Role and Growth of Financial Derivative In the Indian Capital Market

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Abstract:
The innovative practices always catch-up the eyes of concerned people where ideas and innovation become the hallmark of progress. And even capital market is no far away from this, whereas financial derivatives have given drastic change in the growth of the financial market. The most and key role and purpose behind to introduce derivatives is minimize or eliminating price risk through hedging. The figure seems that the total turnover on the financial derivatives segment increased by Rs.31,349,732 crore during 2011-12 as compared with Rs 2,365 crore during 2000-01. The average daily turnover during 2011-12 was Rs 125,903 crore from Rs 12 crore in 2000-01 which shows CAGR of 120.49% in terms of turnover and CAGR of 115.64% in terms of average daily turnover. India's experience with launch of equity derivatives market has been extremely positive, by world standards. NSE is now one of the prominent exchanges amongst all emerging markets, in terms of equity derivatives turnover. There is an increasing sense that the derivatives market is playing a major role in shaping growth of capital market.

Keywords: *Capital market, Derivatives, Equity, Hedging, Turnover*

1. Introduction

New ideas and innovations have always been the hallmark of progress made by mankind. At every stage of development, there have been two core factors that drive man to ideas and innovation. These are increasing return and reducing risk, in all facets of life. The financial markets are no different. The endeavour has always been to maximize returns and minimize risk. A lot of innovation goes into developing financial products centered on these two factors. It has spawned a whole new area called financial engineering.

The world financial markets have undergone qualitative changes in the last three decades due to phenomenal growth of derivatives. An increasingly large number of organisations now consider derivatives to play significant role in play in implementing their financial policies. Derivatives are used for variety of purposes, but, perhaps, the most important is hedging. Hedging involves transfer of market risk- the possibility of sustaining losses due to unforeseen unfavourable price changes. A derivatives transaction allows a firm to alter its market risk profile by transferring to counter-party some type of risk for a price. Hedging is the prime reason for the advent of derivatives and continues to be a significant factor driving users to deal in derivatives.

With the world embracing the derivatives trading on a large scale, the Indian market obviously cannot remain aloof, especially after liberalisation derivatives are among the forefront innovations in the financial markets and aim to increase return and reduce risk. They provide an outlet for investors to protect themselves from the vagaries of the financial markets. These instruments have been very popular with investors all over the world.

Derivatives products serve the vitally important economic functions of price discovery and risk management. The transparency, which emerges from their trading mechanism, ensures the price discovery in the underlying market. Further, they serve as risk management tools by facilitating the trading of risks among the market participants. These products enable market participants to take the desired risks and jettison the undesirable undertones.

To facilitate the development of the derivatives market, it is necessary to educate the market participants and the investors on the nuances of these new age products and their strategic uses.

2. What are Derivatives and what do they do?

A derivative is an instrument whose value is 'derived' from another security or economic variable. The dependence of the derivative's value on other prices or variables makes it an excellent vehicle for transferring and managing risk.

John C. Hull, "A derivative can be defined as a financial instrument whose value depends on (or derives from) the values of other, more basic underlying variables."

Robert L. McDonald "A derivative is simply a financial instrument (or even more simply an agreement between two people) which has a value determined by the price of something else."

A derivative instrument, broadly, is a financial contract whose payoff structure is determined by the value of an underlying commodity, security, interest rate, share price index, exchange rate, oil price, and the like. Thus, a derivative instrument derives its value from some underlying variable. It is instead a promise to convey ownership.

All derivatives are based on some 'cash' products. The underlying basis of a derivative instrument may be any product including commodities, precious metals like gold and silver, foreign exchange rate, bonds of different types, including medium to long-term negotiable debt securities issued by governments, companies, etc., short-term debt securities such as T-bills; and Over-the-counter (OTC) money market products such as loans or deposits.

3. Derivatives Instruments Available in India

In the exchange-traded market, the biggest success story has been derivatives on equity products. Index futures were introduced in June 2000, followed by index options in June 2001, and options and futures on individual securities in July 2001 and November 2001, respectively. As of 2005, the NSE trades futures and options on 118 individual stocks and 3 stock indices. All these derivative contracts are settled by cash payment and do not involve physical delivery of the underlying product (which may be costly). Derivatives on stock indexes and individual stocks have grown rapidly since inception. In particular, single stock futures have become hugely popular; accounting for about half of NSE‟s traded value in October 2005. In fact, NSE has the highest volume (i.e. number of contracts traded) in the single stock futures globally, enabling it to rank 16 among world exchanges in the first half of 2005. Single stock options are less popular than futures. Index futures are increasingly popular, and accounted for close to 40% of traded value in October 2005. The growth in volume of futures and options on the Nifty index, and shows that index futures have grown more strongly than index options NSE launched interest rate futures in June 2003 but, in contrast to equity derivatives, there has been little trading in them. One problem with these instruments was faulty contract specifications, resulting in the

underlying interest rate deviating erratically from the reference rate used by market participants. Institutional investors have preferred to trade in the OTC markets, where instruments such as interest rate swaps and forward rate agreements are thriving. As interest rates in India have fallen, companies have swapped their fixed rate borrowings into floating rates to reduce funding costs. Activity in OTC markets dwarfs that of the entire exchange-traded markets, with daily value of trading estimated to be Rs. 30 billion in 2004.

There are basically four kinds of products or instruments available in Indian stock market i.e. Individual Stock Futures, Stock Index Futures, Individual Stock Options and Stock Index Option. The equity derivative market at both the platform on BSE and NSE, the clearing and settlement cycle is same excluding the stocks and indices and tick size at both the places.

4. Trends of Derivatives Market In India

India is one of the most successful developing countries in terms of a vibrant market for derivatives. This reiterates the strengths of the modern development of India's securities markets, which are based on nationwide market access, anonymous electronic trading, and a predominantly retail market. There is an increasing sense that the equity derivatives market is playing a major role in shaping price discovery.

Equity derivatives trading started in India June 2000, after regulatory process which stretched over more than four years. In July 2001, the equity spot market moved to rolling settlement. Thus, in 2000 and 2001, the Indian equity market reached the logical conclusion of the reforms program which began in 1994. It is important to learn about the behaviour of equity market as well as investors towards equity market in new regime.

India's experience with launch of equity derivatives market has been extremely positive, by world standards. NSE is now one of the prominent exchanges amongst all emerging markets, in terms of equity derivatives turnover. There is an increasing sense that the derivatives market is playing a major role in shaping price discovery.

The figure seems that the total turnover on the F&O segment increased by Rs.31,349,732 crore during 2011-12 as compared with Rs 2,365 crore during 2000-01. The average daily turnover during 2011-12 was Rs 125,903 crore from Rs 12 crore in 2000-01 which shows CAGR of 120.49% in terms of turnover and CAGR of 115.64% in terms of average daily turnover.

4.1 Journey of Equity Derivatives Market at NSE

Equity derivatives trading at NSE, which forms nearly 98%-99% of the total market, has become nearly a decade old in the Indian securities market. Today, this market forms an important component of the Indian securities markets.

As we have earlier seen that even though the derivative trading started in the year 2000, it has surpassed the equity market in terms of trading volumes. The trading volumes in equity derivatives have quadrupled the trading volumes in the equity markets.

4.1.1 Analysis of Index Futures at NSE

The index futures trading at NSE commenced on June 12, 2000 on S&P CNX Nifty Index. Table 1, shows the journey of the index futures since the year 2000. Over a period of time many indices have been made available for index futures trading. The index futures turnover at NSE has grown from Rs. 2,365 crore to Rs. 3,577,998 crore in 2011-12. This shows that index futures have

witnessed a CAGR of 83.62% in last 12 years in terms of turnover and a CAGR of 84.61% in terms of number of contracts traded.

Table 1 Business Growth of Index Futures at NSE

Year	Index Futures		Percentage share of Index Futures in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
Jun-00 to Mar-01	90,580	2,365	100.00	100.00
2001-02	1,025,588	21,482	24.44	21.08
2002-03	2,126,763	43,951	12.68	9.99
2003-04	17,191,668	554,462	30.22	26.02
2004-05	21,635,449	772,174	28.09	30.32
2005-06	58,537,886	1,513,791	37.14	31.38
2006-07	81,487,424	2,539,575	37.57	34.52
2007-08	156,598,579	3,820,667	36.85	29.19
2008-09	210,428,103	3,570,111	32.01	32.42
2009-10	178,306,889	3,934,389	26.25	22.27
2010-11	165,023,653	4,356,755	15.96	14.90
2011-12	146,188,740	3,577,998	12.13	11.41

Note : Index futures was introduced in June 2000, both in the BSE and NSE.
Source: Data compile from fact book 2000-01 to 2010-12 retrieved from www.nseindia.com

Figure 1 Business Growth of Index Futures at NSE

Source: From Table 1

Table and Figure 1 are indicating that the product has seen a continuous rise in its turnover year after year excluding 2008-09 and 2010-11 due to global financial crisis and instability of world financial market because of euro zone debt crisis in 2011. And against it, the percentage share of index futures in terms of total turnover in the derivative segment has little bit down at 15% -16% levels where it was decade before. This can be attributed to the increasing preference for the index futures trading. However, there were increased preferences for the usage of index futures during 2004-05 to 2006-07 when the index futures accounted for a share of around 30% - 35%.
Index futures at NSE are currently available on the indices like S& P CNX Nifty, Nifty Midcap 50, CNX IT, CNX Bank and CNX Infra. Among the index futures products at NSE, the percentage share of Nifty futures is around 96%. This shows that Nifty futures have been the most prominent and popular product. To enable wider participation to retail investors in the derivatives markets, SEBI allowed introduction of smaller contract sized derivatives products in

India. Consequently, the mini-Nifty futures contracts were introduced for trading in January, 2008.

4.1.2 Analysis of Stock Futures at NSE

The trading in individual stock futures started on November 9, 2001. Table 2 shows the business growth of stock futures at NSE in terms of number of contracts traded and in terms of turnover since inception.

Table 2 Business Growth of Stock Futures at NSE

Year	Stock Futures		Percentage share of Stock Futures in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
2000-01	NA	NA	NA	NA
2001-02	1,957,856	51,516	46.65	50.54
2002-03	10,676,843	286,532	63.67	65.14
2003-04	32,368,842	1,305,949	56.90	61.29
2004-05	47,043,066	1,484,067	61.08	58.27
2005-06	79,586,852	2791721	51.33	57.87
2006-07	104,955,401	3,830,972	48.39	52.08
2007-08	203,587,952	7,548,563	47.90	57.66
2008-09	221,577,980	3,479,642	33.71	31.60
2009-10	145,591,240	5,195,247	21.43	29.41
2010-11	186,041,459	5,495,757	17.99	18.79
2011-12	158,344,617	4,074,671	13.14	13.00

Note : Stock futures was introduced in November 2001, both in the BSE and NSE.

Source: Data compile from fact book 2001-02 to 2010-12 retrieved from www.nseindia.com

Figure 2 Business Growth of Stock Futures at NSE

Source: From Table 2

Table and Figure 2 show the growth of stock futures at NSE has been from Rs 51,516 crore to Rs 4,074,671crore in 2011-12. This shows that stock futures witnessed a CAGR of 48.78% in last eleven years in terms of turnover and a CAGR of 49.08% in terms of number of contracts traded. As of March 2011, there were 223 stocks available for trading at NSE.

In terms of share of stock futures has declined over a period of time. Till the year 2007-08, the share of stock futures 57.66% which was relatively less than share of 61.29% in 2003-04.

However, since then the share of stock futures has come down massively to 13.00% in 2011-12. This shows that there has been a drift of participants in the stock futures.

4.1.3 Analysis of Index Options at NSE

The index options were allowed for trading on S&P CNX Nifty Index on June 4, 2001. Table 3 shows the business growth of Index Options from 2001-02 to 2011-12 in overall equity derivatives market. The table reveals that the Index Options contributed only 4.19% in terms of numbers of contracts traded and 3.69% in terms of trading volume in total derivatives market in 2001-02. When there is tremendous growth in Index options during last decade which is indicated in year 2011-12 in which 70.21% shared in terms of number of contracts traded and 72.47% shared in terms of trading volume in total derivatives market. From the below figures in percentage change it is conclude that the Index options contract is more preferred product than other products.

Table 3 Business Growth of Index Options at NSE

Year	Index Options		Percentage share of Index Options in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
2000-01	NA	NA	NA	NA
2001-02	175,900	3,766	4.19	3.69
2002-03	442,241	9,247	2.64	2.1
2003-04	1,732,414	52,823	3.05	2.48
2004-05	3,293,558	121,954	4.28	4.79
2005-06	12,935,116	338,469	8.21	7.02
2006-07	25,157,438	791,912	11.60	10.77
2007-08	55,366,038	1,362,111	13.03	10.41
2008-09	212,088,444	3,731,501	32.26	33.89
2009-10	341,379,523	8,027,965	50.26	45.45
2010-11	650,638,557	18,365,366	62.91	62.79
2011-12	846,017,736	22,720,032	70.21	72.47

Note : Index options was introduced in June 2001,both in the BSE and NSE.

Source: Data compile from fact book 2001-02 to 2010-12 retrieved from www.nseindia.com

Figure 3 Business Growth of Index Options at NSE

Source: From Table 3

Worldwide, options have been the most preferred product in derivatives trading. However, in case of India, in the beginning the preferred product derivative trading was futures. The growth of index options at NSE in terms of turnover has been from Rs 3,766 crore to Rs 22,720,032 crore in 2011-12. This shows that index options witnessed a CAGR of 120.62% in last decade in trading volume and a CAGR of 116.12% in terms of number of contracts traded. In terms of trading volume and number of contracts traded, the share of index options in total derivatives trading volume has increased significantly and on a continuous yearly basis.

Table 3 shows that till the year 2007-08, the share of index options in total derivatives trading volume was 10.41% but in the year 2008-09 and 2009-10, index options accounted for a share of 33.89% and 45.45% respectively and this increased to a share of 72.47% in 2011-12. Increased volume in index options can be attributed to the global financial crisis which made options the most preferred product for trading since they provide better hedge in times of uncertainty. A people had less appetite for risk that particular time.

4.1.4 Analysis of Stock Options at NSE

Table shows the growth of stock options at NSE in terms of number of contracts traded and trading volume since inception. The individual stock options were allowed for trading on July 2, 2001. Individual stock options were allowed for trading before individual stock futures.

Table 4 Business Growth of Stock Options at NSE

Year	Stock Options		Percentage share of Stock Options in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
2000-01	NA	NA	NA	NA
2001-02	1,037,529	25,163	24.72	24.69
2002-03	3,523,062	100,133	21.09	22.76
2003-04	5,583,071	217,212	9.81	10.19
2004-05	5,045,112	168,858	6.55	6.63
2005-06	5,240,776	180,270	3.32	3.74
2006-07	5,283,310	193,811	2.44	2.63
2007-08	9,460,631	359,136	2.23	2.74
2008-09	13,295,970	229,227	2.02	2.08
2009-10	14,016,270	506,065	2.06	2.87
2010-11	32,508,393	1,030,344	3.14	3.52
2011-12	36,494,371	977,031	3.03	3.12

Note : Stock options was introduced in July 2001,both in the BSE and NSE.

Source: Data compile from fact book 2001-02 to 2010-12 retrieved from www.nseindia.com

Figure 4 Business Growths of Stock Options at NSE

Source: From Table 4

The above Table and Figure 4 reveal the growth of stock options at NSE has been from Rs 25,163 crore to Rs 977,031crore in 2011-12. This indicates that stock options witnessed a CAGR of 39.46% in last decade in terms of trading volume and a CAGR of 38.21% in terms of number of contracts traded. As of March 2011, there were 223 stocks options available for trading at NSE.

4.1.5 Business Growth of Futures & Options Segment at NSE

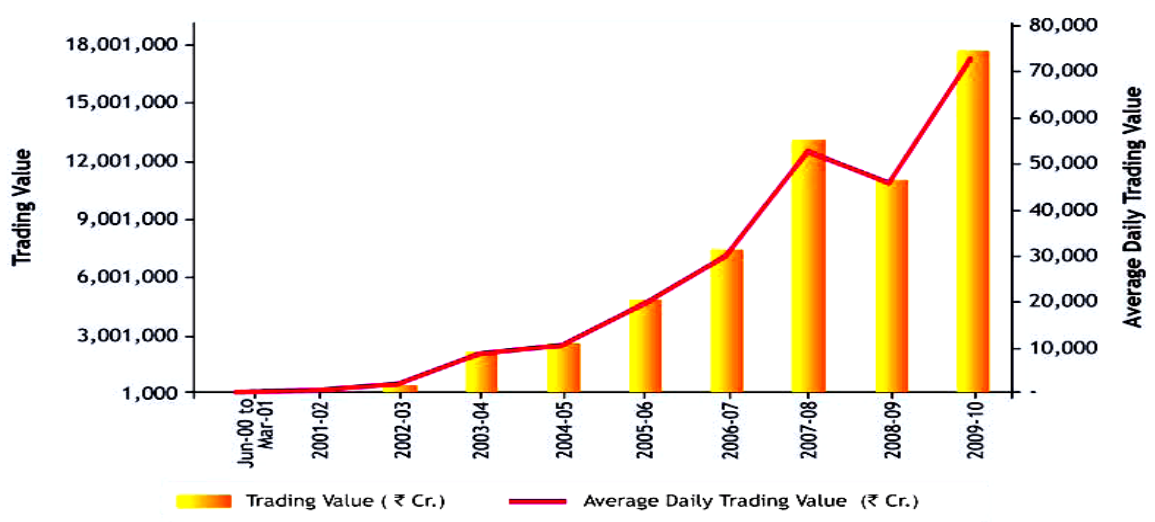
As the study has shown earlier analysis in business growth in each and every product, there is a remarkable change from the introduction. Table and Figure 5 are indicating that in FY 2000-01 only Index futures was introduced and from next year onwards others three products were also introduced. So, the growth in terms of trading value the CAGR is 120.49 percent when CAGR of 116.24 percent in terms of average daily trading value means the derivative market is being preferred market by participators.

Table 5 Business Growth of Futures & Options Segment at NSE

Source: Data compile from fact book 2001-02 to 2010-12 retrieved from www.nseindia.com

Year	Total		Average Daily Trading Volume (Rs. cr.)
	No. of Contracts Traded	Trading Volume (Rs. cr.)	
2000-01	90,580	2,365	12
2001-02	4,196,873	101,927	413
2002-03	16,768,909	439,864	1,752
2003-04	56,886,776	2,130,649	8,388
2004-05	77,017,185	2,547,053	10,067
2005-06	156,300,630	4,824,250	19,220
2006-07	216,883,573	7,356,271	29,543
2007-08	425,013,200	13,090,478	52,153
2008-09	657,390,497	11,010,482	45,311
2009-10	679,293,922	17,663,665	72,392
2010-11	1,034,212,062	29,248,221	115,150
2011-12	1,205,045,464	31,349,732	125,903

Figure 5 Business Growth of Futures & Options Segment at NSE



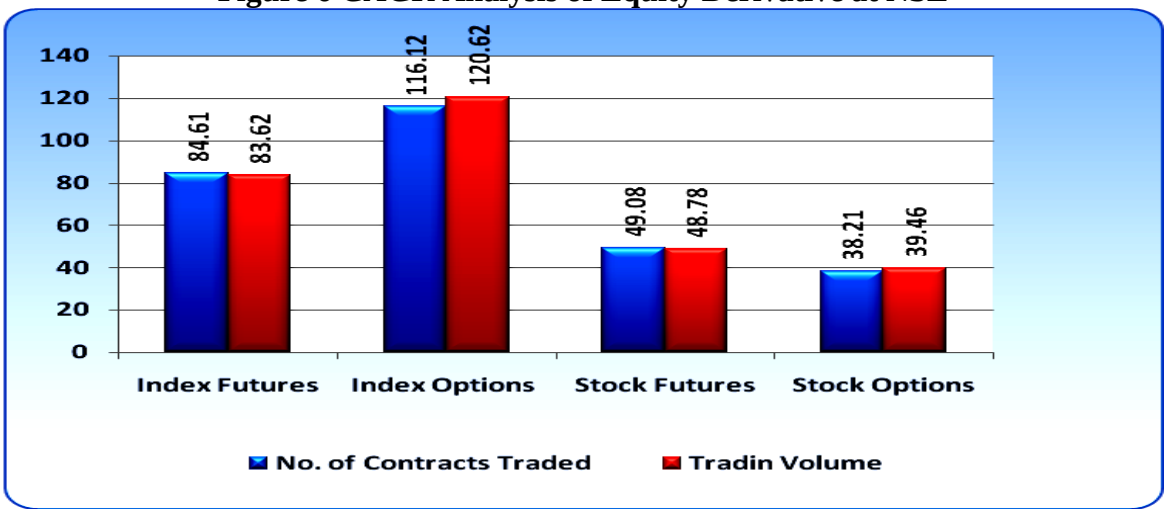
Source: Futures & Options Segment, Factsheet 2010, www.nseindia.com, Pg. No. 109

4.1.6 Relative Analysis of all Equity Derivative Products at NSE

(a) CAGR Analysis

The relative analysis of all equity derivative products in terms of Compound Annual Growth Rate (CAGR) shows that Index options have witnessed the highest growth rate followed by Index futures, Stock futures and Stock Options. Index options have picked up particularly since the last three fiscal years.

Figure 6 CAGR Analysis of Equity Derivative at NSE



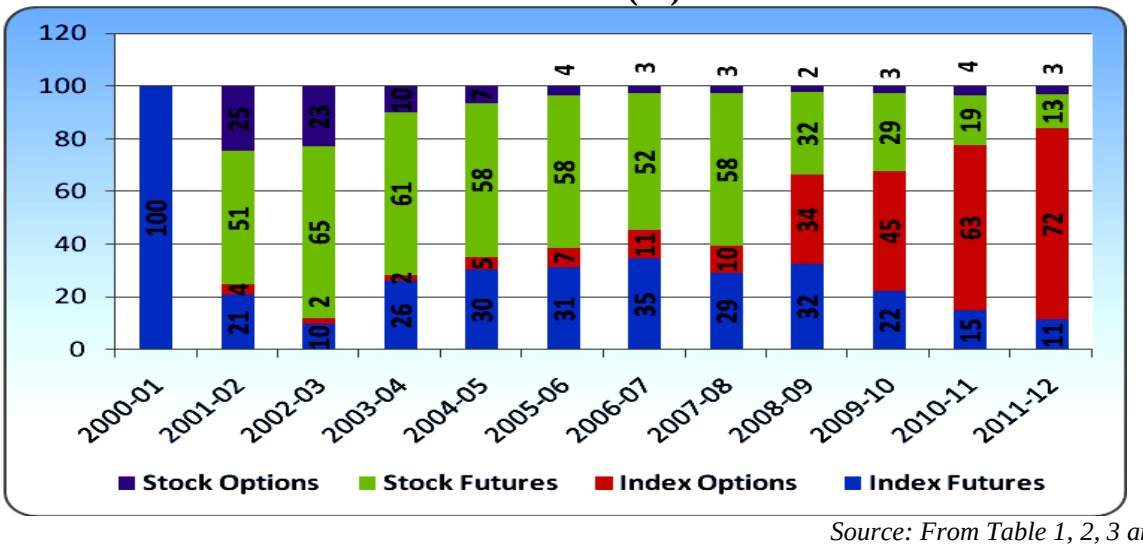
Source: From Table 1, 2, 3 and 4

(b) Percentage Share of Derivative Products in Total Derivative Trading

In the year 2000-01, Index futures were only available for trading and it accounted for a share of 100% of the turnover.

However, the following fiscal year 2001-02 saw 50.54% of the share in turnover by stock futures followed by stock options (24.69%), index futures (21.08%) and stock options (3.69%). The most commendable performance during FY 2001-02 was that of stock futures which was introduced only four months (i.e. in Nov. 9, 2001) prior to the closing of the fiscal 2001-02. Stock options were the second most favoured product for trading.

Figure 7 Relative Analysis of Share in Total Turnover of Equity Derivatives Product (%) at NSE



Source: From Table 1, 2, 3 and 4

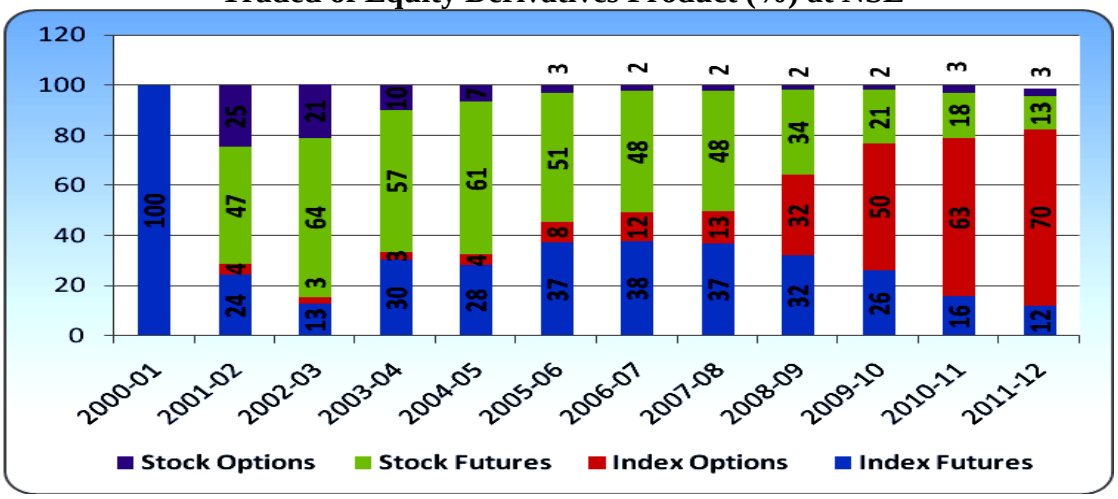
Table 6 Percentage Share of Derivative Products in India (NSE)

Year	Index Futures		Stock Futures		Index Options		Stock Options	
	No. of Contracts Traded	Trading Volume	No. of Contracts Traded	Trading Volume	No. of Contracts Traded	Trading Volume	No. of Contracts Traded	Trading Volume
Jun-00 to Mar-01	100.00	100.00	NA	NA	NA	NA	NA	NA
2001-02	24.44	21.08	46.65	50.54	4.19	3.69	24.72	24.69
2002-03	12.68	9.99	63.67	65.14	2.64	2.1	21.09	22.76
2003-04	30.22	26.02	56.90	61.29	3.05	2.48	9.81	10.19
2004-05	28.09	30.32	61.08	58.27	4.28	4.79	6.55	6.63
2005-06	37.14	31.38	51.33	57.87	8.21	7.02	3.32	3.74
2006-07	37.57	34.52	48.39	52.08	11.60	10.77	2.44	2.63
2007-08	36.85	29.19	47.90	57.66	13.03	10.41	2.23	2.74
2008-09	32.01	32.42	33.71	31.60	32.26	33.89	2.02	2.08
2009-10	26.25	22.27	21.43	29.41	50.26	45.45	2.06	2.87
2010-11	15.96	14.90	17.99	18.79	62.91	62.79	3.14	3.52
2011-12	12.13	11.41	13.14	13.00	70.21	72.47	3.03	3.12

Note : Index futures were introduced in June 2000, index options in June 2001, stock options in July 2001 and stock futures in November 2001, both in the BSE and NSE.

Source: From Table 1, 2, 3 and 4

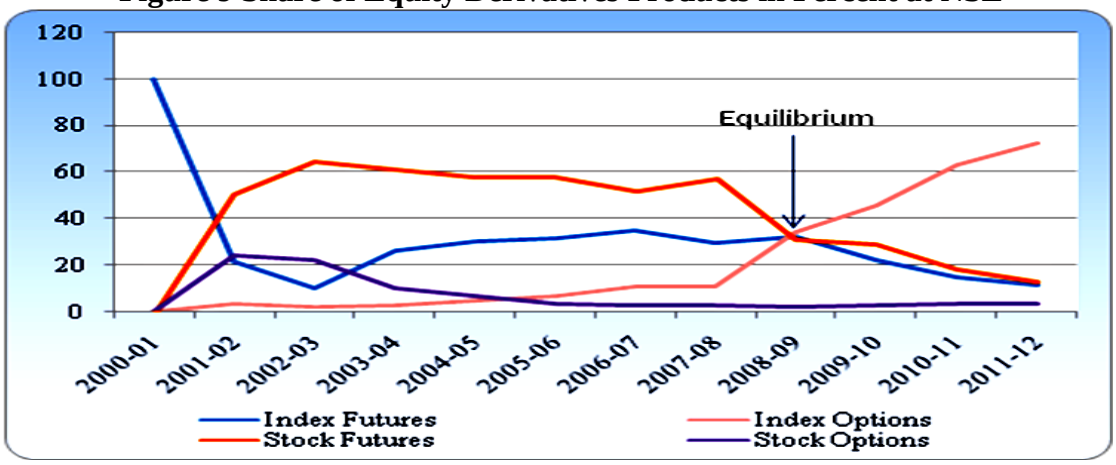
Figure 8 Relative Analysis of Share in Total Number of Contracts Traded of Equity Derivatives Product (%) at NSE



Source: From Table 1, 2, 3 and 4

Highest percentage of stock futures trading was witnessed in the year 2002-03 (65.14%) while stock options accounted for 22.76% of the total turnover in the derivatives segment. This year particularly showed the market confidence in the single stock based derivatives which together accounted for nearly 88% of the market share in derivatives turnover. Index futures turnover dwindled significantly and it accounted for a share of 9.99%. This was the last year when stock options saw a significant share of 22.76%, after that the volumes only kept dwindling and ranged between 2-4%. However, over and above when period was passed out, gradually, the index option has being most preferred product day-by-day.

Figure 9 Share of Equity Derivatives Products in Percent at NSE



Source: From Table 1, 2, 3 and 4

The year 2002-03, again saw revival of index futures and this time the market showed more confidence in the futures product category (both in index and stock futures). The percentage share of index futures was swapped by stock options. Since the year 2003-04, the Indian markets saw a set range of percentage share of different derivative market products. The index futures broadly accounted for a share of 25-35% of trading, followed by stock futures (50-60%), index options (2-3%). From the year 2004-05, index options started gaining volumes (though not quite substantial). Major, drift in volumes have particularly been from stock futures to index options and this shift became quite evident in the year 2010-11 and 2011-12. The share of stock options came down by 87% followed by stock futures 74%, index futures 46% from 2001-02 to 2011-12 when there is a dominant growth in index options in the same period which only contributed 72% in total derivatives turnover. The near equilibrium point in index futures, index options and stock futures (31% to 33%) was reached during 2008-09.

To summaries, among the four types of products available for trading in the futures and options segment of NSE, it has been observed that the index futures and stock futures are witnessing dwindling volumes in terms of the turnover, while index options have seen an increase in the volumes since last four years. Most significant fall has been witnessed by stock futures which accounted for a share of around 50% in derivatives market turnover. On the other hand, the index options have gained significantly. This reflects that the Indian securities market are maturing and understanding the usage of options.

4.1.7 Analysis Based on Participant wise Trading Value in Equity Derivative at NSE

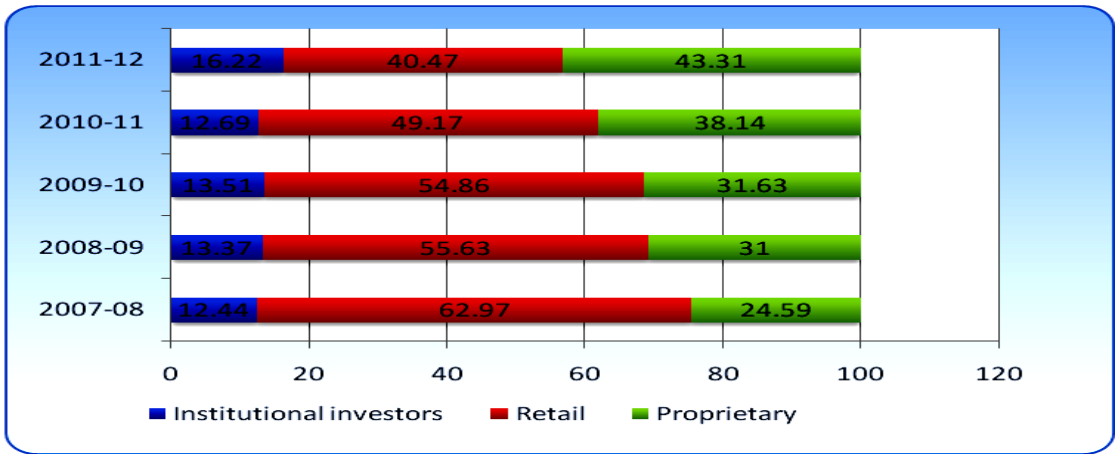
As far as participant wise trading value is concerned in derivatives market, the below Table and Figure 10 seems the change in future and options segment by different three types of participant i.e. institutional investors, retail investors and proprietary investors from year 2007-08 to 2011-12.

Table 7 Participant wise Trading Value in the F&O Segment (2007-08 to 2011-12)

Year	Institutional investors		Retail		Proprietary	
	Gross Traded Value (Rs. Cr.)	% to Gross Turnover	Gross Traded Value (Rs. Cr.)	% to Gross Turnover	Gross Traded Value (Rs. Cr.)	% to Gross Turnover
2007-08	3,256,034	12.44	16,485,724	62.97	6,439,196	24.59
2008-09	2,944,454	13.37	12,250,029	55.63	6,826,484	31.00
2009-10	4,772,915	13.51	19,378,966	54.86	11,175,447	31.63
2010-11	7,423,695	12.69	28,762,436	49.17	22,310,313	38.14
2011-12	10,170,705	16.22	25,374,513	40.47	27,154,245	43.31

Source: Fact sheet 2012 retrieved from www.nseindia.com

Figure 10 Participant wise Trading Value in the F&O Segment (2007-08 to 2011-12)



Source: From Table 10

The data available in the Table 10 shows that CAGR of 25.58% in terms of institutional investors, CAGR of 9% in terms of retail investors and CAGR of 33.35% in terms of proprietary, which indicates that proprietary investors are participating more in equity derivatives market followed by institutional and retail investors. The table and figure also seems that there is respective growth in all three types of participants' involvement in total turnover in last five years. However, in percentage wise participation by proprietary was 24.59% to 43.31% followed by retail investors was 62.97% to 40.47% and institutional investors was 12.44% to 16.22% from year 2007-08 to 2011-12. And which shows in proprietary and institutional investors' percentage share in total turnover increased where as in retail investors it decreased. So these figures have concluded that the participation by retail investors is reducing when by other investors it is increasing in total turnover.

4.2 Journey of Equity Derivatives Market at BSE

BSE created history on June 9, 2000 by launching the first exchange-traded index derivative contract in India i.e. futures on the capital market benchmark index –the BSE Sensex. In sequence of product innovation, BSE commenced trading in index options on Sensex on June 1, 2001, stock options were introduced on 31 stocks on July 9, 2001 and single stock futures were launched on November 9, 2001. And presently 120 stocks are traded in equity derivative on BSE.

BSE also launched the Chhota (mini) Sensex on January 1, 2008. With a small or 'mini' market lot of 5, it allows for comparatively lower capital outlay, lower trading cost, more precise hedging and flexible trading. It is a step to encourage and enable small investors to mitigate risk and enable easy access to India's most popular index, Sensex, through futures & options.

BSE also introduced 'Long Dated Options' on its flagship index-Sensex on February 29, 2008, whereby the members can trade in Sensex (in normal lot of 15 only and not 'mini' Sensex) options contract with an expiry of upto 3 years.

The five sectorial indices that are presently available for futures & options are BSE TECK, BSE FMCG, BSE Metal, BSE Bankex and BSE Oil & Gas.

4.2.1 Analysis of Index Futures at BSE

The index futures trading at BSE commenced on June 9, 2000 on BSE Sensex. Table and Figure 11, shows the journey of the index futures since the year 2000. Over a period of time many indices have been made available for index futures trading. The index futures turnover at BSE has grown from Rs. 1,673 crore to Rs. 178,449 crore in 2011-12. This shows that index futures have witnessed a CAGR of 47.55% in last 12 years in terms of turnover and a CAGR of 42.60% in terms of number of contracts traded.

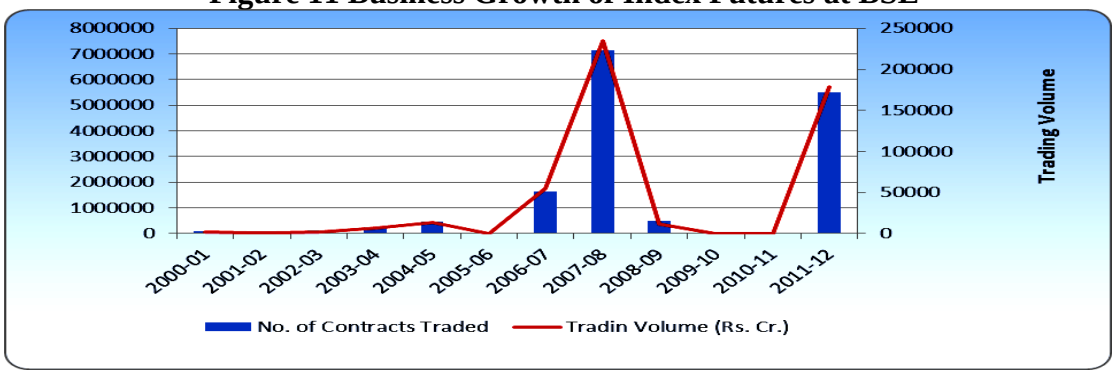
Table 8 Business Growth of Index Futures at BSE

Year	Index Futures		Percentage share of Index Futures in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
Jun-00 to Mar-01	77743	1673	100	100.00
2001-02	79,552	1,276	75.75	66.25
2002-03	1,11,324	1,811	80.66	73.08
2003-04	2,46,443	6,572	64.47	54.43
2004-05	4,49,630	13,600	84.56	84.41
2005-06	89	5	43.84	55.56
2006-07	16,38,779	55,491	92.00	94.04
2007-08	71,57,078	2,34,660	96.02	96.84
2008-09	4,95,830	11,757	99.86	99.85
2009-10	3,744	96	41.48	41.03
2010-11	5,613	154	99.82	100.00
2011-12	55,03,765	1,78,449	18.84	22.07

Note : Index futures was introduced in June 2000, both in the BSE and NSE.

Source : SEBI Handbook 2011

Figure 11 Business Growth of Index Futures at BSE



Source: From Table 11

The Table and Figure 11 are indicating that there was a growth in both numbers of contracts traded and trading volume up to 2004-05 from its introduction in the market. But the data of the year 2005-06 is shocking means in those year, trading was almost finished and only Rs 5 crore turnover. However, the trend was bad for BSE but as the study has shown earlier ultimately the flow of trading was towards NSE. Again years 2006-07 and 2007-08 had the tremendous growth in both numbers of contracts traded and turnover which reveals that the BSE was not putting efforts for increasing the participation of investors and traders in BSE. But end of the moments, from 2011 the BSE has started to put the strong efforts to educate the investors and develop and grow the BSE with increasing the participation. And which seems through growth in year 2011-12 was Rs. 178449 crore from Rs.154 crore in 2010-11. For the Index futures 2007-08 was the top most years in its history in number of contracts traded as well as in trading volume for life time high participation by investors and traders in BSE.

4.2.2 Analysis of Stock Futures at BSE

The trading in individual stock futures started on November 9, 2001. Table 12 shows the business growth of stock futures at BSE in terms of number of contracts traded and in terms of turnover since inception.

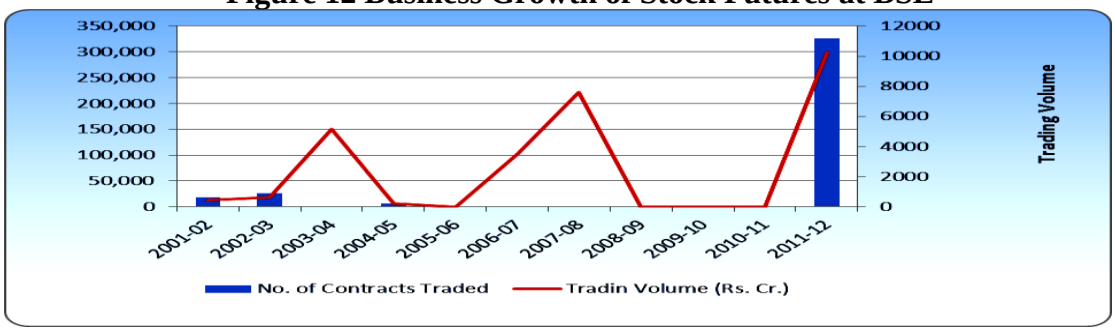
Table 9 Business Growth of Stock Futures at BSE

Year	Stock Futures		Percentage share of Stock Futures in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
2000-01	NA	NA	NA	NA
2001-02	17,951	452	17.09	23.47
2002-03	25,842	644	18.72	25.99
2003-04	1,28,193	5,171	33.54	42.83
2004-05	6,725	213	1.26	1.32
2005-06	12	1	5.91	11.11
2006-07	1,42,433	3,515	8.00	5.96
2007-08	2,95,117	7,609	3.96	3.14
2008-09	299	9	0.06	0.08
2009-10	6	0	0.07	0.00
2010-11	0	0	0.00	0.00
2011-12	326,342	10,217	1.12	1.26

Note : Stock futures was introduced in November 2001, both in the BSE and NSE.

Source : SEBI Handbook 2011

Figure 12 Business Growth of Stock Futures at BSE



Source: From Table 12

The data in Table 12 and presentation through Figure 12 show that from inception in 2001-02 to 2003-04 there was a growth in stock futures trading in both the side in terms of number of contracts traded and trading volume. In 2001-02 the number of contracts traded was 17951 whereas in 2002-03 and 2003-04 it was 25842 and 128193 respectively and in terms of trading volume it was Rs. 452 crore in 2001-02, which were increased Rs. 644 crore in 2002-03 and Rs. 5171 crore in 2003-04. And during those years the stock futures contributed more than 20% in 20 01-02 and 2002-03 whereas it was increased up to 43% in total derivatives in BSE. But after that the trading in stock futures in BSE was came down up zero in both the cases number of contracts traded and trading volume up to year 2010-11 except 2006-07 and 2007-08. And again it was started to grow from 2011-12 but contribution by this product in total is too low than Index futures. The product shows the CAGR 30.17% in terms of number of contracts traded and CAGR 32.77% in terms of turnover from 2001-02 to 2011-12.

4.2.3 Analysis of Index Options at BSE

The index options were allowed for trading on BSE Sensex on June 1, 2001. The Table 13 shows the business growth of Index Options from 2001-02 to 2011-12 in overall equity derivatives market.

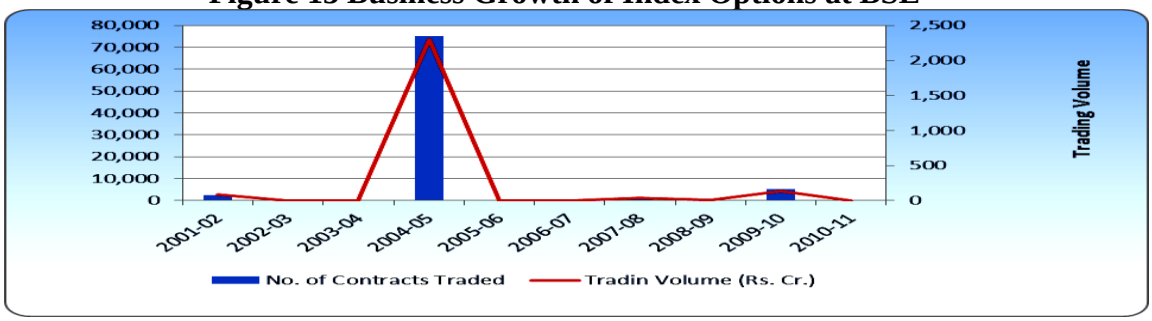
Table 10 Business Growth of Index Options at BSE

Year	Index Options		Percentage share of Index Options in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
2000-01	NA	NA	NA	NA
2001-02	2,415	84	2.30	2.34
2002-03	43	1	0.03	0.00
2003-04	1	0	0.00	0.00
2004-05	75,275	2298	14.16	5.13
2005-06	100	3	49.26	33.33
2006-07	2	0	0.00	0.00
2007-08	1,161	39	0.02	0.00
2008-09	373	9	0.08	0.03
2009-10	5,276	138	58.45	58.97
2010-11	10	0	0.18	0.00
2011-12	24,557,835	618343	84.07	51.73

Note : Index options was introduced in June 2001,both in the BSE and NSE.

Source: SEBI Handbook 2011

Figure 13 Business Growth of Index Options at BSE



Source: From Table 13

The Table and Figure 13 reveal that the Index Options contributed only 2.30% in terms of numbers of contracts traded and 2.34% in terms of trading volume in total derivatives market in 2001-02. But in 2002-03 and 2003-04 it contributed zero percent in total equity derivatives segment at BSE means there was no contribution any trading volume. In year 2004-05 the product contributed 5.13% in total volume when in 2005-06 almost 50% contributed in number of contracts traded but there was only Rs 3 crore value of the contracts and which shows 33.33% proportion in total and in 2009-10 with 58% share in terms of number of contracts traded but 59 percent share in total. 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 year 2011-12 shows marking growth in trading of Index option through around 85% share in number of contracts traded and more than 50% in terms of turnover. The Index option contract shows the CAGR 131.35% in terms of number of contracts traded and CAGR of 124.65% in terms of trading volume up to FY 2011-12 from its introduction in the BSE.

4.2.4 Analysis of Stock Options at BSE

Table 14 shows the growth of stock options at BSE in terms of number of contracts traded and trading volume since inception. The individual stock options were allowed for trading on July 9, 2001. Individual stock options were allowed for trading before individual stock futures.

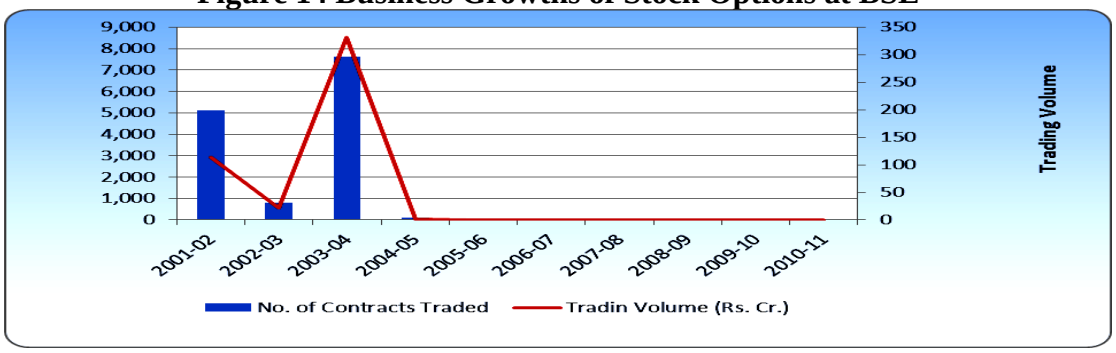
Table 11 Business Growth of Stock Options at BSE

Year	Stock Options		Percentage share of Stock Options in terms of Total	
	No. of Contracts Traded	Trading Volume (Rs. cr.)	No. of Contracts Traded	Trading Volume
2000-01	NA	NA	NA	NA
2001-02	5,105	114	4.86	1.82
2002-03	802	21	0.58	0.00
2003-04	7,621	331	1.99	1.30
2004-05	89	2	0.02	0.00
2005-06	2	0	0.99	0.00
2006-07	6	0	0.00	0.00
2007-08	15	0	0.00	0.00
2008-09	0	0	0.00	0.00
2009-10	0	0	0.00	0.00
2010-11	0	0	0.00	0.00
2011-12	47,505	1469	0.16	0.02

Note : Stock options was introduced in July 2001,both in the BSE and NSE.

Source: SEBI Handbook 2011

Figure 14 Business Growths of Stock Options at BSE



Source: From Table 14

From the above Table and Figure 14, it has been seen that at the time of introduction in year 2001-02 the stock option contributed 4.86% in total number of contracts traded and 1.82% in terms of turnover. But after that it was reduced up to 2003-04 and then after there was total lapsed from the market means that the participation was moved in other market or same market with other place like NSE platform. However, from 2011-12 it is looking like recovery has been started from participation. This contract shows the CAGR from FY 2001-02 to 2011-12 of 22.48% in number of contracts traded and 26.16% in terms of trading value.

4.2.5 Business Growth of Futures & Options Segment at BSE

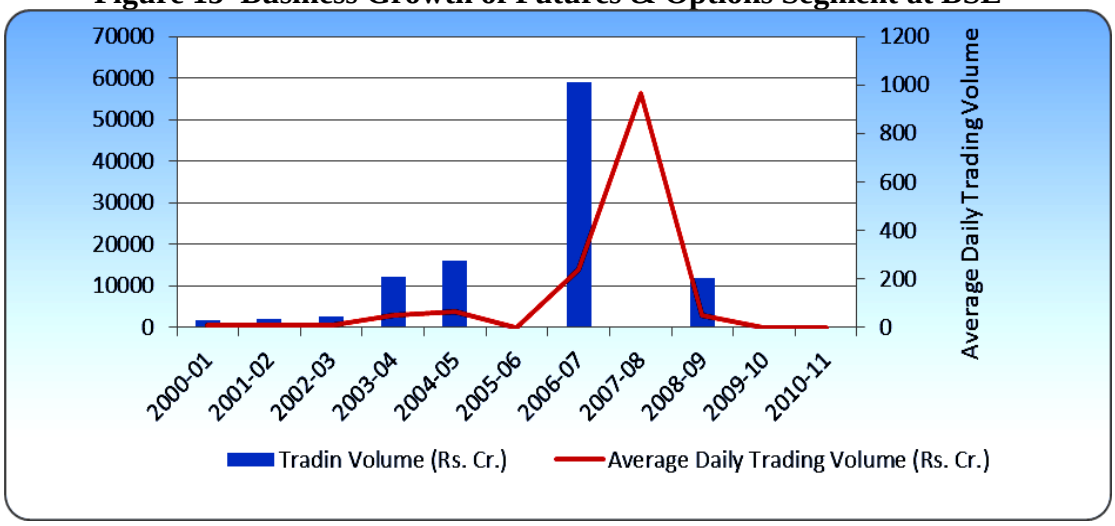
Introduction of derivatives products in Indian Capital Market gave the smile on the face of investors and traders in 2000 and which is reflecting from the below Table and Figure 15. The data in table and presentation in figure are revealing that the products were well accepted by participators in Bombay stock exchange. The derivatives growth in BSE shows up to 2007-08 excludes 2005-06 since introduction of the products, but due to global financial crises and change in preference of platform from BSE to NSE the trend changed up to FY 2010-11. This change became an issue for the BSE as hurdle in development of BSE platform, and to fight against this serious issue BSE put great efforts and again fill the soul in the body of BSE derivative segment which shows from zero value in average daily trading, it was increased Rs. 3246 crore.

Table 12 Business Growth of Futures & Options Segment at BSE

Year	Total		Average Daily Trading Volume (Rs. cr.)
	No. of Contracts Traded	Trading Volume (Rs. cr.)	
2000-01	77743	1673	8.08
2001-02	1,05,023	1,926	7.80
2002-03	1,38,011	2,478	9.87
2003-04	3,82,258	12,074	47.54
2004-05	5,31,719	16,112	63.68
2005-06	203	9	0.04
2006-07	17,81,220	59,006	237
2007-08	74,53,371	2,42,308	965.37
2008-09	4,96,502	11,775	48.26
2009-10	9,026	234	0.92
2010-11	5,623	154	0.61
2011-12	29,211,570	808,477	3246.91

Source: SEBI Handbook 2011

Figure 15 Business Growth of Futures & Options Segment at BSE



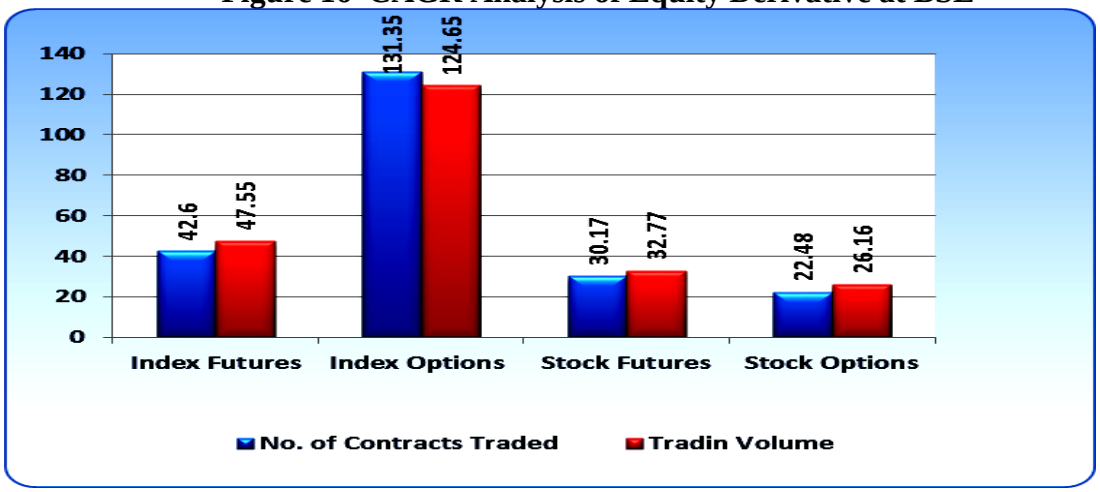
Source: From Table 15

4.2.6 Relative Analysis of all Equity Derivative Products at BSE

(a) CAGR Analysis

The relative analysis of all equity derivative products in terms of Compound Annual Growth Rate (CAGR) shows that Index options have witnessed the highest growth rate followed by Index futures, Stock futures and Stock Options same like NSE. The Index option at BSE has higher CAGR than NSE platform, but the trading was not continued in index option from its introduction. The good GAGR reflecting in all products only because of serious concentration in FY 2011-12 behind development of derivatives segment at BSE platform.

Figure 16 CAGR Analysis of Equity Derivative at BSE



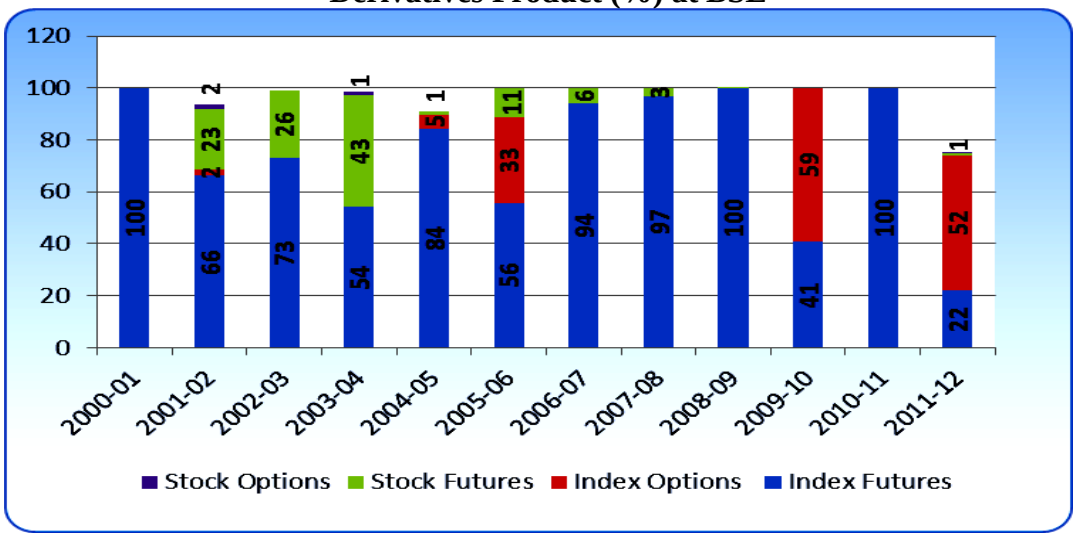
Source: From Table 11, 12, 13 and 14

4.2.7 Percentage Share of Derivative Products in Total Derivative Trading

In the year 2000-01, Index futures were only available for trading and it accounted for a share of 100% of the turnover.

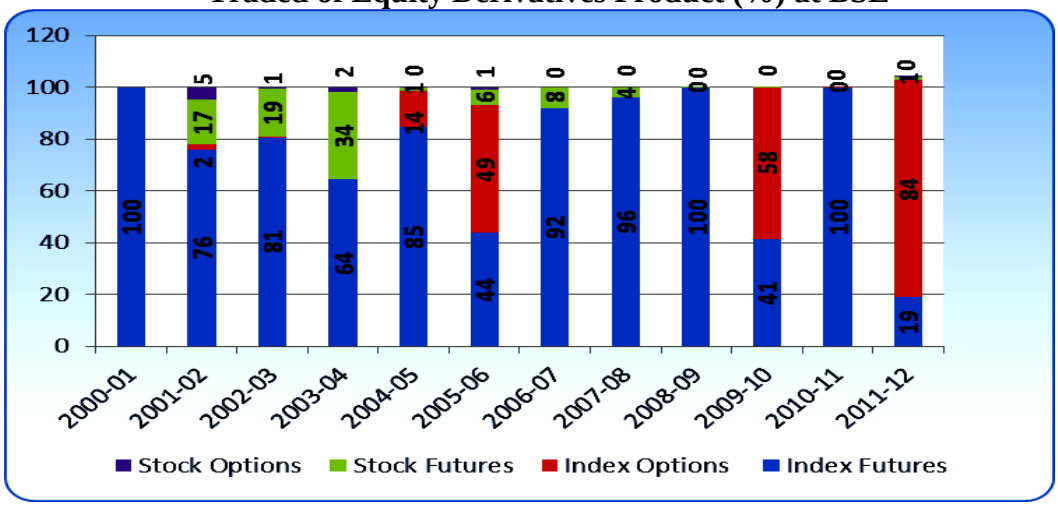
However, the following fiscal year 2001-02 saw 66.25% of the share in turnover by index futures followed by stock futures (23.47%), index option (2.34%) and stock options (1.82%). The most commendable performance during FY 2001-02 was that of index, stock futures were the second most favoured product for trading.

Figure 17 Relative Analysis of Share in Total Turnover of Equity Derivatives Product (%) at BSE



Source: Source: From Table 11, 12, 13 and 14

Figure 18 Relative Analysis of Share in Total Number of Contracts Traded of Equity Derivatives Product (%) at BSE



Source: From Table 4.12, 4.13, 4.14, and 4.16

The Figures 17, 18 and Table 16 show that in the FY 2000-01 only Index Futures was there and that's why which is indicating 100 percent proportion in that year, but over and above the others products were introduced after 2001-02. From 2001-02 to 2004-05, Index futures shared the higher in total at BSE with followed by Stock futures up to 2003-04 and Index option in 2004-05. In year 2005-06 contribution by Index futures and Index options were almost fifty-fifty and again there was a rally in in Index futures, as looking to the contribution that was fine but as the study has shown earlier there was not satisfactory participation at BSE platform against NSE platform. The BSE has started to put good effort in year 2011-12 and because of that the figure shows higher contribution in Index option product by participators and this product interest is same at NSE platform.

Table 13 Percentage Share of Derivative Products in India (BSE)

Year	Index Futures		Stock Futures		Index Options		Stock Options	
	No. of Contracts Traded	Trading Volume	No. of Contracts Traded	Trading Volume	No. of Contracts Traded	Trading Volume	No. of Contracts Traded	Trading Volume
Jun-00 to Mar-01	100	100.00	NA	NA	NA	NA	NA	NA
2001-02	75.75	66.25	17.09	23.47	2.30	2.34	4.86	1.82
2002-03	80.66	73.08	18.72	25.99	0.03	0.00	0.58	0.00
2003-04	64.47	54.43	33.54	42.83	0.00	0.00	1.99	1.30
2004-05	84.56	84.41	1.26	1.32	14.16	5.13	0.02	0.00
2005-06	43.84	55.56	5.91	11.11	49.26	33.33	0.99	0.00
2006-07	92.00	94.04	8.00	5.96	0.00	0.00	0.00	0.00
2007-08	96.02	96.84	3.96	3.14	0.02	0.00	0.00	0.00
2008-09	99.86	99.85	0.06	0.08	0.08	0.03	0.00	0.00
2009-10	41.48	41.03	0.07	0.00	58.45	58.97	0.00	0.00
2010-11	99.82	100.00	0.00	0.00	0.18	0.00	0.00	0.00
2011-12	18.84	22.07	1.12	1.26	84.07	51.73	0.16	0.02

Note : Index futures were introduced in June 2000, index options in June 2001, stock options in July 2001 and stock futures in November 2001, both in the BSE and NSE.

Source: From Table 11, 12, 13 and 1

5. Comparative Growth between Cash and Derivatives Segment

During the global recession in 2008-09, derivatives instruments were largely criticized on account of their speculative nature. Since introduction of derivatives segment in the year 2000, it has led both interactions between the spot and derivatives segment in Indian stock market, and concern by regulators in controlling any possible harmful influences of this new trading segment. There are different opinions on impact of derivatives segment on cash segment. It is said that the derivatives segment prices can reflect additional information, over and above that already reflected in the spot price thus can serve as a leading indicator for the spot price.

It is said that cash segment is the mother segment for derivatives segment. India is the country with largest number of registered companies. 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.

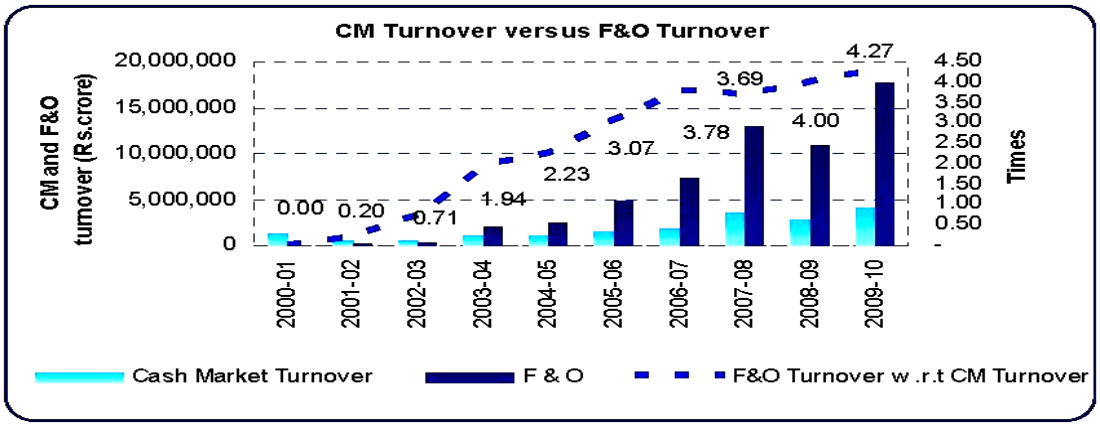
Table 14 Turnover of Cash and Derivatives Segment in India

Year	BSE Turnover (Rs. in Cr.)	NSE Turnover (Rs. in Cr.)	Total Turnover in Cash Segment (Rs. in Cr.)	Total Turnover in Derivative Segment (Rs. in Cr.)
2000-01	1000032	1339511	2339543	4236
2001-02	307293	513167	820459	103853
2002-03	314073	617989	932062	442343
2003-04	503053	1099534	1602587	2142520
2004-05	518715	1140072	1658787	2563166
2005-06	816074	1569558	2385632	4824260
2006-07	956185	1945287	2901472	7415276

Year	BSE Turnover (Rs. in Cr.)	NSE Turnover (Rs. in Cr.)	Total Turnover in Cash Segment (Rs. in Cr.)	Total Turnover in Derivative Segment (Rs. in Cr.)
2007-08	1578857	3551038	5129895	13332785
2008-09	1100074	2752023	3852097	11022257
2009-10	1378809	4138023	5516832	17663899

Source: SEBI Handbook 2010

Figure 19 Turnover of Cash and Derivatives Segment in India



***Source**: Rashmit Kohli (May 2010), "Journey of Equity Derivatives Market at NSE", pp. 9*

The above Table 17 and Figure 19 seem that when derivatives segment was introduced in 2000-01, it was a new segment for Indian investors but within one year it took momentum and in 2001-02 cash segment trading dropped around 60 percent and almost equal to this decline was the turnover of derivatives segment.

6. Conclusion

As seen that derivatives products serve the extremely important economic functions of price discovery as well as risk management. The transparency, which emerges from their trading mechanism, ensures the price discovery in the underlying market. Further, they serve as risk management tools by facilitating the trading of risks among the market participants. These products enable market participants to take the desired risks and jettison the undesirable undertones.

The analysis,25.58%, 9% and 33.35% of compounding annual growth in terms of institutional investors, retail investors and proprietary investors respectively, which indicates that proprietary investors are participating more in equity derivatives market followed by institutional and retail investors. However, in proprietary and institutional investors' percentage share in total turnover increased whereas in retail investors it decreased. But as a logical step to the derivatives segment progress in the Indian capital market, this segment presents wide opportunity to the investors to get better return with hedge the portfolio and equipped to become a dominant player in the market. The problem with derivatives instruments is not with the instruments per se but the lack of understanding of their risk/return characteristics by someone.

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