



3.5 PRODUCTS ON STOCK EXCHANGES

Basket Trade:

Basket trades are used by institutional investors or program traders to invest large amounts of money into a particular portfolio or index. A Single order to buy or sell a set of 15 or more securities is referred as Basket Trade. The true lover of derivatives finds them everywhere, under rocks and in the heavens. Indeed, the most surprising things can often be fruitfully interpreted as derivatives. Derivatives can easily become a way of thinking about life.

The Exchange has commenced trading in the Derivatives Segment with effect from June 9, 2000 to enable the investors to, inter-alia, hedge their risks. Initially, the facility of trading in the Derivatives Segment was confined to Index Futures. Subsequently, the Exchange has introduced the Index Options and Options & Futures in select individual stocks. The investors in cash market had felt a need to limit their risk exposure in the market to movement in Sensex.

With a view to provide investors the facility of creating Sensex linked portfolios and also to create a linkage of market prices of the underlying securities of Sensex in the Cash Segment and Futures on Sensex, the Exchange has provided to the investors as well its members, a facility of Basket Trading System on BOLT. In the Basket Trading System, the investors through the members of the Exchange are able to buy/ sell all 30 scrips of Sensex in one go in the proportion of their respective weights in the Sensex. The investors need not calculate the quantity of Sensex scrips to be bought or sold for creating Sensex linked portfolios and this function is performed by the system. The investors can also create their own baskets by deleting certain scrips from 30 scrips in the Sensex. Further, the investors can alter the weights of securities in such profiled baskets and enter their own weights. The investors can also select less than 100% weightage to reduce the value of the basket as per their own requirements.

To participate in this system, the members need to indicate number of Sensex basket(s) to be bought or sold, where the value of one Sensex basket is arrived at by the system by multiplying Rs.50 to prevailing Sensex. For e.g., if the Sensex is 4000, then value of one basket of Sensex would be $4000 \times 50 =$ i.e., Rs. 2,00,000/-. The investors can also place orders by entering value of Sensex portfolio to be bought or sold with a minimum value of Rs. 50,000/- for each order.

The Basket Trading System provides the arbitrageurs an opportunity to take advantage of price differences in the underlying Sensex and Futures on the Sensex by simultaneous buying and selling of baskets comprising the Sensex scrips in the Cash Segment and Sensex Futures. This is expected to provide balancing impact on the prices in both cash and futures markets.

The Basket Trading System, thus, meets the need of investors and also improves the depth in cash and futures markets. The facility of Basket Trading has been introduced by the Exchange w.e.f., August 14, 2000. The trades executed under the Basket Trading System on BOLT are subject to intra-day trading and gross exposure limits available to the members. The VaR, MTM margins etc, as are applicable to normal trades in the Cash Segment, are also recovered from the members.

Many derivatives fall into the general categories of forwards, futures and swaps on the one hand and calls and puts on the other. In any case, the market for derivatives is a “zero-sum game” in the sense that total profits and losses across counterparties are zero.

To be sure, while this book uses as examples securities that are commonly considered to be derivatives, the full scope of the subject needs to be appreciated. That is why, at the very outset, we have chosen to list, and briefly discuss, many types of derivatives. We have divided them into thirteen types:

- (1) forwards and futures
- (2) swaps
- (3) exchange-traded calls and puts
- (4) explicit corporate options
- (5) corporate debt securities
- (6) government securities
- (7) mortgages and insurance
- (8) securities of other financial institutions
- (9) exotic options
- (10) other financial options
- (11) natural resources
- (12) capital assets
- (13) other non-financial options

Types of derivatives

The most commonly used derivatives contracts are forwards, futures and options, which we shall discuss in detail later. Here we take a brief look at various derivatives contracts that have come to be used.

Forwards: A forward contract is a customized contract between two entities, where settlement takes place on a specific date in the future at today's pre-agreed price.

Futures: A futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future at a certain price. Futures contracts are special types of forward contracts in the sense that the former are standardized exchange-traded contracts.

Options: Options are of two types - calls and puts. Calls give the buyer the right but not the obligation to buy a given quantity of the underlying asset, at a given price on or before a given future date. Puts give 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 date.

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 than those in the opposite direction.



Warrants: Options generally have lives of upto one year, the majority of options traded on options exchanges having a maximum maturity of nine months. Longer-dated options are called warrants and are generally traded over-the-counter.

LEAPS: The acronym LEAPS means Long-Term Equity Anticipation Securities. These are options having a maturity of upto three years.

Baskets: Basket options are options on portfolios of underlying assets. The underlying asset is usually a moving average or a basket of assets. Equity index options are a form of basket options.

Swaptions: Swaptions are options to buy or sell a swap that will become operative at the expiry of the options. Thus a swaption is an option on a forward swap. Rather than have calls and puts, the swaptions market has receiver swaptions and payer swaptions. A receiver swaption is an option to receive fixed and pay floating. A payer swaption is an option to pay fixed and receive floating.

Debt Market:

The debt raised from the primary markets is predominantly of Government securities on account of borrowing by the Central Government. The other debt instruments constitute a very small percentage of the entire debt market. The debt market in India has not developed as much as the equity market. There is no trading floor where brokers bid and offer debt securities. There is no standardised market lot for purchase and sale of such securities. There is no settlement of transactions by an Exchange. The brokers / traders in the debt market negotiate the deal privately and the deal is struck. This deal is completed by the two parties to the deal. The debt market in India is still not as transparent as the equity market. The predominant security in the debt market is Government security. The debt instrument of corporates, financial institutions and banks constitute a tiny proportion of the entire debt market. The negotiated dealing systems (NDS) have been put in place and the banks, primary dealers and financial institutions having SGL accounts and current accounts with RBI are eligible to participate in NDS. It provides an electronic dealing platform (similar to equity market platform) for these participants in Government securities. It facilitates reporting of trades executed through exchanges. The NDS supports transaction in Government bonds, repos, call money, commercial paper, certificate of deposit and interest rate derivatives. NDS will facilitate submission of bids for auctions of Government securities. It will also facilitate dissemination of information relating to primary issuance through auction/sale on tap and underwriting apart from secondary market.

Segments in Indian Debt Market

Government Securities	67.24
State Loans	7.78
Public Sector Undertaking Bonds	7.00
Mutual Fund Units	6.60
Financial Institutions	5.02
T-Bills	2.90
Corporate Bonds	2.53
Others (Local Debt & Bonds)	<u>0.93</u>
	<u>100.00</u>

and pay floating. A payer swaption is an option to pay fixed and receive floating.

Debt Market:

The Debt Markets therefore play a very critical role in any modern economy. And more so in the case of developing countries like India which need to employ a large amount of capital and resources for achieving the desired degree of industrial and financial growth. The Indian Debt Markets are today one of the largest in Asia and includes securities issued by the Government (Central & State Governments), public sector undertakings, other government bodies, financial institutions, banks and corporates. The Indian Debt Markets with an outstanding issue size of close to Rs.14640 Billion (or Rs. 14,64,000 Crores) and a secondary market turnover of around Rs 28500 Billion (in the previous year 2005) is the largest of the Indian financial markets.

The Government Securities (G-Secs) market is the oldest and the largest component of the Indian Debt Market in terms of market capitalization, outstanding securities and trading volumes. The outstanding volumes of Government Securities (Central & State) at the end of March 2005 was around Rs. 14610 billion . The G-Secs. market plays a vital role in the Indian economy as it provides the benchmark for determining the level of interest rates in the country through the yields on the government securities which are referred to as the risk-free rate of return in any economy

Wholesale Debt Market Segment (WDS)

The Reserve Bank of India, vide the following circulars

- DBOD. FSC. BC. No. 39 / 24.76.002/2000 dated October 25, 2000
- IDMC. PDRS. PDS. No PDS-2 / 03.64.00/2000-01 dated November 13, 2000
- DBS. FID No. C 10 / 01.08.00 / 2000-0122 dated November, 2000

permitted the Banks, Primary Dealers and the Financial Institutions in India to undertake transactions in debt instruments among themselves or with non-bank clients through the members of Bombay Stock Exchange Limited (BSE). This notification paved the way for the Exchange to commence trading in Government Securities and other fixed income instruments. The Wholesale Debt Segment of the Exchange commenced its' operations on June 15, 2001.

The membership of the Debt Segment is being granted only to the Existing (equity segment) Members of the Exchange, who possess a minimum net worth of Rs.1.5 crores.. There is no security deposit applicable for the membership of the Debt Segment. The annual approval/ renewal charges at present is are Rs.25,000/-.(Currently waived)

The BSE Debt Segment offers the market participants in the Wholesale Debt Market an efficient and transparent trading mechanism through it's GILT System. The GILT system is envisaged to become the single point trading platform for all types of Debt securities and instruments. The GILT system will over a period of time provide trading facilities for Central and State Govt. securities, T-Bills, Institutional bonds, PSU bonds, Commercial Paper, Certificates of Deposit, Corporate debt instruments and the new innovative instruments like municipal securities, securitized debt, mortgage loans and STRIPs

GILT facilitates faster and efficient price dissemination through the Touchline of the Trading System. All relevant information which are of crucial importance in the trading process like the Accrued Interest and Delivery Value are readily available in the system A Yield Calculator is made available both separately and as part of the various order Entry and trade reporting screens



Trading, Clearing and Settlement in WDS

The major participants in the Wholesale Debt Market like the Banks, Primary Dealers and Institutions are enabled to execute trades through the Members of the WDS of the Exchange through the participant code (Client Code) allocated to each of them, which is one of the key parameters to be entered by the Member in the GILT system while executing the transaction.

The Settlement for the securities traded in the GILT System is on a Trade by Trade DVP basis. The primary responsibility of settling trades concluded in the wholesale segment rests directly with the participants who would settle the trades executed in the GILT system on their behalf through the Subsidiary Ledger Account of the RBI or the CCIL A/c through the NDS. Each transaction is settled individually and netting of transactions is not allowed. The Exchange monitors the Clearing and Settlement process for all the trades executed or reported through the 'GILT' system. The Members need to report the settlement details to the Exchange for all the trades undertaken by them on the GILT system. The settlements for all the trades executed on the GILT system are on a rolling basis. The Exchange permits settlement On

T+1 basis for all outright secondary market transactions in Government securities from May 24, 2005.

Growth in the WDS: The BSE Debt Segment has shown a gradual but consistent growth in turnover in the past few months with increased participation from the mainstream Banking and Institutional Players. The Wholesale Debt Segment today witnesses active participation today from about 100 Major Banks and Institutions in the Debt Market with Average Daily Turnover of around Rs.50 Crores currently. The Segment expects a sustained rise in turnover and participation in the next few months with the initiation of activity by new Members and the continued support and participation of the major Banks, Primary Dealers and Institutions.

Retail Debt Segment (REDS)

The Retail Debt Markets in the new millennium, presents a vast kaleidoscope of opportunities for the Indian investor whose knowledge and participation hitherto has been restricted to the Equities markets in India

The development of the Retail Debt Market has engaged the attention of the policy makers, regulators and the Government in the past few years. The potential of the Retail Debt Markets can be gauged from the investor strength of more than 40 million in the Indian Equities market who have powered the tremendous growth and transformation of the stock markets in recent times. Recognizing this opportunity at a very early date, BSE has been consistently in the forefront of the campaign for the creation of a Retail Debt Market and has consistently expounded the potential and need for the retail trading in G-Secs in the past few years in various important forums and to the key regulatory authorities.

Emergence of the Retail Market: It would be surprising to know that a retail debt market was at one point of time very much present in India. Right through the forties and the fifties and until the early sixties, a good proportion of the holdings of Govt. securities were concentrated with individual investors. Available statistics indicate that more than half of the holdings in Govt. securities was concentrated with retail investors in the early 50s

Today, there exists an inherent need for households to diversify their investment portfolio so as to include various debt instruments and especially Government securities. The growing



investments in the Bond Funds and the Money Market Mutual Funds are a sign of the increasing recognition of this fact by the retail investors.

Retail investors would have a natural preference for fixed income returns and especially so in the current situation of increasing volatility in the financial markets. The Central Government Securities (G-Secs) are the one of the best investment options for an individual investor today in the financial markets due to the following factors:

- Zero Default Risk - due to their sovereign guarantee, ensures the total safety of all investments in G-Secs.
- Lower average volatility in bond prices
- Greater returns as compared to the conventional safe investment avenues like Bank Deposits and Fixed Deposits, which also contain credit risk
- Higher Leverage - Greater borrowing capacity against G-Secs due to their zero risk status.
- Wider range of innovations in the nature of securities like TBills, Index linked Bonds, Partly Paid Bonds and others like STRIPS and Securities with call and put options to follow soon.
- Better and greater features to suit a large range of investment profiles and investor requirements.
- Growing Liquidity and the increased turnover in recent times in the Indian Debt Markets

Retail Trading in G-Secs

The Government of India and RBI, recognizing the need for retail participation had recently announced a scheme for enabling retail participation through a non-competitive bidding facility in the G-Sec auctions with a reservation of 5% of the issue amount for non-competitive bids by retail investors.

The Retail Debt Market Module aims at providing an efficient and reliable trading system for all debt instruments and securities of different types and maturities. The key features of the system are:

1. Trading: by electronic order matching based on price-time priority through the BOLT (BSE OnLine Trading) System with the continuous trading sessions from 9.55 a.m. to 3.30 p.m as is operational in the Equities Segment. Retail Trading in G-secs would be on a Rolling Settlements basis with a T+2 Delivery Cycle.
2. Clearing and Settlement: The Clearing and Settlement mechanism for the Retail trading in G-Secs is based on the existing institutional mechanism available at the Stock Exchanges. The trades executed throughout the continuous trading sessions will be netted out at the end of the trading hours through a process of multilateral netting. The transactions will be netted out member-wise and then scrip-wise so as to determine the net settlement and payment obligations of the members.
3. The Delivery obligations and the payment orders in respect of these members are generated by the Clearing and Settlement system of the Exchange. These statements indicate the



pay-in and pay-out positions of the members for securities and funds who would then give the necessary instructions to their Clearing Banks and depositories.

4. The entire risk management and the clearing and settlement activities for the trades executed in the Retail Debt Market System will be undertaken by the Exchange Clearing House.
5. Holding and Transfer of G-Secs: The G-secs for retail trading through Stock Exchanges can be held by investors in the Same Demat A/c (same as the Constituent SGL A/c which can be held with Banks or PDs) as is used for equities at the Depositories. NSDL and CDSL will hold the combined quantity of G-Secs in their SGL-II A/cs of RBI, meant only for client holdings.

Instruments traded in debt market

Debentures

According to section 2(12) of the Companies Act, a “Debenture” includes debenture stock, bonds and any other securities of a company, whether constituting a charge on the assets of the company or not. From this definition it is not very clear what is a debenture. A debenture has been defined as “acknowledgement of debt, given under the seal of the company and containing a contract for the repayment of the principal sum at a specified date and for the payment of interest at fixed rate per cent until the principal sum is repaid, and it may or may not give the charge on the assets to the company as security of the loan”. A debenture is a kind of document acknowledging the money borrowed containing the terms and conditions of the loan, payment of interest, redemption of the loan and the security offered (if any) by the company. Debentures are bonds issued by a company. Such bonds embody terms and conditions of loans, payment of interest, repayment of the loan etc. Debentures may be of the following kinds:

Bearer Debentures - Bearer debentures are similar to share warrants in that they too are negotiable instruments, transferable by delivery. The interest on bearer debentures is paid by means of attached coupons. On maturity, the principal sum is paid to the bearers.

Registered Debentures - These are debentures which are payable to the registered holders Le., persons whose names appear in the Register of debenture holders. Such debentures are transferable in the same way as shares.

Perpetual or Irredeemable Debentures - A debenture which contains no clause as to payment or which contains a clause that it shall not be paid back is called a ‘Perpetual or Irredeemable debenture’. These debentures are redeemable only on the happening of a contingency or on the expiration of a period, however long. It follows that debentures can be made perpetual, ie., the loan is repayable only on winding up or after a long period of time.

Redeemable Debentures - These debentures are issued for a specified period of time. On the expiry of that specified time the company has the right to pay back the debenture holders and have its properties released from the mortgage or charge. Generally, debentures are redeemable.

Debentures Issued as Collateral Security for a Loan - The term collateral security or secondary security means, a security which can be realised by the party holding it in the event of the loan being not paid at the proper time or according to the agreement of the parties. At times, the lenders of money are given debentures as a collateral security for loan. The nominal value of



such debentures is always more than the loan. In case the loan is repaid, the debentures issued as collateral security are automatically redeemed.

Naked Debentures - Normally debentures are secured by a mortgage or a charge on the company's assets. However debentures may be issued without any charge on the assets of the company. Such debentures are called 'Naked or Unsecured Debentures'. They are mere acknowledgement of a debt due from the company, creating no rights beyond those of unsecured creditors.

Secured Debentures - When any particular or specified property of the company is offered as security to the debentureholders and when the company can deal with it only subject to the prior right of the debentureholders, fixed charge is said to have been created. On the other hand, when the debentureholders have a charge on the undertaking of the company i.e., on the whole of the property of the company, both present and future, and when it can deal with the property in the ordinary course of business until the charge crystallises i.e., when the company goes into liquidation or when a receiver is appointed, the charge is said to be a floating charge. When the floating charge crystallises, the debentureholders have a right to be paid out of the sale proceeds of the assets subject to the right of the preferential creditor but prior to making any payment to unsecured creditors.

Convertible Debentures

A company may also issue Convertible Debentures (CDs) in which case an option is given to the debentureholders to convert them into equity or preference shares at stated rates of exchange, after a certain period. Such debentures once converted into shares cannot be reconverted into debentures. CDs may be fully or partly convertible. In case of fully convertible debentures, the entire face value is converted into shares at the expiry of specified period(s). In case of partly convertible debentures only the convertible portion is converted into shares at the end of the specified period and non-convertible portion is redeemed at the end of certain specified period. Non-convertible debentures do not confer any option on the holder to convert the debentures into shares and are redeemed at the expiry of specified period(s). CDs, whether fully or partly convertible, may be converted into shares at the end of specified period or periods in one or more stages. The company should get a credit rating of debentures done by credit rating agency. CDs are listed on stock exchanges. The Partly Convertible Debentures (PCDs) offers more flexibility to both companies and investors. It has been claimed to be better than fully convertible debentures as it does not automatically entail a large equity base, particularly in case of new companies. Experience shows that servicing of a large base of capital is not easy in case of new projects, especially if the company runs into rough weather due to marketing difficulties.

Mezzanine Finance It is a generic term for financial instruments that have the characteristics of both debt and equity. It may be secured or unsecured, and it may or may not involve a degree of participation in the upside of sale of business. It usually comes in the form of variations on preference shares or loan stock. It is usually provided by mezzanine finance specialists to back management buy-outs and buy-ins.

Hybrid Debt Instruments

In the fast changing financial scenario, it has become imperative for the corporate sector to



devise hybrid debt instruments for raising funds from the market. A brief discussion is made here about the hybrid debt instruments of finance.

Zero Interest Bond

Zero Interest Bonds (ZIBs) refer to those bonds which are sold at discount from their eventual maturity value and have zero interest rate. These certificates are sold to the investors for discount. The difference between the face value of the certificate and the acquisition cost is the gain to the investors. The investors are not entitled to any interest and are entitled to only repayment of principal sum on the maturity period. The individual investors prefer ZIB because of lower investment cost and low rate of conversion to equity if ZIBs are fully or partly convertible bonds. This is also a means of tax planning because the bonds do not carry any interest, which is otherwise taxable. Companies also find ZIB quite attractive because there is no immediate interest commitment. On maturity the bonds can be converted into equity shares or non-convertible debentures depending on the requirement of capital structure of a company.

Equity Warrants with NCDs

Equity warrant is a piece of paper attached to a non-convertible debenture which gives the buyer or holder right to apply for and acquire an equity share at a future date.

Secured Premium Notes

Secured Premium Note (SPN) is a tradable instrument with detachable warrant against which the holder gets equity share(s) after a fixed period of time. The SPN have feature of medium to long-term notes. With each SPN, a warrant may be attached to it, which will give the holder the right to apply for and get allotment of equity shares after certain period of time by which the SPN will be fully paid-up. The investor can plan his tax affairs to minimise tax burden. It will be possible to spread interest income evenly over the life of the investment and that the premium as capital gains. For example, those who retire after fifth year of investment can opt for low premium to reduced tax liability.

Illustration 36

KSBS Ltd. issues SPNs, each SPN is of the face value of Rs. 300. No interest will accrue on the instruments during the first three years after allotment. Subsequently, the SPN will be repaid in four equal instalments as follows:

Year	Initial investment	Principal repayment	Premium repayment
0	300	0	0
1	-	0	0
2	-	0	0
3	-	0	0
4	-	75	75
5	-	75	75
6	-	75	75

Deep Discount Bond

The Yes bank for the first time issued Deep Discount Bond (DDE). For a deep discount price of Rs. 2,700 an investor gets a bond with a face value of Rs. 1 lakh. The DDE appreciates to its face value over the maturity period of 25 years. The unique advantage of DDE is the elimination of investment risk. It allows an investor to lock-in the yield to maturity or keep on withdrawing from the scheme periodically after five years by returning the certificate. The deemed face value of Yes bank's DDE is as under:

Period years	Deemed face value Rs.	Nominal rate (compounded half-yearly) %	Effective rate %
After 5	5,700	15.52	16.12
After 10	12,000	15.49	16.09
After 15	25,000	15.40	15.99
After 20	50,000	15.14	15.71
After 25	1,00,000	14.98	15.54

The main advantage of DDE is that the difference between the sale price and original cost of acquisition will be treated as capital gain, if the investor sells the bonds on stock exchange. The DDE is safe, solid and liquid instrument. Investors can take advantage of these new instruments in balancing their mix of securities to minimise risks and maximise returns.

Zero Coupon Convertible Note

It is an instrument which can be converted into common stock of the issuer. If investors choose to convert they will be required to forego all accrued and unpaid interest. Zero coupon can generally be put to the issuer. This allows the issuer to obtain the advantages of convertible debt without too much dilution of common stock. Like any zero coupon bond the issuer gets a tax deduction for imputed interest, even though no cash is paid until maturity. Investors are also benefited since they have the opportunity to participate in the underlying stock appreciation. If the appreciation does not materialise investors still have the regular scheme of interest income. There are risk considerations also in view of the fact that prices of zero coupon bonds are much more sensitive to changing interest rates than coupon bonds. In case if the proposal does not seem to be advantageous to convert, the investor will be left with a relatively low yield to maturity. Since zero coupon convertibles often can be put to the issuer, the issuer may be forced to refinance the debt at a disadvantageous time.

Debt for Equity Swap

This instrument is an offer from an issuer of debt securities to its debt holders to exchange the debt for the issuer common or preferred stock. The issuer who wishes to offer debt for equity swaps does so with a view to increasing equity capital for the purposes of improving its debt-equity ratio and also enhance its debt raising capacity. It also helps issuers to reduce their interest expenses and enables them to replace it with dividends on stock that are payable at their discretion. Investors get attracted because of the potential appreciation in the value of the



stock. There are risk considerations in view of the fact swaps may dilute earnings per share of issuer. In addition, dividends are not tax deductible while interest on tax securities is taxable.

Junk Bonds

Junk bonds are corporate bonds with low ratings from a major credit rating agencies. High-rated bonds are called investment grade bonds, low rated bonds are called speculative-grade bonds or less formally called as 'Junk bonds'. A bond may receive a low rating for a number of reasons. If the financial condition or business outlook of the company is poor, bonds are rated speculative-grade. Bonds are also rated speculative-grade if the issuing company' already has large amounts of debt outstanding. Some bonds are rated speculative-grade; because they are subordinated to other debt i.e. their legal claim on the firm's assets in the event of default stands behind the other claim, so called senior debt. Junk bonds are traded in a dealer market rather than being traded in stock exchanges. Institutional investors hold the largest share of junk bonds. Firms with low credit ratings are willing to pay 3 to 5 percent more than the investment grade corporate debt to compensate for greater risk. Junk bonds are a high yield security, because of this reason junk bonds are widely used as a source of finance in takeovers and leveraged buy-outs. Junk bonds lie between conventional investment as equities and investment-grade bonds. Junk bonds are riskier than investment-grade bonds but less risky than equity. Junk bonds may have cost or tax advantage that allow for some marginal increase in debt. But these advantages are not likely to induce bondholders to invest in junk bonds more recklessly than other safer debt instruments.

Step-up and step-down Debentures

The terms of issue of stepped up debenture contains that instead of making conversion at one go at the end of the tenure, it has designed the instrument in such a way that the equity component is augmented gradually. For example, the stepped up debenture has been priced at the face value of Rs. 50, with a coupon of 18% p.a. (interest payable half yearly) and a tenure of three years. The debt component will be converted into equity in a phased manner over a period of three years from the date of the issue. The conversion will be done at par value at the rate of 20% at the end of first year and 40% each at the end second and third years.

A STEP-DOWN STRUCTURE
Year I 2 3 4 5

A STEP-UP STRUCTURE

STEP-DOWN AND STEP-UP INTEREST RATE STRUCTURE

As the scale of business increases, via funding through borrowings, proportional increases in equity should also be brought in. A debt instrument with interest rates that either ascend or descend, reaching upto the highest or lowest level in the terminal year.

Other Hybrid Debt Instruments

Multi-option Secured Redeemable Convertible Debentures - Where a debenture gives the holder thereof two or more different options, it may be called a multi-option debenture. It is a species of debenture. It is essentially a debenture in character and is secured redeemable and convertible into equity shares. Its chief feature is the multi-options available to the investor.

Callable Bond - A callable bond is a bond which the issuer has the right to call in and pay off at a price stipulated in the bond contract. The price the issuer must pay to retire a callable bond when it is called is termed as 'call price'. The main advantage in callable bond is the issuers have an incentive to call their existing bonds if the current interest rate in the market is sufficiently lower than the bond's coupon rate. Usually the issuer cannot call the bond for a certain period after issue.

Option Tender Bonds - The option tender bonds are bonds with put option which give the bondholders the right to sell back their bonds to the issuers normally at par. Issuers with puts are aimed both at investors who are pessimistic about the ability of interest rates to decline over the long-term and at those who simply prefer to take a cautious approach to their bond buying.

Guaranteed Debentures - Some businesses are able to raise long term money because their debts are guaranteed, usually by their parent companies. In some instances the State Governments guarantee the bonds issued by the State Government undertakings and corporation like Electricity Supply Board, Irrigation Corporation etc.

Subordinated Debentures - A subordinated debenture is an unsecured debt which is junior to all other debts i.e., other debt holders must be fully paid before the subordinated debentureholders receive anything. This type of debt will have a higher interest rate than more senior debt and will frequently have rights of conversion into ordinary shares. Subordinated debt is often called 'Mezzanine finance' because it ranks between equity and standard debt.

Floating Rate Bonds - The interest paid to the floating rate bondholders changes periodically depending on the market rate of interest payable on the gilt-edged securities. These bonds are also called 'Adjustable Interest Bonds or Variable Rate Bonds'.

Indexed Bonds - Fixed income and fixed sum repayments are uneconomic in times of rapid inflation. Indexed bond is a financial instrument which retains the security and fixed income of the debenture but which also provides some safeguard against inflation.

Inflation Adjusted Bonds - Inflation Adjusted Bonds (IABs) are bonds which promise to repay both the principal and the interest, by floating both these amounts upwards or downwards in line with the movements in the value of the specified index of commodity prices (Inflation rate).

Credit Wrapping - Credit wrapping is a technique by which bonds are issued by a company with a poor rating can be shored up with the assistance of an institution with a strong credit rating. It involves the institution agreeing to underwrite a proportion of the amount payable in the event of default at the time of redemption. In many cases it is the only way in which poorly rated companies can issue bonds.

Interest Rate Futures:

An **Interest Rate Future** is a future contract with an interest-bearing instrument as the underlying asset.



Examples include Treasury-bill futures, Treasury-bond futures and Eurodollars futures.

The global market for exchange-traded interest rate futures is notionally valued by the bank of International settlements at \$22,794,200 million in 2008.

Exchange traded funds

If an investor wants to have the cake and eat it too, the exchange traded fund could be the way out. There are five ETFs in India at present, of which three are based on the 50-share S&P CNX Nifty index, one on the 200-share CNX Nifty Junior, and the third on the 30-share BSE Sensex.

How an ETF works: ETFs are open-ended exchange traded funds that are designed to track specific indices and trade just like any other stock, combined with the benefits of a mutual fund. While ETFs are similar to index funds, they differ in some ways. ETFs can be bought and sold over the exchange through a broker on a daily basis at real-time prices unlike traditional equity funds. As they are traded on the exchange they can be bought / sold through any broker across the country thereby reaching out to a larger number of investors at the lowest possible cost. ETFs are the latest and the fastest growing mutual fund structure in the world. Globally, since the introduction in the United States, in 1993, ETFs have grown rapidly with around \$163 billion invested in over 291 indices (as on July 2003). ETFs are different from conventional index funds in the sense that ETFs are traded throughout the day unlike index funds whose NAVs are computed.

While many investors have similar outlooks, no two are exactly alike. ETFs allow long-term investors to diversify their portfolio at one shot. As ETFs are no load schemes and annual management fees are generally lower, it is an easy and cost efficient way to invest in a basket of securities. It provides liquidity for those investors with a shorter-term horizon as they can trade intra-day at prices near to the net asset value. Being real-time, it gives investors better control and flexibility to manage their investment. As the initial investment is low, investors find it simple and convenient to buy/sell.

India joined the ETF club in December 2001 with the launch India's first ETF 'Nifty BeES' (Nifty Benchmark Exchange-traded Scheme) by Benchmark Mutual Fund, based on the S&P CNX Nifty Index. Since then Benchmark has launched the Junior BeES and the Liquid BeES.

Nifty BeES has appreciated 42.24 per cent on a monthly average to current price of Rs 138.16 till date from Rs 97.13 in April 2003. While Junior BeES is based on the CNX Nifty Junior Index and has been the best performing fund in 2003, Liquid BeES is the world's first liquid ETF. The star performer among all the ETFs has been CNX Nifty Junior Index which has appreciated a whooping 72.92 per cent during the period since April 2003 from Rs 132.53 to Rs 229.17 till date.

By their nature ETFs are passive funds. But as seen in case of Junior BeES, passive fund management does have a major role to play in the Indian markets. Now the investors are turning smart and are resorting to arbitrage opportunities provided between the spot, future and the ETF. On the other hand, investors got another opportunity in July, when SUNDER, approximately equal to 1/10th of the value of S&P CNX Nifty listed on the stock exchange.

The UTI AMC managed 'Sunder' shares are now embarking on a second round of fund mobilisation. The NAV of Sunder is declared on a daily basis and the asset management company can also declare the dividend in the scheme. The only ETF which trends the key Sensex is



SPIcE, managed by Prudential-ICICI. It trades like any other equity share in the cash segment of a stock exchange. The price of SPIcE is linked to the Sensex, which is approximately 1/100th of Sensex. Initially, SPIcE units were created out of IPO (*initial public offering*) proceeds. Subsequently, SPIcE units are being created and redeemed on an on-going basis through a creation and redemption process between the authorized participants and the fund.

Authorized participants are generally large institutions / arbitrageurs / market makers / brokers who hold large chunks of Sensex stocks and exchange the same for SPIcE units. Thus, the trading of SPIcE units on the stock exchanges for investors would be totally separate from the creation process. In fact, we can say that SPIcE units trade on two markets concurrently: primary and secondary markets. The pricing of SPIcE units is continuous during normal trading hours. Each SPIcE unit will trade at its net asset value, which is approximately 1/100th of Sensex. For example, the price of SPIcE in April (monthly average) was 30.38 when the Sensex was 3036.66 and in September (average) it is Rs 43.75, when the Sensex is 4320.32, a rise of 44.01 per cent as against the appreciation of 42.29 per cent in the Sensex. You can buy an ETF just the way you buy a share — from a stock exchange. You can also buy it from a mutual fund that manages such a scheme.

Mutual Funds

Open-ended Funds

Open-ended or open mutual funds are much more common than closed-ended funds and meet the true definition of a mutual fund – a financial intermediary that allows a group of investors to pool their money together to meet an investment objective– to make money! An individual or team of professional money managers manage the pooled assets and choose investments, which create the fund's portfolio. They are established by a fund sponsor, usually a mutual fund company, and valued by the fund company or an outside agent. This means that the fund's portfolio is valued at "fair market" value, which is the closing market value for listed public securities. An open-ended fund can be freely sold and repurchased by investors.

Advantages: Open funds are much more flexible and provide instant liquidity as funds sell shares daily. You will generally get a redemption (sell) request processed promptly, and receive your proceeds by check in 3-4 days. A majority of open mutual funds also allow transferring among various funds of the same "family" without charging any fees.

Open funds range in risk depending on their investment strategies and objectives, but still provide flexibility and the benefit of diversified investments, allowing your assets to be allocated among many different types of holdings. Diversifying your investment is key because your assets are not impacted by the fluctuation price of only one stock. If a stock in the fund drops in value, it may not impact your total investment as another holding in the fund may be up. But, if you have all of your assets in that one stock, and it takes a dive, you're likely to feel a more considerable loss.

Risks: Risk depends on the quality and the kind of portfolio you invest in. One unique risk to open funds is that they may be subject to inflows at one time or sudden redemptions, which leads to a spurt or a fall in the portfolio value, thus affecting your returns. Also, some funds invest in certain sectors or industries in which the value of the portfolio can fluctuate due to various market forces, thus affecting the returns of the fund.



Closed-ended Funds

Close-ended or closed mutual funds are really financial securities that are traded on the stock market. Similar to a company, a closed-ended fund issues a fixed number of shares in an initial public offering, which trade on an exchange. Share prices are determined not by the total net asset value (NAV), but by investor demand. A sponsor, either a mutual fund company or investment dealer, will raise funds through a process commonly known as underwriting to create a fund with specific investment objectives. The fund retains an investment manager to manage the fund assets in the manner specified.

Advantages: The prospect of buying closed funds at a discount makes them appealing to experienced investors. The discount is the difference between the market price of the closed-end fund and its total net asset value. As the stocks in the fund increase in value, the discount usually decreases and becomes a premium instead. Savvy investors search for closed-end funds with solid returns that are trading at large discounts and then bet that the gap between the discount and the underlying asset value will close. So one advantage to closed-end funds is that you can still enjoy the benefits of professional investment management and a diversified portfolio of high quality stocks, with the ability to buy at a discount.

Risks: Investing in closed-end funds is more appropriate for seasoned investors. Depending on their investment objective and underlying portfolio, closed-ended funds can be fairly volatile, and their value can fluctuate drastically. Shares can trade at a hefty discount and deprive you from realizing the true value of your shares. Since there is no liquidity, investors must buy a fund with a strong portfolio, when units are trading at a good discount, and the stock market is in position to rise.

a. Risk Management System

Risk Management Strategies

Many corporate executives are faced with the challenge of managing the risks associated with low cost basis and restricted-stock holdings (i.e., concentrated equity positions). There are many strategies available, each with unique characteristics and requirements. In general, these strategies provide holders of concentrated equity positions the ability to protect against a decrease in the value of the stock, generate liquidity, diversify the exposure, and potentially defer capital gains taxes.

Management Strategies include the following:

- Risk Avoidance
- Risk Abatement
- Risk Retention
- Risk Transfer
- Risk Allocation

Risk Avoidance is just that, avoiding the risk associated with a specific task, activity or project. Often, following the review of a contract, it is determined that a project is just too risky. The client may decide not to bid the work at all, or remove that element of the work from their bid, sometimes using an alternate deduct to delineate the exclusion. Risk avoidance is strictly a business decision, and sometimes a very good strategy if construction documents are unclear, ambiguous or incomplete.



Risk Abatement is the process of combining loss prevention or loss control to minimize a risk. This risk management strategy serves to reduce the loss potential and decrease the frequency or severity of the loss. Risk abatement is preferably used in conjunction with other risk management strategies, since using this risk management method alone will not totally eliminate the risk.

Risk Retention is a good strategy only when it is impossible to transfer the risk. Or, based on an evaluation of the economic loss exposure, it is determined that the diminutive value placed on the risk can be safely absorbed. Another consideration in retaining a risk is when the probability of loss is so high that to transfer the risk, it would cost almost as much as the cost of the worst loss that could ever occur, i.e., if there is a high probability of loss, it may be best to retain the risk in lieu of transferring it.

Risk Transfer is the shifting of the risk burden from one party to another. This can be done several ways, but is usually done through conventional insurance as a risk transfer mechanism, and through the use of contract indemnification provisions.

Risk Allocation is the sharing of the risk burden with other parties. This is usually based on a business decision when a client realizes that the cost of doing a project is too large and needs to spread the economic risk with another firm. Also, when a client lacks a specific competency that is a requirement of the contract, e.g., design capability for a design-build project. A typical example of using a risk allocation strategy is in the formation of a joint venture.

Regardless of how the portfolio management and risk management activity is characterized, e.g., investing, trading, speculating, or hedging; regardless of the markets and instruments traded; and, regardless of the strategies and tactics employed; one requirement is common to all applications - the need to understand and manage the risk inherent in the underlying activity. All analytical and decision making and implementation processes are oriented to making sure that risk can be prudently managed before focusing on the potential reward

Risk Management (Retail Debt Market)

Base Capital & Networth Requirements

- Clearing members of Capital Market and Trading members of the WDM segment of the Exchange will be allowed to participate in clearing and settlement of trades done in Government securities, subject to a minimum net worth of Rs.1 crore.
- An initial contribution to the Settlement Guarantee Fund (SGF) of this market by way of interest free security deposit (IFSD) of Rs.5 lakhs is required to be kept with NSCCL. A member desirous of participating in this segment may opt to set aside a contribution of Rs.5 lakhs from his additional base capital available on the Capital Market segment and / or Futures & Options segment (s) towards this IFSD.

Margins & Gross Exposure Limits

- Mark to market margins will be applicable on all-open positions in government securities and shall be calculated on the basis of ZCYC prices. This margin shall be payable on T + 1 day.
- Institutions that are permitted under the relevant regulations to transact only on the basis of giving and taking delivery will operate through the custodial mechanism and shall



be exempt from margin as in the case of the equities. Custodial trades on behalf of Provident Funds transacting through SGL – II accounts shall also be eligible for margin exemption.

- The gross exposure in respect of these securities shall not exceed 20 times of the IFSD. Any member desirous of a higher exposure will be required to bring in additional base capital as in Capital Market segment.

National Stock Exchanges (NSE)- Derivatives Segment: Risk Management by NSCCL: A sound risk management system is integral to an efficient clearing and settlement system. NSE introduced for the first time in India, risk containment measures that were common internationally but were absent from the Indian securities markets.

NSCCL has put in place a comprehensive risk management system, which is constantly upgraded to pre-empt market failures. The Clearing Corporation ensures that trading member obligations are commensurate with their network.

Risk containment measures include capital adequacy requirements of members, monitoring of member performance and track record, stringent margin requirements, position limits based on capital, online monitoring of member positions and automatic disablement from trading when limits are breached, etc.

We will discuss the above in more detail individually

Minimum Base Capital: A Clearing Member (CM) is required to meet with the Base Minimum Capital (BMC) requirements prescribed by NSCCL before activation. The CM has also to ensure that BMC is maintained in accordance with the requirements of NSCCL at all points of time, after activation.

Every CM is required to maintain BMC of Rs.50 lakhs with NSCCL in the following manner:

1. Rs.25 lakhs in the form of cash.
2. Rs.25 lakhs in any one form or combination of the below forms:
 - i. Cash
 - ii. Fixed Deposit Receipts (FDRs) issued by approved banks and deposited with approved Custodians or NSCCL
 - iii. Bank Guarantee in favour of NSCCL from approved banks in the specified format.
 - iv. Approved securities in demat form deposited with approved Custodians.

In addition to the above BMC requirements, every CM is required to maintain BMC of Rs.10 lakhs, in respect of every trading member(TM) whose deals such CM undertakes to clear and settle, in the following manner:

1. Rs.2 lakhs in the form of cash.
2. Rs.8 lakhs in a one form or combination of the following:
 - i. Cash
 - ii. Fixed Deposit Receipts (FDRs) issued by approved banks and deposited with approved Custodians or NSCCL
 - iii. Bank Guarantee in favour of NSCCL from approved banks in the specified format.
 - iv. Approved securities in demat form deposited with approved Custodians.

Any failure on the part of a CM to meet with the BMC requirements at any point of time, will be treated as a violation of the Rules, Bye-Laws and Regulations of NSCCL and would attract disciplinary action inter-alia including, withdrawal of trading facility and /ore clearing facility, closing out of outstanding positions etc.

Risk Involved in Trading in Derivatives Contracts

The amount of margin is small relative to the value of the derivatives contract so the transactions are 'leveraged' or 'geared'. Derivatives trading, which is conducted with a relatively small amount of margin, provides the possibility of great profit or loss in comparison with the principal investment amount. But transactions in derivatives carry a high degree of risk.

You should therefore completely understand the following statements before actually trading in derivatives trading and also trade with caution while taking into account one's circumstances, financial resources, etc. If the prices move against you, you may lose a part of or whole margin equivalent to the principal investment amount in a relatively short period of time. Moreover, the loss may exceed the original margin amount.

- A. Futures trading involves daily settlement of all positions. Every day the open positions are marked to market based on the closing level of the index. If the index has moved against you, you will be required to deposit the amount of loss (notional) resulting from such movement. This margin will have to be paid within a stipulated time frame, generally before commencement of trading next day.
- B. If you fail to deposit the additional margin by the deadline or if an outstanding debt occurs in your account, the broker / member may liquidate a part of or the whole position or substitute securities. In this case, you will be liable for any losses incurred due to such close-outs.
- C. Under certain market conditions, an investor may find it difficult or impossible to execute transactions. For example, this situation can occur due to factors such as illiquidity i.e. when there are insufficient bids or offers or suspension of trading due to price limit or circuit breakers etc.
- D. In order to maintain market stability, the following steps may be adopted: changes in the margin rate, increases in the cash margin rate or others. These new measures may be applied to the existing open interests. In such conditions, you will be required to put up additional margins or reduce your positions.
- E. You must ask your broker to provide the full details of the derivatives contracts you plan to trade i.e. the contract specifications and the associated obligations.

Risk-reducing orders or strategies: The placing of certain orders (e.g., "stop-loss" orders, or "stop-limit" orders) which are intended to limit losses to certain amounts may not be effective because market conditions may make it impossible to execute such orders. Strategies using combinations of positions, such as "spread" positions, may be as risky as taking simple "long" or "short" positions.

Suspension or restriction of trading and pricing relationships :_Market conditions (e.g., illiquidity) and /or the operation of the rules of certain markets (e.g., the suspension of trading in any contract or contact month because of price limits or "circuit breakers") may increase the risk of loss due to inability to liquidate / offset positions.



Deposited cash and property : You should familiarise yourself with the protections accorded to the money or other property you deposit particularly in the event of a firm insolvency or bankruptcy. The extent to which you may recover your money or property may be governed by specific legislation or local rules. In some jurisdictions, property which has been specifically identifiable as your own will be pro-rated in the same manner as cash for purposes of distribution in the event of a shortfall. In case of any dispute with the member, the same shall be subject to arbitration as per the byelaws / regulations of the Exchange.

Risk of Option holders

1. An option holder runs the risk of losing the entire amount paid for the option in a relatively short period of time. This risk reflects the nature of an option as a wasting asset which becomes worthless when it expires. An option holder who neither sells his option in the secondary market nor exercises it prior to its expiration will necessarily lose his entire investment in the option. If the price of the underlying does not change in the anticipated direction before the option expires to an extent sufficient to cover the cost of the option, the investor may lose all or a significant part of his investment in the option.
2. The Exchange may impose exercise restrictions and have authority to restrict the exercise of options at certain times in specified circumstances

Risks of Option Writers

1. If the price movement of the underlying is not in the anticipated direction the option writer runs the risks of losing substantial amount.
2. The risk of being an option writer may be reduced by the purchase of other options on the same underlying interest-and thereby assuming a spread position-or by acquiring other types of hedging positions in the options markets or other markets. However, even where the writer has assumed a spread or other hedging position, the risks may still be significant. A spread position is not necessarily less risky than a simple 'long' or 'short' position.
3. Transactions that involve buying and writing multiple options in combination, or buying or writing options in combination with buying or selling short the underlying interests, present additional risks to investors. Combination transactions, such as option spreads, are more complex than buying or writing a single option. And it should be further noted that, as in any area of investing, a complexity not well understood is, in itself, a risk factor. While this is not to suggest that combination strategies should not be considered, it is advisable, as is the case with all investments in options, to consult with someone who is experienced and knowledgeable with respect to the risks and potential rewards of combination transactions under various market circumstances.

Trading at the Futures & Options Segment of NSE - Risk Management System

The salient features of risk containment measures on the F&O segment are:

1. The financial soundness of the members is the key to risk management. Therefore, the requirements for membership in terms of capital adequacy (net worth, security deposits) are quite stringent.



2. NSCCL charges an upfront initial margin for all the open positions of a CM. It specifies the initial margin requirements for each futures/options contract on a daily basis. It also follows VaR-based margining computed through SPAN. The CM in turn collects the initial margin from the TMs and their respective clients.
 3. The open positions of the members are marked to market based on contract settlement price for each contract. The difference is settled in cash on a T+1 basis.
 4. The exposure of a CM can not exceed 33.3 times the liquid net worth for index options/futures and 20 times the liquid net worth for stock options/futures.
 5. NSCCL's on-line position monitoring system monitors a CM's open position on a real-time basis. Limits are set for each CM based on his base capital. The on-line position monitoring system generates alerts whenever a CM reaches a position limit set up by NSCCL. NSCCL monitors the CMs for MTM value violation, while TMs are monitored for contract-wise position limit violation.
1. A member is alerted of his position to enable him to adjust his exposure or bring in additional capital. Position violations result in disablement of trading facility for all TMs of a CM in case of a violation by the CM.
 2. A separate Settlement Guarantee Fund for this segment has been created out of the base capital of members. The fund had a balance of Rs. 1,300 crore at the end of March 2003.

The most critical component of risk containment mechanism for F&O segment is the margining system and on-line position monitoring. The actual position monitoring and margining is carried out on-line through Parallel Risk Management System (PRISM) using SPAN(R) Standard Portfolio Analysis of Risk) system for the purpose of computation of on-line margins, based on the parameters defined by SEBI.

NSE – SPAN : The objective of NSE-SPAN is to identify overall risk in a portfolio of all futures and options contracts for each member. The system treats futures and options contracts uniformly, while at the same time recognising the unique exposures associated with options portfolios, like extremely deep out-of-the-money short positions and inter-month risk. Its overriding objective is to determine the largest loss that a portfolio might reasonably be expected to suffer from one day to the next day based on 99% VaR methodology. SPAN considers uniqueness of option portfolios. The following factors affect the value of an option:

- i. Underlying market price.
- ii. Volatility (variability) of underlying instrument, and
- iii. Time to expiration.
- iv. Interest rate
- v. Strike price

As these factors change, the value of options maintained within a portfolio also changes. Thus, SPAN constructs scenarios of probable changes in underlying prices and volatilities in order to identify the largest loss a portfolio might suffer from one day to the next. It then sets the margin requirement to cover this one-day loss.

**Capital adequacy requirement:****Capital Adequacy of Financial Intermediaries (FI)**

The term financial intermediary includes Banks, Investment Companies, Insurance Companies, Development Financial Institutions, Non-Banking Finance Companies, Mutual Funds, etc. All these financial institutions assist in the transfer of savings from economic units/individuals with excess money to those that need capital for investments.

Need for Capital:

Financial Intermediaries need capital for two reasons:

- To run operations of their business.
- To safeguard against the losses, that may arise.

Adequate capital helps financial intermediaries to survive even during substantial losses. It gives time to re-establish the business and avoid any break in operations.

To ensure the good performance of FIs the regulatory authority (RBI) has specified the minimum capital for the FI.

This requirement is called Capital Adequacy, and it is specified for Banks and Non Banking Financial Corporations (NBFCs).

Computation of capital adequacy ratio (CAR) of banks:

For computation of CAR, we need to calculate:

- Tier I capital
- Tier II capital
- Risk Weighted Assets (RWA)

Step 1: Compute Tier I capital:

Tier I capital is the most permanent and readily available support against unexpected losses. It consists of-

1. Paid up equity capital
2. Statutory reserves
3. Capital reserves
4. Other disclosed free reserves

Less:

1. Equity investments in subsidiaries
2. Intangible assets
3. Current and Accumulated Losses, if any

Step3: Compute tier II capital

These are not permanent in nature or, are not readily available.

Tier II capital consists of-

1. **Undisclosed reserves and cumulative perpetual preference shares-** Cumulative preference shares should be fully paid and should not contain clauses which permit redemption from shareholders.
2. **Revaluation Reserves (RR)-** 45% of RR is only taken in calculation of tier II capital
3. **General Provisions and Loss Reserves (GPLR)-** Actual GPLR or 1.25% of Risk Weighted Assets, whichever is lower, is taken.
4. **Hybrid Debt Capital Instruments-** These combine characteristics of both equity and debt. As they are more or less similar to equity, they are included in the Tier II capital
5. **Subordinated Debts-** These must be fully paid up, unsecured, subordinated to the claims of other creditors, also there should be no such clause which permits redemption. The amount of subordinate debts to be taken as Tier II capital depends upon the maturity of debt. Subordinate Debt Instruments will be limited to 50% of Tier I capital.

Remaining term to maturity	Discount Rate(%)	Amount to be taken in %
1. Where the date of maturity is above 5 years	0	100
2. Where the date of maturity is above 4 years but doesn't exceed 5 years	20	80
3. Where the date of maturity is above 3 years but doesn't exceed 4 years	40	60
4. Where the date of maturity is above 2 years but doesn't exceed 3 years	60	40
5. Where the date of maturity is above 1 year but doesn't exceed 2 years	80	20
6. Where the date of maturity does not exceed 1 year	100	0

Note: Tier II capital cannot be more than Tier I capital.

Capital Adequacy Ratio:

Capital Adequacy Ratio = (Tier I capital + Tier II capital) / RWA

According to the present norm, the Capital Adequacy Ratio of bank as defined earlier should be at least 10%.

Intra day trading: Intraday trading refers to opening and closing a position in a security in the same trading day. This can be buying and selling to capitalize on a potential rise in a security's value or shorting and covering the short to capitalize on a potential drop in value. Intraday traders capitalize on small moves in the value of a security by using "leverage" or "margin", which basically means borrowing money. Most day trading accounts are allowed to take an initial position in a security that is 4X the value of their account (per securities regulations), but



some professional accounts get more leverage (i.e. 10X). For instance, a day trader with INR10,000 in his/her account can take a INR 40,000 position in a security for day trading purposes. This amount is not allowed to be held overnight (only about 2X the value of the account can be held overnight per securities registered). The leverage inherent in day trading allows small gains in a position to yield meaningful profits (and losses). Most day traders are very strict about cutting losses with “stop loss” orders. This limits the potential downside (but not the upside) on any particular trade, hence the adage “cut your losses short and let your profits run”. With this basic strategy, a day trader can be wrong on 50% of his/her trades and still make good money. Day trading styles vary from “scalpers”, which take positions for only a few minutes, to holding a position for most of the day. Some day traders are momentum followers and jump onto any given move, while others try to identify intraday reversals. Virtually all day traders use technical analysis (stock charting) heavily in their decision making

Exposure limit: THE National Stock Exchange (NSE) impose security-wise differential exposure limits for trades executed, a trading member having Rs 1 crore exposure in Group 1 securities (highly liquid securities) will have adjusted gross exposure of Rs 1 crores. Whereas, for exposure of Rs 1 crore in Group two (securities with say medium liquidity) and group three securities (illiquid scrips), the adjusted gross exposure would be Rs 3 crore and Rs 5 crore respectively. Hence, though the outstanding position in the case of Rs 3 crore, the adjusted gross exposure for the members would be considered as Rs 9 crore.

Margining procedures:

Categorisation of stocks for imposition of margins

- The Stocks which have traded at least 80% of the days for the previous six months shall constitute the Group I and Group II.
- Out of the scrips identified above, the scrips having mean impact cost of less than or equal to 1% shall be categorized under Group I and the scrips where the impact cost is more than 1, shall be categorized under Group II.
- The remaining stocks shall be classified into Group III.
- The impact cost shall be calculated on the 15th of each month on a rolling basis considering the order book snapshots of the previous six months. On the basis of the impact cost so calculated, the scrips shall move from one group to another group from the 1st of the next month.
- For securities that have been listed for less than six months, the trading frequency and the impact cost shall be computed using the entire trading history of the security.

In case any corporate action results in a change in ISIN, then the securities bearing the new ISIN shall be treated as newly listed security for group categorization. Daily margins payable by members consists of the following:

Daily margin, comprising of the sum of VaR margin, Extreme Loss Margin and mark to market margin is payable.

Value at Risk Margin

All securities are classified into three groups for the purpose of VaR margin For the securities

listed in Group I, scrip wise daily volatility calculated using the exponentially weighted moving average methodology shall be applied to daily returns in the same manner as in the derivatives market. The scrip wise daily VaR would be 3.5 times the volatility so calculated subject to a minimum of 7.5%.

For the securities listed in Group II, the VaR margin shall be higher of scrip VaR (3.5 sigma) or three times the index VaR, and it shall be scaled up by root 3.

For the securities listed in Group III, the VaR margin would be equal to five times the index VaR and scaled up by root 3

In case of securities in Trade for Trade segment (TFT segment) VaR as applicable to Group 3 (illiquid securities) shall be applicable

VaR margin rate for a security constitutes the following:

1. Value at Risk (VaR) based margin, which is arrived at, based on the methods stated above. The index VaR, for the purpose, would be the higher of the daily Index VaR based on S&P CNX NIFTY or BSE SENSEX. The index VaR would be subject to a minimum of 5%.
2. Security specific Margin: NSCCL may stipulate security specific margins for the securities from time to time.

The VaR margin rate computed as mentioned above will be charged on the net outstanding position (buy value-sell value) of the respective clients on the respective securities across all open settlements. There would be no netting off of positions across different settlements. The net position at a client level for a member are arrived at and thereafter, it is grossed across all the clients including proprietary position to arrive at the gross open position.

For example, in case of a member, if client A has a buy position of 1000 in a security and client B has a sell position of 1000 in the same security, the net position of the member in the security would be taken as 2000. The buy position of client A and sell position of client B in the same security would not be netted. It would be summed up to arrive at the member's open position for the purpose of margin calculation.

The VaR margin shall be collected on an upfront basis by adjusting against the total liquid assets of the member at the time of trade. The VaR margin so collected shall be released on completion of pay-in of the settlement. The details of all margins (VaR, extreme loss margin and mark to market) as at end of each day will be downloaded to members in their respective Extranet directory.

Extreme Loss Margin

The Extreme Loss Margin for any security shall be higher of:

1. 5%, or
2. 1.5 times the standard deviation of daily logarithmic returns of the security price in the last six months. This computation shall be done at the end of each month by taking the price data on a rolling basis for the past six months and the resulting value shall be applicable for the next month.



The Extreme Loss Margin shall be collected / adjusted against the total liquid assets of the member on a real time basis.

The Extreme Loss Margin shall be collected on the gross open position of the member. The gross open position for this purpose would mean the gross of all net positions across all the clients of a member including its proprietary position. There would be no netting off of positions across different settlements. The Extreme Loss Margin collected shall be released on completion of pay-in of the settlement. The details of all margins (VAR, extreme loss margin and mark to market) as at end of each day will be downloaded to members in their respective Extranet directory.

Mark-to-Market Margin

Mark to market loss shall be calculated by marking each transaction in security to the closing price of the security at the end of trading. In case the security has not been traded on a particular day, the latest available closing price at the NSE shall be considered as the closing price. In case the net outstanding position in any security is nil, the difference between the buy and sell values shall be considered as notional loss for the purpose of calculating the mark to market margin payable. The mark to market margin (MTM) shall be collected from the member before the start of the trading of the next day. The MTM margin shall also be collected / adjusted from / against the cash / cash equivalent component of the liquid net worth deposited with the Exchange.

The MTM margin shall be collected on the gross open position of the member. The gross open position for this purpose would mean the gross of all net positions across all the clients of a member including its proprietary position. For this purpose, the position of a client would be netted across its various securities and the positions of all the clients of a broker would be grossed. There would be no netting off of the positions and setoff against MTM profits across two rolling settlements i.e. T day and T-1 day. However, for computation of MTM profits / losses for the day, netting or setoff against MTM profits would be permitted. In case of Trade for Trade Segment (TFT segment) each trade shall be marked to market based on the closing price of that security. The MTM margin so collected shall be released on completion of pay-in of the settlement

Margins collection from Client

Members should have a prudent system of risk management to protect themselves from client default. Margins are likely to be an important element of such a system. The same shall be well documented and be made accessible to the clients and the Stock Exchanges. However, the quantum of these margins and the form and mode of collection are left to the discretion of the members.

Margin Shortfall

In case of any shortfall in margin:

- The members shall not be permitted to trade with immediate effect.
- Penalty for margin violation

Penalty applicable for margin violation shall be levied on a monthly basis based on slabs as mentioned below:

Instances of Disablement	Penalty to be levied
1st instance	0.07% per day
2nd to 5th instance of disablement	0.07% per day +Rs.5000/- per instance from 2nd to 5th instance
6th to 10th instance of disablement	0.07% per day+ Rs. 20000 (for 2nd to 5th instance) +Rs.10000/- per instance from 6th to 10th instance
11th instance onwards	0.07% per day +Rs. 70,000/- (for 2nd to 10th instance) +Rs.10000/- per instance from 11th instance onwards. Additionally, the member will be referred to the Disciplinary Action Committee for suitable action

Instances as mentioned above shall refer to all disablements during market hours in a calendar month. The penal charge of 0.07% per day shall be applicable on all disablements due to margin violation anytime during the day.

Liquid assets

Members are required to provide liquid assets which adequately cover various margins & base minimum capital requirements. Liquid assets of the member include their Initial membership deposits including the security deposits. Members may provide additional collateral deposit towards liquid assets, over and above their minimum membership deposit requirements. The acceptable forms of capital towards liquid assets and the applicable haircuts are listed below:

1. Cash Equivalents: cash, bank fixed deposits, Bank Guarantees, Government securities, other liquid assets.

Exemption for institutional deals

Institutional businesses i.e., transactions done by all institutional investors shall be exempt from margin payments. For this purpose, institutional investors shall include

- Foreign Institutional Investors registered with SEBI. (FII)
- Mutual Funds registered with SEBI. (MF)
- Public Financial Institutions as defined under Section 4A of the Companies Act, 1956. (DFI)
- Banks, i.e., a banking company as defined under Section 5(1)(c) of the Banking Regulations Act, 1949. (BNK)
- Insurance companies registered with IRDA. (INS)

1 Institutional Transactions:

- Institutional transactions shall be identified by the use of the participant code at the time of order entry.
- Transactions entered into on behalf of custodial participants i.e. carrying custodial participant code shall be considered as institutional deals unless not confirmed by the re-



spective custodians in which case the transactions shall be considered as a normal transactions and all applicable margins shall be levied on the members.

- Non-Custodial Institutional Transactions shall be identified by the use of the participant code 'NCIT'. The 'NCIT' transaction shall be exempted only for margin purposes and the settlement obligation shall remain with the member. Non-Custodial Institutional transactions, which are not marked, as 'NCIT' at the time of order entry, shall not be exempt from margins.
- Members are required to enter only the above five categories, if applicable, while reporting Non-Custodial Institutional deals (NCIT) and contraction of unallocated OTRs.
- Reporting and other procedures regarding 'NCIT' and Institution transactions shall continue as per the current procedure.

2 Retail Professional Clearing Member:

In case of transactions which are to be settled by Retail Professional Clearing Members (PCM), all the trades with PCM code shall be included in the trading member's positions till the same are confirmed by the PCM. Margins shall be collected from respective trading members until confirmation of trades by PCM. On confirmation of trades by PCM, such trades will be reduced from the positions of trading member and included in the positions of PCM. The PCM shall then be liable to pay margins on the same

F&O-

Margins

NSCCL has developed a comprehensive risk containment mechanism for the Futures & Options segment. The most critical component of a risk containment mechanism for NSCCL is the online position monitoring and margining system. The actual margining and position monitoring is done on-line, on an intra-day basis. NSCCL uses the SPAN (Standard Portfolio Analysis of Risk) system for the purpose of margining, which is a portfolio based system

Initial Margin

NSCCL collects initial margin up-front for all the open positions of a CM based on the margins computed by NSCCL SPAN. A CM is in turn required to collect the initial margin from the TMs and his respective clients. Similarly, a TM should collect upfront margins from his clients. Initial margin requirements are based on 99% value at risk over a one day time horizon. However, in the case of futures contracts (on index or individual securities), where it may not be possible to collect mark to market settlement value, before the commencement of trading on the next day, the initial margin may be computed over a two-day time horizon, applying the appropriate statistical formula. The methodology for computation of Value at Risk percentage is as per the recommendations of SEBI from time to time.

Base Capital & Networth Requirements

- Clearing members of Capital Market and Trading members of the WDM segment of the Exchange will be allowed to participate in clearing and settlement of trades done in Government securities, subject to a minimum net worth of Rs.1 crore.



- An initial contribution to the Settlement Guarantee Fund (SGF) of this market by way of interest free security deposit (IFSD) of Rs.5 lakhs is required to be kept with NSCCL. A member desirous of participating in this segment may opt to set aside a contribution of Rs.5 lakhs from his additional base capital available on the Capital Market segment and / or Futures & Options segment (s) towards this IFSD.

Margins & Gross Exposure Limits

- Mark to market margins will be applicable on all-open positions in government securities and shall be calculated on the basis of ZCYC prices. This margin shall be payable on T + 1 day.
- Institutions that are permitted under the relevant regulations to transact only on the basis of giving and taking delivery will operate through the custodial mechanism and shall be exempt from margin as in the case of the equities. Custodial trades on behalf of Provident Funds transacting through SGL – II accounts shall also be eligible for margin exemption.
- The gross exposure in respect of these securities shall not exceed 20 times of the IFSD. Any member desirous of a higher exposure will be required to bring in additional base capital as in Capital Market segment.

Key Words

- Basket Trade
- Forwards
- Futures:
- Options
- Swaps
- LEAPS
- Baskets
- Swaptions
- Debt Market
- Wholesale Debt Market Segment
- Trading, Clearing and Settlement in WDS
- Retail Debt Segment (REDS) Retail Trading in G-Secs
- Debentures
- *Bearer Debentures*
- *Registered Debentures*
- *Redeemable Debentures*
- *Debentures Issued as Collateral Security for a Loan*
- *Naked Debentures*
- *Secured Debentures*
- Mezzanine Finance

CAPITAL MARKET ANALYSIS

- Hybrid Debt Instruments
- Zero Interest Bond
- Equity Warrants with NCDs
- Secured Premium Notes
- Deep Discount Bond
- Debt for Equity Swap
- Junk Bonds
- Step-up and step-down Debentures
- Callable Bond
- Option Tender Bonds
- Guaranteed Debentures
- Subordinated Debentures
- Floating Rate Bonds
- Indexed Bonds
- Inflation Adjusted Bonds
- Credit Wrapping
- Interest Rate Futures
- Exchange traded funds
- Open-ended Funds
- Closed-ended Funds
- Risk Management Strategies
- Risk Avoidance
- Risk Abatement
- Risk Retention
- Risk Transfer
- Risk Allocation
- Capital adequacy requirement
- Intra day trading
- Value at Risk Margin
- Extreme Loss Margin
- Mark-to-Market Margin

Key Questions

1. Write a short note on - Basket Trade, Forwards, Futures, Options, Swaps, LEAPS, Baskets, Swaptions
2. Explain Indian Debt Market
3. Wholesale Debt Market Segment in BSE and NSE
4. Write on Trading, Clearing and Settlement in WDS

5. Explain Retail Debt Segment (REDS) Retail Trading in G-Secs
6. Write a Short note on – Debentures, *Bearer Debentures*, *Registered*, *Redeemable Debentures*, *Debentures Issued as Collateral Security for a Loan*, *Naked Debentures*, *Secured Debentures*, Mezzanine Finance
7. Write on Hybrid Debt Instruments
8. Define Zero Interest Bond
9. Explain Equity Warrants with NCDs, Secured Premium Notes, Deep Discount Bond, Debt for Equity Swap. Junk Bonds, Step-up and step-down Debentures, Callable Bond, Option Tender Bonds, Guaranteed Debentures, Subordinated Debentures, Floating Rate Bonds, Indexed Bonds, Inflation Adjusted Bonds, Credit Wrapping
10. What do you understand by Interest Rate Futures
11. Explain Exchange traded funds
12. Write of Mutual fund -Open-ended Funds and Closed-ended Funds
13. What do you understand by Risk Management Strategies
14. Explain Intra day trading, Value at Risk Margin, Extreme Loss Margin, Mark-to-Market Margin

3.6 DERIVATIVE MARKETS

Introduction

The emergence of the market for derivative products, most notably forwards, futures and options, can be traced back to the willingness of risk-averse economic agents to guard themselves against uncertainties arising out of fluctuations in asset prices. By their very nature, the financial markets are marked by a very high degree of volatility. Through the use of derivative products, it is possible to partially or fully transfer price risks by locking-in asset prices. As instruments of risk management, these generally do not influence the fluctuations in the underlying asset prices. However, by locking-in asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors.

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. The financial derivatives came into spotlight in 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 both in terms of variety of instruments available, their complexity and also turnover. In the class of equity derivatives, 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 indices with various portfolios and ease of use. The lower costs associated with index derivatives vis-vis derivative products based on individual securities is another reason for their growing use.



The following factors have been driving the growth of financial derivatives:

1. Increased volatility in asset prices in financial markets,
2. Increased integration of national financial markets with the international markets,
3. Marked improvement in communication facilities and sharp decline in their costs,
4. Development of more sophisticated risk management tools, providing economic agents a wider choice of risk management strategies, and
5. Innovations in the derivatives markets, which optimally combine the risks and returns over a large number of financial assets, leading to higher returns, reduced risk as well as trans-actions costs as compared to individual financial assets.

Derivative is a product whose value is derived from the value of one or more basic variables, called bases (underlying asset, index, or reference rate), in a contractual manner. The underlying asset can be equity, forex, commodity or any other asset. For example, wheat farmers may wish to sell their harvest at a future date to eliminate the risk of a change in prices by that date. Such a transaction is an example of a derivative. The price of this derivative is driven by the spot price of wheat which is the “underlying”.

In the Indian context the Securities Contracts (Regulation) Act, 1956 (SC(R) A) defines “equity derivative” to include “A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security.” A contract, which derives its value from the prices, or index of prices, of underlying securities. The derivatives are securities under the SC(R) A and thus the regulatory framework under the SC(R) A governs the trading of derivatives.

According to author derivative can be defined as

Derivatives are those assets whose value is determined from the value of some underlying assets. The underlying asset may be equity, commodity or currency. The list of derivative assets is long.

The derivatives are most modern financial instruments in hedging risk. The individuals and firms who wish to avoid or reduce risk can deal with the others who are willing to accept the risk for a price. A common place where such transactions take place is called the ‘derivative market’. As the financial products commonly traded in the derivatives market are themselves not primary loans or securities but can be used to change the risk characteristics of underlying asset or liability position, they are referred to as ‘derivative financial instruments’ or simply ‘derivatives’. These instruments are so called because they derive their value from some underlying instrument and have no intrinsic value of their own. Forwards, futures, options, swaps, caps floor collar etc. are some of more commonly used derivatives. The world over, derivatives are a key part of the financial system.

Characteristics of Derivatives

The important characteristics of derivatives are as follows:

- Derivatives possess a combination of novel characteristics not found in any form of assets.
- It is comfortable to take a short position in derivatives than in other assets. An investor is said to have a short position in a derivatives product if he is obliged to deliver the underlying asset in specified future date.



- Derivatives traded on exchanges are liquid and involves the lowest possible transaction costs.
- Derivatives can be closely matched with specific portfolio requirements.
- The margin requirements for exchange traded derivatives are relatively low, reflecting the relatively low level of credit-risk associated with the derivatives.
- Derivatives are traded globally having strong popularity in financial markets.
- Derivatives maintain a close relationship between their values and the values of underlying assets; the change in values of underlying assets will have effect on values of derivatives based on them.
- In a Treasury bond future contract the derivatives are straight-forward.

Criteria for Derivatives Trading

In the derivatives market there shall be a two-level system of members viz., clearing members and non-clearing members. The clearing member takes the responsibility for settlement of trades on behalf of the non-clearing member. Thus, the clearing member acts as a guarantor for the non-clearing member. The clearing member shall have a minimum networth of Rs. 300 lakhs as per the SEBI's definition and shall made a deposit of Rs. 50 lakhs with the Exchange / Clearing Corporation in the form of liquid assets such as cash. Fixed deposits pledged in the name of the Exchange, or other securities.

Derivatives Market in India

The most notable development concerning the secondary segment of the Indian capital market is the introduction of derivatives trading in June 2000. SEBI approved derivatives trading based on Futures Contracts at both BSE and NSE in accordance with the rules/by laws and regulations of the Stock Exchanges. A beginning with equity derivatives has been made with the introduction of stock index futures by BSE and NSE.

Stock Index Futures contract allows for the buying and selling of the particular stock index for a specified price at a specified future date. Stock Index Futures, inter alia, help in overcoming the problem of asymmetries in information. Information asymmetry is mainly a problem in individual stocks as it is unlikely that a trader has market-wide private information. As such, the asymmetric information component is not likely to be present in a basket of stocks. This provides another rationale for trading in Stock Index Futures. Trading in index derivatives involves low transaction cost in comparison with trading in underlying individual stocks comprising the index. While the BSE introduced Stock Index Futures for S&P CNX Nifty comprising 50 scrips.

Stock Index Futures in India are available with one month, two month and three month maturities. While derivatives trading based on the Sensitive Index (Sensex) commenced at the BSE on June 9, 2000, derivatives trading based on S&P CNX Nifty commenced at the NSE on June 12, 2000. SIF is the first attempt in the development of derivatives trading.

Exchange-Traded and Over-the-Counter Derivative Instruments

OTC (over-the-counter) contracts, such as forwards and swaps, are bilaterally negotiated between two parties. The terms of an OTC contract are flexible, and are often customized to fit the



specific requirements of the user. OTC contracts have substantial credit risk, which is the risk that the counterparty that owes money defaults on the payment. In India, OTC derivatives are generally prohibited with some exceptions: those that are specifically allowed by the Reserve Bank of India (RBI) or, in the case of commodities (which are regulated by the Forward Markets Commission), those that trade informally in “havala” or forwards markets.

An exchange-traded contract, such as a futures contract, has a standardized format that specifies the underlying asset to be delivered, the size of the contract, and the logistics of delivery. They trade on organized exchanges with prices determined by the interaction of many buyers and sellers. In India, two exchanges offer derivatives trading: the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). However, NSE now accounts for virtually all exchange-traded derivatives in India, accounting for more than 99% of volume in 2003-2004. Contract performance is guaranteed by a clearinghouse, which is a wholly owned subsidiary of the NSE. The Margin requirements and daily marking-to-market of futures positions substantially reduce the credit risk of exchange-traded contracts, relative to OTC contracts.

Development of Derivative Markets in India

Derivatives markets have been in existence in India in some form or other for a long time. In the area of commodities, the Bombay Cotton Trade Association started futures trading in 1875 and, by the early 1900s India had one of the world’s largest futures industry. In 1952 the government banned cash settlement and options trading and derivatives trading shifted to informal forwards markets. In recent years, government policy has changed, allowing for an increased role for market-based pricing and less suspicion of derivatives trading. The ban on futures trading of many commodities was lifted starting in the early 2000s, and national electronic commodity exchanges were created.

In the equity markets, a system of trading called “badla” involving some elements of forwards trading had been in existence for decades. However, the system led to a number of undesirable practices and it was prohibited off and on till the Securities and Derivatives OUP

Volatility is measured as the yearly standard deviation of the daily exchange rate series.

Exchange Board of India (SEBI) banned it for good in 2001. A series of reforms of the stock market between 1993 and 1996 paved the way for the development of exchange-traded equity derivatives markets in India. In 1993, the government created the NSE in collaboration with state-owned financial institutions. NSE improved the efficiency and transparency of the stock markets by offering a fully automated screen-based trading system and real-time price dissemination. In 1995, a prohibition on trading options was lifted. In 1996, the NSE sent a proposal to SEBI for listing exchange-traded derivatives. The report of the L. C. Gupta Committee, set up by SEBI, recommended a phased introduction of derivative products, and bi-level regulation (i.e., self-regulation by exchanges with SEBI providing a supervisory and advisory role). Another report, by the J. R. Varma Committee in 1998, worked out various operational details such as the margining systems. In 1999, the Securities Contracts (Regulation) Act of 1956, or SC(R)A, was amended so that derivatives could be declared “securities.” This allowed the regulatory framework for trading securities to be extended to derivatives. The Act considers derivatives to be legal and valid, but only if they are traded on exchanges. Finally, a 30-year ban on forward trading was also lifted in 1999.

The economic liberalization of the early nineties facilitated the introduction of derivatives based on interest rates and foreign exchange. A system of market-determined exchange rates was adopted by India in March 1993. In August 1994, the rupee was made fully convertible on current account. These reforms allowed increased integration between domestic and international markets, and created a need to manage currency risk. Figure 1 shows how the volatility of the exchange rate between the Indian Rupee and the U.S. dollar has increased since 1991. The easing of various restrictions on the free movement of interest rates resulted in the need to manage interest rate risk.

Development and Regulation of Derivative Markets in India

The SEBI Board in its meeting on June 24, 2002 considered some important issues relating to the derivative markets including:

- Physical settlement of stock options and stock futures contracts.
- Review of the eligibility criteria of stocks on which derivative products are permitted.
- Use of sub-brokers in the derivative markets.
- Norms for use of derivatives by mutual funds

The recommendations of the Advisory Committee on Derivatives on some of these issues were also placed before the SEBI Board. The Board desired that these issues be reconsidered by the Advisory Committee on Derivatives (ACD) and requested a detailed report on the aforesaid issues for the consideration of the Board.

In the meantime, several other important issues like the issue of minimum contract size, the segregation of the cash and derivative segments of the exchange and the surveillance issues in the derivatives market were also placed before the ACD for its consideration.

The Advisory Committee therefore decided to take this opportunity to present a comprehensive report on the development and regulation of derivative markets including a review of the recommendations of the L. C. Gupta Committee (LCGC).

Four years have elapsed since the LCGC Report of March 1998. During this period there have been several significant changes in the structure of the Indian Capital Markets which include, dematerialisation of shares, rolling settlement on a T+3 basis, client level and Value at Risk (VaR) based margining in both the derivative and cash markets and proposed demutualization of Exchanges. Equity derivative markets have now been in existence for two years and the markets have grown in size and diversity of products. This therefore appears to be an appropriate time for a comprehensive review of the development and regulation of derivative markets.

Regulatory Objectives

It is inclined towards positive regulation designed to encourage healthy activity and behaviour. It has been guided by the following objectives:

(a) Investor Protection: Attention needs to be given to the following four aspects:

(i) Fairness and Transparency: The trading rules should ensure that trading is conducted in a fair and transparent manner. Experience in other countries shows that in many cases, derivatives brokers/dealers failed to disclose potential risk to the clients. In this context, sales practices



adopted by dealers for derivatives would require specific regulation. In some of the most widely reported mishaps in the derivatives market elsewhere, the underlying reason was inadequate internal control system at the user-firm itself so that overall exposure was not controlled and the use of derivatives was for speculation rather than for risk hedging. These experiences provide useful lessons for us for designing regulations.

(ii) Safeguard for clients' moneys: Moneys and securities deposited by clients with the trading members should not only be kept in a separate clients' account but should also not be attachable for meeting the broker's own debts. It should be ensured that trading by dealers on own account is totally segregated from that for clients.

(iii) Competent and honest service: The eligibility criteria for trading members should be designed to encourage competent and qualified personnel so that investors/clients are served well. This makes it necessary to prescribe qualification for derivatives brokers/dealers and the sales persons appointed by them in terms of a knowledge base.

(iv) Market integrity: The trading system should ensure that the market's integrity is safeguarded by minimising the possibility of defaults. This requires framing appropriate rules about capital adequacy, margins, clearing corporation, etc.

(b) Quality of markets: The concept of "Quality of Markets" goes well beyond market integrity and aims at enhancing important market qualities, such as cost-efficiency, price-continuity, and price-discovery. This is a much broader objective than market integrity.

(c) Innovation: While curbing any undesirable tendencies, the regulatory framework should not stifle innovation which is the source of all economic progress, more so because financial derivatives represent a new rapidly developing area, aided by advancements in information technology."

Derivative Products

Derivative is a product/contract which does not have any value on its own i.e. it derives its value from some underlying.

Forward contracts

- A forward contract is one to one bi-partite contract, to be performed in the future, at the terms decided today.
- (E.g. forward currency market in India).
- Forward contracts offer tremendous flexibility to the parties to design the contract in terms of the price, quantity, quality (in case of commodities), delivery time and place.
- Forward contracts suffer from poor liquidity and default risk.

Future contracts

- Future contracts are organised / standardised contracts, which are traded on the exchanges.
- These contracts, being standardised and traded on the exchanges are very liquid in nature.
- In futures market, clearing corporation / house provides the settlement guarantee.

Every futures contract is a forward contract. They :

- are entered into through exchange, traded on exchange and clearing corporation / house provides the settlement guarantee for trades.

- are of standard quantity; standard quality (in case of commodities).
- have standard delivery time and place.

Forward / Future Contracts

Features	Forward Contract	Future Contract
Operational Mechanism	Not traded on exchange	Traded on exchange
Contract Specifications	Differs from trade to trade.	Contracts are standardised contracts.
Counterparty Risk	Exists	Exists, but assumed by Clearing Corporation / house.
Liquidation Profile	Poor Liquidity as contracts are tailor made contracts.	Very high Liquidity as contracts are standardised contracts.
Price Discovery	Poor; as markets are fragmented.	Better; as fragmented markets are brought to the common platform.

Options

Options are instruments whereby the right is given by the option seller to the option buyer to buy or sell a specific asset at a specific price on or before a specific date.

- Option Seller - One who gives / writes the option. He has an obligation to perform, in case option buyer desires to exercise his option.
- Option Buyer - One who buys the option. He has the right to exercise the option but no obligation.
- Call Option - Option to buy.
- Put Option - Option to sell.
- American Option - An option which can be exercised anytime on or before the expiry date.
- European Option - An option which can be exercised only on expiry date.
- Strike Price / Exercise Price - Price at which the option is to be exercised.
- Expiration Date - Date on which the option expires.
- Exercise Date - Date on which the option gets exercised by the option holder / buyer.
- Option Premium - The price paid by the option buyer to the option seller for granting the option.

Introduction of futures in India

- The first derivative product to be introduced in the Indian securities market is going to be "INDEX FUTURES".
- In the world, first index futures were traded in U.S. on Kansas City Board of Trade (KCBT) on Value Line Arithmetic Index (VLAI) in 1982.

Index Futures

- Index futures are the future contracts for which underlying is the cash market index.



- For example: BSE may launch a future contract on “BSE Sensitive Index” and NSE may launch a future contract on “S&P CNX NIFTY”.

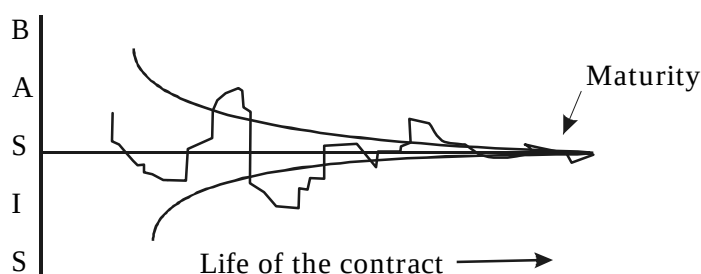
Frequently used terms in Index Futures market

- Contract Size - The value of the contract at a specific level of Index. It is Index level * Multiplier.
- Multiplier - It is a pre-determined value, used to arrive at the contract size. It is the price per index point.
- Tick Size - It is the minimum price difference between two quotes of similar nature.
- Contract Month - The month in which the contract will expire.
- Expiry Day - The last day on which the contract is available for trading.
- Open interest - Total outstanding long or short positions in the market at any specific point in time. As total long positions for market would be equal to total short positions, for calculation of open Interest, only one side of the contracts is counted.
- Volume - No. of contracts traded during a specific period of time. During a day, during a week or during a month.
- Long position - Outstanding / unsettled purchase position at any point of time.
- Short position - Outstanding / unsettled sales position at any point of time.
- Open position - Outstanding / unsettled long or short position at any point of time.
- Physical delivery - Open position at the expiry of the contract is settled through delivery of the underlying. In futures market, delivery is low.
- Cash settlement - Open position at the expiry of the contract is settled in cash. These contracts are designated as cash settled contracts. Index Futures fall in this category.
- Alternative Delivery Procedure (ADP) - Open position at the expiry of the contract is settled by two parties - one buyer and one seller, at the terms other than defined by the exchange. World wide a significant portion of the energy and energy related contracts (crude oil, heating and gasoline oil) are settled through Alternative Delivery Procedure.

Concept of basis in futures market

- Basis is defined as the difference between cash and futures prices: $\text{Basis} = \text{Cash prices} - \text{Future prices}$.
- Basis can be either positive or negative (in Index futures, basis generally is negative).
- Basis may change its sign several times during the life of the contract.

Basis turns to zero at maturity of the futures contract i.e. both cash and future prices converge at maturity



Life of the contract

Operators in the derivatives market

Hedgers - Operators, who want to transfer a risk component of their portfolio.

Speculators - Operators, who intentionally take the risk from hedgers in pursuit of profit.

Arbitrageurs - Operators who operate in the different markets simultaneously, in pursuit of profit and eliminate mis-pricing.

Pricing Futures

Cost and carry model of Futures pricing

Fair price = Spot price + Cost of carry - Inflows

- $FP_{tT} = CP_t + CP_t * (R_{tT} - D_{tT}) * (T-t) / 365$
- FP_{tT} - Fair price of the asset at time t for time T.
- CP_t - Cash price of the asset.
- R_{tT} - Interest rate at time t for the period up to T.
- D_{tT} - Inflows in terms of dividend or interest between t and T.
- Cost of carry = Financing cost, Storage cost and insurance cost.
- If Futures price > Fair price; Buy in the cash market and simultaneously sell in the futures market.
- If Futures price < Fair price; Sell in the cash market and simultaneously buy in the futures market

This arbitrage between Cash and Future markets will remain till prices in the Cash and Future markets get aligned.

Set of assumptions

- No seasonal demand and supply in the underlying asset.
- Storability of the underlying asset is not a problem.
- The underlying asset can be sold short.
- No transaction cost; No taxes.
- No margin requirements, and so the analysis relates to a forward contract, rather than a futures contract.

Myths and realities about Derivatives

Derivatives increase speculation and do not serve any economic purpose

Numerous studies of derivatives activity have led to a broad consensus, both in the private and public sectors that derivatives provide numerous and substantial benefits to the users. Derivatives are a low-cost, effective method for users to hedge and manage their exposures to interest rates, commodity prices, or exchange rates.

The need for derivatives as hedging tool was felt first in the commodities market. Agricultural



futures and options helped farmers and processors hedge against commodity price risk. After the fallout of Bretton wood agreement, the financial markets in the world started undergoing radical changes. This period is marked by remarkable innovations in the financial markets such as introduction of floating rates for the currencies, increased trading in variety of derivatives instruments, on-line trading in the capital markets, etc. As the complexity of instruments increased many folds, the accompanying risk factors grew in gigantic proportions. This situation led to development derivatives as effective risk management tools for the market participants.

Looking at the equity market, derivatives allow corporations and institutional investors to effectively manage their portfolios of assets and liabilities through instruments like stock index futures and options. An equity fund, for example, can reduce its exposure to the stock market quickly and at a relatively low cost without selling off part of its equity assets by using stock index futures or index options.

By providing investors and issuers with a wider array of tools for managing risks and raising capital, derivatives improve the allocation of credit and the sharing of risk in the global economy, lowering the cost of capital formation and stimulating economic growth. Now that world markets for trade and finance have become more integrated, derivatives have strengthened these important linkages between global markets, increasing market liquidity and efficiency and facilitating the flow of trade and finance.

Indian Market is not ready for derivative trading

Often the argument put forth against derivatives trading is that the Indian capital market is not ready for derivatives trading. Here, we look into the pre-requisites, which are needed for the introduction of derivatives and how Indian market fares:

Large market Capitalization - India is one of the largest market-capitalized countries in Asia with a market capitalization of more than Rs.765000 crores.

High Liquidity in the underlying - The daily average traded volume in Indian capital market today is around 7500 crores. Which means on an average every month 14% of the country's Market capitalization gets traded. These are clear indicators of high liquidity in the underlying.

Trade guarantee - The first clearing corporation guaranteeing trades has become fully functional from July 1996 in the form of National Securities Clearing Corporation (NSCCL). NSCCL is responsible for guaranteeing all open positions on the National Stock Exchange (NSE) for which it does the clearing.

A Strong Depository - National Securities Depositories Limited (NSDL) which started functioning in the year 1997 has revolutionalised the security settlement in our country.

A Good legal guardian - In the Institution of SEBI (Securities and Exchange Board of India) today the Indian capital market enjoys a strong, independent, and innovative legal guardian who is helping the market to evolve to a healthier place for trade practices.

Disasters prove that derivatives are very risky and highly leveraged instruments

Disasters can take place in any system. The 1992 Security scam is a case in point. Disasters are not necessarily due to dealing in derivatives, but derivatives make headlines. Some of the reasons behind disasters related to derivatives are:

1. Lack of independent risk management
2. Improper internal control mechanisms
3. Problems in external monitoring done by Exchanges and Regulators
4. Trader taking unauthorized positions
5. Lack of transparency in the entire process

Derivatives are complex and exotic instruments that Indian investors will have difficulty in understanding

Trading in standard derivatives such as forwards, futures and options is already prevalent in India and has a long history. Reserve Bank of India allows forward trading in Rupee-Dollar forward contracts, which has become a liquid market. Reserve Bank of India also allows Cross Currency options trading.

Forward Markets Commission has allowed trading in Commodity Forwards on Commodities Exchanges, which are, called Futures in international markets. Commodities futures in India are available in turmeric, black pepper, coffee, Gur (jaggery), hessian, castor seed oil etc. There are plans to set up commodities futures exchanges in Soya bean oil as also in Cotton. International markets have also been allowed (dollar denominated contracts) in certain commodities. Reserve Bank of India also allows, the users to hedge their portfolios through derivatives exchanges abroad. Detailed guidelines have been prescribed by the RBI for the purpose of getting approvals to hedge the user's exposure in international markets.

Derivatives in commodities markets have a long history. The first commodity futures exchange was set up in 1875 in Mumbai under the aegis of Bombay Cotton Traders Association (Dr.A.S.Naik, 1968, Chairman, Forwards Markets Commission, India, 1963-68). A clearinghouse for clearing and settlement of these trades was set up in 1918. In oilseeds, a futures market was established in 1900. Wheat futures market began in Hapur in 1913. Futures market in raw jute was set up in Calcutta in 1912. Bullion futures market was set up in Mumbai in 1920.

History and existence of markets along with setting up of new markets prove that the concept of derivatives is not alien to India. In commodity markets, there is no resistance from the users or market participants to trade in commodity futures or foreign exchange markets. Government of India has also been facilitating the setting up and operations of these markets in India by providing approvals and defining appropriate regulatory frameworks for their operations. Approval for new exchanges in last six months by the Government of India also indicates that Government of India does not consider this type of trading to be harmful albeit within proper regulatory framework.

This amply proves that the concept of options and futures has been well ingrained in the Indian equities market for a long time and is not alien as it is made out to be. Even today, complex strategies of options are being traded in many exchanges which are called teji-mandi, jota-phatak, bhav-bhav at different places in India (Vohra and Bagari, 1998) In that sense, the derivatives are not new to India and are also currently prevalent in various markets including equities markets.

The existing capital market is safer than Derivatives

World over, the spot markets in equities are operated on a principle of rolling settlement. In



this kind of trading, if you trade on a particular day (T), you have to settle these trades on the third working day from the date of trading (T+3).

Futures market allow you to trade for a period of say 1 month or 3 months and allow you to net the transaction taken place during the period for the settlement at the end of the period. In India, most of the stock exchanges allow the participants to trade during one-week period for settlement in the following week. The trades are netted for the settlement for the entire one-week period. In that sense, the Indian markets are already operating the futures style settlement rather than cash markets prevalent internationally.

In this system, additionally, many exchanges also allow the forward trading called badla in Gujarati and Contango in English, which was prevalent in UK. This system is prevalent currently in France in their monthly settlement markets. It allowed one to even further increase the time to settle for almost 3 months under the earlier regulations. This way, a curious mix of futures style settlement with facility to carry the settlement obligations forward creates discrepancies.

The more efficient way from the regulatory perspective will be to separate out the derivatives from the cash market i.e. introduce rolling settlement in all exchanges and at the same time allow futures and options to trade. This way, the regulators will also be able to regulate both the markets easily and it will provide more flexibility to the market participants.

In addition, the existing system although futures style, does not ask for any margins from the clients. Given the volatility of the equities market in India, this system has become quite prone to systemic collapse. This was evident in the MS Shoes scandal. At the time of default taking place on the BSE, the defaulting member of the BSE Mr. Zaveri had a position close to Rs.18 crores. However, due to the default, BSE had to stop trading for a period of three days. At the same time, the Barings Bank failed on Singapore Monetary Exchange (SIMEX) for the exposure of more than US \$ 20 billion (more than Rs.84,000 crore) with a loss of approximately US \$ 900 million (around Rs.3,800 crore). Although, the exposure was so high and even the loss was also very big compared to the total exposure on MS Shoes for BSE of Rs.18 crores, the SIMEX had taken so much margins that they did not stop trading for a single minute.

Options

«An option is a contractual agreement that gives the option buyer the right, but not the obligation, to purchase (in the case of a call option) or to sell (in the case of a put option) a specified instrument at a specified price at any time of the option buyer's choosing by or before a fixed date in the future. Upon exercise of the right by the option holder, an option seller is obliged to deliver the specified instrument at the specified price.»

The growth in organised option markets has resulted with the developments in Option Pricing. Theory made by Black and Scholes (1973), since when the theory has been modified and extended. The option market is not only extended to stocks dealings but also to foreign currencies, commodities etc. An option is the right but not the obligation to enter into a transaction. An option is the right, but not the obligation, to buy or sell something at a stated date at a stated price. An option contract gives the holder of the contracts the option to buy or sell shares at a specified price on or before a specific date in the future. The buyer of the contract pays the writer (or seller) for the right, but not the obligation, to purchase shares etc. from, or sell shares etc. to the writer at the price fixed by the contract (the striking or exercise price). The

right to choose, therefore the option, is sold by the seller (writer) of the option to the Purchaser (holder) in return for a payment (premium). The right conveyed by the option only lasts a certain period of time and then the right expires - at its maturity or expiration. The seller of an option has no choice. He must meet his obligation to buy/sell if the right of the purchaser to do so is exercised at the agreed exercise / strike rate. It is the purchase who has choice, he does not have to exercise the right to buy/sell at the strike rate agreed if it is better from his prospective to buy/sell out spot, he can instead walk away from the option. In this respect options differ from futures where holders of positions do have the obligation to buy/sell the underlying asset. At worst the purchaser will lose the premium, but can gain substantially if the option is worth exercising. Options come in two varieties -European and American. In European option, the holder of the option can only exercise his right (if he so desire) on the expiration date. In an American option he can exercise this right any time between purchase date and the expiration date. Options are categorised into - (a) Call option and (b) Put option.

Features of Options

The important features of options contracts are as follows:

- The option is exercisable only by the owner, namely the buyer of the option.
- The owner has limited liability.
- Owners of options have no right affordable to shareholders such as voting right and dividend right.
- Options have high degree of risk to the option writers.
- Options are popular because they allow the buyer profits from favourable movements in exchange rate.
- Options involve buying counter positions by the option sellers.
- Flexibility in investors needs.
- No certificates are issued by the company.
- An investor who writes a call option against stock held in his portfolio is said to be selling 'covered options'. Options sold without the stock to back them up are called 'naked options'.

Differences between Futures and Options

The key difference between futures and options is that the former involve obligations, whereas the latter confer rights. Futures are a contractual obligation to buy and sell at an agreed price at a future date. The contract terms are standardised by futures exchanges, and the obligation, from both buyer and seller, is confirmed when the initial margin, or deposit, changes hands. An option does not carry the same obligations. Buyers pay a premium for the right to purchase (or sell, in the case of put options) an agreed quantity of some underlying asset by a future date. The option buyer then has a further decision to make, which is that of exercising his option if he chooses to buy the underlying asset. In most cases, however, he will take whatever profit there is available by selling his option back at a higher price (this is why they are known as 'traded options'). The futures contract margin is, therefore, the basis of a contractual commitment, while the option premium represents the purchase of exercisable rights. In both, the concept of gearing is crucial, although there are differences. Option premiums are a wasting asset, and are much affected by the volatility of the underlying price. Futures margins are not a wasting asset



and are affected differently by volatility. These key variations causes important differences in the risk/reward relationships involved in investing in either futures or options. Both futures and options are useful derivatives but have some fundamental differences between the two types of derivatives. They are:

<i>Futures</i>	<i>Options</i>
1. Both the parties are obliged to perform the contract.	1. Only the seller (writer) is obligated to perform the contract.
2. No premium is paid by either parties.	2. The buyer pays the seller (writer) a premium.
3. The holder of the contract is exposed to the entire spectrum of downside risk and has potential for all the upside return.	3. The buyer's loss is restricted to downside risk to the premium paid, but retains upward indefinite potentials.
4. The parties of the contract must perform at the settlement date. They are not obligated to perform before the date.	4. The buyer can exercise option any time prior to the expiry date,

Options are of two basic types:

The Call and the Put Option

A call option gives the holder the right to buy an underlying asset by a certain date for a certain price. The seller is under an obligation to fulfill the contract and is paid a price of this which is called “the call option premium or call option price”.

A put option, on the other hand gives the holder the right to sell an underlying asset by a certain date for a certain price. The buyer is under an obligation to fulfill the contract and is paid a price for this, which is called “the put option premium or put option price”.

The price at which the underlying asset would be bought in the future at a particular date is the “**Strike Price**” or the “**Exercise Price**”. The date on the options contract is called the “**Exercise date**”, “**Expiration Date**” or the “**Date of Maturity**”.

There are two kind of options based on the date. The first is the **European Option** which can be exercised only on the maturity date. The second is the **American Option** which can be exercised before or on the maturity date.

In most exchanges the options trading starts with European Options as they are easy to execute and keep track of. This is the case in the BSE and the NSE **Cash settled options** are those where, on exercise the buyer is paid the difference between stock price and exercise price (call) or between exercise price and stock price (put). **Delivery settled options** are those where the buyer takes delivery of undertaking (calls) or offers delivery of the undertaking (puts).

Call Options

The following example would clarify the basics on Call Options.

A call option give the buyer the right but not the obligation to buy a given quantity of the underlying asset, a given price known as ‘exercise price’ or ‘strike price’ on or before a given future date called the ‘maturity date’ or ‘expiry date’. A call option gives the buyer the right to buy a fixed number of shares/commodities in a particular security at the exercise price upto the date of expiration of the contract. The seller of an option is known as ‘writer’. Unlike the buyer, the writer has no choice regarding the fulfilment of the obligations under the contract. If the buyer wants to exercise his right, the writer must comply. For this asymmetry of privilege, the buyer must pay the writer the option price, which is known as ‘premium’.

Illustration 1

An investor buys one European Call option on one share of Reliance Petroleum at a premium of Rs. 2 per share on 31 July . The strike price is Rs.60 and the contract matures on 30 September . The payoffs for the investor on the basis of fluctuating spot prices at any time are shown by the payoff table . It may be clear form the graph that even in the worst case scenario, the investor would only lose a maximum of Rs.2 per share which he / she had paid for the premium. The upside to it has an unlimited profits opportunity.

On the other hand the seller of the call option has a payoff chart completely reverse of the call options buyer. The maximum loss that he can have is unlimited though a profit of Rs.2 per share would be made on the premium payment by the buyer.

Payoff from Call Buying/Long (Rs.)				
S	Xt	c	Payoff	Net Profit
57	60	2	0	-2
58	60	2	0	-2
59	60	2	0	-2
60	60	2	0	-2
61	60	2	1	-1
62	60	2	2	0
63	60	2	3	1
64	60	2	4	2
65	60	2	5	3
66	60	2	6	4

A European call option gives the following payoff to the investor: **$\max(S - X_t, 0)$** .

The seller gets a payoff of: **$-\max(S - X_t, 0)$ or $\min(X_t - S, 0)$** .

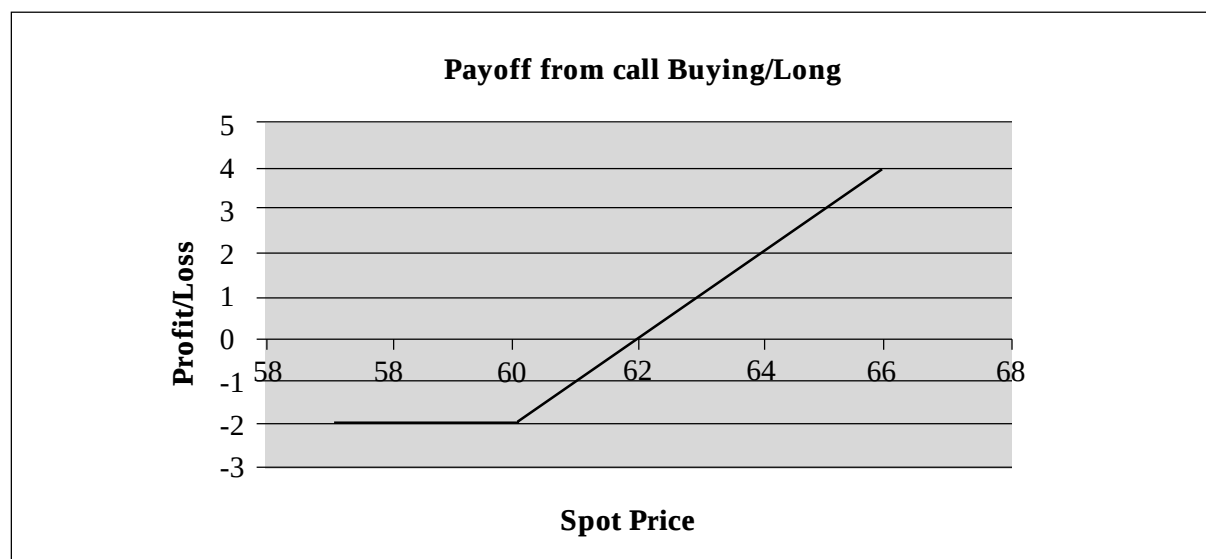
Notes:

S - Stock Price

Xt - Exercise Price at time ‘t’

C - European Call Option Premium

Payoff - $\max(S - X_t, 0)$

Graph

Net Profit - Payoff minus 'c'

Option Position and Strategies

The Call option gives the buyer a right to buy the requisite shares on a specific date at a specific price. This puts the seller under the obligation to sell the shares on that specific date and specific price. The Call Buyer exercises his option only when he/ she feels it is profitable. This Process is called “Exercising the Option”. This leads us to the fact that if the spot price is lower than the strike price then it might be profitable for the investor to buy the share in the open market and forgo the premium paid.

The implications for a buyer are that it is his/ her decision whether to exercise the option or not. In case the investor expects prices to rise far above the strike price in the future then he/ she would surely be interested in buying call options. On the other hand, if the seller feels that his shares are not giving the desired returns and they are not going to perform any better in the future, a premium can be charged and returns from selling the call option can be used to make up for the desired returns. At the end of the options contract there is an exchange of the underlying asset. In the real world, most of the deals are closed with another counter or reverse deal. There is no requirement to exchange the underlying assets then as the investor gets out of the contract just before its expiry.

Put Options

The European Put Option is the reverse of the call option deal. Here, there is a contract to sell a particular number of underlying assets on a particular date at a specific price. An example would help understand the situation a little better:

Illustration 2

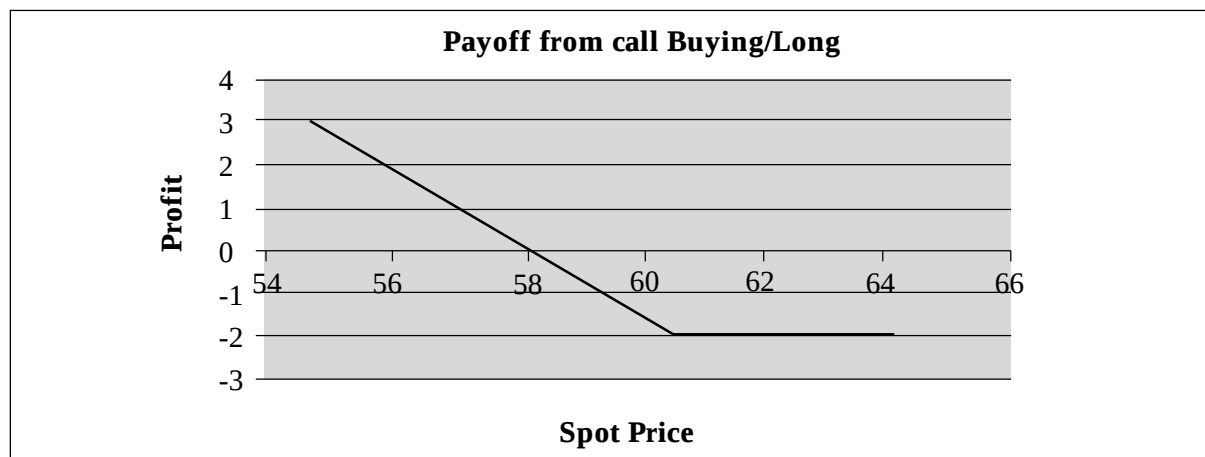
An investor buys one European Put Option on one share of Reliance Petroleum at a premium of Rs. 2 per share on 31 July. The strike price is Rs.60 and the contract matures on 30 September. The payoff table shows the fluctuations of net profit with a change in the spot price.

Payoff from Put Buying/Long (Rs.)				
S	Xt	p	Payoff	Net Profit
55	60	2	5	3
56	60	2	4	2
57	60	2	3	1
58	60	2	2	0
59	60	2	1	-1
60	60	2	0	-2
61	60	2	0	-2
62	60	2	0	-2
63	60	2	0	-2
64	60	2	0	-2

The payoff for the put buyer is : $\max(X_t - S, 0)$

The payoff for a put writer is : $-\max(X_t - S, 0)$ or $\min(S - X_t, 0)$

Graph



These are the two basic options that form the whole gamut of transactions in the options trading. These in combination with other derivatives create a whole world of instruments to choose from depending on the kind of requirement and the kind of market expectations.

Exotic Options are often mistaken to be another kind of option. They are nothing but non-standard derivatives and are not a third type of option.

Market players

Hedgers: The objective of these kind of traders is to reduce the risk. They are not in the derivatives



market to make profits. They are in it to safeguard their existing positions. Apart from equity markets, hedging is common in the foreign exchange markets where fluctuations in the exchange rate have to be taken care of in the foreign currency transactions or could be in the commodities market where spiraling oil prices have to be tamed using the security in derivative instruments.

Speculators: They are traders with a view and objective of making profits. They are willing to take risks and they bet upon whether the markets would go up or come down.

Arbitrageurs: Riskless Profit Making is the prime goal of Arbitrageurs. Buying in one market and selling in another, buying two products in the same market are common. They could be making money even without putting their own money in and such opportunities often come up in the market but last for very short timeframes. This is because as soon as the situation arises arbitrageurs take advantage and demand-supply forces drive the markets back to normal.

Options undertakings

Stocks

Foreign

Currencies

Stock Indices

Commodities

Others - Futures Options, are options on the futures contracts or underlying assets are futures contracts. The futures contract generally matures shortly after the options expiration

Options are often classified as

In the money - These result in a positive cash flow towards the investor

At the money - These result in a zero-cash flow to the investor

Out of the money - These result in a negative cash flow for the investor

Example:

Calls

Reliance 350 Stock Series

Naked Options: These are options which are not combined with an offsetting contract to cover the existing positions.

Covered Options: These are option contracts in which the shares are already owned by an investor (in case of covered call options) and in case the option is exercised then the offsetting of the deal can be done by selling these shares held.

Options Pricing Model

Prices of options are commonly depend upon six factors. Unlike futures which derives their prices primarily from prices of the undertaking. Option's prices are far more complex. The table below helps understand the affect of each of these factors and gives a broad picture of option pricing keeping all other factors constant. The table presents the case of European as well as American Options.

EFFECT OF INCREASE IN THE RELEVANT PARAMETRE ON OPTION PRICES

	EUROPEAN OPTIONS Buying		AMERICAN OPTIONS Buying	
PARAMETERS	CALL	PUT	CALL	PUT
Spot Price (S)	↑	↓	↑	↓
Strike Price (Xt)	↓	↑	↓	↑
Time to Expiration (T)	?	?	↑	↑
Volatility ()	↑	↑	↑	↑
Risk Free Interest Rates (r)	↑	↓	↑	↓
Dividends (D)	↓	↑	↓	↑

PRICES

↑ Favourable
↓ Unfavourable

SPOT PRICES: In case of a call option the payoff for the buyer is $\max(S - X_t, 0)$ therefore, more the Spot Price more is the payoff and it is favourable for the buyer. It is the other way round for the seller, more the Spot Price higher are the chances of his going into a loss.

In case of a put Option, the payoff for the buyer is $\max(X_t - S, 0)$ therefore, more the Spot Price more are the chances of going into a loss. It is the reverse for Put Writing.

STRIKE PRICE: In case of a call option the payoff for the buyer is shown above. As per this relationship a higher strike price would reduce the profits for the holder of the call option.

TIME TO EXPIRATION: More the time to Expiration more favourable is the option. This can only exist in case of American option as in case of European Options the Options Contract matures only on the Date of Maturity.

VOLATILITY: More the volatility, higher is the probability of the option generating higher returns to the buyer. The downside in both the cases of call and put is fixed but the gains can be unlimited. If the price falls heavily in case of a call buyer then the maximum that he loses is the premium paid and nothing more than that. More so he / she can buy the same shares from the spot market at a lower price. Similar is the case of the put option buyer. The table show all effects on the buyer side of the contract

RISK FREE RATE OF INTEREST: In reality the r and the stock market is inversely related. But theoretically speaking, when all other variables are fixed and interest rate increases this leads to a double effect: Increase in expected growth rate of stock prices Discounting factor increases making the price fall In case of the put option both these factors increase and lead to a decline in the put value. A higher expected growth leads to a higher price taking the buyer to the position of loss in the payoff chart. The discounting factor increases and the future value becomes lesser

In case of a call option these effects work in the opposite direction. The first effect is positive as at a higher value in the future the call option would be exercised and would give a profit. The



second affect is negative as is that of discounting. The first effect is far more dominant than the second one, and the overall effect is favourable on the call option.

DIVIDENDS: When dividends are announced then the stock prices on ex-dividend are reduced. This is favourable for the put option and unfavourable for the call option.

Option Pricing Models

These models are mathematical formulas used in determining theoretical values for option contracts. Professional option traders commonly use these models to make bid and ask prices on a timely basis during the trading, to keep the prices of calls and puts in proper numerical relationship, and for monitoring and adjusting their risk. Some individual investors find these models useful when considering a price to buy or sell an option contract. Option pricing models generally require six inputs: underlying price, strike price, time to expiration, interest rates, dividend amount and volatility.

The term “fair value” (also “theoretical value”) refers to a theoretical option price generated by an option pricing model. Because pricing models require an assumption about an underlying stock or index’s future volatility as input, values produced by these formulas are ultimately subjective.

Volatility is fluctuation, not direction, of stock price movement. It represents the standard deviation of day-to-day price changes, expressed as an annualized percentage.

Option traders are generally interested in two types of volatility: historical and implied.

- An underlying stock’s historical volatility represents its actual price fluctuation as observed over a specific period in the past.
- An option’s implied volatility (as derived from an option pricing calculator or displayed on many option chains) represents a forecast of the underlying stock’s volatility as implied by the option’s price in the marketplace. In other words it is the volatility measurement that would be needed as input into a pricing model to generate a theoretical value the same as the options current market price.

It is often asked why an option change in price didn’t change as much as the underlying stock. You should expect only deep in-the-money calls and puts to change in price as much as the underlying stock. A theoretical sensitivity of option value to underlying stock price movement can be quantified by an option’s “delta,” generated by an option pricing model, which can range from 0 to 1.00. At-the-money calls and puts have deltas around .50, which implies an expected change in option price by .50 (or 50%) of underlying stock price change. Deep in-the-money options may have deltas up to 1.00, implying an expected change in option price of up to 100% the change in stock price. Out-of-the-money calls and puts have deltas less than .50, down to a low of 0. Deltas may be generated by an option pricing calculator.

Lets not forget about liquidity. Liquidity is a trading environment characterized by high trading volume. Liquid markets commonly have narrow spreads between the bid and ask prices, and the ability to accept larger orders without significant price changes. Always keep in mind that Index and Equity Options with poor liquidity will serve as a disadvantage to the trader due to wider bid ask spreads and less favorable fills. We should always consider the liquidity issue prior to getting involved in the trading of Options in these areas.

Pricing Models Used

The Black-Scholes model and the Cox, Ross and Rubinstein binomial model are the primary Option pricing models. Both models are based on the same theoretical foundations and assumptions (such as the geometric Brownian motion theory of stock price behaviour and risk-neutral valuation). However, there are also some important differences between the two models and these are highlighted below.

Black Scholes model

The Black-Scholes model is used to calculate a theoretical call price (ignoring dividends paid during the life of the option) using the five key determinants of an option's price: stock price, strike price, volatility, time to expiration, and short-term (risk free) interest rate.

The original formula for calculating the theoretical option price (OP) is as follows:

Where:

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left(r + \frac{v^2}{2}\right)t}{v\sqrt{t}}$$

$$d_2 = d_1 - v\sqrt{t}$$

The variables are:

S = stock price

X = strike price

t = time remaining until expiration, expressed as a percent of a year

r = current continuously compounded risk-free interest rate

v = annual volatility of stock price (the standard deviation of the short-term returns over one year). See below for [how to estimate volatility](#).

$\ln$ = natural logarithm

$N(x)$ = standard normal cumulative distribution function

e = the exponential function

or

The Black-Scholes model for valuing a European call is:

$$C = SN(d_1) - Xe^{-r(T-t)}N(d_2)$$

Where,

$$D_1 = \frac{\ln(S/X) + (r + \sigma^2/2)(T-t)}{\sigma\sqrt{T-t}}$$

$$D_2 = d_1 - \sigma\sqrt{T-t}$$

C = Call option premium

S = Current asset price

X = Exercise price



$T-t$ = Time to expiry in decimals of a year

σ = The annualized standard deviation of the natural log of the asset price relative in decimals

$\ln$ = Natural logarithm

$N(d_1)$ = Cumulative standard normal probability distribution

d_1 and d_2 = Standardised normal variables

r = Risk-free rate on interest in decimals (continuously compounded)

Illustration 11

The current asset price is 35.0, the exercise price is 35.0, the risk-free rate of interest is 10%, the volatility is 20% and the time to expiry is one year. Thus $S = 35$, $X = 35$, $(T-t) = 1.0$, $r = 0.1$ and $\sigma = 0.2$.

Solutions :

First, we calculate d_1 , then d_2 and, finally, the present value of the exercise price $Xe^{-r(T-t)}$

$$d_2 - d_1 - 0.2\sqrt{1.0} = 0.4$$

$$Xe^{-r(T-t)} = 35e^{-(0.1 \times 1.0)} = 31.66934$$

Then, the equation for the call then looks like this:

$$c = 35N(0.6) - 31.6693N(0.4)$$

Here d_1 is a standardised normal random variable $N(d_1)$ is a cumulative standardised normal probability distribution. It represents the area under the standardised normal curve from Z .

By referring to mathematical table given at the end of book on the standardised normal distribution we can arrive at the values of $-N(d_1)$ and $N(d_2)$ as follows :

The value of $N(d_1)$ when $d_1 = 0.6$ is 0.7257

The value of $N(d_2)$ when $d_2 = 0.4$ is 0.6554

When the above values are substituted in the equation, then

$$c = 35(0.7257) - 31.6693(0.6554) = 4.6434$$

Valuing Put Options with the Black-Scholes Model

An alternative form of valuation is to use the Black-Scholes formula for a put, which is:

$$P = Xe^{-r(T-t)} [(1-N(d_1))] - S[1-N(d_1)]$$

Where d_1 and d_2 are as given in the section deriving a call option.

Note that $[1 - N(d_2)]$ is the same as $N(-d_2)$ and $[1 - N(d_1)]$ is the same as $N(-d_1)$.

Using the same data that we used in valuing the call, the put option value is calculated as follows:

$$P = 31.6693(0.3446) - 35(0.2743) = 1.3127$$

Illustration 12

Calculate the value of option from the following information

$S = \text{Rs.}20$, $K = \text{Rs.}20$, $t = 3$ months or 0.25 years

$r = 12\%$, $\sigma^2 = 0.16$

Solutions:

Since d_1 and d_2 are required inputs for Black-Scholes Option Pricing Model.

$$d_1 = \frac{\ln(20/20) + (0.12 + (0.16/2)(0.25))}{0.40(0.50)} = \frac{0 + 0.05}{0.20} = 0.25$$

$$d_2 = d_1 - 0.20 = 0.05$$

$$N(d_1) = N(0.25)$$

$$N(d_2) = N(0.05)$$

The above two represent area under a standard normal distribution function.

From table given at the end of the book, we see that value $d_1 = 0.25$ implies a probability of $0.0987 + 0.5000 = 0.5987$, so $N(d_1) = 0.5987$. Similarly, $N(d_2) = 0.5199$. We can use those values to solve the equation in *Black-Scholes Option Pricing Model*

$$\begin{aligned} C &= \text{Rs. } 20 [N(d_1)] - \text{Rs. } 20 e^{(-0.12 \times 0.25)} [N(d_2)] \\ &= \text{Rs. } 20 [N(0.25)] - \text{Rs. } 20(0.9704)[N(0.05)] \\ &= \text{Rs. } 20(0.5987) - \text{Rs.}19.41 (0.5199) \\ &= \text{Rs. } 11.97 - \text{Rs.}10.09 \\ &= \text{Rs. } 1.88 \end{aligned}$$

Illustration 13

The stock option has 120 days until expiration and the strike price is Rs. 85. The simple rate of interest is 6 per cent p.a. The underlying asset value is Rs. 80 and the volatility (standard deviation) is 0.30. Calculate the value of the stock option.

Solutions;

Working notes

- (1) The number of days to expiration must be converted into years by dividing by 365

$$\text{Thus } t = 120 / 365 = 0.329$$

- (2) The simple annual interest must be converted to the Black - Scholes continuously compounded equivalent using the relationship that $1+R = e^r$, making $r = \ln (1+R)$.

$$\text{Now } r = \ln (1.06) = 0.0583$$



Now we can find the values of d_1 and d_2 as follows:

$$d_2 = \frac{\ln(80/85) + (0.0583 - 0.5 \times 0.3^2) \times 0.329}{(0.3)(0.329^5)} = -0.327$$

The next step is to look up the $N(d_1)$ and $N(d_2)$ values in a table of such Values. Note that $N(d_1) = N(-0.155)$ and $N(d_2) = (-0.327)$ represent areas under a standard normal distribution function. From Table given at the end of the book, we see that the value of $d_1 = 0.155$ implies the area under the normal curve to the left of -0.155, which is approximately (interpolating from the table) .438. The value of $N(d_2)$ is found in a similar fashion to be approximately 0.372.

Now, we can insert the above values in Black - Scholes formula, to obtain the value of the stock option. = $80 \times .438 \times e^{(-0.0583 \times 0.329)} \times .372 = \text{Rs. } 4.03$

Lognormal distribution

The model is based on a normal distribution of underlying asset returns which is the same thing as saying that the underlying asset prices themselves are lognormally distributed. A lognormal distribution has a longer right tail compared with a normal, or bell-shaped, distribution. The lognormal distribution allows for a stock price distribution of between zero and infinity (ie no negative prices) and has an upward bias (representing the fact that a stock price can only drop 100% but can rise by more than 100%).

In practice underlying asset price distributions often depart significantly from the lognormal. For example historical distributions of underlying asset returns often have fatter left and right tails than a normal distribution indicating that dramatic market moves occur with greater frequency than would be predicted by a normal distribution of returns— ie more very high returns and more very low returns.

A corollary of this is the volatility smile—the way in which at-the-money options often have a lower volatility than deeply out-of-the-money options or deeply in-the-money options.

Modified Black-Scholes and binomial pricing (using implied binomial trees) for European and American option pricing with non-lognormal distributions. These models can be used to see the impact on option prices of non-lognormal price distributions (as measured by coefficients of skewness (symmetry) and kurtosis (fatness of distribution tails and height of peaks)), and to calculate and plot the volatility smile implied by these distributions.

Measuring the degree to which historical asset price distributions diverge from the lognormal (as measured by coefficients of skewness and kurtosis).

Advantages and Limitation of Black-Scholes model

Advantage: The main advantage of the Black-Scholes model is speed — it lets you calculate a very large number of option prices in a very short time.

Limitation: The Black-Scholes model has one major limitation: it cannot be used to accurately price options with an American-style exercise as it only calculates the option price at one point

in time — at expiration. It does not consider the steps along the way where there could be the possibility of early exercise of an American option.

As all exchange traded equity options have American-style exercise (ie they can be exercised at any time as opposed to European options which can only be exercised at expiration) this is a significant limitation.

The exception to this is an American call on a non-dividend paying asset. In this case the call is always worth the same as its European equivalent as there is never any advantage in exercising early.

Various adjustments are sometimes made to the Black-Scholes price to enable it to approximate American option prices (eg the Fischer Black Pseudo-American method) but these only work well within certain limits and they don't really work well for puts.

The Binominal Model

The binomial model breaks down the time to expiration into potentially a very large number of time intervals, or steps. A tree of stock prices is initially produced working forward from the present to expiration. At each step it is assumed that the stock price will move up or down by an amount calculated using volatility and time to expiration. This produces a binomial distribution, or recombining tree, of underlying stock prices. The tree represents all the possible paths that the stock price could take during the life of the option.

At the end of the tree — ie at expiration of the option — all the terminal option prices for each of the final possible stock prices are known as they simply equal their intrinsic values.

Next the option prices at each step of the tree are calculated working back from expiration to the present. The option prices at each step are used to derive the option prices at the next step of the tree using risk neutral valuation based on the probabilities of the stock prices moving up or down, the risk free rate and the time interval of each step. Any adjustments to stock prices (at an ex-dividend date) or option prices (as a result of early exercise of American options) are worked into the calculations at the required point in time. At the top of the tree you are left with one option price.

To get a feel for how the binomial model works you can use the on-line binomial tree calculators: either using the original Cox, Ross, & Rubinstein tree or the equal probabilities tree, which produces equally accurate results while overcoming some of the limitations of the C-R-R model. The calculators let you calculate European or American option prices and display graphically the tree structure used in the calculation. Dividends can be specified as being discrete or as an annual yield, and points at which early exercise is assumed for American options are highlighted.

Advantages and Limitations

Advantage: The big advantage the binomial model has over the Black-Scholes model is that it can be used to accurately price American options. This is because with the binomial model it's possible to check at every point in an option's life (ie at every step of the binomial tree) for the possibility of early exercise (eg where, due to eg a dividend, or a put being deeply in the money the option price at that point is less than its intrinsic value).

Where an early exercise point is found it is assumed that the option holder would elect to exercise, and the option price can be adjusted to equal the intrinsic value at that point. This then flows into the calculations higher up the tree and so on.



The on-line binomial tree graphical option calculator highlights those points in the tree structure where early exercise would have caused an American price to differ from a European price.

The binomial model basically solves the same equation, using a computational procedure that the Black-Scholes model solves using an analytic approach and in doing so provides opportunities along the way to check for early exercise for American options.

Limitation: The main limitation of the binomial model is its relatively slow speed. It's great for half a dozen calculations at a time but even with today's fastest PCs it's not a practical solution for the calculation of thousands of prices in a few seconds.

Relation ship to Black- Scholes Model

The same underlying assumptions regarding stock prices underpin both the binomial and Black-Scholes models: that stock prices follow a stochastic process described by geometric brownian motion. As a result, for European options, the binomial model converges on the Black-Scholes formula as the number of binomial calculation steps increases. In fact the Black-Scholes model for European options is really a special case of the binomial model where the number of binomial steps is infinite. In other words, the binomial model provides discrete approximations to the continuous process underlying the Black-Scholes model.

Binomial Option Pricing Model

The binomial model has proved over time to be the most flexible, intuitive and popular approach to option pricing. It is based on the simplification that over a single period (of possibly very short duration), the underlying asset can only move from its current price to two possible levels. Among other virtues, the model embodies the assumptions of no riskless arbitrage opportunities and perfect markets. Neither does it rely on investor risk aversion or rationality, nor does its use require estimation of the underlying asset expected return. It also embodies the risk-neutral valuation principle which can be used to shortcut the valuation of European options. In addition, we show later, that the Black-Scholes formula is a special case applying to European options resulting from specifying an infinite number of binomial periods during the time-to-expiration.

Nonetheless, a binomial tree has several curious, and possibly limiting, properties. For example, all sample paths that lead to the same node in the tree have the same risk-neutral probability. The types of volatility – objective, subjective and realized – are indistinguishable; and, in the limit, its continuous-time sample path is not differentiable at any point.

Another way to approach binomial option pricing is through the inverse problem, implied binomial trees. Instead of presuming we know the underlying asset volatility in advance to construct the up and down moves in the tree, we use the current prices of related options to infer the size of these moves.

Binomial trees can also be used to determine the sensitivity of option values to the underlying asset price (delta and gamma), to the time-to-expiration (theta), to volatility (vega), to the riskless return (rho), and to the payout return (lambda). Of these, gamma is particularly important because it measures the times in the life of the option when replication is likely to prove difficult in practice. Fugit measures the risk-neutral expected life of the option and can also be calculated from a binomial tree.



The standard binomial option pricing model for options on assets can easily be extended to options on futures and options on foreign currencies. In addition, the model continues to work even if its parameters are time-dependent, asset price-dependent, or dependent on the prior path of the underlying asset price. But it fails if its parameters depend on some other random variable. A more difficult task is to extend the binomial model to value options on bonds..

Introduction of futures in India

- The first derivative product to be introduced in the Indian securities market is going to be “INDEX FUTURES”.
- In the world, first index futures were traded in U.S. on Kansas City Board of Trade (KCBT) on Value Line Arithmetic Index (VLAI) in 1982.

What are Index Futures

- Index futures are the future contracts for which underlying is the cash market index.
- For example: BSE may launch a future contract on “BSE Sensitive Index” and NSE may launch a future contract on “S&P CNX NIFTY”.

Frequently used terms in Index Futures market

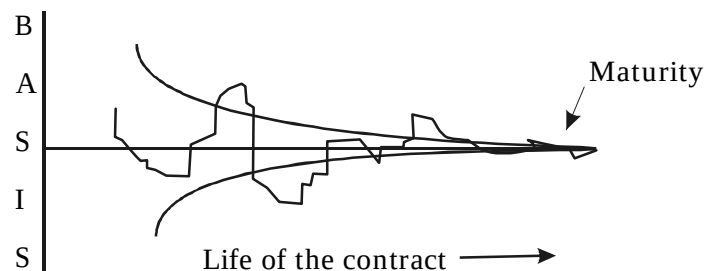
- Contract Size - The value of the contract at a specific level of Index. It is Index level * Multiplier.
- Multiplier - It is a pre-determined value, used to arrive at the contract size. It is the price per index point.
- Tick Size - It is the minimum price difference between two quotes of similar nature.
- Contract Month - The month in which the contract will expire.
- Expiry Day - The last day on which the contract is available for trading.
- Open interest - Total outstanding long or short positions in the market at any specific point in time. As total long positions for market would be equal to total short positions, for calculation of open Interest, only one side of the contracts is counted.
- Volume - No. of contracts traded during a specific period of time. During a day, during a week or during a month.
- Long position- Outstanding/ unsettled purchase position at any point of time.
- Short position - Outstanding/ unsettled sales position at any point of time.
- Open position - Outstanding/ unsettled long or short position at any point of time.
- Physical delivery - Open position at the expiry of the contract is settled through delivery of the underlying. In futures market, delivery is low.
- Cash settlement - Open position at the expiry of the contract is settled in cash. These contracts are designated as cash settled contracts. Index Futures fall in this category.



- Alternative Delivery Procedure (ADP) - Open position at the expiry of the contract is settled by two parties - one buyer and one seller, at the terms other than defined by the exchange. World wide a significant portion of the energy and energy related contracts (crude oil, heating and gasoline oil) are settled through Alternative Delivery Procedure.

Concept of basis in futures market

- Basis is defined as the difference between cash and futures prices:
Basis = Cash prices - Future prices.
- Basis can be either positive or negative (in Index futures, basis generally is negative).
- Basis may change its sign several times during the life of the contract.
- Basis turns to zero at maturity of the futures contract i.e. both cash and future prices converge at maturity



Life of the contract

Operators in the derivatives market

- Hedgers - Operators, who want to transfer a risk component of their portfolio.
- Speculators - Operators, who intentionally take the risk from hedgers in pursuit of profit.
- Arbitrageurs - Operators who operate in the different markets simultaneously, in pursuit of profit and eliminate mis-pricing.

Pricing Futures

Cost and carry model of Futures pricing

- Fair price = Spot price + Cost of carry - Inflows
- $FP_{tT} = CP_t + CP_t * (R_{tT} - D_{tT}) * (T-t) / 365$
- FP_{tT} - Fair price of the asset at time t for time T.
- CP_t - Cash price of the asset.
- R_{tT} - Interest rate at time t for the period up to T.

- D_{tT} - Inflows in terms of dividend or interest between t and T .
 - Cost of carry = Financing cost, Storage cost and insurance cost.
 - If Futures price $>$ Fair price; Buy in the cash market and simultaneously sell in the futures market.
 - If Futures price $<$ Fair price; Sell in the cash market and simultaneously buy in the futures market.
- This arbitrage between Cash and Future markets will remain till prices in the Cash and Future markets get aligned.

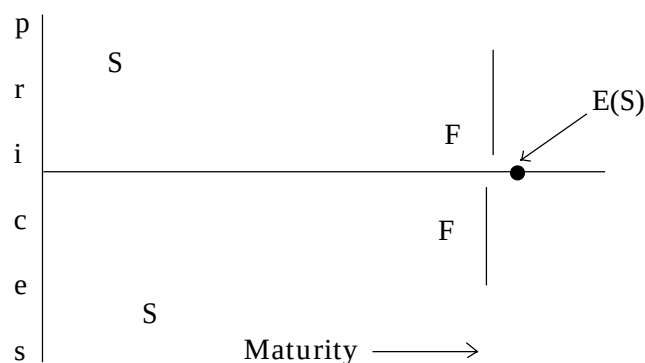
Set of assumptions

- No seasonal demand and supply in the underlying asset.
- Storability of the underlying asset is not a problem.
- The underlying asset can be sold short.
- No transaction cost; No taxes.
- No margin requirements, and so the analysis relates to a forward contract, rather than a futures contract.

Index Futures and cost and carry model

In the normal market, relationship between cash and future indices is described by the cost and carry model of futures pricing.

Expectancy Model of Futures pricing



S - Spot prices.

F - Future prices.

E(S) - Expected Spot prices.

- Expectancy model says that many a times it is not the relationship between the fair price and future price but the expected spot and future price which leads the market. This



happens mainly when underlying is not storable or may not be sold short. For instance in commodities market.

- E(S) can be above or below the current spot prices. (This reflects market's expectations)
- Contango market- Market when Future prices are above cash prices.
- Backwardation market - Market when future prices are below cash prices.

Relationship between forward & future markets

- Analyze the different dimensions of Forward and Future Contracts: (Risk; Liquidity; Leverage; Margining etc....)
- Assign value to each factor to arrive at the contract price. (Perception plays a crucial role in price determination)
- *Any substantial difference in the Forward and Future prices will trigger arbitrage.*

Risk management through Futures

Which risk are we going to manage through Futures

- Basic objective of introduction of futures is to manage the price risk.
- Index futures are used to manage the systemic risk, vested in the investment in securities.

Hedge terminology

- Long hedge- When you hedge by going long in futures market.
- Short hedge - When you hedge by going short in futures market.
- Cross hedge - When a futures contract is not available on an asset, you hedge your position in cash market on this asset by going long or short on the futures for another asset whose prices are closely associated with that of your underlying.
- Hedge Contract Month- Maturity month of the contract through which hedge is accomplished.
- Hedge Ratio - Number of future contracts required to hedge the position.

Some specific uses of Index Futures

- Portfolio Restructuring - An act of increasing or decreasing the equity exposure of a portfolio, quickly, with the help of Index Futures.
- Index Funds - These are the funds which imitate/replicate index with an objective to generate the return equivalent to the Index. This is called Passive Investment Strategy.

Speculation in the Futures market

- Speculation is all about taking position in the futures market without having the underlying. Speculators operate in the market with motive to make money. They take:
- Naked positions - Position in any future contract.
- Spread positions - Opposite positions in two future contracts. This is a conservative speculative strategy.

Speculators bring liquidity to the system, provide insurance to the hedgers and facilitate the price discovery in the market.

Arbitrageurs in Futures market

Arbitrageurs facilitate the alignment of prices among different markets through operating in them simultaneously.

Margining in Futures market

- Whole system dwells on margins:
- Daily Margins
- Initial Margins
- Special Margins
- Compulsory collection of margins from clients including institutions.
- Collection of margins on the Portfolio basis not allowed by L. C. Gupta committee.

Daily Margins

- Daily margins are collected to cover the losses which have already taken place on open positions.
- Price for daily settlement - Closing price of futures index.
- Price for final settlement - Closing price of cash index.
- For daily margins, two legs of spread positions would be treated independently.
- Daily margins should be received by CC/CH and/or exchange from its members before the market opens for the trading on the very next day.
- Daily margins would be paid only in cash.

Initial Margins

- Margins to cover the potential losses for one day.
- To be collected on the basis of value at risk at 99% of the days.
- Different initial margins on:
 - Naked long and short positions.
 - Spread positions.

Naked positions

Short positions 100 $[\exp(3s_t) - 1]$

Long positions 100 $[1 - \exp(3s_t)]$

Where $(s_t)^2 = l(s_{t-1})^2 + (1-l)(r_t^2)$

- s_t is today's volatility estimates.
- s_{t-1} is the volatility estimates on the previous trading day.
- l is decay factor which determines how rapidly volatility estimates change and is taken as 0.94 by Prof. J. R. Verma.

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- r_t is the return on the trading day $[\log(I_t / I_{t-1})]$
- Because volatility estimate s_t changes everyday, Initial margin on open position will change every day.
(for first 6 months of futures trading, minimum initial margin on naked positions shall be 5%)

Spread positions

- Flat rate of 0.5% per month of spread on the far month contract.
- Min. margin of 1% and maximum margin of 3% on spread positions.
- A calendar spread would be treated as open position in the far month contract as the near month contract approaches maturity.
- Over the last five days of trading of the near month contract, following percentages of the spread shall be treated as naked position in the far month contract:
 - 100% on the day of expiry
 - 80% one day before the expiry
 - 60% two days before the expiry
 - 40% three days before the expiry
 - 20% four days before the expiry

Margins on the calendar spread is to be reviewed after 6 months of futures trading.

Liquid assets and Broker's net worth

- Liquid assets
- Cash, fixed deposits, bank guarantee, government securities and other approved securities.
- 50% of Liquid assets must be cash or cash equivalents. Cash equivalents means cash, fixed deposits, bank guarantee and government securities.
- Liquid net-worth = Liquid asset - Initial margin
- Continuous requirement for a clearing member:
- Minimum liquid net-worth of Rs. 50 Lacs.
- The mark to market value of gross open position shall not exceed 33.33 times of member's liquid net worth.

Basis for calculation of Gross Exposure:

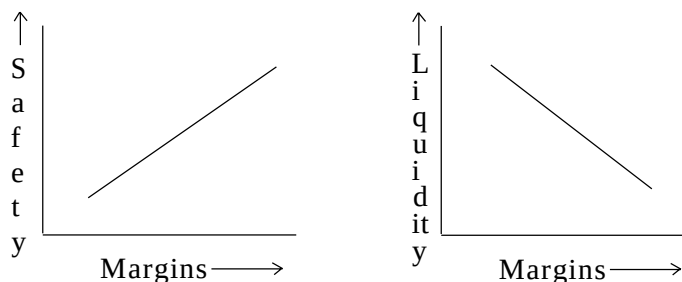
- For the purpose of the exposure limit, a calendar spread shall be regarded as an open position of one third of the mark to market value of the far month contract.
- As the near month contract approaches expiry, the spread shall be treated as a naked position in the far month contract in the same manner as defined in slide no. 49.

Margining in Futures market

Initial Margin (Value at risk at 99% of the days)

Daily Margin

Special Margins



- ***Striking an intelligent balance between safety and liquidity while determining margins, is a million dollar point.***

Position limits in Index Futures

Customer level

- No position limit. Disclosure to exchange, if position of people acting in concert is 15% or more of open interest.

Trading member level

- 15% of open interest or 100 crore whichever is higher.
- to be reviewed after 6 months of futures trading.

Clearing member level

- No separate position limit. However, C.M. should ensure that his own positions (if C.M. is a T.M. also) and the positions of the T.Ms. clearing through him are within the limits specified above for T.M.

Market level

- No limit. To be reviewed after 6 months of trading in futures.

Expected advantages of derivatives to the cash market

- Higher liquidity
- Availability of risk management products attracts more investors to the cash market.
- Arbitrage between cash and futures markets fetches additional business to cash market.
- Improvement in delivery based business.
- Lesser volatility
- Improved price discovery.

Illustration 3

In May beginning you decide that shares in X Ltd. will rise over the next month or so. The current price is Rs. 100 and you hope that the shares will be at Rs. 150 by the end of July.

**Solutions:*****When no option is traded***

If you buy the shares, say 100 shares for Rs. 10,000 and you are correct in your expectations your 100 shares will be worth Rs. 15,000 within three months showing a profit of Rs. 5,000, 50% of the amount invested less expenses.

The risk attached in this investment, is, you need an investment of Rs. 10,000 for purchase of 100 Shares in X Ltd. And if the amount is invested, there is a risk of price drop on different factors like collapse of X Ltd., fall of shares market index, slump in the market etc. Then you will lose your money, when

your expectations go wrong.

When option is traded

- (1) When an option is traded, you could buy an option on the share, say at Rs. 10 premium.
- (2) This option would give you the right to buy a share in X Ltd. for Rs. 100 at any time over the next three months.
- (3) If X Ltd.'s share price remains at Rs. 100, you have an option with no value and so you have lost Rs. 10 premium per share that you have paid and your total loss is to the extent of Rs. 1,000 (100 shares X Rs. 10).
- (4) If the share price goes up to Rs. 150 then your option has value worth exercising. The increase in share price from Rs. 100 to Rs. 150 per share amounting to total increase is Rs. 5,000 on 100 shares and your net return is Rs. 4,000 on an investment of Rs. 1,000 and you earn a profit of 400% on your investment by purchasing an option instead of shares in X Ltd.
- (5) If the price rose to over Rs. 100 and the option was exercised, then we would be required to part with his shares in X Ltd. at Rs. 100 per share or buy them for onward delivery at the prevailing market price. However, he would get Rs. 10 premium as well, so he would locally be getting Rs. 100 on share and this Rs. 10 would limit the paper loss in his portfolio if the X Ltd. share price falls.

Liquidating Option Positions

When a trader buys an option, he can exit the trade in one of three ways:

- *Sell the option and collect whatever the premium is* - If the premium is more than what is initially cost plus the commission, there's a profit. If the premium is less, it's a loss, but keeping some money is better than losing all the money.
- *Exercise the option, covering it into a futures position* - The broker must be notified before options expire. Not all options have an automatic exercise provision. Therefore, an in-the-money option that expires without any action taken, loses the buyer money (a seller somewhere will be very happy). An option can be exercised if the trader feels the market will continue to move favourably to the trader's position or an option can be exercised if the trading in the option is not very liquid. The trader, in this case feels he can exercise and then liquidate the futures more economically than selling his option position.

- *Ride the option into the dust* - Let it expire worthless, especially if getting out will cost more than the premium is worth.

When a trader sells an option, he or she can exit the trade by buying the option back. If the premium is higher, the option seller has lost money. The option seller cannot exercise his or her option.

‘At the’ ‘Out-of-the’ and ‘In-the money’

At any time during the life of the option, if the current market price (spot price) is equal to the exercise price, the option is at the money. If the spot price is less than the exercise price, the option is ‘out-of-the money’ and if greater than the exercise price the option is in-the-money. The relationship between the intrinsic value (IV), the exercise price (EP), and the share price (S) are summarised below, together with the relevant terminology.

<i>Call options</i>	<i>Put Options</i>	
If $S > EP$	$S < EP$	then $IV > 0$ and Option is ‘in the money’
If $S = EP$	$S = EP$	then $IV = 0$ and Option is ‘at the money’
If $S < EP$	$S > EP$	then $IV = 0$ and Option is ‘out of the money’

The time value of an option represents the amount that options buyers are willing to pay, over and above the intrinsic value. Options have time value because in the time between the purchase of the option and its expiration, the price of the underlying stock may change in a way favourable to the option holder. Obviously, the option holder hopes that in this time an option which is currently either ‘out-of-the-money’ or ‘at-the-money’ will move ‘into-the-money’, or that an option which is currently ‘in-the-money’ will move deeper ‘into-the-money’. The longer the time to expiration, the greater the time value of the option.

Advantages and Disadvantages of Options

The advantages and disadvantages of options contracting are given below:

Advantages

- There is limited risk for many options strategies. The trader can lose the entire premium, but that amount is known when the position is initiated.
- There are no margin calls for many strategies.
- Options offer a wide range of strategies for a variety of conditions.
- Options offer a way to add to futures positions without spending any more money or premiums. Thus, the option trader has more leverage.
- With a forward and futures contract, the investor is committed to a future transaction; with an option, he enjoys the right to go ahead but he can walk away from the deal if he so desires.
- There is limited risk for many options strategies. The trader can lose the entire premium, but that amount is known when the position is initiated.



- There are no margin calls for many strategies.
- Options offer a wide range of strategies for a variety of conditions

Disadvantages

- There are more complex factors affecting premium prices for options. Volatility and time to expiration are often more important than price movement.
- Many options contracts expire weeks before the underlying futures. This can be an occasional often occurs close to the final trading day of futures. However, this should not be construed to mean that commercials cannot use the options to hedge.
- Option premiums don't move tick for tick with the futures (unless they're deep in the money). This can be frustrating to have the market move in your direction, yet lose premium value.
- The trader pays a premium to enter a market when buying options. When volatility is high, premiums can be very expensive. The trade is paying for time, so the premium becomes an eroding asset. On the other side, options sellers can receive price premiums, but they have margin requirements.
- Currently, there is more liquidity in futures contracts than there is in most options contracts. Entry and exit from some markets can be difficult. Even if a position entered with a limit order, exiting can be a problem, unless the option is in the money. Of course, the option buyer can exercise the option, receive a futures position, then liquidate the futures.

Financial Derivatives

There are three types of financial derivatives viz.,

- Currency futures, where the position involves foreign currencies.
- Interest rate futures, where the position involves fixed income securities.
- Equity futures, where the position involves equities.

Key words

- Commodity
- Derivatives
- Bench Mark
- Index
- Index Future
- Forward
- Options
- Put option and call Option
- Margin
- Arbitraders
- Currency derivatives

- Dow Johns
- Hedging
- Swapping
- Derivative
- Options
- Futures
- In the money
- Strike price
- Call option
- Put option
- Out of money
- At the money
- Risk management

Summary

A derivative security is a financial contract whose value is derived from the value of something else, such as a stock price, a commodity price, an exchange rate, an interest rate, or even an index of prices. , some simple types of derivatives: forwards, futures, options and swaps.

Derivatives may be traded for a variety of reasons. A derivative enables a trader to hedge some preexisting risk by taking positions in derivatives markets that offset potential losses in the underlying or spot market. In India, most derivatives users describe themselves as hedgers (FitchRatings, 2004) and Indian laws generally require that derivatives be used for hedging purposes only. Another motive for derivatives trading is speculation (i.e. taking positions to profit from anticipated price movements). In practice, it may be difficult to distinguish whether a particular trade was for hedging or speculation, and active markets require the participation of both hedgers and speculators.³

A third type of trader, called arbitrageurs, profit from discrepancies in the relationship of spot and derivatives prices, and thereby help to keep markets efficient. Jogani and Fernandes (2003) describe India's long history in arbitrage trading, with line operators and traders arbitraging prices between exchanges located in different cities, and between two exchanges in the same city.

Short questions & Easy Questions

1. Write on Derivative market in India
2. Explain Clearing and settlement in the case of derivative
3. What are the factors have been driving the growth of financial derivatives
4. Explain briefly Characteristics of derivatives
5. What are the criteria for derivatives trading
6. Explain Indian Derivative Market
7. What is the difference between Forward and future?
8. Write a brief note on Equity Derivatives in India



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9. What is Index future in india?
10. Write Concept of basis in futures market
11. Write a Short note on Major Equity Derivative Exchanges in the World
12. Explain step by step development of derivative markets in India
13. Explain development and regulation of derivative markets in India
14. What are the objective of regulatory of derivative market
15. Define Hedging
16. What do you mean Portfolio rebalancing
17. Write on derivative products
18. Explain futures in India
19. Write about Myths and realities about derivatives

Student Activity

1. Study on Indian Commodity trading Growth in recent years. Author say that commodity trading will lead to inflation do you agree with this? Justify
2. Study on Derivative Market – Future and Option with special reference to BSE and NSE. Compare with the Global Market
3. Study on Mid Cap, Small Cap and Large Cap with special reference to BSE

Objective Questions:

1. The spot value of Sensex is 12140. An investor buys a one month Index 12157 call option for a premium of Rs. 8. The option is _____
(in the money ; at the money ; out of the money)
2. The option Premium is _____
(Sum of intrinsic value and time value ; Greater than Sum of intrinsic value and time Value ; Less than Sum of intrinsic value and time value)
3. Mr.X agrees to exchange 100 Kgms of basmati rice three months later at Rs. 80 per Kgm. This is an example of _____
(Spot contract ; Forward Contract ; Futures Contract)
4. The Spot is currently selling at Rs. 270. The call option to buy the stock at Rs. 265 costs Rs. 12 . What will be the Time Value of the option?
(Rs. 17 ; Rs. 5 ; Rs. 7)
5. The spot value of Nifty is 4430. An investor bought a one month Nifty for 4410 call option for a premium of Rs.12. The option is _____
(in the money ; at the money ; out of the money)
6. The RComm is currently selling at Rs. 530 . The call option to buy the stock at Rs. 550 Costs Rs. 15. What would be the Time Value of the option ?
(5 ; 20 ; 0)
- 7 .In question No.5 ; what will be the Intrinsic value. _____ (Rs. 0 ; Rs. 8 ; Rs.20)



8. A special contract under which the owner of the contract enjoys the right to buy or sell something without the obligation to do so. _____
(Forward , Option, Future)
9. The _____ can be exercised only on the expiration date
(American option ; European option; Index option)
10. When the Exercise price is equal to the Spot Price it is _____
(ITM ; OTM ; ATM)
11. The fixed price at which the option holder can buy / sell the underlying asset is called the _____
(Strike price ; Spot Price ; market price)
12. The value of the option contract on individual securities shall not be less than Rs. _____
(Rs. 200000 ; Rs.500000; Rs. 100000)

[Answers: 1. c ; 2. a ; 3. b ; 4. c ; 5. a ; 6. c ; 7. c ; 8. b ; 9. b ; 10. c ; 11. a ; 12 a]

3.7 DEBT MARKET

The Debt Market is the market where fixed income securities of various types and features are issued and traded. Debt Markets are therefore, markets for fixed income securities issued by Central and State Governments, Municipal Corporations, Govt. bodies and commercial entities like Financial Institutions, Banks, Public Sector Units, Public Ltd. companies and also structured finance instruments.

Benefits of an efficient Debt Market to the financial system and the economy

- Reduction in the borrowing cost of the Government and enable mobilization of resources at a reasonable cost.
- Provide greater funding avenues to public-sector and private sector projects and reduce the pressure on institutional financing.
- Enhanced mobilization of resources by unlocking illiquid retail investments like gold.
- Development of heterogeneity of market participants
- Assist in development of a reliable yield curve and the term structure of interest rates.

Introduction to Fixed Income Instruments

Fixed Income securities are one of the most innovative and dynamic instruments evolved in the financial system ever since the inception of money. Based as they are on the concept of interest and time-value of money, Fixed Income securities personify the essence of innovation and transformation, which have fueled the explosive growth of the financial markets over the past few centuries.

Fixed Income securities offer one of the most attractive investment opportunities with regard to safety of investments, adequate liquidity, flexibility in structuring a portfolio, easier monitoring, long term reliability and decent returns. They are an essential component of any portfolio of financial and real assets, whether in form of pure interest bearing bonds, innovative and varied type of debt instruments or asset-backed mortgages and securitised instruments.



Fixed Income Markets - Powering the World

The Fixed Income securities market was the earliest of all the securities markets in the world and has been the forerunner in the emergence of the financial markets as the engine of economic growth across the globe. The Fixed Income Securities Market, also known as the Debt Market or Bond Market, is easily the largest of all the financial markets in the world today. The size of the world Bond markets last year was around US \$ 35 trillion, which is nearly equivalent to the total GDP of all the countries in the world. The Debt Markets have therefore a very prominent role to play in the efficient functioning of the world financial system and in catalyzing the economic growth of nations across the globe.

Indian Debt Markets - Pillars of the Indian Economy

The Debt Markets therefore play a very critical role in any modern economy. And more so in the case of developing countries like India which need to employ a large amount of capital and resources for achieving the desired degree of industrial and financial growth. The Indian Debt Markets are today one of the largest in Asia and includes securities issued by the Government (Central & State Governments), public sector undertakings, other government bodies, financial institutions, banks and corporates. The Indian Debt Markets with an outstanding issue size of close to Rs.14640 Billion (or Rs. 14,64,000 Crores) and a secondary market turnover of around Rs 28500 Billion (in the previous year 2006) is the largest of the Indian financial markets.

The Government Securities (G-Secs) market is the oldest and the largest component of the Indian Debt Market in terms of market capitalization, outstanding securities and trading volumes. The outstanding volumes of Government Securities (Central & State) at the end of March 2006 was around Rs. 14610 billion . The G-Secs. market plays a vital role in the Indian economy as it provides the benchmark for determining the level of interest rates in the country through the yields on the government securities which are referred to as the risk-free rate of return in any economy.

Transformations in Market Structure

The Indian Debt Markets are today poised on the threshold of momentous change and transition to an efficient, transparent and vibrant market with significant retail participation. The first half of the twentieth century had witnessed a significant amount of retail interest and participation in the G-Sec market with more than half the holdings of G-Secs issued being held by retail investors, a trend which continued until the early sixties. The administered interest rate regime and the emergence of other equity and debt instruments led to a gradual diminution in the investor interest and participation in the G-Sec market.

The Indian Debt Market structure was hitherto that of a wholesale market with participation largely restricted to the Banks, Institutions and the Primary Dealers. The rapidly expanding volumes in the Wholesale Debt Market over the past few years bear the promise of an immense and attractive financial market with a strong potential for retail participation. The Retail Debt Market in India is being created, thanks to the pioneering efforts of the Exchanges and the market participants and the strong leadership and guidance by SEBI, RBI and the Govt. of India.

BSE's Bond with Investors

Bombay Stock Exchange Limited (BSE), the premier stock exchange in the country has heralded the capital market revolution in India and has contributed immensely towards the achievement of global standards of efficiency and safety by the Indian Capitals Markets. The nationwide BSE BOLT Network today, spread across more than 413 cities in the country, represents one of



the most formidable and efficient distribution channels for financial securities in the Indian Financial Markets. BSE has always been in the forefront in introducing new and innovative financial products and services suited to the Indian Business Environment during its 130 years of fruitful association with the Indian Investor Community.

BSE, with its 130 years of association with the Indian investors, has been in the forefront to provide the highest standards of service to the Indian investor Community. The BSE Debt Segment, while reiterating this commitment, promises to provide an integrated trading, clearing and settlement platform for the Fixed Income Markets with information products and services suited to meet all the trading and investment requirements of the market participants.

Wholesale Debt Market Segment (WDS)

The Reserve Bank of India, vide the following circulars

- DBOD. FSC. BC. No. 39 / 24.76.002 / 2000 dated October 25, 2000 IDMC. PDRS. PDS. No PDS-2 / 03.64.00 / 2000-01 dated November 13, 2000 DBS. FID No. C 10 / 01.08.00 / 2000-0122 dated November, 2000

permitted the Banks, Primary Dealers and the Financial Institutions in India to undertake transactions in debt instruments among themselves or with non-bank clients through the members of Bombay Stock Exchange Limited (BSE). This notification paved the way for the Exchange to commence trading in Government Securities and other fixed income instruments. The Wholesale Debt Segment of the Exchange commenced its' operations on June 15, 2001.

The membership of the Debt Segment is being granted only to the Existing (equity segment) Members of the Exchange, who possess a minimum net worth of Rs.1.5 crores.. There is no security deposit applicable for the membership of the Debt Segment. The annual approval/ renewal charges at present is are Rs.25,000/-.(Currently waived)

The BSE Debt Segment offers the market participants in the Wholesale Debt Market an efficient and transparent trading mechanism through its' GILT System. The GILT system is envisaged to become the single point trading platform for all types of Debt securities and instruments. The GILT system will over a period of time provide trading facilities for Central and State Govt. securities, T-Bills, Institutional bonds, PSU bonds, Commercial Paper, Certificates of Deposit, Corporate debt instruments and the new innovative instruments like municipal securities, securitized debt, mortgage loans and STRIPs.

GILT facilitates faster and efficient price dissemination through the Touchline of the Trading System. All relevant information which are of crucial importance in the trading process like the Accrued Interest and Delivery Value are readily available in the system A Yield Calculator is made available both separately and as part of the various order Entry and trade reporting screens.

There are normally two types of transactions, which are executed in the Wholesale Debt Market :

- **An outright sale or purchase and**
- **A Repo trade**

An outright Buy or sell transaction is a one where there is no intended reversal of the trade at the point of execution of the trade. The Buy or sell transaction is an independent trade and is in no way connected with any other trade at the same or a later point of time. A Ready Forward Trade (which is normally referred to as a Repo trade or a Repurchase Agreement) is a transaction where the said trade is intended to be reversed at a later point of time at a rate which will include the interest component for the period between the two opposite legs of the transactions.



So in such a transaction, one participant sells securities to other with an agreement to purchase them back at a later date. The trade is called a Repo transaction from the point of view of the seller and it is called a Reverse Repo transaction from point of view of the buyer.

Repos therefore facilitate creation of liquidity by permitting the seller to avail of a specific sum of money (the value of the repo trade) for a certain period in lieu of payment of interest by way of the difference between the two prices of the two trades.

Repos and reverse repos are commonly used in the money markets as instruments of short-term liquidity management and can also be termed as a collateralised lending and borrowing mechanism. Banks and Financial Institutions usually enter into reverse repo transactions to manage their reserve requirements or to manage liquidity.

Trading, Clearing and Settlement in WDS

The major participants in the Wholesale Debt Market like the Banks, Primary Dealers and Institutions are enabled to execute trades through the Members of the WDS of the Exchange through the participant code (Client Code) allocated to each of them, which is one of the key parameters to be entered by the Member in the GILT system while executing the transaction. Trading on the GILT system is currently permitted from 10.00 a.m. to 5.45 p.m. from Monday to Friday and 10.00 a.m. to 2.15 p.m. on Saturday.

The Settlement for the securities traded in the GILT System is on a Trade by Trade DVP basis. The primary responsibility of settling trades concluded in the wholesale segment rests directly with the participants who would settle the trades executed in the GILT system on their behalf through the Subsidiary Ledger Account of the RBI or the CCIL A/c through the NDS. Each transaction is settled individually and netting of transactions is not allowed. The Exchange monitors the Clearing and Settlement process for all the trades executed or reported through the 'GILT' system. The Members need to report the settlement details to the Exchange for all the trades undertaken by them on the GILT system. The settlements for all the trades executed on the GILT system are on a rolling basis..

Growth in the WDS

The BSE Debt Segment has shown a gradual but consistent growth in turnover in the past few months with increased participation from the mainstream Banking and Institutional Players. The Wholesale Debt Segment today witnesses active participation today from about 100 Major Banks and Institutions in the Debt Market with Average Daily Turnover of around Rs.50 Crores currently. The Segment expects a sustained rise in turnover and participation in the next few months with the initiation of activity by new Members and the continued support and participation of the major Banks, Primary Dealers and Institutions.

Retail Debt Segment (REDS)

The Retail Debt Markets in the new millennium, presents a vast kaleidoscope of opportunities for the Indian investor whose knowledge and participation hitherto has been restricted to the Equities markets in India.

The development of the Retail Debt Market has engaged the attention of the policy makers, regulators and the Government in the past few years. The potential of the Retail Debt Markets can be gauged from the investor strength of more than 40 million in the Indian Equities market who have powered the tremendous growth and transformation of the stock markets in recent times. Recognizing this opportunity at a very early date, BSE has been consistently in the forefront of the campaign for the creation of a Retail Debt Market and has consistently expounded

the potential and need for the retail trading in G-Secs in the past few years in various important forums and to the key regulatory authorities.

Emergence of the Retail Market

It would be surprising to know that a retail debt market was at one point of time very much present in India. Right through the forties and the fifties and until the early sixties, a good proportion of the holdings of Govt. securities were concentrated with individual investors. Available statistics indicate that more than half of the holdings in Govt. securities was concentrated with retail investors in the early 50s.

Today, there exists an inherent need for households to diversify their investment portfolio so as to include various debt instruments and especially Government securities. The growing investments in the Bond Funds and the Money Market Mutual Funds are a sign of the increasing recognition of this fact by the retail investors.

Retail investors would have a natural preference for fixed income returns and especially so in the current situation of increasing volatility in the financial markets. The Central Government Securities (G-Secs) are the one of the best investment options for an individual investor today in the financial markets due to the following factors:

- Zero Default Risk - due to their sovereign guarantee, ensures the total safety of all investments in G-Secs.
- Lower average volatility in bond prices
- Greater returns as compared to the conventional safe investment avenues like Bank Deposits and Fixed Deposits, which also contain credit risk
- Higher Leverage - Greater borrowing capacity against G-Secs due to their zero risk status.
- Wider range of innovations in the nature of securities like TBills, Index linked Bonds, Partly Paid Bonds and others like STRIPS and Securities with call and put options to follow soon.
- Better and greater features to suit a large range of investment profiles and investor requirements.
- Growing Liquidity and the increased turnover in recent times in the Indian Debt Markets

Retail Trading in G-Secs

The Government of India and RBI, recognizing the need for retail participation had recently announced a scheme for enabling retail participation through a non-competitive bidding facility in the G-Sec auctions with a reservation of 5% of the issue amount for non-competitive bids by retail investors.

The Retail Trading in G-Secs. commenced on January 16, 2003 in accordance with the SEBI Circular bearing ref. no. SMD/Policy/GSEC/776/2003 dated 10th January 2003. The Indian Fixed Income Markets, which until some time ago was the mainstay of the wholesale investors were made accessible to the Retail Indian Investors, thanks to some path-breaking initiatives by the Government of India - Ministry of Finance, the RBI and SEBI to enable retail trading in G-Secs through the Stock Exchanges. BSE has, for long, been an ardent advocate of the need to enable the participation of the 28 Million Indian investor multitude in the Indian Fixed Income Markets. The Indian Investor is today able to buy or sell G-Secs through the nationwide BSE



BOLT Network of more than 7000 Terminals spread across 410 cities around the country.

The Retail Debt Market Module aims at providing an efficient and reliable trading system for all debt instruments and securities of different types and maturities. The key features of the system are:

1. **Trading:** by electronic order matching based on price-time priority through the BOLT (BSE OnLine Trading) System with the continuous trading sessions from 9.55 a.m. to 3.30 p.m as is operational in the Equities Segment. Retail Trading in G-secs would be on a Rolling Settlements basis with a T+2 Delivery Cycle.
2. **Clearing and Settlement:** The Clearing and Settlement mechanism for the Retail trading in G-Secs is based on the existing institutional mechanism available at the Stock Exchanges. The trades executed throughout the continuous trading sessions will be netted out at the end of the trading hours through a process of multilateral netting. The transactions will be netted out member-wise and then scrip-wise so as to determine the net settlement and payment obligations of the members. The Delivery obligations and the payment orders in respect of these members are generated by the Clearing and Settlement system of the Exchange. These statements indicate the pay-in and pay-out positions of the members for securities and funds who would then give the necessary instructions to their Clearing Banks and depositories.

The entire risk management and the clearing and settlement activities for the trades executed in the Retail Debt Market System will be undertaken by the Exchange Clearing House.

3. **Holding and Transfer of G-Secs:** The G-secs for retail trading through Stock Exchanges can be held by investors in the Same Demat A/c (same as the Constituent SGL A/c which can be held with Banks or PDs) as is used for equities at the Depositories. NSDL and CDSL will hold the combined quantity of G-Secs in their SGL-II A/cs of RBI, meant only for client holdings.

The BSE Debt Market solution would also provide live Internet trading on its state of the art BSEWebx Trading System which will offer among others a number of quintessential features and facilities, critical for the investor in the fixed Income markets. The BSE Debt Market solution would seek to provide in the course of time an integrated trading and settlement platform for the entire variety of debt securities and instruments, which are bound to expand in an enormous way in terms of variety and numbers in the near future.

BSE, in keeping with the dramatic strides in the expansion of the Indian Debt Market, is all set to offer our investors an enlightening

and satisfying investment and trading experience which will truly unleash the magic and potential of the Bond Markets for the Indian Investors.

BSE - Bonding with the Future

The BSE Debt segment would seek to pave the way for the development of an healthy, efficient and active debt market mechanism and market structure in line with world class standards and greater integration with the global economy. The BSE vision for the Indian Debt Market foresees the markets growing in leaps and bounds in the near future, soon attaining global standards of safety, efficiency and transparency. This will truly help the Indian capital markets to attain a place of pride among the leading capital markets of the world.