Effect of Index Derivative Trading on Indian Stock Market: A Comparison of Pre and post Introduction period

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Abstract: **Financial Equity derivatives trading started on June 9, 2000 with beginning of stock index futures by Bombay Stock Exchange (BSE) National Stock Exchange (NSE) as well commenced zits trading on 12 June, 2000 based on S&P Nifty. Consequently, new products like stock futures on individual securities, index options and options on being securities were introduced. This study tries to examine the impact of derivatives trading on the stock market volatility of BSE- 30 Index it also examines the behavior of volatility index to see whether the market wide volatility has declined over the sample period. Advance, surrogate indices like BSE-30 Index pre and post second-hand to assess whether the introduction of derivatives for every se has been instrumental or the volatility has plummeted in line up with general fall in market wide volatility. The results recognized that introduction of pre and post have negligible or no effect on the volatility as evident from Descriptive Statistics model. When replacement index taken into consideration BSE-30 Index showed decline in volatility at the same time as BSE Sensex exhibited rise in volatility.**

Keywords: **Derivative Trading, 2000 based on S&P Nifty, consideration BSE-30 Index.**

1. INTRODUCTION

Derivatives are financial instruments that are correlated to a remedy financial instruments or share or commodity and skim through which specific financial incident can be traded in own up to right. The justifying of financial derivative derives non-native from the price of an underlying asset, such as an asset or share. Many debt securities, not enough principal is new advanced to be repaid and no funding income accrues (IMF). Derivatives includes futures, forwards, options and swaps, and these can be connected with reference to without exception substitute or traditional securities and loans to create hybrid derivatives instruments. These instruments are second hand for risk management by hedging i.e. appealing reverse aspect in the future exchange. Equity derivatives in India was started as a link of capital market reforms to hedge price risk resulted from larger financial consolidating between nations in the 90' s, These reforms were an unreduced part of financial head reforms recommended by the *Narasimham Committee Report on Financial* Regulations, in September 1992. These reforms were aimed at proper, competitor, intelligibility and efficiency in the Indian financial market. About than one decade of reforms has all in a major conversion and fundamental financial assistance during this time such as shift to electronic trading from floor-based trading, elimination of ' Badla' contract and introduction of ' rolling' settlement gradually to ' T+2' to increase cash market make belive in India. In reserve not only new financial products like derivatives, exchange-traded investment and hedge funds but as well as permission to enter to foreign arrangement like foreign institutional investors (FIIs) be permitted 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. Consideration, 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. Afterwards other products like stock futures on individual securities were introduced in November 2001. This was followed by

acknowledgment of trading in index options based on these two indices and options on individual securities. The volumes in derivatives markets particularly on the Futures and Options segment of the NSE witnessed a humongous collection and now the turnover is much higher than the turnover in the cash markets. Till today, there are only four derivatives instruments attainable in the Indian markets, namely, index futures, index options, stock futures and stock options. One of the important reasons for introducing derivatives trading in India was high volatility of the Indian stock markets. The Indian stock market is one of the most volatile markets in comparison to other developed markets of the world. How the derivatives trading in India is impacting the volatility of the underlying cash market is a question of high significance as high volatility can rob the investors a substantial part of total value of his her portfolio. Against this background, this paper tries to study whether the Indian stock markets show some significant change in the volatility after the introduction of derivatives trading. This paper also tries to examine whether decline or rise in volatility can be attributed to introduction of derivatives alone or due to some other macroeconomic reasons.

2.   REVIEW OF LITERATURE

Heterogeneous researches have been conducted on the way to evaluate the impact of derivatives trading on the underlying stock market mostly related to US and other developed countries markets. Very few researches attempted to be familiar with the impact of introduction of derivatives trading in emerging stock market economies like India. Mutually hypothetical and empirical studies were passed out to assess the impact of listing of futures and options on the cash market. Two hypotheses with reference to the impact of derivatives trading on the spot market are current in the literature. Proponents of 'minimize forces' hypothesis argue that derivatives trading increases stock market volatility as of high degree of leverage, likely occurrence of uneducated traders due to low dealings cost involved to take location in the futures market. The lesser level in order of derivatives traders among respect to cash market traders is likely to increase the asset volatility. *Stein (1987)* in his revolutionary hypothetical model completed that opening a futures market improves risk sharing and as a result reduces price volatility and if the speculators examine a noisy but informative signal, the hedgers respond to the noise in the speculative trades producing an increase in volatility. These unaware traders may possibly destabilize the cash market. Cox (1976), Figlewski (1981) originate consequences behind this hypothesis. On the other hand, the speculators execute the important role in given that cash to the market and rapid processing of information. Derivatives trading can increase the availability of information flow due to low transaction costs than those in the cash market thereby transmitting original information more quickly to the futures market. Thus, derivatives market provides another channel by which information can be transmitted to the cash markets. Everyday arrival and rapid processing of information might lead to improved volatility in the underlying spot market. Antoniou and Holmes (1995) however did not find link between information and volatility. Antoniou *et al*, 1998). As well this, speculative movement may be transferred from the cash market to a more regulated futures market, dampening spot market volatility by reducing amount of noise trading. This also suggests that with the introduction of derivatives trading would be accompanied by a refuse in trading volume of the underlying market. The practical evidence, generally with reference to the U.S economy, suggests that the introduction of derivatives does not strike at the foundations of the underlying market. Bolonga and Cavallo (2002) in a current paper examined the stock market volatility in the post derivative period in the framework of Italian stock exchange.

They in employment Generalized Autoregressive Conditional Heteroscedasticity (GARCH) class of models and to explanation in support of the effect of factors other than derivatives trading formative the volatility in the post derivative period, the GARCH model was computed subsequent to adjusting the share return equation for market factors peroxide by an index on which derivatives products are not available. In the Indian context, near the beginning study by Thenmozhi (2002) reported decline in volatility due to improved flow of information at the same time as Shenbagaraman (2003) did not stumble on significant impact on market volatility in India. Raju and Karnade (2003) as well studied the behaviour of volatility of the S&P CNX Nifty index after the introduction of derivatives trading. Every part of the above studies concerning to S&P Nifty reported a decline in the volatility. Bandivadekar and Ghosh (2003) studied volatility behaviour of both NSE Nifty and BSE Sensex after the introduction of futures trading and documented ' futures effects' in the volatility behavior of NSE Nifty. The current study not only provides further observed evidence in this consider but also contributes to the literature in some aspects. First, all the earlier studies except Bandivadekar and Ghosh (2003) for the most part concentrated on the volatility behavior of S&P CNX Nifty on the opinion that turnover on BSE Futures and Options segment is negligible. This article seeks to observe the behaviour of BSE Sensex after the introduction of derivatives trading in June 2000 since the important point is the volatility of the cash market affected or unaffected by the futures trading. Secondly, this paper makes an attempt to study the behavior of not only those index on which derivatives

products are available like BSE Sensex but also the behaviour of those indices such as BSE-30 to see whether market wide volatility has declined due to other improvements like screen-based electronic trading, rolling settlement of ' T+2' and other institutional developments introduced in the Indian market in recent years. Thirdly, this paper tries to see the impact of introduction of futures trading and option trading simultaneously on the behavior of volatility of the indices. To conclude, this term paper as well makes an try to find whether the reported refuse in the volatility as claimed by positive previous studies is due to introduction of derivatives trading alone.

3. DATA DESCRIPTION

The data for present study are obtained from Bombay Stock Exchange of India (NSE). Daily closing prices of BSE-30 INDEX and twenty four individual stocks are collected for the period 2nd January, 1998 to 31st December, 2012 to investigate the effect of index futures trading on the volatility of the Index. In all 24 individual stocks were selected out of 30 stocks, which formed the basis for introducing derivatives from time to time in the Indian stock market as underlying stocks. These individual stocks include BHEL, CIPLA, DRREDDY, GAIL**,** HDFC, HDFC Banking, HERO MOTORS, HINDALCO, HUL, ICICI BANK**, INFOYS**, ITC, JINDAL,L&T, M&M, ONGC, RELIANCE,SBI, SSLT,GRASIM, HDFC BANK, HCLTECH, ITC, NATIONALU, M&M, RANBAXY, RELIANCE, SUN PHARMA**,** TATAMOTORS, TATAPOWER, TATA STEEL, and WIPRO. However, the study could not cover all individual stocks, because some of stocks were introduced as stocks futures very recently.

4. DESCRIPTIVE STATISTICS

In terms of market volatility, as measured by the standard deviation of daily stock market returns, the highest value of pre period (0.082985) HUL and post period (0.065908) was recorded by SSLT Ltd, with the negative mean returns of pre HUL(-0.00221) and SSLT (0.000475) positive mean returns post period. It indicated that there was inverse relationship between risk and return. The lowest value of standard deviation of HINDALCO (0.02875) and HUL Ltd (0.01899) was recorded pre and post period. It suggested that the pre launch period HINDALCOINDS performed better than other companies, with is higher return and lower risk. The skewness and kurtosis of the stock market distribution indicate non-symmetric distribution, with fat tails as compared with normal distribution. In the skewness of the returns distribution, most of the companies were negatively skewed. The HDFC (H) at-23.4467 and ITC at -40.2923 pre and post period were negatively skewed. The highest kurtosis value was recorded by HUL at 720.0459, and ITC (-40.2923) pre and post period. The Jarque- Bera test values were greater than 3 for all selected sample companies, which confirmed that the sample company's share price returns were not normally distributed during the study period. The overall analysis under the table of suggests that high risk, which indicates more volatility during the pre listed period.

5. CONCLUSION

 The results showed that after introduction of the futures trading reduced stock market volatility, contributes to increase market efficiency. The study also examined futures trading changes structure spot market volatility. The study observed that there is a changes structure in spot market volatility after introduction futures trading. Specifically, there is evidence that the increased impact on recent news and reduced effect of the uncertainty originating from the old news. The study finally tried to investigate whether futures trading introduction is only factor responsible for reduction in volatility of BSE -30 or macro economic factors affecting the market volatility. The study found that futures trading has significant role in reducing volatility of the BSE- Index but market wide factors do not affect the volatility of the spot market. Finally, the study concludes that futures' trading reduces spot price volatility, by providing low contingent strategies and enabling investor to minimize the portfolio risk by transferring speculator from spot market to future market. The low margins and low transaction cost and standardized contracts and trading conditions attract risk taking speculator to the futures market. Hence, futures are expected to have stabilizing influence as it adds more traders to the cash market, making it more liquid.

REFERENCES

[1] Antoniou, A. and Holmes, P. (1995) Futures trading and spot price volatility: evidence forthe FTSE-100 stock index futures contract using GARCH, *Journal of Banking and Finance*, 19, 117–29.

[2] Antoniou, A., Holmes, P. and Priestley, R. (1998) The effects of stock index futures trading on stock index: an analysis of the asymmetric response of volatility to news, *Journal of Futures Markets*, 18, 151–66.

[3] Bandivadekar, S. and Ghosh, S. (2003), "Derivatives and Volatility in Indian Stock Markets", *Reserve Bank of India Occasional Papers,* Vol. 24(3), pp. 187-201.

[4] Bologna, P. (1999) TheeVect of stock index futures trading on the volatility of the Italian stockexchange: a GARCH examination, *Ente per gliStudiMonetariBancari e Finanziari Luigi Einaudi -Temi di Ricerca*, 12

[5] Cox, C. C. (1976) Futures trading and market information, Journal of Political Economy, 84, 1215–37.

[6] Raju, M. T. and Karande, K. (2003), "Price Discovery and Volatility on NSE Futures Market", *SEBI Bulletin*, Vol. 1(3), pp. 5-15.

[7] Shenbagaraman, P. (2003), "Do Futures and Options Trading Increase Stock Market Volatility", NSE Research Initiative paper No. 20, http://www.nseindia.com/content/reserch/paper60.pdf

[8] Stein, J. C. (1987) Informational externalities and welfare reducing speculation, Journal ofPolitical Economy, 96, 1123–45.

[9] Thenmozhi, M. (2002), "Futures Trading Information and Spot Price Volatility of NSE -50Index Futures Contract", NSE Research Initiative Paper No. 18, http://www.nseindia.com/content/reserch/paper59.pdf

APPENDIX-A

List of tables:

Table.1: Results of the Descriptive statistics in pre period BSE-30Index companies Returns during the period from 02-01-1998 to 29-06-2001

S.No	Name of the Company	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
1	BHEL	-0.00045	-0.00135	0.291521	-0.12566	0.03846	0.522248	6.902865	589	0
2	CIPLALTD	0.000686	0	0.095189	-1.02165	0.047812	-11.2581	242.8585	2094244	0
3	DR DEDDY	0.002529	-0.00065	0.605505	-0.12361	0.040649	3.777443	58.08618	111553.9	0
4	GAIL	-0.00076	-0.00081	0.132359	-0.10458	0.03431	0.114786	3.560438	13.23517	0.001337
5	HDFC[BANKING]	0.001708	-9.94E-0	0.520157	-0.17082	0.037768	3.037264	43.72544	61177.89	0
6	HDFC[HOUSING]	-0.00175	-0.00171	0.113262	-2.22574	0.081548	-23.4467	640.3757	14738120	0
7	HERO MOTOR	-0.0009	-0.00056	1.08371	-1.62478	0.0766	-8.4188	286.783	2916121	0
8	HINDALCOINDS	7.23E-05	-0.00087	0.106694	-0.08335	0.028759	0.251264	4.292744	69.41434	0
9	HUL	-0.00221	-0.00082	0.113322	-2.33278	0.082985	-25.609	720.0459	18647075	0
10	ICICIBANK	0.001258	-0.00102	0.213444	-0.14663	0.040965	0.289166	4.359954	78.80399	0
11	INFOSYS	0.001473	0.001524	0.176632	-0.74154	0.052576	-5.32649	73.22208	182026.9	0
12	ITC	0.000222	0	0.097742	-0.10729	0.029709	0.111799	4.477081	80.52949	0
13	JINDALSTEEL	0.000571	-0.00075	0.17756	-0.14174	0.038283	0.256182	4.056875	49.77699	0
14	L&T	-0.00017	-0.0008	0.137469	-0.20045	0.037144	-0.17327	4.724581	111.6514	0
15	MAMA& MAHA	-0.00061	-0.00267	1.062042	-0.83305	0.066276	2.902205	115.1653	455182.4	0
16	ONGC	-0.00071	0	0.091739	-0.15472	0.030885	-0.15838	4.296716	64.29364	0
17	RIL	0.000905	7.27E-05	0.118747	-0.11868	0.031215	0.163994	4.278249	62.83905	0
18	SBI	-0.00037	-0.00176	0.132996	-0.19327	0.03165	-0.03664	5.267354	185.6944	0
19	SSLT	-0.00195	-0.00298	0.095134	-0.28522	0.03902	-0.35397	6.003317	343.5528	0
20	SUNPHARMA	0.000968	0	0.124622	-1.18222	0.057786	-9.84046	204.3079	1476249	0
21	TATAMOTORS	-0.00201	-0.00356	0.152376	-0.15089	0.038342	0.065298	3.583796	12.91328	0.00157
22	TATAPOWER	0.000191	-0.00159	0.148233	-0.14431	0.032801	0.256986	5.347633	208.401	0
23	TATASTEEL	-0.00018	-0.00239	0.145754	-0.16417	0.032429	0.103571	4.490539	81.71485	0
24	WIPRO	0.001271	0.001072	0.1539	-1.5717	0.073055	-11.6469	249.7629	2216762	0

Source: www.Data Collected bseindia.com and Calculated from E-views.

Table.2: Results of the Descriptive statistics in post period BSE-30Index companies Returns during the period from 02-07-2001 to 31-12-2012

S.No	Name of the Company	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
1	BHEL	8.86E-05	0.000302	0.195857	-1.62849	0.041459	-22.6771	857.3507	87501168	0.00
2	CIPLALTD	-0.00035	0.000196	0.104047	-1.63629	0.040283	-27.6662	1048.319	1.31E+08	0.00
3	DRDEDDY	4.40E-05	0.000459	0.160987	-0.70294	0.027492	-10.9395	274.6662	8879698	0.00
4	GAIL	0.000647	0.00046	0.2839	-0.4425	0.025568	-1.81838	45.84195	220991.8	0.00
5	HDFC[BANKING]	0.000408	0.000364	0.218908	-1.60395	0.036718	-29.0384	1272.936	1.93E+08	0.00
6	HDFC[HOUSING]	6.57E-05	0.000234	0.190262	-1.57852	0.040017	-23.1276	877.319	91637448	0.00
7	HEROMOTCORP	0.000897	0.000186	0.165445	-0.09223	0.022458	0.259968	5.570956	822.4645	0.00
8	HINDALCOINDS	-0.00066	0.000581	0.167567	-2.28089	0.050597	-31.9431	1439.316	2.47E+08	0.00
9	HUL	0.000323	0	0.091075	-0.16273	0.01899	-0.06026	6.781527	1711.176	0.00
10	ICICIBANK	0.000763	0.000234	0.207122	-0.21957	0.028388	-0.02371	7.978818	2963.543	0.00
11	INFOSYS	-0.00017	0.000324	0.104546	-1.3657	0.037057	-20.0335	690.4484	56685545	0.00
12	ITC	-0.00034	0.000351	0.105123	-2.62228	0.054178	-40.2923	1923.433	4.42E+08	0.00
13	JINDALSTEEL	0.000782	0.004592	0.228223	-1.91606	0.05821	-22.814	716.0777	61033398	0.00
14	LT	0.000638	0.000191	0.357113	-0.7143	0.031351	-7.30964	188.9213	4157714	0.00
15	MAHAMAHA	0.000855	0.001124	0.207753	-0.689	0.03154	-6.87555	153.1627	2718130	0.00
16	ONGC	0.000198	0	0.182275	-1.44374	0.036222	-22.394	886.6689	93586389	0.00
17	RIL	0.000277	0.000784	0.191391	-0.72301	0.027043	-7.19256	188.1589	4123083	0.00
18	SBI	0.000831	0.000987	0.184383	-0.15978	0.02409	-0.12475	7.064267	1982.063	0.00
10	SSLT	0.000475	0.000432	0.188437	-2.93532	0.065908	-31.1909	1378.185	2.27E+08	0.00
20	SUNPHARMA	9.99E-05	0.000276	0.097283	-1.60544	0.04014	-25.5047	946.4696	1.07E+08	0.00
21	TATAMOTORS	0.000558	0.001018	0.174929	-1.6517	0.04187	-21.4433	847.178	85409617	0.00
22	TATAPOWER	-6.28E-05	0.000712	0.210972	-2.32073	0.050153	-34.5632	1599.591	3.05E+08	0.00
23	TATASTEEL	0.000458	0.000969	0.152574	-0.45193	0.030086	-1.43203	23.17625	49643.7	0.00
24	WIPRO	-0.00045	0	0.201538	-1.09076	0.037085	-11.9006	315.0815	11710465	0.00

Source: Data collected from www.bseindia.com, computed from E-views.