



Chief Editor

Dr. A. Singaraj, M.A., M.Phil., Ph.D.

Editor

Mrs.M.Josephin Immaculate Ruba

Editorial Advisors

1. Dr.Yi-Lin Yu, Ph. D
Associate Professor,
Department of Advertising & Public Relations,
Fu Jen Catholic University,
Taipei, Taiwan.
2. Dr.G. Badri Narayanan, PhD,
Research Economist,
Center for Global Trade Analysis,
Purdue University,
West Lafayette,
Indiana, USA.
3. Dr. Gajendra Naidu.J., M.Com, LL.M., M.B.A., PhD. MHRM
Professor & Head,
Faculty of Finance, Botho University,
Gaborone Campus, Botho Education Park,
Kgale, Gaborone, Botswana.
4. Dr. Ahmed Sebihi
Associate Professor
Islamic Culture and Social Sciences (ICSS),
Department of General Education (DGE),
Gulf Medical University (GMU), UAE.
5. Dr. Pradeep Kumar Choudhury,
Assistant Professor,
Institute for Studies in Industrial Development,
An ICSSR Research Institute,
New Delhi- 110070.India.
6. Dr. Sumita Bharat Goyal
Assistant Professor,
Department of Commerce,
Central University of Rajasthan,
Bandar Sindri, Dist-Ajmer,
Rajasthan, India
7. Dr. C. Muniyandi, M.Sc., M. Phil., Ph. D,
Assistant Professor,
Department of Econometrics,
School of Economics,
Madurai Kamaraj University,
Madurai-625021, Tamil Nadu, India.
8. Dr. B. Ravi Kumar,
Assistant Professor
Department of GBEH,
Sree Vidyanikethan Engineering College,
A.Rangampet, Tirupati,
Andhra Pradesh, India
9. Dr. Gyanendra Awasthi, M.Sc., Ph.D., NET
Associate Professor & HOD
Department of Biochemistry,
Dolphin (PG) Institute of Biomedical & Natural Sciences,
Dehradun, Uttarakhand, India.
10. Dr. D.K. Awasthi, M.SC., Ph.D.
Associate Professor
Department of Chemistry, Sri J.N.P.G. College,
Charbagh, Lucknow,
Uttar Pradesh. India

ISSN (Online) : 2455 - 3662
SJIF Impact Factor :3.967

EPRA International Journal of Multidisciplinary Research

Monthly Peer Reviewed & Indexed
International Online Journal

Volume: 3 Issue: 1 January 2017



Published By :
EPRA Journals

CC License





GROWTH OF FINANCIAL DERIVATIVES MARKET IN INDIA- A COMPARATIVE STUDY ON BSE AND NSE

Mr. Mubarak¹

¹Assistant Professor and Research Scholar,
Department of Studies and Research in Commerce,
V.S.K University,
P.G.Centre Nandihalli,
Sandur, Ballari, Karnataka, India

Dr. Ramesh O Olekar²

²Associate Professor and Chairman,
Department of Studies and Research in Commerce
Vijayanagara Sri Krishnadevaraya University,
Ballari, Karnataka, India

ABSTRACT

Innovation of derivatives have restructured and redefined the entire financial industry across the globe and derivatives have earned a well deserved and extremely elegant place among all the financial products. Derivatives are specialized contracts which are employed for a various utility such as reduction of funding cost, enhancing the yield and minimizing risk etc. However, the most significant use of derivatives is price discovery and transferring market risk, called Hedging, which is a protection against losses resulting from price volatility. Thus derivatives are a very important tool of risk management as well as speculative and arbitraging tool that help in effective management of risk by stakeholders. As awareness about the usefulness of derivatives as a risk management, speculative and arbitraging tool has increased; the markets for derivatives too have grown. The emergence of derivative market an ingenious feat of financial engineering that provides an effective and less costly solution to the problem of risk that resulting from high uncertainty and price volatility. Since 2000, financial derivatives market in India has shown a remarkable growth both in terms of volumes and number of traded contracts and the stock markets are becoming globally efficient. Earlier BSE was the most popular and reliable stock exchange in India but after introduction of NSE, it has taken over BSE in terms of turnover. NSE alone accounts for 90 per cent of the derivatives trading in Indian markets. The statistical data seems that the total turnover on the financial derivatives segment has grown by Rs 5123266.56 billion during the year 2015-16 as compared with Rs 4038 billion in the year 2000-01. If compare to trading figures of NSE and BSE, performance of NSE is well deserved and extremely elegant and BSE is not encouraging both in terms of volumes and number of contracts traded in all categories of derivatives product. Thus present study is undertaken to analyze the derivative trading in BSE and NSE in India. It is an endeavor to portray the growth and expansion of financial derivative of BSE and NSE in India during the time period of 2000-01 to 2015-16.

KEYWORDS: derivative trading, variations, NSE, BSE, CAGR.

INTRODUCTION

The individuals, business firms, multinationals, mutual funds, banks, financial institutions, foreign and institutional investors and market operators (traders, hedgers, speculators, arbitrageurs) are freely using derivatives, also popularized as future market instruments, in most of the developed countries of the world to manage different risks by the stakeholders. Emerged in 1970s, the derivatives markets have seen remarkable growth and trading volumes have nearly doubled in every three years, making it a multi-trillion dollar business market. The future markets in various segments have developed so much that now one cannot think of the existence of financial markets without the derivatives instruments. In other words, the derivatives markets whether belonging to commodities or financials have become today, an integral part of the financial system of a country.

The Indian financial markets indeed waited for too long for derivatives trading to emerge. The phase of waiting is over. The statutory hurdles have been cleared. Regulatory issues have been sorted out. Stock exchanges are gearing up for derivatives. Mutual funds, foreign institutional investors, financial Institutions, banks, insurance companies, investment companies, pension funds and other investors who are deprived of hedging opportunities now find the derivatives market to bank on. They found important derivatives instruments in the Indian financial markets to manage their portfolios and associated risks.

Financial derivatives are innovative instruments in the financial markets, both in the developed economies like USA, UK and emerging economies like India, China, Japan, Korea and Indonesia and so on. Basically there are four categories of derivatives i.e., Forwards, Futures, options and swaps. These derivatives are traded in two markets i.e., over the counter (OTC) markets and exchange traded markets (ETM). Banks, financial institutions, mutual funds, corporations and individual investors are the players in the derivative markets. They play in the derivative markets as Hedgers, Speculators and Arbitrageurs. Regulatory Authorities of particular country promote and regulate derivative instruments and markets. In India SEBI, RBI and Forward market Commission (FMC) are the regulatory authorities for derivative markets and instruments. Besides Stock Exchanges, Commodity Exchanges and Clearing Houses are also facilitating the market operations particularly for Futures and Options.

Financial derivatives have changed the face of finance by entering new ways to understand and manage financial risks. Ultimately derivatives offer the organizations the opportunity to split financial risks into smaller components and then buy or sell those components to best meet the specific risk

management objectives. In the present highly volatile business phenomena, the utility of risk management is much eager than ever before. The emergence of derivatives market an ingenious feat of financial engineering that provides an effective and less costly solution to the problem of risk that is expressed in the price uncertainty at the underlying assets.

NEED FOR FINANCIAL DERIVATIVES

Financial derivatives' trading offers a risk-reduction mechanism to the farmers, producers, exporters, importers, investors, bankers, trader, etc. which are essential for any country. In the words of Alan Greenspan, Chairman of the US Federal Reserve Board, "The array of derivative products that has been developed in recent years has enhanced economic efficiency". The economic function of these contracts is to allow risks that formerly had been combined to be unbundled and transferred to those most willing to assume and manage each risk components. Development of derivative markets in many countries has contributed significantly in terms of invisible earnings in the balance of payments, through the fees and other charges paid by the foreigners for using the markets. Further, economic progress of any country, today, much depends upon the service sector as on agriculture or industry. Services are now backbone of the economy of the future. India has already crossed the roads of revolution in industry and agriculture sector and has allowed the same now in services like financial futures and options. India has all the infrastructure facilities and potential exists for the whole spectrum of financial futures and options trading in various financial derivatives like stock market indices, treasury bills, gilt-edged securities, foreign currencies, cost of living index, stock market index, etc. For all these reasons, there is a major potential for the growth of financial derivatives markets in India. This study has covered the major trends of BSE and NSE in terms of number of contracts and respective total turnover of futures and option segment.

OBJECTIVES OF THE STUDY

1. To analyze the growth of financial derivatives products traded at NSE and BSE.
2. To examine the factors driving the growth of Financial Derivatives.
3. To evaluate the trends of NSE and BSE.

RESEARCH METHODOLOGY

This study is undertaken to analyze the growth of financial derivatives in India. It is an attempt to analyze the potentiality of derivative trading in Bombay Stock Exchange and National Stock Exchange. The present study has undertaken based on secondary sources. Secondary data for the study collected from websites of BSE, NSE and other literature has been gathered from various

websites, books and journals. Here the study period is undertaken from 2000-01 to 2015-16. This study has covered last 15 years major trends of BSE and NSE in terms of number of contracts and respective total turnover of futures and options segment. The tools used for this study for analysis and interpretation of data are trend analysis, percentage analysis, mean, standard deviation and Cumulative Annual Growth Rate (CAGR).

GROWTH OF FINANCIAL DERIVATIVES MARKET IN INDIA

India is one of the most successful developing countries in terms of a vibrant market for exchange traded derivatives. The exchange traded derivatives market in India has witnessed tremendous growth in terms of trading volume and number of trading contracts since 2000. Financial derivatives such as Index Futures, index options, Stock Futures and Stock Options are commenced in Indian market in 2000, at BSE and NSE.

i. Derivatives products traded in derivatives segments of Bombay Stock Exchange:

Bombay Stock Exchange is the ancient securities exchange of the continent, previously renowned by the name of the Native Share and stock brokers Association in the year 1875. They launched trading in sensex based index futures contract for the first time in India on 9th June 2000. It was followed by trading in index options on 1st June 2001. Consequently, stock options on 9th July 2001 and single stock futures on 9th November 2002. Further, it was launched weekly options a unique product unparalleled worldwide in the derivatives markets in India on 13th September 2004. It permitted trading in the stocks of the leading companies such as Satyam, Reliance Industries Limited, State Bank of India and Tata Steel. BSE also introduced Chotta (mini) sensex on 1st January 2008. With a small or mini market lot

of 5, it allows for comparatively lower capital outlay, lower trading costs, more precise hedging and flexible trading. It is a step to encourage and enable small investors to mitigate risk and easy access to India's most popular index sensex through Futures and Options. Going ahead, on October 1, 2008 BSE launched its currency derivatives segment in dollar-rupee currency futures as the exchange traded currency futures contracts facilitate easy access, increased transparency, efficient price discovery, better counterparty credit risk management, wider participation and reduced transaction costs. BSE re-launched its Derivatives Segment by enabling trading of Index and Stock Futures on its BOLT Terminal on 23rd July 2010. The change was in response to requests from trading members for a common front end from which equities and equity derivatives could be traded. The change will enable a trader to trade in cash Securities and futures products through BOLT TWS/ IML while Option products would continue to trade through the DTSS TWS/DIML. The risk management and settlement of futures and option trades will continue to take place on DTSS. EUREX - S&P BSE SENSEX Futures launch on 4th Oct 2010, BSE launched trading in BRICSMART indices on 30th Mar 2012, Launch of Currency Derivatives (BSE CDX) on 28th Nov 2013, Launch of Interest Rate Futures (BSE -IRF) on 28th Jan 2014. Further BSE felicitated at The Asian Banker Summit 2014 - BSE Best Managed Financial Derivatives Exchange in the Asia Pacific on 27th May 2014, BSE exceeds 1 billion derivatives contracts on its new Deutsche Börse T7 powered trading platform on 28th May 2015. BSE, recently signs Memorandum of Understanding with Korea Exchange (KRX) to launch S&P BSE Sensex based derivatives contracts at KRX on 28th Apr 2016.

The following Table Number 1 exhibits the date of commencement of various Financial Derivatives products in BSE during the period of 2000 to 2016

Sl.No	Date of Commencement	Derivative product traded at BSE
1	9th Jun 2000	Equity Derivatives introduced- index Futures
2	1st Jun 2001	Index Options launched
3	9th Jul 2001	Stock options launched
4	1st Nov 2001	Stock futures launched
5	1st Jan 2003	India 's first ETF on S&P BSE SENSEX - 'SPICE' introduced
6	13 th Sep 2004	Weekly options commenced
7	1 st Jan 2008	Chotta- Mini launched
8	29 th Feb 2008	Long dated options On its flagship index is commenced
9	1st Oct 2008	Currency Derivatives Introduced
10	7th Aug 2009	BSE - USE Form Alliance to Develop Currency & Interest Rate Derivatives Markets
11	18th Dec 2009	BSE's new derivatives rates to lower transaction costs for all
12	23rd July 2010	Options on BOLT
13	4th Oct 2010	EUREX - S&P BSE SENSEX Futures launch
14	30th Mar 2012	BSE launched trading in BRICSMART indices derivatives
15	28th Nov 2013	Launch of Currency Derivatives (BSE CDX)
16	28th Jan 2014	Launch of Interest Rate Futures (BSE -IRF)
17	27th May 2014	BSE felicitated at The Asian Banker Summit 2014 - BSE Best Managed Financial Derivatives Exchange in the Asia Pacific
18	28th May 2015	BSE exceeds 1 billion derivatives contracts on its new Deutsche Börse T7 powered trading platform
19	28th Apr 2016	BSE signs Memorandum of Understanding with Korea Exchange (KRX) to launch S&P BSE Sensex based derivatives contracts at KRX

(Source: Compiled from NSE Website)

ii. Derivatives products traded in derivatives segment of National Stock Exchange:

National Stock Exchange is among the youngest stock exchange in India (1992). NSE was set up as a tax paying company in 1992, which later on registered as a stock exchange under the Securities Contract Regulation Act 1956. On 12th June 2000, NSE started trading in Index Futures. This financial derivative index is based on the underlying S&P CNX Index. NSE introduced Index Option on 4th June 2001. Futures on individual securities started on 9th November 2001. The Futures contracts are available on 233 securities propounded by SEBI. Trading in options on individual securities commenced from 2nd July 2001. The options contracts are American style of option exercise. Trading Interest Rate Futures was introduced on 24th June 2003 but it was closed subsequently due to pricing problems. The NSE has introduced Mini Index Futures and Options on January 1, 2008 with a minimum contract size of Rs 1 lakh. Later NSE introduced the trading of Currency Futures on US Dollar-Rupee in the Indian Derivative Market on December 10, 2008. Further NSE was launched Interest Rate Futures on August 2009. On February 2010 NSE was launched Currency Futures. NSE introduced Currency Options on USD-Rupee on October 2010. Later NSE commenced trading in 91 days T-Bill Futures. Further NSE launched S&P CNX Nifty Futures in Japan on January 2013. NSE launched NVIX Futures on February 2014.

The following Table Number 2 exhibits the date of commencement of various Financial Derivatives products in NSE during the period of 2000 to 2014

Sl.No	Date of Commencement	Derivative product traded at NSE
1	June 12, 2000	Commencement of Derivatives Trading(Index Futures)
2	June 4, 2001	Commencement of trading in Index Options launched
3	July 2, 2001	Commencement of trading in Stock options launched
4	November 9, 2001	Commencement of trading in Stock futures launched
5	June 23, 2003	Interest rate futures – T. Bills & 10 years Bond
6	August 29, 2003	CNX IT Futures and Options introduced
7	June 13, 2005	Bank Nifty Futures and Options commenced
8	June 1, 2007	CNX Nifty Junior Futures and Options
9	June 1, 2007	CNX 100 futures & options
10	October 5, 2007	Nifty Midcap 50 Futures and Options
11	January 1, 2008	Mini Index Futures and Options- S&P CNX Nifty Index
12	March 3, 2008	Long term Options contracts on S&P CNX Nifty Index
13	August 29, 2008	Currency Derivatives Introduced on US Dollar Rupee
14	August 29, 2008	Interest Rate Futures launched
15	December 10, 2008	S&P CNX Defty Futures & options
16	February 2010	Launch of currency futures on additional currency pairs
17	July 2010	S&P CNX Nifty futures on CME
18	October 2010	Introduction of currency option on USD-INR
19	October 2010	Introduction of European style stock options
20	July 2011	Commercial of Trading in 91 day T-Bill futures
21	August 2011	Launch of derivatives on global indices
22	September 2011	Launch of derivatives on CNX PSE & CNX Infrastructure indices
23	May 2012	Future and options contract on FTSE 100
24	January 2013	Launch of S & P CNX Nifty futures in Japan
25	February 2014	NSE Launched NVIX futures on India v ix Index
26	March 2014	Commencement of trading of CNX Nifty future on OSE

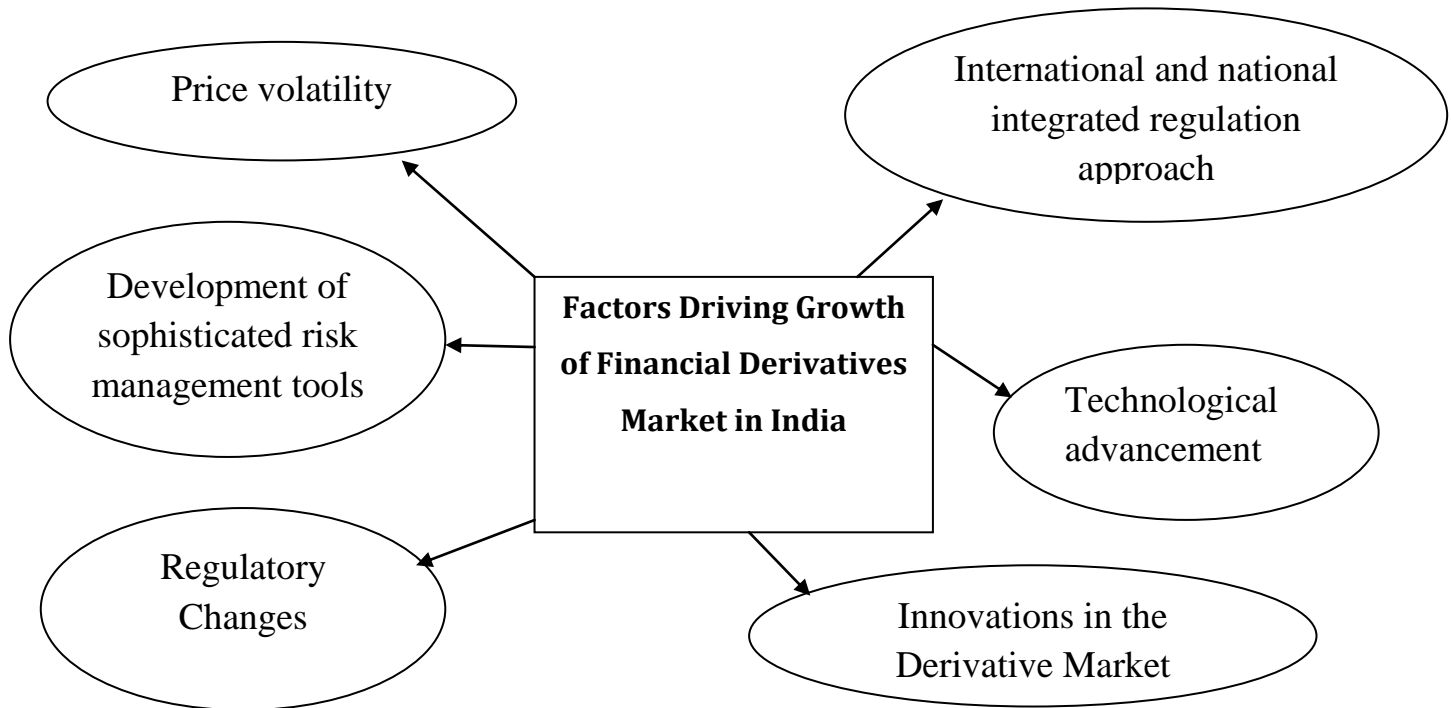
(Source: Compiled from NSE fact book)

FACTORS DRIVING GROWTH OF FINANCIAL DERIVATIVES MARKET IN INDIA

Over the last three decades, the global derivatives market has been a phenomenal growth. Large variety of derivative contracts has been launched at exchanges across the globe. The explosive growth in financial derivatives in the recent past is a consequence of number of factors. The important factors driving the growth of financial derivatives are:

1. Increased price volatility in the underlying assets in financial markets.
2. Increased integration of national financial markets with international financial markets i.e., globalization of markets.
3. Technological advancement, improvement in telecommunication facilities and sharp declining in their costs.
4. Development of more sophisticated risk management tools, providing a wider choice of risk management strategies.
5. Innovations in the derivatives markets in terms of transformation of thoughts into ideas, the application of these ideas to produce new and improved processes and products in financial markets.
6. Regulatory changes in financial derivative market has fostered by an atmosphere of deregulation of financial sector and advances in financial theory to have pinnacle of financial derivative market. A number of financial theories, formulae, methods, valuation models and strategies have been developed to give extra mileage in the progress of financial derivative market.

The below picture portrays the factors driving growth of financial derivatives market-



TRENDS OF FINANCIAL DERIVATIVES IN BSE AND NSE

The following tables depict the trends of financial derivatives in terms of number of contracts and total turnover of futures and option segments in BSE and NSE. The below tables shown the trends of futures and options in BSE and

NSE. The number of contracts and turnover of futures and options trends can be analyzed by computing mean, median and standard deviation.

Table-3 Exhibits Total Derivatives Contracts and Turnover (Turnover in Rs billion)

YEAR	NSE		BSE		TOTAL	
	Number of Contracts	Turnover	Number of Contracts	Turnover	Number of Contracts	Turnover
2000-01	90580	2365	77743	1673	168323	4038
2001-02	4196873	1019.26	105527	1922	4302400	2941.26
2002-03	16768909	4398.62	138037	2478	16906946	6876.62
2003-04	56886776	21306.1	143224	5021.81	57030000	26327.91
2004-05	77017185	25469.82	531719	16112.32	77548904	41582.14
2005-06	157619271	48241.74	203	8.78	157619474	48250.52
2006-07	216883573	73562.42	1781220	59006.62	218664793	132569.04
2007-08	425013200	130904.78	7453371	242308.41	432466571	373213.19
2008-09	657390497	110104.82	496502	11774.83	657886999	121879.65
2009-10	679293922	176636.65	9028	234.06	679302950	176870.71
2010-11	1034212062	292482.21	5623	154.33	1034217685	292636.54
2011-12	1205045464	313497.32	32222825	808475.99	1237268289	1121973.31
2012-13	1131467418	315330.04	262440691	7163576.66	1393908109	7478906.7
2013-14	1284406775	382092.15	301942441	9219434.32	1586349216	9601526.47
2014-15	1837029857	556041.97	505478869	20362741.42	2342508726	5,56,042
2015-16	2098610301	648258.24	106209394	4475008.32	2204819695	5123266.56
Sum	10881932663	3101711.14	1219036417	42369930.87	12100969080	25108900.59
Maximum	2098610301	648258.24	505478869	20362741.42	2342508726	9601526.47
Minimum	90580	1019.26	203	8.78	168323	2941.26
Average	680120791.4	193856.9463	76189776.06	2648120.679	756310567.5	1569306.287
Median	541201848.5	120504.8	514110.5	13943.575	545176785	154719.875
Standard Deviation	682400238.6	204403.849	149455274.6	5534722.589	792461687	3020255.251

(Source: Compiled from NSE and BSE Website)

INTERPRETATION

Table -3 exhibits total turnover and contracts of derivatives segment in NSE and BSE from its inception to 2016. During inception of derivatives in India, turnover of NSE was Rs 2365 billion and number of contracts traded was 90580. After, that NSE has seen a remarkable growth both in terms of turnover and contracts traded. Now presently, it has turnover of Rs 648258.24 billion and 2098610301 contracts during the year 2015-16. Likewise, during 2000-01 total turnover on BSE was Rs 1673 billion and number of contracts traded was 77743 and presently in the year 2015-16, BSE has total turnover of Rs 44750.08 billion and

106209394 of total contracts. Table number 3 reveals that BSE has recognise themselves in derivatives segment during 2006-07 but unfortunately due to global financial crises and drastic change in stock market environment, BSE not able to progress in derivatives segment as compare to NSE progress in derivatives segment, the entire picture has tend to changed due to that BSE has down fall in total turnover and number of contracts. The same table reveals that NSE is well performing as against to BSE. BSE was confronted lot of hurdles in derivatives segment and BSE has put forth its great efforts and again gain the rhythm in derivatives segment and currently BSE has potential growth in derivatives segment.

Chart -1 NSE overall Numbers of Contracts**INTERPRETATION**

Chart-1 shows that the number of contracts traded on NSE over the years has had an elevated trend till the 2011-12, thereafter which has been decline in the year 2012-13 and thereafter, there has been a continues rise in number of contracts of NSE. During the year 2000-01 the

number of contracts stood at 90580 proceeded by a remarkable increase over the years from 2000-01 to 2011-12. And after 2011-12 it can be seen that the trend has volatility. After that NSE has shown rising trend in number of contracts traded. Currently NSE has 1205045464 of derivatives contracts.

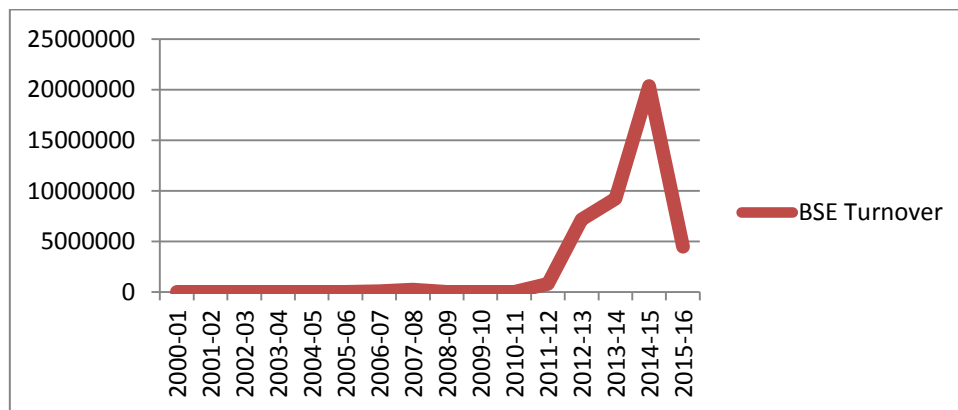
Chart-2 NSE total value of turnover

INTERPRETATION

Chart-2 shown that the total turnover of NSE has been on a rise from the years 2000-01 to 2007-08, after which there has been a fall in the

turnover in the year 2008-09 the amount being 110104.82 billion and 2009-10 onwards there has been a continues increase in the turnover of NSE.

Chart -3 BSE overall total value of turnover

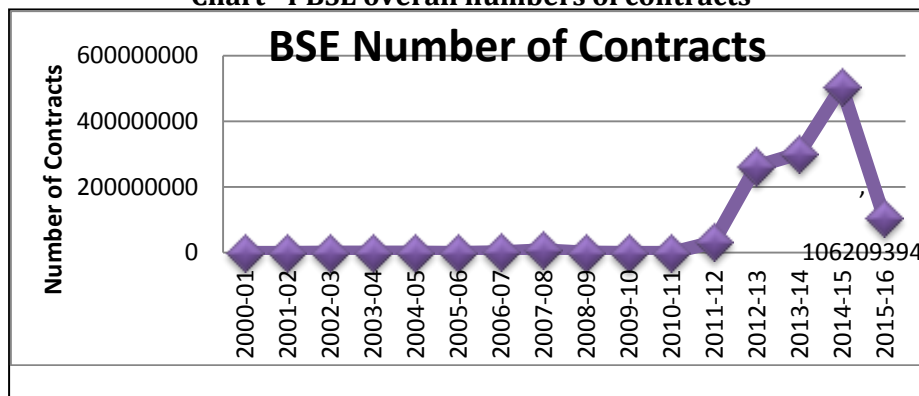


INTERPRETATION

Chart-3 shown that the value of total turnover of the BSE over the 10 years had a highly volatile trend from the year 2000-01 to 2010-11 and 2011-12 onwards BSE has a significant rise in the value of the turnover till 2014-15. It can be observed that the value of the turnover in 2010-11 stood at 1.54 billion which is the lowest turnover over the 10 years. During the global recession in

2008-09, derivatives instruments were largely criticized on speculative nature. In the year 2013-14 onwards there was a sudden rise in the turnover amounting to 9219434.32 billion and the year 2014-15 witnessed the highest turnover amounting to 20362741.42 billion and thereafter it has sudden decline in the turnover in the year 2015-16 amounting to Rs 4475008.32.

Chart -4 BSE overall numbers of contracts



INTERPRETATION

Chart-4 shown that the number of contracts traded on BSE over the last a decade has had a raising trend from the year 2011-12 onwards before which has number of contracts traded in less significantly. In the year 2000-01 the contracts traded were 77743 and after that a significant raise up to 2004-05, which has had a drastic fall in the

year 2005-06 and thereafter, there has been a fluctuation in the contracts received by BSE till 2010-11, after which the number of contracts received had a sudden rise in 2012 the amount stood at 32222825 and rise to 262440691. Year 2014 witnessed the highest number of contracts stood at 505478869 and there has been a sudden fall in number of contracts of BSE in the year 2015-16 amounting to 106209394.

Table- 4 Shows the Turnover in the Derivatives Segment in NSE since Inception of Derivatives in India (Turnover in Rs Billion)

YEAR	INDEX FUTURES		STOCK FUTURES		INDEX OPTION		STOCK OPTION	
	Number of Contract	Turnover	Number of Contract	Turnover	Number of Contract	Turnover	Number of Contract	Turnover
2000-01	90580	23.65	-----	-----	-----	-----	-----	-----
2001-02	1025588	214.83	1957856	5151.5	175900	37.65	1037529	251.63
2002-03	2126763	439.52	10676843	2865.33	442241	92.46	3523062	1001.31
2003-04	17191668	5544.46	32368842	13059.39	1732414	528.16	5583071	2172.07
2004-05	21635449	7721.47	47043066	14840.56	3293558	1219.43	5045112	1688.36
2005-06	58537886	15137.55	80905493	27916.97	12935116	3384.69	5240776	1802.53
2006-07	81487424	25395.74	104955401	38309.67	25157438	7919.06	5283310	1937.95
2007-08	156598579	38206.67	203587952	75485.63	55366038	13621.11	9460631	3591.37
2008-09	210428103	35701.11	221577980	34796.42	212088444	37315.02	13295970	2292.27
2009-10	178306889	39343.89	145591240	51952.47	341379523	80279.64	14016270	5060.65
2010-11	165023653	43567.55	186041459	54957.57	650638557	183653.66	32508393	10303.44
2011-12	146188740	35779.98	148344617	40746.71	864017736	227200.32	36494371	9770.31
2012-13	96100385	25271.31	147711691	42238.72	820877149	227815.74	66778193	20004.27
2013-14	105252983	30831.03	170414186	49492.82	928565175	277673.41	80174431	24094.89
2014-15	129303044	41072.15	237604741	82917.66	1378642863	399227.63	91479209	32825.52
2015-16	140538674	45571.14	234243967	78286.06	1623528486	489519.31	100299174	34881.74
Sum	1509836408	389822.05	1973025334	613017.48	6918840638	1949487.29	470219502	151678.31
Maximum	210428103	45571.14	237604741	82917.66	1623528486	489519.31	100299174	34881.74
Minimum	90580	23.65	1957856	2865.33	175900	37.65	1037529	251.63
Average	94364775.5	24363.87813	131535022.3	40867.832	461256042.5	129965.8193	31347966.8	10111.88733
Median	100676684	28113.385	147711691	40746.71	212088444	37315.02	13295970	3591.37
Standard Deviation	70401236.89	16892.90761	81048145.23	25559.57191	548795744.5	162149.6307	35407908.09	11959.01547

(Source: Compiled from NSE Website)

INTERPRETATION

Table-4 reveals the product-wise volume and turnover in NSE. Financial derivatives are classified into Index futures and index option and stock futures and stock options. The Index futures were traded from 2006. The Index futures turnover in NSE rise from Rs 25395.74 billion to Rs 45571.14 billion in 2015-16. It also reveals the trends of stock futures in NSE in the form of number of contracts traded and turnover. Stock

futures in NSE rise from Rs 38309.67 billion to Rs 78286.06 billion in 2015-16. The index options also traded at NSE, that has worldwide recognize product in derivatives trading. However, the growth of index options at NSE in terms of turnover has a drastic rise from Rs 7919.06 billion to Rs 489519.31 billion in 2015-16. Stock options at NSE rise from Rs 1937.95 billion to Rs 34881.74 billion in 2015-16.

Table- 4 Shows the Turnover in the Derivatives Segment since Inception of Derivatives in India. Volume of the Contract and Turnover in BSE (Turnover in Rs Billion)

YEAR	INDEX		STOCK FUTURES		INDEX OPTION				STOCK OPTION			
	FUTURES		Number of Contract	Turnover	Call option		Put option		Call option		Put option	
	Number of Contract	Turnover			Number of Contract	Turnover	Number of Contract	Turnover	Number of Contract	Turnover	Number of Contract	Turnover
2000-01	77743	1673	-	-	-	-	-	-	-	-	-	-
2001-02	79552	1276	17951	452	1139	39	1276	45	3605	79	1500	35
2002-03	111324	1811	25842	644	41	1	2	-	783	21	19	-
2003-04	103777	3082.63	33437	1680.34	1	-	-	-	3466	139.07	2544	119.77
2004-05	449630	13599.66	6725	212.85	48065	1471	27210	826.62	72	2.08	17	0.5
2005-06	89	5	12	0.49	100	3.2	-	-	2	0.09	-	-
2006-07	1638779	55490.86	142433	3515.5	2	0.06	2	-	5	0.16	1	0.04
2007-08	7157078	234660.16	295117	7609.24	951	31	210	7.66	9	0.21	6	0.14
2008-09	495830	11757.22	299	8.49	251	6.11	122	3.01	-	-	-	-
2009-10	3744	96	8	0.3	5276	-	-	-	-	-	-	-
2010-11	5613	154.08	-	-	-	-	10	0.25	-	-	-	-
2011-12	7073334	178448.83	326342	10215.7	7206514	200089.57	17569130	418252.79	39848	1277.27	7657	191.82
2012-13	4701927	122429.78	116933	3420.07	116324195	3230232.06	140909766	3797249.53	178313	5186.57	209557	5059.75
2013-14	2136269	63493.84	1901877	54599.42	182685008	5705316.57	113674567	3349884.04	667365	22185.51	877355	23945.18
2014-15	1227926	48632.35	305714	9794.26	244203156	10112605.13	254031531	10016621.34	3010092	93854.5	2700450	81233.84
2015-16	306712	13097.16	51815	1349.59	58773325	2560540.69	44654651	1825708.19	1009439	31904.16	1413452	42408.53
Sum	25569327	749707.57	3224505	93502.25	609248024	21810335.39	570868477	19408598.43	4912999	154649.62	5212558	152994.57
Maximum	7157078	234660.16	1901877	54599.42	244203156	10112605.13	254031531	10016621.34	3010092	93854.5	2700450	81233.84
Minimum	89	5	8	0.3	1	0.06	2	0.25	2	0.09	1	0.04
Average	1598082.938	46856.72313	230321.7857	6678.732143	43517716	1817527.949	47572373.08	1940859.843	409416.58	12887.468	473868.91	15299.457
Median	378171	12427.19	42626	1514.965	3207.5	755	14243	209539.705	3535.5	109.035	2544	155.795
Standard Deviation	2474358.412	71534.30708	496163.376	14261.76638	80160161.47	3193819.761	81159009.38	3193957.965	881473.08	27558.624	873724.26	27194.181

(Source: Compiled from BSE Website)

INTERPRETATION

Table-5 reveals the product-wise volume and turnover in BSE. The index futures trading at BSE commenced from 2001. In the year 2006-07 and 2007-08 had drastic rise in both terms of number of contracts traded and turnover, which shows huge participation of investors in BSE due to its scheme of educating investors. But this trend has not sustained for long time. Then BSE has seems by growth in the year 2011-12 was Rs 1784488 billion from Rs 1540.8 billion in 2010-11. The trading in stock futures in BSE was came down up to low in both terms of number of contracts traded and turnover up to 2010-11. Thereafter had a steady growth in stock futures of BSE. Similarly, after 2014-15 it shows declining trend. The year 2011-12 shows marking growth in

trading of index option. In 2006-07 and 2009-10 it contributed zero percent in total equity derivatives segment at BSE means there was no contribution any trading volume. And this situation was created big question mark against BSE means the participators are more divert towards NSE, so BSE has put more efforts for to alive the derivative segment at BSE and in result of that BSE is getting good favor from participators. The individual stock options were allowed for trading on July 9, 2001. Individual stock options were allowed for trading before individual stock futures. From 2006-07 there was total lapsed from the market means that the participation was moved with other place like NSE platform. However, from 2011-12 it is looking like recovery has been started form participation. There after BSE has brought down their strategies to gear

up derivatives trading in both futures and options segment. Instantly BSE has tremendous potential growth in subsequent years of derivatives trading, at the end of 2015-16 it has 106209394 billions of contracts and gain the total turnover of Rs

4475008.32 billion. Finally, it have potential growth both in terms of number of contracts traded and turnover as compare to NSE, similarly it has great favor of participation in derivatives segment as compare to derivatives trading of NSE.

TABLE 6 – SHOWS CUMULATIVE ANNUAL GROWTH RATE (CAGR) OF BSE AND NSE

BSE					NSE			
Year	Number of contracts	CAGR (%)	Turnover	CAGR (%)	Number of contracts	CAGR (%)	Turnover	CAGR (%)
2000-01	77743	35.74	1673	14.88	90580	4533.33	2365	-56.90
2001-02	105527	30.81	1922	28.93	4196873	299.56	1019.26	331.55
2002-03	138037	3.76	2478	102.66	16768909	239.24	4398.62	384.38
2003-04	143224	271.25	5021.81	220.85	56886776	35.39	21306.1	19.54
2004-05	531719	-99.96	16112.32	-99.95	77017185	104.66	25469.82	89.41
2005-06	203	877348.28	8.78	671957.18	157619271	37.60	48241.74	52.49
2006-07	1781220	318.44	59006.62	310.65	216883573	95.96	73562.42	77.95
2007-08	7453371	-93.34	242308.41	-95.14	425013200	54.68	130904.78	-15.89
2008-09	496502	-98.18	11774.83	-98.01	657390497	3.33	110104.82	60.43
2009-10	9028	-37.72	234.06	-34.06	679293922	52.25	176636.65	65.58
2010-11	5623	572953.97	154.33	523761.85	1034212062	16.52	292482.21	7.19
2011-12	32222825	714.46	808475.99	786.06	1205045464	-6.11	313497.32	0.58
2012-13	262440691	15.05	7163576.66	28.70	1131467418	13.52	315330.04	21.17
2013-14	301942441	67.41	9219434.32	120.87	1284406775	43.03	382092.15	45.53
2014-15	505478869	-78.99	20362741.42	-78.02	1837029857	14.24	556041.97	16.58
2015-16	106209394		4475008.32		2098610301		648258.24	
CAGR		61.82%	CAGR	69.23%	CAGR	95.43%	CAGR	45.39

The **compound annual growth rate (CAGR)** is a useful measure of growth over multiple time periods. It can be thought of as the growth rate that gets you from the initial trading value to the ending trading value if you assume that the trading volume has been compounding over the time period.

The formula for CAGR is

$$\text{CAGR} = (\text{EV} / \text{BV})^{1/n} - 1$$

Where:

EV = Trading ending value

BV = Trading beginning value

n = Number of periods (years).

INTERPRETATION

The CAGR stands Cumulative Annual Growth Rate. The CAGR for the number of contracts of BSE represent at 61.82%, which seems to be a highly moderate percentage but the average annual growth rate have significant variations over the number of years. While in some years the CAGR percentage has significant rise and in some years there has been a negative growth. For instance in the year 2003-04 the percentage stands at 271.25% while in 2004-05 at -99.96%, similarly in the year 2011-12 the positive percentage stands at 714.46% in the year 2014-15 the average annual growth rate stood at – 78.99%.

The CAGR for the total turnover of BSE represent at 69.23%, which seems to be a highly moderate percentage but the average annual growth rate have huge variations over the number of years. While in some years the CAGR percentage has significantly rise and in some years there has been a negative percentage of growth. For instance from the year 2000-01 to 2002-03 the growth percentage

has had significant rise at 220.85% while in 2004-05 at -99.95%, similarly in the year 2011-12 the positive percentage stands at 786.06% and in the year 2014-15 the average annual growth rate stood at – 78.02%.

The CAGR stands Cumulative Annual Growth Rate. The CAGR for the number of contracts of NSE represent at 95.43%, which seems to be a high percentage of growth as compared to growth rate of BSE, but the average annual growth rate have drastic variations over the number of years and shown irregular variations. While in some years the CAGR percentage has significantly rise and in some years there has been a negative growth. For instance in the year 2003-04 the percentage stands at 239.24% while in rest of the years seems to be a drastic variations in growth rate. The lowest CAGR percentage in the year 2008-09 at 3.33%, similarly in the year 2011-12, negative percentage stands at -6.11% and in the year 2014-15 the average annual growth rate stood at 14.24%.

The CAGR for the total turnover of NSE represent at 69.23%, which seems to be a high percentage as compared to growth rate of BSE, but the average annual growth rate have huge variations over the number of years. While in some years the CAGR percentage has significantly rise and in some years there has been a negative percentage of growth. For instance in the starting year 2000-01 negative percentage stands at -56.90% and in the year 2003-04 the percentage stands at 384.38 % while in rest of the years seems to be a drastic variations in growth rate. The lowest

CAGR percentage in the year 2011-12 at 0.58%, which is lowest growth rate as compared to BSE growth rate, similarly in the year 2007-08, negative percentage stands at -15.89 % and in the year 2014-15 the average annual growth rate stood at 16.58%.

FINDINGS OF THE STUDY

The following are the significant findings of the study which derived from quantitative analysis of BSE and NSE trading volume and total turnover from the year 2000-01 to 2015-16.

1. Bombay stock exchange is one of the oldest and well popularize stock exchange among all exchanges of India. In the beginning years of derivatives trading, BSE has had significant rise both in terms of number of contracts traded and total turnover but has huge and drastic variations in the rest of the years of trading. However, BSE has had very less trading volume and turnover as compared to that of the NSE.
2. The Cumulative Annual Growth Rate of BSE in terms of both number of contracts traded and total turnover stands at 61.82% and 69.23%. The annual growth rate of BSE has had tremendous variations over 15 years of trading as compared to that of the NSE and in some years there has been a drastic drop in the growth and some years seems to be negative growth rate.
3. NSE is one of the largest stock exchanges of India, which is called as youngest stock exchange with lot of energetic growth in terms of both trading volume and total turnover. NSE has had incredible rise both in terms of number of contracts traded and total turnover but has huge and drastic variations in the rest of the years of trading. However, NSE has had very high trading volume and turnover as compared to that of the BSE. The NSE has a significant record in terms of both number of contracts traded and total turnover as compared to all Asian stock exchanges.
4. The Cumulative Annual Growth Rate of NSE in terms of both number of contracts traded and total turnover stands at 95.43% and 45.39%. The annual growth rate of NSE has had tremendous rise and fall over the past 15 years. There has been a drastic drop in CAGR percentage in some of the years and in some years seems to be negative growth rate. However NSE has drastic growth in percentage as compared to that of the BSE.
5. However it is to be observed that, NSE has incredible and remarkable growth both in terms of number of contracts traded and total turnover since from introduction of derivatives in Indian Capital Market as

compared to BSE. It is evident from the CAGR, NSE has a tremendous growth in terms of number of contracts (95.43%) as compared to that of BSE but in terms of total turnover BSE has remarkable growth (69.23%) as compared to that of NSE.

RECOMMENDATIONS

1. BSE require to concentrating on increasing its growth both in terms of number of contracts traded and total turnover.
2. BSE has to chackout suitable policies to enhance its growth in terms of number of contracts traded and total turnover, because its growth rate seems to be quite less as compared to that of the NSE.
3. BSE need to concentrate not only on increasing trading volume and total turnover but also on pushing consistent and continues cumulative annual growth rate, because its performance as compared to NSE seems to be quite less.
4. NSE has performing comparatively quite well as compared to that of the BSE though it has to concentrate on steady and consistent growth in increasing contracts and turnover instead of hazardous variations in derivatives trading.
5. NSE has to concentrate on increasing its turnover because as it CAGR quite less as compared to BSE.
6. Though NSE is well performer as compared to BSE, need to chackout potential policies for further improvement in trading volume and turnover.
7. Both BSE and NSE need to create awareness and educate about derivatives trading among all types of investors.
8. Both BSE and NSE need to market and advertise need of derivatives trading among all types of investors to enhance their potential results by using derivatives as risk management, speculative and arbitraging tool.

CONCLUSION

Innovation of derivatives have redefined and revolutionized the entire financial industry across the globe and derivatives have earned a well deserved and extremely significant place among all the financial products. Derivatives are risk management tool that help in effective management of risk by various an opportunity to transfer risk, from the one who wish to avoid it; to one, who wish to accept it, similarly derivatives are also use as speculative and arbitraging tool for enhancement of returns and exploiting opportunities in the financial market. The financial markets have undergone qualitative changes in the last three decades due to phenomenal growth of derivatives. An increasingly large number of institutions now

consider derivatives to play a significant role in implementing their financial policies. Derivatives are considered not only a risk management tool but also speculative and arbitraging tool that helps in effective management of risk by stakeholders. In the present highly uncertain business phenomena the importance of risk management is much higher than ever before.

The emergence of derivative market an ingenious feat of financial engineering that provides an effective and less costly solution to the problem of risk that resulting from high uncertainty and price volatility. Since 2000, financial derivatives market in India has shown a remarkable growth both in terms of volumes and number of traded contracts and the stock markets are becoming globally efficient. Earlier BSE was the most popular and reliable stock exchange in India but after introduction of NSE, it has taken over BSE in terms of turnover. NSE alone accounts for 90 per cent of the derivatives trading in Indian markets. The statistical data seems that the total turnover on the financial derivatives segment has grown by Rs 5123266.56 billion during the year 2015-16 as compared with Rs 4038 billion in the year 2000-01. If compare to trading figures of NSE and BSE, performance of NSE is well deserved and extremely elegant and BSE is not encouraging both in terms of volumes and number of contracts traded in all categories of derivatives product.

REFERENCES

1. Barot Himanshu and Gajjar B Nilesh, "Role and Growth of Financial Derivatives in the Indian Capital Market", *International Journal of Research in Management and Pharmacy*, Vol.2 issue 6, June 2013.
2. Vashishtha Ashutosh and Kumar Sathish "Development of Financial Derivatives Market in India-A case study", *International Journal of Finance and Economics*, issue 37, June 2010.
3. Kaur P (2004), "Financial Derivatives: Potential of derivatives Market in India and emerging derivatives market structure in India"
4. Harish A S (2001) "Potential of Derivatives Market in India" *The ICFAI Journal of Applied Finance*, Vol 7, No 5, pp 1-24.
5. Miss. Caroline Priyanka Koorse and Dr. S. Kavitha, *EPRA International Journal of Economic and Business Review*, Vol-3, issue 7, July 2015.
6. NSE fact book, 2016 issue. Access at <http://www.nseindia.com>.
7. BSE website. Access at <http://www.bseindia.com>.
8. Vohra. N.D. and Bagri, B.R. (2011). *Futures and Options*, (2nd Edition), Tata McGraw Hills, New Delhi.
9. Desai, Vasant (2008). "Fundamental of the Indian Financial System", (6th Edition). Himalaya Publishing, Mumbai.
10. S. L. Gupta, *Financial Derivatives, theory, concepts and problems*. PHI. 12th edition. www.phindia.com.
11. G. Kotreshwar, *Financial Derivatives*, Chandan Publications, Mysore; 15:13N 978-81- 929366-0-4.
12. S.S.S Kumar, *Financial Derivatives*, PHI Learning Pvt. Ltd, New-Delhi,(2012). www.phindia.com.
13. Manish Bansal and Navneet Bansal, *Derivatives and Financial Innovation*, McGraw hill Education Pvt. Ltd, New-Delhi, 6th edition 2010, www.tatamcgrawhill.com.
14. Prafulla Kumar Swain, *Fundamentals of Financial Derivatives*, HpH, 2nd edition 2013. www.himpub.com.