CHAPTER - III

THEORETICAL OVERVIEW OF FUTURE AND OPTIONS MARKET

Many associate the financial market with the equity market. The financial market is, of course, far broader, encompassing bonds, foreign exchange, real estate, commodities, classification of other asset and financial instruments. Of late segment of the market that has fast become its most important one is the derivatives market. The derivatives market has seen the highest growth among all financial market segments in recent years. It has become a central contributor to the vibrant state of the financial system and has emerged as an important factor in the functioning of the real economy. Despite the importance of the derivatives market, many a sections of society want to have a comprehensive perspective on its size, structure, role etc and on how it works.

Last decade was one of the most eventful decades in the International financial markets, more specifically derivatives market. On one side, just few derivatives disaster stories were enough to bring entire business of derivatives under the limelight, make every one worry about unknown risks associated with derivatives, and elevate derivatives into mysterious “something”; while on the other side, there were people who started understanding the derivatives and used
the derivatives for hedging and mitigating risks while adding liquidity to the markets.

The derivatives market has recently attracted more attention against the backdrop of the financial crisis, fraud cases and the near failure of some market participants. Although the financial crisis has primarily been caused by structured credit-linked securities that are not derivatives, policy makers and regulators have started to think about strengthening regulation to increase transparency and safety both for derivatives and other financial instruments.

Before discussing the prerequisites for a well functioning derivatives market, it is useful to consider the fundamentals and characteristics of this market along with the mechanics of trading, its economic and social functions and the dynamics of derivative market functioning with special reference to futures market.

**Derivatives**

Derivatives are financial instruments that are mainly used to protect against or to manage risks, and very often also serve arbitrage or investment purposes, providing various advantages compared to securities. Derivatives come in many varieties and can be differentiated by how they are traded, the underlying they refer to, and the product type.
A derivative instrument, broadly, is financial contracts whose payoff structure is determined by the value of an underlying commodity, security, interest rate, share price index, exchange rate, and oil price alike. Thus, a derivative instrument derives its value from some underlying variable. A derivative instrument by itself does not constitute ownership. It is, instead, a promise to convey ownership. All derivatives are based on some “cash” products. The underlying basis of a derivative instrument may be any product including

1. Commodities like grain, coffee beans, orange juice etc.
2. Precious metals like gold and silver
3. Foreign exchange rate.
4. Bonds of different types, including medium and to long-term negotiable debt securities issued by governments, companies, etc.
5. Short-term debt securities such as T-bills

Derivatives are specialized contracts which are employed for a variety of purpose including reduction of funding costs by borrowers, enhancing the yield on assets, modifying the payment structure of assets to correspond to the investor’s market view. In the organized derivatives market where derivative products are traded, future market plays a defining role. Futures contracts are traded on exchanges, and they are standardized according to the rules and regulations of the exchange. The exchange determines the exact quality and
quantity of the goods to be delivered per contract, when the contract terminates and the location of the delivery. This standardization facilitates secondary market trading and enhances the liquidity of the market. The parties involved need not concern themselves with the creditworthiness of other players because the exchange itself guarantees the performance of all parties. The seller of a futures contract is said to be in the ‘short’ position and the buyer is said to be in the ‘long’ position. The date at which the parties must complete the transaction is the settlement or delivery date. The price agreed to by two parties is known as the futures price.

**Types of Derivatives**

The most commonly used derivatives contracts are forwards, futures, options. Here we take a brief look at various derivatives contracts that have come to be used.

**Forward Contracts**

A forward contract is an agreement between two parties to buy and sell of a commodity or financial asset at certain future time for a certain price. Historically, the forward markets are forerunners of futures markets. A forward contract is a simple derivative that can be contrasted with a spot contract, which is an agreement to buy or sell an asset today where as the forward contract at a future period. A forward contract is traded in the over-the-counter market usually
between two financial institutions or between a financial institution and one of its clients.

One of the parties to a forward contract assumes a long position and agrees to buy the underlying asset on a certain specified future date for a certain specified price. The other party assumes a short position and agrees to sell the asset on the same date for the same price. Forward contracts on foreign exchange are very popular. Most large banks have a "forward desk" within their foreign exchange trading room that is devoted to the trading of forward contracts.

**Futures Contracts**

Like a forward contract, a futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future for a certain price. Unlike forward contracts, futures contracts are normally traded on an exchange. To make trading possible, the exchange specifies certain standardized features of the contract. As the two parties to the contract do not necessarily know each other, the exchange provides a mechanism that gives the two parties a guarantee that the contract will be honored.

The largest exchanges on which futures contracts are traded are the Chicago Board of Trade (CBOT) and the Chicago Mercantile Exchange (CME). On these and other exchanges throughout the world, a very wide range of commodities and financial assets form the underlying assets in the various
contracts. The commodity includes even pork bellies, live cattle, sugar, wool, lumber, copper, aluminum, gold, and tin. The financial assets include stock indices, currencies, and Treasury bonds.

One way in which a futures contract is different from a forward contract is that an exact delivery date is usually not specified. The contract is referred to by its delivery month, and the exchange specifies the period during the month when delivery must be made. For commodities, the delivery period is often the entire month. The holder of the short position has the right to choose the time during the delivery period when it will make delivery. Usually, contracts with several different delivery months are traded at any one time. The exchange specifies the amount of the asset to be delivered for one contract and how the futures price is to be quoted. In the case of a commodity, the exchange also specifies the product quality and the delivery location.

**Options Contracts**

Options are traded both on exchanges and in the over-the-counter market. There are two basic types of options. A call option gives the holder the right to buy the underlying asset by a certain date for a certain price. A put option gives the holder the right to sell the underlying asset by a certain date for a certain price. The price in the contract is known as the exercise price or strike price; the date in the contract is known as the expiration date or maturity date. American
options can be exercised at any time up to the expiration date. European options can be exercised only on the expiration date. Most of the options that are traded on exchanges are American. In the exchange-traded equity options market, one contract is usually an agreement to buy or sell 100 shares. European options are generally easier to analyze than American options, and some of the properties of an American option are frequently deduced from those of its European counterpart.

It should be emphasized that an option gives the holder the right to do something. The holders not necessarily have to exercise this right. This is what distinguishes options from forwards and futures, where the holder is obligated to buy or sell the underlying asset. It need to be noted that it costs nothing to enter into a forward or futures contract, where as there is a cost for acquiring an option.

**Emergence of Financial Derivatives**

Derivative products initially emerged as hedging devices against fluctuations in common prices, and commodity-linked derivatives remained the sole form of such products for almost three hundred years. Financial derivatives came into limelight in the post-1970s due to growing instability in the financial markets. However, since their emergence, financial derivatives products have become very popular and in 1990’s, overtaking the commodity derivatives they
accounted for about two-thirds of total transaction in derivative market. In recent years, the market for financial derivatives has grown tremendously in terms of variety of instruments available, their complexity and also in terms of turnover. In the class of equity derivatives world over, futures and options on stock indices have gained more popularity than on individual stocks, especially among institutional investors, who are the major users of index-linked derivatives. Even small investors find the usefulness of derivatives became of the existence of a high correlation between the popular indexes with various portfolios. The lower costs associated with index derivatives than derivative products based on individual securities is another reason for their growing use.

**Players in Derivative Markets**

Derivatives markets have been outstandingly successful. The main reason is that they have attracted many different types of traders and have a great deal of liquidity. When an investor wants to take one side of a contract, there is usually no problem in finding someone who is prepared to take the other side.

Three broad categories of traders can be identified among the players in the market they are: hedgers, speculators, and arbitrageurs. Hedgers use futures, forwards, and options to reduce the risk that they face from potential future movements in a market variable. Speculators use them to bet on the future
direction of a market variable. Arbitrageurs take offsetting positions in two or more instruments to lock in a profit.

Hedgers

Hedging is the prime reason which has led to the emergence of derivatives. The availability of derivatives allows one to undertake many activities at a considerably lower risk. Hedgers, therefore, are important components of the derivatives markets. Hedgers are the traders who wish to eliminate the risk associated with price of an asset and they may take a long position or short position on a commodity to lock in existing profits. The main purpose is to reduce the volatility of a portfolio, by reducing the risk. Nevertheless, while a forward contract requires no payment, an option contract involves an initial cost. In the event of call is not exercised, the premium paid for it becomes a net loss while if it is exercised, the profit resulting from the call exercise compensates the cost.

Speculators

Hedgers are the people who wish to avoid the price risk; while speculators are those who are willing to take such risk. These are the people who take positions in the market and assume risks, to profit from fluctuations in prices. In fact, the speculators consume information, make forecasts about the prices and put their money in these forecasts. In this process, they feed information into
prices and hence contribute to market efficiency. By taking positions, they are betting that a price would go up or they are betting that it would go down. Depending on their perceptions, they may take long or short positions on futures or options or may hold spread positions. Derivatives make speculation easy with least investment. In the absence of the derivatives, speculative activity would become very difficult as it might require huge funds to be invested.

Speculators in the derivatives market may be categorized as scalpers, day traders and position traders. Scalpers attempt to profit from small changes in the contract price. Day traders speculate on the price movements during single trading day, thus open and close positions many times a day but do not carry any positions at the end of the day. Obviously, they monitor the prices continuously and generally attempt to make profit from just a few ticks per trade. On the other hand, the position traders attempt to gain from price fluctuations by keeping their positions open for longer durations - may be for a few days, weeks or even months. They use fundamental analysis, technical analysis and other information available to them to form their opinions on the likely price movements Vohra and Bagri (2008).
Arbitrageurs

Arbitrageurs attempt to earn risk-free profits by exploiting market imperfections. An arbitrageur profits by trading a given commodity or other items that sells for different prices in different markets. Thus, arbitrage involves making risk-less profit by simultaneously entering into transactions in two or more markets. If a certain share is quoted at a lower rate on the NSE and at a higher rate on the BSE, an arbitrageur would make profit by buying the share at NSE and simultaneously selling it at BSE, this type of arbitrage is “arbitrage over space”. If an arbitrageurs feels that the futures are being quoted at a high level considering the cost of carry, the arbitrageurs would buy securities underlying today and sell the future in market maturing in a month or two hence. Similarly, since futures and options with various expiration dates are traded in the market, there are likely to be several arbitrage opportunities in trading. Thus, if a trader believes that the price differential between the futures contracts on the same underlying asset with differing maturities is more or less than what the arbitrageur perceives them to be, then appropriate positions in them may be taken to make profits.

It may be noted that the existence of well-functioning derivatives markets alters the flow of information into the prices. This is because, in a purely cash market, speculators feed information into the spot prices. In contrast, the presence of a derivatives market ensures that a major part of the transformation
of information into prices, due to lower transactions costs involved in derivative a market, and then it gets transmitted to the spot markets. It is here that the arbitrageurs provide a link between the derivatives market and the cash market by synchronizing the prices in the two markets. Thus, through their actions, the arbitrageurs provide a critical link between the cash and derivatives markets.

**Significance of Derivative Market**

The derivatives market performs a number of economic functions; they are

1. **Price Discovery:** Prices in an organized 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 the derivative contracts. Thus derivatives help in discovery of future as well as current prices.

2. **Risk Transfer:** Due to the inherent link of derivatives market with the underlying cash market, witnesses higher trading volumes because of participations by more players who would not have otherwise participated for lack of an arrangement to transfer risk.

3. **Controlled Speculative Trading:** Speculative trades shift to a more controlled environment due to the existence of derivatives market. In the
absence of an organized derivatives market, speculators trade in the underlying cash markets and margining, monitoring and surveillance of the activities of various participants become extremely difficult in derivative markets.

4. **Financial Architecture:** An important incidental benefit that flows from derivatives trading is that it acts as a catalyst for new entrepreneurial activity. The derivative has a history of attracting many bright, creative, well-educated people with an entrepreneurial attitude. They often energize others to create new business, new products and new employment opportunities, the benefit of which is immense.

5. **Enhances Volume of Activity:** Derivatives market help to increase savings and investment in the long run and transfer of risk enables the market participants to expand their volume of activity.

**Models of Futures Price**

The relationship between spot and futures prices can be explained by two models, they are Cost of Carry model and Expectations model. According to this view, futures prices depend on the cash price of the asset and the cost of storing the underlying asset from the present to the delivery date of the futures contract. Second, according to the expectations model, the futures price today equals to the
cash price that traders expects to prevail for the underlying asset on the delivery date the futures contract.

**Cost of Carry Model**

The relationship between futures prices and spot prices can be summarized in terms of the cost of carry. This measures the storage cost plus the interest that is paid to finance the asset less the income earned on the asset. For a non-dividend-paying stock, the cost of carry is $r$, because there are no storage costs and no income is earned; for a stock index, it is $r - q$, because income is earned at rate $q$ on the asset. For a currency, it is $r - r_f$ for a commodity with storage costs that are a proportion $u$ of the price, it is $r + u$; and so on.

For an investment asset, the futures price is

$$F_0 = S_0 e^{cr}$$

For a consumption asset, it is

$$F_0 = S_0 e^{(c - y)T}$$

Where,

- $F_0$ is the Futures Price at time $t$.
- $S_0$ is the Spot Price at time $t$.
- $c$ stands for Holding or Carry Cost
- $T$ stands for Time till Expiration.
- $y$ is the convenience yield.
If $F > Se^T$ or $F < Se^T$, then arbitrage opportunities exist between the futures and spot markets. Arbitrageurs can then simultaneously take positions in the underlying market and futures market, and hence lock in a secure pay off.

**Expectations Model**

The price relationship between two markets can be obtained by considering the relationship between risk and expected return. According to the Capital asset Pricing Model (CAPM), the two types of risks are; systematic and unsystematic. Unsystematic risk does not matter much to the investor, as it can be eliminated by holding a well-diversified portfolio. However, systematic risk cannot be diversified away, because it arises from a correlation between returns from the investment in stock market as whole. Hypothetically, a speculator who takes a long futures position in the hope that the spot price of the asset will be above the futures price at maturity and puts the present value of the futures price into a risk-free investment while simultaneously taking a long futures position. The proceeds of the risk-free investment are used to buy the asset on the delivery date. The asset is then immediately sold for its market price. The cash flows to the speculator are:

Time 0: $-F_0e^{-rT}$

Time T: $+S_T$
Where, \( S_T \) is the price of the asset at time \( T \). The present value of this investment is:

\[
-F_0e^{-rT} + E(S_T)e^{-kT} = 0 \quad \text{or} \quad F_0 = E(S_T)e^{(r-k)T}
\]

The value of \( k \) depends on the systematic risk of the investment. If \( S_T \) is uncorrelated with the level of the stock market, the investment has zero systematic risk. In this case \( K = r \), and \( F_0 = E(S_T) \). If \( S_T \) is positively correlated with the stock market as whole, the investment has positive systematic risk, \( F_0 < E(S_T) \). Finally, if \( S_T \) is negatively correlated with the stock market, the investment has negative systematic risk, in such case \( k < r \), and shows that \( F_0 > E(S_T) \). Hull (2004).

**International Derivatives Markets**

A comparison of the derivatives markets, over the last few years, among various countries gives rise to an interesting pattern. The exchanges of the developed markets have shown robust growth and maintained their leadership position over last five years; at the same time, emerging market exchanges have gained a position of eminence with strong growth trends. It is evident from the data presented in Table 3.1 to 3.4 given below that Indian market has emerged fourth along with markets in Korea, Spain and Israel, but only in case of single stock option contracts traded Indian market stood at 16th position.
## Table: 3.1 Top Five Exchanges (Number of Stock Index Futures Contracts traded)

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Number of Contracts traded in 2008*</th>
<th>Number of Contracts traded in 2003</th>
<th>Percentage Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUREX</td>
<td>371,504,525</td>
<td>155,988,661</td>
<td>138.16 %</td>
</tr>
<tr>
<td>NSE, India</td>
<td>141,261,516</td>
<td>10,557,024</td>
<td>1238.08 %</td>
</tr>
<tr>
<td>Osaka SE</td>
<td>90,965,674</td>
<td>13,231,287</td>
<td>587.50 %</td>
</tr>
<tr>
<td>Euronext Liffe</td>
<td>76,525,955</td>
<td>56,898,050</td>
<td>34.50 %</td>
</tr>
<tr>
<td>Singapore Exchange</td>
<td>45,256,382</td>
<td>8,609,973</td>
<td>425.63 %</td>
</tr>
</tbody>
</table>


## Table: 3.2 Top Five Exchanges (Number of Stock Index Option Contracts traded)

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Number of Contracts traded in 2008*</th>
<th>Number of Contracts traded in 2003</th>
<th>Percentage Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea Exchange</td>
<td>2,011,059,741</td>
<td>3</td>
<td>#</td>
</tr>
<tr>
<td>Chicago Board Option Exchange</td>
<td>435,860,762</td>
<td>110,822,096</td>
<td>293.30 %</td>
</tr>
<tr>
<td>EUREX</td>
<td>371,155,699</td>
<td>108,504,304</td>
<td>242.07 %</td>
</tr>
<tr>
<td>NSE, India</td>
<td>89,099,694</td>
<td>1,332,417</td>
<td>6587.07 %</td>
</tr>
<tr>
<td>TAIFEX</td>
<td>77,154,336</td>
<td>21,720,084</td>
<td>255.22 %</td>
</tr>
</tbody>
</table>

*Source: World Federation of Exchanges, * January to October 2008, #Very large figure due to small base*
### Table: 3.3 Top Five Exchanges (Number of Single Stock Futures traded)

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Number of Contracts traded in 2008*</th>
<th>Number of Contracts traded in 2003</th>
<th>Percentage Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSE</td>
<td>307,836,600</td>
<td>4,585,919</td>
<td>6.612.65 %</td>
</tr>
<tr>
<td>NSE, India</td>
<td>165,706,741</td>
<td>25,572,505</td>
<td>547.99 %</td>
</tr>
<tr>
<td>EUREX</td>
<td>121,656,741</td>
<td>7,004,235</td>
<td>1,636.90 %</td>
</tr>
<tr>
<td>Euronext Liffe</td>
<td>94,223,989</td>
<td>N.A</td>
<td>N. A</td>
</tr>
<tr>
<td>BME, Spanish</td>
<td>35,301,142</td>
<td>12,492,568</td>
<td>182.58 %</td>
</tr>
</tbody>
</table>

**Source:** World Federation of Exchanges, * January to October 2008, N.A refers to the 2003 data pertains to that of Euronext

### Table: 3.4 Top Five Exchanges (Number of Single Stock Options traded)

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Number of Contracts traded in 2008*</th>
<th>Number of Contracts traded in 2003</th>
<th>Percentage Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISE</td>
<td>767,805,138</td>
<td>220,988,837</td>
<td>247.44 %</td>
</tr>
<tr>
<td>Chicago Board Option Exchange</td>
<td>463,710,159</td>
<td>173,033,695</td>
<td>167.99 %</td>
</tr>
<tr>
<td>Philadelphia SE</td>
<td>409,010,094</td>
<td>89,458,901</td>
<td>357.20 %</td>
</tr>
<tr>
<td>EUREX</td>
<td>276,165,919</td>
<td>188,239,823</td>
<td>46.71 %</td>
</tr>
<tr>
<td>Sao Paulo SE</td>
<td>260,696,612</td>
<td>175,622,679</td>
<td>48.44 %</td>
</tr>
<tr>
<td>NSE, India</td>
<td>8,009,365</td>
<td>5,607,990</td>
<td>42.82 %</td>
</tr>
</tbody>
</table>

**Source:** World Federation of Exchanges, * January to October 2008.
Derivatives Market in India

The derivatives market is a new market design of the Indian equity market, which play a vital role in disseminating information and offsetting undesirable price risks. It ensures the cheapest trading facilities to the investors and shareholders. The development of markets for derivatives was initially not possible in view of prohibition in the Securities Contracts (Regulation) Act, 1956 (SCRA). The preamble to Act itself spoke of prohibiting options trading. Section 20 of the Act explicitly prohibited all options in securities. Under this Act, by a notification in 1969, Government prohibited all forward trading in securities in order to curb unhealthy practices and to prevent undesirable transactions. The introduction of trading in derivatives required withdrawal of these prohibitions Narain (2003).

The first step towards introduction of derivatives trading in the Indian financial markets was the promulgation of the Securities Laws (Amendment) Ordinance, 1995, which withdrew the prohibition on options in securities. 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 November 18, 1996 to develop appropriate regulatory framework for derivatives trading in India. The committee submitted its report on March 17, 1998 prescribing necessary pre-
conditions for introduction of derivatives trading in India. The committee recommended that derivatives should be declared as “securities” so that regulatory framework applicable to trading of “securities” could also govern trading of securities. SEBI also set up a group in June 1998 under the Chairmanship of Prof. J. R. Varma, to recommend measures for risk containment in derivatives market in India. The report, which was submitted in October 1998, worked out the operational details of margining system, methodology for charging initial margins, broker net worth, deposit requirement and real-time monitoring requirements.

In December 1999, amendment to Securities Contracts (Regulation) Act, was notified, making way for derivatives trading in India. In June 2000, Futures contracts on Nifty and Sensex were launched, followed by Options contracts on Nifty and Sensex (European style). The Options contracts on stocks (American style) and Futures contracts on stocks in June, July and November 2001, respectively. The number of underlying stocks and indexes has increased over the years and presented in Table: 3.5 showing exponential increase of options futures traded.

In the Indian market, the Index option contracts are cash settled European style options. Stock options are also cash settled American style contracts. Interest rate derivatives are based on notional 10-years bonds and 91-days T-bill. All exchange-traded equity derivatives contracts are cash settled contracts.
### Table: 3.5 Futures and Options Traded on NSE & BSE

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>NSE - Stocks</th>
<th>NSE - Index</th>
<th>BSE - Stocks</th>
<th>BSE - Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 - 2002</td>
<td>31</td>
<td>1</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>2002 - 2003</td>
<td>41</td>
<td>1</td>
<td>38</td>
<td>1</td>
</tr>
<tr>
<td>2003 - 2004</td>
<td>53</td>
<td>2</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>2004 - 2005</td>
<td>52</td>
<td>2</td>
<td>46</td>
<td>1</td>
</tr>
<tr>
<td>2005 - 2006</td>
<td>117</td>
<td>3</td>
<td>76</td>
<td>7</td>
</tr>
<tr>
<td>2006 - 2007</td>
<td>155</td>
<td>3</td>
<td>89</td>
<td>7</td>
</tr>
<tr>
<td>2007 - 2008</td>
<td>265</td>
<td>7</td>
<td>126</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: BSE, NSE.

### Table: 3.6 Total Derivatives turnover since inception (in Rs. Crore) *

<table>
<thead>
<tr>
<th>Period</th>
<th>NSE</th>
<th>BSE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 - 2002</td>
<td>101,925</td>
<td>1,917</td>
<td>103,842</td>
</tr>
<tr>
<td>2002 - 2003</td>
<td>439,865</td>
<td>2,475</td>
<td>442,340</td>
</tr>
<tr>
<td>2003 - 2004</td>
<td>2,130,447</td>
<td>12,074</td>
<td>2,142,521</td>
</tr>
<tr>
<td>2004 - 2005</td>
<td>2,547,053</td>
<td>16,112</td>
<td>2,563,165</td>
</tr>
<tr>
<td>2005 - 2006</td>
<td>4,824,245</td>
<td>9</td>
<td>4,824,254</td>
</tr>
<tr>
<td>2006 - 2007</td>
<td>7,356,271</td>
<td>59,007</td>
<td>7,415,278</td>
</tr>
<tr>
<td>2007 – 2008</td>
<td>13,090,478</td>
<td>242,308</td>
<td>13,332,786</td>
</tr>
<tr>
<td>2008 to Dec 2008</td>
<td>5,963,894</td>
<td>11,491</td>
<td>5,975,385</td>
</tr>
</tbody>
</table>

Source: BSE, NSE. * Excluding Currency Derivatives
Turnover in the derivatives segment, since inception, is presented in Table: 3.6 and Chart 3.1. During 2001 - 02, turnover on NSE was Rs. 101,925 Crore and during 2007 - 2008 it was Rs. 13,090,478 Crore. Likewise, during 2001 - 2002, turnover on BSE was Rs. 1,917 Crore and during 2007 - 2008 it was Rs. 242.308 Crore. Turnover on BSE increased till 2004 - 2005 but during 2005 - 2006 there was a noticeable decrease in turnover. The turnover on BSE has started increasing since 2006 - 2007. During the financial year 2008 to 31<sup>st</sup> December 2008, the total turnover in NSE and BSE were observed with Rs. 59,63,894 Crore and Rs. 11,491 Crore, respectively.

![Chart: 3.1 Business Growth of Futures & Options Segment](source: www.nseindia.com)
India’s Experience in Future & Options

India’s experience with the launch of equity derivatives market has been extremely positive with the global derivatives market. The derivatives turnover on the NSE has surpassed the equity market turnover. The turnover of derivatives on the NSE increased from Rs. 23,654 million in 2000-01 to Rs. 130,904,779 million in 2007-08. India is one of the most successful developing countries in terms of a vibrant market for exchange-traded derivatives. This reiterates the strengths of the recent developments of India’s securities markets, which are based on nationwide market access, anonymous electronic trading, and a predominantly retail market. There is an increasing belief that the equity derivatives market is playing a major role in shaping price discovery.

As per Indian Securities Market Review (ISMR) 2009, NSE ranked as the eighth largest derivatives exchange in the world, the second largest exchange in terms of number of contracts traded in single stock futures and the third largest in terms number of contracts traded in the index futures category. The derivatives trading at NSE commenced on June 12, 2000 with futures trading on S&P CNX Nifty Index. Subsequently, the product base has been increased to include trading in options on S&P CNX Nifty Index, futures and options on CNX IT Index, Bank Nifty Index, CNX Nifty Junior, CNX 100, Nifty Midcap 50 Indices, S&P CNX Defty and 234 single stocks were observed in Table: 3.7 as of March 2009.
The various products on the derivative segment of NSE and their date of launch is shown in the table below.

<table>
<thead>
<tr>
<th>Products on Derivative Segment</th>
<th>Date of Launch</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P CNX Nifty Futures</td>
<td>June 12, 2000</td>
</tr>
<tr>
<td>S&amp;P CNX Nifty Options</td>
<td>June 4, 2001</td>
</tr>
<tr>
<td>Single Stock Options</td>
<td>July 2, 2001</td>
</tr>
<tr>
<td>Single Stock Futures</td>
<td>November 9, 2001</td>
</tr>
<tr>
<td>Interest Rate Futures</td>
<td>June 24, 2003</td>
</tr>
<tr>
<td>CNX IT Futures &amp; Options</td>
<td>August 29, 2003</td>
</tr>
<tr>
<td>Bank Nifty Futures &amp; Options</td>
<td>June 13, 2005</td>
</tr>
<tr>
<td>CNX Nifty Junior Futures &amp; Options</td>
<td>June 1, 2007</td>
</tr>
<tr>
<td>CNX 100 Futures &amp; Options</td>
<td>June 1, 2007</td>
</tr>
<tr>
<td>Nifty Midcap 50 Futures &amp; Options</td>
<td>October 5, 2007</td>
</tr>
<tr>
<td>Mini Nifty Futures &amp; Options on S&amp;P CNX Nifty</td>
<td>January 1, 2008</td>
</tr>
<tr>
<td>Long term Options on S&amp;P CNX Nifty</td>
<td>March 3, 2008</td>
</tr>
<tr>
<td>S&amp;P CNX Defty Futures and Options</td>
<td>December 10, 2008</td>
</tr>
</tbody>
</table>

Source: www.nseindia.com

As per Indian Securities Market Review (ISMR) 2009, the total number of contract traded increased by 54.68% to 66 crore contracts during 2008-09. Out of the total contracts traded, 33.71% of the contracts were traded on Stock futures followed by index options on which 32.26% of the contracts were traded. Number of contracts traded on Index futures was 32.01% while 2.02% of the total contracts were traded on stock options are envisaged in Chart 3.2.
Mechanics of Futures Trading:

Trading Mechanism

The derivatives trading system at National Stock Exchange is called National Exchange for Automated Trading (NEAT) - Futures and Options (F&O) trading system. It provides a fully automated screen-based trading for all kind of derivative products available on NSE on a nationwide basis. It practices an anonymous order driven market, which operates on a strict price/time priority. It provides tremendous flexibility to users in terms of kinds of orders that can be placed on the system. Various time and price related conditions like Immediate or Cancel, Limit/Market Price, Stop Loss, etc. can be built into an order. Trading
in derivatives is essentially similar to that of trading of securities in the Clearing Member (CM) segment.

The NEAT-F&O trading system distinctly identifies two groups of users. The trading user more popularly known as trading member has access to functions such as, order entry, order matching and order & trade management. The clearing user uses the trader workstation for the purpose of monitoring the trading members for whom he clears the trades. Additionally, he can enter and set limits on positions, which a trading member can take.

**Contract Specification**

The index futures and index options contracts traded on NSE are based on S&P CNX Nifty Index, CNX IT Index, Bank Nifty, CNX Nifty Junior, CNX 100, Nifty Midcap 50 and S&P CNX Defty while stock futures and options are based on individual securities. Mini futures and options contracts and long term options contracts are also available on S&P CNX Nifty. Stock futures and options were available on 234 securities as of March 2009.

As regard to expiration, at any point of time there are only three contract months available for trading, with 1 month, 2 months and 3 months to expiry. These contracts expire on last Thursday of the expiry month and have a maximum of 3-month expiration cycle. If the last Thursday is a trading holiday, the contracts expire on the previous trading day. A new contract is introduced on
the next trading day following the expiry of the near month contract. All the derivatives contracts are presently cash settled.

Charges:

Brokerage Charges

The maximum brokerage chargeable by a trading member in relation to trades affected in the contracts admitted to dealing on the F&O segment of NSE is fixed at 2.5% of the contract value in case of index futures and stock futures. In case of index options and stock options it is 2.5% of notional value of the contract \([(\text{Strike Price} + \text{Premium}) \times \text{Quantity})\], exclusive of statutory levies.

Transaction Charges

The transaction charges payable to the exchange by the trading member for the trades executed by him on the F&O segment are fixed at the rate of Rs. 2 per lakh of turnover (0.002%) subject to a minimum of Rs. 1, 00,000 per year. However, for the transactions in the options sub-segment the transaction charges is levied on the premium value at the rate of 0.05% (each side) instead of on the strike price as levied earlier. For a trading member participating in trading S&P CNX Nifty at any time during the year till September 30, 2009 there would be no transaction charges. The trading member would be required to make a lump sum
contribution of Rs.500/- for the whole year as a contribution to Investor Protection Fund.

Clearing and Settlement:

NSCCL undertakes clearing and settlement of all trades executed on the F&O Segment of the Exchange. It also acts as legal counterparty to all trades on this segment and guarantees their financial settlement. The Clearing and Settlement process comprises of three main activities, viz., Clearing, Settlement and Risk Management.

Clearing Mechanism

The first step in clearing process is to work out open positions and obligations of clearing members (CMs). The open positions of a CM is arrived at by aggregating the open positions of all the Trading Members (TMs) and all Custodial Participants (CPs) clearing though him, in the contracts which they have traded. The open position of a TM is arrived at by summing up his proprietary open position and clients’ open positions, in the contracts which they have traded. While entering orders on the trading system, TMs identify orders as either proprietary or client. Proprietary positions are calculated on net basis for each contract and that of clients are arrived at by summing together net positions of each individual client. A TM’s open position is the sum of proprietary open position, client open long position and client open short position.
Settlement Mechanism

All futures and options contracts are cash settled i.e. through exchange of cash. The underlying for index futures/options cannot be delivered. The settlement amount for a CM is netted across all their TMs/clients, across various settlements. For the purpose of settlement, all CMs are required to open a separate account with National Securities Clearing Corporation Limited (NSCCL) designated clearing banks for F&O segment.

Settlement of Futures Contracts on Index or Individual Securities

Futures contracts have two types of settlements, the Mark-to-Market (MTM) settlement which happens on a continuous basis at the end of each day, and the final settlement which happens on the last trading day of the futures contract.

1. MTM Settlement for Futures: The positions in futures contracts for each member are marked-to-market to the daily settlement price of the relevant futures contract at the end of each day. The CMs who have suffered a loss are required to pay the mark-to-market (MTM) loss amount in cash which is in turn passed on to the CMs who have made a MTM profit. This is known as daily mark-to-market settlement. CMs are responsible to collect and settle the daily MTM profits/losses resulted by the TMs and their clients clearing and settling through them. Similarly, TMs are responsible
to collect/pay losses/profits from/to their clients by the next day. The pay-in and pay-out of the mark-to-market settlement are effected on the day following the trade day (T+1). After completion of daily settlement computation, all the open positions are reset to the daily settlement price. Such positions become the open positions for the next day.

2. **Final Settlement for Futures**: On the expiry day of the futures contracts, after the close of trading hours, NSCCL marks all positions of a CM to the final settlement price and the resulting profit or loss is settled in cash. Final settlement of profit or loss amount is debited or credited to the relevant CM’s clearing bank account on the day following expiry day of the contract.

3. **Settlement Prices for Futures**: Daily settlement price on a trading day is the closing price of the respective futures contracts on such day. The closing price for a futures contract is currently calculated as the last half an hour weighted average price of the contract in the F&O Segment of NSE. Final settlement price is the closing price of the relevant underlying index/security in the Capital Market segment of NSE, on the last trading day of the Contract.
Risk Management System

NSCCL has developed a comprehensive risk containment mechanism for the F&O segment. The salient features of risk containment measures on the F&O segment are:

1. The financial soundness of the members is the key to risk management. Therefore, the requirements for membership in terms of capital adequacy (Net Worth, Security Deposits) are quite stringent.

2. NSCCL charges an upfront initial margin for all the open positions of a Clearing Member (CM). It specifies the initial margin requirements for each futures/options contract on a daily basis. It follows VaR-based margin computed through SPAN (Standard Portfolio Analysis of Risk). The CM in turn collects the initial margin from the trading members (TMs) and their respective clients.

3. The open positions of the members are marked to market based on contract settlement price for each contract at the end of the day. The difference is settled in cash on a T+1 basis.

4. NSCCL’s on-line position monitoring system monitors a CM’s open position on a real-time basis. Limits are set for each CM based on his effective deposits. The on-line position monitoring system generates alert
messages whenever a CM reaches 70 %, 80 %, 90 % and a disablement message at 100 % of the limit. NSCCL monitors the CMs for Initial Margin violation, Exposure margin violation, while TMs are monitored for Initial Margin violation and position limit violation.

5. CMs are provided a trading terminal for the purpose of monitoring the open positions of all the TMs clearing and settling through him. A CM may set limits for a TM clearing and settling through him. NSCCL assists the CM to monitor the intra-day limits set up by a CM and whenever a TM exceeds the limits, it stops that particular TM from further trading.

6. A member is alerted of his position to enable him to adjust his exposure or bring in additional capital. Margin violations result in disablement of trading facility for all TMs of a CM in case of a violation by the CM.

7. A separate Settlement Guarantee Fund for this segment has been created out of deposits of members.

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

Future markets are of critical importance for any financial markets in particular and global market in general. Instability of interest rates, currency values, and stock index prices represent great headaches for financial planners and forecasters. Futures trading serves as a tool that helps minimize the risk of this market disturbance. Financial managers use futures as risk management tools, which are generally successful in significantly reducing the potential for drastic losses in cash positions. In addition, the degree of leverage provided by futures is not available with any other financial instruments, which underlines their singular importance. With futures, speculators are able to creatively develop portfolios for which the level of risk is minimized Robert T. Daigler (1993).

The central purpose of futures trading is to support healthy competition, capital formation, and new product development. By reducing barriers to competition, futures help to safeguard and improve the general competitiveness of the economy. Futures exchanges are institutions that represent great equality of opportunity through access to improved forms of information flow which characterizes highly efficient markets. Futures trading enhance investment levels and savings flow. Finally, by creating a wide collection of new saving instruments, futures markets encourage the mobilization of savings and provide a rich variety of risk repackaging services, increasing the flow of funds between savers and investors, and simulating the growth of financial inter-mediation
services Powers & Castelino (1991). Nevertheless, the central economic functions performed by futures are still in the fields of competitive price discovery and the hedging of price risks.

Futures markets provide information about the prices of underlying markets and serve as an accurate reflection of market expectations. The role of price discovery has been assigned to futures markets. Futures prices are established through open and competitive trading on the floor of the exchange. Prices reflect what is estimated to be the underlying supply and demand of an asset at some specific future date. These prices are public or global information. This process makes prices visible and available to everyone and establishes equilibrium between current and anticipated cash prices.

Another important function of futures markets is the shifting of risk through hedging. Futures markets separate price risk from other business risks and allow for transferring the price risk from traders who wish to transfer it to speculators who are willing to assume it. Thus, futures help traders to reduce or control risk exposure, the results of adverse price fluctuations Edwards & Cindy W. Ma (1992). There have been some important criticisms; however, lodged against futures markets. The critics claim that futures markets don’t provide sufficient benefits to the economy and society at large. Some critics argue that futures cause many economic problems such as higher interest rates, greater volatility of prices and rates, scarcity of resources; some go so far as to paint that
the futures market are the high-tech form of legalized gambling-moral suspicion
of dishonest gain Siems (1997). These criticisms may be based on pervasive
perceptions or misperceptions of the role of speculators in futures markets. There
is a widespread perception that futures markets are accurately characterized as
entailing high leverage and great risk Edwards & Cindy W. Ma (1992). Despite
these criticisms, however, the contribution of futures markets to the maintenance
of a smoothly operating financial economy is undeniable.

It is often claimed that futures increase price volatility, leading to higher
risk premiums and less efficient pricing. In one study of the volatility of futures
prices, cash prices, and the magnitude of speculation was measured in sixteen
futures exchanges; it was claimed that increased speculation increased premium
risks in the futures market by increasing price volatility. The results of this study
are at odds with the widespread assumption that speculation reduces the size of
the risk premium. As mentioned above, another very frequently cited criticism of
the futures market has to do with the charge of gambling. Unlike gambling,
however, the risks from futures are not artificially created; rather, they arise
naturally from the price fluctuations of the underlying spot market. Hence,
futures markets do not create new risks; they simply let the hedger shift the risk
of price changes to a person who is willing to assume them. Another important
difference between gambling and futures markets are the way in which legal
regulations and governmental regulatory agencies oversee futures markets to prevent unfair practices or manipulations Robert T. Daigler (1993).

In short, there are many advantages of futures markets to the economy and traders in particular. Futures increase market efficiency by providing information to decision-makers and planners. Commissions-bid-ask spreads and short-sell costs are less than they are on the cash market, so hedgers are able to hedge their position at a lower cost. There are also built in safeguards against credit risks as a result of clearing associations’ guarantees. Finally, it is easy to enter this market became of relatively low capital requirements, increasing access to accommodate smaller players.

**Fundamental Factors Affecting Stock Indexes Futures Markets**

There are several factors that influence the development of stock market indexes. The relative importance of individual factors is likely to vary over time in significant ways. Over a long term, improvements in corporate earnings drive the secular trend of the stock market. This secular trend is based on earnings. The computation of the net present value of the future stream of earning depends on three variables: earnings, interest rates, and time. The effects of changes in the estimates of futures interest rates and earnings are compounded over time. This is a major reason for stock price volatility. The factors that effect stock market indexes are generally the same factors that influence earnings. These factors
include interest rates, monetary policy, exchange rates, business cycles, inflation, and the state of the economy in general Smith Courtney (1992).

Trends in earnings over the long term are basic determinants of a market’s future direction. Changes in the growth rates of earnings will have a significant impact on the direction of the stock market. The prices of the entire stock market will be determined by earnings over the long term. People tend to buy stocks when the stock market is undervalued and sell stocks when the market is overvalued. Therefore, it is necessary to monitor the extent to which the market is undervalued, overvalued, or accurately priced.

The monetary policies of a nation’s Central Bank exert a powerful influence on capital market. Money generated by a Central Bank can ultimately be spent in many areas of the economy, including the stock market. Increased liquidity in an economy means that there is more money that can be invested in the stock market. Moreover, a Central Bank exerts a powerful influence on short-term interest rates too by controlling bank reserves and setting discount rates and interest rates which have an enormous impact on stock markets. Long-term interest rates also have a powerful impact on stock markets especially so far as bonds represent one of the major competitors of the stock market for attracting investments. Public sector borrowing requirements are often financed by the issue of gilt edged stock. If the government needs to borrow large amounts of
money, interest rates are likely to increase, which is undesirable for the stock market John Millers (1992).

In addition, the general state of the economy also has a profound influence on the stock market. Expectations of future economic strength can cause people to think that future earnings will rise as well, so that stock prices will go up. It is generally believed that a strong economy corresponds with increasing stock prices. One especially important indicator of economic growth is the Gross Domestic Product (GDP). The GDP represents the total output of goods and services of the economy as a whole. When the GDP is high, share prices reflect capital growth. If GDP figures show stable growth, share prices generally rise or remain stable. When GDP shows a decline in the rate of growth, prices start to fall and people tend to sell their equities. Another fundamental indicator of the state of a stock market is consumer spending, which is a more rapid signal of change than the GDP; it can be classified according to sectors which indicate which sections of the economy are working well.

Exchange rates are another important factor that influences stock market prices. A strong national currency is especially important for companies that import goods and raw materials. The equities of the companies involved reflect the potential change in earnings; the profits of importers go down as the currency weakens. A weakening currency means higher interest rates and, therefore, a bad situation for the equity market. Inflation has a major impact on stock market
indices. Inflation has an impact on the value of financial assets, as well such as stocks and bonds, and depreciates the earnings of the company. As the rate of inflation rises, people tend to purchase more consumer goods as they are concerned that prices will continue to increase. This attitude tends to shift the direction of financial resources away from investment and towards consumption. Finally, psychological factors also have a great influence on the equity market. Psychological trends and the depth of the sentiment involved can have a powerful effect on the stock market.

**Conclusion**

The study concludes that the derivatives market and its instruments are very dynamic and have quickly emerged as the most important segment of financial market. Futures contracts are a type of forward contract traded on organized exchanges featuring highly standardized contracts terms. The market has a complex operational environment with brokers, exchanges, and industry organization and a federal agency all playing their respective roles. Finally, the regulatory bodies govern the activities of a variety of like arbitragers, speculators etc. and thus facilitate future market effectively fulfill its economic functions of price efficiency and risk allocation. The imperatives for a well-functioning market are efficiency, price discovery and safety. Overall, it is clearly desirable to preserve the environment that has contributed to the impressive development of the derivatives market which performs various important economic functions.
However, it is imperative for policy makers to put efforts such that safety, transparency and operational efficiency could be enhanced along proven and successful models helping the global derivatives market to become even safer and more efficient.
References:


