A PAPER ON
A REVIEW ON STOCK FUTURES AND STOCK OPTIONS WITH REFERENCE TO NSE AND BSE

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Derivatives which are regarded as Risk Management Tools which helps the investors to minimize different types of risks faced by them. Trading in derivatives is increasing day by day in terms of its volume which indicates the importance of derivatives. Various derivative products are emerging to meet the needs of different investors. Many types of equity derivatives etc are trading in major exchanges in India. The present paper studies the trading in Equity Derivatives in NSE & BSE.

1. DERIVATIVES

The Indian securities market is rapidly changing and updating, the investors and market participants are in search of different ways by which they can hedge their risk management and their various needs can be effectively met. So, over the decades, financial markets have taken several steps towards advancement of products and offerings and so have the derivative markets. The Securities and Exchange Board of India (SEBI) started on April 12, 1992 removed the barriers in trading the exchange traded derivatives. A tewnty four-member committee was set up under the chairmanship of Dr L. C. Gupta on November 18, 1996 to set appropriate rules to trade in India. Later another committee headed by Prof. J. R.Varma studied and formulated different ways to manage risk through equity derivatives in India in the year 198. Derivatives trading commenced in India in June 2000 after SEBI granted the final approval to this effect in May 2000.1 The derivatives contract is a financial contract that derives its value from the underlying asset which may be from equity or stocks, interest rates, commodity, currency, security or bonds. In simple terms they specify the particular quantity, price and period of time to be traded.The futures are divided into stock futures, commodity futures and index futures. The stock futures are shares and debentures, whereas commodity futures are belonging to the commodities namely gold, paddy and sugar. Index futures are congregation of shares. Finally, futures are aggregation of stock futures commodity futures and index futures. The time of a futures contract is basis i.e., futures price-spot price. Basis should be zero or expiration, gross hedge scenario is arised due to variability between futures price and spot price. Based on "value at risk" concept minimum margins are fixed by the concerned stock exchange about 10 percent of the total of contract.

*1. Jayanth Rama Varma, Chapter 3, Evolution and Progress of Regulatory Framework for Equity derivatives Market in India

There are different types of futures markets are available like, stock future which is also called as equity future. These futures used as a risk management tools. The price of futures contract i.e. Futures price will be determined based on the expected movement in spot market or cash market, cost of carry, in terms of interest cost, storage cost and insurance cost etc., and dividend receipts.

2. Brief Review of Earlier Studies

Ruchika Gahlot &Saroj K. Datta, 2010 in their paper examined the Impact of Future Trading on Efficiency and Volatility of the Indian Stock Market: A Case of CNX 100 and the results showed that futures trading has no influence on efficiency of the market. Revathy, Dr.V.Santhi , T. Sathish Kumar. compared the equity, commodity, and currency derivatives in India , Shruthi.C, Suresh N, 2013, compared the trading in derivative market with cash market Pravakar Sahoo, Rajiv Kumar, 2009 tested the efficiency and futures trading-price of select commodities futures markets in India and found that the commodity futures market is efficient for all five commodities. Sanjay Sehgal & Mala Dutt in their paper on Domestic and international information linkages between NSE Nifty spot and futures markets: an empirical study for India and observed that there are very few studies which studied the performance of Equity Derivatives in Indian Stock Markets. So, an attempt was made to test empirically whether there is any difference in the Equity Derivatives in NSE and BSE. This paper has IV sections. Section I gives introduction to Indian Derivative Market and Section II emphasise on the earlier studies and tries to identify the research gap. Section III examines the methodology of the study and last section focus on the results and discussions.

3. Design of the study

The required information was collected from secondary sources. The data were obtained from the handbook statistics of the securities board of India for the year 2018 and the period of testing is for 8 years ie., from 2010 to 2018. Paired sample Test and to test the relation between NSE and BSE paired sample correlation are used to find whether there is any difference between the NSE AND BSE.

The following hypothesis is formulated to test the relationship between the performance of Equity derivatives in NSE & BSE.

Formulated Hypothesis

- ✓ Hypothesis 1 (Ho): No Significant difference between the total volume of equity of BSE to that of NSE.
- ✓ Hypothesis 2 (Ho): No significant difference between the volume of index future of BSE to that of NSE.
- ✓ Hypothesis 3 (Ho): No significant difference between the volume of stock futures of BSE to that of NSE.
- ✓ Hypothesis 4 (Ho): No significant difference between the volume of index option of BSE of call option to that of NSE.
- ✓ Hypothesis 5 (Ho): No significant difference between the volume of index option of put option of BSE to that of NSE.
- ✓ Hypothesis 6 (Ho): No significant difference between the volume vof call option of stock option of BSE to that of NSE.
- ✓ Hypothesis 7 (Ho): No significant difference between the volume of put option of stock option of NSE to that of NSE.

4. A REVIEW OF NSE AND BSE WITH RESPECT TO STOCK FUTURES AND STOCK OPTIONS

It is examined whether there is any relation in the volume of Index Futures in NSE and BSE. So the volume based on the number of working days is collected from the respective websites and paired sample test is conducted and in order to test the weather volume in NSE and BSE is related or not, paired sample correlation is done.

Table 1 volume of Index futures input in NSE and BSE

Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
BSE volume (in cr)	154	178449	122374	63494	48632	13097	2267	3218
NSE volume (in cr)	4356755	3577998	2527131	3085297	4109472	4557124	4335941	4335941

Source: compiled from NSE &BSE websites respectively.

It is examined that Paired Sample Mean is 43493.4, 58733.83708 with a standard deviation of 3888566.3 and 698186.6607 BSE & NSE respectively.

Table 2 : Paired sample test of Index Futures	P(T<=t) one-tail	T stat	P(T<=t) two-tail	df	Correlation between NSE and BSE
Volume of index futures BSE – volume of index future of NSE	3.8E-08	15.6799	7.67136E-08	9	-0.61318

Source: compiled from BSE & NSE websites respectively.

From table 1 it is revealed that comparison between the volume of index futures of BSE to that of NSE. It is also understood that volume of index futures of NSE was favorable than the volume of index futures of BSE. Correlation value -0.61318 indicates a low relation between NSE and BSe. It is also revealed that the of t was 15.6799, df=9, and it can be concluded to reject the Hypothesis 1 which indicates that there was a significant difference between the volume of index futures of BSE to that of NSE.

Table 3: Equity derivatives of stock futures input table for NSE and BSE

Sample Period	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
BSE volume(cr)	0	10216	3418	54609	9797	1350	203	37
NSE volume(cr)	5495757	4074671	4223872	4949282	8291766	7828606	1.1E+07	1.6E+07

Source: compiled from BSE & NSE websites respectively.

It is examined that Paired Sample Mean is 7966.8, 8545088 with a standard deviation of 16004.19, 3761273 BSE & NSE respectively.

Table 4 : Paired sample test of Index Futures	P(T<=t) one-tail	T stat	P(T<=t) two-tail	df	Correlation between NSE and BSE
volume of index futures BSE – volume of index future of NSE	3.96735E-05	-6.7967	7.9347E-05	9	-0.4308391

It is calculated that the volume of stock futures of NSE was better the volume of stock futures of BSE and understood a weak relationship between the volume values of stock futures of BSE to the volume of stock futures of NSE. The of t was   -6.796, at df=9, hence it can be concluded that the proposed null Hypotheses was rejected and concluded that the there was a significant difference between the volume of stock futures of BSE to volume of Stock futures of NSE.

Table 5 Equity derivatives of Index Call Option input table for NSE and BSE:

Sample Period	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
BSE volume(cr)	0	200090	3230232	5705317	1E+07	2560541	1255	6
NSE volume(cr)	909072	1.2E+07	1.2E+07	1.4E+07	2.1E+07	2.6E+07	3.8E+07	7.1E+07

Source: compiled from BSE & NSE websites respectively.

It is examined that Paired Sample Mean is 2181005, 32119835 with a standard deviation of 3229216, 25107967 BSE & NSE respectively.

Table 6 Paired Sample Test of Index Call Options	P(T<=t) one-tail	T stat	P(T<=t) two-tail	df	Correlation between NSE and BSE
volume of index futures BSE – volume of index future of NSE	0.003998003	-3.3903	0.007996006	9	-0.376309577

The of t was -3.3903 concluded to reject null hypothesis, hence accepted that there was a significant difference between the volume of index option of BSE of call option to the volume of index options of NSE call option. -0.37 value indicates both the exchanges have low correlation.

Table 7 Equity derivatives of Index Put Option input table for NSE and BSE

Sample Period	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
BSE volume(cr)	0	418253	3797249	3349884	10016621	1825708	3214	2

NSE volume(cr)	9274664	11165731	11200089	13944282	19151224	22888140	34699323	63892971

Source: compiled from BSE & NSE websites respectively.

It is examined that Paired Sample Mean is 1941093, 30131679 with a standard deviation of 3029905 & 21364548 BSE & NSE respectively.

Table 8 Paired Sample Test of Index Put options:	P(T<=t) one-tail	T stat	P(T<=t) two-tail	df	Correlation between NSE and BSE
volume of index futures BSE – volume of index future of NSE	0.002388266	-3.7191	0.004776533	9	-0.39739403

The volume of index option of put option of BSE (mean 1941093), is more than the volume of index option of put option of NSE (30131679), and projected the Weak relationship between the volume of index option of put of BSE to volume of index option of put option of NSE. The value of t was -3.7191, df=9 indicates to reject the null hypothesis and there was a significant difference between the volume of index option of put option of BSE to volume of index option of put option of NSE.

Table 9 Equity derivatives of Stock Call Option input table for NSE and BSE

Sample Period	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
BSE volume(cr)	0	39848	178313	667365	3010092	109439	0	3
NSE volume(cr)	0	1277	5186	22186	93854	31904	0	0

Source: compiled from BSE & NSE websites respectively.

It is examined that Paired Sample Mean is 15440.7, 3102263, with a standard deviation of 28218.84 & 2160279 BSE & NSE respectively.

Table 10 Paired Sample Test of stock options call	P(T<=t) one-tail	T stat	P(T<=t) two-tail	df	Correlation between NSE and BSE
volume of index futures BSE – volume of index future of NSE	0.001036486	-4.2725	0.002072972	9	-0.250023889

The correlation -0.250023 between BSE & NSE shows a low relation. The value of t -4.2725, at df=9 rejects the null hypothesis and accept that there was a significant difference between the volume of call option of stock of BSE to volume of call option of stock option of NSE.

Table 11: Equity derivatives of Stock Put Option input table for NSE and BSE

Period	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
BSE volume(cr)	0	192	5060	23945	81233	42409	0	0
NSE volume(cr)	253235	305261	697648	865594	1039170	1163144	1959998	2927002

Source: compiled from BSE & NSE websites respectively.

It is examined that Paired Sample Mean is15283.9, 1433185 with a standard deviation of 25807.66 & 956788.2 BSE & NSE respectively.

Table 12 Paired Sample Test of stock options put	P(T<=t) one-tail	T stat	P(T<=t) two-tail	df	Correlation between NSE and BSE
volume of index futures BSE – volume of index future of NSE	0.000841789	-4.41491	0.001683579	9	-0.246992233

The volume of put option of stock option of BSE (Mean 15283.9) was better than the same of NSE (1433185) There value -0.246992233 shows negatively correlated between the variables of volume of put option of stock option of NSE to volume of put option of stock option BSE. It is evident that the value of t was -4.41491, at df=9 to reject null hypothesis and accepted that there was a significant difference between the volume of put option of stock option of NSE to volume of put option of stock option of BSE.

5. RESULTS AND DISCUSSIONS

The following findings were identified that the volume of index futures of NSE was better than the volume of index futures of BSE, and there was a Moderate relationship between two variables and statically there was a significant difference between them. The volume of stock futures of NSE was better than volume of stock futures of BSE, and they had a Poor relationship and statistically there was a significant difference between them. It was evident that volume of index options of call option of NSE was better than the volume of index option of call option of BSE and they had a Weak relationship, and statistically there was a significant difference between them. It is also observed that the of volume of index option of put option of NSE was favourable than the volume of index option of put option of BSE, they had a Weak relationship, and statically, there was a significant difference between them and came out with the volume of call option of stock option of NSE was better than the volume of call option of stock option of BSE, and they consisted negative relationship between them, and statically there was a significant difference between them and examined the volume of put option of stock option of NSE was favourable than the volume   put option of stock option of BSE, and they consisted a very low relationship between them, and statically there was a significant difference between the two variables. The study also came out with the total volume of equity

segment of NSE was better than the total volume of equity segment of BSE, and they reflected a moderate relationship between them and statically, there was a significant difference between them.

6. CONCLUSION

With the advent of derivatives many products emerged satisfying the needs of investors. In India, stock futures and stock options are helping the investors in many ways. NSE & BSE differ each other in terms of volume traded. The present paper also revealed that there exists a weak relation between both which signifies they trade uniquely and differently.

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