A STUDY ON EFFECTIVENESS OF EQUITY DERIVATIVES IN CASH MARKET SEGMENT IN INDIA

S.Dinesh,

Assistant Professor,
Department of Management Studies,
Sri Jayaram Engineering College,
Cuddaore. India.

R.Arivazhagan,

Assistant Professor,
School of Management,
SRM University, Kattankulathur,
Chennai India

ABSTRACT

One of the most significant events in the securities markets has been the development and expansion of financial derivatives. Derivative products like futures and options on Indian stock markets have become important instruments of price discovery, portfolio diversification and risk hedging in recent times. The empirical analysis points towards a decline in spot market volatility after the introduction of index futures due to increased impact of recent news and reduced effect of uncertainty originating from the old news. However, further investigation also reveals that the market wide volatility has fallen during the period under consideration. whether the introduction of index futures *per se* has been instrumental in reducing the spot market volatility or the volatility has fallen in line with general fall in market wide volatility.

Keywords: Pivote Point, Interest, Margin, Automated terminal, Derivatives

Introduction:

The origin of derivatives can be traced back to the need of farmers to protect themselves against fluctuations in the price of their crop. From the time it was sown to the time it was ready for harvest, farmers would face price uncertainty. Through the use of simple derivative products, it was possible for the farmer to partially or fully transfer price risks by locking-in asset prices. These were simple contracts developed to meet the needs of farmers and were basically a means of reducing risk.

In 1848, the Chicago Board of Trade, or CBOT, was established to bring farmers and merchants together. A group of traders got together and created the 'to-arrive' contract that permitted farmers to lock in to price upfront and deliver the grain later.

1. Derivatives Defined:

A derivative is a product whose value is derived from the value of one or more underlying variables or assets in a contractual manner. The underlying asset can be equity, forex, commodity

2. Nse's Derivatives Market:

The derivatives trading on the NSE commenced with S&P CNX Nifty Index
futures on June 12, 2000. The trading in index options commenced on June 4, 2001 and trading in options on individual securities commenced on July 2, 2001. Single stock futures were launched on November 9, 2001. Today, both in terms of volume and turnover, NSE is the largest derivatives exchange in India. Currently, the derivatives contracts have a maximum of 3-month expiration cycles. Three contracts are available for trading, with 1 month, 2 months and 3 months expiry. A new contract is introduced on the next trading day following the expiry of the near month contract.

2.1 The S & P Cnx Nifty:

In this paper aims to discuss how the S&P CNX Nifty addresses some of these issues. **Diversification:** As mentioned earlier, a stock market index should be well diversified, thus ensuring that hedgers or speculators are not vulnerable to individual-company or industry risk. **Liquidity of the index:** The index should be easy to trade on the cash market. This is partly related to the choice of stocks in the index. High liquidity of index components implies that the information in the index is less noisy.

2.2 Index Derivatives:

Index derivatives are derivative contracts which have the index as the underlying. The most popular index derivatives contracts the world over are index futures and index options. NSE's market index, the S&P CNX Nifty was scientifically designed to enable the launch of index-based products like index derivatives and index funds. The first derivative contract to be traded on NSE's market was the index futures contract with the Nifty as the underlying. This was followed by Nifty options, derivative contracts on sectoral indexes like CNX IT and BANK Nifty contracts. Trading on index derivatives were further introduced on CNX Nifty Junior, CNX 100, Nifty Midcap 50 and Mini Nifty 50.

2.3 Index Funds:

An index fund is a fund that tries to replicate the index returns. It does so by investing in index stocks in the proportions in which these stocks exist in the index. The goal of the index fund is to achieve the same performance as the index it tracks.

2.4 About India VIX

India VIX is a volatility index based on the index option prices of NIFTY. India VIX is computed using the best bid and ask quotes of the out-of-the-money near and mid-month NIFTY option contracts which are traded on the F&O segment of NSE. India VIX indicates the investor's perception of the market's volatility in the near term. The index depicts the expected market volatility over the next 30 calendar days. i.e. higher the India VIX values, higher the expected volatility and vice-versa.

Statement of The Problem:

In recent year investment made in derivative market growing radically. Why because of the derivative market is highly volatile in nature ,when compared to the cash market. Initially the derivative market started it as a tool for hedging. But finally, it is used for skimming the market opportunities. Especially to the settlement cycle of the derivative market, influence are huge in cash market.

Objective of The Study:

The main objective of this study are:
1) To assess the impact of derivative market effect in cash market segment
2) To evaluate different strike price movement of the contract
3) To Predict the cash market index and underlying index

Scope of The Study:

In this research study used to know the impact of equity derivatives in cash market movement. This research study will be used to measure the impact of cash market and provide information to the investors for making decision related to buy/hold/sell. So, it will used to the investors to penetrate the market returns.

Methodology of the Study:

Methodology is the systematic approach to solve the research problem. In this research study researcher deployed interest rate calculation, Pivote point analysis, Rate of return. And some of the important will be used in the context of derivatives are Greeks.

Hypothesis of the Study:

In this research study price movement of equity futures and equity options were analysed. The reaction of cash market and derivatives compared by the turnover, index points and strike prices and interest rates.

Pivot Points represents a point at which a major price movement is expected to occur. Pivot points can be used in two ways. The first way is for determining overall market trend: if the pivot point price is broken in an upward movement, then the market is bullish, and vice versa. However, that pivot points are short-term trend indicators, useful for only one day until they need to be recalculated. The second method is to use pivot point price levels to enter and exit the markets.

$PP = (H+L+C)/3$

Then, $R_1 = (2 * PP) - L$, $R_2 = PP + (H - L)$, $R_3 = H + 2 * (PP - L)$, $S_1 = (2 * PP) - H$, $S_2 = PP - (H - L)$. $S_3 = L - 2 * (H - PP)$

If the price is above the PP, then one would only be long. If the price is below the PP, then one would only be short. If there is support close to the PP, one will first wait for the price to pass through both the PP and the support before entering short. If there is resistance close to the PP, one will first wait for the price to move through both the PP and the resistance before entering long.

4.3 Data collection

Primary data were collected with the officials from Religare securities, Kotak securities and India Infoline in Cuddalore district through oral communication.

Secondary data were collected from the National Stock Exchange website, journals and news papers.

4.4 Tools used

        a) Pivote point analysis
        b)Average price
        c) Rate of return

Review of Literature:

The effect of introduction of derivatives on the volatility of the spot markets and in turn, its role in stabilising or destabilising the cash markets has remained an active topic of analytic and empirical interest. Questions pertaining to the impact of derivative trading on cash market volatility have been empirically addressed in two ways: by comparing cash market volatilities during the pre-and post-futures/ options trading eras and second, by evaluating the impact of options and futures trading (generally proxied by trading volume) on the behaviour of cash markets. The literature is, however, inconclusive on whether introduction of derivative products lead to an increase or decrease in the spot market volatility.

One school of thought argues that the introduction of futures trading increases the spot market volatility and thereby, destabilises the market (Cox 1976; Figlewski 1981; Stein, 1987). Others argue that the introduction of futures actually reduces the spot market volatility and thereby, stabilises the market (Powers, 1970; Schwarz and Laatsch, 1991 *etc*.). The rationale and findings of these two alternative schools are discussed in detail in this section. The advocates of the first school perceive derivatives market as a market for speculators. Traders with very little or no cash or shares can participate in the derivatives market, which is characterised by high risk. Thus, it is argued that the participation of speculative traders in systems, which allow high degrees of leverage, lowers the quality of information in the market. These uninformed traders could play a destabilising role in cash markets (Chatrath, Ramchander and Song, 1995). However, according to another viewpoint, speculation could also be viewed as a process, which evens out price fluctuations.

The debate about speculators and the impact of futures on spot price volatility suggests that increased volatility is undesirable. This is, however, misleading as it fails to recognise the link between the information and the volatility (Antoniou and Holmes, 1995). Prices depend on the information currently available in the market. Futures trading can alter the available information for two reasons: first, futures trading attract additional traders in the market; second, as transaction costs in the futures market are lower than those in the spot market, new information may be transmitted to the futures market more quickly. Thus, future markets provide an additional route by which information can be transmitted to the spot markets and therefore, increased spot market volatility may simply be a consequence of the more frequent arrival and more rapid processing of information.

On the other hand, arguments suggesting that the future and option markets have become important mediums of price discovery in cash markets are equally strong. Several authors have argued that trading in these products improve the overall market depth, enhance
market efficiency, increase market liquidity, reduce informational asymmetries and compress cash market volatility (Kumar, Sarin and Shastri, 1995; Antoniou, Holmes and Priestley, 1998).

A few studies have been undertaken to evaluate the effect of introduction of derivative products on volatility of Indian spot markets. These studies have mainly concentrated on the NSE, and the evidence is inconclusive in this regard. While Thenmozhi (2002) showed that the inception of futures trading has reduced the volatility of spot index returns due to increased information flow. According to Shenbagaraman (2003), the introduction of derivative products did not have any significant impact on market volatility in India. Raju and Karande (2003) also reported a decline in volatility of S&P CNX Nifty after the introduction of index futures. In the present study, following Bologna and Cavallo (2002) a GARCH model has been used to empirically evaluate the effects on volatility of the Indian spot market and to see that what extent the change (if any) could be attributed to the of introduction of index futures. We use BSE-200 and Nifty Junior as surrogate indices to
capture and study the market wide factors contributing to the changes in spot market volatility. This gives a better idea as to: whether the introduction of index futures in itself caused a decline in the volatility of spot market or the overall market wide volatility has decreased, and thus, causing a decrease in volatility of indices on which derivative products have been introduced. Finally, the studies in the Indian context have evaluated the trends in NSE and not on the Stock Exchange, Mumbai (BSE) for the reason that the turnover in NSE
captures an overwhelmingly large part of the derivatives market. However, since the key issue addressed here is the volatility of the cash market as affected or unaffected by the derivative market, the importance of evaluating the trends in BSE as well was felt and the
empirical analysis was carried out likewise.

Poshakwale, Sunil (2002) examined the random walk hypothesis in the emerging Indian stock market by testing for the nonlinear dependence using a large disaggregated daily data from the Indian stock market. The sample used was 38 actively traded stocks in the BSE National Index. He found that the daily returns from the Indian market do not conform to a random walk. Daily returns from most individual stocks and the equally weighted portfolio exhibit significant non-linear dependence. This is largely consistent with previous research that has shown evidence of non-linear dependence in returns from the stock market indexes and individual stocks in the US and the UK. Noor, Azuddin Yakob, Diana Beal and Delpachitra, Sarath (2006) studied the stock market seasonality in terms of day-of-the-week, month-of-theyear, monthly and holiday effects in ten Asian stock markets, namely, Australia, China, Hong Kong, Japan, India, Indonesia, Malaysia, Singapore, South Korea and Taiwan. He concluded that the existence of seasonality in stock markets and also suggested that this is a global phenomenon.

Analysis and Discussions:

Comparison of NIFTY Futures OI vs Settle price:

Date	Settle Price	Underlying price	Volume	Open Int	Change in OI	% of changes in OI
1-Nov-10	6152.05	6117.55	363229	25194400	844850	3.35
2-Nov-10	6155.95	6119	309660	25036600	-157800	-0.63
3-Nov-10	6191.25	6160.5	303851	24855700	-180900	-0.73
4-Nov-10	6301.55	6281.8	413326	25125950	270250	1.08
5-Nov-10	6325.05	6312.45	82527	25426400	300450	1.18
8-Nov-10	6300.5	6273.2	261439	25340900	-85500	-0.34
9-Nov-10	6333.45	6301.55	411820	25060950	-279950	-1.12
10-Nov-10	6308.3	6275.7	271348	25809050	748100	2.90

11-Nov-10	6232.55	6194.25	418064	24428100	-1380950	-5.65
12-Nov-10	6091.55	6071.65	766633	24381650	-46450	-0.19
15-Nov-10	6140.25	6121.6	453552	24944200	562550	2.26

Source: Calculated value
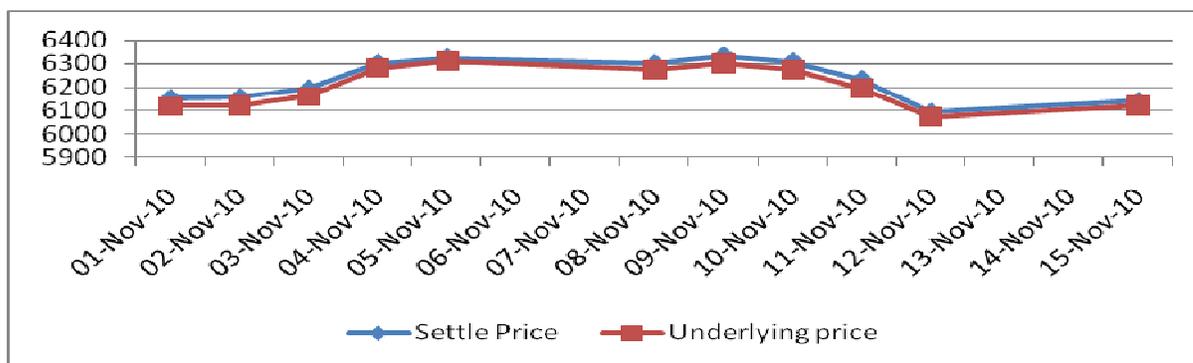
From the above table and chart clearly shows that the movement of daily price in future market is in and around the underlying price of the particular stock index. Open interest for future market highly volatile in negative aspect in 11th Nov. It clearly depicts that the existing position also been sold due to the negative aspect in the market.

6.2 Day to day volatile movement of S&P CNX Nifty:

Date	Open	High	Low	Close
01-Nov-10	6092.3	6132.4	6084.75	6117.55
02-Nov-10	6127.55	6138.1	6094.4	6119
03-Nov-10	6150.6	6182.5	6146.8	6160.5
04-Nov-10	6209.6	6290.15	6199.35	6281.8
05-Nov-10	6321.85	6338.5	6303.1	6312.45
08-Nov-10	6335.25	6335.9	6265.35	6273.2
09-Nov-10	6281	6310.9	6243.55	6301.55
10-Nov-10	6303.2	6307.65	6269.25	6275.7
11-Nov-10	6286.35	6296.55	6179.5	6194.25
12-Nov-10	6182.3	6202.5	6056.75	6071.65
15-Nov-10	6079.9	6128.75	6039.4	6121.6

Source: Calculated value
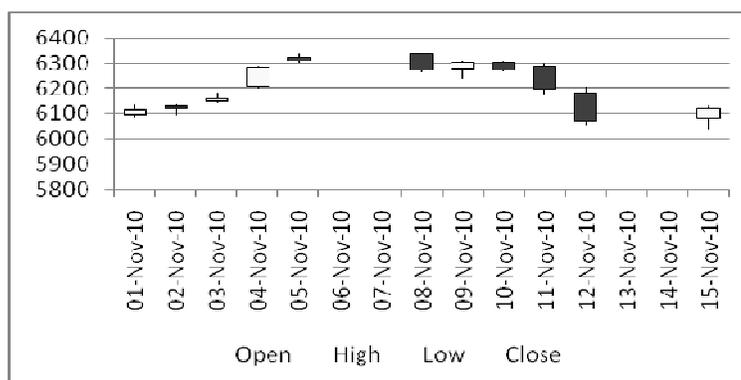
From the above table and chart clearly depicts that 12th Nov is the day for high negative volatile and 4th Nov is highly positive volatile in the market. Chart clearly shows the movement of the index for each and every day.

6.3 Comparison of FUTIDX and S&P CNX NIFTY price
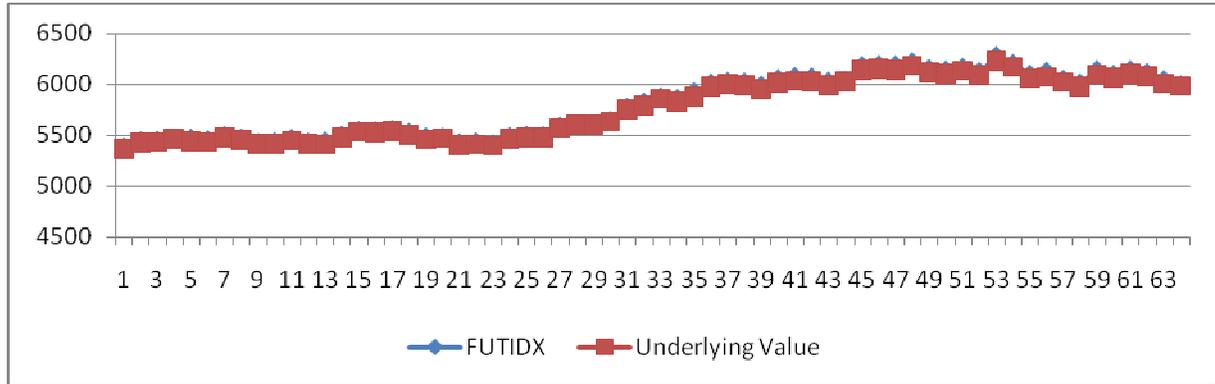
From the above chart clearly shows the movement of future index price (FUTIDX) and underlying asset price(S&P CNX NIFTY)values for the 3 months contract starts from 30th July 2010 to 28th Oct 2010. Most of the time the movement of FUTIDX accompanied with the movement of the underlying asset price.

6.4 Comparison of turnover of the index and the Nifty future index
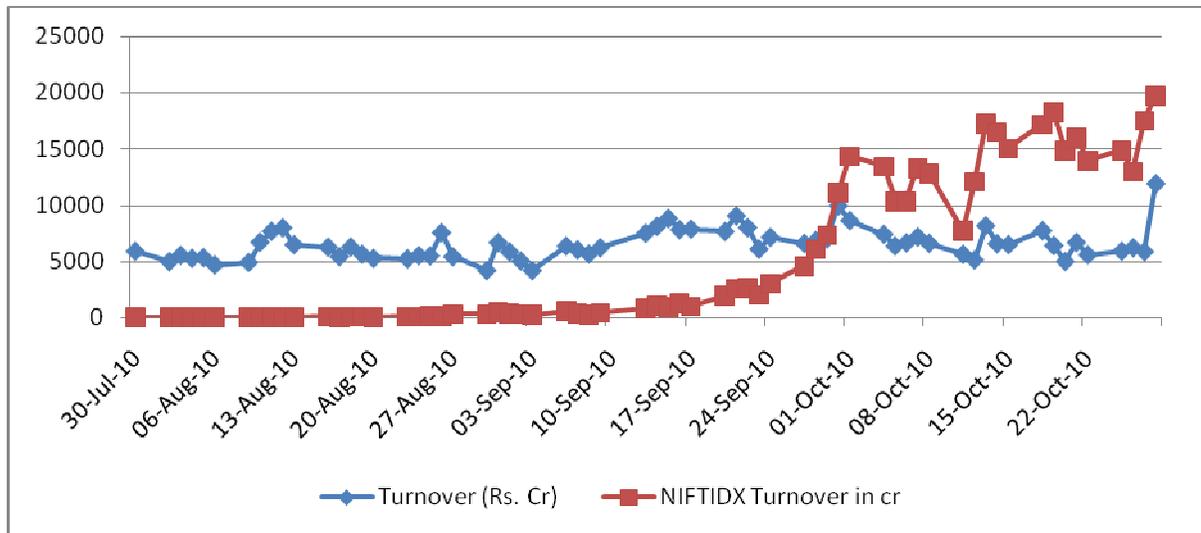
From the above chart clearly identified that volume of trade made by cash market and future market for 3 months contract . Movement of future market is slow in starting time of trade. But, the ending or the settlement time the market volatile on the movement of future market.

6.5 Spread of NIFIDX
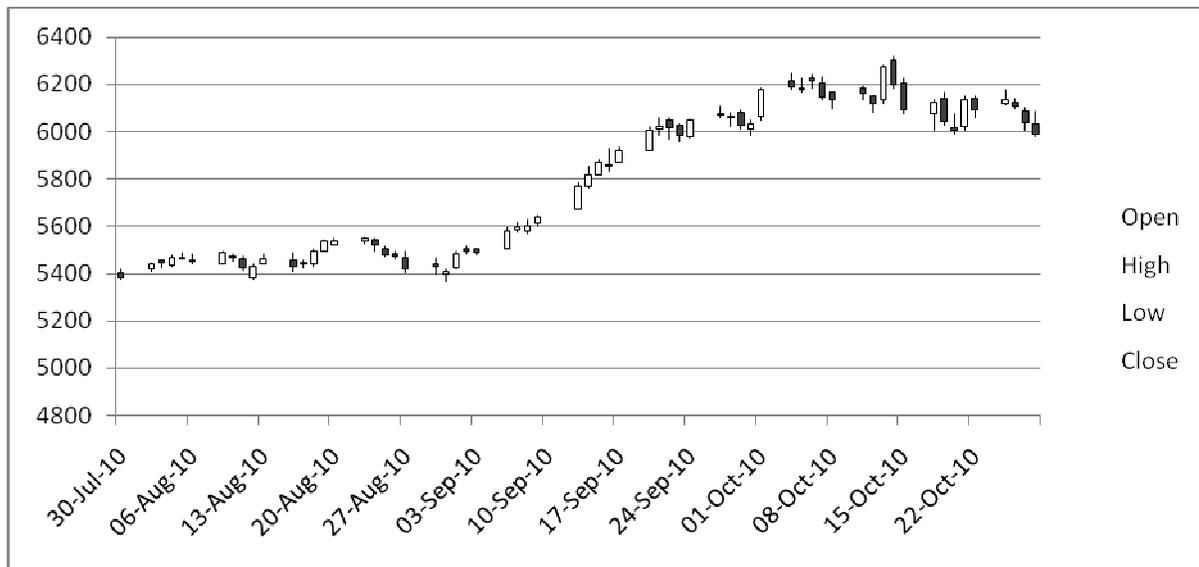
From the above chart clearly depicts that the day for high negative volatile and the highly positive volatile in the market. Chart clearly shows the movement of the future index for each and every day.

6.6 Option CE closing price for different strike prices
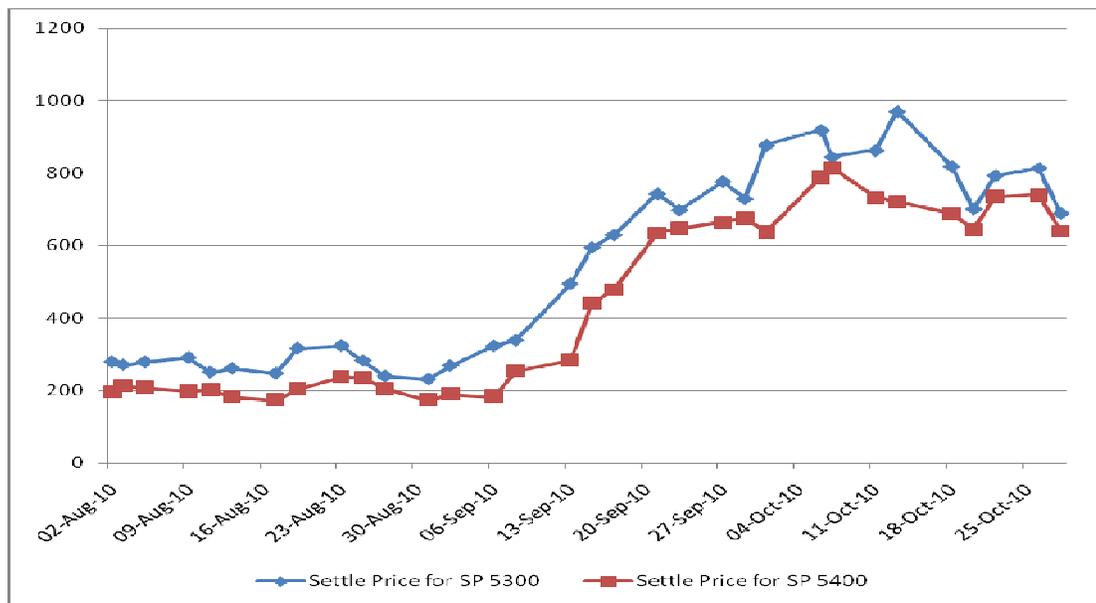
From the above chart clearly depicts that the market in between 5300 to 5400 points. So, that the strike price also been same for that two prices. There is no huge difference between the settlement time. But in the beginning of the 3 month contract the strike price volatile for the two price movements are almost same. But the differences are there in prices in the first one and half months. Expectation of the buyer in the market is high, before the settlement period. After the market not reaching any good information so ,the price is down at the settlement period.

6.7 Option PE closing price for different strike prices
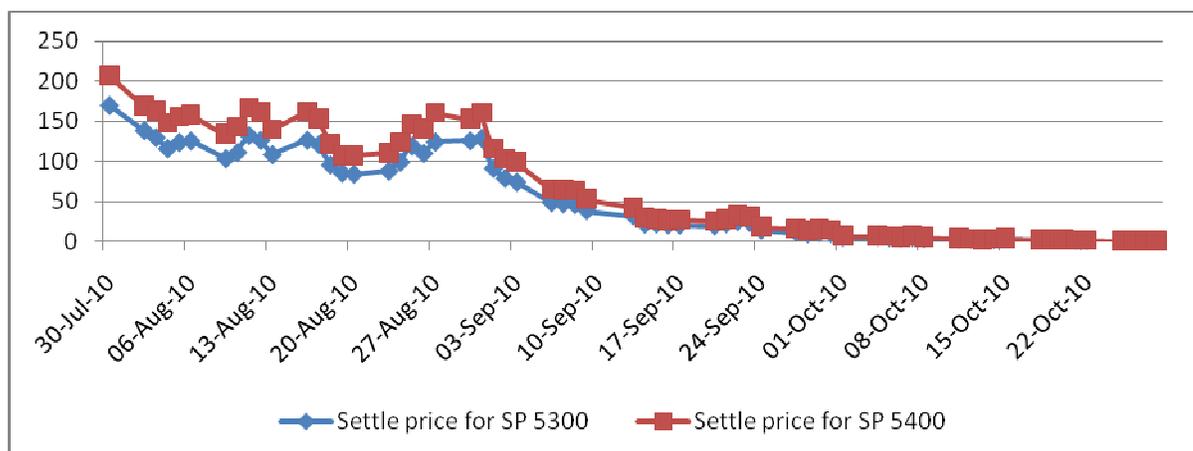
From the above chart clearly depicts that the market in between 5300 to 5400 points. So, that the strike price also been same for that two prices. There is no huge difference between the settlement time. But in the beginning of the 3 month contract the strike price volatile for the two price movements are almost same. But the differences are there in prices in the first one and half months.

SYMBAL	SUPPORT 3	SUPPORT 2	SUPPORT 1	PIVOTE POINT	RESISTANCE 1	RESISTANCE 2	RESISTANCE 3
S&P CNX NIFTY (MONTHLY)	(4927.05) 4927	(5165.05) 5165	(5597.50) 5598	(5835.50) 5836	(6267.95) 6268	(6505.95) 6506	(6938.40) 6938
S&P CNX NIFTY (WEEKLY)	(5861.30) 5861	(5912.45) 5912	(5971.20) 5971	(6022.35) 6022	(6081.10) 6081	(6132.25) 6132	(6191.00) 6191
FUTIDX_NIFTY (MONTHLY)	(4909.67) 4910	(5163.83) 5164	(5598.67) 5599	(5852.83) 5853	(6287.67) 6288	(6541.83) 6542	(6976.67) 6977
FUTIDX_NIFTY (WEEKLY)	(5855.00) 5855	(5920.10) 5920	(5976.80) 5977	(6041.90) 6042	(6098.60) 6099	(6163.70) 6164	(6220.40) 6220
OPTIDX_NIFTY_C E (STRIKE PRICE 5300) (MONTHLY)	(-209.43) 0	(10.33) 10.35	(369.77) 369.75	(589.53) 589.55	(948.97) 949	(1168.73) 1168.75	(1528.17) 1528.15
OPTIDX_NIFTY_C E (STRIKE PRICE 5300) (WEEKLY)	(552.07) 552.05	(619.53) 619.55	(674.37) 674.35	(741.83) 741.85	(796.67) 796.65	(864.13) 864.15	(918.97) 919
OPTIDX_NIFTY_C E (STRIKE PRICE 5400) (MONTHLY)	(-263.90) 0	(-51.50) 0	(293.20) 293.20	(505.60) 505.60	(850.30) 850.30	(1062.70) 1062.70	(1407.40) 1407.40
OPTIDX_NIFTY_C E (STRIKE PRICE 5400) (WEEKLY)	(451.27) 451.25	(520.63) 520.65	(579.27) 579.30	(648.63) 648.65	(707.27) 707.25	(776.63) 776.65	(835.27) 835.30
OPTIDX_NIFTY_P E (STRIKE PRICE 5300) (MONTHLY)	(-141.03) 0	(-67.02) 0	(-28.53) 0	(45.48) 45.50	(83.97) 84	(157.98) 158	(196.47) 196.45
OPTIDX_NIFTY_P E (STRIKE PRICE 5300) (WEEKLY)	(1.23) 1.25	(4.12) 4.15	(7.03) 7.05	(9.92) 9.95	(12.83) 12.85	(15.72) 15.70	(18.63) 18.65

6.8 Prediction of future value for underlying and derivative instruments
Source: Calculated value

From the above table shows the pivote analysis for monthly and weekly for NIFTY, Future Nifty, Call option (SP 5300) Nifty, Call option (SP 5400) Nifty, Put option (SP 5300) Nifty, Put option (SP 5400) Nifty. period has been selected for the derivatives from 30th July 2010 to 28th Oct 2010 (Expiry date:28/10/2010). From the above study consist 64 working days, out of which researcher has to select September month for pivot monthly calculation. Which consist of 21 working days. Weekly pivote calculated for 4 working days.

Nifty (monthly) pivote suggest that buy above and sell below 5836 points and for Nifty(Weekly) pivote suggest that buy above and sell below 6022 points. Nifty future(Monthly) pivote suggest that buy above and sell below 5853 points and weekly pivote suggest that buy above and sell below 6042 points. Call option (SP 5300) monthly finds that buy above and sell below Rs.589.55 and for call option weekly finds that buy above and sell below of Rs.741.85. Call option (SP 5400) monthly suggest that buy above and sell below Rs.505.60 and for call option weekly suggest that buy above and sell below of Rs.648.65. Put option (SP 5300) monthly finds that buy above and sell below Rs.45.5 and for put option weekly finds that buy above and sell below of Rs.9.95. Put option (SP 5400) monthly suggest that buy above and sell below Rs.58.85 and for put option weekly suggest that buy above and sell below of Rs.14.

Findings and Suggestion:

➢ Open interest for future market highly volatile in negative aspect in 11th Nov. It clearly depicts that the existing position also been sold due to the negative aspect in the market.
➢ 12th Nov is the day for high negative volatile and 4th Nov is highly positive volatile in the market
➢ Most of the time the movement of FUTIDX accompanied with the movement of the underlying asset price.
➢ Movement of future market is slow in starting time of trade. But, the ending or the settlement time the market volatile on the movement of future market.
➢ Beginning of the 3 month contract the strike price volatile for the two price movements are almost same. But the differences are there in prices in the first one and half months.
➢ The market in between 5300 to 5400 points. So, that the strike price also been same for that two prices. There is no huge difference between the settlement time. But in the beginning of the 3 month contract the strike price volatile for the two price movements are almost same.
➢ Nifty (monthly) pivote suggest that buy above and sell below 5836 points
➢ Nifty future(Monthly) pivote suggest that buy above and sell below 5853 points
➢ Call option (SP 5300) monthly finds that buy above and sell below Rs.589.55
➢ Call option (SP 5400) monthly suggest that buy above and sell below Rs.505.60
➢ Put option (SP 5300) monthly finds that buy above and sell below Rs.45.5
➢ Put option (SP 5400) monthly suggest that buy above and sell below Rs.58.85

The major suggestion of this research study are:

➢ Use technical tools to predict the market.
➢ Pivote point calculations are used to know the resistant and support level for technical analysis
➢ Nifty future(Monthly) pivote suggest that buy above and sell below 5853 points
➢ Call option (SP 5300) monthly finds that buy above and sell below Rs.589.55
➢ Put option (SP 5400) monthly suggest that buy above and sell below Rs.58.85

Conclusion:

This study has empirically provide the information about the equity derivatives in Indian stock market. The result of the study showed the fact that the strike price reacted to the index price. The analysis

presented in this study has implications to know the terminology and technical analysis of the market efficiency.

From the above findings clearly states that the returns in strike prices are same movement in the settlement period. Pivote points used to know the level at which investor going to take a decision for buying and selling the instruments. This research study furtherly provide better scope for doing research study in the areas of derivative market effects.

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