Chapter –VIII

Summary and Conclusion

Derivatives are financial instruments that derive value from their underlying assets such as an index or a commodity. Derivatives includes futures, forwards, options and swaps, and these can be combined with each other or traditional securities and loans to create hybrid instruments. These instruments are used for risk management and hedging by taking opposite position in the futures market. Equity derivatives in India was started as a part of capital market reforms to hedge price risk resulted from greater financial integration between nations in the 90’s. These reforms were an integral part of financial sector reforms recommended by the Narasimham Committee Report on Financial System, in September 1992. These reforms were aimed at enhancing competition, transparency, and efficiency in the Indian financial market. More than one decade of reforms have brought a major transformation and structural change during this period such as shift to electronic trading from floor-based trading, abolition of ‘Badla’ transaction and introduction of ‘rolling’ settlement gradually to ‘T+2’ to improve cash market operation in India. Further, not only new financial products like derivatives, exchange-traded funds and hedge funds but also entry to foreign players like foreign institutional investors (FIIs) were allowed to invest in India. Introduction of derivatives in India was recommended by the L.C. Gupta Committee Report on Derivatives in 1997 in a phased manner. Accordingly, stock index futures were introduced first. BSE was the first stock exchange in the country to start trading in index futures based on BSE Sensex on June 9, 2000. NSE also commenced its trading on 12 June, 2000 based on S&P Nifty. Subsequently, other products like stock futures on individual securities were introduced in November 2001. This was followed by approval of trading in index options based on these two indices and options on individual securities. The volumes in derivatives markets especially on the Futures and Options segment of the NSE witnessed a tremendous growth and now the turnover is much higher than the turnover in the cash markets. Till today, there are only four derivatives instruments available in the Indian markets, namely, index futures, index options, stock futures and stock options.

The introduction of derivatives instruments in the Indian market has been debated among policy makers, regulators and market participants. One view was that the Indian
market is not ripe for highly leveraged products like derivatives, the introduction of which might heighten volatility in the underlying spot market. The other and opposite view is that closer economic integration of the different countries of the world and progressive deregulation of financial sector, together with large fluctuations in real sectors of Indian economy in recent years, have exposed market players to different risks. India would be, according to this view, at a disadvantage unless financial derivatives as risk management tools are introduced. In India, four derivatives instruments viz. index futures, index option, stock futures and stock option are traded on the Indian stock exchanges.

The moot question is whether the introduction of these leveraged products in the Indian market has helped their basic economic function of price discovery. Besides this, another important issue relating to the introduction of derivatives market is whether it has destabilized the underlying cash market. In other words, whether derivatives are playing their part as risk management tools and how it is benefiting the underlying market in terms of pricing efficiency, liquidity and stability through the supposed informational role of derivatives trading.

We tested the following objectives in this study:

1. To determine the hedging effectiveness of index futures and stock futures.
2. To study whether futures market are performing their price discovery function.
3. To study whether introduction of futures and options have destabilized the underlying market.
4. To examine whether trading in futures market is done for hedging or speculation.
5. To examine whether market quality in terms of efficiency and liquidity have enhanced after the introduction of derivatives products.

We employed various econometric techniques. To assess the hedging effectiveness of index futures viz. S&P Nifty futures contract, Bank Nifty futures and CNXIT futures. Data for Nifty and Nifty futures were collected from 12 June 2000 to 26 March 2009 and for Bank Nifty and Bank Nifty futures, and CNXIT and CNXIT futures, data were collected for the period 2 January 2007 and 26 March 2009. We used three alternative models viz. OLS, VAR and VECM for finding hedge ratio and hedging effectiveness of index futures and stock futures on individual stocks.
To study the price discovery function of the futures market, we employed Engle–Granger method of cointegration and vector error correction model proposed by Johnston multivariate system approach for index futures and stock futures on individual stock. Data on S&P Nifty and Nifty futures were collected for the period 12 June 2000 and 26 March 2009. Data for Bank Nifty and Bank Nifty futures, CNXIT and CNXIT futures and stock futures were collected from 2nd January to 26 March 2009. To examine the impact of introduction of futures and options trading on the volatility of the underlying market, we used ARCH/GARCH techniques. To meet this objective, we collected data on S&P Nifty and Junior Nifty from 1st January 1998 to 31 March, 2009. While data on CNX 100 index was from 2nd January 2006 to 31 March, 2009. Moreover, data on 14 individual stocks were also collected from 1st January 1999 to 31st March, 2009 to find the behaviour of volatility of individual stocks before and after futures trading. To examine whether trading in futures market is done for hedging or for speculation, we used LMSW method proposed by Llorente, Michaely, Saar and Wang (2002). The same set of data were used for this objective also. To examine market quality in terms of efficiency and liquidity, we applied various tests of efficiency on S&P Nifty before and after the introduction of F&O. We also used an event technique to assess the impact of F&O trading on the liquidity of underlying index and stock.

In the third chapter, we studied the hedging effectiveness of index and stock futures. The study showed that cash prices and futures prices are co-integrated and there exist a long run equilibrium relationship between cash and futures prices. In case of all contracts, VECM performs better than OLS and VAR models. The study found that Nifty futures, Bank nifty futures, CNXIT futures and stock futures contracts traded on NSE provides effective hedging facility to the market players for risk management.

In fourth chapter, we examined the price discovery function of the futures market. The findings are: There exists a long-run relationship between at market level as well as firm level between cash and futures prices. One can combine information of spot and futures prices to predict the future spot price. Thirdly, the error correction model leads to the conclusion that there exists a feed back between spot and futures. The results also established that spot market leads the futures market and price discovery takes place in both the markets. This has an important implication for the market participants in the
In the fifth chapter, we studied the impact of futures and option on the underlying market. The findings are: after the introduction of the futures and options the volatility of the underlying markets has declined in case of Nifty but the volatility of Junior Nifty and CNX 100 index has increased after the introduction of futures trading. The results showed that volatility of individual stocks have declined after the futures trading. When surrogate index – Junior Nifty – was used to account for market wide volatility, the effect of futures and option on the volatility of the underlying market vanishes. Broadly, it can be said that volatility of the market has dampened but the contribution of futures and option trading is negligible. The impact of recent news have increased while the volatility in returns arising from the effect of old news has declined implying that the quality of information flowing have improved to the cash market.

In chapter sixth, we tried to find whether trading volume in futures segment is generated by hedging or speculation. The findings are: at market level, results establish that trading is basically for rebalancing portfolio. At firm level, in those companies where futures volume is moderate speculation is rampant. However, in case of those companies in which volume is relatively high, trading is done basically for portfolio rebalancing i.e. hedging.

Finally in seventh chapter, we examined the enhancement in market efficiency and liquidity before and after the introduction of derivatives instruments in the Indian market. The findings are: efficiency tests establish that market was efficient in its weak form before the introduction of F&O may be due to institutional reform and other reforms which were carried out to improve the functioning of the cash market before the introduction of futures. Secondly, after the introduction of F&O the market became inefficient. It might be because of faster flow of information from futures to cash market that may have led to trading by informed and less informed traders. Thirdly, inefficiency of the market after the introduction of futures and option is due to non-linearity in returns, which may be the result of psychological factors, noise trading or irrational behaviour of the investors. The positive relationship between stock returns and risk premium as predicted by capital asset pricing model (CAPM) does not hold in India. Results
established that average volume and turnover of the underlying stocks have changed significantly after the introduction of futures and option trading.

The following conclusions emerge from this study. Index futures contracts S&P Nifty futures, Bank Nifty Futures, CNXIT futures and stock futures on individual scripts provide effective hedging facility to the market participants. ‘Market completion’ hypothesis which argue that derivatives trading helps in price discovery, improves the overall market depth, enhance market efficiency, augment market liquidity, reduce asymmetric information and thereby reduce volatility of the cash market. This hypothesis seems to hold in case of India because flow of information has increased after the introduction of this market. This is established by this study. Price discovery takes place in both the markets. No dominance of any market is established in this study. There exists feedback relationship in cash and futures market. Prices are predictable from each other and one can incorporate information from each market to predict the future prices. The introduction of derivative instruments like index futures and index options have not destabilized the underlying market S&P CNX Nifty. Thus, the hypothesis of ‘destabilizing forces’ does not hold in case India. Trading in the F&O segment of NSE is done for portfolio rebalancing. This is established at market level. At firm level, trading in some stocks is done for fulfilling speculative desires. The underlying market over the sample period was efficient before the introduction of derivatives trading. Market has become inefficient in post derivatives period. This might be because of faster flow of information from futures to cash market that may have led to trading by informed and less informed traders. In addition, inefficiency of the market after the introduction of futures and option is due to non-linearity in returns, which may be the result of psychological factors, noise trading or irrational behaviour of the investors. The liquidity of underlying market has significantly increased after the introduction of derivative trading. This is true at market as well as at firm level.

The analysis and above mentioned results have in our judgement, important implications for policy and regulation. In NSE, trading in derivatives instruments takes place on a segment called F&O segment. This study found that there is no clear cut dominance of futures market over spot market in price discovery process. This might be result of conducting both types of trading in the same exchange. It is also important to note that the trading rules and entry requirements for futures trading is different from
those for cash trading. This study found that market has become inefficient in its weak form after the introduction of futures and option trading. Since both cash and futures trading is taking place in the same exchange, the possibility of collusion among traders seems to be greater that might have result into irrational trading and ‘noise’. It is established in this study that Nifty returns have non-linear characteristics. The L.C. Gupta Committee was also in favour of separate exchange from regulatory point of view. “From the purely regulatory angle, a separate exchange for futures trading seems to be a neater arrangement….” (Paragraph 3.8).

The L.C. Gupta Committee report on derivatives was not in favour of introducing single stock futures in India. “The fourth type, viz. individual stock futures, was favoured much less. It is pertinent to note that the U.S.A. does not permit individual stock futures. Only one or two countries in the world are known to have futures on individual stocks.” (Paragraph 2.3). However, trading in single stock futures in the US, started in early 2003 with physical settlement system.

However, in India, single stock futures and options contracts are cash-settled. When introducing stock futures and option it was promised by the Indian authorities that within six months the physical settlement would be in place. Physical settlement was not introduced at the time of introduction due to lack of infrastructural facilities. However, even after five years physical settlement has not introduced in case of single stock futures and stock options contracts. The problem with cash settlement is that it deters the link between the market and the real economy. If the market participants know that they would never be required to deliver the asset underlying the futures contract sold by them, many of them are tempted to indulge in excessive speculation or to create artificial prices unrelated to the real economic factors. Because, it is easy to arrange cash than securities for settlement of trade. The principle of physical settlement in the case of deliverable type of asset underlying the futures is used by all well-functioning futures exchanges. The only exception is broad-based index futures where the regulatory authorities are convinced that prices of such products cannot be easily manipulated and their supply cannot be cornered. This study also found that speculation is rampant in case of stock futures trading. In fact, stock futures trading are most successful in India than anywhere in the world because they are simply a substitute for badla. To curb speculation physical delivery is very important. In all developed market, derivative trades are delivery settled.
Futures market without delivery is more of a speculative avenue than fulfilling the need of hedging.