly returns. An investor will invest in it only if he is assured of an average \$180 monthly income. He has a sample of 300 months' returns which has a mean of \$190 and standard-deviation of \$75. Should he or she invest in this scheme?

Let's set up the problem. The investor will invest in the scheme if he or she is assured of his or her desired \$180 average return. Here,

H_0 : Null Hypothesis: mean = 180

H_1 : Alternative Hypothesis: mean > 180

Method 1 - Critical Value Approach

Identify a critical value X_L for the sample mean, which is large enough to reject the null hypothesis. That is, reject the null hypothesis if sample mean \geq critical value. X_L

P (identify a Type I alpha error) = P (reject H_0 given that H_0 is true),

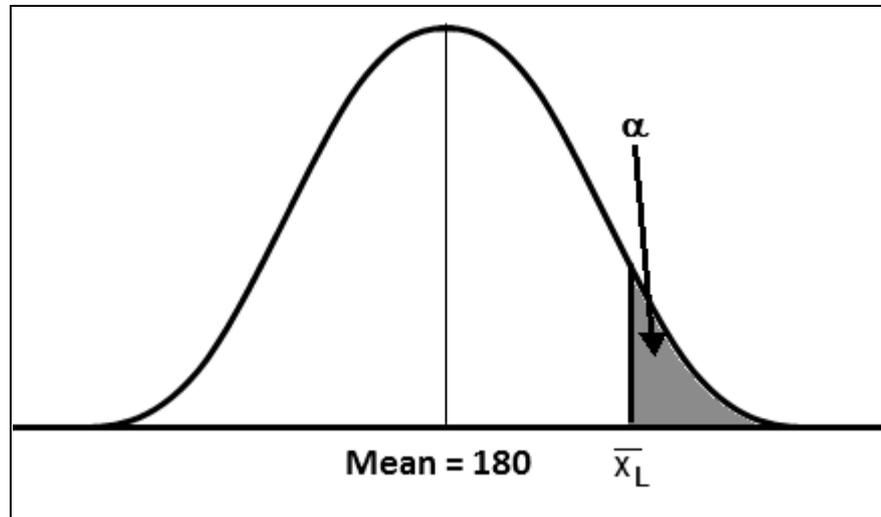
which would be achieved when sample mean exceeds the critical limits, i.e.,

$$= P(\text{given that } H_0 \text{ is true}) = \alpha$$

Since $P(Z > Z_\alpha) = \alpha$

$$\Rightarrow > Z_\alpha = \frac{\bar{x} - 180}{75/\sqrt{300}}$$

Graphically,



Taking alpha = 0.05 (i.e. 5% significance level), $Z_{0.05} = 1.645$ (from the Z-table or normal distribution table)

$$\Rightarrow X_L = 180 + 1.645 \cdot (75/\sqrt{300}) = 187.12$$

Since the sample mean (190) is greater than the critical value (187.12), the null hypothesis is rejected, and the conclusion is that average monthly return is indeed greater than \$180, so the investor can consider investing in this scheme.

Method 2 - Using standardized test statistics

One can also use the standardized value z.

Test Statistic, $Z = (\text{sample mean} - \text{population mean}) / (\text{std-dev} / \sqrt{\text{no. of samples}})$ i.e.

$$Z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$$

Then, the rejection region becomes

$$Z \geq Z_{\alpha}$$

$$Z = (190 - 180) / (75 / \sqrt{300}) = 2.309$$

Our rejection region at 5% significance level is $Z > Z_{0.05} = 1.645$

Since $Z = 2.309$ is greater than 1.645, the null hypothesis can be rejected with the similar conclusion mentioned above.

Method 3 - P-value calculation

We aim to identify P (sample mean ≥ 190 , when mean = 180)

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$$= P(Z \geq (190 - 180) / (75 / \sqrt{300}))$$

$$= P(Z \geq 2.309) = 0.0084 = 0.84\%$$

The following table that helps to infer p-value calculations concludes that there is confirmed evidence of average monthly returns being higher than 180.

p-value	Inference
less than 1%	Confirmed evidence supporting alternative hypothesis
between 1% and 5%	Strong evidence supporting alternative hypothesis
between 5% and 10%	Weak evidence supporting alternative hypothesis
greater than 10%	No evidence supporting alternative hypothesis

Example 2: A new stock broker (XYZ) claims that his brokerage rates are lower than that of your current stock broker (ABC). Data available from an independent research firm indicates that the mean and std.-dev. of all ABC broker clients are \$18 and \$6 respectively.

A sample of 100 clients of ABC is taken and brokerage charges are calculated with the new rates of XYZ broker. If the mean of sample is \$18.75 and std-dev is the same (\$6), can any inference be made about the difference in the average brokerage bill of ABC and XYZ broker?

H_0 : Null Hypothesis: mean = 18

H_1 : Alternative Hypothesis: mean \neq 18 (This is what we want to prove)

Rejection region:

$Z < -Z_{2.5}$ and $Z > Z_{2.5}$ (assuming 5% significance level, split 2.5 each on either side)

$$Z = (\text{sample mean} - \text{mean}) / (\text{std-dev} / \sqrt{\text{no. of samples}})$$

$$= (18.75 - 18) / (6 / \sqrt{100}) = 1.25$$

This calculated Z value falls between the two limits defined by

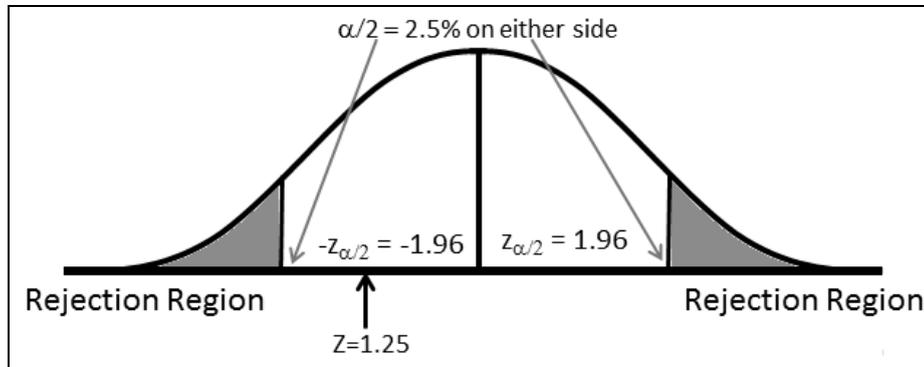
$$-Z_{2.5} = -1.96 \text{ and } Z_{2.5} = 1.96.$$

This concludes that there is insufficient evidence to infer that there is any difference between the rates of your existing and new broker.

Alternatively, The p-value = $P(Z < -1.25) + P(Z > 1.25)$

= $2 * 0.1056 = 0.2112 = 21.12\%$ which is greater than 0.05 or 5%, leading to the same conclusion.

Graphically, it is represented as follows:



Criticism Points for Hypothetical Testing Method

- Statistical method based on assumptions
- Error prone as it is detailed in terms of alpha and beta errors
- Interpretation of p-value can be ambiguous, and lead to confusing results

Hypothesis testing allows a mathematical model to validate a claim or idea with a certain level of confidence. However, like majority of statistical tools and models, this too is bound by some limitations. The use of this model for making financial decisions should be considered critically, keeping all dependencies in mind. Alternate methods like Bayesian Inference are also worth exploring for a similar analysis.

Time Series Analysis

There are three different methodologies to estimate factor models. The time series analysis is the most intuitive among all the techniques. In this analysis, a linear regression is performed over different time periods, with the assumption that the factor sensitivities are constant across time. Typical factors that are considered relevant in many studies, as for instance in the studies of Berry et. Al. (1988), are excess returns on long term bonds, exchange rates, price changes of raw material and inflation. Cross sectional analysis is the second methodology and is less intuitive than time series analysis. In this, we take factor exposures as given. A regression is then performed over all securities for a single time period, rather than over one security over all time periods. The process is then repeated over several other time periods to obtain a time series for factor values. Fama and French used this technique to explain the size and value effect in the US market. The main drawback of this technique is that it assumes exposures to be given. The third common methodology for estimating factor models is statistical factor analysis. The statistical factor models obtain both the factors and the sensitivities to these factors simultaneously. The advantage of this approach is its “objectivity”, as neither the factors nor the sensitivities are defined in advance, but rather estimated from the data. However factor analysis requires constancy of factors. Further, the economic interpretation of the factors is very difficult. This technique was employed by Ross to

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formulate the APT. Elton and Gruber (1989) used this technique to find the evidence of a multi factor risk model for the Japanese context.

Quantitative and qualitative methodologies for forecasting help managers to develop business goals and objectives. Business forecasts can be based on historical data patterns that are used to predict future market behavior. The time series method of forecasting is one data analysis tool that measures historical data points -- for instance, using line charts -- to forecast future conditions and events. The goal of the time series method is to identify meaningful characteristics in the data that can be used in making statements about future outcomes.

Reliability: Historical data used in time series tests represent conditions reporting along a progressive, linear chart. The time series method of forecasting is the most reliable when the data represents a broad time period. Information about conditions can be extracted by measuring data at various time intervals -- e.g., hourly, daily, monthly, quarterly, annually or at any other time interval. Forecasts are the soundest when based on large numbers of observations for longer time periods to measure patterns in conditions.

Seasonal Patterns: Data- points variances measured and compared from year to year can reveal seasonal fluctuation patterns that can serve as the basis for future forecasts. This is of particular importance about markets whose products fluctuate seasonally, such as commodities and clothing retail businesses. For retailers, for instance, time series data may reveal that consumer demand for winter clothes spikes at a distinct time period of each year, information that would be important in forecasting production and delivery requirements.

Growth: The time series method is a useful tool to measure both financial and endogenous growth, according to Professor Hossein Arsham of the University of Baltimore. In contrast with financial growth, endogenous growth is the development that occurs from within from an organization's internal human capital that can lead to economic growth. The impact of policy variables, for instance, can be evidenced through time series tests.

Uses of Time Series Analysis In Business Decisions

Time Series is a sequence of well-defined data points measured at consistent time intervals over a period of time. Data collected on an ad-hoc basis or irregularly does not form a time series. Time series analysis is the use of statistical methods to analyze time series data to extract meaningful statistics and characteristics about it.

Time series analysis helps us understand the underlying forces leading to a particular trend (in the time series data points helps us in forecasting and monitoring by fitting appropriate models to it).

Historically speaking, time series analysis has been around for centuries and its evidence can be seen in the field of astronomy where it was used to study the movements of the planets and the sun in ancient ages. Today, it is used in practically every sphere around us – from day to day business issues (say monthly sales of a product or daily closing value of NASDAQ) to complicated scientific research and studies (evolution or seasonal changes).

Benefits and Applications of Time Series Analysis

Time series analysis aims to achieve various objectives and the tools and models used vary accordingly. The various types of time series analysis include –

Descriptive analysis is used to determine the trend or pattern in a time series using graphs or other tools. This helps us identify cyclic patterns, overall trends, turning points and outliers.

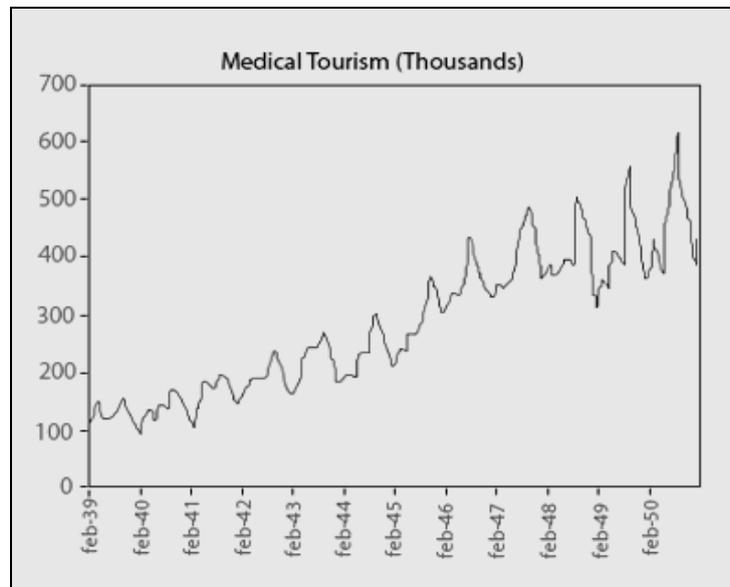
Spectral analysis is also referred to as frequency domain and aims to separate periodic or cyclical components in a time series: for example, identifying cyclical changes in the sales of a product.

Forecasting is used extensively in business forecasting, budgeting, etc. based on historical trends.

Intervention analysis is used to determine if an event can lead to a change in the time series; for example, if an employee's level of performance has improved or not after getting training and thus to determine the effectiveness of the training program.

Explanative analysis studies the cross- correlation or relationship between two time series and the dependence of one on another. For example, the study of employee turnover data and employee training data to determine if there is any dependence of employee training programs on employee turnover rates over time.

The biggest advantage of using time series analysis is that it can be used to understand the past as well as to predict the future. Further, time series analysis is based on past data plotted against time which is rather readily available in most areas of study. Example of Medical Tourism (in Thousands) Trends as shown below:



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For instance, a financial services provider may want to predict future gold price movements for its clients. It can use historically available data to conduct Time series analysis and forecast the gold rates for a specific future period.

There are various other practical applications of time series analysis including economic forecasting, census analysis and yield projections. Further, it is used by investment analysts and consultants for stock market analysis and portfolio management. Business managers use time series analysis on a regular basis for sales forecasting, budgetary analysis, inventory management and quality control.

Technical Analysis – Evaluating Securities

The methods used to analyze securities and make investment decisions fall into two broad categories: fundamental analysis and technical analysis. Fundamental analysis involves analyzing the characteristics of a company in order to estimate its value. Technical analysis takes a completely different approach; it doesn't care one bit about the "value" of a company or a commodity. Technicians (sometimes called chartists) are only interested in price movements in a market.

Despite all the fancy and exotic tools it employs, technical analysis really studies supply and demand in a market in an attempt to determine what direction, or trend, will continue in the future. In other words, technical analysis attempts to understand the emotions in the market by studying the market itself, as opposed to its components. If you understand the benefits and limitations of technical analysis, it can give you a new set of tools or skills that will enable you to be a better trader or investor.

Technical analysis is a method of evaluating securities by analyzing the statistics generated by market activity, such as past prices and volume. Technical analysts do not attempt to measure a security's intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity.

Just as there are many investment styles on the fundamental side, there are also many different types of technical traders. Some rely on chart patterns, others use technical indicators and oscillators, and most use some combination of the two. In any case, technical analysts' exclusive use of historical price and volume data is what separates them from their fundamental counterparts. Unlike fundamental analysts, technical analysts don't care whether a stock is undervalued or not. The only thing that matters is a security's past trading data and what information this can provide about where the security might move in the future.

The field of technical analysis is based on three assumptions:

1. The market discounts everything.
2. Price moves in trends.
3. History tends to repeat itself.

1. The Market Discounts Everything: A major criticism of technical analysis is that it only considers price movement, ignoring the fundamental factors of a company. However, technical analysis assumes that, at any given time, a stock's price reflects everything that has or could affect a company – including fundamental factors. Technical analysts believe that the fundamentals of a company, along with broader economic factors and market psychology, are all priced into the stock, removing the need to actually consider these factors separately. This only leaves the analysis of price movement, which technical theory views as a product of the supply and demand for a particular stock in the market.

2. Price Moves in Trends: In technical analysis, price movements are believed to follow trends. This means that after a trend has been established, the future price movement is more likely to be in the same direction as the trend than to be against it. Most technical trading strategies are based on this assumption.

3. History Tends to Repeat Itself: Another important idea in technical analysis is that history tends to repeat itself, mainly in terms of price movement. The repetitive nature of price movements is attributed to market psychology; in other words, market participants tend to provide a consistent reaction to similar market stimuli over time. Technical analysis uses chart patterns to analyze market movements and understand trends.

Although many of these charts have been used for more than 100 years, they are still believed to be relevant because they illustrate patterns in price movements that often repeat themselves.

Technical analysis can be used on any security with historical trading data. This includes stocks, futures and commodities, fixed-income securities, forex, etc. In this tutorial, we'll usually analyze stocks in our examples, but keep in mind that these concepts can be applied to any type of security. In fact, technical analysis is more frequently associated with commodities and forex, where the participants are predominantly traders.

Indicators are calculations based on the price and volume of a security that measure things like **money flow, trends, volatility and momentum**. They are used as a secondary measure to the actual price movements and add additional information to the analysis of securities. Indicators are used in two main ways to confirm price movement and the quality of chart patterns, and to form buy and sell signals.

There are two main types of indicators: leading and lagging. A leading indicator precedes price movements, giving them a predictive quality, while a lagging indicator is a confirmation tool because it follows price movement. A leading indicator is thought to be the strongest during periods of sideways or non-trending trading ranges, while the lagging indicators are still useful during trending periods.

There are also two types of indicator constructions: those that fall in a bounded range and those that do not. The ones that are bound within a range are called oscillators and are the most common type. Oscillator indicators have a range, for example between zero and 100,

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and signal periods where the security is overbought (near 100) or oversold (near zero). Non-bounded indicators still form buy- and- sell signals along with displaying strength or weakness, but they vary in the manner they do this.

Indicators are used in two main ways to form buy- and- sell signals in technical analysis through crossovers and divergence. Crossovers are the most popular and are reflected when either the price moves through the moving average, or when two different moving averages cross each other. Divergence happens when the direction of the price trend and the direction of the indicator trend move in opposite directions. This signals to the indicator users that the direction of the price trend is weakening.

Indicators provide an extremely useful source of additional information. They identify momentum, trends, volatility and various other aspects in a security. It is important to note that while some traders use a single indicator to buy and sell signals, they are best used in conjunction with price movement, chart patterns and other indicators.

Accumulation / Distribution Line

The accumulation / distribution line is one of the more popular volume indicators that measures money flows in a security. This indicator attempts to measure the ratio of buying to selling by comparing the price movement of a period to the volume of that period.

Calculated:

$$\text{Acc / Dist} = ((\text{Close} - \text{Low}) - (\text{High} - \text{Close})) / (\text{High} - \text{Low}) * \text{Period's Volume}$$

This is a non-bounded indicator that simply keeps a running sum over the period of the security. Traders look for trends in this indicator to gain insight into the amount of purchasing compared to the selling of a security. If a security has an accumulation/distribution line that is trending upward, it is a sign that there is more buying than selling.

Average Directional Index

The average directional index (ADX) is a trend indicator that is used to measure the strength of a current trend. The indicator is seldom used to identify the direction of the current trend, but can identify the momentum behind trends.

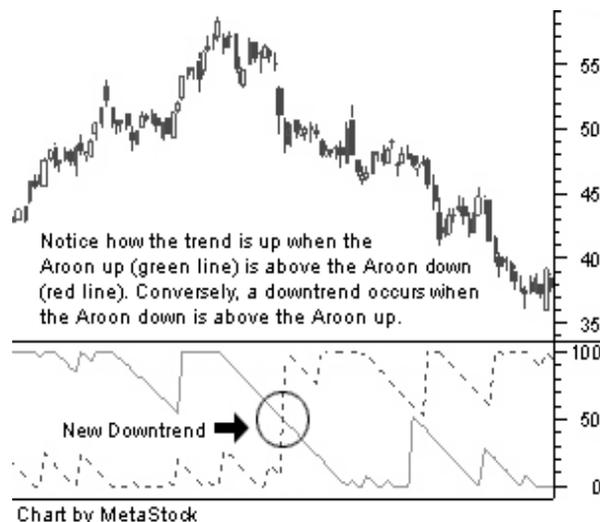
The ADX is a combination of two price movement measures: the positive directional indicators (+DI) and the negative directional indicator (-DI). The ADX measures the strength of a trend but not the direction. The +DI measures the strength of the upward trend while the -DI measures the strength of the downward trend. These two measures are also plotted along with the ADX line. Measured on a scale between zero and 100, readings below 20 signal a weak trend while readings above 40 signal a strong trend.

Aroon

The Aroon indicator is a relatively new technical indicator that was created in 1995. It is a trending indicator used to measure whether a security is in an uptrend or downtrend and the

magnitude of that trend. The indicator is also used to predict when a new trend is likely to begin.

The indicator is comprised of two lines, an "Aroon up" line (blue line) and an "Aroon down" line (red dotted line). The Aroon up line measures the amount of time it has been since the highest price during the time period. The Aroon down line, on the other hand, measures the amount of time since the lowest price during the time period. The number of periods that are used in the calculation is dependent on the time frame that the user wants to analyze.



Aroon Oscillator

An expansion of the Aroon is the Aroon Oscillator, which plots the difference between the Aroon up and down lines by subtracting the two lines. This line is then plotted between a range of -100 and 100. The centerline at zero in the oscillator is considered a major signal line determining the trend. The higher the value of the oscillator from the centerline point, the more upward strength there is in the security; the lower the oscillator's value is from the centerline, the more downward is the pressure. A trend reversal is signaled when the oscillator crosses through the centerline. For example, when the oscillator goes from positive to negative, a downward trend is confirmed. Divergence is also used in the oscillator to predict trend reversals. A reversal warning is formed when the oscillator and the price trend are moving in opposite directions.

The Aroon lines and Aroon oscillators are fairly simple concepts but yield significant information about trends. This is another great indicator to add to any technical trader's arsenal.

Moving Average Convergence

The moving average convergence- divergence (MACD) is one of the most well known and used indicators in technical analysis. This indicator is comprised of two exponential moving

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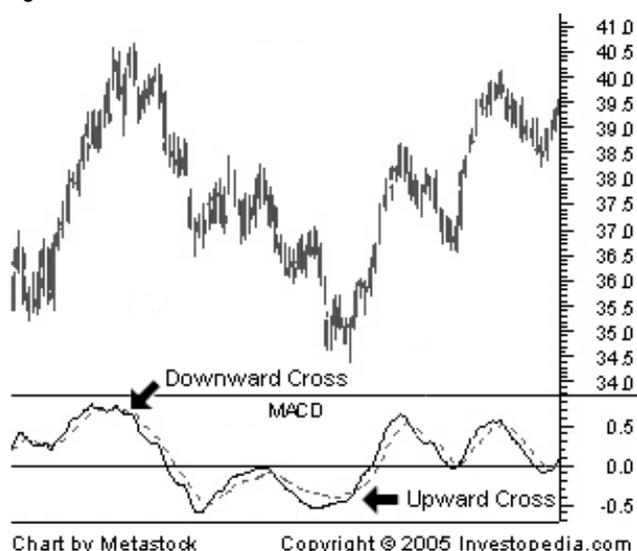
averages, which help to measure momentum in the security. The MACD is simply the difference between these two moving averages plotted against a centerline. The centerline is the point at which the two moving averages are equal. Along with the MACD and the centerline, an exponential moving average of the MACD itself is plotted on the chart. The idea behind this momentum indicator is to measure short-term momentum compared to longer term momentum to help signal the current direction of the momentum.

MACD = shorter term moving average - longer term moving average

When the MACD is positive, it signals that the shorter term moving average is above the longer term moving average and suggests upward momentum. The opposite holds true when the MACD is negative. - This signals that the shorter term is below the longer and suggests downward momentum. When the MACD line crosses over the centerline, it signals a crossing in the moving averages. The most common moving average values used in the calculation are the 26-day and 12-day exponential moving averages. The signal line is commonly created by using a nine-day exponential moving average of the MACD values. These values can be adjusted to meet the needs of the technician and the security. For more volatile securities, shorter term averages are used while for less volatile securities longer averages are used.

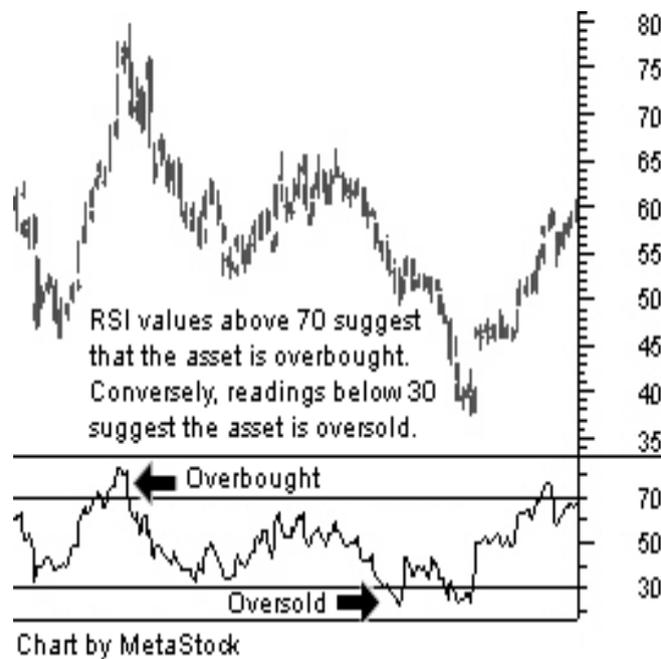
Another aspect to the MACD indicator that is often found on charts is the MACD histogram, which is plotted on the centerline and represented by bars. Each bar is the difference between the MACD and the signal line or, in most cases, the nine-day exponential moving average. The higher the bars are in either direction, the more momentum behind the direction in which the bars point.

As can be seen in below, one of the most common buy signals is generated when the MACD crosses above the signal line (blue dotted line), while sell signals often occur when the MACD crosses below the signal.



Relative Strength Index

The relative strength index (RSI) is another most used and well-known momentum indicators in technical analysis. RSI helps to signal overbought and oversold conditions in a security. The indicator is plotted in a range between zero and 100. A reading above 70 is used to suggest that a security is overbought, while a reading below 30 is used to suggest that it is oversold. This indicator helps traders to identify whether a security's price has been unreasonably pushed to current levels and if a reversal may be on its way.



The standard calculation for RSI uses 14 trading days as the basis, which can be adjusted to meet the needs of the user. If the trading period is adjusted to use fewer days, the RSI will be more volatile and will be used for shorter term trades.

On-Balance Volume

The on-balance volume (OBV) indicator is a well-known technical indicator that reflects movements in volume. It is also one of the simplest volume indicators to compute and understand.

The OBV is calculated by taking the total volume for the trading period and assigning it a positive or negative value depending on whether the price is up or down during the trading period. When price is up during the trading period, the volume is assigned a positive value, while a negative value is assigned when the price is down for the period. The positive or negative volume total for the period is then added to a total that is accumulated from the start of the measure.

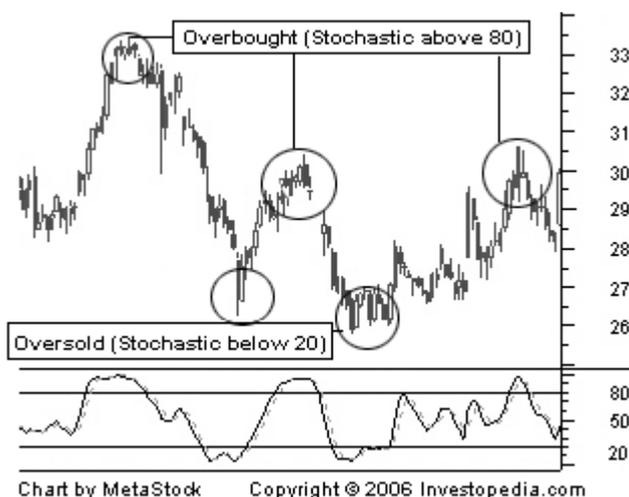
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It is important to focus on the trend in the OBV than the actual value of the OBV measure. This measure expands on the basic volume measure by combining volume and price movement.

Stochastic Oscillator

The stochastic oscillator is one of the most recognized momentum indicators used in technical analysis. The idea behind this indicator is that in an uptrend, the price should be closing near the highs of the trading range, signaling upward momentum in the security. In downtrends, the price should be closing near the lows of the trading range, signaling downward momentum.

The stochastic oscillator is plotted within a range of zero and 100 and signals overbought conditions above 80 and oversold conditions below 20. The oscillator contains two lines. The first line is the %K, which is essentially the raw measure used to formulate the idea of momentum behind the oscillator. The second line is the %D, which is simply a moving average of the %K. The %D line is considered more important of the two lines as it produces better signals. The oscillator generally uses the past 14 trading periods in its calculation but can be adjusted to meet the needs of the user.



Linear Programming – Decision Making – Simulation

The purpose of investment appraisal is to assess the economic prospects of a proposed investment. It is a methodology for calculating the expected return based on cash-flow forecasts of many, often inter-related, project variables. Risk emanates from the uncertainty encompassing these projected variables. The evaluation of project risk therefore depends, on the one hand, on our ability to identify and understand the nature of uncertainty surrounding the key project variables and on the other, on having the tools and methodology to process its risk implications on the return of the project.

Linear Programming

The rise of linear programming to prominence began in the oil companies in the 1950's. "We used linear programming to schedule our tanker fleets, design port facilities, blend gasoline, create financial models, you name it," says Bill Drew, former manager of research for Exxon. Within a short time, linear programming was commonly used to:

- solve environmental problems
- make decisions to improve the economy of small countries
- help investors make the best portfolio decisions
- schedule worldwide air travel
- develop global business strategies
- improve government functions and ideas
- schedule automobile assembly line production

All linear programming problems have the following operational characteristics:

- An objective function to optimize, such as:
- Which product/service mix to select so as to maximize profit contribution (product mix problem)
- Which product blend to select so as to minimize production cost (blending problem)
- Which supply chain locations to select for a distribution system so as to minimize product throughput time and cost (transportation problem)
- Which airline pilots to tap so as to minimize labor costs (scheduling problem)
- Which capital budget projects to select so as to maximize NPV (capital budgeting problem)
- Which stocks to place in a portfolio so as to maximize return (portfolio selection problem)
- "subject to" constraints:
- labor, machine time, inventory, supplier (for the product mix problem)
- Facility capacity (for the transportation problem)
- Pilot availability and passenger/route demand (for the scheduling problem)
- Project relationships and available capital (for the capital budgeting problem)
- Investment funds available and risk tolerance (for the portfolio problem)

And linear programming problems all have the following mathematical characteristics:

- Decision alternatives are expressed as decision variables

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- A single linear objective function to maximize or minimize
- Linear constraints that set upper limits on resources or lower bounds on requirements
- Non-negative real values (including fractions) for the decision variables

The last three characteristics can be thought of as assumptions, since we have to assume that real world problems can be modeled as single objective problems, with linear objective and constraint equations, and fractions allowed as values for the decision variables. More on these assumptions as we get into extensions to linear programming to address these issues.

Decision Making

An asset or item is purchased with the hope that it will generate income or appreciate in the future. In economics, investment means that goods are not purchased for immediate consumption, but for future use, to create wealth. In finance, an investment means that a monetary asset is purchased with the intention that it will provide income in the future or appreciate and be sold at a higher price.

The buildings of a factory used to produce goods and the investment one makes by going to college or university are both examples of investments in the economic sense.

In the financial sense investments include the purchase of bonds, stocks or real estate property.

We need to differentiate between 'making an investment' and 'speculating' Investing usually involves the creation of wealth whereas speculating is often a zero-sum game, because no wealth is created. Although speculators often make informed decisions, speculation cannot be called traditional investing.

Simulation

Simulation is a powerful analytical tool which facilitates an investigation of financial risk through the examination of repeated outcomes from the same model. It is not, however, easy to use simulation in property investment because of the complex relationship between its fundamental components, such as periodic cash flows, vacancy rates, let up periods, and capitalization rates. (Seeks to examine a simple investment scenario in which the variations in net annual cash flows and final capitalization rate determine the overall viability of the investment. It shows that the relationship between these two variables and between the net annual cash flows over time significantly increases the investment's risk. The use of asymmetric variables to describe these property characteristics is also discussed as are the interpretation of "expected" outcomes as either the "average" or the "most likely" result. These are all critical considerations if the simulation model is to provide a reasonable representation of the true investment situation and for the simulation results to be useful in the investment decision-making process.

Risk simulation is a risk analysis technique that gained prominence in the early 1960s (Hertz, 1964). It involves the use of probability distribution and random numbers, hence the Monte Carlo element, to estimate net cash flow figures. When discounted, these figures sum to an estimated net present value (NPV) for a project and repeated many times, one gets a distribution of project NPV. If the resulting distribution is presented as a graph, it is relatively easy to comprehend the uncertainty surrounding a project. This is beneficial for students because it contrasts sharply with the deterministic nature of most investment models.

Building a Risk Simulation Model

The construction and operation of a risk simulation model for an investment appraisal application involves a number of steps.

- Step 1:** Build an investment appraisal model using discounted cash flow.
- Step 2:** For each year's net cash flow, create a probability distribution and link it to a random number generator.
- Step 3:** Carry out a simulation by drawing a value from each probability distribution by using the random number generator and sum the resulting estimates to provide an overall estimate for the project NPV.
- Step 4:** Repeat the simulation many times (500 times or more) to provide an estimated distribution for NPV for the project.
- Step 5:** Decide whether the probability that the project NPV may be negative is or is not an acceptable risk and proceed accordingly.

Several reasons that motivate the use of simulation are outlined below:

Simulation may be the only alternative to provide solutions to the problem under study. For example, it is not possible to obtain transient (time-dependent) solutions for complex queuing models in closed form or by solving a set of equations, but they are readily obtained with simulation methods.

Models to be simulated can represent a real-world process more realistically because fewer restrictive assumptions are required. Examples include the use of non-deterministic lead times in an inventory model, non-Poisson arrivals or service times in a queuing process, and non-deterministic parameters in a multi period production scheduling and inventory control problem. Each of these situations results in analytic models that are intractable.

Changes in configuration or structure can be easily implemented to answer "What happens if . . . ?" questions. For example, various decision rules can be tested for altering the number of servers in a network of queues.

In most cases, simulation is less costly than actual experimentation; in other cases, it may be the only reasonable initial approach, as when the system does not yet exist but theoretical relationships are well-known. For example, solar energy thermal collection systems for homes

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have been tested by simulation prior to being built to help solve site-specific problems or to explore new design issues.

Simulation can be used for pedagogical (teaching) purposes either to illustrate a model or to better comprehend a process, such as revenue management policies used by airlines to price tickets over time.

For many dynamic processes, simulation provides the only means for direct and detailed observation within specified time limits. The approach also allows time compression, whereby a simulation accomplishes in minutes what might require years of actual experimentation.

With all these advantages and others, one might ask "Why not approach all modeling through simulation?" First, simulation is time-consuming and costlier compared to many analytic approaches. For example, a simulation to estimate optimal reorder levels and quantities for an inventory problem requires an extensive search for optimal values of controllable variables, whereas an analytic solution would not. Second, certain issues associated with design, validation, and estimation are complex at best and unresolved at worst. Because it attempts to reproduce significant amounts of detail, a simulation model may require a large programming effort, its accuracy may be difficult to verify, and the computational burden it imposes may be extensive compared to other approaches. Like queuing analysis, simulation is a tool that requires the enumeration of alternatives to determine an optimal design. Unlike queuing analysis, simulation does not yield expected values. Rather, a simulation run is like making an observation of a system in the real world and recording the relevant statistics. Since statistics are themselves random variables, the interpretation of the results must be done carefully, with procedures based on the appropriate theory. This requirement is often neglected in practice, giving rise to the possibility that the results will either be misinterpreted or misused.

Core Tools for Cash Management – Cash and Liquidity Forecasting

The cash balance shown in a company's Ledger may not be the same as the available balance in its bank account. The difference is the net float. When a firm has written a large number of cheques awaiting clearance, the available balance will be larger than the ledger balance. When a firm has just deposited large number of cheques, which have not been collected, the available balance will be smaller. If the firm can predict how long it will take the cheque to clear, it may be able to play the float and get by a smaller cash balance. Firms can also manage floats by speeding up collections and slowing down payments. Some of the ways to speed up the collections are concentration banking and lockbox banking.

With the advent of technological boom, companies world over are moving towards ECS (Electronic Clearance Scheme), to reduce the floats.

1. Introduction

Cash management has changed significantly over the past two decades for two reasons. First, from the early 1970s to the late 1980s, there was an upward trend in interest rates that increased the opportunity cost of holding cash. This encouraged financial managers to search for more efficient ways of managing cash. Second, technological developments, particularly computerized electronic funds transfer mechanism changed the way in which cash is managed.

Most cash management activities are performed jointly by a firm and its banks. Effective cash management encompasses proper management of cash inflows, and outflows, which entails (1) improving forecasts of cash flows, (2) synchronizing cash inflows and outflows, (3) using floats, (4) accelerating collections, (5) getting available funds to where they are needed, and (6) controlling disbursement. Most of the business comes from large firms, which have many sources and make payments from a number of different cities or even countries. For example, companies such as IBM, General Motors, and Hewlett-Packard have manufacturing plants all around the world, even more sales offices, but most of the payments are made from the cities where manufacturing takes place, or from the head office. Thus a major corporation might have hundreds of bank accounts, and since there is no reason to think that inflows and outflows will balance in each account, a system must be in place to transfer funds from where they come into where they are needed, to arrange loans to cover net corporate shortfalls, and to invest net corporate surpluses without delay.

2. Float

The efficiency of a firm's cash management programme can be enhanced by the knowledge and use of various procedures aimed at

- (a) accelerating cash inflows, and
- (b) controlling cash outflows

For controlling, inflows and outflows, float is an important technique, because it reduces the length of the cash cycle. When a firm receives or makes payments in the form of a cheque, there is usually a time gap between the time it is written and cleared. This time gap is known as float. The float for the paying firm refers to the time that elapses between the point when it issues a cheque and the time at which the funds underlying the cheque are actually debited in a bank account. For the payee firm, float refers to the time between the receipt of the cheque and the availability of funds in its account. So, float denotes the funds that have been dispatched by a payer (the firm making the payment) but are not in a form that payee (the firm receiving the payment) can spend. The float also exists when a payee has received funds in a spendable form but which has not been withdrawn from the account of the payer.

To get an idea of the float mechanism and its utility in the management of cash inflows and outflows, one must know the related banking procedure. When a cheque is issued by a paying

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firm, the bank balance of the firm is not immediately reduced, rather the bank reduces the balance only when the cheque is presented to it either personally or through the clearing system.

Similarly, when a firm receives a cheque from its customer and deposits it in its account, its bank credits the cheque amount only when it is cleared by the paying bank.

The cash balance shown by a firm on its books is called the book or ledger balance whereas the balance shown in its bank accounts is called the available or collected balance. The difference between the two is referred to as the float.

3. Types of Floats

There are two types of float viz., disbursement float and collection float

3.1 Disbursement Float

The amount from cheques issued but not presented for payment is known as the disbursement float. For example, suppose that ABC Company has a book balance as well as an available balance of Rs 4 Lac with its bank, the State Bank of India, as on March 31. On April 1 it pays Rs 1 Lac by cheque to one of its suppliers and hence reduces its book balance by Rs. 1 Lac

The State Bank of India, however, will not debit ABC Company account till the cheque is presented for payment on, say, April 6. Until that happens the firm's available balance is greater than its book balance by Rs. 1 Lac. Hence, between April 1 and April 6, ABC Company has a disbursement float of Rs. 1 Lac.

Disbursement float = Firm's available Bank balance - Firm's book balance = Rs 4 Lac - Rs. 3 Lac = Rs.1 Lac.

3.2 Collection Float

The amount due from cheque deposited in banks, but not yet cleared, is known as the collection float.

For example, XYZ Company has a book balance as well as available balance of Rs 5 Lac on April 30. On May 1 XYZ Company receives a cheque for Rs. 1.5 Lac from a customer which it deposits in its bank. It increases its book balance by Rs. 1.5 Lac. However, this amount is not available to ABC Company until its bank presents the cheque to the customer's bank on, say, May 5. So, between May 1 and May 5 ABC Company has a collection float of (-) Rs. 1.5 Lac.

Collection float = Firm's available Bank Balance - Firm's book balance = Rs 5.0 Lac - Rs. 6.5 Lac = (-) Rs. 1.5 Lac.

3.3 Net Float

The net float at a point of time is simply the overall difference between a firm's available bank balance and the balance shown in its ledger account. If the net float is positive, i.e., payment float is more than receipt float, then the available bank balance exceeds the book balance.

However, if the available bank balance is less than the book balance, then the float is negative. If a firm has a positive net float, it can issue more cheques even if the net bank balance shown by the books of account is not sufficient. A firm can use this to its advantage and maintain a smaller cash balance than it would need in the absence of the float. The action taken by a firm to manage its payment and receipt float is called playing the float, which is now an important technique of cash management. Float management helps avoid stagnation of funds. Money paid by cheques by customers to a firm but not yet available to it is tied in the float and therefore stagnant money. Similarly, cheques issued but not presented to the firm's bank is stagnant money. This can be used by a proper and careful float management.

Since what matters is the available balance, finance managers have to try to maximize the net float, to strive to speed up collections and delay disbursements.

4. Management of Float

4.1 Speeding up Collections

The collection time comprises mailing time, cheque processing delay, and the bank's availability, delay etc.

When a company receives payments through cheques, sent by mail, all the three components of collection time are relevant. The financial manager should take steps for speedy recovery from debtors, and for this purpose proper internal control system should be installed in the firm. Once the credit sales have been effected, there should be a built-in mechanism for timely recovery from the debtors. Periodic statements about outstanding bills should be prepared. Incentives should be offered to the customers for early / prompt payments. Once the cheques / drafts are received from customers, there should be no delay in depositing them in their banks. The time lag in collection of receivables can be considerably reduced by managing the time taken by postal intermediaries and banks.

To speed up collection, companies may also use lockboxes and concentration banking for expeditious decentralized collection.

4.1.1 Lock Boxes

This system is not widely used by the Corporates due to introduction of Technology remittance products by the Banks like RTGS, NEFT etc.

Under a lock box system, customers are advised to mail their payments to special post office boxes called lockboxes, which are attended to by local collection banks, instead of sending them to corporate headquarters.

The local bank collects cheques from the lock box once or several times during a day, deposits them directly into the local bank account of the firm, and furnishes details to it.

Thus the lock box system (i) cuts down the mailing time, (ii) reduces the processing time and (iii) shortens the availability delay. The lockbox system is not popular in India. However,

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commercial banks usually provide this service to their large clients for (i) collecting cheques from the office of the client, and (ii) sending the high value cheques to the clearing system on the same day. Both these services help in reducing the float of the large clients. However, these benefits are not free. Usually, the bank charges a fee for each cheque processed through the system. The benefits derived from the acceleration of receipts must exceed the incremental costs of the lock box system, or a firm would be better without it.

When is it worthwhile to have a lock box? The answer depends on the costs and benefits of maintaining the lock box. To setup a lock box, a company has to gather the following information:

- Average number of daily payments : 50
- Average size of payment : Rs. 8000
- Savings in mailing and processing time : 2 days
- Annual rental for the lock box : Rs. 3000
- Bank charges for operating the lock box : Rs. 72,000
- Interest rate : 15%

The lock box will increase the r company's collected balance by:

50 items day x Rs. 8,000 per item x 2 days saved = Rs 800,000

The annual benefit in the form of interest saving on account of this is:

Rs 800,000 x 0.15= Rs 120,000

The annual cost of the lock box is:

Rs 3,000 (rental) + Rs 72,000 (bank charges) = Rs 75,000

Since the interest saving exceeds the cost of the lock box, it is advantageous to set up the lock box. More so, because the company also saves on the cost of processing cheques internally.

4.1.2 Concentration Banking

A firm may open collection centres (banks) in different parts of the country to save on postal delays. This is known as concentration banking. Under this system, the collection centres are opened as near to the debtors as possible, thereby reducing the time in dispatch, collection, etc. The firm may instruct the customers to mail their payments to a regional collection centre / bank rather than to the Central Office. Cheques received by the regional collection centre are deposited for collection into a local bank account. Surplus funds from various local bank accounts are transferred regularly (mostly daily) to a concentration account at one of the company's principal banks. For effecting the transfer, several options are available.

With the vast network of branches set up by banks regional / local collection centres can be easily established. To ensure that the system of collection works according to plan, it is helpful to periodically audit the actual transfers by the collecting banks and see whether they are in conformity with the instructions given.

Concentration banking saves the time of collection, and results in better cash management. However, the selection of collection centres must be based on the volume of billing / business in a particular geographical area. It may be noted that concentration banking also involves cost in terms of minimum cash balance required with a bank or in the form of normal minimum cost of maintaining a current account.

Concentration banking can be combined with the lock box arrangement to ensure that funds are pooled centrally as quickly as possible.

4.1.3 Electronic Fund Transfer

The banking system has responded to the growing need to speed up the transfer of money from one firm to another. For example, the 'CHAPS' system in the UK (Clearing House Automated Payments System) permits same-day cheque clearance and CHIPS (Clearing House Interbank Payment System), a computerized network, enables the electronic transfer of international dollar payments. These systems provide two benefits to large firms, which use them. First, there is greater certainty as to when money will be received and second, they can reduce the time for which money is in the banking system.

Companies can take other steps to create a beneficial float. They could bank frequently to avoid having cheques remaining in the accounts office for more than a few hours. They could also encourage customers to pay on time, or even in advance, of the receipt of goods and services by using the direct debit system through which money is automatically transferred from one account to another on a regular basis. Many UK consumers now pay by direct debit. In return they often receive a small discount. From the producer's viewpoint this not only reduces the float but also avoids the onerous task of chasing late payers. Also, retailers now have terminals which permit electronic funds transfer at the point of sale (EFTPOS) - money taken from customers' accounts electronically using debit card.

4.2 Delaying Payments

Just as a firm can increase its net float by speeding up collections, it can also do so by slowing down disbursements. A common temptation is to increase the mail time. For example, Acme Ltd. may pay its suppliers in Cochin with a cheque sent from its Calcutta office and its suppliers in Ludhiana with cheque mailed from its Chennai office. However, such gimmicks provide only a short-term benefit and finally turn out to be self-defeating when suppliers discover the ploy and adjust their price and credit terms appropriately.

While maximizing disbursement float is a questionable practice, a firm can still make payments. The following may be done in this respect.

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Ensure that payments are made only when they fall due and not earlier. Centralize disbursements. This helps in consolidating funds at the head office, scheduling payments more effectively, reducing unproductive cash balances at region / local offices, and investing funds more productively. . However, care must be taken that the goodwill and credit rating of the firm is not affected. Payments to creditors need not be delayed, otherwise it may be difficult to secure trade credits at a later stage.

Arrange with suppliers to set the due dates of their bills to match with company's receipts. Synchronization of cash outflows with cash inflows helps a company to get greater mileage from its cash resources.

5. Electronic data interchange: will the float disappear?

Electronic data interchange (EDI) refers to direct, electronic exchange of information between various parties. Financial EDI or FEDI involves electronic transfer of information and funds between transacting parties. FEDI leads to elimination of paper invoices, paper cheque, mailing, handling and so on. Under FEDI, the seller sends the bill electronically to the buyer; the buyer electronically authorizes its bank to make payment, and the bank transfers funds electronically to the account of the seller at the designed bank. The net effect is that the time required to complete a business transaction is shortened considerably, thereby virtually eliminating the float.

6. International Cash Management

Cash Management in domestic firms is a child's play compared with that of the large multinational corporations operating in dozens of countries, each with its own currency, banking system and legal structure. Unilever for example manufactures and sells all over the world. To operate effectively Unilever has numerous bank accounts so that some banking transactions can take place near to the point of business. Sales receipts from America will be paid into local banks there. Likewise, many operating expenses will be paid for with funds drawn from those very banks. The problem for Unilever is that some of those bank accounts will have high inflows and others high outflows, so interest could be payable on one while funds are lying idle or earning a low rate of return in another. Therefore, as well as taking advantage of the benefit of having local banks carry out local transactions, large firms need to set in place a co-coordinating system to ensure that funds are transferred from where there is surplus to where they are needed.

A single centralized cash management system is an unattainable idea for these companies, although they are edging towards it. For example, if you are the treasurer of a large multinational company with operations throughout Europe, you could allow your branches to manage their own cash but that would be costly because each would accumulate its little hoards of cash. The solution is to set up a regional system, by establishing a local concentration account with a bank in each country. Then any surplus cash is swept daily into

central multicurrency accounts in London or another European banking center. This cash is then invested in marketable securities or used to finance any subsidiaries that have a cash shortage.

Payments can also be made from the regional center. For example, to pay wages in each European country, the company just needs to send its principal bank a computer file with details of the payment to be made, the bank then finds the least costly way to transfer funds to be credited on the correct day to the employees in each country.

YTM - Yield Curve, Modified YTM, Current Yield, Different Versions – Callable Bonds, Callable Yield Notes, Puttable Bonds

Yield is a critical concept in bond investing, because it is the tool used to measure the return of one bond against another. It enables investors to make informed decisions about what bonds to buy.

In essence, yield is the rate of return on the bond investment. However, it is not fixed, like a bond's stated interest rate. It changes to reflect the price movements in a bond caused by fluctuating interest rates.

The yield to call of a bond can be an essential piece of information to a bond investor. However, people often underestimate the yield to call, as they often jump to look at the yield to maturity instead. While yield-to-maturity is a very important factor when looking at bonds, it is important to recognize that in a callable or redeemable bond it becomes essential to look at the bond's yield-to-call.

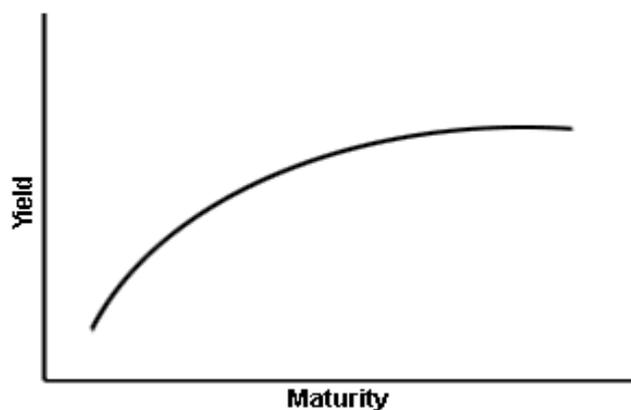
Similar to yield-to-maturity, the yield-to-call uses a call date and call price instead of a maturity and face amount. In other words, the yield-to-call calculates the yield of a bond that would be earned if it were to be called at its call date, rather than at the date of its maturity. Also, just as yield-to-maturity suffers from the assumption that the investor won't sell his bond before the date of maturity, the yield-to-call suffers from the assumption that the investor won't sell his bond before the call date.

Then why is yield-to-call important? It is important because if the bond is called early, then the original yield-to-maturity will not matter to the investor anymore. Instead, the yield-to-call will be his new yield. The yield-to-call will be less than or greater than the yield-to-maturity depending on the circumstances. If the bond is trading at a discount, or below its face value, then the yield-to-call is greater than the yield-to-maturity. Conversely, if the bond is trading at a premium, then the yield-to-call will be less than the yield-to-maturity. Therefore, if there is a chance that the bond will be called, then there is a chance that as a holder of the bond the investor may receive that possibly unattractive or lower yield.

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Yield Curve

It is a line that plots interest rates, at a set point in time, of bonds having equal credit quality, but differing maturity dates. The most frequently reported yield curve compares the three-month, two-year, five-year, and thirty-year U.S. Treasury debt. This curve is used as a benchmark for other debts in the market, such as mortgage rates or bank lending rates. It is also used to predict changes in economic output and growth.



The shape of the yield curve helps to get an idea of future interest rate change and economic activity. The three main yield curve shapes are: normal, inverted and flat (or humped). A normal yield curve (pictured here) is one in which longer maturity bonds have a higher yield compared to shorter-term bonds due to the risks associated with time. An inverted yield curve is one in which the shorter-term yields are higher than the longer-term yields, which can be a sign of upcoming recession. A flat (or humped) yield curve is one in which the shorter- and longer-term yields are very close to each other, which predicts an economic transition. The slope of the yield curve is also important: the greater the slope, the greater the gap between short- and long-term rates.

YTM - Modified YTM, Current Yield

The term *Yield to Maturity* is also called Redemption Yield often abbreviated as YTM and used when it comes to bond funds, is defined as the rate of return obtained by buying a bond at the current market price and holding it to maturity. It is the index for measuring the attractiveness of bonds. When the price of the bond is low the yield is high and vice versa. YTM is beneficial to the bond buyer because a rising yield would decrease the bond price; the same amount of interest is paid but for less money. Where the coupon payment refers to the total interest per year on a bond, Yield- to- maturity can be mathematically derived and calculated from the formula:

$$\text{Yield to Maturity} = \frac{\text{Annual Interest} + \frac{\text{Par Value} - \text{Market Price}}{\text{Number of Years to Maturity}}}{\frac{\text{Par Value} + \text{Market Price}}{2}}$$

YTM is therefore a good measurement gauge for the expected investment return of a bond. When it comes to online calculation, the Yield- to- Maturity calculator can help to determine the expected investment return of a bond according to the respective input values. YTM deals only with the time-value-of-money calculations between the price, coupons and face value of the bond at hand, not with other potential future investments. If the coupons and face value are paid as promised, the bond earns its yield-to-maturity.

Current Yield: A simple yield calculation that is often used to calculate the yield on both bonds and the dividend yield for stocks is the current yield. It calculates the percentage return that the annual coupon payment provides to the investor. In other words, this yield calculates what percentage the actual dollar coupon payment is of the price the investor pays for the bond. The multiplication by 100 in the formulas below converts the decimal into a percentage, allowing us to see the percentage return:

$$\text{Current Yield} = \frac{\text{Annual Interest Paid}}{\text{Market Price}} * 100\%$$

So, if a bond with a par value of Rs100 is bought for Rs 95.92 and it paid a coupon rate of 5%, this is how its current yield is calculated:

$$= \frac{(0.05 * 100)}{95.92} * 100\% = 5.21\%$$

It can be seen that this calculation does not include any capital gains or losses the investor would make if the bond were bought at a discount or premium. Because the comparison of the bond price to its par value is a factor that affects the actual current yield, the above formula would give a slightly inaccurate answer, unless of course the investor pays par value for the bond. To correct this, investors can modify the current yield formula by adding the result of the current yield to the gain or loss the price gives the investor: [(Par Value – Bond Price)/Years to Maturity]. The **modified current yield** formula then takes into account the discount or premium at which the investor bought the bond. This is the full calculation:

$$\text{Adjusted Current Yield} = \left[\frac{\text{Annual Coupon}}{\text{Market Price}} \right] * 100 + \left[\frac{(100 - \text{Market Price})}{\text{Years of Maturity}} \right]$$

Now to re-calculate the yield of the bond in our example, which matures in 30 months and has a coupon payment of Rs.5.

$$= \frac{5}{95.92} * 100 + \frac{(100 - 95.92)}{2.5} = 6.84\%$$

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The adjusted current yield of 6.84% is higher than the current yield of 5.21% because the bond's discounted price (Rs95.92 instead of Rs100) gives the investor more of a gain on the investment.

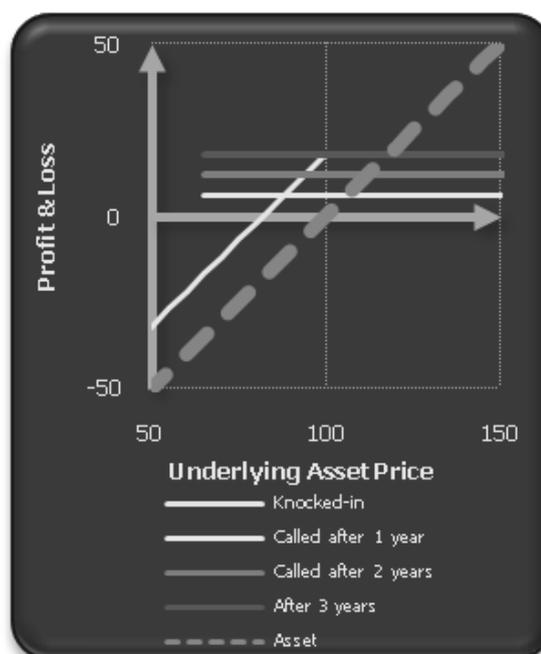
Callable Bonds

Bonds that allow the issuer to alter their tenor, by redeeming them prior to their maturity date, are called callable bonds. The inclusion of this feature in the bond's structure provides the issuer the right to fully or partially retire the bond, and is therefore in the nature of call option on the bond. Since these options are not separated from the original bond issue, they are also called embedded options. A call option can be a European option, where the issuer specifies the date on which the option can be exercised. Alternatively, the issuer can embed an American option in the bond, providing him the right to call the bond on or anytime before a pre-specified date. The call option provides the issuer the option to redeem a bond, if interest rates decline, and re-issue them at a lower rate. The investor, however, loses the opportunity to stay invested in a high coupon bond, when interest rates drop. The call option, therefore, can effectively alter the term of a bond, and carries an added set of risks to the investor, in the form of call risk, and re-investment risk. As we shall see later, the prices at which these bonds will trade in the market are also different. . In the home loan markets, pre-payment of housing loans represent a special case of call options exercised by borrowers. Housing finance companies are exposed to the risk of borrowers exercising the option to pre-pay, thus retiring a housing loan, when interest rates fall.

Callable Yield Notes

Callable Yield Notes (CYN) are yield enhancement products, whose performance is capped by a coupon that is guaranteed by the issuer. As the name implies, the issuer, at his discretion, can call the product usually on predefined observation dates. The underlying assets are generally composed of several stocks or stock indices, thus making it product based on the worst-of function. They are akin to Express Certificates.

The redemption is linked to a barrier (a down and in) and the callability. If none of the underlying assets ever broke through the barrier and all are above par at a predefined call date, then the CYN will



most probably be called by the issuer at par and pay the full coupon for the period. However, if one or more underlying assets trade below the level at the issue date, the issuer will just pay the coupon and probably not call the CYN. An uncertainty exists for the investor as to the call of the product: it is not only linked to the level of the underlying assets, but also to their implied volatility, their implied correlation and to the level and shape of the yield curve. Even changes in the implied dividend yields may play a role. If one underlying asset breaks through the predefined barrier (often set at 70% or below of the initial asset levels), the protection of the barrier disappears (it is knocked-out) and the investor is simply long on the worst performing asset. In that case, at maturity, the redemption will be linked to the performance of the worst performing asset. The redemption will occur in cash in the in case of indices, and may be in the form of the delivery of the worst performing share of the basket. The maturity of CYN is usually 2 to 3 years, and can typically be called on each anniversary date. The barriers are relatively far away from the spot price due to the longer maturity.

Payoff:

The following is a numerical example: callable yield note on the Eurostoxx50 Index and the Nikkei Index, quanto Euro, two years maturity, a barrier set at 65% of spot and a coupon of 6% p.a

Scenario 1: none of the indices breaks through the barrier or both end above their initial levels at maturity: the product is redeemed at par.

Scenario 2: at least one of the indices breaks through the barrier anytime during the life of the product and at least one ends below its initial level: the note redeems according to the performance of the worst performing index.

The coupon is paid in any case (usually on a per annum base or semi-annually).

Note that the example features only two indices. In practice, three or four indices are usually included in the product. However, the addition of one or more assets in the structure is most of the time not recommended from a risk-reward view for the investor. It raises the coupon marginally but increases the risk of the structure substantially. This is a general rule that applies to all structured products that feature a worst-of option.

Do's:

Invest in a CYN when the included assets are thought to move sideways, the volatility is high or expected to fall and the correlation is low or expected to increase.

Limit the maturity preferably to two years, or at the most three. The additional protection or coupon, when calculated on a per annum basis decreases with the time to maturity; 40% protection over three years is less than 30% over two years.

Prefer indices to single stocks. Empirical data suggests that the worst-of feature priced on single stocks does not compensate the investor for the risk he takes for having the worst performing stock delivered.

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Do invest only in products that correspond to your reference currency, or hedge your currency risk; that is, unless you willingly take the currency risk.

Do favour a better barrier over a higher coupon.

Don'ts:

Don't invest in callable yield notes that include more than three assets. If at all, prefer those with two assets. Why not try a callable yield note on a single asset? It makes the risk management of your portfolio easier.

Don't invest in CYN whose coupon amounts to more than six times the risk-free interest rate if your target is to beat money-market. The higher the coupon, the higher the chances that a barrier event (which is defined as an asset breaking through the barrier, annihilating the conditional protection). On an average, the products offered on the market have a 40% chance of breaking through the barrier.

Classical variant:

Callable Return Note: It is similar to the callable yield note, but the coupon is not guaranteed. It is paid as long as no barrier event occurs. Since the coupon is at risk, it is usually higher than that of a comparable CYN.

Main impact factors:

Volatility: the higher the volatility, the higher the coupon and also the more the callable option is worth.

Correlation: the lower the correlation, the higher the coupon. Dividend yields: the higher the yield, the higher the coupon.

Option volatility skew: the higher the skew, the higher the coupon (selling the barrier will be worth more).

Puttable Bonds

Bonds that provide the investor with the right to seek redemption from the issuer, prior to the maturity date, are called puttable bonds. The put options embedded in the bond provide the investor the right to partially or fully sell the bonds back to the issuer, either on or before pre-specified dates. The actual terms of the put option are stipulated in the original bond indenture. This option provides the investor the right to sell a low coupon-paying bond to the issuer, and invest in higher coupon paying bonds, if interest rates move upwards. The issuer will have to re-issue the put bonds at higher coupons. Puttable bonds represent a re-pricing risk to the issuer. When interest rates increase, the value of bonds declines. Therefore put options, which seek redemptions at par, cause additional losses to the issuer.

Building ZCC and Use of ZCC Yields

Zero coupon convertibles are another zero coupon structure (could be taxable as well as tax exempt) that makes a great deal of sense. This type of bond is a combination of a zero coupon bond and a convertible bond. It is issued as a zero coupon bond that pays no interest until a specified date, when it converts to a coupon-paying bond with a specified term and coupon. Depending upon the issue, these bonds can be non-callable or callable at or after the conversion date.

A fixed income instrument that is a combination of a zero-coupon bond and a convertible bond: Due to the zero-coupon feature, the bond pays no interest and is issued at a discount to par value, while the convertible feature means that the bond is convertible into common stock of the issuer at a definite conversion price.

The zero-coupon and convertible features offset each other in terms of the yield required by investors. Zero-coupon bonds are often the most volatile fixed-income investments because they have no periodic interest payments to mitigate the risk of holding them; as a result, investors demand a slightly higher yield to hold them. On the other hand, convertibles pay a lower yield compared to other bonds of the same maturity and quality because investors are willing to pay a premium for the convertible feature.

Bootstrapping Process to derive the Zero Curve

A spot rate curve, also known as a zero curve, refers to the yield curve constructed using the spot rates such as Treasury spot rates instead of the yields.

A spot rate Treasury curve is more suitable to price bonds because most bonds provide multiple cash flows (coupons) to the bond holders at different points in time, and it is better to use the spot rates as the discount rates for different time periods rather than using a single discount rate.

We can build a spot rate curve using on-the-run treasuries, off-the-run treasuries, or both. We can construct a spot rate curve using a method called bootstrapping. In this method one repetitively applies a no-arbitrage implied forward rate equation to yields on the estimated Treasury par yield curve. Given below is the step-by-step process to arrive at the spot curve using this method.

Step 1: Decide on the Instrument for Yield Curve

The spot curve can be obtained by using on-the-run treasury securities, off-the-run treasury securities, or a combination of both, or treasury coupon strips. The selected instrument should not have credit risk, liquidity risk, embedded options, or any pricing anomalies.

Step 2: Select the Par Yield Curve

Typically, one cannot find Treasury securities for only a few maturities such as 3-month, 6-month, 2-year, 5-year, 10-year, and 30 years.

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Step 3: Interpolate the Missing Yields

We will have to interpolate the in-between yields for different periods, such as for 3-year, 3-year, 6-year, and so on. This can be done by using the simple interpolation formula, which may not be very accurate.

Step 4: Calculate Spot Rates Using Treasury Yields

In this step, we will apply the bootstrapping method to calculate the spot rates.

To reiterate, the spot curve is made up of spot interest rates for zero coupon bonds of different maturities. For example, a 2-year spot rate tells us that the interest rate is for a zero-coupon bond of two-year maturity. We bootstrap this data from the treasury yield curve.

Suppose we have the following data:

Period	Years	Yield	Price
1	0.5	4%	100
2	1	4.30%	100
3	1.5	4.50%	100
4	2	4.90%	100

We can use this data to calculate the spot rates. Note that first two securities, i.e., the 6 month and 1 year treasury securities are T-bills which are discount securities, essentially zero-coupon securities. So, for these the spot rate will be the same as the yield, i.e., 4% and 4.3%.

0.5 year spot rate, $z_1 = 4\%$

1 year spot rate, $z_2 = 4.3\%$

We can now use this data to calculate the 1.5 year spot rate. Since 1.5 year bond is selling at par, its coupon will be 4.5%. The three cash flows are:

Cash flow at 0.5 year = $100 \times 0.045 \times 0.5 = 2.25$

Cash flow at 1 year = $100 \times 0.045 \times 0.5 = 2.25$

Cash flow at 1.5 year = $100 + 100 \times 0.045 \times 0.5 = 102.25$

We want the 1.5 year zero rate such that the present value of all cash flows discounted by their respective spot rates is equal to the price of the bond, i.e., 100.

$$100 = 2.25/(1+4\%/2)^1 + 2.25/(1+4\%/2)^2 + 102.25/(1+z_3/2)^3$$

Solving for z_3 , we get $z_3 = 4.511$, which is the 1.5 year spot rate.

Period	Years	Yield	Price	Spot Rate
1	0.5	4%	100	4%
2	1	4.30%	100	4.30%
3	1.5	4.50%	100	4.51%
4	2	4.90%	100	

When we plot the spot rates against the maturities, we get the spot rate or the zero curve.

Liquidity & Interest Rate Sensitivity Gap measures - RBI Guidelines

To strengthen the Management Information System within the FIs and to sensitize them to the market risk, RBI has issued ALM Guidelines. These state that FIs are required to prepare periodical statements on liquidity gap and interest rate sensitivity and put these up to their top management.

In the ALM system, the balance sheets of FIs should not only contain items of assets and liabilities but also cash flows emanating from these items over the entire life of the asset, liability or contingent commitments. While the Reserve Bank has prescribed prudential limits on negative liquidity gaps at 10 per cent and 15 per cent of the cash outflows in the first two time buckets (viz., 1 to 14 days and 15 to 28 days), the FIs themselves have to evolve internal prudential limits for cumulative negative liquidity gaps across all time buckets as also for the interest rate gaps in various time buckets with the approval of their Board/ALCO. Since the ALM system also aims at capturing the foreign currency portfolio of the FIs, they are also required to compile currency-wise liquidity and interest rate sensitivity (IRS) reports in respect of their foreign currency exposures, for which separate formats have been prescribed.

The envisaged ALM system seeks to introduce a formalized framework for management of market risks through measuring, monitoring and managing liquidity, exchange rate and interest rate risks of a FI that need to be closely integrated with the FIs' business strategy. The initial focus of the ALM function is to enforce the discipline of market risk management viz., managing business after assessing the market risks involved. The objective of good risk management systems should be to evolve into a strategic tool for effective management of FIs.

The ALM process rests on three pillars:

- ALM Information System
 - Management Information System
 - Information availability, accuracy, adequacy and expediency
- ALM Organization
 - Structure and responsibilities
 - Level of top management involvement

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- ALM Process
 - Risk parameters
 - Risk identification
 - Risk measurement
 - Risk management
 - Risk policies and tolerance levels.

ALM has to be supported by a management philosophy which clearly specifies the risk policies and tolerance limits. This framework needs to be built on a sound methodology with necessary supporting information system, as the central element of the entire ALM exercise is the availability of adequate and accurate information. Thus, information is the key to the ALM process. There are various methods in use world-wide for measuring risks. These range from the simple Gap Statement to extremely sophisticated and data intensive Risk Adjusted Profitability Measurement methods. The present guidelines would require comparatively simpler information system for generating liquidity gap and interest rate gap reports.

Liquidity Risk Management

As suggested by AML guidelines, liquidity position should be tracked through maturity or cash flow mismatches by FIs on an ongoing basis. For measuring and managing net funding requirements, the use of a maturity ladder and calculation of cumulative surplus or deficit of funds at selected maturity dates is adopted as a standard tool. The maturity profile could be used for measuring the future cash flows of FIs in different time buckets as follows:

- (a) 1 to 14 days
- (b) 15 to 28 days
- (c) 29 days and up to 3 months
- (d) Over 3 months and up to 6 months
- (e) Over 6 months and up to 1 year
- (f) Over 1 year and up to 3 years
- (g) Over 3 years and up to 5 years
- (h) Over 5 years and up to 7 years
- (i) Over 7 years and up to 10 years
- (j) Over 10 years.

The investments are assumed as illiquid due to lack of depth in the secondary market and are, therefore, generally shown, as per their residual maturity, under respective time buckets. However, some of the FIs may maintain securities in the 'Trading Book', which are kept

separately from other investments made for retaining relationship with customers. Securities held in the 'Trading Book' should be subject to the following preconditions:

- (i) The composition and volume of the Trading Book should be clearly defined;
- (ii) Maximum maturity/duration of the trading portfolio should be restricted;
- (iii) The holding period of the trading securities should not exceed 90 days;
- (iv) Cut-loss limit(s) should be prescribed;
- (v) Product-wise defeasance periods (i.e. the time taken to liquidate the 'position' on the basis of liquidity in the secondary market) should be prescribed;
- (vi) Such securities should be marked-to-market on a daily/weekly basis and the revaluation gain/loss should be charged to the profit and loss account.

Interest Rate Risk (IRR)

Interest rate risk is the risk caused by changes in market interest rates that adversely affect a FI's financial condition. The immediate impact is on FI's earnings (i.e. reported profits), changes in its Net Interest Income (NII). A long-term impact is on FI's Market Value of Equity (MVE) or Net Worth as the economic value of bank's assets, liabilities and off-balance sheet positions get affected. The interest rate risk, viewed from these two perspectives, is known as 'earnings perspective' and 'economic value' perspective, respectively. The risk from the earnings perspective can be measured as changes in the Net Interest Income (NII) or Net Interest Margin (NIM). There are many analytical techniques for measurement and management of Interest Rate Risk. In the context of poor MIS and slow pace of computerization in the FIs, the traditional Gap analysis is considered a suitable method to measure the Interest Rate Risk in the initial phase of the ALM system. However, the FIs, which are better equipped, would have the option of deploying advanced IRR management techniques with the approval of their Board / ALCO, in addition to the Gap analysis prescribed under the guidelines.

It is the intention of RBI to move over to the modern techniques of Interest Rate Risk measurement like Duration Gap Analysis, Simulation and Value at Risk over time when FIs acquire sufficient expertise and sophistication in acquiring and handling MIS.

The Gap or Mismatch risk can be measured by calculating Gaps over different time intervals at a given date. Gap analysis measures mismatches between rate sensitive liabilities and rate sensitive assets (including off-balance sheet positions). An asset or liability is normally classified as rate sensitive if:

- (i) Within the time interval under consideration, there is a cash flow;
- (ii) The interest rate resets /re-prices contractually during the interval;
- (iii) It is contractually pre-payable or withdrawable before the stated maturities;

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(iv) It is dependent on the changes in the Bank Rate by the RBI.

The Gap Report should be generated by grouping rate sensitive liabilities, assets and off-balance sheet positions into time buckets according to residual maturity or next re-pricing period, whichever is earlier. All investments, advances, deposits, borrowings, purchased funds, etc. that mature/re-price within a specified time frame are interest rate sensitive. Similarly, any principal repayment of loan is also rate sensitive if the FI expects to receive it within the time horizon. This includes final principal repayment and interim installments. Certain assets and liabilities carry floating rates of interest that vary with a reference rate and, hence, these items get re-priced at pre-determined intervals. Such assets and liabilities are rate sensitive at the time of re-pricing.

While the interest rates on term deposits and bonds are generally fixed during their currency, the interest rates on advances could be re-priced any number of occasions, on the pre-determined reset / re-pricing dates and the new rate would normally correspond to the changes in Base Rate.

The interest rate gaps may be identified in the following time buckets:

- (i) 1-28 days
- (ii) 29 days and up to 3 months
- (iii) Over 3 months and up to 6 months
- (iv) Over 6 months and up to 1 year
- (v) Over 1 year and up to 3 years
- (vi) Over 3 years and up to 5 years
- (vii) Over 5 years and up to 7 years
- (viii) Over 7 years and up to 10 years
- (ix) Over 10 years
- (x) Non-sensitive

The various items of rate sensitive assets and liabilities and off-balance sheet items may be classified into various time-buckets. The Gap is the difference between Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) for each time bucket. The positive Gap indicates that it has more RSAs than RSLs whereas the negative Gap indicates that it has more RSLs. The Gap reports indicate whether the institution is in a position to benefit from rising interest rates by having a positive Gap ($RSA > RSL$) or whether it is in a position to benefit from declining interest rates by a negative Gap ($RSL > RSA$). The Gap can, therefore, be used as a measure of interest rate sensitivity.

Each FI should set prudential limits on interest rate gaps in various time buckets with the approval of the Board/ALCO. Such prudential limits should have a relationship with the **Total**

Assets, Earning Assets or Equity. In addition to the interest rate gap limits, the FIs that are better equipped would have the option of setting the prudential limits in terms of Earnings at Risk (EaR) or Net Interest Margin (NIM) based on their views on interest rate movements with the approval of the Board / ALCO.

Bond & Securities Valuation – Bond Dynamics - Duration – Modified Duration

Choosing the right mix of stocks and bonds can be the most basic yet confusing decisions facing any investor. In general, the role of stocks is to provide long-term growth potential and the role of bonds is to provide an income stream.

Bond & Securities Valuation

The fundamental principle of bond valuation is that the value of a bond is equal to the present value of its expected (future) cash flows. The valuation process involves the following three steps:

1. Estimate the expected cash flows.
2. Determine the appropriate interest rate or interest rates that should be used to discount the cash flows.
3. Calculate the present value of the expected cash flows found in step one by using the interest rate or interest rates determined in step two.

Determining Appropriate Interest Rates

The minimum interest rate that an investor should accept is the yield for a risk-free bond (a Treasury bond for a U.S. investor). The Treasury security that is most often used is the on-the-run issue because it reflects the latest yields and is the most liquid.

For non-Treasury bonds, such as corporate bonds, the required rate or yield would be the on-the-run government security rate plus a premium that accounts for the additional risks that come with non-Treasury bonds.

As for the maturity, an investor could just use the final maturity date of the issue compared to the Treasury security. However, because each cash flow is unique in its timing, it would be better to use the maturity that matches each of the individual cash flows.

Computing a Bond's Value

First, we need to find the present value (PV) of the bond's future cash flows. The present value is the amount that would have to be invested today to generate that future cash flow. PV is dependent on the timing of the cash flow and the interest rate used to calculate the present value. To figure out the value, the PV of each individual cash flow has to be found. Then the figures have to be added to determine the price of a bond.

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$$\text{PV at time T} = \text{expected cash flows in period T} / (1 + I) \text{ to the T power}$$

After you calculate the expected cash flows, you will need to add the individual cash flows:

$$\text{Value} = \text{present value @ T1} + \text{present value @ T2} + \text{present value @ T}_n$$

We can throw some numbers around to further illustrate this concept.

Example: The Value of a Bond

Bond GHJ matures in five years with a coupon rate of 7% and a maturity value of \$1,000. For simplicity's sake, let's assume that the bond pays annually and the discount rate is 5%.

The cash flow for each of the years is as follows:

Year One = \$70

Year Two = \$70

Year Three = \$70

Year Four = \$70

Year Five = \$1,070

Thus, the PV of the cash flows is as follows:

Year One = $\$70 / (1.05) \text{ to the } 1^{\text{st}} \text{ power} = \66.67

Year Two = $\$70 / (1.05) \text{ to the } 2^{\text{nd}} \text{ power} = \63.49

Year Three = $\$70 / (1.05) \text{ to the } 3^{\text{rd}} \text{ power} = \60.47

Year Four = $\$70 / (1.05) \text{ to the } 4^{\text{th}} \text{ power} = \57.59

Year Five = $\$1,070 / (1.05) \text{ to the } 5^{\text{th}} \text{ power} = \838.37

Now to find the value of the bond:

Value = $\$66.67 + \$63.49 + \$60.47 + \$57.59 + \$838.37$

Value = \$1,086.59

How Does the Value of a Bond Change?

As rates increase or decrease, the discount rate that is used also changes. Let's change the discount rate in the above example to 10% to see how it affects the bond's value.

Example: The Value of a Bond when Discount Rates Change

PV of the cash flows is:

Year One = $\$70 / (1.10) \text{ to the } 1^{\text{st}} \text{ power} = \63.63

Year Two = $\$70 / (1.10) \text{ to the } 2^{\text{nd}} \text{ power} = \57.85

Year Three = $\$70 / (1.10)$ to the 3rd power = \$ 52.63

Year Four = $\$70 / (1.10)$ to the 4th power = \$ 47.81

Year Five = $\$1,070 / (1.10)$ to the 5th power = \$ 664.60

Value = $63.63 + 57.85 + 52.63 + 47.81 + 664.60 = \$ 886.52$

- As we can see from the above examples, an important property of PV is that for a given discount rate, the older a cash flow value is, the lower is its present value.
- We can also compute the change in value from an increase in the discount rate used in our example. The change = $\$1,086.59 - \$886.52 = \$200.07$.
- Another property of PV is that the higher the discount rate, the lower is the value of a bond; the lower the discount rate, the higher is the value of the bond.

If the discount rate is higher than the coupon rate, the PV will be less than par. If the discount rate is lower than the coupon rate, the PV will be higher than par value.

How Does a Bond's Price Change as it Approaches its Maturity Date?

As a bond moves closer to its maturity date, its price will move closer to par. There are three possible scenarios:

1. If a bond is at a premium, the price will decline over time toward its par value.
2. If a bond is at a discount, the price will increase over time toward its par value.
3. If a bond is at par, its price will remain the same.

To show how this works, let's use our original example of the 7% bond, but now let's assume that a year has passed and the discount rate remains the same at 5%.

Example: Price Changes Over Time

Let's compute the new value to see how the price moves closer to par. You should also be able to see how the amount by which the bond price changes is attributed to it closer to its maturity date.

PV of the cash flows is:

Year One = $\$70 / (1.05)$ to the 1st power = \$66.67

Year Two = $\$70 / (1.05)$ to the 2nd power = \$ 63.49

Year Three = $\$70 / (1.05)$ to the 3rd power = \$ 60.47

Year Four = $\$1,070 / (1.05)$ to the 4th power = \$880.29

Value = $\$66.67 + \$63.49 + \$60.47 + \$880.29 = \$1,070.92$

As the price of the bond decreases, it moves closer to its par value. The amount of change attributed to the year's difference is \$15.67.

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An individual can also decompose the change that results when a bond approaches its maturity date and the discount rate changes. This is accomplished by first taking the net change in the price that reflects the change in maturity, then adding it to the change in the discount rate. The two figures should equal the overall change in the price of the bond.

Computing the Value of a Zero-coupon Bond

A zero-coupon bond may be the easiest of securities to value because there is only one cash flow, the maturity value.

The formula to calculate the value of a zero coupon bond that matures N years from now is as follows:

$$\text{Maturity value} / (1 + I) \text{ to the power of the number of years} * 2$$

Where I is the semi-annual discount rate.

Example: The Value of a Zero-Coupon Bond

To illustrate this, let us look at a zero coupon with a maturity of three years and a maturity value of \$1,000 discounted at 7%.

$$I = 0.035 (.07 / 2)$$

$$N = 3$$

The value of a Zero-Coupon Bond

$$= \$1,000 / (1.035) \text{ to the } 6^{\text{th}} \text{ power } (3*2)$$

$$= \$1,000 / 1.229255$$

$$= \$813.50$$

Arbitrage-free Valuation Approach

Under the traditional approach of valuing a bond, it is typical to view the security as a single package of cash flows, discounting the entire issue with one discount rate. Under the arbitrage-free valuation approach, the issue is instead viewed as various zero-coupon bonds that should be valued individually and added together to determine value. The reason for this is that the correct way to value a bond is that it does not allow a risk-free profit to be generated by "stripping" the security and selling the parts at a higher price than purchasing the security in the market.

As an example, a five-year bond that pays semi-annual interest would have 11 separate cash flows and would be valued using the appropriate yield on the curve that matches its maturity. So the markets implement this approach by determining the theoretical rate the U.S. Treasury would have to pay on a zero-coupon treasury for each maturity. The investor then determines the value of all the different payments using the theoretical rate and adds them together. This zero-coupon rate is the **Treasury spot rate**. The value of the bond based on the spot rates is the arbitrage-free value.

Determining Whether a Bond Is Undervalued or Overvalued

What you need to do for this is to value a bond like we did before, by using the more traditional method of applying one discount rate to the security. The twist here, however, is that instead of using one rate, you will use whatever rate the spot curve has that coordinates with the proper maturity. You will then add the values up as you did previously to get the value of the bond.

You will then be given a market price to compare with the value that you derived from your work. If the market price is above your figure, then the bond is undervalued and you should buy the issue. If the market price is below your price, then the bond is overvalued and you should sell the issue.

How Bond Coupon Rates and Market Rates Affect the Bond Price

If the coupon rate of a bond is above the yield required by the market, it will trade above its par value or at a premium. This will be because investors will be willing to pay a higher price to achieve the additional yield. As investors will continue to buy the bond, its yield will decrease until it reaches the market equilibrium. **Remember that as yields decrease, bond prices rise.**

If the coupon rate of a bond is below the yield required by the market, it will trade below its par value or at a **discount**. This happens because investors will not buy this bond at par when other issues are offering higher coupon rates, so yields will have to increase, which means the bond price will drop to induce investors to purchase these bonds. **Remember that as yields increase, bond prices fall.**

Bond Dynamics

A bond is a type of loan taken out by companies. Investors lend money to a company when they buy its bonds. In exchange, the company pays an interest "coupon" at predetermined intervals (usually annually or semiannually) and returns the principal on the maturity date, ending the loan.

Unlike stocks, bonds can vary significantly, based on the terms of its indenture, a legal document outlining its characteristics. Because each bond issue is different, it is important to understand their precise terms before investing. In particular, there are six important features to look for, when considering a bond for investment.

Maturity

The maturity date of a bond is the date when the principal or the par amount of the bond will be paid to investors, and the company's obligation will end.

Secured / Unsecured

A bond can be secured or unsecured. Unsecured bonds are called debentures; their interest payments and return of principal are guaranteed only by the credit rating of the issuing

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company. If the company fails, you may get little of your investment back. On the other hand, a secured bond is a bond in which specific assets are pledged to bondholders if the company cannot repay the obligation.

Liquidation Preference

When a firm goes bankrupt, it pays money back to investors in a particular order as it liquidates. After a firm has sold off all of its assets, it begins to pay out to investors. Senior debt is paid first, then junior (subordinated) debt, and stockholders get whatever is left over.

Coupon

The coupon amount is the amount of interest paid to bondholders, normally on an annual or semiannual basis.

Tax Status

While the majority of corporate bonds are taxable investments, there are some government and municipal bonds that are tax exempt, meaning that income and capital gains realized on the bonds are not subject to the usual state and federal taxation.

Because investors do not have to pay taxes on returns, tax-exempt bonds will have lower interest than equivalent taxable bonds. An investor must calculate the tax-equivalent yield to compare the return with that of taxable instruments.

Callability

Some bonds can be paid off by an issuer before maturity. If a bond has a call provision, it may be paid off at earlier dates, at the option of the company, usually at a slight premium to par.

2. Risks of Bonds

Credit / Default Risk

Credit or default risk is the risk that interest and principal payments due on the obligation will not be made as required.

Prepayment Risk

Prepayment risk is the risk that a given bond issue will be paid off earlier than expected, normally through a call provision. This can be bad news for investors, because the company only has an incentive to repay the obligation early when interest rates have declined substantially. Instead of continuing to hold a high interest investment, investors are forced to reinvest funds in a lower interest rate environment.

Interest Rate Risk

Interest rate risk is the risk that interest rates will change significantly from what the investor had expected. If interest rates decline significantly, the investor faces the possibility of

prepayment. If interest rates increase, the investor will be stuck with an instrument yielding below market rates. The greater the time to maturity, the greater the interest rate risk an investor has to bear, because it is harder to predict market developments farther out into the future.

3. Bond Ratings

Agencies

The most commonly cited bond rating agencies are Standard and Poor's Moody's and Fitch. These agencies rate a company's ability to repay its obligations. Ratings range from 'AAA' to 'Aaa' for "high grade" issues very likely to be repaid, to 'D' for issues that are currently in default. Bonds rated 'BBB' to 'Baa' or above are called "investment grade"; this means that they are unlikely to default and tend to remain stable investments. Bonds rated 'BB' to 'Ba' or below are called "junk bonds", which means that default is more likely, and they are thus more speculative and subject to price volatility.

Occasionally, firms will not have their bonds rated, in which case it is solely up to the investor to judge a firm's repayment ability. Because the rating systems differ for each agency and change from time to time, it is prudent to research the rating definition for the bond issue you are considering.

4. Bond Yields

Bond yields are all measures of return. Yield to maturity is the measurement most often used, but it is important to understand other yield measurements that are used in different situations.

Yield to Maturity (YTM)

As said above, yield to maturity (YTM) is the most commonly cited yield measurement. It measures what the return on a bond is if it is held to maturity and all coupons are reinvested at the YTM rate. Because it is unlikely that coupons will be reinvested at the same rate, an investor's actual return will differ slightly.

Current Yield

Current Yield can be used to compare the interest income provided by a bond to the dividend income provided by a stock. This is calculated by dividing the bond's annual coupon amount by the bond's current price. Keep in mind that this yield incorporates only the income portion of return, ignoring possible capital gains or losses. As such, this yield is most useful for investors concerned with current income only.

Nominal Yield

The nominal yield on a bond is the percentage of interest to be paid on the bond periodically. It is calculated by dividing the annual coupon payment by its par value. It is important to note that the nominal yield does not estimate the return accurately, unless the current bond price is

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the same as its par value. Therefore, nominal yield is used only for calculating other measures of return.

Yield to Call (YTC)

A callable bond always bears some probability of being called before the maturity date. Investors will realize a slightly higher yield if the called bonds are paid off at a premium. An investor in such a bond may wish to know what yield will be realized if the bond is called at a particular call date, to determine whether the prepayment risk is worthwhile.

Realized Yield

The realized yield of a bond should be calculated if an investor plans to hold it only for a certain period of time, rather than to maturity. In this case, the investor will sell the bond, and this projected future bond price must be estimated for the calculation. Because future prices are hard to predict, this yield measurement is only an estimation of return.

Although the bond market appears complex, it is really driven by the same risk/return tradeoffs as the stock market. An investor need only master these few basic terms and measurements to unmask the familiar market dynamics and become a competent bond investor.

Duration-Modified Duration

Effective Duration

Duration is the approximate percentage change in price for a 100 basis point change in rates. To compute duration, you can apply the following equation that was presented earlier in the guide.

$$\text{Price if yield decline} - \text{price if yield rise} / 2(\text{initial price})(\text{change in yield in decimal})$$

Let's make:

Δy = change in yield in decimal (Δ = "delta")

V1 = initial price

V2 = price if yields decline by Δy

V3 = price if yields increase by Δy

$$\text{Duration} = (V2 - V3) / 2(V1)(\Delta y)$$

Example:

Stone & Co 9% of 10 are option-free and selling at 106 to yield 8.5%. Let's change rates by 50 bps. The new price for the increase in 50 bps would be 104 and the new price for a decrease in rates would be 109. Then:

Answer:

$$\text{Duration} = 109 - 104 / 2 * (106) * (.005)$$

$$\text{Duration} = 5 / 1.06$$

$$\text{Duration} = 4.717$$

This means that for a 100 basis point change, the approximate change would be 4.717%

Price Change Given the Effective Duration and Change in Yield

Once you have computed the effective duration of a bond, it is easy to find the approximate price change given at change in the yield.

$$\text{Approximate Percent Price change} = - \text{duration} \times \text{change in yield} \times 100$$

Example:

Using the duration for 4.717% obtained from the previous example, let's see the approximate change for a small movement in rates such as a 20 bps increase.

$$\text{Percentage Price Change} = - 4.717 \times (+0.0020) \times 100 = -.943\%$$

And for a large change, a 250 bps increase:

$$\text{Percentage Price Change} = -4.717 \cdot (+0.0250) \times 100 = -11.79\%$$

As noted before, these changes are estimates. For small changes in rates, the estimate will be almost dead on. For larger movements in rates, the estimate will be close but will underestimate the new price of the bond regardless of whether the movement in rates is up or down.

Modified Duration

Modified duration is the approximate percentage change in the price of a bond for a 100 basis points change in yield, assuming that its *expected cash flow does not change when the yield changes*. This works for option-free bonds such as Treasuries but not for option-embedded bonds because the cash flows may change due to a call or prepayment.

Effective Duration

Effective duration takes into account the way in which changes in yield will affect the expected cash flows. It takes into account the discounting that occurs at different interest rates as well as changes in cash flows. This is a more appropriate measure for any bond with an option embedded in it.

Macaulay Duration

In order to better understand Macaulay duration, let's first turn to the modified duration equation:

$$\text{Modified duration} = 1/(1+\text{yield}/k)[1 \times \text{pvcf}_1 + 2 \times \text{pvcf}_2 + \dots + n \times \text{pvcf}_n / k \times \text{Price}$$

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Where:

k = the number of periods: two for semi-annual, 12 for monthly and so on.

n = the number of periods to maturity

Yield = YTM of the bond

pvcf = the present value of cash flows discounted at the yield to maturity.

The bracket part of the equation was developed by Frederick Macaulay in 1938 and is called Macaulay Duration.

So Modified duration = Macaulay's Duration / (1 + yield/k)

Macaulay's duration allows the analysis a short cut to measure modified duration. But because modified duration is flawed by not incorporating the change in cash flows due to an embedded option, so are Macaulay durations.

When is Effective Duration a Better Measure?

When a bond has an embedded option, the cash flows can change when interest rates change because of prepayments and the exercise of calls and puts. Effective duration takes into consideration the changes in cash flows and values that can occur from these embedded options.

Why is duration the best interpretation of a measure of the sensitivity of a bond or portfolio to changing interest rates?

As already stated, duration gives an approximate percentage change for a 100 basis point change in rates. It is a quick way to calculate the change in a bond's value. It also allows an investor to get a "feel" of the price change. For example, you can tell a client that the duration of measure of 7 for their portfolio would equal roughly a 7% change in their portfolio's value if rates change, plus or minus 100 basis points. It also allows a manager or investor to compare bonds regarding the interest rate risk under certain assumptions.

A portfolio's duration is equal to the weighted average of the durations of the bonds in it. The weight is proportional to how much of the portfolio consists of a certain bond.

$$\text{Portfolio Duration} = w_1D_1 + w_2D_2 \dots + w_kD_k$$

Example:

Let's take 3 bonds:

\$6,000,000 market value of Stone & Co 7% of 10 with duration of 5.5

\$3,400,000 market value of Zack Stores 5% of 15 with duration of 7.8

\$1,535,000 market value of Yankee Corp. 9% of 20 with duration of 12

Total market value of \$10,935,000

Answer:

First let's find the weighted average of each bond

Stone & Co. weighted average is $6,000,000 / 10,935,000 = .548$

Zack Stores weighted average is $3,400,000 / 10,935,000 = .311$

Yankee Corp. weighted average is $1,535,000 / 10,935,000 = .14$

So the portfolio duration = $.548(5.5) + .311(7.8) + .14(12) = 7.119$

This means that if rates change by 100 bps, the portfolio's value will change approximately by 7.119%. Keep in mind that the individual bonds will not change by this much because each will have its own duration.

You can also use this to figure out the dollar amount of the change. This is done by using the dollar duration equation and adding up the change for all the bonds in the portfolio.

Going back to our example of those three bonds and a 50 bps yield change,

Percentage price change = -duration x change in yield x market value

Stone & Co = $-5.5 \times .005 \times 6,000,000 = 165,000$

Zack Stores = $-7.8 \times .005 \times 3,400,000 = 132,600$

Yankee Corp = $-12 \times .005 \times 1,535,000 = 92,100$

So the dollar change for a 50 bp change would be equal to approximately \$389,700

Limitations of the Portfolio Duration Measure

The primary limitation of this measure is that each of the bonds in the portfolio must change by the 100 or 50bps, or there must be a parallel shift in the yield curve for the duration measure to be useful.

Risk Measures – VaR – Mecauly Duration

VaR measures the possible adverse change in the market value of a financial instrument, based on what is regarded as the largest likely adverse move in rates or prices over a given time frame. It also includes the correlation between different financial instruments to measure the volatility of a financial portfolio of instruments.

Macauly Duration is the weighted average term to maturity of the cash flows from a bond. The weight of each cash flow is determined by dividing the present value of the cash flow by the price, and is a measure of bond price volatility with respect to interest rates.

Macauly duration can be calculated by:

$$\text{Macauly Duration} = \frac{\sum_{t=1}^n \frac{t * C}{(1 + y)^t} + \frac{n * M}{(1 + y)^n}}{\text{Current Bond Price}}$$

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Where:

t = respective time period

C = periodic coupon payment

y = periodic yield

n = total number of periods

M = maturity value

The metric is named after its creator, Frederick Macaulay. Macaulay duration is frequently used by portfolio managers who use an immunization strategy. It is also used to measure how sensitive a bond or a bond portfolio's price is to changes in interest rates.

Interest rate sensitivity is a measure of price change of a fixed-income asset as a result of changes in the interest rate environment. Securities that are more sensitive will have greater price fluctuation than those with less sensitivity. This type of sensitivity must be taken into account when selecting a bond or other fixed-income instruments that the investor may sell in the secondary market.

Generally, the longer the maturity of an asset, the more sensitive it will be to changes in interest rates. A fund with duration of 10 years is twice as volatile as a fund with five-year duration. Duration also gives an indication of how a fund's NAV will change as interest rates change. A fund with five-year duration would be expected to lose 5% from its NAV if interest rates rose by one percentage point or gain 5% if interest rates fell by one percentage point. Changes in interest rates are watched closely by bond and fixed income traders, as the resulting price fluctuations will affect the overall yield of the securities. Investors who understand the concept of duration can immunize their fixed-income portfolios to changes in short-term interest rates.

Back Testing of VaR

The Value at Risk is a statistical risk management technique that monitors and quantifies the risk level associated with an investment portfolio. It measures the maximum amount of loss over a specified time horizon with a given confidence level. Back testing measures the accuracy of the value at risk calculations. The loss forecast calculated by the value at risk is compared with actual losses at the end of the specified time horizon.

Back testing is a technique for simulating a model or strategy on past data to gauge its accuracy and effectiveness. In value at risk, it is used to compare the predicted losses from the calculated value at risk with the actual losses realized at the end of the specified time horizon. This comparison identifies the periods where the value at risk is underestimated or where the portfolio losses are greater than the original expected value at risk. These predictions can be recalculated if the back testing values are not accurate, thereby reducing the risk of unexpected losses.

Value at risk calculates the potential maximum losses over a specified time horizon with a certain degree of confidence. For example, the one-year value at risk of an investment portfolio is \$10 million with a confidence level of 95%. The value at risk indicates that there is a 5% chance of having losses that exceed \$10 million at the end of the year. With 95% confidence, the worst expected portfolio loss over one trading year will not exceed \$10 million.

If the value at risk is simulated over the past yearly data and the actual portfolio losses have not exceeded the expected value at risk losses, then the calculated value at risk is an appropriate measure. On the other hand, if the actual portfolio losses exceed the calculated value at risk losses, then its expected calculations may not be accurate.

When the actual portfolio losses are greater than the calculated value at risk of estimated loss, it is known as a breach of value at risk. However, if the actual portfolio loss is above the estimated value at risk only a few times, it doesn't mean that the estimated value at risk has failed. The frequency of breaches needs to be determined.

By Historical Simulation Method

The fundamental assumption of the Historical Simulations methodology is that you base your results on the past performance of your portfolio and make the assumption that the past is a good indicator of the near-future.

The algorithm below illustrates the straightforwardness of this methodology. It is called Full Valuation because we re-price the asset or the portfolio after every run. This differs from a Local Valuation method in which we use only the information about the initial price and the exposure at the origin to deduce VaR.

Step 1 – Calculate the returns (or price changes) of all the assets in the portfolio between each time interval.

The first step lies in setting the time interval and then calculating the returns of each asset between two successive periods of time.

Generally, we use a daily horizon to calculate the returns, but we could use monthly returns if we were to compute the VaR of a portfolio invested in alternative investments (Hedge Funds, Private Equity, Venture Capital and Real Estate) where the reporting period is either monthly or quarterly.

Historical Simulation VaR requires a long history of returns in order to get a meaningful VaR. Indeed, computing a VaR on a portfolio of Hedge Funds with only a year of return history will not provide a good estimate.

Step 2 – Apply the price changes calculated to the current mark-to-market value of the assets and re-value your portfolio.

Once we have calculated the returns of all the assets from today back to the first day of the period of time that is being considered. – let us assume one year comprised of 265 days – we

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now consider that these returns may occur tomorrow with the same likelihood. For instance, we start by looking at yesterday's returns of every asset, and apply them to the value of these assets today. That gives us new values for all these assets and consequently a new value of the portfolio.

Then, we go back in time by one more time interval to two days ago. We take the returns that have been calculated for every asset on that day and assume that those returns may occur tomorrow with the same likelihood as the returns that occurred yesterday.

We re-value every asset with these new price changes and then the portfolio itself. And we continue until we have reached the beginning of the period.

In this example, there will be 264 simulations.

Step 3 – Sort the series of the portfolio-simulated P&L from the lowest to the highest value.

After applying these price changes to the assets 264 times, we end up with 264 simulated values for the portfolio and thus P&Ls.

Since VaR calculates the worst expected loss over a given horizon at a given confidence level under normal market conditions, we need to sort these 264 values from the lowest to the highest as VaR focuses on the tail of the distribution.

Step 4 – Read the simulated value that corresponds to the desired confidence level.

The last step is to determine the confidence level we are interested in. Let us choose 99% for this example.

One can read the corresponding value in the series of the sorted simulated P&Ls of the portfolio at the desired confidence level and then take it away from the mean of the series of simulated P&Ls.

In other words, the VaR at 99% confidence level is the mean of the simulated P&Ls minus the 1% lowest value in the series of the simulated values.

This can be formulated as follows:

$$\text{VaR}_{1-\alpha} = \mu(R) - R_{\alpha}$$

Where:

VaR (1 - α) is the estimated VaR at the confidence level $100 \times (1 - \alpha)\%$.

$\mu(R)$ is the mean of the series of simulated returns or P&Ls of the portfolio

R_{α} is the worst return of the series of simulated P&Ls of the portfolio or, in other words, the return of the series of simulated P&Ls that corresponds to the level of significance α

Need for Interpolation: We may need to proceed to some interpolation since there will be no chance to get a value at 99% in our example. Indeed, if we use 265 days, each return calculated at every time interval will have a weight of $1/264 = 0.00379$. If we want to look at

the value that has a cumulative weight of 99%, we will see that there is no value that matches exactly 1% (since we have divided the series into 264 time intervals and not a multiple of 100). Considering that there is very little chance that the tail of the empirical distribution is linear, proceeding to a linear interpolation to get the 99% VaR between the two successive time intervals that surround the 99th percentile will result in an estimation of the actual VaR. This would be a pity considering we did all that we could to use the empirical distribution of returns. Nevertheless, even a linear interpolation may give you a good estimate of your VaR. For those who are more eager to obtain the exact VaR, the Extreme Value Theory (EVT) could be the right tool for them.

Creating an efficient frontier from historical or forecast statistics about asset returns is inherently uncertain due to errors in statistical inputs. This uncertainty is minor when compared to the problem of projecting investor preferences into mean standard deviation space. Economists know relatively little about human preferences, especially when they are confined to a single-period model. We know people prefer more to less, and we know most people avoid risk when they are not compensated for holding it. Beyond that is guess-work. We don't even know if they are consistent through time in their choices. The theoretical approach to the portfolio selection problem relies upon specifying a utility function for the investor, using that to identify indifference curves, and then finding the highest attainable utility level in the feasible set. This turns out to be a tangency point. In practice, it is difficult to estimate a utility function, and even more difficult to explain it back to the investor. An alternative to utility curve estimation is the "safety-first" technology, which is motivated by a simple question about preferences. What is your "floor" return? If you can pick a floor, you can pick a portfolio. In addition, you can identify a probability of exceeding that floor, by observing the slope of the tangency line. Safety-first also lets you find optimal portfolios by picking a floor and a probability, as well as simply picking a probability. Value at risk is becoming increasingly popular method of risk measurement and control. It is a simple extension of the safety first technology, when the assets comprising the portfolio have normally distributed returns.

By Monte Carlo Simulation Method

It is a problem solving technique used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, using random variables.

Monte Carlo simulation is named after the city in Monaco, where the primary attractions are casinos that have games of chance: Gambling games, like roulette, dice, and slot machines that exhibit random behavior.

In general terms, the Monte Carlo method (or Monte Carlo simulation) can be used to describe any technique that approximates solutions to quantitative problems through statistical sampling. 'Monte Carlo simulation' is more specifically used to describe a method for propagating (translating) uncertainties in model inputs into uncertainties in model outputs

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(results). Hence, it is a type of simulation that explicitly and quantitatively represents uncertainties. It relies on the process of explicitly representing uncertainties by specifying inputs as probability distributions. If the inputs describing a system are uncertain, the prediction of future performance is necessarily uncertain. That is, the result of any analysis based on inputs represented by probability distributions is in itself a probability distribution.

In order to compute the probability distribution of predicted performance, it is necessary to *propagate* (translate) the input uncertainties into uncertainties in the results. A variety of methods exist for propagating uncertainty. Monte Carlo simulation is perhaps the most common technique for propagating the uncertainty in the various aspects of a system to the predicted performance.

In Monte Carlo simulation, the entire system is simulated a large number (e.g., 1000) of times. Each simulation is referred to as a realization of the system. For each realization, all of the uncertain parameters are sampled (i.e., a single random value is selected from the specified distribution describing each parameter). The system is then simulated through time (given the particular set of input parameters) such that the performance of the system can be computed. This results in a large number of separate and independent results, each representing a possible "future" for the system (i.e., one possible path the system may follow through time). The results of the independent system realizations are assembled into probability distributions of possible outcomes. As a result, the outputs are not single values, but probability distributions.

Monte Carlo simulation is another non-parametric method. It is the most popular approach when there is a need for a sophisticated and powerful VaR system, but it is also by far the most challenging one to implement.

The Monte Carlo simulation process can be described in two steps. First, stochastic processes for financial variables are specified and correlations and volatilities are estimated on the basis of market or historical data. Second, price paths for all financial variables are simulated (thousands of times). These price realizations are then compiled to a joint distribution of returns, from which VaR estimates can be calculated.

The strength of Monte Carlo simulation is that no assumptions about normality of returns have to be made. Even though parameters are estimated from historical data, one can easily bring subjective judgments and other information to improve forecasted simulation distributions. The method is also capable of covering nonlinear instruments, such as options. In addition to these advantages, Monte Carlo simulation generates the entire distribution and therefore it can be used, for instance, to calculate losses in excess of VaR.

The most significant problem with Monte Carlo approach is its computational time. The method requires a lot of resources, especially with large portfolios. As a consequence, the implementation may turn out to be expensive. Nevertheless, Monte Carlo will most likely

increase its popularity in the future as the costs of computer hardware will decrease considerably.

Its potential weakness is also model risk, which arises due to wrong assumptions about the pricing models and underlying stochastic processes. If these are not specified properly, VaR estimates will be distorted. Moreover, complicated procedures associated with this method require special expertise. Senior management may therefore have hard time keeping abreast of how VaR figures are calculated when Monte Carlo is being used.

Investment Appraisals

Capital investment appraisal, also known as capital budgeting is primarily a planning process which facilitates the determination of the investments of a firm, both long term and short term. The components come under this kind of capital investment appraisal include property, equipment, R & D projects, advertising campaigns, new plants, new machinery, etc. Thus, in simple words, capital investment appraisal is the budgeting of major capital and investment to company expenditure. For example, capital investment appraisal in small companies decides on future ventures into newer markets as well as in the expansion and inclusion of new activities.

Capital investment appraisal factors are selected based on the priorities of stakeholders and decision makers, and long term growth when compared with short term profits. In order to get a fuller picture and better understanding of capital investment appraisal, various techniques are employed to measure it.

Ten Capital Investment Appraisal Techniques: The techniques used to measure capital investment appraisal of a business project include:

- Net present value
- Accounting rate of return
- Internal rate of return
- Modified internal rate of return
- Adjusted present value
- Profitability index
- Equivalent annuity
- Payback period
- Discounted payback period
- Real option analysis

Net Present Value (NPV): This technique measures the cash in-flow, whether in excess or shortfall, after the routine finance commitments are met with. All capital investment appraisals

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have a single objective: drive towards a positive NPV. The NPV is a mathematical calculation involving net cash flow at a particular present time 't' at discount rate at the same time, i.e. (t – initial capital outlay). Thus there is an inverse proportional relation between discount rate and NPV. A high discount rate would reduce the net present value of capital. A high interest rate increases discount rates over a period of time and most capital investment appraisals are wary of such an increase.

Accounting Rate of Return (ARR): This technique compares the profit that can be earned by the concerned project to the amount of initial investment capital that would be required for it. Projects that can earn a higher rate of return are naturally preferred over ones with low rate of return. ARR is a non-discounted capital investment appraisal technique in that it does not take into consideration the time value of money involved.

Internal Rate of Return (IRR): This technique is the discount rate that gives a value of zero to NPV or net present value. Among all capital investment appraisal techniques, IRR is generally considered the most appropriate to measure the efficiency of the capital investment. Thus if cost of capital investment in a company works out to be greater than the IRR value, the project is highly likely to be rejected. On the other hand, a low cost of capital has more chances of being accepted. IRR is calculated by equating NPV to zero and then deriving the discount rate. Even though IRR and NPV are related capital investment appraisal techniques, they are different from each other. IRR considers the time value of money over the project life time and derives the world discount rate.

Modified Internal Rate of Return: (MIRR) IRR does not give the actual annual profitability of a CAPITAL INVESTMENT since it does not take into consideration the intermediate cash flows which are never reinvested is equaling project IRR. Hence the IRR technique is not effective enough since the actual rate of return is certainly going to be lower. This flaw is overcome by a more efficient capital investment appraisal technique, MIRR. It evaluates capital investment projects assuming that reinvestment rate equals a company's cost of capital.

Adjusted Present Value (APV): This technique overcomes the shortcomings of NPV technique and evaluates a project on the basis of risks associated with a prospective company undertaking the investment.

Profitability Index (PI): It evaluates a project based on calculation of value per unit of investment. Also known as value investment ratio and profit investment ration, this technique is a ratio of the amount of money invested to profit or pay-off of the project.

Equivalent Annuity: Capital investment appraisals done using equivalent annuity usually compares projects with different life spans. In cases where two projects have different time spans, NPV would not justify a fair comparison. This technique divides the NPV value with annuity factor, resulting in expressing NPV in relation to annualized cash flow.

Payback Period: It appraises capital investment on the basis of time that would be taken to get back your initial investment. Payback period is one of the easiest methods of capital

investment. Projects with a shorter payback period are usually preferred for investment over the longer pay- back periods.

Discounted Payback Period: Capital investment appraisals using discounted payback period are similar to payback period but here, the time value of money or discounted value of cash flow is considered for the calculation of payback period.

Real Option Analysis: This technique considers and values the various options that managers would have while managing their projects in terms of increasing cash inflow and decreasing cash outflow. These values are added to NPV in the course of capital investment appraisals.

All the above mentioned capital investment appraisal techniques are used for ranking projects. Usually, organizations have many projects that are appraised simultaneously for financial viability. Once the preliminary appraisal of a project is completed, it is compared and ranked against other peer projects. The projects in consideration are ranked from having high Profitability index to the lowest Profitability index. The higher ranking projects are usually implemented after careful and detailed due diligence.

Financial Statement Analysis

Financial statement analysis involves the identification of the following items for a company's financial statements over a series of reporting periods:

- *Trends.* Create trend lines for key items in the financial statements over multiple time periods, to see how the company is performing. Typical trend lines are for revenues, gross margins, net profits, cash, accounts receivable, and debt.
- *Proportion analysis.* An array of ratios is available for discerning the relationship between the sizes of various accounts in the financial statements. For example, you can calculate a company's quick ratio to estimate its ability to pay its immediate liabilities, or its debt to equity ratio to see if it has taken on too much debt. These analyses are frequently between the revenues and expenses listed on the income statement and the assets, liabilities, and equity accounts listed on the balance sheet.

Financial statement analysis is an exceptionally powerful tool for a variety of users of financial statements, each having different objectives in learning about the financial circumstances of the entity.

Users of Financial Statement Analysis: There are a number of users of financial statement analysis. They are:

- *Creditors:* Anyone who has lent funds to a company is interested in its ability to pay back the debt, and so will focus on various cash flow measures.
- *Investors:* Both current and prospective investors examine financial statements to learn about a company's ability to continue issuing dividends, or to generate cash flow, or to continue growing at its historical rate (depending upon their investment philosophies).

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- *Management:* The company controller prepares an ongoing analysis of a company's financial results, particularly in relation to a number of operational metrics that are not seen by outside entities (such as the cost per delivery, cost per distribution channel, profit by product, and so forth).
- *Regulatory authorities:* If it is a public company held, its financial statements are examined by the Securities and Exchange Commission (if the company files in the United States) to see if its statements conform to the various accounting standards and rules of the SEC.

Methods of Financial Statement Analysis: There are two key methods for analyzing financial statements. The first method is horizontal and vertical analysis. Horizontal analysis is the comparison of financial information over a series of reporting periods, while vertical analysis is the proportional analysis of a financial statement, where each line item on a financial statement is listed as a percentage of another item. Typically, this means that every line item on an income statement is stated as a percentage of gross sales, while every line item on a balance sheet is stated as a percentage of total assets. Thus, horizontal analysis is the review of the results of multiple time periods, while vertical analysis is the review of the proportion of accounts to each other within a single period. The following links will direct you to more information about horizontal and vertical analysis:

- ✓ Horizontal Analysis
- ✓ Vertical Analysis

The second method for analyzing financial statements is the use of ratios, which are used to calculate the relative size of one number in relation to another. After you calculate a ratio, you can then compare it to the same ratio calculated for a prior period, or the one that is based on an industry average, to see if a company is performing according to expectations. In a typical financial statement analysis, most ratios will be within expectations, while a small number will flag potential problems that will attract the attention of the reviewer.

Problems with Financial Statement Analysis: While financial statement analysis is an excellent tool, there are several issues to be aware of that can interfere with your interpretation of the analysis results. These are:

Comparability between periods: The company preparing financial statements may have changed the accounts in which it stores financial information, so results may differ from period to period. For example, an expense may appear in the cost of goods sold in one period, and in administrative expenses in another period.

Comparability between companies: An analyst frequently compares the financial ratios of different companies in order to see how they match up against each other. However, each company may aggregate financial information differently, so that the results of their ratios are not really comparable. This can lead an analyst to draw incorrect conclusions about the results of a company in comparison with its competitors.

Operational information: Financial analysis only reviews a company's financial information, not its operational information, so you cannot see a variety of key indicators of future performance, such as the size of the order backlog, or changes in warranty claims. Thus, financial analysis only presents part of the total picture.

Cash Return on Assets Ratio

It is a ratio used to compare a business performance with other industry members. The ratio can be used internally by the company's analysts, or by potential and current investors. The ratio does not however include any future commitments regarding assets, nor does it include the cost of replacing older ones.

$$\text{Cash Return on Assets} = \text{Cash flow from operations on total assets}$$

The cash return on assets ratio is generally used only in more advanced profitability ratio analysis. It is used as a comparison to return on assets since it is a cash comparison to this ratio as return on assets is stated on an accrual basis. Cash is required for future investments. The calculation is: $\text{Cash flow from operating activities} / \text{Total Assets} = \text{ _____\%}$. The numerator is taken from the Statement of Cash Flows and the denominator from the balance sheet. The higher the percentage, the better it is.

A high cash return on assets ratio can indicate that a higher return is to be expected. This is because the higher the ratio, the more cash the company has available for reintegration into the company, whether it is in upgrades, replacements or other areas.

Returns Ratios

Return on Assets (also called Return on Investment)

The Return on Assets ratio is an important profitability ratio because it measures the efficiency with which a company is managing its investment in assets and using them to generate profit. It measures the amount of profit earned relative to the firm's level of investment in total assets. The return on assets ratio is related to the asset management category of financial ratios.

The calculation for the return on assets ratio is: $\text{Net Income} / \text{Total Assets} = \text{ _____\%}$. Net Income is taken from the income statement and total assets are taken from the balance sheet. The higher the percentage, the better it is, as it shows that a company is doing a good job by using its assets to generate sales.

Return on Equity: The Return on Equity ratio is perhaps the most important of all the financial ratios to investors in a company. It measures the return on the money the investors have put in it. This is the ratio potential investors look at when deciding whether or not to invest in a company. The calculation is: $\text{Net Income} / \text{Stockholder's Equity} = \text{ _____\%}$. Net income comes from the income statement and stockholder's equity comes from the balance sheet. In general,

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the higher the percentage, the better it is, with some exceptions, as it shows that a company is doing a good job using the investors' money.

Comparative Data: Financial ratio analysis is a good method of financial analysis only if comparative data is available. The ratios should be compared to both historical data of the company and industry data.

The DuPont Model - A helping tool: There are so many financial ratios - liquidity ratios, debt or financial leverage ratios, efficiency or asset management ratios, and profitability ratios - that it is often hard to see the big picture. You can get bogged down in the detail. One method that business owners can use to summarize all the ratios is to use the DuPont Model.

The DuPont Model shows a business owner where the component parts of the Return of Assets (or Return on Investment ratio) comes from as well as the Return on Equity ratio. For example, did ROA come from net profit or asset turnover? Did return on equity come from net profit, asset turnover, or the business' debt position? The DuPont model is very helpful to business owners in determining the financial adjustments that are needed.

Solvency Ratios

Solvency ratios, also called leverage ratios, measure a company's ability to sustain operations indefinitely by comparing debt levels with equity, assets, and earnings. In other words, solvency ratios identify going concern issues and a firm's ability to pay its bills in the long term. Many people confuse solvency ratios with liquidity ratios. Although they both measure the ability of a company to pay off its obligations, solvency ratios focus more on the long-term sustainability of a company instead of the current liability payments.

Solvency ratios show a company's ability to make payments and pay off its long-term obligations to creditors, bondholders, and banks. Better solvency ratios indicate a more creditworthy and financially sound company in the long-term.

The most common solvency ratios include:

Debt- to- Equity Ratio: The debt- to- equity ratio is a financial, liquidity ratio that compares a company's total debt to total equity. The debt- to- equity ratio shows the percentage of company financing that comes from creditors and investors. A higher debt- to- equity ratio indicates that more creditor financing (bank loans) is used than investor financing (shareholders).

Formula

The debt- to- equity ratio is calculated by dividing total liabilities by total equity. The debt- to- equity ratio is considered a balance sheet ratio because all the elements are reported on the balance sheet.

$$\text{Debt- to- Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

Analysis

Each industry has a different debt- to- equity ratio benchmarks, as some industries tend to use more debt financing than others. A debt ratio of .5 means that there are half as many liabilities as that of equity. In other words, the assets of a company are funded 2-to-1 by investors to creditors. This means that investors own 66.6 cents of every dollar of company assets while creditors only own 33.3 cents on the dollar.

A debt- to- equity ratio of 1 would mean that investors and creditors have an equal stake in the business assets.

A lower debt- to- equity ratio usually implies a more financially stable business. Companies with a higher debt- to- equity ratio are considered more risky to creditors and investors than companies with a lower ratio. Unlike equity financing, debt must be repaid to the lender. Since debt financing also requires debt servicing or regular interest payments, debt can be a far more expensive form of financing than equity financing. Companies leveraging large amounts of debt might not be able to make the payments.

Creditors view a higher debt- to- equity ratio as risky because it shows that the investors haven't funded the operations as much as creditors have. In other words, investors don't have as much skin in the game as the creditors do. This could mean that investors don't want to fund business operations because the company isn't performing well. Lack of performance might also be the reason why the company is seeking out extra debt financing.

Example

Assume a company has \$100,000 of bank lines of credit and a \$500,000 mortgage on its property. The shareholders of the company have invested \$1.2 million. Here is how you calculate the debt- to- equity ratio.

Debt- to- Equity Ratio

$$.5 = \frac{\$100,000 + \$500,000}{\$1,200,000}$$

Equity Ratio:

The equity ratio is an investment leverage or solvency ratio that measures the amount of assets that are financed by owners' investments by comparing the total equity in the company to its total assets.

The equity ratio highlights two important financial concepts of a solvent and sustainable business. The first component shows how much of the total company assets are owned outright by the investors. In other words, after all of the liabilities are paid off, what assets will be left for the investors?

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The second component inversely shows how leveraged the company is with debt. The equity ratio measures how much of a firm's assets were financed by investors. In other words, this is the investors' stake in the company. This is what they are on the hook for. The inverse of this calculation shows the amount of assets that were financed by debt. Companies with higher equity ratios show new investors and creditors that investors believe in the company and are willing to finance it with their investments.

Formula

The equity ratio is calculated by dividing total equity by total assets. Both of these numbers truly include all of the accounts in that category. In other words, all of the assets and equity reported on the balance sheet are included in the equity ratio calculation.

$$\text{Equity Ratio} = \frac{\text{Total Equity}}{\text{Total Assets}}$$

Analysis

In general, higher equity ratios are typically favorable for companies. This is because of several reasons. Higher investment levels by shareholders show that they think the company is worth investing; so many investors are willing to finance the company. A higher ratio also shows to the potential creditors that the company is sustainable and it is less risky to lend future loans.

Equity financing in general is much cheaper than debt financing because of the interest expenses related to debt financing. Companies with higher equity ratios should have less financing and debt service costs than companies with lower ratios.

As with all ratios, they are contingent on the industry. Exact ratio performance depends on industry standards and benchmarks.

Example

Tim's Tech Company is a new startup with a number of different investors. Tim is looking for additional financing to help expand the company business, so he talks to his business partners about financing options. Tim's total assets are reported at \$150,000 and his total liabilities are \$50,000. Based on the accounting equation, we can assume the total equity is \$100,000. Here is Tim's equity ratio.

Equity Ratio

$$.67 = \frac{\$100,000}{\$150,000}$$

As you can see, Tim's ratio is .67. This means that investors rather than debt are currently funding more assets. 67 percent of the company's assets are owned by shareholders and not creditors. Depending on the industry, this is a healthy ratio.

Debt Ratio

Debt ratio is a solvency ratio that measures a firm's total liabilities as a percentage of its total assets. In a sense, the debt ratio shows a company's ability to pay off its liabilities with its assets. In other words, this shows how many assets the company must sell in order to pay off all of its liabilities.

This ratio measures the financial leverage of a company. Companies with higher levels of liabilities compared with assets are considered highly leveraged and more risky for lenders.

This helps investors and creditors analysis the overall debt burden on the company as well as the firm's ability to pay off the debt in future, uncertain economic times.

Formula

The debt ratio is calculated by dividing total liabilities by total assets. Both of these numbers can easily be found in the balance sheet. Here is the calculation:

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Make sure you use total liabilities and total assets in your calculation. The debt ratio shows the overall debt burden of the company—not just its current debt.

Analysis

The debt ratio is shown in decimal format because it calculates total liabilities as a percentage of total assets. As with many solvency ratios, a lower ratio is more favorable than a higher ratio.

A lower debt ratio usually implies a more stable business with the potential of longevity because a company with lower ratio also has lower overall debt. Each industry has its own benchmarks for debt, but .5 is a reasonable ratio.

A debt ratio of .5 is often considered less risky. This means that a company has twice as many assets as liabilities. Or stated differently, this company's liabilities are only 50 percent of its total assets. Essentially, its creditors own only half of the company's assets and the shareholders own the remainder.

A ratio of 1 means that total liabilities equal total assets. In other words, the company would have to sell off all of its assets in order to pay off its liabilities. Obviously, this is a highly leveraged firm. Once its assets are sold off, the business can no longer run.

The debt ratio is a fundamental solvency ratio because creditors are always concerned about being repaid. When companies borrow more money, their ratio increases, and creditors will no longer loan them money. Companies with higher debt ratios are better off looking to equity financing to expand their operations.

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Example

Dave's Guitar Shop is thinking about building an addition onto the back of its existing building for more storage. Dave consults his banker about applying for a new loan. The bank asks for Dave's balance to examine his overall debt levels.

The banker discovers that Dave has total assets of \$100,000 and total liabilities of \$25,000. Dave's debt ratio would be calculated like this:

$$\text{Debt Ratio} \\ .25 = \frac{\$25,000}{\$100,000}$$

As you can see, Dave only has a debt ratio of .25. In other words, Dave has 4 times as many assets as he has liabilities. This is a relatively low ratio and implies that Dave will be able to pay back his loan. Dave shouldn't have a problem getting approved for his loan.

Liquidity Ratios

Liquidity ratios are a class of financial metrics that are used to determine a company's ability to pay off its short-term debt obligations. Generally, the higher the value of the ratio, the larger the margin of safety that a company possesses to cover short-term debts.

Common liquidity ratios include the current ratio, the quick ratio and the operating cash flow ratio. Different analysts consider different assets to be relevant in calculating liquidity. Some analysts will calculate only the sum of cash and equivalents divided by current liabilities because they feel that they are the most liquid assets, and would most likely be used to cover short-term debts in an emergency.

A company's ability to turn short-term assets into cash to cover debts is of the utmost importance when creditors are seeking payment. Bankruptcy analysts and mortgage originators frequently use the liquidity ratios to determine whether a company will be able to continue as a going concern.

Testing a company's liquidity is a necessary step in analyzing a company.

Profitability Ratios and Growth

Profitability ratios show a company's overall efficiency and performance. They are of two types: margins and returns. Ratios that show margins represent a firm's ability to translate sales into profits at various stages of measurement. Ratios that show returns represent a firm's ability to measure its efficiency in generating returns for its shareholders.

Gross Profit Margin

The gross profit margin looks at cost of goods sold as a percentage of sales. This ratio looks at how well a company controls the cost of its inventory and the manufacturing of its products

and subsequently pass on the costs to its customers. The larger the gross profit margin, the better for the company. The calculation is: $\text{Gross Profit} / \text{Net Sales} = \text{ _____\%}$. Both terms of the equation come from the company's income statement.

Operating Profit Margin

Operating profit is also known as EBIT and is found on a company's income statement. EBIT is earnings before interest and taxes. The operating profit margin looks at EBIT as a percentage of sales. The operating profit margin ratio is a measure of overall operating efficiency, incorporating all of the expenses of ordinary, daily business activity. The calculation is: $\text{EBIT} / \text{Net Sales} = \text{ _____\%}$. Both terms of the equation come from a company's income statement.

Net Profit Margin

When doing a simple profitability ratio analysis, net profit margin is the most often margin ratio used. The net profit margin shows how much of each rupee sale shows up as net income after all expenses are paid. For example, if the net profit margin is 5%, it means that 5 paise of every rupee is profit.

The net profit margin measures profitability after deducting all expenses including taxes, interest, and depreciation. The calculation is: $\text{Net Income} / \text{Net Sales} = \text{ _____\%}$. Both terms of the equation come from the income statement.

Cash Flow Margin

The Cash Flow Margin ratio expresses the relationship between cash generated from operations and sales. Every company needs cash to pay dividends and suppliers, for service debt, and for investing in new capital assets. So cash is just as important as profit to a business firm.

The Cash Flow Margin ratio measures the ability of a firm to translate sales into cash. The calculation is: $\text{Cash flow from operating cash flows} / \text{Net sales} = \text{ _____\%}$. The numerator of the equation comes from the firm's Statement of Cash Flows. The denominator comes from the income statement. The larger the percentage, the better it is.

Efficiency Ratios & Valuation Ratios

Efficiency Ratios: Efficiency ratios are used to analyze how well a company uses its assets and liabilities internally. Efficiency ratios can calculate the turnover of receivables, the repayment of liabilities, the quantity and usage of equity and the general use of inventory and machinery.

Some common ratios are accounts receivable turnover, fixed asset turnover, sales to inventory, sales to net working capital, accounts payable to sales and stock turnover ratio. They are meaningful when compared to peers in the same industry and can identify

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businesses that are better managed relative to the others. Also, efficiency ratios are important because an improvement in the ratios usually translates into improved profitability.

Valuation Ratios: The theory of buying low and selling high makes investing seem all too easy. For many, it is difficult to truly know when prices are cheap or expensive. In theory, the value of an investment is equal to the sum of its earnings or cash flows, which are discounted by some expected rate of return. From this general theory, many different short-hand methods have evolved to assist investors to determine quickly a company's investment value by using valuation ratios.

In many instances, a low ratio is considered a sign of an undervalued security, while a high ratio is considered an overvalued security. However, one major problem is that ratios typically do not take into account the future expected growth of the company itself. It is the prospect of a company's future growth combined with these estimated valuations that Investors are interested in.

Price / Earnings Ratio: The price/earnings ratio, commonly referred to as the P/E ratio, is a standard method for comparing stocks based on their relative expense. A company's P/E is calculated by dividing its current price per share by its earnings per share.

With the P/E ratio, treasurers can evaluate the difference between what they are paying for the stock and its earning power. A company with a P/E of 40 is trading at a level 40 times higher than its earnings, while a company with a P/E of 20 is trading at a level 20 times its earnings.

A high P/E ratio may signify that the company is overvalued, which means that eventually market forces will drive the price down. On the other hand, a high P/E could indicate great earning power and the possibility that profitability will increase over time, justifying the higher price.

A low P/E may indicate the potential for strong future performance. Companies with low P/Es may be undervalued or trading at a price lower than the company's fundamentals merit. In that case, earnings may increase dramatically in future weeks and years. Or, a low P/E could just as easily denote a faltering company and inadvisable investment.

P/E is a valuable tool but it does not provide all the information needed to make an informed decision.

Price / Earnings Growth (PEG) Ratio: One ratio that was developed to help counter the shortcoming of the traditional P/E ratio is the PEG Ratio. Growth in earnings is what helps determine whether a high or low P/E is justified. So, the formula for determining a PEG ratio is:

PEG Ratio = (Price / Earnings) / Earnings growth rate

By taking into consideration the growth of a company's earnings, we can see that a low PEG ratio means that it is trading at a low price relative to its earnings growth potential. A high PEG ratio means that its stock is trading at a high price relative to its earnings growth potential.

As with any ratio, this too has problems. For example, we cannot say for certain if for calculating a PEG ratio, we should use historical growth rates of earnings or estimated earnings. Historical growth rates do not always indicate a reasonable future growth rate for earnings and projected future earnings growth rates can be over or understated.

In spite of this, the PEG ratio has become a common tool used for a quick measure of valuation. While no exact value for the ratio is considered good or bad, many have framed some general rules. According to some theories, a ratio of 2 or more is considered overvalued, with PEG ratios of around 1 or less is considered undervalued.

Price to Sales (P/S) Ratio: In some cases, a company that you are seeking to value does not have any current earnings. In other cases a company is very young or might be experiencing a cyclical low in its earnings cycle. Additionally, a variety of accounting rules can make a profitable company appear to have no earnings due to special write-offs specific to that industry. For all of the above-mentioned reasons, some prefer to use a ratio of current price to the sales of a company. As with most ratios, the lower the ratio the better the expected value of the shares of companies. However, much like the P/E ratio, it fails to account for future growth and therefore can give misleading results, if used independently.

Price to Cash Flow Ratio: A middle ground between the Price to Sales and P/E Ratio is the Price to Cash Flow Ratio. It takes into consideration the many accounting rules that can hide a company's earnings while also focusing on its ability to be profitable. The purpose of the Statement of Cash Flows produced by companies is to show the actual cash generated by them by removing non-cash related expenses and determining their actual uses and sources of cash. One of the end results of those calculations is a company's reported cash flow from operations. The calculation for price to cash flow is:

Price to Cash Flow Ratio = current price / cash flow from operations per share

or

Price to Cash Flow Ratio = market capitalization / cash flow from operations

As mentioned before, a lower ratio is generally considered desirable if other factors lead to you believe that a company has bright future prospects.

Additionally, some analysts will remove cash flows of operations i.e., capital expenditure of a company to arrive at Free Cash Flow. Capital expenditures are the minimum amount of reinvestment needed to keep the company operational. Therefore, Free Cash Flow would be the funds that a company has in excess of what is necessary to run a firm. At this point, a firm could choose to reinvest those funds or pay them as a dividend to shareholders. It is calculated by using the same methods as price to cash flows and is interpreted in the same manner.

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Price to Book Value (P/B Ratio): One final ratio comes from the balance sheet. The balance sheet is designed to tell the book value or equity of a company as of a specific reporting period. The equity value of a company represents a firm's worth in the case of liquidation. It is calculated by dividing the current price of a company by the reported book value per share. As with other ratios, a high ratio could indicate that a firm is overvalued relative to the equity of a company. A low ratio could indicate that a firm is undervalued relative to the equity of a company.

Unfortunately, because of the way accounting rules work, the assets reported on the balance sheet might be held at cost or some other value that would not accurately reflect what a firm could get for them today. Additionally, the balance sheet is not always able to accurately represent the true earning power of those assets. Therefore, the ratio itself might be misleading without some form of additional analysis and modifications.

Check Your Progress

1. What is the impact of globalization on Indian investment markets?
2. What factors influence interest rates? Does budgetary deficit have any impact on interest rates?
3. Write a short note on derivative products and their present status in Indian Markets.
4. State the difference between
 - (a) Nominal and real interest rates
 - (b) Interest and discount rates
5. How do we measure interest rate sensitivity of a bond? Is it the same for government and corporate bonds?
6. What is the importance of Time Value of Money in Investment Management?
7. Linear Programming is an important tool to assess the cost of borrowing and yield on investments. Explain.
8. The study of Financial Statements of a Company is a prerequisite for starting the investment process in it. . Elaborate.
9. Explain the following:
 - (a) Monte Carlo Simulation Method
 - (b) Callable Yield Notes
10. What are the various tools that are useful in Cash Management and Liquidity Forecasting?

RMG Ltd is a 20 Years old trading Company is variety of commodities from capital goods to

electronic gadgets. Its annual turnover is in the range of Rs.3,000 Crores with CAGR of over 24%. Its business model is mainly importing from developed countries like Italy & UK and exporting to South East Asian & African countries. RMG Ltd is a cash- rich company, it imports generally on cash basis and exports on usage basis. These terms make the export very attractive to the perspective buyers. RMG Ltd. Is able to load enough margins because of the terms. You have joined the company as the treasurer and the management has asked you to identify the risks if any in this model and suggest protective steps. Describe the risks in generic terms.

11. You have been appointed as head of Treasury Department at a leading MNC in a Bid to Review and Overhaul the Functioning and Management of the Treasury Department of the Company. The company had previously established the Treasury Function as a cost centre and after that not being successful and effective as desired by the management the Management has asked you to analyze the advantages and disadvantages of setting up the treasury function as a Profit Centre and if yes then how the revenues would be reorganized. Discuss.

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

1. Financial risks are ascertainable, although not always -----
 - (a) Quantifiable*
 - (b) Undesirable
 - (c) Verifiable
 - (d) Questionable
2. What is basis risk?
 - (a) Risks that arise without any notice
 - (b) Risks that are measurable
 - (c) Risks that arise on account of assets and liabilities being based on different benchmarks*
 - (d) Risks that arise on account of changes in Base Rates of banks.
3. When does a positive gap arise?
 - (a) When $RSA > RSL$ *
 - (b) When $RSA < RSL$
 - (c) When $RSA \leq RSL$
 - (d) When the gap is expanding with time

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4. When the gap is positive and interest rates increase, what happens to NII?
 - (a) Decreases
 - (b) Remains unaffected
 - (c) Increases*
 - (d) Depends on the size of the gap
5. When is a portfolio said to be 'immunized'?
 - (a) When the duration gap is > 1
 - (b) When the duration gap is < 0
 - (c) When the duration gap is $= 0$ *
 - (d) When the duration gap is constant
6. What is stress testing used for?
 - (a) Validating the VaR model
 - (b) Designing the VaR model
 - (c) Rejecting the VaR model
 - (d) Knowing the impact of large variations*
7. What is a modified duration?
 - (a) Modified duration is a measure of shift in interest rates for a unit change in prices of bonds.
 - (b) Modified duration represents skewness of duration.
 - (c) Modified duration is a measure of price sensitivity of a bond to interest rate movements.*
 - (d) Modified duration is an indicator of interest income.
8. Net overnight open position is calculated on the basis of -----.
 - (a) Deals done overnight
 - (b) Net present value*
 - (c) Limit fixed for the bank
 - (d) Covers done through derivatives
9. Which of the following is true?
 - (a) Economic equity ratio measures the relationship of the equity of a bank with the macroeconomic changes taking place in the country.
 - (b) ALM has a role in managing the economic equity ratio*

10. Which of the following does not contribute to the growing importance of ALM?
- (a) Volatility of the market
 - (b) Political Instability*
 - (c) Regulator's concern
 - (d) Product innovation
11. A (n) ----- hedge protects the company from adverse exchange rate movements but allow the company to benefit from favourable movements.
- (a) Balance Sheet
 - (b) Forward Market
 - (c) Money Market
 - (d) Options Market*
12. A Swap can be interpreted as strip of -----
- (a) Fixed Rate agreements or future contracts*
 - (b) Future contracts only
 - (c) Fixed rate agreements only
 - (d) None of the above
13. A Cash Manager at a retailer forecasts a positive collected cash position for the end of the current day. The company has an overdraft facility at 10%, a separate investment account earning 8% before taxes, an earnings credit rate of 8% and an outstanding single payment note at 9.5% maturing in 1 week. This month's bank service fees are expected to exceed the earnings credit. Which of the following intra-day options would be the MOST economically positive for the company?
- (a) Leave the funds in the account*
 - (b) Redeem the single payment note
 - (c) Prepay administrative expenses
 - (d) Transfer funds to the investment account
14. A firm has a DFL (Degree of Financial Leverage) of 3.5 at X Rupees. What does this tell us about the firm?
- (a) If sales rise by 3.5% at the firm, then EBIT will rise by 1%
 - (b) If EBIT rises by 3.5% at the firm, then EPS will rise by 1%
 - (c) If EBIT rises by 1% at the firm, then EPS will rise by 3.5%*
 - (d) If sales rise by 1% at the firm, then EBIT will rise by 3.5%

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15. The airline wants to lock in the price of the jet fuel it needs to purchase to satisfy the peak in-season demand for travel. The airline wants to manage its exposure to fluctuations in fuel prices. What type of exposure is this?
- (a) Translation
 - (b) Delivery
 - (c) Commodity*
 - (d) Speculative
16. In the Balance Sheet of a firm, the debt- equity ratio is 2:1. The amount of long term sources is Rs.12 lac. What is the amount of tangible net worth of the firm?
- (a) Rs.12 Lac.
 - (b) Rs.8 Lac.*
 - (c) Rs.4 Lac.
 - (d) Rs.2 Lac.
17. If we want to examine the efficiency of a firm, which of the following ratios would be helpful?
- (a) Current Ratio
 - (b) Dividend Cover
 - (c) Stock Turnover*
 - (d) Gearing
18. Which amongst the following is not a Greek for Options Pricing?
- (a) Delta
 - (b) Gamma
 - (c) Theta
 - (d) Kho*
19. The futures exchange prescribes an initial margin of USD 5,000 and maintenance margin of USD 3,000 against one Euro futures. The maximum level of margin that buyer of futures should keep with the exchange for one future is,
- (a) USD 5,000*
 - (b) USD 3,000, and if a special call is given USD 5,000
 - (c) USD 8,000
 - (d) USD 5,000 and if a special call is given, additional USD 3,000

20. A trader is required to take long gold futures position worth Rs.5,00,000 as a part of his hedging strategy. Two month futures trade at Rs.6,500/10 gms. Unit of trading is 100 Gms. And delivery unit is one Kg. how many units must he purchase to give him the hedge?
- (a) 8*
 - (b) 11
 - (c) 10
 - (d) 5
21. A bond with a 12% coupon, 10 years to maturity and selling at 88:00 has a yield to maturity of -----
- (a) Over 14%*
 - (b) Between 13% and 14%
 - (c) Between 12% and 13%
 - (d) Below 12%
22. The rate of return on a bond held to maturity is known as its:
- (a) Interest Yield
 - (b) Running Yield
 - (c) Duration
 - (d) Redemption Yield*
23. The bonds that are backed by cash flow from project and are sold to finance particular project are classified as:
- (a) Finance bonds
 - (b) Revenue bonds*
 - (c) Financing bonds
 - (d) Project Bonds
24. A share has a current market price of Rs.30. One month call is available at a strike price of Rs.29. It is known that after 1 month, this share price may be Rs.32 or Rs.28. If the risk free rate is 8%, the value of the call is:
- (a) Rs.3
 - (b) NIL
 - (c) Re.1
 - (d) Re.1.67*

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25. If a bond is currently trading at a premium then---
- (a) Its currently yield is more than its yield-to-maturity*
 - (b) Its current yield is less than its yield-to-maturity
 - (c) Its current yield is equal to its yield-to-maturity
 - (d) Nothing can be concluded
26. A share, Y Currently sells for Rs.50. It is expected that in one year it will either rise to Rs.55 or decline to Rs.45. The value of European Call, if the strike price of the underlying share is Rs.48 and the risk free interest rate is 9% p.a. is:
- (a) Rs.9.33
 - (b) Rs.11.33*
 - (c) Rs.18.33
 - (d) Rs.20.50
27. Which one of the following statements is not true about Efficient Markets?
- (a) Share prices behave randomly and do not show any systematic pattern in the behaviour
 - (b) Share prices fully reflect all available information
 - (c) Price of one Share is independent of the price of other shares in the market*
 - (d) None can earn abnormally high profiles on a constant basis
28. The price of a company's share is Rs.100 and the value of growth opportunities is Rs.25. The company's capitalization rate is 20%. The P/E ratio is:
- (a) 15%*
 - (b) 11.25%
 - (c) 20%
 - (d) 5%
29. A firm has PAT of Rs.33.60 lakh with extraordinary income of Rs.6 lakh. Cost of capital is 20% and the applicable tax rate is 40%. The value of the firm is:
- (a) Rs.250 lakh
 - (b) Rs.150 lakh*
 - (c) Rs.180 lakh
 - (d) Rs.168 lakh

30. Free Cash Flow to Equity (FCEE) at the end of last year of explicit forecast period is Rs.10 lakh. Its cost of capital is 15% and steady growth rate is 5%, the terminal value of the firm is:
- (a) Rs.100 lakh
 - (b) Rs.10 lakh
 - (c) Rs.10.5 lakh
 - (d) Rs.105 lakh*

Glossary of Important Terms and Commonly Used Market Terminology

Accrued Interest: The accrued interest on a bond is the amount of interest accumulated on a bond since the last coupon payment. The interest has been earned, but because coupons are paid only on coupon dates, the investor has not gained the money yet. In India, day count convention for G-Secs is 30/360.

Auction—Multiple price and Uniform Price: 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. On the other hand, 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.

Bid Price / Yield: The price / yield being offered by a potential buyer for a security

Big Figure: When the price is quoted as Rs.102.35, the portion other than decimals (.35) is called the big figure

Competitive Bid: Competitive bid refers to the bid for the stock at the price stated by a bidder in an auction

Coupon: The rate of interest paid on a debt security as calculated on the basis of the security's face value

Coupon Frequency: Coupon payments are made at regular intervals throughout the life of a debt security, and may be quarterly, semi-annual (twice a year) or annual payments.

Discount: When the price of a security is below the par value, it is said to be trading at a discount. The value of the discount is the difference between the FV and the Price. For example, if a security is trading at Rs.99, the discount is Rs.1.

Duration (Macaulay Duration): Duration of a bond is the number of years taken to recover the initial investment of a bond. It is calculated as the weighted average number of years to receive the cash flow wherein the present value of respective cash flows are multiplied with

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the time to those respective cash flows. The total of such values is divided by the price of the security to arrive at the duration.

Face Value: Face value is the amount that is to be paid to an investor at the maturity date of the security. Debt securities can be issued at varying face values; however, in India they typically have a face value of Rs.100. The face value is also known as the repayment amount. This amount is also referred to as redemption value, principal value (or simply principal), maturity value or par value.

Floating-Rate Bond: Bonds whose coupon rate is re-set at predefined intervals and is based on a pre-specified market based interest rate.

Gilt / G-Secs: G-Secs are also known as gilts or gilt edged securities. "G-Sec" means a security created and issued by the Government for the purpose of raising a public loan or for any other purpose as may be notified by the Government in the Official Gazette and having one of the forms mentioned in the G-Secs Act, 2006.

Market Lot: Market lot refers to the standard value of the trades that happen in the market. The standard market lot size in the G-Secs market is Rs.5 crore in face value terms.

Maturity Date: The date when the principal (face value) is paid back. The final coupon and the face value of a debt security is repaid to the investor on the maturity date. The time to maturity can vary from short term (1 year) to long term (30 years).

Non-Competitive Bid (NCB): NCB means the bidder would be able to participate in the auctions of dated G-Secs without having to quote the yield or price in the bid. The allotment to the non-competitive segment will be at the weighted average rate that will emerge in the auction on the basis of competitive bidding. It is an allocating facility wherein a part of total securities are allocated to bidders at a weighted average price of successful competitive bid.

Odd Lot: Transactions of any value other than the standard market lot size of Rs.5 crore are referred to as odd lot. Generally, the value is less than the Rs.5 crore with a minimum of Rs.10,000/-. Odd lot transactions are generally done by the retail and small participants in the market.

Par value: Par value is nothing but the face value of the security which is Rs.100 for G-Secs. When the price of a security is equal to face value, the security is said to be trading at par.

Premium: When the price of a security is above the par value, the security is said to be trading at premium. The value of the premium is the difference between the price and the face value. For example, if a security is trading at Rs.102, the premium is Rs.2.

Price: The price quoted is for per Rs.100 of face value. The price of any financial instrument is equal to the present value of all the future cash flows. The price one pays for a debt security is based on a number of factors. Newly-issued debt securities usually sell at, or close to, their face value. In the secondary market, where already-issued debt securities are bought and sold between investors, the price one pays for a bond is based on a host of variables, including

market interest rates, accrued interest, supply and demand, credit quality, maturity date, state of issuance, market events and the size of the transaction.

Primary Dealers: In order to accomplish the objective of meeting the Government borrowing needs as cheaply and efficiently as possible, a group of highly qualified financial firms / banks are appointed to play the role of specialist intermediaries in the G-Sec market between the issuer on the one hand and the market on the other. Such entities are generally called Primary dealers or market makers. In return of a set of obligations, such as making continuous bids and offer price in the marketable G-Secs or submitting reasonable bids in the auctions, these firms receive a set of privileges in the primary/ secondary market.

Real Time Gross Settlement (RTGS) system: RTGS system is a funds transfer mechanism for transfer of money from one bank to another on a “real time” and on “gross” basis. This is the fastest possible money transfer system through the banking channel. Settlement in “real time” means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. “Gross settlement” means the transaction is settled on one to one basis without bunching with any other transaction. Considering that money transfer takes place in the books of the Reserve Bank of India, the payment is taken as final and irrevocable.

Repo Rate: Repo rate is the return earned on a repo transaction expressed as an annual interest rate.

Repo / Reverse Repo: Repo means an instrument for borrowing funds by selling securities of the Central Government or a State Government or of such securities of a local authority as may be specified in this behalf by the Central Government or foreign securities, with an agreement to repurchase the said securities on a mutually agreed future date at an agreed price which includes interest for the fund borrowed.

Reverse Repo means an instrument for lending funds by purchasing securities of the Central Government or a State Government or of such securities of a local authority as may be specified in this behalf by the Central Government or foreign securities, with an agreement to resell the said securities on a mutually agreed future date at an agreed price which includes interest for the fund lent.

Residual Maturity: The remaining period until maturity date of a security is its residual maturity. For example, a security issued for an original term to maturity of 10 years, after 2 years, will have a residual maturity of 8 years.

Secondary Market: The market in which outstanding securities are traded. This market is different from the primary or initial market when securities are sold for the first time. Secondary market refers to the buying and selling that goes on after the initial public sale of the security.

Tap Sale: Under Tap sale, a certain amount of securities is created and made available for sale, generally at a minimum price, and is sold to the market as bids are made. These

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securities may be sold over a period of day or even weeks; and authorities may retain the flexibility to increase the (minimum) price if demand proves to be strong or to cut it if demand weakens. Tap and continuous sale are very similar, except that with Tap sale the debt manager tends to take a more pro-active role in determining the availability and indicative price for tap sales. Continuous sale are essentially at the initiative of the market.

Treasury Bills: Debt obligations of the Government that have maturities of one year or less are normally called Treasury Bills or T-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.

Underwriting: The arrangement by which investment bankers undertake to acquire any unsubscribed portion of a primary issuance of a security.

Weighted Average Price / Yield: It is the weighted average mean of the price / yield where weight being the amount used at that price / yield. The allotment to the non-competitive segment will be at the weighted average price/yield that will emerge in the auction on the basis of competitive bidding.

Yield: The annual percentage rate of return earned on a security. Yield is a function of a security's purchase price and coupon interest rate. Yield fluctuates according to numerous factors including global markets and the economy.

Yield to Maturity (YTM): Yield- to- maturity is the total return one would expect to receive if the security is being held until maturity. Yield- to- maturity is essentially the discount rate at which the present value of future payments (investment income and return of principal) equals the price of the security.

Yield Curve: The graphical relationship between yield and maturity among bonds of different maturities and the same credit quality. This curve shows the term structure of interest rates. It also enables investors to compare debt securities with different maturities and coupons.

Important Excel functions for bond related calculations

Function	Syntax
1. Present Value	PV(rate, nper, pmt, fv, type)
<i>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.</i>	
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
<p>Example: To calculate the present value of Rs.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</p>	
2. Future Value	FV(rate, nper, pmt, pv, type)
<p><i>This function is used to calculate the future value of a series of investments made, given the interest rate.</i></p> <p>Rate is the interest rate per period.</p> <p>Nper is the total number of payment periods in an annuity.</p> <p>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.</p> <p>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.</p> <p>Type is the number 0 or 1 and indicates when payments are due. If type is omitted, it is assumed to be 0.</p> <p>Example: To calculate the future value of Rs.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</p>	
3. Coupon days	COUPDAYBS(settlement, maturity, frequency, basis)
<p><i>This function is used to work out the number of days from the beginning to the end of the coupon period that contains the settlement date.</i></p> <p>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.</p> <p>Maturity is the security's maturity date. The maturity date is the date when the security expires.</p> <p>Frequency is the number of coupon payments per year. For annual payments, frequency =</p>	

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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. Year frac 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 (maturity date).

Basis is the type of day count basis to use (0=US system 30/360, 2=Actual/actual, 3=Actual/365, 4=European style 30/360) (thus 0 or 4 throws same value).

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 – Feb 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 Rs.100 face value.

Frequency is the number of coupon payments per year. For annual payments, frequency =

<p>1; for semiannual, frequency = 2; for quarterly, frequency = 4.</p> <p>Basis is the type of day count basis to use.</p> <p>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;</p> <p>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</p>	
6. YIELD	YIELD(settlement, maturity, rate, pr, redemption, frequency, basis)
<p><i>This function is used to find the Yield to Maturity of a security given the price of the security.</i></p> <p>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.</p> <p>Rate is the security's annual coupon rate.</p> <p>Pr is the security's price per Rs.100 face value.</p> <p>Redemption is the security's redemption value per Rs.100 face value.</p> <p>Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.</p> <p>Basis is the type of day count basis to use.</p> <p>Taking the same example as above, and price at 95.55, the result for the yield would be 6.68%.</p>	
7. DURATION	DURATION(settlement, maturity, coupon, yld, frequency, basis)
<p><i>This function is used to find the Duration of a security in number of years.</i></p> <p>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.</p> <p>Coupon is the security's annual coupon rate.</p> <p>Yld is the security's annual yield.</p> <p>Frequency is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.</p> <p>Basis is the type of day count basis to use.</p> <p>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;</p>	

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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)
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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

6

Treasury – Technology

Role of Information Technology in Treasury Management – Global Scenario

Technology and Treasury Management are supplementary. Convergence between treasury and technology occurs in three main areas. With currency volatility still a major issue for treasury managers and likely to remain so, foreign exchange exposure management is more crucial. In response, treasurers are making even greater use of their enterprise resource planning (ERP) and treasury management systems to deliver the data and analyze their need to better manage their exposures.

One of the more recent and exciting developments in treasury management is the introduction of mobile corporate banking. The past year has seen banks and financial software vendors launch a number of mobile corporate banking applications that enable treasurers to remotely authorize payments, view trade documentation such as letters of credit and conduct electronic invoice presentment and payment on a mobile device. Some of the early movers in this space, say that the advent of smart phones has the potential to radically transform treasury management. However, unlike its retail equivalent, mobile corporate banking is still in its infancy, and not every bank is convinced of its value. More important, perhaps, mobile network operators and the banks are still drawing the lines of engagement in the tussle as to who owns the customer and who can deliver the greatest value.

A debate is also going over the relative value and performance benefits of ERP and dedicated treasury management systems. A key question is whether the treasury functionality within ERP systems has evolved sufficiently for them to rival dedicated systems in relation to treasury management capabilities. Increasingly, treasurers are looking to leverage their existing ERP investments instead of buying a dedicated treasury management system.

The internet now seems to be driving the future of cash and treasury management systems and services, with cloud computing and downloadable apps the possible endgame.

The pressures on corporate treasury departments for complete visibility of their operations, accountability, and risk and fraud control continue, as do the efforts of the banks and other third-party cash and treasury management systems and service providers to develop the required solutions.

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Connectivity

Improving connectivity has been one of the main priorities for both banks and corporate treasury departments since 2010. The banks have been installing multi-channel solutions.

Corporate treasurers' preference for bank-agnostic communication systems and services continues, with a 25% increase in companies connected to SWIFT in 2010, by January 2011, there were 726 registered companies on the SWIFT network, slightly more than half connected via a service bureau. The majority of SWIFT corporate users (71%) are in Europe while 19% are in the Americas and 10% in Asia Pacific. The volume of messages are growing fast, with an increase of more than 50% in basic FIN messages and more than 150% in File Act messages during 2010. SWIFT connectivity is no longer the preserve of the large global MNCs. Mid-sized companies are increasing in number and already represent 40%.

All the corporate treasury management systems suppliers have also improved their connectivity services and several new ERP-to-bank integration services have been launched.

SWIFT is an obvious choice for payment instructions requiring indemnification guarantees, but cash management reporting, client reporting and general corporate notifications do not require this level of security. Global networks such British Telecommunications MSM, with 99% plus reliability of connection, costs per message is many times cheaper, depending on volumes, and setup costs for connectivity to the network are considerably cheaper too, and can offer an advantageous alternative. SWIFT cannot provide connectivity to all companies' party to a supply chain. Hamilton concludes, "Corporates should implement a 360-degree approach to information exchange facilitating choice in security, least-cost routing, end-point reach and quality of service. SWIFT is certainly part of the solution but corporates should leverage the competition that is out there."

Automation of bank relationship management

The implementation of the new electronic Bank Account Management (eBAM) standards is proceeding slowly. The vision, to replace paper-based bank account management processes with electronic straight-through processing systems, is clear but not easy to deliver. The problem is that, although the format of the eBAM messages for the exchange of bank documents can quite easily be agreed, it is proving to be far more difficult for banks to standardize their documentation. Only a few banks have as yet tested eBAM with live pilots. At the moment eBAM is only really happening within bank groups, where some of the larger banks have managed to standardize their automated account opening and account management world-wide. General, more widespread, adoption of the eBAM standards is likely to take many years yet. By comparison, the TWIST global Bank Services Billing (BSB) standard is a real success. There are already 18 banks committed to using the BSB standard for billing and statements and several have already implemented it.

A new XML 20022 version is being developed and there are plans to extend the BSB standard to enable the electronic invoicing of all bank services. There is also a plan to bring together the BSB and eBAM standards to provide a comprehensive set of bank-to-customer administration standards which, if adopted, will make the evaluation of bank charges considerably easier for corporate clients. Corporate treasury management systems suppliers are already beginning to develop fully integrated solutions for bank relationship management using these new standards.

Business Networking

There are some 600 million members on the Facebook network, more than 90 million members on the LinkedIn network and countless others on smaller networking sites, all adding up to a phenomenal amount of interest in this area of web-based technology. Although networking has always played an important part in cash and treasury management conferences and other events where companies, bankers and suppliers meet and socialize, web-based business networks will make interaction between cash and treasury management professionals much easier. The internet is ubiquitous, available 24/7 and free. Business networks are not only beginning to transform the way cash and treasury products and standards are developed and supported, they are also offering treasury professionals a new opportunity for sharing their expertise and experiences. Deutsche Bank's Drive DB provides an interactive, secure online environment for collaborative product development. The bank's corporate users and product developers share ideas for developing new bank products and services via the web-site and take votes on which they consider the best.

The site has proved to be very popular and has over 1,000 users who have come up with an additional 19 product ideas on payment systems, notifications, single-click investigations and accounting, as well as other aspects of transaction banking proposed by employees of Deutsche Bank's client companies across a wide range of job functionality and commercial activity. Deutsche Bank has found the interaction invaluable in improving an understanding of and relationships with its corporate customers. The problem with many banking and payment standards is that, once developed, they sit on the shelf awaiting active promotion to encourage its use. SWIFT has set up the MyStandards web-site network to record the bilateral agreements made between standard users and to share market practices. It also offers a space for users to share experiences on implementing standards. Adam Moulson, head of standards implementation, believes, "MyStandards will speed up the implementation and adoption of new standards world-wide." Opportunities for sharing experiences are also being built into other new services. The Thomson Reuters Eikon market financial information service offers a space to share expertise with close friends and colleagues and the LinkedIn network has an increasing number of specialist groups on liquidity management, payment factories, working capital management and many other cash and treasury management topics.

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Treasury Automation

Both the balance and nature of the processes required in finance as well as cash and treasury management are changing. A large part of treasury administration being basic and repetitive, can be standardized and is therefore easy to outsource from third parties. Many companies have already outsourced basic financial functions. For example, accounts payables-to specialist outsourcing providers, such as Hewlett Packard and IBM via the internet. And classic cash and treasury management systems with their one-time system licence fees plus annual maintenance charges are being replaced by web-based software-as-a-service (SaaS) solutions with monthly fees.

Already, most sales of new cash and treasury management systems are on a SaaS basis. Although there are some corporate treasurers who prefer the one-time system licence, SaaS and web-based services are beginning to dominate. Eventually corporate treasurers will simply need to decide the best combination of the ever-increasing range of internet-based services to create a solution to fit their particular needs. As the role of the corporate treasurer expands, so do the requirements for cash and treasury management systems and services. Enterprise-wide cash management systems and services, incorporating not only the traditional FX and other instruments but also elements relating to the physical production of goods and services, such as energy costs and commodity forecasts, are now becoming essential. The cash and treasury management system is fast becoming the working capital engine of the corporate treasury department and core to the company's success. JACCOO LLC, which launched its new SaaS service in 2010, describes it as a new and innovative way of banking, offering diverse and extensive functionality to carry out optimal cash and treasury management. It is essentially a working capital management platform, including accounts receivable, accounts payable, in-house banking, SWIFT messages, treasury operations, multi-bank integration, cash and risk management and a cash flow monitoring dashboard.

The JACCOO service acts as the company's 'in-house bank', carrying out the execution of all transactions and the issuance of reports for the company, and also performing end-of-day reconciliation of cash flows to give full visibility of the company's cash. JACCOO uses a completely different business model from the usual cash- and- treasury management systems and SaaS services. New users simply send in an application, register, and then carry out the step-by-step implementation of their chosen functionalities themselves with support from JACCOO staff.

There are no set-up charges but only 'per-transaction' fees. The corporate treasury management systems business has continued to consolidate. In the recent past Wall Street Systems agreed to acquire Treasura from Thomson Reuters. Treasura is a SaaS corporate treasury management system aimed at mid-sized treasury departments. Wall Street Systems already owns City Financials, also targeted at mid-tier corporate clients, and might well decide to merge the two. Reval has also been acquiring corporate treasury management systems companies. In 2009 it acquired the US-based FXpress system and has been incorporating

FXpress functionality into its flagship product Reval. In January 2011 it acquired Eco finance, the leading general treasury management system provider in Central Europe. Concerning this latest acquisition, Jiro Okochi, Reval CEO, says, "We will take our time to evaluate and integrate the best functionality to deliver the single, full solution that the industry wants." Reval clearly seems to be evolving from a provider of financial risk management solutions to a provider of general cash and treasury management system solutions. Ken Lillie of Lillie Associates believes this is an important development and explains, "This will add another option for corporate TMS* buyers in a rapidly shrinking supplier pool. It will be good if they can offer a fully integrated complete solution to challenge the majors."

*TREASURY MANAGEMENT SYSTEM (TMS)

As businesses become increasingly global in their activities, treasury departments find themselves weighed down with a growing number of banking relationships to manage, and a number of basic functions that need to be undertaken on a daily basis.

Automating treasury functions by using a Treasury Management System (TMS) can bring significant benefits to treasury departments and businesses in general. Given below are some of the main benefits that can be derived from automating treasury functions.

1. Automation Saves Time

This is perhaps one of the most obvious benefits of automation. Removing corporate treasurers' need to carry out basic functions will free up their time to concentrate on fulfilling more strategic roles in the business.

Following the global economic crisis, there is a much greater need for treasurers to maintain a strong focus on regulations, risk and cash forecasting. Therefore, it is essential to free up a treasurer's time to carry out these tasks.

2. Automation enables more effective Cash Flow Forecasting

Using a treasury management system helps treasurers gain a better level of cash visibility. Those using automated systems are able to obtain information about their cash position at any time for any geographical location. All transactions are centralized, and treasurers can see where money is coming in and out 24 hours a day. This, in turn, means they are better equipped to forecast what will happen next.

3. Automation reduces Risk

Having a better understanding of a business's cash position, as well as greater control over transactions also helps in managing risk. Alongside the global approach to business that is emerging comes greater exposure to foreign exchange risk. Working with a TMS, which centralizes all banking transactions, can help to neutralize these risks. For example, a TMS can automatically monitor FX movements, and make transaction and investment decisions based on these movements, to reduce exposure.

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Improved cash visibility and liquidity that automation brings can also help to manage counterparty and other supply chain risks. With factors like customer demand volatility contributing to supply chain risks, ensuring treasurers have a clear picture of cash positions at all times will considerably reduce the impact of these factors on businesses.

4. Automation boosts Liquidity

Through the use of an automated treasury system, corporate treasurers can gain greater levels of liquidity within their businesses. With an ever increasing number of banking relationships to manage, deploying the services of a TMS can help treasurers to achieve a better grasp of their cash position at any given time. Transaction decisions can be made more easily thanks to the use of a centralized banking system that provides better visibility and control to corporate treasurers.

5. Automation means your business benefits from “The Cloud”

Adopting cloud-based Software-as-a-Service tools offers numerous advantages. The initial advantage is reduced costs. Outsourcing basic functions means that treasury departments need less equipment and technology in-house. Implementing and deploying cloud services is easy and inexpensive, compared with bringing these functions in-house.

Cloud Computing with Downloadable Apps

Cloud computing is location-independent computing, using shared servers to provide resources, software, and data to computers and other devices on demand. Downloading ‘apps’ to mobile phones and tablets is now commonplace and Apple recently launched an app service for its desktop and laptop computers. Cloud computing with downloadable apps could well be the future of cash and treasury systems, with corporate treasury departments connected to all their different Software Suppliers, Banks, SWIFT etc. and simply downloading specific apps and data as required. This is a long way in the future, perhaps, but possible.

Downloadable apps for cash and treasury management are already appearing in closed systems with registered users. In recent months Deutsche Bank has begun rolling out a new model of its Autobahn electronic banking distribution services via a new app-based approach. More than 100 services are being redesigned as apps, which users will be able to access and launch individually. Dan Marovitz, head of product development for Global Transaction Banking at Deutsche Bank, believes, "The ‘App Market’ building on Autobahn is game changing. It is a huge leap in making our services more accessible and will revolutionize the way we do business". The internet now seems to be driving the future of cash and treasury management systems and services with cloud computing and downloadable Apps the possible end game. Many of the banks are reviewing the possibility of implementing an app-based approach to the provision of their electronic banking services. Several corporate treasury management systems suppliers are also building their own versions of app markets. Location independent cloud computing using shared servers offering cash and treasury management apps in an open environment may, like all miracles, take a little longer.

Treasury — Technology

The Treasury function in any corporate has always been important in ensuring that the business has sufficient liquidity to meet its obligations, whilst managing payments, receipts and financial risks effectively.

With ever increasing pace of changes in regulations, compliance and technology in the financial sector, Treasury has increasingly become a strategic business partner across all areas of the business, adding value to the operating divisions of the company; for example, working with the sales department to establish good financial contract terms so that any trade discounts offered and the payment method agreed to are beneficial to the business.

Current market conditions also reinforce the need for corporates to ensure that their financial position is managed as efficiently as possible, with no excess working capital tied up in the business. The old adage '**cash is king**' is certainly as relevant today as it has always been.

Treasury departments need to cover the complete financial environment; from capital structure and long term investments to liquidity and working capital management. If Treasury can cause improvements in the Purchase-To-Pay and Order-To Cash cycles, there can be a direct effect on the overall debt and investment requirements and thus on the capital structure required in the business.

The question is, if the Treasury function is becoming more of a business partner, how can the department manage its time to ensure that the day to day administration, processing and transaction execution is completed using the minimum of resources?

The answer is that larger companies automate the majority of their daily financial processing and administration tasks, supported by policy standards, control and monitoring processes, embedding financial best practices across the whole business. Integrating corporate systems with those of their banks can achieve significant levels of automation, reducing the amount of time that needs to be spent on tasks such as calculating the daily cash position.

At the same time, efficient use of secure systems can minimize operational risk, increase operational security and maximize straight through processing. Add to this automatic reconciliation of bank account data, and Treasury need then to manage exceptions rather than every item, giving them the time to devote to delivering value-added services across the company.

As all treasurers are well aware, there are currently several significant developments in the financial markets, particularly in Europe, which affect most companies and their banks. Europe is becoming more integrated, aided by the introduction of SEPA. This will help companies to do business more easily, although at the same time this will increase competition between banks. Then there is the effect of increasing globalization, opening up new markets in different regulatory regimes, all of which need to be understood and managed to ensure financial propriety.

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European banking infrastructure and regulation is currently going through its largest re-organization for many years-how will SEPA develop, which new payment providers will flourish, what clearing and settlement mechanisms will be available are all important questions that arise All these have the potential to change the optimal bank account structure across Europe and need to be considered by Treasury for the benefit of the whole business.

Technology development is continually providing new and enhanced ways for corporates to manage their financial position. An example of this is the development of SWIFT Corporate Access, enabling corporates to use SWIFT channels to communicate directly with their banks. This, together with the development of more standardized file formats, for example XML, has the potential to change radically the systems and processes used in the business where the benefits outweigh the cost of introduction.

Cash and liquidity management has always been a key task in every company to ensure debtor, creditor and stock levels are managed as efficiently and effectively as possible. When the business environment is more challenging, corporates can gain a competitive advantage through optimal management of every aspect of their financial position. As a treasurer of a multinational corporate commented at a recent cash management conference, "During times of difficulty, treasurers demonstrate their true worth to the business".

Overview of Software used in Treasury - Banks, Insurance Companies and Corporates

Various software that are used by Treasury Department in Banks, Insurance and Corporates are mentioned below. Based on their requirements, cost / price of the Software, Life of the Software, Hardware Requirements, Systems Personnel and also tailor-made reports / requirements of the Company, software may differ from organization to organization.

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 / applications by members of primary issuance of government securities by RBI, through auction and floatation. The system of submission of physical SGL transfer form for deals 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.

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, BSE, and foreign exchange (through the Reuters electronic dealing system).

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 authorized 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.

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Settlement

Post approval of a deal, the system *suo motu*, 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.

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 by way of transfers of funds from and to NOSTRO accounts.

Custody

Electronic records of ownership of securities are held by DPs (Depository Participants). Such securities do not exist in physical form. The SGL depository of the RBI maintains custody and ownership of SLR securities in electronic form.

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., in electronic form. A Demat account is basically an electronic record of ownership and transactions in securities, maintained with a depository participant, which, in turn, maintains an account with the apex depository (NSDL, CDSL, etc.)

Similarly, Real Time Gross Settlement (RTGS) has also 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 / street testing, apply statistical tools for complicated analysis in bond dynamics and exchange rate mechanisms.

Other Software Used In Treasury Department

KASTLE™

KASTLE™ Treasury is a leading, integrated treasury management solution used by financial institutions worldwide to meet their business objectives which:

- Provides organizations with a sophisticated, multi-entity, multi-portfolio, multi-dealing room environment supported by robust risk management, back-office management, and MIS.
- Presents a holistic picture of an organization's financial health.
- Covers several key markets such as foreign exchange, money, equity, and their related derivative instruments.

- Identifies open positions, measures risks in real time, assists in generating P&L statements, and facilitates settlements.

Key features:

Automation and analyses features:

- Wide range of MIS reports.
- Real-time feed integration from multiple service providers for many instruments and currencies.
- Structured portfolio approach enabling simulation analysis.
- Decision support via exhaustive pre- and post-trade support tools and analytics, including pricing and valuation of plain vanilla and complex derivative instruments.
- Intelligent messaging module capable of handling SWIFT, RTGS, and other formats.
- Full-fledged Nostro reconciliation module (Nostroplus).
- User-friendly interface to capture exchange rates, benchmark rates, scrip rates, and prices of stocks in F&O segment.
- VC++ component library for automated mathematical computations.
- Complete straight-through processing functionality, covering front, middle and back-office MIS and reporting requirements.

Atomization features

- Multi-entity system.
- Multi-dealing-room capability.
- Multi-portfolio enabled.
- Multicurrency accounting.
- Platform-independent database.
- Seamless interface with third-party market information systems.
- High level of parameterization varying requirements can be met by simply changing the settings.
- Transaction downloads across various dealing systems (e.g., Dealing 3000).

Key differentiators:

- Convenient, right-click enabled deal entry and retrieval criteria.
- Comprehensive analytics for front-office users.

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- Extensive limit management.
- User-definable accounting policies.
- Compliant with SOX, Basel III, IFRS, MiFID, and hedge accounting rules.
- Extensive online context- sensitive help available at a single click.
- Unicode compliant, with language localization for all screens and interfaces.
- Modular yet seamless approach (Front, Middle and Back-office operations work in an independent yet integrated fashion).

Key business benefits:

- Hundred per cent accuracy in execution and accelerated decision-making made possible through treasury management tools (real-time information from multiple sources, MIS, and analytical solutions) and functionalities like historical simulation and “what-if” analyses that enable dealers to respond quickly and accurately to market conditions.
- Tailored solutions to real-time business problems via flexible, intelligent, and user-friendly systems and interfaces.
- Process efficiency achieved through implementation of best practices incorporated into the solution.
- Improved productivity and reduced costs automated analyses lead to efficient operations with 60% increase in productivity and swift decision-making, while minimizing overheads and cutting costs incurred on salary by 42%.
- Enhanced security with user access, control, and administration security features.

HCL

Globalization and centralization are compelling treasury professionals to conduct their business across geographies that may have different regulatory controls. In fact, more recent trends like the migration from SWIFT MT to the MX message series and new accounting regulations for seamlessly carrying out trading activities in real-time with straight-through enabled processing, requires that this industry offer a full range of solutions to treasury customers. It would be wise for Banks to move from simply satisfying their treasury clients to delighting them with a range of comprehensive, value added solutions that would lead to a better customer experience.

HCL’s Treasury Practice comprises a strong pool of industry specialists, treasury certified professionals, and experts and consultants with extensive front, middle and back-office experience. HCL provides specialized services across treasury management, such as consultancy, application development, enhancement, support and maintenance, and banking IT services for the entire trade lifecycle of deal captures, trade entries, processing,

Treasury — Technology

confirmations, payments, settlements, reconciliations, accounting, problem investigation, resolution, and reporting. Additionally, HCL provides packaged/ customized application implementation and deployment of industry-leading products such as Misys™.

- HCL's dedicated Treasury Practice consists of SMEs and techno-domain consultants from the banking and financial services industry. With over 800 man-years of experience working on treasury systems, the team is highly proficient in developing, supporting, maintaining and implementing treasury management software and treasury infrastructure for leading banks, financial institutions, and corporates.
- HCL has proven capabilities in the development of the treasury management suite of applications, and provides technical support for the maintenance of all kinds of asset classes such as foreign exchange, money market, derivatives, equities, structured products, cash management, payments, risk management, SWIFT, CLS, SEPA, faster payments, FIX, and more.

HCL's key differentiators include:

- Integrated multi-service offering spanning technology, operations and infrastructure.
- One-stop solutions for innovative and well- integrated treasury management software and solutions.
- Technology leadership - backed by Centers-of-Excellence (CoE) in various technologies such as Mainframe, Java, Oracle, Microsoft, and CRM products.
- Dedicated CoE for Misys' treasury products such as Summit / OPICS Plus, with continuous investment in training and certifying employees in these products.
- Integrated offerings leveraging strong SOA and Middleware practices such as TIBCO, Web Methods, and others.
- Framework accelerators to hasten customer delivery.
- Risk-free implementation through the adoption of CMMi Level 5, ISO 9001:2000 and BS 7799 standards.

TCS BaNCS

TCS BaNCS is a core banking software suite developed by Tata Consultancy Services for use by retail banks.

- It includes functions for universal banking, cores banking, payments, compliance, Wealth Management, Forex and Money Markets, financial inclusion, Islamic banking and treasury operations. There are also modules that deal with capital markets and the insurance business.
- DLF Pramerica Life Insurance Company India Limited (DPLI), is using TCS BaNCS to meet their financial services. In August 2013, TCS deployed its core banking solution at

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Panzhuhua (PZH) Commercial Bank, making it the first Chinese city commercial bank to use TCS BaNCS solution.

T24 Treasury and Treasury Traders

Front-to back-office Core Banking Functionality

Banks are increasingly looking to their treasury departments, which have traditionally contributed a significant proportion of profit to maximize return.

However, greater competition with tighter margins, riskier products and volatile market conditions - together with regulatory reforms which are forcing banks to retain more capital are challenges to this strategy. Even if profitable, the treasury function may not have the IT systems required to support the kind of dynamic trading that achieves optimum results.

Difficult market conditions, with low yields and tighter margins, have resulted in dealers venturing into riskier products in order to meet their targets. To support this trading over a broad range of asset classes, multiple solutions have often been installed, resulting in complex interfaces to the core banking system, which place a greater management burden on the treasurer, risk managers and the IT department.

Further, legacy systems may not be sufficient to protect the reputation of banks against the actions of rogue individuals or high risk trading strategies.

Treasury managers may be under pressure to earn higher returns, but the right systems can ensure that dealing room risk is also managed successfully. An integrated solution removes the need for unnecessary processing, and makes information easily available to all authorized areas of the bank.

T24 Treasury and Treasury Traders solutions provide fully integrated front, middle and back office core banking functionality to meet the complete needs of an international bank treasury operation in a modern environment.

T24 Treasury spans the front, middle and back office and delivers comprehensive risk management as well as functionality to cover all asset classes and the complete product life cycle.

Full STP is achieved from the front office or trading platform, through the middle office for control and risk management to the back office for settlement, accounting and messaging. Significantly, the bank's treasury operation is able to manage positions raised anywhere in the bank including hedging operations.

These positions can be managed in real-time across the bank as a whole or by any trade subset. Data can be grouped by any number of attributes for effective management of risk and P&L. The back office leverages all the power and flexibility of T24 to facilitate highly configurable work-flow control and trade management, with full settlement support through to

accounting, payments and messaging. NOSTRO reconciliations and confirmation matching are catered for by the respective T24 modules.

The solution also delivers treasury management dashboards which deliver a real-time view of the bank's overall position. A graphical app enables users to quickly decipher complex information, interact with the data and follow threads where there is a particular interest or the screen indicates more attention is required.

Asset Classes

- Foreign Exchange.
- Money Markets.
- Capital Markets.
- Interest Rate Derivatives.
- Exchange Trade Futures and Options.
- Structured Products.
- OTC Options.
- Credit Derivatives.

Temenos T24 Treasury Trader is an advanced front and middle-office solution for today's international treasury operations. It provides real-time links to the market for instant and accurate data access, together with an impressive range of risk, planning and analysis tools to manage bank-wide positions and data.

Treasury Trader caters for a wide range of instruments and delivers high trade capacities, streamlined transaction processes, and reliable and cost effective risk management within a modern technological framework.

Trading room support is delivered for deal capture, blotters, pricing, position and portfolio management, scenario analysis and real-time profitability reporting. Dealing risk and exposure can be controlled and managed via configurable limit checks from trade level to dealer and portfolio. Limit types supported include: Counterparty, Settlement, Geography, Industry, Currency, Gap, NPV, DeaR and VaR.

The straight-through-processing functionality of Treasury Trader begins with the inputting of the deal (either via an external dealing system or traders entering a deal directly into Treasury Trader). From deal capture, the process is completely automated in real time, with no user intervention required.

All transactions update trader positions in real time and are simultaneously routed to the back office for the full transaction processing life cycle.

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The risk management facilities extend not just across the dealing room, but the bank as a whole. Risk managers can see the complete position of the bank, in real time, as well as any number of user- defined risk profiles.

Various analyses can be performed to provide net present value, value at risk, daily earnings at risk, liquidity, gaps and ladders. This is complimented by a host of forecasting tools including yield curve modeling, rate shift scenarios and 'what if' analysis.

SocialComply is the treasury and capital management industry's premier compliance, actionable social media and online traffic management software solution. What is said on social media and the Internet can impact a financial institution's risk profile due to poor due diligence or oversight. By using SocialComply, you are empowered to manage and mitigate the risk.

- *Moderating* – tools to address collaboration needs effectively.
- *Monitoring* – see what your employees are saying and what is being said about your organization.
- *Archiving* – comply with regulators to keep track of your bank's social activity.

Storage of Data Files - Reports Generation, IT Risks Mitigation Measures like Business Continuity Plan (BCP), Disaster Recovery Plan (DRP) and Transaction Protections.

Storage of Data Files

Most banks have in place tools to determine transfer pricing, funds portfolio management, risk management and asset liability management tools.

Challenges:

- (i) Many banks do not yet have a multi-dimensional, real time analysis platform, which provides their treasuries a holistic view of their holdings and the ability to perform multiple levels of ad-hoc analyses.
- (ii) Banks' operations are largely handled through multiple Excel files and some automated static reports Challenges.
- (iii) The time taken for an operational analysis is substantial since data is first consolidated, and then cleansed and arranged to derive any meaningful insight.
- (iv) Most banks only provide static reports (as operational BI) to their end users to analyze a particular process.

Reports Generation

- Fully integrated treasury ledger.
- Standard accounts reporting, including trial balances, balance sheet and P&L reports.
- Journal processing to provide a controlled method of entering non-transactional management accounting entries.
- Export functionality to corporate general ledger packages.

Accounting Standards

Hedge portfolios identify links between exposures and hedges. Effectiveness tests can be run on these portfolios and accounting entries automatically generated based on the effective and ineffective values.

Financial Reporting

A full set of standard accounting reports are supplied. These include trial balances, consolidated trial balances, balance sheets and profit and loss statements. Users are able to easily customize these to suit their own particular reporting and corporate imagery.

Journal Processing

Journal input provides a mechanism for management accountants to pass additional entries into the treasury ledger that are not related to any specific transaction, such as internal management expenses that need to be charged to group intercompany accounts.

Treasury Ledger

The system contains a fully integrated, multicurrency accounting ledger specifically focused on the requirements of treasury accounting. Standard accounting for each transaction type is supplied with the software but users can also create their own transaction accounting models. All transactions update the ledger automatically as entered.

Multi-entity Accounting

Each financial entity in the system can have its own period end definitions. Period ends can be closed by the entity. Financial reports can be produced for one company, groups of companies or for all companies.

Multi-currency Accounting

Complete accounts are maintained for each currency. All reports can detail both actual currency amounts and entity- based currency values.

General Ledger Exporting

The process of updating a corporation's general ledger is a simple case of mapping accounts to each other. 'Transaction Reports' are not necessary—all transactions have specifically

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created a set of accounting entries within the internal ledger that can be checked and verified whenever required.

Reporting

Automatic Report Generation

Users can create reports without any specific report writing skills. Users can set their own column preferences for any enquiry screen from a simple selection list, and define the sorting, grouping and order by using 'drag-and-drop' functionality on screen.

Instant Messaging

Automatically trigger messages that can be sent to an integrated instant messaging service within the system or via email. Users can subscribe to messages relevant to them. Sample messages include credit limit breaches and changes to static data that require authorization.

Integrated Security

The system uses a fully integrated graphical report designer instead of relying on external third-party reporting tools, delivering a consistent environment and seamless interaction between on-screen enquiries and reports.

Multiple Output Options

All reports created within the system can be set to produce and communicate results to a printer, to an email address/distribution list or to file. Files can be in a large variety of output formats, including PDF, Excel, Word, HTML and XML. If the report has graphs or charts, the report can also be saved in JPG or BMP graphic formats for integration into other documents.

Unattended Importing

A polling engine automatically imports data at user-defined frequencies. Previous day bank files can be automatically loaded into the system and reconciled overnight, providing exception reports ready for the start of the working day. Spreadsheets of market data can be loaded every user-defined number of minutes to allow intra-day revaluations.

Scheduled Reporting

Reports and data exports can be scheduled to run at user-defined intervals. Users can specify reports to run daily, weekly, monthly or at specific times/days through a simple scheduling 'wizard'.

IT Risks Mitigation Measures like Business Continuity Plan (BCP)

The Business Continuity Guidelines provide a framework to the organization to draw up an action plan for meeting any crisis (disaster or emergency). It enables the organization to take appropriate action to overcome the crisis and ensure the organization's continued operability.

A business continuity plan is a plan to continue operations if a place of business (e.g., an office, work site or data center) is affected by adverse physical conditions, such as a storm, fire or crime. Such a plan typically explains how the business would recover its operations or move operations to another location. For example, if a fire destroys an office building or data center, the people and business or data center operations would relocate to a recovery site.

The plan could include recovering from different levels of disaster which can be short term, localized disasters, or stretching to days affecting many buildings, to a permanent loss of a building.

Examples: Office building disasters – if a roof leaks in an office building, then move the people to another floor in the same building; if the building loses electrical power or is flooded, then allow people to work from home during the outage; if there is a fire and the building is completely destroyed, then relocate the people to a recovery site until a new building is acquired.

Computer center disasters – If a server breaks down, then recover to a backup server; if the electrical power is out, then start an emergency generator, if the datacenter is destroyed by a fire, then recover to a computer disaster recovery datacenter.

Business Continuity Plan – Checklist

	CHECKLIST OF THINGS TO DO	Yes	No	Don't Know	Can't Say	Remarks
1	Is BC plan of Treasury in place?					
2	Does your plan have the approval of your controller?					
3	Is it being updated regularly?					
4	Has risk assessment been done before putting in place the Business Continuity Plan?					
5	If so, have you documented the same?					
6	Did the Treasury perform Business Impact Analysis?					
7	If so, have you documented the same?					
8	Whether a Crisis Management Team has been formed.					
9	Whether Emergency Response or Action Team has been formed.					
10	Whether Data Recovery & Salvage Team has been formed.					

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11	Whether Business Restoration Team has been formed?					
12	If yes, whether the team members know their roles.					
13	Do you have alternate members ready, just in case of need?					
14	Do you regularly hold BCP strategy session?					
15	If so, have you documented the same?					
16	Does the Treasury have a priority list of services to be restored in case of an eventuality?					
17	Have you created different teams with alternates - Provided multiple contact nos. for each staff?					
18	Have you spelt out the roles of different members in various teams?					
19	Do you have the approval for alternate / reciprocal site?					
20	Have you ever tested the plan?					
21	If yes, have you documented the results?					
22	Have you submitted details of these tests to your controller?					
23	Have you reviewed you BCP after conduct of its test/ evaluation?					
24	To what test was the plan subjected to?					
25	Whether the staff has been imparted training.					
26	Whether the contact details of staff are being updated regularly.					
27	Whether the contact details of external service providers are being updated regularly.					
28	Whether the contact details of vendors are being updated regularly.					
29	Have the duties been explained to staff who has joined recently on transfer / new posting?					
30	Do you maintain a copy of BC Plan at an alternate site?					

31	If yes, in what form-paper, electronic, Internet site?					
32	Have you checked pre-incident training & preparation procedures (conduct of mock drills)?					
33	Have you ever evaluated staff skills in handling of equipment, inventory during training?					
34	Have you kept a draft communiqué for customers ready, in case of an emergency?					
35	Do you know Plan Activation parameters?					
36	Have you put in place a hierarchical structure in case of emergency / incident?					
37	Do you have Incident response mechanism in place?					
38	When was the plan last tested.					
39	Do you maintain a timetable for review of plan or testing of plan?					
40	Is the plan being updated upon introduction of new services?					

BCP in banks

The pivotal role that banking sector plays in the economic growth and stability, both at national and individual level, requires continuous and reliable services. Increased contribution of 24x7 electronic banking channels has increased the demand to formulate consolidated Business Continuity Planning (BCP) guidelines covering critical aspects of people, process and technology.

BCP forms a part of an organization's overall Business Continuity Management (BCM) plan, which is the “preparedness of an organization”, which includes policies, standards and procedures to ensure continuity, resumption and recovery of critical business processes, at an agreed level and limit the impact of the disaster on people, processes and infrastructure (includes IT); or to minimize the operational, financial, legal, reputational and other material consequences arising from such a disaster.

Effective business continuity management typically incorporates business impact analyses, recovery strategies and business continuity plans, as well as a governance programme covering a testing programme, training and awareness programme, communication and crisis management programme.

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A bank's Board has the ultimate responsibility and oversight over BCP activity of a bank. The Board approves the Business Continuity Policy of a bank. Senior Management is responsible for overseeing the BCP process which includes:

- Determining how the institution will manage and control identified risks.
- Allocating knowledgeable personnel and sufficient financial resources to implement the BCP.
- Prioritizing critical business functions.
- Designating a BCP committee which will be responsible for the Business Continuity Management.
- The top management should annually review the adequacy of the institution's business recovery, contingency plans and the test results and put up the same to the Board.
- The top management should consider evaluating the adequacy of contingency planning and their periodic testing by service providers whenever critical operations are outsourced.
- Ensuring that the BCP is independently reviewed and approved at least annually.
- Ensuring employees are trained and are aware of their roles in the implementation of the BCP.
- Ensuring the BCP is regularly tested on an enterprise-wide basis.
- Reviewing the BCP testing programme and test results on a regular basis and
- Ensuring the BCP is continually updated to reflect the current operating environment.

Disaster Recovery Plan (DRP)

Computer backup facilities, disaster recovery, business resumption, or contingency planning problems and issues pose major challenges and concerns to IT Management, senior management, functional user management, and audit management. The key issues are how to develop disaster recovery plans, how to test them, how to maintain them, and how to maintain the continuity of operations. The key issue for IT Management is to know why we need to plan for disaster recovery and what the objectives are.

The disaster recovery plan, if it is to be of any value, should cover both IT and functional user departments of the organization. The plan (or plans) should be available to all the concerned departments. It should address not only central computers (servers), but also all the computers and their networks.

Today, more than ever, system users are demanding 24 hour online system availability. System users want complete control over their information. In order to serve such a

demanding environment and meet user needs, it is necessary to have these systems available whenever users are working. (OLTP) Online-Transaction Processing Real Time application systems are more difficult to restore as transaction logs, checkpoints, file/database dumps must be maintained for reliable and timely recovery purposes.

Another related area is ensuring the adequacy of the vital records. So, not only does the government need to retain such records but the management and employees of any organization during the course of their day-to-day work also often need to go back to old records for referencing and analysis purposes, for supporting a customer complaint, and similar purposes. Today, there is a tendency to store these records on magnetic media.

Incorporating disaster recovery requirements into system design would be the best approach and proactive thinking. For example, a facility for restarting at an intermediate stage of processing an application program can be built in, to provide continuity of program operation.

A 'Top down' approach is recommended for developing organization- wide disaster recovery and continuity plans especially for the first time. For ongoing maintenance, a combination of 'top down' and 'bottom up' approach is advised. This will permit input not only from top management (top down) but also output from test exercises conducted regularly (bottom up). A 'top down' contingency plan approach includes the following steps and involves senior management, IT Management, IS auditors, and functional (end) users:

- (i) Conduct impact analysis.
- (ii) Plan Design.
- (iii) Plan Development.
- (iv) Plan Testing.
- (v) Plan implementation, and
- (vi) Plan maintenance.

Risk Analysis and Assessment

A disaster is an occurrence, which impacts the business activity to the extent that the capability to perform normal operations is impaired. The degree of impairment can range from a minor disruption to total destruction of the facility, computer equipment, telecommunication network, business data, software, and non-availability of key employees. Basically, disasters result from two kinds of threats: man-made and natural. Examples of man-made threats are errors, sabotage, bomb, strikes, vandalism, and fire. Examples of natural threats are floods, fire etc.

The Disaster recovery or contingency plans must be established to prepare an organization to respond to disasters of any kind that might otherwise cause considerable loss to or total disruption of, the organization's functions and operations. To this end, every organization must

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have a written and tested plan with clear responsibilities assigned to employees for each phase of a disaster preparedness programme, i.e., plan development, testing, recovery, and maintenance.

The disaster recovery planning process begins with the recognition by senior management that disaster recovery plan development and maintenance activities are integral to the cost of doing business. A disaster recovery plan provides the vital preplanned framework for initiating recovery operations immediately following a disaster and as such, provides guidance for damage assessment and planned actions which must be taken to resume critical IT and functional activities and restore full business operations with minimum delay and disruption.

Risk analysis is a prerequisite to a complete and meaningful disaster recovery planning program. Risk analysis is the assessment of threats to resources / assets and the determination of the amount of protection necessary to adequately safeguard the resources, so that vital systems, operations, and services can be quickly resumed to a normal status in case of a disaster. Essentially, risk analysis and assessment process addresses the following actions:

- (i) Identify assets (e.g. hardware, software, data, facilities, documentation).
- (ii) Develop a list of potential threats (e.g. fire, flood) with frequency of their occurrences.
- (iii) Correlate threats to assets.
- (iv) Rank the threats based on their impact and risk.
- (v) Recommend cost-effective controls to reduce potential threats.

There are several actions which can be taken in response to a threat:

- (i) Do nothing. This may be a situation where the threat is remote or the cost of response is excessive and management simply accepts the risk.
- (ii) Improve controls.
- (iii) Purchase redundant equipment and facilities.
- (iv) Remove or spread the vulnerable condition. This is a situation where alternate resources and support for backup are sought. Providing insurance coverage is another form of spreading the risk.

To be meaningful and useful, disaster event scenarios need to be developed. Since there are many scenario levels that can be developed theoretically, it will be effective to limit them to as few levels as possible. The following describes one's approach to accomplish this objective:

(a) Minor Disaster: It is the lowest level of a disaster where business operations are abnormally interrupted and recovery to normal situation can be accomplished with current resources within a short period of time.

(b) Major Disaster: It is the condition where business operations are seriously interrupted and recovery to a normal situation cannot be affected for an extended period of time and without additional resources.

(c) Catastrophic Disaster: It is the condition beyond the previous two situations where severe damage has occurred to building, equipment, software, and network which renders the organization inoperable for a long time. Extensive additional resources are needed to bring operations to normal conditions.

Backup Computer Processing Choices

Many choices are available to us in preparing for a disaster. The following are some major choices available for alternative backup computer facilities:

(i) Dedicated Contingency Facilities: Also known as “Hot Sites”, where an organization provides fully equipped computer facilities for use in the event of disaster. Periodic computer testing time is made available. It is the most expensive choice. Large and complex online and database systems use hot site services.

(ii) Empty-Shell Facilities: A fully prepared computer room or building (cold site) is maintained by an organization which includes data communication systems, security systems, air conditioning, humidity controls, raised floors, storage and office space, and electrical power. In the event of a disaster, the computer vendor delivers the required hardware and peripheral equipment to the empty shell facility.

Usually, empty shell facilities also provide offsite storage of computer files (programs and data), documentation, etc.

(iii) Warm Sites: The configuration lies in between “hot site” and “cold site”. It has telecommunications ready to be utilized, and is recommended for users of sophisticated telecommunications and network needs.

(iv) Vendor Backup Facilities: Some hardware vendors offer their facilities, in the event of major computer disaster in their clients systems.

(v) Organization Multiple Sites: Based on the redundancy concept, each site is configured to support the combined computer processing load of the organization.

(vi) Commercial Service Providers: This provides backup and recovery services for their clients.

(vii) Mutual Aid (Reciprocal Processing) Agreements: One organization agrees to provide backup and recovery facilities for another organization with a compatible hardware and software configuration and vice versa. Mutual aid agreements may not prove workable when needed. It is the least expensive choice. Simple and large batch systems are suitable to use a reciprocal processing agreement.

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(viii) Consortium: Several organizations pool their resources and build their own backup computer facility for common use.

(ix) Time Brokers: Time brokers serve as a resource for obtaining backup support. Time brokers find, for a fee, available processing time on other systems. Processing arrangements are made entirely through this third party service.

Time brokers, however, do not guarantee that hardware and software configurations will fully satisfy critical requirements.

(x) Use of PCs: This approach to backup processing integrates operations that can be supported by PCs. PCs for example, can be used to perform local processing, storage, data entry and query, and word processing. To use this alternative, contingency planners should determine which operations can be accomplished by PCs, select commercial data management and other software that can support critical application systems' processing, select hardware that will not only support current applications but which is also flexible enough to support future applications. PCs, when used as a part of the overall backup processing strategy, may be able to provide interim processing capability until the host is available. There is a danger, however, of incompleteness of or inconsistency between databases. Database owners should ensure that both the host and PC versions remain compatible.

(xi) Reversion to Manual Processing: This approach reverts back to a manual operation. It may be a workable choice if manual procedures that duplicate the automated process are documented. If, however, manual procedures are outdated, or simply not available, it may be impractical to rewrite them. This option may be suitable if used in conjunction with another alternative.

(xii) A Combination of the above Options.

Contingency Planning Process

A plan should be developed, addressing the procedures to be used before, during and after a disaster. These procedures should include methods for maintaining and updating the plan. The sample plan illustrates the structure and writing style. Some sections of the sample plan are written as examples that the financial institutions can use in a plan.

Contingency Planning Process can be detailed as follows:

- (i) Obtain commitment from senior management to develop the plan.
- (ii) Establish a management group to oversee development and implementation of the plan.
- (iii) Perform a risk assessment.
 - (a) Consider possible threats such as: *Natural*: fire, flood, etc.
 - (b) *Technical*: Hardware and software failure, power disruption Communications interference etc.

- (c) *Human*: Riots, strikes, disgruntled employees etc.
- (d) Assess impact from loss of information and services:
 - Financial condition
 - Competitive position
 - Customer confidence
 - Legal / regulatory requirements
 - Analyze the costs to minimize exposures.
- (iv) Evaluate the critical needs:
 - (a) Functional operations.
 - (b) Key personnel.
 - (c) Information.
 - (d) Processing systems.
 - (e) Documentation.
 - (f) Vital records.
 - (g) Policies / Procedures.
- (v) Establish priorities for recovery based on critical needs.
- (vi) Determine strategies to recover:
 - Facilities.
 - Hardware.
 - Software.
 - Communications.
 - Data files / Databases.
 - User operations.
 - MIS.
 - End-User systems.
 - Other processing operations.
- (vii) Obtain written backup agreements and contracts:
 - Facilities.

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- Hardware.
 - Software.
 - Vendors.
 - Suppliers.
 - Disaster recovery services.
 - Reciprocal arrangements.
- (viii) Organize and document a written plan.
- (ix) Assign responsibilities:
- (a) Management
 - (b) Personnel
 - (c) Teams
 - (d) Vendors
- (x) Document strategies and procedures to recover:
- (a) Procedures to execute the plan.
 - (b) Priorities for Critical Vs Non-critical functions.
 - (c) Site relocation (short-term).
 - (d) Site restoration (long-term).
 - (e) Required resources:
 - 1. Human
 - 2. Financial
 - 3. Technical (Hardware/Software)
 - (f) Data
 - (g) Facilities
 - (h) Administrative
 - (i) Vendor support
- (xi) Establish criteria for testing and maintenance of plans
- (a) Determine conditions and frequency for testing:
 - 1. Batch systems

2. Online systems
 3. Communications networks
 4. User operations
 5. End-user systems
- (b) Evaluate results of tests
- (c) Establish procedures to revise and maintain the plan
- (d) Provide training for personnel involved in the plan's execution
- (xii) Present the contingency plan to senior management and the board, for review and approval

Detailed Outline of a Disaster Recovery Plan

- (a) Executive Summary
- Purpose
 - Assumptions
 - Overview
 - Definition
 - Objective
 - Scope
 - Structure of the Plan
 - The Recovery Process—Conceptual Flowchart
 - Levels of Disaster
 - Alternate Processing and Facility Sites
 - Alternate Processing Site Strategies for in house Computer Systems
 - Distribution of the Plan
 - Maintenance of the Plan
 - Testing the Plan
 - Service Center Disaster Recovery Plan Overview
- (b) Risk Assessment Business Impact Analysis
- Risk Assessment Process

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- Existing Disaster Prevention Measures
- Risk Assessment Forms
- Risk Assessment Results
- (c) Emergency Procedures
 - Emergency Considerations
 - Evacuation Procedures
 - Specific Emergency and Evacuation Procedures
- (d) Contingency Organization
 - Contingency Organization Chart
 - Team Assignments
 - Team Manager's Responsibilities
- (e) Management Team
 - General Responsibilities—Management Team
 - Establishing the Command and Control Center
 - Facilities
 - Equipment and Supplies
 - Specific Responsibilities—Management Team
 - Initial Disaster Alert
 - Disaster Verification and Assessment
 - Disaster Recovery Plan Activation
 - Notification Procedures
 - Recovery Action Planning Activities
 - Plan Testing Methods
 - Monitoring Recovery Operations
- (f) Business Recovery Team
 - General Responsibilities—Business Recovery Team
 - Specific Responsibilities—Business Recovery Team
 - Lending

- Investment
 - Bookkeeping / Accountancy
 - Proof
 - Item Processing
 - Platform Automation
 - Asset Liability Management
 - General Ledger
 - Accounts Payable
 - Regulatory Reporting
 - Wire Transfers
 - Vaults
 - Automated Clearing
 - Personnel
 - Administration
 - Other
- (g) Departmental Recovery Team
- General Responsibilities—Departmental Recovery Team
 - Specific Responsibilities - Departmental Recovery Team
 - Notification Procedures
 - Specific Department Responsibilities
- (h) Computer Recovery Team
- General Responsibilities - Computer Recovery Team
 - Specific Responsibilities - Computer Recovery Team
- (i) Long-term Interruption in Processing by the Service Center
- Introduction
 - Management Team Responsibilities
 - Departmental Recovery Team Responsibilities
- (j) Testing
- Considerations for developing Testing Plans
 - Types of Tests

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- Development of Testing Plans
- Structured Walk Through Test Example

Transaction Protections

Financial scandals have been highlighted in the media to a great effect. No one wants to be in the next headline.

Legislators and financial authorities have created a raft of standards and regulations to address a number of previous concerns. This may be connected with listing requirements in a particular market (Sarbanes Oxley) or sector-related regulation such as the FSA regulation of the UK banking sector.

Even those listed companies not burdened by regulations have experienced an increase in governance and reporting requirements for all operational aspects of the business. Derivative transactions and potential losses continue to focus attention on Treasury operations.

Heads of internal audit and Treasurers review and benchmark controls over their treasury operations. There are broadly two key categories of these reviews:

- Protection of company assets; and
- Financial reporting (internal and external).

Asset protection: The unusually high risk nature and size of derivative transactions entered into by treasury dealers requires specialized controls designed to mitigate the risk of loss from a 'bad trade'. These controls revolve principally around the deal capture and accounting processes.

The design effectiveness of these 'operational controls' greatly affect both the security and efficiency of the treasury department. Many companies have successfully automated large elements of the control processes to minimize the impact on operations.

Governance: More than just looking at internal reporting, the governance of treasury operations commences with the Board setting policy in line with their appetite for risk. Without the right level of focus, the value from these controls, which are ultimately to protect the assets of the company, may not be realized.

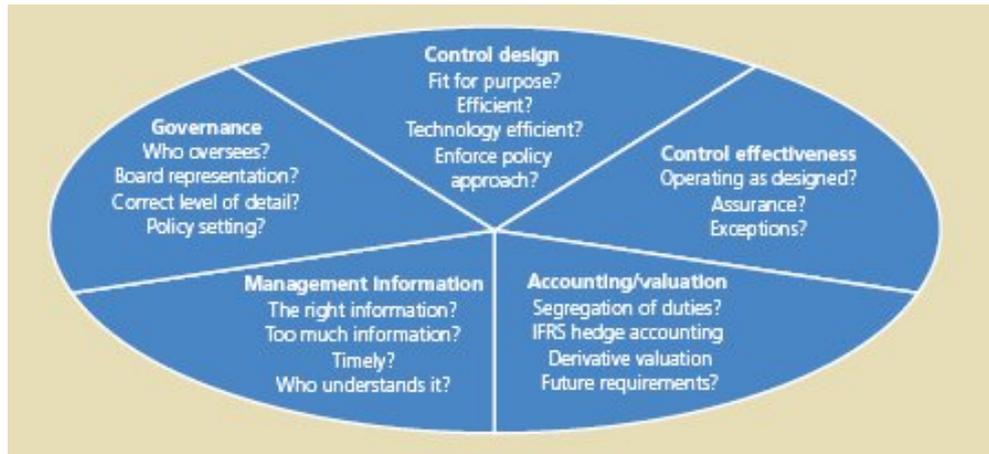
Internal reporting: Internal reporting of treasury operations is a key element of any control framework. Is the key information being lost in a mountain of detail, or omitted completely? Are the reports user-friendly, and who understands them?

External reporting: IFRS/FAS reporting requirements have placed additional burden on many companies, and increased the focus on the disclosure of derivatives and of treasury activities. The reporting standard IFRS 7 adds the additional requirement of incorporating internal risk reporting into external disclosures. Is your company comfortable with disclosing to the markets how you measure your risk?

Derivative modeling

Sarbanes Oxley – the bar moves higher

With the introduction of Sarbanes Oxley, a new standard has been set for documenting and confirming the design and effectiveness of key treasury controls.



Outsource internal audit

The core business of many companies is very different from corporate treasury operations. This provides a significant challenge to the heads of internal audit to acquire expert resources to perform the internal audit of the treasury function.

Corporate treasurers have to achieve a critical balance between protecting their businesses and achieving value drivers for growth by managing significant risks. As the portfolio of activities to achieve this equilibrium is varied, over-emphasis on a few may mean failure to notice and mitigate others. A recent survey of corporate treasuries has revealed that Indian treasuries are giving prominence to diversifying their funding sources and effectively managing liquidity and foreign exchange risks. The Survey results also suggest that there are various areas with significant scope for improvement in use of technology in treasury and managing operational risks. Incidentally, these were not ranked as high priority by most respondents; possible reason could be resource constraints, given other business commitments. In India, while many organizations are embracing new technologies to help manage the increasing flow of data, spreadsheets remain the tool of choice for a majority of respondents as compared to the use of IT and other integrated treasury systems and tools.

As regards the management of foreign exchange risks (primarily FX and interest rate), treasury operations and funding, given the importance of cash management in a treasury function, treasurers see the need to enhance visibility and control of cash and liquidity at an entity level. The Survey Respondents, being aware of the challenges of achieving this, rate this as one of the key concern areas. Treasuries need to achieve a comprehensive and more

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integrated understanding (and management) of the risks arising from foreign exchange movements; commodity prices; interest rates; and their people, systems and processes, as their businesses pursue growth. On the whole, corporate treasuries must effectively integrate treasury initiatives with the overall business objectives as the role of the treasurer continues to evolve.

Inadequate operational risk management increases the possibility of fraudulent events and errors that could have significant implications for a company's business. Operational risk management is more important than ever for Indian treasuries as most of them are yet to fully integrate technology in their operations. Nearly 73% of the treasuries have reported managing FX risk while 50% have reported integrating with internal systems as high-priority initiatives for reducing overall operational risk. On a lower priority are initiatives on people, establishing greater control over cash in foreign countries and compliance with accounting standards.

Technology plays a crucial role in making the job of a treasurer less stressful (by having better visibility on risks and liquidity) and more efficient (through process automation and performance improvement). In India, while many companies are adopting new technologies to help manage the increasing flow of data, spreadsheets remain the tool of choice. Most of the staff using spreadsheets have, on an average, 60 spot transactions and 20 derivative transactions per month. However, as the business grows, the number of transactions would grow, thereby increasing the level of automation in treasury through investments in systems—to efficiently manage the increasing volumes and complexities of treasury operations.

Treasuries with greater manual activity naturally have a higher number of Full Time Equivalents (FTEs) involved in treasury activities. In large treasuries (companies with annual turnover exceeding 5000 crore INR), the use of technology for managing treasury activities still has a lot of ground to cover. However, on an average among the treasuries that have implemented treasury systems, majority have linked dealing, validation and settlement with electronic systems to replace dealing via phone. Thus with limited investment available for new systems, treasury functions may find it increasingly difficult to keep pace with changing business needs as the volume and complexity of transactions increase in the future.

Integrated risk management and a robust governance framework will benefit treasuries by enhancing the overall visibility of and control over enterprise-wide risks. This will also help provide reasonable assurance on internal controls over business operations to internal and external stakeholders. A treasury management system, rather than operating as a stand-alone system, needs to be well interfaced with the organization's other systems and platforms. Optimum implementation of technology can help treasuries strengthen risk management through automation of controls, manage fraud risks, enhance reporting and operational efficiency through reduced manual interventions.

With the ever-growing need for effective cash management and funding, treasuries need to maintain a proactive approach to cash management. Accurate cash forecasts will help

treasurers make informed decisions concerning optimized funding structures and help them better manage liquidity and foreign currency risk. As business dynamics change, organizations grow and markets evolve, bringing with them a host of regulatory changes and complex products, the scope of corporate treasuries needs to be widened and more closely aligned to business objectives.

Bloomberg / Thomson Reuters screenshot showing Forward Markets and their Interpretation

'Reuters'

Reuters is a global information provider headquartered in London, England, and serving professionals in the financial services, media and corporate markets. The news agency provides text, graphics, video and pictures to subscribers around the world, including general and economic news. Reuters Group trades on the London Stock Exchange and Nasdaq as 'RTR' and 'RTRSY'.

Founded in 1851, more than 90% of its revenue is derived from the financial services arm, with hundreds of thousands of subscribers in the world's equities, fixed-income, foreign-exchange, commodities and energy markets. Their core strength is in providing the content, analytics, trading and messaging capabilities needed by financial professionals.

'Bloomberg'

Bloomberg is a major global provider of 24-hour financial news and information including real-time and historic price data, financials data, trading news and analyst coverage, as well as general news and sports. Its services, which span their own platform, television, radio and magazines, offer professionals analytic tools.

One of its key revenue earners and what they are well known for is the Bloomberg Terminal—an integrated platform that streams together price data, financials, news, trading data, and much more to more than 250,000 customers worldwide.

The digital revolution continues to overhaul the landscape of traditional industries. Prior to the widespread access to the Internet, financial news and information was relayed through newspapers. In the U.S. *The Wall Street Journal*, *The New York Times* and *Financial Times* were amongst the most popular sources of business news. Today, many companies have shifted away from print and solely provide digital news. Along with the breadth of digital news, access to financial information has grown as well.

Bloomberg and **Thomson Reuters** (TRI) are leading the pack, claiming a majority of the business information market. Despite their robust multimedia platforms, both companies are best known for technological devices: the Bloomberg Terminal and Thomson Reuters Eikon, respectively.

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Bloomberg LP

Prior to his political career, Michael Bloomberg was a well-known name on Wall Street. After being laid off from the investment bank he had worked at for 20 years, Bloomberg launched his own business information platform. Bloomberg LP provided quick, high quality business information to Wall Street, and in the early 80s, the company sold its first financial information system to **Merrill Lynch** (BAC).

Today, Bloomberg LP is not only known for Bloomberg Terminal; but it has become a global multimedia entity as well. The financial news and media company includes Bloomberg News, *Business week* magazine, radio and television. With a vast array of products and services, the Bloomberg Terminal continues to be Bloomberg LP's core revenue-generating product.

Bloomberg Terminal

The Bloomberg Terminal is an integral piece of software within the finance industry that is used to access financial information. In its initial phases, the platform was a physical terminal. However, over the years, the terminal has transformed into a remote software that is accessible anywhere. Many companies rely on the terminal to analyze individual securities, market movements and monitor news. An extension, Bloomberg Trade book, allows formal trade execution through its messaging service. Traders, portfolio managers and risk management analysts, among other financial professionals, use the program. Currently, there are over 325,000 subscriptions worldwide.

Due to its wide reach in finance, the Bloomberg Terminal can have effects on the financial markets. Recently, the terminal experienced an outage that caused the U.K to postpone a debt auction, resulting in significant grief amongst traders around the world. In particular, the messaging and data services led to significant impediments in executing trades.

Thomson Reuters

Created by Thomson Corporation's 2008 acquisition of Reuters, Thomson Reuters is a multinational media and financial information resource. Thomson Reuters prides itself on delivering leading Intel on various sectors, from finance, tax and accounting to legal and intellectual property.

In 2011, Thomson Reuters moved beyond the realm of financial news with the release of a more affordable option to the Bloomberg Terminal namely Thomson Reuters Eikon. Like Bloomberg Terminal, Eikon is a software provider used to monitor and analyze financial information. Eikon provides finance professionals with access to market data, analytics and messaging tools. Information can also be exported to Microsoft Excel for continued data analysis. Furthermore, Eikon can use all tweets on a given subject to identify positive or negative indicators.

Unstructured data from social media sources have been the key to identifying the trends over the past decade, but many platforms, save for Eikon, have been unable to collect and analyze this data.

Market Share: Eikon and Bloomberg Terminal are the two most used business information platforms. Bloomberg Terminal's 315,000 users accounted for 57 percent of the market. By comparison, Eikon had 190,000 users who accounted for 34 percent of the market, and FactSet, S&P Capital IQ and Morningstar Direct comprise the rest. A majority of Bloomberg Terminal users reside in America and Asia while most Eikon users are in Europe, Middle East and Africa.

Price: For individuals who work at large financial institutions, the cost of either program is probably negligible. However, for higher education institutions, government agencies and small businesses, the costs are staggering. Bloomberg Terminal is the most expensive among financial data providers, costing \$24,000 per year. For customers with two or more subscriptions Bloomberg charges \$20,000 per year. By comparison, a fully loaded version of Eikon costs \$1,800 per month, with a bare bones version costing a mere \$300 per month.

Alternatives: While Bloomberg Terminal and Thomson Reuters Eikon are far and away the two most popular platforms in this space, there are a number of less expensive substitutes. FactSet, S&P Capital IQ, Morningstar and YCharts are all viable alternatives, depending on one's needs and budget.

After Bloomberg and Eikon, FactSet and Capital IQ are the next two most popular financial data platforms for professionals. FactSet revenues grew 7.3 percent to \$920 million, representing a growing presence in the financial data industry. For smaller and more personal use, YCharts offers a lite and professional version. At \$39 per month, the lite subscription is geared towards individual investors, whereas the \$300 per month professional service is better suited for small businesses. **Google** (GOOG) and **Yahoo!** (YHOO) Finance are the most cost-effective options, providing a good portion of YCharts services for free.

In addition to monitoring news and markets, Bloomberg can also be used to analyze individual securities. In fact, the analytics available in Bloomberg are very robust, and they cover a number of major asset classes including equities, fixed income, currencies, commodities, mutual funds and ETFs. If you are uncertain what the ticker symbol is for a security you want to look at, you can find the ticker by hitting the key for the asset class you are looking at followed by <TK>. For example, if you wanted to analyze Microsoft stock but didn't know the ticker, you could hit <equity> <TK> and then type in Microsoft and the ticker would appear.

Note: Using this function will pull up a list of all the tickers for that company. For instance, if a stock is listed on multiple exchanges, all of them will appear. Therefore, it is important to make sure that you select the correct security from the list when using this function (for instance, in this example most users would be seeking the ticker for Microsoft stock listed on the NASDAQ stock exchange).

technical analysis, Bloomberg offers an advanced suite of charting capabilities. While a complete description of available charts is beyond the scope of this discussion, some of the tools available include relative strength indicators (RSI), Bollinger Bands, intraday price and volume charts, candlestick charts and comparison charts displaying multiple securities.

An example of a simple price and volume chart for Microsoft stock is displayed below. (For rough idea):



Bloomberg also provides easy access to company updates. Bloomberg also offers company specific news. For example, once you have pulled up a security (such as Microsoft stock) you can type <CN> into the Bloomberg and a scrolling list of the most recent news stories concerning that security will come up. You can then click on any of those headlines in order to read the full story. Additional security specific information that can be found on Bloomberg includes earnings estimates (Bloomberg ticker EE), analyst recommendations (Bloomberg ticker ANR) and credit ratings (Bloomberg ticker CRPR).

FX Swap Curve across the globe and India and Correlation between Swap Curves

A swap spread is the difference between the fixed interest rate and the yield of a Treasury security of the same maturity as the term of the swap. In other words, the swap spread is

Module 1 : Certificate Course on Forex and Treasury Management

the spread that the fixed-rate payer agrees to pay above the Treasury yield with the same term to maturity. The swap rate is the sum of the yield of a Treasury with a comparable maturity plus the swap spread. The spread of the three-month LIBOR rate over the three month T-Bill Rate is the TED Spread (T-Bill and ED, the ticker symbol for the Eurodollar futures contract). In a LIBOR swap, the floating payments are three-month risk-free rate plus the TED spread. Even without Credit Risk, the Fixed Rate of a LIBOR swap (i.e. the Swap Rate) has to incorporate a fixed spread over the corresponding riskless Treasury rate in order to compensate for the floating TED spread. There is a high Correlation between Swap Spreads and credit spreads in various segments of the bond market. Actually, the swap spread reflects the current amount of perceived risk in the corporate bond market.

Accordingly, the spread of the swap rate over the Treasury rate for a given maturity could be positive or negative. Empirically, both Treasury yields and swap spreads do respond to market realities and developments. More typically, each of these variables drifts in one direction. But, unlike the yields on the Treasury notes which advance a bit and then move down a bit, while drifting in one direction, spreads tend to move steadily, though slowly, in one direction. In general, the swap spreads tend to move in the opposite direction of the treasury yields. If the yields are increasing, the spreads will be expected to fall. Although this inverse relationship holds good most of the time, it doesn't always do so. In short, "if treasury yields slump, swap spreads jump".

Swap Curve

The name given to the swap's equivalent of a yield curve. The swap curve identifies the relationship between swap rates at varying maturities. Used in similar manner as a bond yield curve, the swap curve helps to identify different characteristics of the swap rate versus time.

The swap market covers a variety of advantages. It has almost no government regulations, making it more comparable across different markets; some sovereign issues over a variety of tax benefits to domestic and/or foreign investors, making government curve comparative analysis across countries latently inconsistent. The swap market is an increasingly liquid market, with narrow bid-ask spreads and a wide spectrum of maturities. The supply of swaps is solely dependent on the number of counterparties wishing to transact at any given time. No position in an underlying asset is required, avoiding any potential repo specials" effects. Given the liquidity and large size of the swap market, new swaps with standard maturities are issued daily, keeping a constant forecast horizon, mitigating any potential coupon effects; bonds with high coupons tend to have lower yields to maturity than bonds with low coupons. The fungibility of swaps also prevents swaps with similar cash flows from trading at substantially different rates, contributing to market efficiency. Swaps have similar credit-risk properties across countries, making them more comparable than the government term structure. Government debt is considered risk-free; however, governments entail different credit-risk qualities across countries. Credit Risk is embedded in the swap curve as swaps are based on the balance sheet of the banking sector. In addition, swap rates are highly correlated with

yields on other fixed-income securities even under adverse market conditions, making swaps latently a better hedging vehicle than government issues. Other fixed-income securities include agency debt, corporate debt, and mortgage-backed securities. Swap prices are frequently quoted as a spread over government issues, thereby serving as a rough indicator of credit risk of the banking sector.

A swap spread is the difference between the fixed rate on an interest rate swap contract and the yield on a government bond with an equivalent tenor. The fixed swap rate is the rate that equates the present value of the swap to zero. Quoting the swap curve as a spread over the government curve can be unreliable, as there is a maturity mismatch and coupon rate between the different quoted government notes and their corresponding swap issues. Swap rates should be quoted directly off the swap market. Quoting the swap rate as a spread over government issues is common mainly in Anglo-Saxon swap markets. The most prominent impediment to swap market liquidity is swap counterparty credit exposure, which is balance-sheet intensive, in that it is a bilateral contract. The risk is the potential loss to a counterparty of the present value of a swap position if a swap party defaults. Therefore, parties to a swap transaction must be confident in the credit quality of their swap counterparty. A variety of credit enhancement mechanisms have been developed to somewhat reduce this potential credit exposure. Some of the mechanisms include the use of credit enhanced subsidiaries, credit derivatives, and an automatic swap unwind clause triggered by a credit event. In brief, the swap term structure offers several advantages over government curves, and is a robust tool for pricing and hedging fixed-income products. Correlations among governments and other fixed-income products have declined, making the swap term structure a more efficient hedging and pricing vehicle. With the supply of government issues declining and high correlations of credit spreads to swap spreads, the swap term structure is a potential alternative to the government term structure as a benchmark for measuring the relative value of different debt classes.

The swap curve depicts the relationship between the term structure and swap rates. The swap curve consists of observed market interest rates derived from market instruments that represent the most liquid and dominant instruments for their respective time horizons, bootstrapped and combined using an interpolation algorithm.

Check your progress

1. Why is it necessary to have contingency planning for IT in an organization?
2. What are the different threats from where disasters can occur?
3. What are different back-up computer processing choices?
4. Give five important themes of contingency planning process.
5. What are the controls required for smooth dealing operations?

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6. Briefly describe the Negotiated Dealing System (NDS) Process.
7. What are the different functionalities that are available in **KASTLE™**.
8. Explain the difference between functionalities of **REUTERS & BLOOMBERG**.
9. Why IT plays a Key Role in Treasury Operations.
10. What are the guidelines of RBI in respect of DRP and BCP?

Choose the appropriate answers for the following questions from the options given there under:

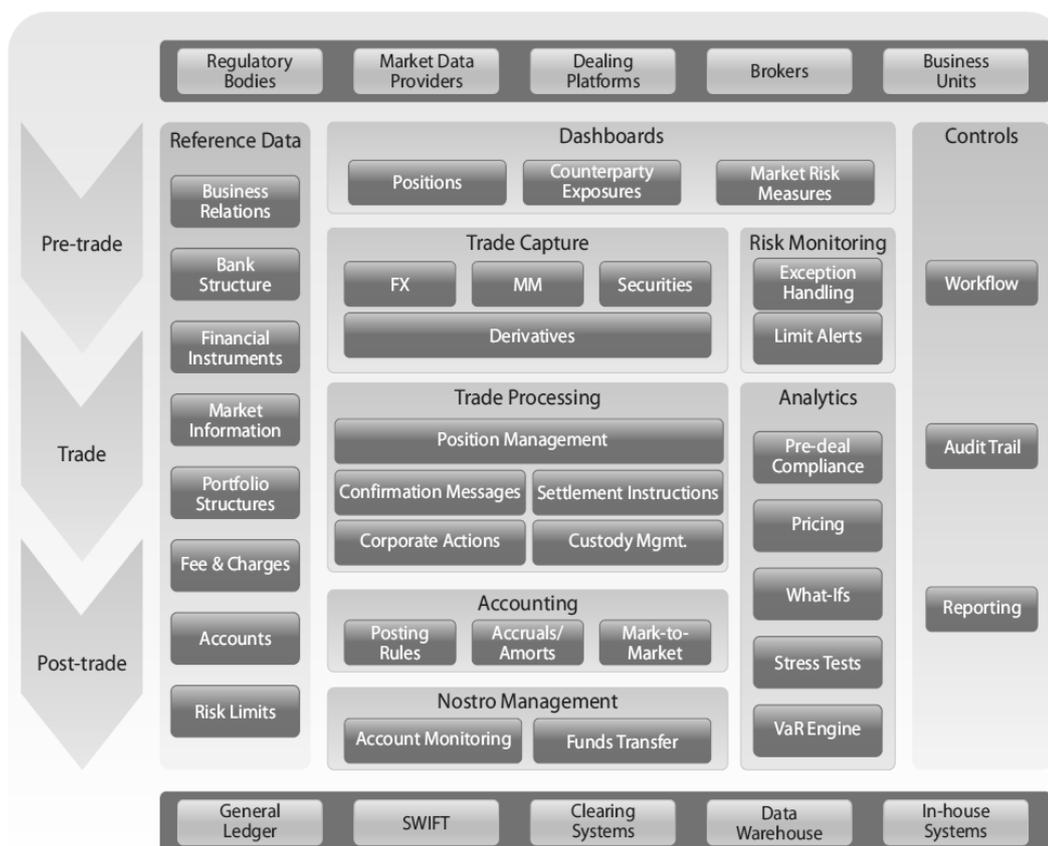
1. Contingency plans for computerized operations should include appropriate backup arrangements. Which of the following arrangements would be considered too vendor-dependent when vital operations require almost immediate availability of computer resources?
 - (a) A “hot site” arrangement
 - (b) A “cold site” arrangement*
 - (c) A “cold and hot site” combination arrangement
 - (d) Using excess capacity at another data center within the organization.
2. Which of the following best describes the primary reason as to why organizations develop contingency plans for their computer operations?
 - (a) To ensure that they will be able to process vital transactions in the event of any type of disaster.*
 - (b) To ensure the safety of important records.
 - (c) To help hold down the cost of insurance.
 - (d) To plan for sources of capital for recovery from any type of disaster.
3. An essential element of a disaster-recovery plan is a statement of the:
 - (a) System development standards for the organization.
 - (b) History of modifications to the operating system.
 - (c) Applications planned for new development.
 - (d) Responsibilities of each organizational unit in case of disaster.*
4. Greater reliance of management on computerized information systems increases the exposure to:
 - (a) Unauthorized third-party access to the system.

Treasury — Technology

- (b) Systematic programming errors.
 - (c) Inadequate information to the management
 - (d) Business Interruption*
5. NDS is an electronic trading platform for debt instruments. (True)
6. The system of Physical transfer of SGL form is still available in NDS. (False)
7. Membership of INFINET is not necessary to become members of NDS. (False)
8. NDS facilitates screen- based trading. (True)
9. The SGL depository of RBI maintains custody and ownership of SLR securities in electronic form. (True)
10. A Swap Spread means:
- (a) Swap spread is the spread that the fixed-rate payer agrees to pay above the Treasury yield with the same term to maturity*
 - (b) Difference between the variable interest rate payer agrees to the above Treasury yield and the same term to maturity.
 - (c) Difference between Fixed Rate and Variable Rate above the Treasury Yield with the same term to maturity.
 - (d) None of the above.

A BRIEF ON TREASURY & RISK MANAGEMENT SOLUTION (TRM) BROAD FUNCTIONALITIES

AN OVERVIEW OF TREASURY I-T STRUCTURE



An overview of the treasury solution

Supports to different Asset classes of the Bank: TRM supports comprehensive spectrum of asset classes such as forex, equities, mutual funds, bonds, money markets, derivatives, fixed incomes, gold (xau), Venture Capital Funds / Alternative Investment Funds and cash equivalents etc.

Full - Trade Life Cycle Support: TRM gives end-to-end ability to support trading activities, including pre and post-trade functions, work-flow configuration, automation and control of trade, collateral management, portfolio management and custodial services, profit and loss (P&L) and cash management, risk management, general accounting, regulatory compliance and reporting. System should be capable of checking short-selling.

Integration Workflow Capabilities: TRM provides capabilities like centering on the orchestration layer, integration and synchronization with external systems, third-party execution platforms or service providers etc.

Reporting Capabilities: TRM supports both internal and external (regulatory) reporting capabilities involving Business Intelligence (BI), real time data aggregation, NOOP (Net Overnight Open Position), MIS support for Performance report generation, Transaction level reporting. etc., preferably without using any third-party services / applications. System should be capable of generating ad-hoc reports / user- defined reports by the dealers at the front office

Risk Management: TRM gives functionalities like front-to-back risk management capabilities, including pre-trade to post-trade execution across all asset classes, real-time risk assessment capabilities, stress-testing tools, back testing, clean back testing, dirty back testing, limit management, VaR and Enterprise VaR (EVAR), Stress VaR etc., forward guidance along with limit management.

Portfolio / Positioning Management: TRM ability is to offer functions and features for better portfolio and positioning management, such as real-time monitoring, trading activities, dashboards etc.

New Asset Addition: TRM ability is to introduce a new asset and address its need of configuration.

New Regulation Addition: TRM ability is to cope with new regulatory requirements.

Process, Settlement and Clearing: TRM handles connections with different settlement / clearing systems, including any new connections, generation of deal confirmation messages and SWIFT messages.

Solution Delivery, Ongoing Support: TRM services are available both onshore and offshore.

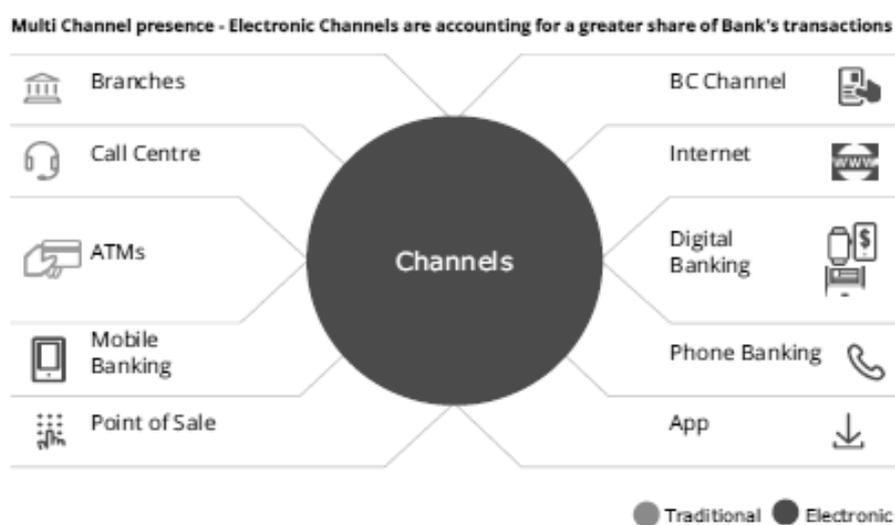
Open Architecture Reference Model: TRM can support and adopt industry standards such as data formats, messages and protocols, integration capabilities, and the provision of an extensible framework of services and standardized processes.

Componentization Capabilities: TRM having number of modules and components, and the methodology used to deliver the right mix between granularity and complexity. It includes the interface standards used and the components' ability to run on a standalone basis or in a distributed environment.

Trading App Capabilities: TRM supports mobile apps / widgets, whether stand-alone or as part of a Container / flexibility in creating new apps.

Mobility on Presentation Layer: TRM supports across channels like mobile devices and includes capabilities such as mobile data analysis and visualization.

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Exception Reports: TRM produces exception reports, audit trail reports and record post audit data.

Integration Capabilities: TRM is capable of integrating banks' existing systems and also other regulatory database (like PAN etc) for validation purposes e.g. Core Banking System, Trade Bills Software of Banks etc.

Forex Merchant capabilities: TRM facilitates merchant trades done through Forex enabled branches by providing Forex Rates, reporting of Forex Transactions to Dealing Room for Cover, limit management of bookings done directly with Treasury by customers, entire life-cycle management of forward contracts, PCFC, Bills etc. and other forex merchant products and to improve Treasury Business using asset-wise / customer-wise automatic margin additions etc.

Market Risk Analysis capabilities: TRM possesses capabilities like performance Analysis capabilities (Sharpe Ratio, Information Ratio, Sortino Ratio, Jensen alpha, Treynor measure etc.), Valuation of products like Bonds with embedded optionality /convertible bonds, Portfolio optimization (through (i) Efficient frontier portfolio (ii) Minimum variance portfolio (iii) Optimal portfolio & other methods), What-if & Regression analysis, Model validation module, Capabilities for computation of RAROC, maximization of Economic Value Addition (EVA) and RAROC with allocated and consumed capital, Analytical capabilities pertaining to Capital Planning, Financial Planning, Risk Budgeting and Performance Measurement System, Capital computation methods as Revised Market Risk Guidelines of Basel, Capture riskiness through Greeks, SA-CCR, CVA& DVA , FRTB etc. Beta of the equity portfolio, P/L of mutual fund and FI (Realized as well unrealized), P/L of derivative position, Rate scans for forex [Calculation based on trade date rather than settlement date].

Treasury — Technology

Cloud deployment capability: Ability of TRM system is deployed completely on Bank's in-premise cloud. The Bank may or may not decide at its sole discretion for the deployment to be done on its own cloud instead of deployment using physical resources. TRM system has the capability to be deployed on cloud as well with full efficiency.

Record Retention and Purging Functionality: TRM system is capable of enough space to store the records as per the bank's policy of record retention of 10 years. It also possesses Functionality to purge Matured deals and retrieve conveniently.

Month-end / Quarter-end reporting falling on holidays: TRM System is capable of generating reports in case month-end or quarter-end falls on Sundays or pre declared public holidays etc.

What is the role of the Clearing Corporation of India Limited (CCIL)?

The CCIL is the clearing agency for G-Secs. It acts as a Central Counter Party (CCP) for all transactions in G-Secs by interposing itself between two counterparties. In effect, during settlement, the CCP becomes the seller to the buyer and buyer to the seller of the actual transaction. All outright trades undertaken in the OTC market and on the NDS-OM platform are cleared through the CCIL. Once CCIL receives the trade information, it works out participant-wise net obligations on both the securities and the funds leg. The payable / receivable position of the constituents (gilt account holders) is reflected against their respective custodians. CCIL forwards the settlement file containing net position of participants to the RBI where settlement takes place by simultaneous transfer of funds and securities under the 'Delivery versus Payment' system. CCIL also guarantees settlement of all trades in G-Secs. That means, during the settlement process, if any participant fails to provide funds/ securities, CCIL will make the same available from its own means. For this purpose, CCIL collects margins from all participants and maintains 'Settlement Guarantee Fund'.

ABOUT SOCIETY FOR WORLDWIDE INTERBANK FINANCIAL TELECOMMUNICATION (SWIFT)

SWIFT's messaging services are trusted and used by more than 11,000 financial institutions in more than 200 countries and territories around the world. Providing reliable, secure and efficient messaging services to our community of users, SWIFT is the backbone of global financial communication.

SWIFT messaging services went live in 1977 to replace the Telex technology then widely used by banks to communicate instructions related to cross-border transfers. The service remains as relevant today as it was ground-breaking back then, representing the primary communications channel for financial institutions engaged in correspondent banking all around the world, and offering the most secure, cost-effective and reliable way of transmitting financial messages relating to payments, securities, treasury and trade.

Since its inception, SWIFT has played a leading role, together with its community, in the standardization that underpins global financial messaging and its automation. The use of standardized messages and reference data ensures that data exchanged between institutions is unambiguous and machine friendly, facilitating automation, reducing costs and mitigating risks. Through SWIFT, banks, custodians, investment institutions, central banks, market infrastructures and corporate clients, can connect with one another exchanging structured electronic messages to perform common business processes, such as making payments or settling trades.

SWIFT is committed to the confidentiality, integrity and availability of its messaging services. We have controls and procedures in place to: protect message data from unauthorized disclosure; to help ensure the accuracy, completeness and validity of messages and their delivery; and to ensure our service availability requirements are met.

SWIFTNet

SWIFT messaging platform, known as SWIFTNet, produces huge efficiencies for our users by enabling them to seamlessly and securely communicate through a single shared utility. Financial services organizations have increasingly complex and diverse messaging requirements—whether communicating with market infrastructures, with correspondents or with commercial clients. Over SWIFTNet, today, they offer four complementary messaging services, all of which allow for seamless straight-through-processing: FIN, InterAct, FileAct and WebAccess. Each service delivers different advantages that cater to the distinct messaging needs of different users.

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FIN

FIN is the longest established of all our messaging services. It enables the exchange of messages formatted with the traditional SWIFT MT standards. These standards cover a wide range of business areas and are widely used and accepted by the financial community. FIN enables the exchange of messages on a message-per-message basis, and supports the exchange of proprietary formats between market infrastructures and their customers. It also works in store-and-forward mode and offers extensive functionalities, such as message copy, broadcasts to groups of other users, and online retrieval of previously-exchanged messages.

InterAct

Like FIN, InterAct enables the exchange of messages on a message-per-message basis, and supports the exchange of proprietary formats between market infrastructures and their customers. In addition, InterAct offers increased flexibility, including store-and-forward messaging, real-time messaging, and real-time query-and-response options. The InterAct service enables the exchange of MX message types, which are expressed in the flexible XML syntax and developed in accordance with the ISO 20022 standard methodology, many of which have already been published as ISO 20022 standard definitions.

FileAct

FileAct enables the transfer of files. It is typically used to transfer large batches of messages, such as bulk payment files, very large reports, or operational data.

WebAccess

With WebAccess, SWIFTNet users can browse securely on financial web sites available on SWIFTNet using standard Internet technologies and protocols.

Connecting to SWIFT Messaging Services

In order to use SWIFT's Messaging Services, customers need to connect to the SWIFT environment. There are several ways of connecting to the SWIFT environment: directly via permanent leased lines, the internet, or SWIFT's cloud service (Lite2); or indirectly via their appointed partners.

"Messages sent by our customers are authenticated using our specialized security and identification technology (Files can also be sent via our FileAct messaging service. The connection descriptions apply to files as well as messages). Encryption is added as the messages leave the customer environment (or customers' partners' environments) and enter the SWIFT environment. Messages remain in the protected SWIFT environment, subject to all SWIFT's confidentiality and integrity commitments, throughout the transmission process - whilst they are transmitted to our operating centres (OPCs) where they are processed-until they are safely delivered to the receiver.

“In addition to the different connectivity options and our range of gateway products, SWIFT also provides a range of interfaces, providing seamless links between users’ internal systems and the SWIFT environment. Our different interfaces all manage the SWIFT protocols needed to access the SWIFT environment, whilst the different options are tailored to support different services and functionalities, depending on customer needs.

“All SWIFT messaging services can be combined with a range of standard and optional features. Users can increase efficiencies and tailor their SWIFTNet package to their messaging needs by making use of these additional tools.

Traffic & Pricing

“The SWIFT community keeps growing and records new peak messaging days several times a year. The growth in message volumes and users generates economies of scale which we return to SWIFT community through message price reductions.

“The more users join SWIFT and the more messaging traffic there is, the greater the benefits are to the community, as our traffic growth contributes to significant price reductions for our users. SWIFT offer several different pricing options to suit every user profile, including a fixed rate for large users.”

Standards

Enabling efficient communication for the financial world

SWIFT was founded in 1973, based on the ambitious and innovative vision of creating shared worldwide financial messaging services, and a common language for international financial messaging. To achieve this vision, SWIFT has long played an important role in standardization, notably by creating and maintaining global financial messaging and reference data standards.

Standards are vital to allow for a common understanding of the data across linguistic and systems boundaries and to permit the seamless, automated transmission, receipt and processing of communications exchanged between users. Use of standardized messages and reference data ensures that data exchanged between institutions is unambiguous and machine friendly; in turn this enables efficient automation, thereby reducing costs and mitigating risks.

Today financial players routinely send structured electronic messages to one another to perform common business processes, such as making payments or confirming trades. In its ongoing role as a financial messaging standardiser, the SWIFT Standards group works with the financial community to define standards for these messages. These standards specify the data elements that can be included in the messages, document the meaning and format of those data elements, and specify which of the data elements are mandatory, which are optional, and which are only required in specific business scenarios. The message standards

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also describe the actions expected of the message receivers, and, because some business processes require several messages to be exchanged, they also specify the order in which messages should be sent and received.

SWIFT Standards acts as Registration Authority (RA) for several standards that define universal codes for common data items, or *reference data*. RAs are appointed by the International Organization for Standardization (ISO) to ensure the integrity of the reference data defined by ISO standards, and to publish the data in an accessible form for the benefit of the user community. Examples of such standards include the ISO 9362 Business Identifier Code (BIC - commonly referred to as the “SWIFT” code), which is used to identify parties, and the ISO 10383 Market Identifier Code (MIC), which is used to identify exchanges, trading platforms, regulated or non-regulated markets and trade reporting facilities. SWIFT Standards also contributes to the formalization and implementation of other reference data standards, notably the ISO 17442 Legal Entity Identifier (LEI), which is increasingly required for regulatory reporting purposes. Financial messaging standards specify these codes wherever possible to minimize the ambiguity of data.

SWIFT Standards and the community

SWIFT Standards works with the user community to specify and publish *Market Practice* - rules and best-practice advice on how standards should be deployed to meet particular business needs or to comply with regulation.

The SWIFT Standards group maintains several important message standards. The SWIFT MT standard, for instance, is used for international payments, cash management, trade finance and treasury business. Working with the SWIFT community, SWIFT Standards operates the annual maintenance process for MT, which ensures that the standard evolves to meet changing market needs.

SWIFT Standards, under contract to ISO, also maintains two open messaging standards: ISO 15022, which is used for securities settlement and asset servicing, and ISO 20022, which is scoped to all financial industry processes.

The role of ISO 20022 is twofold: it is a methodology for creating financial messaging standards, and it is a related body of content, which includes definitions of common industry terms, and message definitions addressing an expanding range of business areas, including payments, cash management, treasury, cards and securities.

PAYMENT AND SETTLEMENT SYSTEMS

Overview of Payment Systems in India

The central bank of any country is usually the driving force in the development of national payment systems. The Reserve Bank of India as the central bank of India has been playing this developmental role and has taken several initiatives for Safe, Secure, Sound, Efficient, Accessible and Authorised payment systems in the country.

The Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), a sub-committee of the Central Board of the Reserve Bank of India is the highest policy making body on payment systems in the country. The BPSS is empowered to authorize, prescribe policies and set standards for regulating and supervising all the payment and settlement systems in the country. The Department of Payment and Settlement Systems of the Reserve Bank of India serves as the Secretariat to the Board and executes its directions.

In India, the payment and settlement systems are regulated by the Payment and Settlement Systems Act, 2007 (PSS Act) which was legislated in December 2007. The PSS Act as well as the Payment and Settlement System Regulations, 2008 framed there under came into effect from August 12, 2008. In terms of Section 4 of the PSS Act, no person other than the Reserve Bank of India (RBI) can commence or operate a payment system in India unless authorised by RBI. Reserve Bank has since authorised payment system operators of pre-paid payment instruments, card schemes, cross-border in-bound money transfers, Automated Teller Machine (ATM) networks and centralized clearing arrangements.

Payment Systems

The Reserve Bank has taken many initiatives towards introducing and upgrading safe and efficient modes of payment systems in the country to meet the requirements of the public at large. The dominant features of large geographic spread of the country and the vast network of branches of the Indian banking system require the logistics of collection and delivery of paper instruments. These aspects of the banking structure in the country have always been kept in mind while developing the payment systems.

Paper-based Payments

Use of paper-based instruments (like cheques, drafts, and the like) accounts for nearly 60% of the volume of total non-cash transactions in the country. In value terms, the share is presently around 11%. This share has been steadily decreasing over a period of time and electronic mode gained popularity due to the concerted efforts of Reserve Bank of India to popularize the electronic payment products in preference to cash and cheques.

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Since paper based payments occupy an important place in the country, Reserve Bank had introduced Magnetic Ink Character Recognition (MICR) technology for speeding up and bringing in efficiency in processing of cheques.

Later, a separate High Value Clearing was introduced for clearing cheques of value Rupees one lakh and above. This clearing was available at select large centres in the country (since discontinued). Recent developments in paper-based instruments include launch of Speed Clearing (for local clearance of outstation cheques drawn on core-banking enabled branches of banks), introduction of cheque truncation system (to restrict physical movement of cheques and enable use of images for payment processing), framing CTS-2010 Standards (for enhancing the security features on cheque forms) and the like.

While the overall thrust is on reducing the use of paper for transactions, given the fact that it would take some time to completely move to the electronic mode, the intention is to reduce the movement of paper—both for local and outstation clearance of cheques.

Electronic Payments

The initiatives taken by RBI in the mid-eighties and early-nineties focused on technology-based solutions for the improvement of the payment and settlement system infrastructure, coupled with the introduction of new payment products by taking advantage of the technological advancements in banks. The continued increase in the volume of cheques added pressure on the existing set-up, thus necessitating a cost-effective alternative system.

Electronic Clearing Service (ECS) Credit

The Bank introduced the ECS (Credit) scheme during the 1990s to handle bulk and repetitive payment requirements (like salary, interest, dividend payments) of corporates and other institutions. ECS (Credit) facilitates customer accounts to be credited on the specified value date and is presently available at all major cities in the country.

During September 2008, the Bank launched a new service known as National Electronic Clearing Service (NECS), at National Clearing Cell (NCC), Mumbai. NECS (Credit) facilitates multiple credits to beneficiary accounts with destination branches across the country against a single debit of the account of the sponsor bank. The system has a pan-India characteristic and leverages on Core Banking Solutions (CBS) of member banks, facilitating all CBS bank branches to participate in the system, irrespective of their location across the country.

Regional ECS (RECS)

Next to NECS, RECS has been launched during the year 2009. RECS, a miniature of the NECS, is confined to the bank branches within the jurisdiction of a Regional office of RBI. Under the system, the sponsor bank will upload the validated data through the Secured Web Server of RBI containing credit/debit instructions to the customers of CBS enabled bank branches spread across the Jurisdiction of the Regional office of RBI. The RECS centre will

process the data, arrive at the settlement, generate destination bank wise data/reports and make available the data/reports through secured web-server to facilitate the destination bank branches to afford credit/debit to the accounts of beneficiaries by leveraging the CBS technology put in place by the bank. Presently, RECS is available in Ahmedabad, Bengaluru, Chennai and Kolkata

Electronic Clearing Service (ECS) Debit

The ECS (Debit) Scheme was introduced by RBI to provide a faster method of effecting periodic and repetitive collections of utility companies. ECS (Debit) facilitates consumers / subscribers of utility companies to make routine and repetitive payments by 'mandating' bank branches to debit their accounts and pass on the money to the companies. This tremendously minimizes use of paper instruments apart from improving process efficiency and customer satisfaction. There is no limit as to the minimum or maximum amount of payment. This is also available across major cities in the country.

Electronic Funds Transfer (EFT)

This retail funds transfer system introduced in the late 1990s enabled an account holder of a bank to electronically transfer funds to another account holder with any other participating bank. Available across 15 major centers in the country, this system is no longer available for use by the general public, for whose benefit a feature-rich and more efficient system is now in place, which is the National Electronic Funds Transfer (NEFT) system.

National Electronic Funds Transfer (NEFT) System

In November 2005, a more secure system was introduced for facilitating one-to-one funds transfer requirements of individuals / corporates. Available across a longer time window, the NEFT system provides for batch settlements at hourly intervals, thus enabling near real-time transfer of funds. Certain other unique features viz. accepting cash for originating transactions, initiating transfer requests without any minimum or maximum amount limitations, facilitating one-way transfers to Nepal, receiving confirmation of the date / time of credit to the account of the beneficiaries, etc., are available in the system.

Real Time Gross Settlement (RTGS) System

RTGS is a funds transfer system where transfer of money takes place from one bank to another on a "real time" and on "gross" basis. Settlement in "real time" means payment transaction is not subjected to any waiting period. "Gross settlement" means the transaction is settled on one- to- one basis without bunching or netting with any other transaction. Once processed, payments are final and irrevocable. This was introduced in 2004 and settles all inter-bank payments and customer transactions above Rs.2 lakh.

Clearing Corporation of India Limited (CCIL)

CCIL was set up in April 2001 by banks, financial institutions and primary dealers, to function

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as an industry service organization for clearing and settlement of trades in money market, government securities and foreign exchange markets.

The Clearing Corporation plays the crucial role of a Central Counter Party (CCP) in the government securities, USD–INR forex exchange (both spot and forward segments) and Collateralised Borrowing and Lending Obligation (CBLO) markets. CCIL plays the role of a central counterparty whereby, the contract between buyer and seller gets replaced by two new contracts - between CCIL and each of the two parties. This process is known as 'Novation'. Through novation, the counterparty credit risk between the buyer and seller is eliminated with CCIL subsuming all counterparty and credit risks. In order to minimize the risks, that it exposes itself to, CCIL follows specific risk management practices which are as per international best practices. In addition to the guaranteed settlement, CCIL also provides non guaranteed settlement services for National Financial Switch (Inter bank ATM transactions) and for rupee derivatives such as Interest Rate Swaps.

CCIL is also providing a reporting platform and acts as a repository for Over the Counter (OTC) products.

Other Payment Systems

Pre-paid Payment Systems

Pre-paid instruments are payment instruments that facilitate purchase of goods and services against the value stored on these instruments. The value stored on such instruments represents the value paid for by the holders by cash, by debit to a bank account, or by credit card. The pre-paid payment instruments can be issued in the form of smart cards, magnetic stripe cards, internet accounts, internet wallets, mobile accounts, mobile wallets, paper vouchers, etc.

Subsequent to the notification of the PSS Act, policy guidelines for issuance and operation of prepaid instruments in India were issued in the public interest to regulate the issue of prepaid payment instruments in the country.

The use of pre-paid payment instruments for cross border transactions has not been permitted, except for the payment instruments approved under Foreign Exchange Management Act, 1999 (FEMA).

Mobile Banking System

Mobile phones as a medium for providing banking services have been attaining increased importance. Reserve Bank brought out a set of operating guidelines on mobile banking for banks in October 2008, according to which only banks which are licensed and supervised in India and have a physical presence in India are permitted to offer mobile banking after obtaining necessary permission from Reserve Bank. The guidelines focus on systems for security and inter-bank transfer arrangements through Reserve Bank's authorized systems.

On the technology front the objective is to enable the development of inter-operable standards so as to facilitate funds transfer from one account to any other account in the same or any other bank on a real time basis irrespective of the mobile network a customer has subscribed to.

ATMs / Point of Sale (POS) Terminals / Online Transactions

Presently, there are over 2,10,000 ATMs in India. Savings Bank customers can withdraw cash from any bank terminal up to 5 times in a month without being charged for the same. To address the customer service issues arising out of failed ATM transactions where the customer's account gets debited without actual disbursement of cash, the Reserve Bank has mandated re-crediting of such failed transactions within 12 working day and mandated compensation for delays beyond the stipulated period. Furthermore, a standardized template has been prescribed for displaying at all ATM locations to facilitate lodging of complaints by customers.

There are over 33,32,000 POS terminals in the country, which enable customers to make payments for purchases of goods and services by means of credit/debit cards. To facilitate customer convenience the Bank has also permitted cash withdrawal using debit cards issued by the banks at PoS terminals.

The PoS for accepting card payments also include online payment gateways. This facility is used for enabling online payments for goods and services. The online payment are enabled through own payment gateways or third party service providers called intermediaries. In payment transactions involving intermediaries, these intermediaries act as the initial recipient of payments and distribute the payment to merchants. In such transactions, the customers are exposed to the uncertainty of payment as most merchants treat the payments as final on receipt from the intermediaries. In this regard, in order to safeguard the interests of customers and to ensure that the payments made by them using Electronic/Online Payment modes are duly accounted for by intermediaries receiving such payments, directions were issued in November 2009, which require that the funds received from customers for such transactions need to be maintained in an internal account of a bank and the intermediary should not have access to the same.

Further, to reduce the risks arising out of the use of credit / debit cards over internet / IVR (technically referred to as card not present (CNP) transactions), Reserve Bank mandated that all CNP transactions should be additionally authenticated based on information not available on the card and an online alert should be sent to the cardholders for such transactions.

National Payments Corporation of India

The Reserve Bank encouraged the setting up of National Payments Corporation of India (NPCI) to act as an umbrella organization for operating various Retail Payment Systems (RPS) in India. NPCI became functional in early 2009. NPCI has taken over National Financial

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Switch (NFS) from Institute for Development and Research in Banking Technology (IDRBT). NPCI is expected to bring greater efficiency by way of uniformity and standardization in retail payments and expanding and extending the reach of both existing and innovative payment products for greater customer convenience.

Oversight of Payment and Settlement Systems

Oversight of the payment and settlement systems is a central bank function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change. By overseeing payment and settlement systems, central banks help to maintain systemic stability and reduce systemic risk, and to maintain public confidence in payment and settlement systems.

The Payment and Settlement Systems Act, 2007 and the Payment and Settlement Systems Regulations, 2008 framed thereunder, provide the necessary statutory backing to the Reserve Bank of India for undertaking the Oversight function over the payment and settlement systems in the country.

CODE OF CONDUCT FOR TRANSACTING IN GOVERNMENT SECURITIES USING RBI'S "NEGOTIATED DEALING SYSTEM –ORDER MATCHING (NDS-OM)"

[The contents of the code are also applicable to all Over the Counter (OTC) transactions done and reported on NDS-OM]

NDS-OM System:

The Negotiated Dealing System – Order Matching System (NDS-OM), hereinafter referred to as the "System" is an anonymous electronic order matching platform, owned by RBI. The System was launched on August 1, 2005. The system facilitates secondary market trading in all kinds of Central Government Securities, State Government Securities, Special Securities and Treasury Bills. The system is hosted and maintained by the Clearing Corporation of India Limited (CCIL) for and on behalf of RBI.

The System facilitates placement of bids and offers which it matches on price/time priority or yield/time priority that is, within the orders of the same price or yield (as applicable), it matches the order first received by the System. For example, if, for 7.80 % Government Security 2021, there are two bids of Rs.5 Crore each at price Rs.96.50, one received by the System at 9.30 am, and another at 9.45 am, the bid received at 9.30 am will get priority for being taken up for matching with an offer at the bid price. As soon as the bid received at 9.30 am has been matched by the System, in the event that the bid placed at 9.45 am is the next best bid, it would get the next priority. In case there is a bid for a price higher than Rs 96.50 at 9.45 am, the bid at the higher price, though received by the System at a time later than 09:45 am, would get priority over the earlier bid. Similar time priority logic applies to offers /sell orders with the lowest price/highest yield offered always getting the highest priority.

The system ensures complete anonymity among participants as counterparty information is not available to any of the system participants either pre= or post= trade, thus facilitating transparency without impeding fair pricing. The anonymity offered by the system enables large ticket execution without distorting market sentiment and/or price equilibrium which would normally be prevalent in bilateral market. Access is restricted to authorized users of entities that have been granted System membership by RBI. Others can access the System through any of the System members with whom they hold their gilt and fund accounts.

The System operates in a straight through processing (STP) environment viz., all trades concluded on the system flow directly to CCIL for settlement. CCIL acts as the central counterparty (CCP) for settlement of all trades concluded on the system subject to its Bye-Laws, Rules and Regulations.

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The system provides both pre-trade and post-trade information and on real-time basis to all users who are logged into the System. In addition, market information is also disseminated through RBI/CCIL websites and made available to Info Vendors for wider dissemination. This ensures transparency and better price discovery as against the voice-market (direct or brokered), where there could be a time delay in information dissemination.

Trading happens in standardized lot size of Rs.5 Crore (face value quantity), and in multiples thereof. For instruments where order matching is facilitated on price basis, presently price quotes are enabled in 0.0025 or multiples thereof. For securities traded on yield basis, yield inputs are facilitated in multiples of .0001 bps.

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/- (for dated securities) and Rs. 25,000/- (for Treasury Bills) is also available in the system.

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.

While order matching is facilitated in "clean" price and or yield terms, based on the type of instrument, settlements take place only in "dirty" price terms based on settlement considerations computed on the basis of relative clean traded price and taking into account broken period interest from the last coupon payment date for the traded security.

(For further full details, please see FIMMDA Web-site).