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NEED/IMPORTANCE OF THE STUDY

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RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

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POTENTIALITY OF DERIVATIVE TRADING IN INDIAN CAPITAL MARKET: AN EMPIRICAL STUDY ON NSE

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ABSTRACT

Discovery of derivatives have restructured 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 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 and optimizing the results 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 (National Stock Exchange), 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 648258.24 billion during the year 2015-16 as compared with Rs 2365 in the year 2000-01. If compare to trading figures of NSE, performance of NSE is well deserved and extremely elegant and is 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 NSE in India. It is an endeavor to portray the growth and expansion of financial derivative of NSE in India during the time period of 2000-01 to 2015-16.

KEYWORDS

NSE, CAGR, financial derivatives, derivative trading, variations.

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 derivative 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 Capital markets indeed waited for too long for derivatives trading to emerge. The time 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.

SIGNIFICANCE OF THE STUDY

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 NSE in terms of number of contracts and respective total turnover of futures and options segment.

OBJECTIVES OF THE STUDY

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

RESEARCH METHODOLOGY

This study is undertaken to analyze the potentiality of derivative trading in National Stock Exchange. The present study has undertaken based on secondary sources. Secondary data for the study collected from websites of 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 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 NSE.

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 1 exhibits the date of commencement of various Financial Derivatives products in NSE during the period of 2000 to 2014

TABLE 1

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: Ccompiled from NSE fact book

FACTORS DRIVING GROWTH OF FINANCIAL DERIVATIVES MARKET IN INDIA

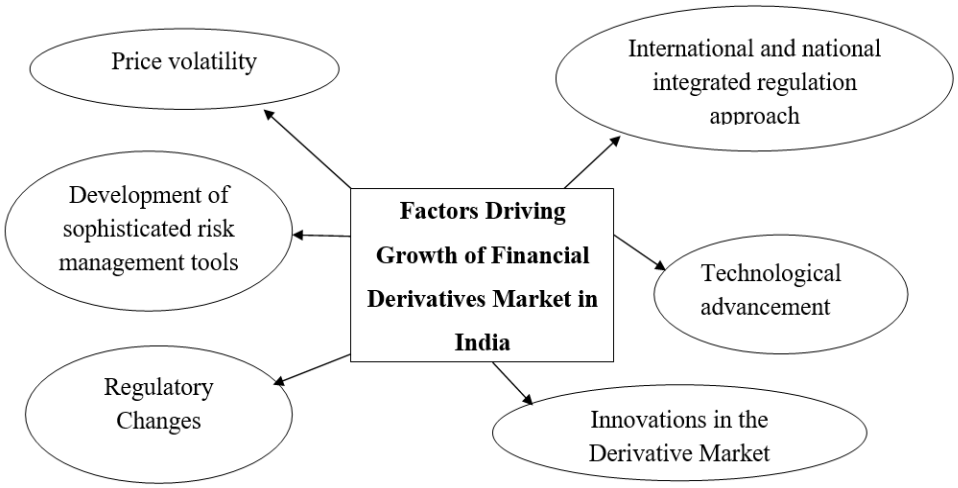
Over the last three decades, the global derivatives market has been a phenomenal growth. Large variety of derivative contracts has been launched at exchanges across the globe. The explosive growth in financial derivatives in the recent past is a consequence of number of factors. The important factors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

FIG. 1



TRENDS OF DERIVATIVE TRADING IN 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 NSE. The below tables shown the trends of futures and options in NSE. The number of contracts and turnover of futures and options trends can be analyzed by computing mean, median and standard deviation.

TABLE-2 EXHIBITS TOTAL DERIVATIVES CONTRACTS AND TURNOVER IN NSE

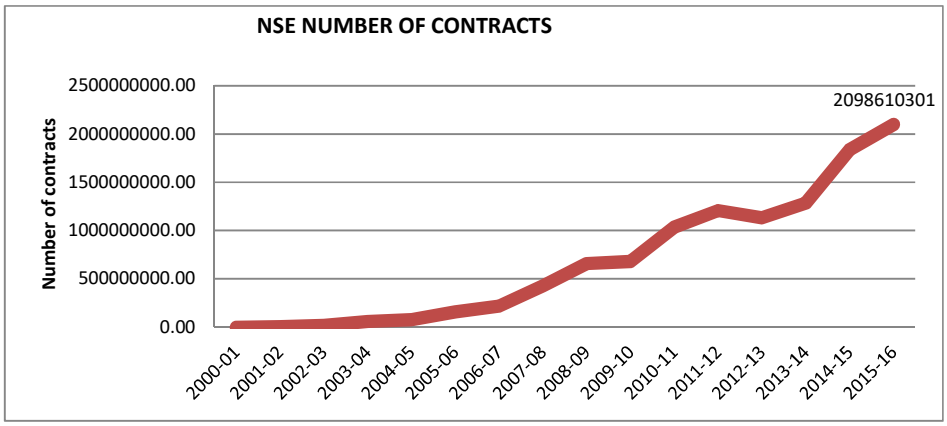
YEAR	NSE	
	Number of Contracts	Turnover (In Rs billion)
2000-01	90580	2365
2001-02	4196873	1019.26
2002-03	16768909	4398.62
2003-04	56886776	21306.1
2004-05	77017185	25469.82
2005-06	157619271	48241.74
2006-07	216883573	73562.42
2007-08	425013200	130904.78
2008-09	657390497	110104.82
2009-10	679293922	176636.65
2010-11	1034212062	292482.21
2011-12	1205045464	313497.32
2012-13	1131467418	315330.04
2013-14	1284406775	382092.15
2014-15	1837029857	556041.97
2015-16	2098610301	648258.24
Sum	10881932663	3101711.14
Maximum	2098610301	648258.24
Minimum	90580	1019.26
Average	680120791.4	193856.9463
Median	541201848.5	120504.8
Standard Deviation	682400238.6	204403.849

(Source: Compiled from NSE Website)

INTERPRETATION

Table -2 exhibits total turnover and contracts of derivatives segment in NSE from its inception to present days. 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. Table number 2 reveals that NSE has recognise themselves as king in derivatives segment among all stock exchanges of India but unfortunately due to global financial crises and drastic change in stock market environment, NSE not able to have remarkable progress in derivatives segment during 2008-09, the entire picture has tended to changed due to that NSE has down fall in total turnover and number of contracts. The same table reveals that 2009-10 onwards NSE is well performing and put forth its great efforts and again gains the rhythm in derivatives segment and currently NSE has potential growth in derivatives segment.

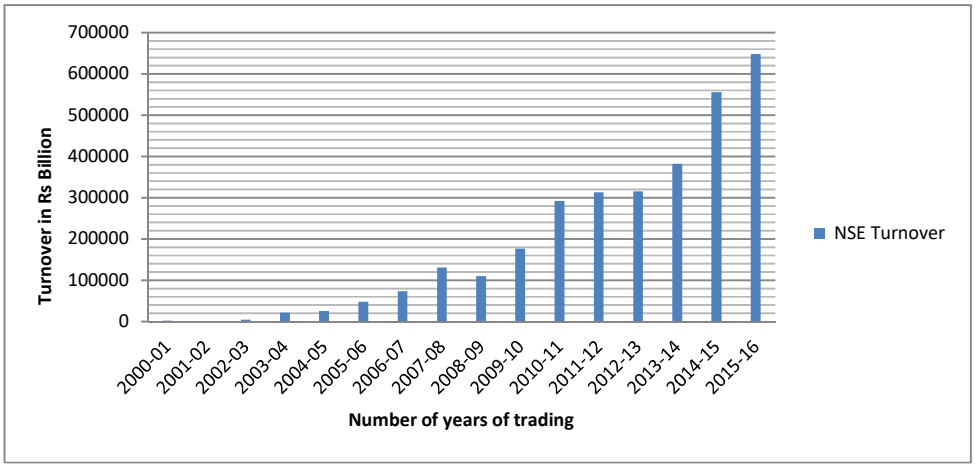
CHART 1: NSE OVERALL NUMBERS OF CONTRACTS



INTERPRETATION

Chart-1 shows that the number of contracts traded on NSE over the years has had a 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 and there 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 2098610301 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 Rs 110104.82 billion and 2009-10 onwards there has been a continues increase in the turnover of NSE. Now presently NSE has Rs 648258.24 Billion of turnover.

TABLE 3: 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-3 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 recognized 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. It shows potentiality of derivatives trading in NSE.

TABLE 4: SHOWS CUMULATIVE ANNUAL GROWTH RATE (CAGR) OF NSE

Year	Number of contracts	CAGR (%)	Turnover (Rs in Billion)	CAGR (%)
2000-01	90580	4533.33	2365	-56.90
2001-02	4196873	299.56	1019.26	331.55
2002-03	16768909	239.24	4398.62	384.38
2003-04	56886776	35.39	21306.1	19.54
2004-05	77017185	104.66	25469.82	89.41
2005-06	157619271	37.60	48241.74	52.49
2006-07	216883573	95.96	73562.42	77.95
2007-08	425013200	54.68	130904.78	-15.89
2008-09	657390497	3.33	110104.82	60.43
2009-10	679293922	52.25	176636.65	65.58
2010-11	1034212062	16.52	292482.21	7.19
2011-12	1205045464	-6.11	313497.32	0.58
2012-13	1131467418	13.52	315330.04	21.17
2013-14	1284406775	43.03	382092.15	45.53
2014-15	1837029857	14.24	556041.97	16.58
2015-16	2098610301		648258.24	
	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

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

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 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 has 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 variation 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 has 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 variation 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 significant findings of the study which derived from quantitative analysis of BSE and NSE trading volume and total turnover from the year 2000-01 t0 2015-16. National Stock Exchange is one of the youngest and well popularize stock exchange among all exchanges of India. 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, in the beginning years of derivatives trading, NSE 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, NSE has Rs 2365 billion turnover in the year 2000-01 and it has risen to Rs 648258.24 billion in the year 2015-16. It has observed that NSE has very high trading volume and turnover. The NSE has a significant record in terms of both number of contracts traded and total turnover as compared to all Asian stock exchanges.

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 of the years seems to be negative growth rate.

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. It is evident from the CAGR, NSE has a tremendous growth in terms of number of contracts (95.43%) and total turnover (45.39%).

RECOMMENDATIONS

1. NSE has performing comparatively quite well as compared to that of competitive exchanges, though it has to concentrate on steady and consistent growth in increasing contracts and turnover instead of hazardous variations in derivatives trading.
2. NSE 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 volatility.
3. NSE need to concentrate not only on increasing trading volume and total turnover but also on pushing consistent and continues cumulative annual growth rate.
4. NSE has to concentrate on increasing its turnover because as it CAGR quite less as compared to its CAGR of number of contracts.
5. NSE needs to create awareness and educate about derivatives trading among all types of investors.
6. NSE needs 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 restructured and redefined 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 648258.24 billion during the year 2015-16 as compared with Rs 2365 in the year 2000-01. If compare to trading figures of NSE, performance of NSE is well deserved and extremely elegant and is encouraging both in terms of volumes and number of contracts traded in all categories of derivatives product.

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