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# FINANCIAL DERIVATIVES : PERSPECTIVES AND PROSPECTS

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*Introduction of index based futures is a landmark in the history of Indian bourses. As a result, Indian stock market has taken another step forward. The objective of this paper is to give a brief overview of the need for financial derivatives, their types with special reference to stock index futures and the developments leading to introduction of stock index futures in India stock market.*

## **INTRODUCTION**

The international financial markets have witnessed revolutionary changes during the past three decades or so. The beginning of seventies saw the dismantling of fixed exchange rate regimes and the end of the hegemony of the dollar, deregulation of interest rates and liberalisation of capital account in various countries. The direct result of these developments was the emergence of euromarkets and the globalisation of financial markets.

With the integration of financial markets and free mobility of capital, risk also multiplied and risk diversification came to occupy the centre stage. Adoption of floating exchange rates brought exchange related risk while deregulation of interest rates caused interest rate risk. This logically led to the evolution of risk hedging mechanisms, first in the forex markets, later in other segments of financial services industry. These hedging tools and techniques have come to be known generically as derivatives.

Broadly, this paper has been divided into parts. Section I gives the concept and need

for financial derivatives and their types with special reference to stock index futures. Section II deals with the Indian scenario including the recommendations of the SEBI Committee on derivatives and subsequently the launch of Sensex Futures and Nifty Futures in June, 2000 at Bombay Stock Exchange and National Stock Exchange respectively.

## **SECTION I**

### **DERIVATIVE - THE CONCEPT**

A Derivative is one which derives its value from a primary source or underlying asset. It has no independent value of its own. Its value is derived entirely from the value of an underlying variable which may be a cash asset (asset bought and sold in the market on normal deliverable terms) like a commodity; a financial security like shares, debentures or bonds; a share price index; exchange rate; interest rate or the like. The SEBI committee on derivatives opines:

*"A derivative means forward, future or option contract of predetermined fixed duration linked for the purpose of*

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*contract fulfillment to the value of a specified real or financial asset or to index of securities."*

For instance, a stock option gives its owners the right to buy or sell the shares of the stock that underlie stock option. Thus a stock option cannot exist without the underlying stock as the stock option is derived from the stock itself. In this sense, a stock represents a financial security and a stock option is a financial derivative.

### THE NEED

Derivatives are popularly used as risk management tools all over the world. These instruments serve the purpose of hedging and offloading risk. Risk (or more specifically price risk) is inherent in every business activity. Prices of all commodities, financial securities or exchange rates are subject to continuous change. The risk of loss due to price change cannot be eliminated, however, it can be managed effectively by instruments called derivatives. Derivatives redistribute the risk from those who wish to avoid it (hedgers) to those who are able and willing to bear it (speculators).

Hedging is the primary reason for advent of derivatives. Literally, to hedge is to grow a shield or protective cover around oneself to keep intruders out. It is a defensive or protective measure against an identified risk. In derivatives markets, hedging indicates taking a position in futures market in order to offset the risk of loss on a related position in cash market. Hedging transactions provide defence against changes in interest rate, exchange rate, share price etc. Hedgers use derivatives markets to reduce the risk associated with price movement of an asset whereas speculators wish to bet on futures movement in the price of an asset.

### FAMILY OF DERIVATIVES

Derivatives may be forwards, futures, options and swaps.

### FORWARDS VS FUTURES CONTRACTS

Both forward and futures contracts are used for hedging.

A forward / futures contract fixes the price and conditions

**NOW**

for transactions that will take place in

**FUTURE**

Forward contracts are in the nature of private bilateral contracts. They are exposed to default risk by a counter-party. Each forward contract is unique in terms of contract size, expiration date and asset type/quality. The contract price is not transparent as it is not publically disclosed. Since the forward contract is not typically tradeable it has to be settled by delivery of the asset on the expiration date.

In contrast, futures contracts are standardised tradeable contracts. They are standardised in terms of size, expiration date and all other features. They are traded on specially designed exchanges in highly sophisticated environment of stringent financial safeguards. They are liquid and transparent. Their market prices and trading volumes are regularly reported. The futures trading system has effective safeguards against defaults in the form of clearing corporation guarantees for trades and daily cash adjustment (mark to market) to the accounts of trading members based on a daily price change. Futures are far more cost efficient than forward contracts for hedging.

## FINANCIAL FUTURES

Financial futures are futures contract where the underlying is a financial instrument. Financial transactions and asset liability positions are exposed to three broad types of price risk, viz (a) exchange rate risk where the position involves a foreign currency as in the case of exports, imports, foreign loans or investments; (b) interest rate risk as in case of fixed income securities like treasury bond holdings, whose market price could decline heavily if interest rates shot up; and (c) equities market risk also called systematic risk which cannot be diversified away because the stock market as a whole may go up or down from time to time.

The above classification of price risks explains the emergence of (a) currency futures (b) interest rate futures and (c) equity futures (stock index futures) respectively.

- (a) **Currency futures** : Currency futures are the futures contracts calling for the delivery of specified amount of foreign currency at a specified future date in return for a given payment of domestic currency.
- (b) **Interest rate futures** : Interest rate futures take a debt instrument such as treasury bill or treasury bond as the underlying good. With these kinds of contracts the trader should deliver a certain type of debt instrument in order to fulfill the contract.
- (c) **Stock index futures** : Stock index futures or index futures are the futures contracts where the underlying is the cash market index, say, sensex or nifty. (Details are given later)

## OPTIONS

Futures and options have many similarities and serve similar purposes but the risk profile of an option contract is asymmetric and regulatory complexities are greater as compared to futures contracts.

Options are the contracts giving the holder the right (but not the obligation) to buy (known as call option) or sell (known as put option) securities at a predetermined price (known as strike price or exercise price) within or at the end of a specified period (known as expiration period). American options are exercisable at any time prior to expiration date while European options can be exercised only at expiration date. For the call option holder (the right to buy) it is worthwhile to exercise the right only if the price of underlying securities rises above the exercise price. For the put option holder (the right to sell) it is worthwhile to exercise the right only if the price falls below the exercise price.

In order to acquire the right of the option, the option buyer pays to the option seller (known as option writer) an option premium which is the price paid for the right. The buyer of an option can lose no more than the option premium paid but his possible gain is unbounded. On the other hand, the option writer's possible loss is unbounded but his maximum gain is limited to option premium charged by him to the holder.

The most critical aspect of options contract is the evaluation of the fairness of option premium i.e. option pricing. There can be options on commodities, currencies, securities, stock index, individual stocks and even on futures.

## SWAPS

Compared to futures and options, swap contracts are a recent innovation. A swap is an agreement between two or more parties (called counter parties) to exchange (swap) one set of predetermined payments for another (cash flows) over a period in future. For example, Party A might agree to pay a fixed rate of interest on \$1 million each year for five years to Party B. In return, Party B might pay a floating rate of interest on \$1 million each year for five years. The cash flows that counterparties make are generally tied to value of debt instruments or to the value of foreign currencies, giving rise to two basic kinds of swaps viz., interest rate swaps and currency swaps.

## STOCK INDEX FUTURES

Stock index futures are an extension of financial futures. Generally, stock prices get impacted by two separate factors namely company specific events such as bonus announcements, results, product launches, tie ups etc. and events that impact the overall economy or sectors like diesel price hikes, tax rates etc. Accordingly, there are two types of risk in equity market namely unsystematic and systematic risk. Unsystematic risk is the risk associated with individual stocks due to company specific events and can be reduced by portfolio diversification. The systematic risk, on the other hand, is the risk of market fluctuations and it cannot be diversified. However, this risk can be reduced using index futures.

A stock index futures contract is simply an agreement to buy or sell a specified quantity of a certain index at a definite price on a specified future date. To arrive at the value of the contract the index is multiplied by a number called multiplier which is standard for that index and is defined in contract specification. For example, in case of S&P

500 stock index futures, the dollar amount involved is futures quote times \$ 500. Thus, if a futures contract is quoted at 600, the amount is \$ 3,00,000 (i.e.  $600 \times \$ 500$ ). A hedger with portfolio of stocks worth approximately \$ 3,00,000 can short (sell) one futures contract and protect the portfolio from price decline.

Stock index futures are of great help when one wants to take a position on market movements. Instead of buying shares that constitute the index one can buy the market by taking a position on index futures. Further, index based derivatives (both index futures and index options) are cash settled worldwide. The settlement of trade takes place only through settlement of differences of buying/selling price of the contract and its settlement/final settlement price.

## USE OF STOCK INDEX FUTURES AS HEDGING AND SPECULATIVE INSTRUMENTS

Stock index futures can be used for both hedging and speculative purposes.

### i) As hedging instruments

Investors who have a portfolio of shares can use index futures as a hedging mechanism. If an investor is expecting a fall in prices of shares, in say one month time, a simple way to minimize the loss could be to dispose off the holdings at current prices. But in the process, the investor will have to part with holdings. On the other hand he may continue to hold the portfolio and hedge his position by selling stock index futures. The investor can square up the transaction of selling stock index futures later, by buying them at a lower value when prices decline. In this process he will be able to make profit which will compensate him for the loss in the value of portfolio held by him. So hedging in the

form of stock index futures helps the investors to avoid the loss or atleast minimise the loss. On the contrary, if share prices increase instead of decreasing then share index will also rise causing an increase in the value of index futures. The consequential loss due to buying stock index futures at higher prices will be neutralized by profits resulting from increase in share prices of the portfolio. In both the cases, the investor will be able to hedge the expected loss.

While the investor can avoid losses if share prices decrease, he also gives up large profits if prices are high. The investor is willing to give up the chance for larger profits in order to avoid possible catastrophic losses on the downside. Thus, a hedged position has a lower expected return than an unhedged position. By providing protection against adverse price movements derivatives can be used to reduce the extent of risk. Conversely, derivatives also provide opportunities to those who are prepared to undertake risk.

## ii) As speculative instruments

Stock index futures can be used as speculative instruments also. A speculator who expects a boom in share prices can buy index futures now to sell them at a later stage when prices increase to make money. Similarly he can sell stock index futures when he expects the market to go down to book profits by squaring the position later when prices have fallen. However, if market behaves otherwise then the speculator will incur loss.

## Reasons for popularity of stock index futures

Stock index futures are internationally the most popular form of equity derivatives. Some of the reasons for their popularity

are listed below:

- i) Institutional and other large equity holders need portfolio hedging facility. For them index based derivatives are more suitable and cost efficient than derivatives based on individual stocks. Even pension funds in the U.S. are known to use stock index futures for risk hedging purposes.
- ii) A stock index is much harder to manipulate than an individual stock. This is partly because an individual stock has a limited supply which can be cornered. Ofcourse, a stock index can be manipulated through the cash prices of its component securities, however, this is much arduous and capital intensive.
- iii) Popularity of stock index futures ensures a high degree of liquidity in the market.
- iv) Stock index being an average is much less volatile than individual stock prices. Lower volatility means lower margins and capital adequacy requirements than in case of derivatives on individual stocks. Lower margins induce more players to join the market.
- v) Since stock index futures donot represent a physically deliverable asset they are cash settled all over the world on the premise that index value is derived from the cash market. The process of cash settlement avoids the difficulties of delivering many individual securities that constitute the particular index.

Thus, on the basis of above mentioned points the index futures make a lot of sense in the Indian context too.

## EVOLUTION AND GROWTH

From forward trading in commodities emerged commodity futures. Emergence of financial futures is a relatively recent phenomenon. Financial futures arose around early 1970s, beginning with futures in currency and interest rates. However, futures on equity indexes came much later in 1982. The 1970s was the period when the Brettonwood system collapsed and the exchange rates became highly volatile. This brought about the need for hedging against both the price fluctuations in exchange rate and interest differentials in many countries. Futures trading started in currencies on Chicago Mercantile Exchange (CME) in May 1972. This was followed by interest rate futures contract in Government National Mortgage Association (GNMA) bonds in October 1975 by the Chicago Board of Trade (CBOT). The equity index futures of 1980s were driven by the hedging needs of institutional portfolios. The first stock index futures contract of the world was based on 'Value Line Index' which made its debut in February 1982, by the Kansas City Board of Trade in the U.S. It was followed by the S&P 500 index futures at the CME two months later. It was an instantaneous success and became one of the most widely traded futures contract in the world. Thereafter, there was a rapid increase in the number of index futures contracts. These instruments have become so popular that every major country in the world has stock indices and most have index futures and options.

According to data from 'Futures Industry Association' equity index futures in the U.S. traded 42.2 million contracts in 1998 almost triple the 14.8 million contracts in 1990. Options on these futures contracts rose at an even greater pace to 5.6 million contracts

in 1998 from 1.7 million contracts eight years earlier.

## SECTION II

### INDIAN SCENARIO

Indian stock market being an important component of Indian financial system has made rapid strides. Its role in the Indian financial system getting transferred from being peripheral to central. It is trying to catch world standards of operational efficiency.

Today, technology has allowed for the stock exchanges to have a greater reach and the internet promises to maintain this advantage. Trading which used to take place in a ring has computerised thus making the system more transparent. A depository has come into place and hence the hassles associated with physical paper have diminished. The markets have witnessed an increase in capitalization and delivery based trading which makes it difficult for any individual to manipulate the system. Domestic mutual funds have given a better performance which has installed confidence among investors.

Further, with international money coming in slowly and steadily the Indian stock market is moving towards achieving international standards. It is also aspiring to integrate with global systems. Hence, the urgency to have a proper hedging facility in place is heightened.

Time and again market players have laid stress on introduction of derivatives in Indian stock exchanges while impressing on the government that derivatives would not be used for speculative purposes but only for hedging purposes. International experience has shown that the launch of derivatives generally lead to a substantial improvement

in the quality of the underlying equity market with a corresponding increase in liquidity and market efficiency.

### L.C. GUPTA COMMITTEE

SEBI had set up a committee in 1996 under the chairmanship of Dr. L.C. Gupta to understand the ramifications of starting derivatives markets in India. The committee submitted its first draft report in September 1997 and final report in March 1998.

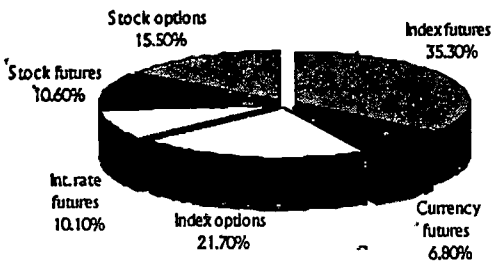
The committee in its report strongly favoured the introduction of financial derivatives in order to provide the facility for hedging in the most cost efficient way against market risk. It felt the need for equity derivatives, currency derivatives and interest rate derivatives. However, it emphasised the urgent need for introduction of equity derivatives from the point of view

of market development as it lacks hedging facility against risk to which equity holders are exposed. The hedging facility, has in fact, become necessary for institutional equity holders (such as mutual funds and other investment institutions) who have been accumulating equity portfolio.

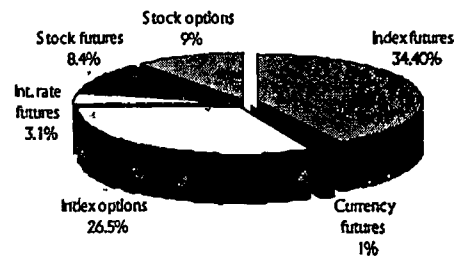
The Committee conducted a questionnaire based survey among potential users of financial derivatives to explore the likely nature of potential demand for equity derivative of each kind. The survey gave many interesting results about the awareness and appreciation of derivatives markets in India. The most important factor revealed was that there was a healthy awareness about derivatives and the fact that such instruments are needed. (see figure 1).

**Figure 1. Simplicity Finds Favour**

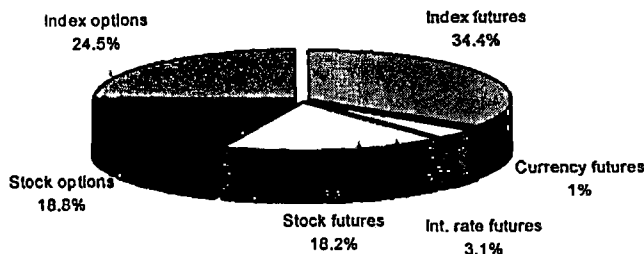
**Which of the derivative securities you favour the most?**



**Which of the derivative products should be introduced first?**



**Which derivative products are needed the most for improving stock market efficiency?**



The committee has recommended a phased introduction of equity derivatives with stock index futures as the best starting points to be followed by stock index options, options on individual stocks and futures on individual stocks.

### MAJOR RECOMMENDATIONS

- i) Trading should be conducted by existing exchanges subject to fulfillment of certain conditions such as online screen based trading system, an independent clearing corporation, minimum requirement of fifty members for starting derivatives trading, establishment of a separate governing council for derivatives market etc.
- ii) Regulatory responsibility should be divided between exchange conducting derivatives trading and SEBI. A derivatives exchange would look into the formulation of detailed rules and regulations and byelaws and creation of really efficient monitoring and enforcement mechanism covering all aspects of derivatives trading. SEBI's role will be to provide overall supervision and to act as regulator of last resort.
- iii) Members of existing exchange would not automatically become members of the derivatives market. Brokers, dealers in derivatives division will be subject to strict entry rules. They will have to pass a certification test that is considered adequate by SEBI. Further, there will be a two level system of members viz. clearing and non clearing members. Non clearing members will have to depend on clearing members for settlement of trades.

iv) The clearing corporation should provide guarantee for the settlement of trades. The initial and daily mark to market margin should be collected from brokers as well as clients.

v) The sales practices should be regulated and there should be adequate disclosure for derivatives.

The recommendations of the Committee have by and large been accepted. Further, the 'Securities Contract Regulation Act', 1956 has been amended to include derivatives within the ambit of securities. The provisions are given in 'Securities Laws Amendment Act', 1999. The government has also lifted a three decade old prohibition on forward trading in securities w.e.f. March 2000. In 1969, the government had imposed a ban on futures trading in securities in order to curb certain unhealthy trends that had developed in the stock market at that time and to prevent undesirable speculation. In the changing financial environment, the relevance of prohibition has vastly reduced.

The Securities Laws Amendment Act, 1999 and the repeal of 1969 notification has paved the way for introduction of derivatives trading in the country.

### PRESENT POSITION

The year 2000 has heralded the introduction of exchange traded equity derivatives in India for the first time. Both the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE) have started derivatives trading in the form of stock index futures since June 9 and June 12, 2000 respectively. As an initial product BSE commenced trading with 'Sensex Futures' and NSE with 'S&P CNX Nifty Futures' It is definitely a new star on the horizon of Indian stock market.



Both, the BSE and NSE have set up an in house segment instead of setting up a separate exchange for derivatives. NSE's trading system for the purpose is 'National Electronic Automated Trading - NEAT (Future & Options)'. It is based on NEAT system for cash segment. BSE's trading system for its derivatives segment is 'Derivatives Trading Settlement System (DTSS)'. It is built on a platform different from BOLT system, though most of the features are common.

Membership for the new segment is not automatic and has to be separately applied for. All members are required to be registered with SEBI. Further, members have to pass a certification test approved by SEBI. NSE's certification programme is christened as 'NSE's Certification in Financial Markets' (NCFM). BSE's certification programme is called 'BSE's Certification for Derivatives Exchange' (BCDE).

## PRODUCT SPECIFICATIONS

### i) Sensex Futures

- i) Contract size - Rs. 50 times the index
- ii) Tick size<sup>1</sup> - 0.1 points or Rs. 5
- iii) Expiry day - last Thursday of the month
- iv) Settlement basis - Cash settled
- v) Contract cycle - 3 months
- vi) Active contracts - 3 nearest months

### ii) Nifty Futures

- i) Contract size - Rs. 200 times the index
- ii) Tick size - 0.05 points or Rs. 10

- iii) Expiry day - last Thursday of the month
- iv) Settlement basis - cash settled
- v) Contract cycle - 3 months
- vi) Active contracts - 3 nearest months

Three contracts are available for trading at any given moment with approximately one, two and three months to expiry. The expiry date is last Thursday of the expiry month. If the last Thursday is a trading holiday, the contract will expire on previous day. A new contract will be introduced on trading day following the expiry of near month contract.

Investors are required to deposit margins with brokers. The contracts are marked to market daily. The profits or losses on a position are not accumulated but settled on a daily basis. Daily adjustments are made in the margin account. In case of profits, it is credited otherwise debited. Further, contracts are cash settled. Daily settlement price is the closing price of futures contract for trading day. Final settlement price is the closing price of underlying securities on last trading day of futures contract.<sup>2</sup>

## RECENT DEVELOPMENTS

Some recent developments in the field are listed below.

- i) Mutual funds have been permitted to trade in derivatives.
- ii) RBI has permitted foreign institutional investors to trade in derivatives.
- iii) Delhi Stock Exchange is planning to start derivatives trading.
- iv) BSE is planning to introduce options trading soon.
- v) SEBI has approved the risk management framework of index options.

- vi) Nifty futures have started trading on 'Singapore Derivatives Exchange'.

## ROADBLOCKS

Though index futures have kicked off smoothly in both BSE & NSE, yet volumes are still thin. The market turnover is expected to move up exponentially after some of the roadblocks are addressed in the coming months. These are mentioned below.

- i) There are no accounting guidelines for equity index futures. (A committee under the aegis of the Institute of Chartered Accountants of India (ICAI) has prepared a draft in this regard and guidelines are expected to be in place soon).
- ii) There is ambiguity with regard to applicability of tax rules. Whereas derivatives have been used in forex markets by banks and corporates for several years still there is no clarity on the issue.
- iii) Brokers back office software is not ready in many cases.
- iv) There is lack of awareness at investor level, broker/dealer level and top management level of the organisation using derivatives.

## PRECAUTIONS

Since derivatives trading is a relatively new phenomenon, it is necessary that certain precautions are taken. There should be a thorough understanding and knowledge of derivatives instruments at all levels. Top management of many companies are not properly exposed to derivatives complexities, hence the need for education. The task of providing education should be the responsibility of all market participants who

benefit from wide usage of such instruments and the exchanges which allow trading in standardised products. Proper understanding of these products goes hand in hand with creation and effective use of risk management system as also in house rules.

Though external regulations for derivatives may be in place, unchecked operations due to lack of internal controls would pose a serious threat. Worldwide organisations which have not been careful in merchandising in derivatives have incurred huge losses. Classical names in this regard are Barings Bank, Sumitomo Corporation, Orange Country, Procter and Gamble, Daiwa Bank, Metallgesellschaft etc. Thus, it would be necessary to ensure that such disaster donot happen in India. Disclosure norms should be designed in such a way that the level of exposure is clearly reported to top management.

Further, clearing corporations should be strong enough to guarantee settlement of trades at all times through well defined margining systems. There has to be an aura of caution since trading in derivatives has proved to be a risk because of high leverage. The regulatory mechanism should be properly enforced for derivatives trading.

## FUTURE PROSPECTS - LOOKING AHEAD

In days to come, one may possibly find different stock index futures being traded simultaneously on the same exchange. BSE may start trading on BSE 100 or BSE Dollex or any other index it wants. Similarly NSE may introduce trading in S&P CNX Difty, S&P CNX Junior and many more indices. Indeed, some sector specific indices may also be introduced for trading on the exchanges.

Further, nothing stops BSE or NSE to trade in different contract sizes on same index. With a change in multiplier contract size changes and the same index may be traded with a different multiplier and contract size. For instance, two versions of Value Line Arithmetic Index - maxi and mini are traded at Kansas City Board of Trade.

The market may also witness the entry of funds dedicated to derivatives business. In days to come. Such funds may be dedicated to futures trading (futures funds) or options trading (options funds) or trade in many derivatives instruments simultaneously. These funds are quite popular abroad.

### **TO CONCLUDE**

Development of derivatives market is a prerequisite for Indian capital market to get integrated with world markets. The success of derivatives market would not only make Indian capital market globally competitive but also help in improving existing cash market. Despite vast benefits, it should not be forgotten that a derivative instrument is like a 'gun'. Though protective it could also kill. Hence the need for caution. Any slackening could lead to a disaster which could destroy people's confidence in the system. It is only after both investors and dealers become well conversant with trading in stock index futures time may come for introduction of other forms of financial derivatives including options.

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