

8 Derivatives of Securities

INTRODUCTION

History of financial markets is replete with crises, such as the break down of the fixed exchange rate system in 1971, the Black Monday of October 1987, the steep fall in the Nikkei in 1989, the bond debacle of 1994 in US . All these events occur because of very high degree of volatility of financial markets and their unpredictability. With increased global integration of markets, such disasters have become more frequent. Since such volatility and associated disasters can not be wished away, innovative financial instruments emerged to protect against these hazards. These included Futures and Options which are the most dominant forms of financial derivatives. They are called derivatives because their prices depend on the values of other more basic underlying financial instruments. For example, the price of a stock option depends on the value of the underlying stock; a commodity futures price depends on the value of the underlying commodity and so on. These derivatives provide a mechanism which market participants use to hedge their positions against adverse movement of variables over which they have no control. Financial derivatives came into the spotlight along with the growing instability in current markets during the post-1970 period, when the US announced its decision to give up gold-dollar parity, the basic king pin of the Bretton Woods System of fixed exchange rates. In less than three decades of their emergence, derivatives markets have become an integral part of modern financial system. According to Greenspan “By far the most significant event in finance during the past decade has been the extraordinary development and expansion of financial derivatives....”

History of Futures Markets

The butter and eggs dealers of Chicago Produce Exchange joined hands in 1898 to form the Chicago Mercantile Exchange for futures trading. The exchange provided a futures market for many commodities including pork bellies (1961), live cattle (1964), live hogs (1966), and feeder cattle (1971). The International Monetary Market was formed as a division of the Chicago Mercantile Exchange in 1972 for futures trading in foreign currencies. In 1982, it introduced a futures contract on the S&P 500 Stock Index.

Many other exchanges throughout the world now trade futures contracts. Among them are the Chicago Rice and Cotton Exchange, the New York Futures Exchange, the London International Financial Futures Exchange, the Toronto Futures Exchange and the Singapore International Monetary Exchange.

History of Options Contracts

In the early 1900s, a group of firms set up what was known as the Put and Call Brokers and Dealers Association. It, however, did not allow the buyer of an option the right to sell it to another party prior to expiration and there was no mechanism to guarantee that the writer of the option would honour the contract. In April 1973, the Chicago Board of Trade set up a new exchange, the Chicago Board of Options Exchange, specifically for the purpose of trading stock options. Since then options markets have become increasingly popular with investors. The American Stock Exchange and the Philadelphia Stock Exchange began trading options in 1975. By the early 1980's, the volume of trading had grown

so rapidly that the number of shares underlying the option contracts sold each day exceeded the daily volume of shares traded on the New York Stock Exchange.

In the 1980's, markets developed for options in foreign exchange, options on stock indices, and options on futures contracts. The Philadelphia Stock Exchange is the premier exchange for trading foreign exchange options. The Chicago Board Options Exchange trades options on the S&P 100 and the S&P 500 stock indices while the American Stock Exchange trades options on the Major Market Stock Index, and the New York Stock Exchange trades options on the NYSE Index. Most exchanges offering futures contracts now also offer options on these futures contracts. Thus, the Chicago Board of Trades offers options on corn futures, the Chicago Mercantile Exchange offers options on live cattle futures, the International Monetary Market offers options on foreign currency futures, and so on.

Participants and Functions

Three broad categories of traders - hedgers, speculators, and arbitrageurs – trade in the derivatives market. *Hedgers* face risk associated with the price of an asset. They use futures or options markets to reduce or eliminate this risk. *Speculators* wish to bet on futures movements in the price of an asset. Futures and options contracts can give them an extra leverage; that is, they can increase both the potential gains and potential losses in a speculative venture. *Arbitrageurs* are in business to take advantage of a discrepancy between prices in two different markets. If, for example, they see the futures price of an asset getting out of line with the cash price, they will take offsetting positions in the two markets to lock in a profit.

The derivative market performs a number of economic functions. First, prices of an organised derivatives market reflect the perception of market

participants about the future and lead the prices of underlying to the perceived future level. The prices of derivatives converge with the prices of the underlying at the expiration of derivative contract. Thus derivatives help in discovery of future as well as current prices. Second, the derivatives market helps to transfer risks from those who have them but may not like them to those who have appetite for them. Third, derivatives, due to their inherent nature, are linked to the underlying cash markets. With the introduction of derivatives, the underlying market witnesses higher trading volumes because of participation by more players who would not otherwise participate for lack of an arrangement to transfer risk. Fourth, speculative trades shift to a more controlled environment of derivatives market. In the absence of an organised derivatives market, speculators trade in the underlying cash markets. Margining, monitoring and surveillance of the activities of various participants becomes extremely difficult in these kind of mixed markets. Fifth, an important incidental benefit that flows from derivatives trading is that it acts as a catalyst for new entrepreneurial activity. The derivatives have a history of attracting many bright, creative, well-educated people with an entrepreneurial attitude. They often energize others to create new businesses, new products and new employment opportunities, the benefit of which are immense. Sixth, derivatives markets help increase savings and investment in the long run. Transfer of risk enables market participants to expand their volume of activity. The Parliamentary Standing Committee on Finance which examined derivatives bill *was of the opinion that the introduction of derivatives, if implemented with proper safeguards and risk containment measures would certainly give a fillip to the sagging market, result in enhanced investment activity and instill greater confidence among the investors and participants.*



DERIVATIVES : Myths and Realities

Despite tremendous popularity of derivative instruments all over the world, there are apprehensions about their need and desirability in India. This can be attributed precisely to the phenomenon of fear of the unknown. Therefore, it becomes imperative to demystify the myths surrounding the utility of derivatives trading in India.

A. Indian Market is not ready for derivative trading

It is argued in some circles that the Indian securities market is not ready for derivatives trading. The securities market in India is accustomed to the style of settlement in the futures market. Market participants are used to trading, clearing and settlement systems which are akin to futures market. In addition, the basic requirements of a futures markets such as Initial Margin, Daily Mark to Market Margin, Clearing Corporations for Trade Guarantee, Surveillance System, Netting of Trades for a Specific Period etc. have been in place for quite some time now. All the stocks in the Sensex and the Nifty are traded in demat form. There is complete transparency in order execution through on-line trading system and 100% of the trades are conducted on-line. The NSE collects the margin from its members through EFT facility. SEBI has worked out risk containment measures for the futures markets which include the collection of initial margin based on 99% value-at-risk in advance. The Dr. L. C. Gupta Committee recognised the state of preparedness of the market and therefore had recommended a phased introduction of derivatives products in the sequence of index futures, index options and options on stocks. What more needed is separation of cash market from futures market, which would shift some of the speculative transactions from the former to the latter. This is

being achieved by introducing rolling settlement for all transactions on stock exchanges. There is, however, no barometer to judge the preparedness of the market for introduction of derivatives trading. It is also not necessary that all the pre-conditions must be in place before trading of derivatives is introduced. Moreover, when market participants feel the need for derivatives trading but are deprived of it, it is likely that the derivatives market on the Indian indices may develop elsewhere in the world.

B. Disasters prove that derivatives are very risky

Disasters can happen. These have happened in the cash segment of securities market in India. But disasters associated with derivatives catch attention like crash of an aircraft, while innumerable road accidents do not. Derivatives are like aircraft in that they are very useful most of the time, and generate headlines when things go wrong. Yet, a focus on plane crashes does not accurately convey the extent to which thousands of planes fly safely every day. We do not abandon flying just because it has a remote possibility of crash. We build up systems to avoid recurrence of such crash.

Derivatives are subject to same type of basic risks as the securities from which they derive their values, including market risk, liquidity risk, credit risk and settlement risk. Since these create leverage more effectively and cheaply than the underlying, they need to be handled more carefully. Derivatives are like chainsaw – more powerful, but need greater care in use. The regulation should ensure adequate information for investment decisions, protect and promote fair competition, prevent contagion and enable markets to survive systemic shocks.

Many of the disasters are wrongly associated with derivatives and many others have occurred due to lack of internal controls and/or outright fraud either by the employees or promoters. Most of these have



occurred on the Over the Counter (OTC) deals except in case of Barings where it was a case of internal fraud as much as it was the case in Daiwa Bank which lost more than 1 billion dollars in their debt portfolio. OTC deals lack transparency, sophisticated margining system and well laid out regulatory framework. The exchange-traded derivatives allow participants to transfer their risk without the attendant problems associated with the OTC deals. The Parliamentary Standing Committee on Finance, which examined the derivatives bill, *was convinced that the stock exchanges which are presently working would be better equipped to undertake trading in derivatives in a sophisticated environment. Since they are in a better position to handle the risk profile of the retail investors, institutional investors and corporate bodies, it would be prudent to allow trading in derivatives by such exchanges only.* Internal controls are important in case of derivatives trading as much as they are for normal equity or debt trading and the participants need to be careful in implementing and operating good back office and control systems to avoid any internal control failures.

The derivatives industry has seen enormous growth since the emergence of financial futures in 1972, with trading volumes doubling every three years during the subsequent twenty years resulting in a whopping trillion dollar business today.

C. Derivatives are too complex and Indians will not be able to handle them

Trading in standard derivatives such as forwards and futures has been extremely popular in India. Derivatives in commodities have a long history. The first commodity futures exchange was set up in 1875 in Mumbai under the aegis of Bombay Cotton Traders Association. A clearing house 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. Commodity futures are available in turmeric, black pepper, coffee, Gur (jaggery), hessian, castor seed oil etc. International futures markets have also been allowed in certain commodities like pepper and castor oil. Even dollar denominated contracts are traded in the international futures exchanges in India. RBI also permits the users to hedge their portfolios through derivatives exchanges abroad.

In the equities markets also, the derivatives have been in existence for a long time. In fact, official history of the Native Share and Stock Brokers Association, which is now known as Stock Exchange, Mumbai, suggests that the concept of options was existing as early as in 1898. It is worth quoting Mr. James P. Maclean, M.P. at the time of inauguration of BSE's new Brokers' Hall in 1898 “.....*India being the original home of options, a native broker would give a few points to the brokers of the other nations in the manipulations of puts and calls...*” There used to be trading of derivatives in the form of call options (Teji), put options (Mandi) and straddles (Fatak) etc. India had a flourishing derivatives market prior to enactment of the SCRA which made all options in securities entered into after 20th February 1957, illegal.

RBI has recently issued guidelines on interest swaps and forward rate agreements to enable banks and all India financial institutions to hedge interest rate risks and ensure orderly development of derivatives market. RBI also allows forward trading in *Rupee-Dollar forward contracts* as well as Cross Currency options trading.

All these amply prove that the concept of options and futures has been well ingrained in the Indian



markets for a long time and is not alien as it is made out to be. Even today, complex strategies of options like *teji-mandi*, *jota-phatak*, *bhav-bhav* are being traded informally.

Besides, complexity of a product does not deter its use if utility outweighs complexity. And what is complex today does not remain so for ever. All over the world, some of the best derivatives traders are Indians. Today, in many of the Wall Street firms, derivatives desks are manned by people of Indian origin. Indians have a reputation of being very good in derivatives pricing. In fact, financial markets manpower exports could become one of the areas for India in next ten years if derivatives are allowed to be traded in Indian financial markets. The use of current “futures-style settlement” provides ideal launching pad for the skills that are required for futures trading.

D. Existing cash market is more safe than derivatives

The trades in cash market accumulate over a trading cycle and at the end of the cycle, these are clubbed together, and positions are squared up, netted out, carried forward (on some exchanges), and the balance is settled by payment of cash and delivery of securities. Thus, the exchanges already follow “futures-style settlement” in contrast with international practice where trades are settled on rolling settlement basis. Currently account period trading carries the risks and difficulties of future market sans gains in price discovery and hedging services. From the regulatory perspective, the more efficient way would be to separate out the futures from the cash market i.e. introduce rolling settlement in all exchanges and at the same time allow futures and options to trade separately.

The existing system, although futures style, does not mandatorily ask for margins from the clients. Given

the volatility of the equities market in India, this system has become quite prone to systemic problems. This was evident in the MS Shoes episode. At the time of default taking place on the BSE, the defaulting member of the BSE had a position close to Rs.18 crore. However, due to the default, BSE had to stop trading for three days. At the same time, the Barings Bank failed on Singapore Monetary Exchange (SIMEX) with a huge exposure resulting into a loss of approximately US \$ 900 million (around Rs.3, 800 crore). Although, the loss was very big compared to the total exposure on MS Shoes for BSE of Rs.18 crore, the SIMEX had taken so much margins that they did not stop trading for a single minute. In that sense, the present systems at many exchanges in India is more prone to systemic failure as compared to the derivatives exchanges which are quite stringent in monitoring and margining.

The existing cash market suffers from the following:

- The market operates on account period system which is actually a 7 day futures market, while several markets abroad operate on a T+3 rolling settlement basis – one of the G-30 recommendations for an efficient clearing and settlement mechanism.
- In the futures market there is a daily mark to market settlement, leading to a faster settlement and risk reduction, unlike cash market where settlement takes 7 days from the last trading day.
- Cash market suffers from bad paper risk (though reduced significantly due to demat settlement), which is non existent in the futures market.
- Though similar to a futures style settlement, the cash market does not have all the risk containment features necessary including gross margining.



- Client positions are not segregated from proprietary positions from the regulatory perspective.
- Role of the trading member and clearing member are not segregated leading to weaker members affecting the system.
- In the cash market, institutions are exempt from paying margins, while in the futures market every one has to pay margins. The exemption is based on the assumption that institutions will not fail, which has been proved wrong.

DERIVATIVES: Developments in India

I. Developments Prior to 1998-99

In the last few years there have been substantial improvements in the functioning of the securities market. Requirements of adequate capitalisation, margining and establishment of clearing corporations have reduced market and credit risks. Systemic improvements have been effected through introduction of screen based trading system and electronic transfer and maintenance of ownership records of securities. However there are inadequate advanced risk management tools. In order to provide such tools and to deepen and strengthen cash market, a need was felt for trading of derivatives like futures and options.

But it was not possible in view of prohibitions in the SCRA. Its preamble stated that the Act is to prevent undesirable transactions in securities by regulating business of dealing therein, by prohibiting options and by providing for certain other matters connected therewith. Section 20 of the Act explicitly prohibited all options in securities. The Act empowered Central Government to prohibit by notification any type of transaction in any security. In exercise of this power, Government by its notification in 1969 prohibited all forward trading in securities. As the need for

derivatives was felt, it was thought that if these prohibitions were withdrawn, trading in derivatives could commence. The Securities Laws (Amendment) Ordinance, 1995, promulgated on 25th January 1995, lifted the ban by repealing section 20 of the SCRA and amending its preamble.

The market for derivatives, however, did not take off, as there was no regulatory framework to govern trading of derivatives. SEBI set up a 24 member Committee under the Chairmanship of Dr. L. C. Gupta on 18th November 1996 to develop appropriate regulatory framework for derivatives trading in India. The Committee submitted its report on March 17, 1998. The major recommendations of the Committee are given in Box No. 1.

Market went ahead with preparation. It was soon realised that there was no law under which the regulations could be framed for derivatives. It was felt that if derivatives could be treated as “securities” under the SCRA, trading in derivatives would be possible within the framework of that Act. According to section 2 (h) of the SCRA, ‘Securities’ includes shares, scrips, stocks, bonds, debentures, debenture stock, or other marketable securities of a like nature in or of any incorporated company or other body corporate, government securities, *such other* instruments as may be declared by the Central Government to be securities, and rights and interests in securities. SEBI felt that the definition of “Securities” under SC(R)A could be expanded by declaring derivative contracts based on index of prices of securities and other derivative contracts as securities. It was thought that Government could declare derivatives to be securities under its delegated powers. Government, however did not declare derivatives as “securities”, probably because its power was circumscribed by the words *such other*. Only those instruments, which resemble the ones listed in the Act, could be declared.

Box 1 : Major Recommendations of L. C. Gupta Committee (LCGC)

- The Committee strongly favours the introduction of financial derivatives to facilitate hedging in a most cost-efficient way against market risk
- There is a need for equity derivatives, interest rate derivative and currency derivatives
- There should be phased introduction of derivatives product. To start with, index futures will be introduced, which will be followed by options on index and later options on stocks.
- Regulatory framework for derivatives trading envisaged two-level regulation i.e. exchange-level and SEBI-level, with considerable emphasis on self-regulatory competence of derivative exchanges under the overall supervision and guidance of SEBI.
- The derivative trading should take place on a separate segment of the existing stock exchanges with an independent governing council where the number of trading members will be limited to 40% of the total number. The Chairman of the governing council will not be permitted to trade on any of the stock exchanges.
- The settlement of derivatives will be through an independent clearing corporation/clearing house which will become counter party for all trades or alternatively guarantee the settlement of all trades. The clearing corporation will have adequate risk containment measures and will collect margins through EFT.
- The derivative exchange will have on-line trading and surveillance systems. It will disseminate trade and price information on real time basis through two information vending networks. It should inspect 100% of members every year.
- There will be complete segregation of client money at the level of trading /clearing member and even at the level of clearing corporation.
- The trading and clearing member will have stringent eligibility conditions. At least two persons should have passed the certification programme approved by SEBI.
- The clearing members should deposit minimum Rs. 50 lakh with the clearing corporation and should have a net worth of Rs. 3 crore.
- Removal of the regulatory prohibition on the use of derivatives by mutual funds while making the trustees responsible to restrict the use of derivatives by mutual funds only to hedging and portfolio balancing and not for speculation.
- The operations of the cash market, on which the derivatives market will be based, needed improvement in many respects.
- Creation of Derivatives Cell, a Derivatives Advisory Committee, and Economic Research Wing by SEBI.
- Declaration of derivatives as securities under section 2(h)(iia) of the SCRA and suitable amendment in the notification issued by the Central Government in June 1969 under section 16 of the SCRA

II. Developments During 1998-99

A. LCGC Report

The major recommendations of LCGC were accepted by SEBI on 11th May 1998.

B. Securities Contracts (Regulation) Amendment Bill, 1998

As the derivatives could not be declared to be “securities”, government explored the possibility of amending the SCRA to explicitly define securities to include derivatives. The Securities Contracts (Regulation) Amendment Bill, 1998 was introduced in the Lok Sabha on 4th July 1998 proposing to expand the definition of “securities” to include derivatives within its ambit so that trading in derivatives could be introduced and regulated under the SCRA. The Bill was referred to the Standing Committee on Finance (SCF) on 10th July 1998 for examination and report thereon. The Committee submitted its report on 17th March 1999. The committee was of the opinion that the introduction of derivatives, if implemented with proper safeguards and risk containment measures will certainly give a fillip to the sagging market, result in enhanced investment activity and instill greater confidence among the investors/participants. The committee after having examined the Bill and being convinced of the needs and objectives of the Bill approved the same for enactment by Parliament with certain modifications. The SCF in its report stated, inter alia, the following :

- a. A view was expressed before the SCF that since under section 30 of the Indian Contract Act, 1872, the contracts which are cash settled are classified as wagers and trading wagers is null and void, the index futures which are always cash settled, would also be classified as wagers under the said Act. Due to this, no

proceedings to enforce an index futures contract either by an exchange against a defaulting broker or client against his broker would stand the legal scrutiny before the court of law. The SCF was, therefore, of the view that there was no harm in having an overriding provision as a matter of abundant caution.

- b. The SCF was convinced that stock exchanges which are presently working would be better equipped to undertake trading in derivatives in a sophisticated environment. They further observed that most of these exchanges have already been modernised having state-of-the-art technology, the facility of depository and clearing house and moreover, since they are in a better position to handle the risk profiles of the retail investors, institutional investors and corporate bodies, it would be prudent to allow trading in derivatives by such exchanges only.

The SCF recommended following measures to safeguard the integrity of the market and protect investors:

- a. Dr. L. C. Gupta committee appointed by SEBI has drawn out detailed guidelines pertaining to the regulatory framework on derivatives prescribing necessary preconditions which should be adopted before the introduction of derivatives.
- b. There is an urgent need to educate Indian investors by creating investment awareness among them by conducting intensive educational programmes, so that they are able to understand their risk profiles in a better way.
- c. The steps should be taken to strengthen the cash market so that they become strong and efficient.
- d. It is incumbent on the regulatory authorities



to ensure a strong surveillance / vigilance and enforcement machinery.

- e. SEBI should in consultation with the stock exchanges endeavour to conduct the certification programme on derivatives trading with a view to educate the investors and market players.
- f. There is a need to protect particularly the small investors by preventing them from venturing into options and futures market, who may be lured by sheer speculative gains. Threshold limit of the derivatives transactions should be pegged not below Rs. 2 lakh.
- g. There is an urgent need to prescribe pronounced accounting standards in the case of investors/dealers and also back office standards for intermediaries with a view to reducing the possibility of concealing the loss and perpetrating the frauds by companies/intermediaries to a minimum. Institute of Chartered Accountants of India, in consultations with the stock exchanges, should formulate suitable accounting standard and SEBI should prescribe the same before trading in derivatives is commenced.

The Bill, however, lapsed following the dissolution of 12th Lok Sabha.

C. J. R. Varma Group

While approving introduction of index futures trading, SEBI had mandated the setting up of a group to recommend measures for **risk containment** in the derivatives market in India. Accordingly, SEBI constituted a group in June 1998 under the Chairmanship of Prof. J. R. Varma and comprising of representatives from RBI, various stock exchanges and FII's. The group submitted its report (hereinafter referred as J. R. Varma Group report -

JRVG) in October 1998. JRVG covers the operational details of the margining system and methodology for charging initial margins as recommended in the LCGC, broker networth and deposit (liquid assets) requirement and real-time monitoring requirements including intra-day violations etc. to be followed by all exchanges/clearing corporations which allow stock index futures trading.

a. Risk Containment

The group has enumerated the risk containment issues that assume importance in the Indian context while setting up an index futures market. Some of the major observations of the Committee are as follows :

- *Estimation of volatility*

1. Volatility in Indian market is quite high as compared to developed markets.
2. The volatility in Indian market is not constant and is varying over time.
3. The statistics on the volatility of the index futures markets do not exist (as these markets are yet to be introduced) and therefore, in the initial period, reliance has to be made on the volatility in the underlying securities market.
4. The LCGC has prescribed that no cross margining would be permitted and separate margins would be charged on the position in the futures market and the underlying securities market. In the absence of cross margining, index arbitrage would be costly and therefore possibly inefficient.

- *Calendar spreads*

In developed markets, calendar spreads are essentially a play on interest rates with negligible stock market exposure. As such margins for calendar



spreads are very low. However, in India, the calendar basis risk could be high because of the absence of efficient index arbitrage and the lack of channels for the flow of funds from the organised money market into the index futures market.

- **Trader Net Worth**

Even an accurate 99% “value at risk” model would give rise to end of day mark to market losses exceeding the margin approximately once every six months. Trader networth provides an additional level of safety to the market and works as a deterrent to the incidence of defaults. A member with high networth would try harder to avoid defaults as his own networth would be at stake. The definition of networth needs to be made precise having regard to prevailing accounting practices and laws.

- **Margin Collection and Enforcement**

Apart from the correct calculation of margin, the actual collection of margin is also of equal importance. Since initial margins can be deposited in the form of bank guarantee and securities, the risk containment issues in regard to these need to be tackled.

- **Clearing Corporation**

The clearing corporation provides novation and becomes the counter party for each trade. In the circumstances, the credibility of the clearing corporation assumes importance and issues of governance and transparency needs to be addressed.

- **Position Limits**

It may be necessary to prescribe position limits for the market as a whole and for the individual clearing member / trading member / client.

b. Margining System

SEBI should authorise the use of a particular VAR

estimation methodology, but should not mandate a specific minimum margin level. The group approved a particular risk estimation methodology and recommended its use by the derivatives exchange and the clearing corporation to start index futures trading. This methodology works out margins based on volatility estimates. However, for the first six months of trading (until the futures market stabilises with a reasonable level of trading), the initial margin shall not be less than 5%.

- **Initial Methodology**

The group recommended the following margin fixation methodology as initial methodology:

- The exponential moving average method would be used to obtain the volatility estimate every day. The estimate at the end of day t, s_t is estimated using the previous volatility estimate s_{t-1} (as at the end of day t-1), and the return r_t observed in the futures market during day t.

$$(s_t)^2 = \lambda (s_{t-1})^2 + (1 - \lambda) (r_t)^2$$

where λ is a parameter which determines how rapidly volatility estimates change.

- A value of 0.94 would be used for λ .
- The margins for 99% VAR would be based on three sigma limits.
- For statistical reasons, return is defined as the logarithmic return

$$r_t = \ln(I_t/I_{t-1})$$

where I_t is the index futures price at time t.

- Given this statistical definition, the plus/minus three sigma limits for a 99% VAR would specify the maximum/minimum likely logarithmic returns. To convert these into percentage margins, the logarithmic returns would have to be converted into percentage



price changes by reversing the logarithmic transformation. Therefore the percentage margin on short positions would be equal to $100(\exp(3s_t)-1)$ and the percentage margin on long positions would be equal to $100(1-\exp(-3s_t))$. This implies slightly larger margins on short positions than on long positions, but the difference is not significant except during periods of high volatility where the difference merely reflects the fact that the downside is limited (prices can at most fall to zero) while the upside is unlimited. The derivatives exchange/clearing corporation may, if it so chooses, simply apply the higher margin on both the buy and sell side.

- f) To use the formula in (a) above on the first day of index futures trading would require a value of s_{t-1} , the estimated volatility at the end of the day preceding the first day of index futures trading. This would be obtained as follows: (i) Calculate the standard deviation of returns in the cash index during the last one year, (ii) Set the volatility estimate at the beginning of that year equal to this average value, (iii) Move forward through the year, one day at a time, using the formula in (a) above to get the estimated volatility at the end of that day using cash index prices instead of index future prices, (iv) The estimated volatility by this method at the end of the day preceding the first day of index futures trading would be the value of s_{t-1} to be used in formula in (a) above at the end of the first day of futures trading. Thereafter each day's estimate s_t become the s_{t-1} for the next day.
- g) As a transitional measure, for the first six months of trading (until the futures market stabilises with a reasonable level of trading), a parallel estimation of volatility would be done using the cash index prices instead of

the index futures prices and the higher of the two volatility measures would be used to set margins.

In the initial period, margins for futures market would be set using volatility derived from the cash market as discussed in (f) above. This involves an assumption that the volatility of the Nifty or Sensex futures would be identical to the volatility of the same index in the cash market. However, the volatility in the futures market could be higher because of "noise trader risk". The group was of the view that this was not a serious problem because of the use of the exponential moving average method to estimate volatility. This method is more sensitive to recent data. The weightage attached to volatility figures derived from the cash market declines rapidly as data from the futures markets itself becomes available. Therefore if futures markets do turn out to be more volatile, the margins would adjust upwards very quickly. Moreover, the transitional measures suggested earlier provide a further degree of protection.

- **Periodic Reporting**

The derivatives exchange and clearing corporation should be required to submit periodic reports (quarterly or half-yearly) to SEBI regarding the functioning of the risk estimation methodology highlighting the specific instances where price moves have been beyond the estimated 99% VAR limits.

- **Continuous Refining**

The derivatives exchange and clearing corporation should be encouraged to refine this methodology continuously on the basis of further experience. Any proposal for changes in the methodology should be filed with SEBI and released to the public for comments along with detailed comparative backtesting results of the proposed methodology and



the current methodology. The proposal shall specify the date from which the new methodology will become effective and this effective date shall not be less than three months after the date of filing with SEBI. At any time up to two weeks before the effective date, SEBI may instruct the derivatives exchange and clearing corporation not to implement the change, or the derivatives exchange and clearing corporation may on its own decide not to implement the change.

- ***Daily Changes in Margins***

The group recommends that the volatility estimated at the end of the day's trading would be used in calculating margin calls at the end of the same day. This implies that during the course of trading, market participants would not know the exact margin that would apply to their position. It was agreed therefore that the volatility estimation and margin fixation methodology would be clearly made known to all market participants so that they can compute what the margin would be for any given closing level of the index. It was also agreed that the trading software would itself provide this information on a real time basis on the trading workstation screen.

- ***Margining for Calendar Spreads***

A calendar spread is a position wherein the position of a member in one contract (one maturity) is hedged by an offsetting (opposite) position in another contract (different maturity) for the same underlying asset. The calendar spreads can be either long spread or short spread depending on the side of the position (long / short) of the far month (maximum expiry month of the two contract which is involved in the spread) contract involved in the Calendar Spread. These spread positions will be valued at the price of the far month contract.

JRVG has recommended levy of margins on the calendar spreads at a flat rate of 0.5% for each month

of difference between the contracts involved in the spread combination subject to a minimum of 1% and maximum of 3%. The margining of calendar spreads should be reviewed at the end of six months of index futures trading.

A calendar spread should be treated as a naked position in the far month contract as the near month contract approaches expiry. This change should be affected in gradual steps over the last few days of trading of the near month contract. Specifically, during the last five days of trading of the near month contract, the following percentages of a calendar spread shall be treated as a naked position in the far month contract: 100% on day of expiry, 80% one day before expiry, 60% two days before expiry, 40% three days before expiry, 20% four days before expiry. The balance of the spread shall continue to be treated as a spread. This phasing in will apply both to margining and to the computation of exposure limits.

- ***Margin Collection and Enforcement***

The group recommends that the clearing corporation should lay down operational guidelines on collection of margin and standard guidelines for back office accounting at the clearing member and trading member level to facilitate the detection of non-compliance at each level.

- Ø ***Transparency and Disclosure***

The group recommends that the clearing corporation / clearing house shall be required to disclose the details of incidences of failures in collection of margin and / or the settlement dues at least on a quarterly basis. Failure for this purpose means a shortfall for three consecutive trading days of 50% or more of the liquid net worth of the member.

- c. ***Broker Net Worth***

Even an accurate 99% “value at risk” model would give rise to end of day mark to market losses



exceeding the margin approximately once every six months. Obviously, the futures market should not be subject to a payments crisis every six months, and this means that there must be a second level of defence in the form of the broker's net worth. The group is of the view that that given the reality of the Indian situation, liquid net worth is a far more meaningful defence against market risk than book net worth.

• **Liquid Net-worth means:**

- a) total liquid assets deposited with the exchange/clearing corporation towards initial margin and capital adequacy, LESS
- b) initial margin applicable to the total gross open positions at any given point of time of all trades cleared through the clearing member.

The group recommends that the clearing member's liquid net worth must satisfy the following Conditions 1 and 2 on a real time basis:

- a) Condition 1: Liquid Net Worth shall not be less than Rs 50 lakhs at any point of time.
- b) Condition 2: The mark to market value of gross open positions at any point of time of all trades cleared through the clearing member shall not exceed $33^{1/3}$ times the members' liquid networkth.

• **Liquid Assets**

Liquid assets for the purpose of initial margin as well as liquid networkth includes cash, fixed deposits, bank guarantees, treasury bills, government securities or dematerialised securities (with suitable haircuts) pledged in favour of the exchange/clearing corporation.

i. Bank Guarantees

The group recommends:

- a) The Board of Directors or other equivalent

organ of the clearing corporation shall lay down exposure limits either in rupee terms or as percentage of the trade guarantee fund that can be exposed to a single bank directly or indirectly. The total exposure would include guarantees provided by the bank for itself or for others as well as debt or equity securities of the bank which have been deposited by members as liquid assets for margins or net worth requirement.

- b) Not more than 5% of the trade guarantee fund or 1% of the total liquid assets deposited with the clearing house whichever is lower shall be exposed to any single bank which is not rated P1 (or P1+) or equivalent by a RBI recognised credit rating agency and not more than 50% of the trade guarantee fund or 10% of the total liquid assets deposited with the clearing house whichever is lower shall be exposed to all such banks put together.
- c) The exposure limits and any changes thereto shall be promptly communicated to SEBI. The clearing corporation shall also periodically disclose to SEBI its actual exposure to various banks.

ii. Securities

The group recommends that the Board of Directors or other equivalent organ of the clearing corporation shall approve the list of acceptable securities, the hair-cuts applicable to various classes of securities, and the method of periodic revaluation (marking-to-market). The clearing corporation is free to adopt more stringent conditions than those described below. These policies shall be promptly disclosed to SEBI.

- a) The marking to market of securities shall be carried out at least weekly for all securities.



- b) Debt securities shall be acceptable only if they are investment grade. Haircuts shall be at least 10% with weekly mark to market.
- c) The total exposure of the clearing corporation to the debt or equity securities of any company shall not exceed 75% of the trade guarantee fund or 15% of the total liquid assets of the clearing corporation / house whichever is lower. Exposure for this purpose means the mark to market value of the securities less the applicable haircuts.
- d) Equity securities shall be in dematerialised form. The acceptable securities shall be the top 100 securities by market capitalisation out of the top 200 securities by market capitalisation and also by trading value. This list shall be updated on the basis of the average market capitalisation over the previous six months. When a security is dropped from the list of acceptable securities, existing deposits of that security will continue to be counted for liquid assets for a period of one month. Haircuts on equity shall be at least 15% with weekly mark to market. The clearing corporation may charge a higher haircut on concentrated portfolios of equity securities deposited by a member.
- e) All securities deposited for liquid assets shall be pledged in favour of the clearing corporation.

iii. Minimum cash requirement

At least 50% of the total liquid assets shall be in the form of cash equivalents viz. cash, bank guarantee, fixed deposits, T-bills and dated government securities.

d. Position Limits

The group considered the issue of position limits at

the customer level, trading member level, clearing member level, and market level.

• **Customer Level**

Instead of recommending position limits at the client level, the group recommends a self-disclosure requirement similar to that in the take-over regulations :

- a) Any person or persons acting in concert who together own 15% or more of the open interest shall be required to report this fact to the exchange and failure to do so shall attract a penalty as laid down by the exchange / clearing corporation / SEBI.
- b) This requirement may not be monitored by the exchange on a real time basis, but if during any investigation or otherwise, any violation is proved, penalties can be levied.
- c) This would not mean a ban on large open positions but only a disclosure requirement.

• **Trading Member Level**

- a) There shall be a position limit at the trading member level of 15% of the open interest or Rs. 100 crore whichever is higher.
- b) This is to be reviewed after six months of index futures trading.

• **Clearing Member Level**

No separate position limit should be imposed at this level on aggregate trades cleared by a member. However, the clearing member shall ensure that his own positions and the positions of members clearing through him are within the limits specified.

• **Market Level**

- a) No limits should be imposed at this stage on the total market wide open interest (as a



percentage of the underlying market capitalisation).

- b) This should be reviewed at the end of six months of index futures trading to determine whether position limits are required at this level to guard against situations where a very large open interest leads to attempts to manipulate the underlying market.

The group recommends that at the end of six months of futures trading, SEBI should review the risk containment measures with specific reference to the following :

- a) Removal of the transitional provisions
- b) Review of the margins for calendar spreads
- c) Review of position limits
- d) Cross margining between cash and futures markets

e. Risk Containment in Cash Market

The group recognises that it is easier to introduce stringent risk containment measures in the derivatives market which are being set up from scratch. However, it does not make sense to have laxer risk containment measures in the cash market than in the derivatives market. The group recommends that the basic ideas enshrined in this report be extended to the cash market. In particular:

- a) the margins in the cash market should be based on a 99% VaR. As an interim measure, the margins could be twice that in the index futures market since individual securities are roughly twice as volatile as the index. Exposure limits could also be commensurately lower than in the derivatives market.
- b) the recommendations on the computation of liquid net worth and the up front margins could be readily applied to the cash market.

D. JRVG Report

The main recommendations of the JRVG were accepted by SEBI on 19th March 1999.

III. Developments in 1999-2000

The Securities Laws (Amendment) Act, 1999

The Securities Laws (Amendment) Bill, 1999 was introduced in Lok Sabha on 28th October 1999. This Bill incorporated the amendments proposed in the Securities Contracts Regulation (Amendment) Bill, 1998 as well as the modifications suggested by the SCF. The Lok Sabha passed the Bill on 30th November and the Rajya Sabha on 1st December 1999. It became the Securities Laws (Amendment) Act 1999 on receiving the assent of the President on 16th December 1999. The Act would, however, come into force on such date as the Central Government may, by notification in the official gazette, appoint.

The provisions in the SCRA and the regulatory framework developed thereunder govern the trading in securities. The Act, therefore, includes derivatives within the ambit of “securities” in the SCRA whereby trading in derivatives may be possible within the framework of that Act. This is aimed at providing risk management tools and helping to strengthen and deepen securities markets and thus constitutes a major component of second generation reforms in the securities market. It has defined derivatives to include: (a) 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, and (b) a contract which derives its value from the prices, or index of prices, of underlying securities. Since derivative contracts are generally cash settled, these may be classified as wagers. The trading in wagers being null and void under Section 30 of the Indian



Contracts Act 1872, it may be difficult to enforce derivative contracts. In order to overcome these difficulties, it has been specified that notwithstanding anything contained in any other law for the time being in force, contracts in derivatives shall be legal and valid if such contracts are traded on a recognised Stock exchange and settled on its clearing house in accordance with rules and bye-laws of such Stock exchange. The trading in derivatives would have to now wait till 1969 notification, which banned forward trading in securities, is repealed or suitably modified to carve out an exception for derivatives.

Notification under SCRA, 1956

Under a notification issued by the Central Government under section 16 of the SCRA on June 27, 1969, the permission of the Central Government is required to enter into any contract in India (other than spot delivery contracts) for the purchase and sale of securities. The L C Gupta Committee recommended in its report that this notification be

amended to enable trading in futures and options. Even though the notification of 1969, which bans all types of forward trading in securities, is in force, exceptions have been carved out in course of time as market needs changed. Thus, on the one hand there is a notification, which prohibits forward trading and on the other, some form of forward trading (carry forward/ready forward) is prevalent. Further in the changed financial environment, the relevance of the 1969 notification is vastly reduced, particularly when derivatives trading and repo facilities for public sector bonds and privately placed debentures are being contemplated. The repeal of the June 1969 notification is desirable as a measure of market reform to make way for the introduction of derivatives.

NSE'S PREPAREDNESS TOWARDS TRADING IN DERIVATIVES

NSE's preparedness is discussed in terms of various prescriptions of LCGC, JRVG and other requirements for trading of derivatives.

I. RECOMMENDATIONS OF L.C.GUPTA COMMITTEE

<i>Sl No.</i>	<i>Prescription</i>	<i>NSE's Implementation Status</i>
1	Separate Exchange/Segment	Preparation for setting up of a Separate segment called Futures and Options (F&O) Segment is complete.
2	Separate Governing Council for Derivatives Exchange with no common trading members	Separate Executive Committee will be set up for the derivatives segment and the trading member representatives will be mutually exclusive between cash and derivatives segments
3	Chairman of Governing Council of Derivatives Division/ Exchange	Managing Director of NSE, who is not a trading Member, will be the Chairman.
4	Independent Clearing Corporation/House	The clearing and settlement will be handled by NSCCL
5	Membership norms - Trading Member	Separate trading membership for F&O segment Net worth – Rs. 1 Crore Interest-Free Security Deposit – Rs. 8 Lakh Annual Subscription Fees - Rs. 1 Lakh No automatic entry for existing members



Derivatives of Securities

6	Membership norms – Clearing Member	Separate clearing membership for F&O segment Net worth – Rs. 3 crore Interest free security deposit – Rs. 25 lakh Collateral security deposit – Rs. 25 lakh
7	Certification	More than 1500 Broker Dealer/Sales Personnel of Trading Members and other investors have already passed the NCFM (NSE’s Certification in Financial Markets) programme – Derivatives core module
8	Minimum Number of Members - 50 Trading Members	More than 50 members have shown interest in the membership of Futures & Options - Index futures sub- segment and will be admitted as soon as permitted by SEBI.
9	Trading System	
	a) On-line screen based trading	Fully automated on-line screen based trading system called NEAT - F & O. (National Exchange of Automated Trading – Futures and Options) which supports all types of derivative instruments including index futures is ready and has been tested.
	b) Disaster Recovery site	Already set up at Pune as a back up to the main Mumbai site.
	c) Computer and Network load capacity	Hardware for advanced Network link is already in place.
10	Surveillance System	On-line Surveillance system to monitor positions, prices and volumes in real-time so as to deter market manipulation has been developed and is in place.
11	Information Dissemination to at least 2 Vendors on Real Time basis	Reuters, Knight-Ridder etc. who are real-time information vendors will be provided information on real time basis of all trades, quantities and quotes of stock index futures contracts. Apart from this information will be disseminated on real-time on the NSE Web-Site www.nse.co.in . Other news vendors will be provided information on an end of day basis.
12	Arbitration & Investor Grievance from 4 regions	Arbitration and Investor Grievance redressal mechanism will be provided from NSE offices located in all the 4 regions of the country viz. Mumbai (West), Delhi (North), Kolkotta (East) and Chennai (South).
13	Inspection	Inspection of all members every year will be conducted.
14	Product - Derivatives Contract	S&P CNX Nifty, a scientifically constructed index, will be used for the index futures contract



15	Safeguards and risk protection mechanism adopted by Exchange to ensure market integrity, protection of investors and smooth and orderly trading	<p>The following risk management systems are already in place</p> <ul style="list-style-type: none"> • Monitoring and Surveillance – Prices and Volumes at the Exchange • Position monitoring as per JRVG recommendations by NSCCL • Settlement Guarantee by NSCCL • Stringent Margining mechanism as per JRVG • A separate Investor Protection Fund for the derivatives segment. • Client registration and adoption of “know your client” concept. • Segregation of Clients Funds
16	Infrastructure of the exchange and the surveillance system to effectively monitor trading in such contracts	Fully automated on-line trading and surveillance system already in place

II. RECOMMENDATIONS OF J.R.VARMA GROUP

<i>Sl. No.</i>	<i>Requirement</i>	<i>NSE Implementation status</i>
	A. Risk containment and related issues	
1	Facility to calculate volatility of the underlying securities in the initial period as required by the Committee.	Developed
2	Provision of charging separate margins on the position in the futures market and the underlying securities market i.e. no cross margining	The margining system for index futures market is distinct from the cash market and no set off will be provided
3	Providing for collection of Initial margin collection in the form of Bank Guarantees and securities - keeping in view risk containment issues.	Well defined mode of collection of initial margin already in place
	B. Margining System	
1	Facility for calculation of margins based on 99% VaR	A facility to calculate VaR on a real time basis has been developed and ready to go live
2	Derivatives Exchange and Clearing Corporation have to submit periodic reports (quarterly or half-yearly) highlighting instances where price moves beyond the estimated 99% VaR limits	Facility available to provide this information



Derivatives of Securities

3	Infrastructure required for risk estimation methodology as per the committee's recommendation. Infrastructure to continuously refine the methodology in-house and back-testing the results	Available
4	Adoption of the volatility calculation model as given by the committee for calculation of initial margins	Developed and ready for use
5	Facility for volatility estimation and calculation of margins should be disseminated to all the market participants.	The information will be disseminated through the trading system as well as the clearing system
6	Defining a methodology for margining of calendar spreads	The recommendation of JRVG for spread margining has been built in to the system
7	Clearing Corporation to lay down the operational guidelines on mode of collection of margins	Already laid down
	<i>C. Broker Net-worth</i>	
1	Facility to calculate "Liquid Net-worth" as per the JRVG.	The liquid net worth calculation as per JRVG has been provided for
2	Monitoring mechanism for ensuring that the market value of gross open positions at any point of time of all trades cleared through the clearing member shall not exceed 33.33 times the Trading Members' liquid net-worth.	This is also built in as part of the OPMS
3	Facility of calculation of exposure limits in rupee terms or as percentage of the trade guarantee fund that can be exposed to any single bank in case of bank guarantees as recommended by the committee and periodically to SEBI.	Available
4	List of Approved securities for Liquid Net-worth calculation and a method of weekly marking to market such securities.	Available
5	Segregation of client funds from own funds and having separate bank accounts as per the committee's recommendations.	Members will be required to maintain separate bank account for client money
	<i>D. Position Limits</i>	
1	A position limit at trading member level of 15% of the open interest or Rs.100 crore whichever is higher	Available in the OPMS



III. PRODUCT - DERIVATIVE CONTRACT ON S&P CNX NIFTY

An examination of market indexes available in the country revealed many deficiencies in their construction and maintenance. Hence a new market index NSE-50 (now known as S&P CNX NIFTY) was developed in early 1996. Since its introduction, Nifty has made enormous strides in gaining acceptance as the Indian market index in performance evaluation. NSE has set up a joint venture with **CRISIL** (the largest credit rating agency in India) in technical collaboration with **Standard and Poor's** (the world's leading provider of investible equity indices) to maintain this index and other indices of NSE and CRISIL known as **India Index Services & Products Limited (IISL)**. IISL is India's first specialist company dedicated to providing investors in Indian equity with Indices and Index services.

Method of Computation of Indices

The Indices are computed using market capitalisation weighted method wherein the level of Index reflects the total market value of all the stocks in the index relative to a particular base period. The method also takes into account constituent changes in the index and importantly corporate actions.

Index maintenance

Index Maintenance plays a crucial role in ensuring stability of the Index as well as in meeting its objective of being a consistent benchmark of the equity markets. IISL has constituted an independent **Index Policy Committee**, which evolves policy and guidelines for managing the CNX Indices. An **Index Maintenance Sub-Committee** takes all

decisions on addition / deletion of companies in any index and ensures that all guidelines for index maintenance are adhered to based on the policies set by the Index Policy Committee.

Adjustments for corporate actions are carried out in a timely manner as laid down in the **“Policy Document on Corporate Actions”**. Each Index has a ‘Replacement Pool’ comprising companies that meet all the criteria for candidacy to that index and companies in the index are replaced from this pool.

Standard & Poor's

IISL has a consulting and licensing agreement with Standard & Poor's (S&P), the world's leading provider of investible equity indices, for co-branding IISL's equity indices. The S&P 500 index is used by professionals around the world as the standard measure of the US market. Over US\$ 800 billion is indexed, or directly linked, to the S&P 500 through index or tracker funds, more than any other index in the world. Daily trading volumes of derivatives transactions based on the S&P 500 amount to over US\$ 50 billion. Standard & Poor's plays an active role in the construction, development and maintenance of IISL's indices and brings its international expertise to the joint venture. This is for the first time that Standard & Poor's, the world's largest index services provider, has offered its brand name and technical support to any such venture anywhere in the world, outside of the US.

The S&P CNX Nifty index is India's first scientifically developed index for the Indian stock markets. S&P CNX Nifty emerged from over a trillion calculations to ensure that a stock market index besides being a true reflection of the stock market, should also be used for modern applications such as index funds and index derivatives.



Selection Criteria

The effectiveness of an index is judged by the constituents of the index and the criteria for their selection. S&P CNX Nifty is unique in this respect. Selection of the index set is based on the criteria of liquidity and market capitalisation.

Base Date and Value

The base period selected for S&P CNX Nifty index is the close of prices on November 3, 1995, which marks the completion of one year of operations of NSE's Capital Market Segment. The base value of the index has been set at 1000.

S&P CNX Nifty is a superior index for a number of reasons: -

Diversification: S&P CNX Nifty is a more diversified index, accurately reflecting overall market conditions.

Liquidity: The impact cost analysis that is the foundation of Nifty yields high liquidity. Over one year (October 1998 to October 1999), the trading volume on NSE for Nifty stocks was Rs.3.5 trillion, giving a liquidity ratio of 105%.

Hedging effectiveness: The basis risk of Nifty futures will be lower owing to the superior liquidity of Nifty stocks and of NSE. Nifty has high correlation with typical portfolios in India. These two factors imply that hedging using Nifty futures will be superior to hedging using futures based on any other comparable index.

Governance: Nifty is managed by a professional team at IISL, a company set-up by NSE and CRISIL with technical assistance from Standard & Poor's (S&P). There is a three-tier governance structure comprising the Board of Directors of IISL, the Index

Policy Committee, and the Index Maintenance Subcommittee. The S&P CNX Nifty is managed using well-documented rules and regulations.

IV. OTHER PREPARATIONS

Training of Intermediaries

NSE has identified education of investors, trading members and other participants as a major activity to be undertaken and has conducted many training programs along with Institute of Chartered Accountants (ICAI), Institute of Company Secretaries of India (ICSI), NSE trading members and institutions such as UTI and ICICI in various cities across the country. NSE has conducted training programs for the members and their staff on the finer aspects of using the derivative products. More than 10000 people have been trained through these programs in the last 3 years.

As per the LCGC, dealers/sales personnel of trading members must have cleared a certifying examination before they become eligible for acting as intermediaries in the derivatives market. NSE launched its Certification examination by the name NCFM (NSE'S Certification in Financial Market) program in 1998 for derivatives core module. This is a SEBI approved examination system and its policies and decisions are professionally managed by a committee. NCFM's on-line testing system is a revolutionary concept in administering examinations in India. The entire process of testing, assessing, scores reporting and invigilation is fully automated. The system is operated through an intranet facility. This certification facility currently available from 7 centres in India namely Mumbai, Delhi, Ahmedabad, Calcutta, Madras, Hyderabad and Pune from where one can appear for this



examination. NSE also has accredited around 24 institutes to train candidates who are appearing for this examination. The accredited institutes conduct regular training programs on derivatives attended by intermediaries and investors. More than 1500 candidates have already passed this exam on the Derivatives core module.

Investor Education

NSE has been conducting training programs and seminars all over India. NSE has now launched a road show all over India to educate investors on Index futures trading. Major cities / towns all over India are expected to be covered through this investor programs reaching thousands of small investors. Road shows have already been organised in more than 45 such centres in Kerala, Tamilnadu, Andhra Pradesh and Ahmedabad. The response has been overwhelming. NSE is planning to conduct these investor seminars on an on going basis.

Mock Trading

NSE has been conducting regular mock trading sessions right from 1996 both at NSE premises and from the members' offices through the network. This has made trading members familiar with trading.

Training of NSE staff

The NSE staff has been provided an intensive training on derivatives and have been certified through the NCFM for the derivatives core module.

Y2K Compliance

The software and hardware have been tested for Y2K compliance and they have been certified as Y2K compliant.

Regulations

A comprehensive regulations including bye-laws and rules have been prepared as per the recommendations of the LCGC and the same has been submitted to SEBI for approval.

Clearing Corporation

The centre of risk containment on the derivatives market is the clearing corporation. The clearing corporation becomes the legal counter party to both legs of every trade in the derivatives market. NSE has set up India's first clearing corporation, NSCCL which will be handling the clearing and settlement of F&O segment of NSE.

Hardware, Software and Telecommunication

NSE has already put the necessary hardware requirements in place. The software in terms trading, clearing & settlement and risk management has been fully developed, tested and ready for launch. The existing mode of connectivity including VSAT and leased line facility will be utilised for the proposed trading system.

Thus derivatives trading can take off the movement regulatory approvals are in place.