Development and Growth of Derivatives Market in India

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ABSTRACT
Derivatives are inherently a leveraged bet on the stock price movements with margin financing. Derivatives are type of investments where the investor does not own the underlying asset but he or she makes a bet on the direction of the price movement of the underlying asset via an agreement with another party. Of the two major stock exchanges in India, NSE continued to have lion’s share of the market and dominate trading in derivative segment. BSE had only a negligible percentage share in the market. The attractiveness of Index Option demonstrates the willingness of investors in derivatives to bet on a larger hypothetical portfolio of with asymmetrical pay off than a single stock option. Investors in options market tend to be rational in choosing instruments such that an instrument that gets exposure to the entire market is preferred to the one that has exposure to a specific stock. It is clear from the analysis that the investors in the futures market prefer Stock Futures to Stock Options. Nevertheless, in Option market investors prefer Index Options to Stock Options. It is to be understood that investors are willing to chase single stock with relatively risky instruments and bet on the index with safe instrument option.

Key words: Derivatives, Exchange traded, India, Foreign Investors & Retail investors

1. INTRODUCTION
The Indian Securities Market post 1992 witnessed the positive externalities of liberalization measures announced by the government of India and the political will to open up the financial sector for foreign investment helped to stimulate the financial system. The Securities Exchange Board of India (SEBI) which was established in 1992 to protect the interest of investors and for regulating the markets as well as to bringing primary and secondary market intermediaries within the regulatory framework given impetus for the development of securities market. The Indian securities markets have witnessed far reaching reforms in the post-liberalization era in terms of market design, technological developments, settlement practices and introduction of new instruments. The markets have achieved tremendous stability and as a result, have attracted huge investments by foreign investors (NSE, 2014).

2. DEVELOPMENT OF DERIVATIVES
Derivatives have become increasingly important in the world of finance especially in the preceding three decades in view of intricacies entailed in the financial markets which are, by nature, extremely volatile and hence the risk factor is a key concern for financial instruments and agents. The concept of derivatives comes into the picture in order to mitigate the risk embedded with financial instruments and hence risks-averse economic agents who would like to guard themselves against uncertainties arising out of fluctuations in asset prices use derivative products such as Forward, Futures, Options etc., to partially or fully transfer risks by locking in assets prices. Although derivatives gained prominence in late 1970, only in recent years the market for derivatives especially financial derivatives has grown in terms of the variety of instruments available, as well as their complexity and turnover. Undoubtedly, derivatives have changed the world of finance through the creation of innovative ways to comprehend, measure, and manage risks. Derivatives have probably been around for as long as people have been trading with one another. Forward contracting have been in existence from the time immemorial. Merchants entered into contracts with one another for future delivery of specified amount of commodities at specified price. A primary motivation for pre-arranging a buyer or seller for a stock of commodities in early forward contracts was to lessen the possibility that large swings would inhibit marketing the commodity after a harvest. Derivatives have had a long presence in India too. The commodity derivatives market has been functioning in India since the nineteenth century with...
organized trading in cotton through the establishment of Cotton Trade Association in 1875, since then contracts on various other commodities have been introduced as well (Ashutosh). The first leap towards introduction of derivative in organized manner originated with the promulgation of the Securities Laws (Amendment) Ordinance, 1995. As a sequel of it derivatives trading began in India in June 2000 after SEBI granted the final approval to this effect in May 2001 on the recommendation of L. C Gupta committee. Securities and Exchange Board of India (SEBI) permitted the derivative segments of two stock exchanges NSE and BSE.

3. OBJECTIVES OF THE STUDY
The purpose of the present study is to;
1. Study the growth of derivatives market in India
2. Examine the role of different types of traders in derivatives market
3. Analyze the pattern of development of various derivative products
4. Examine the role of retail investors in derivatives market

5. MATERIALS AND METHODS
This study is descriptive in nature and the data required for the study have been culled out from the website of National Stock Exchange (NSE) Ltd and Bombay Stock Exchange (BSE). The growth of derivatives market is analysed based on volume of trading in NSE as lion’s share of the market for derivative products has been taking place only in NSE. The collected data have been analysed through diagram and graphs. The present study attempts to discuss the genesis of derivatives trading by looking at its historical development, different types of derivative instruments, and trends in derivatives market India. The study is organized into three sections. First the concept and definition, features and types of financial derivatives, followed by data analysis and the last section concludes.

6. DERIVATIVES DEFINED
A derivative can be defined as a financial instrument whose value depends on or derives from the values of underlying variables. The underlying asset may assume many forms like Commodities, Currencies, Precious metals like gold and silver, Bonds of different types, Shares, Stock Index etc., Thus, Derivatives are type of investments where the investor does not own the underlying asset but he or she makes a bet on the direction of the price movement of the underlying asset via an agreement with another party.

6.1 USES OF DERIVATIVES
Financial derivatives provide a powerful tool for hedging risks: It is not about the elimination of risk rather it is about the management of risk. Derivatives are meant to facilitate the hedging of price risks of inventory holdings or a financial/commercial transaction over a certain period. By locking in asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors, and thereby, serve as instruments of risk management. Efficiency in Trading: Traders can use a position in one or more financial derivatives as a substitute for a position in the underlying instruments. In many instances, traders find financial derivatives to be a more attractive instrument than the underlying security. This is mainly because of the greater amount of liquidity in the market offered by derivatives as well as the lower transaction costs associated with trading a financial derivative as compared to the costs of trading the underlying instrument in cash market. Price discovery: There is an increasing sense that the equity derivatives market plays a major role in shaping price discovery which means revealing information about future cash market prices through the futures market. Derivatives markets provide a mechanism by which diverse and scattered opinions of future are collected into one readily discernible number which provides a consensus of knowledgeable thinking.
6.2 TYPES OF TRADERS

Hedger: If someone bears an economic risk and uses the futures market to reduce that risk, the person is a hedger. Hedgers use futures or options markets to reduce or eliminate the risk associated with price of an asset.

Speculator: A person or firm who accepts the risk the hedger does not want to take is a speculator. Speculators believe the potential return outweighs the risk. The primary purpose of derivatives markets is not speculation. Rather, they permit the transfer of risk between market participants as they desire.

Arbitrageurs: Arbitrageurs are in business to take advantage of a discrepancy between prices in two different markets. Arbitrage refers to the simultaneous purchase and sale in two markets so that the selling price is higher than the buying price by more than the transaction cost resulting in risk-less profit.

6.3 Development of Exchange-Traded Derivatives (ETDs)

Derivatives’ trading in India is outstandingly successful in view of the fact that it has attracted variety market participants who trade anonymously in the exchange-traded mechanism. This reiterates the strengths of the modern development in India’s securities markets, which are based on nationwide market access, anonymous electronic trading, and a predominant retail market. In India exchange traded financial derivatives were introduced in the new millennium at the two major stock exchanges NSE and BSE. The exchange provides the platform for buyers and sellers to meet anonymously and trade, ensuring greater transparency and emancipation of prices of the underlying asset. The risk of credit default is virtually eliminated when derivatives are traded through an exchange. The derivatives market in India has grown exponentially especially at NSE. The daily turnover in derivatives trading in securities is, on an average about three to four times of cash market.

7. DATA ANALYSIS AND DISCUSSION

The turnover-wise comparison of performance of the derivatives segments over the last ten years, it may be noticed from an inspection of the relevant data that the derivatives market in India has expanded phenomenally as compared to the global segment.

Figure 1: Average Daily Turnover in F & O

Source: NSE database

The turnover of the NSE exchange traded derivatives segment in 2003-04 stood at Rs. 2130610 crores. It grew to an astonishing level of Rs. 55606453 crores during the year 2014-15, displaying a more than twenty five time increase over the ten year period. The average daily overall turnover of the futures and options in 2014-15 was Rs. 2,28,833 crores as against Rs.11 crores at the inception 2000-01.
Figure 1 attests the fact that derivatives market has been outstandingly successful in Indian exchange traded derivative segment of the capital market especially in the National Stock Exchange.

7.1 NSE Vs. BSE in Derivatives Market

India’s tryst with derivatives began in 2000 when both the NSE and the BSE commenced trading in equity derivatives. The National Stock Exchange of India Limited (NSE) commenced trading in derivatives with the launch of index futures on June 12, 2000. The futures contracts are based on the popular benchmark CNX Nifty Index. The Exchange introduced trading in Index Options on June 4, 2001. NSE also became the first exchange to launch trading in options on individual securities from July 2, 2001. Futures on individual securities were introduced on November 9, 2001. Bombay Stock Exchange (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, 2002.

Table 1: Business Growth in NSE and BSE

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>NSE</th>
<th>BSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Contracts traded</td>
<td>Turnover Rs. in crore</td>
</tr>
<tr>
<td>2001-02</td>
<td>4196873</td>
<td>101925</td>
</tr>
<tr>
<td>2002-03</td>
<td>16768909</td>
<td>4398548</td>
</tr>
<tr>
<td>2003-04</td>
<td>56886776</td>
<td>21306492</td>
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<tr>
<td>2004-05</td>
<td>77017185</td>
<td>25470526</td>
</tr>
<tr>
<td>2005-06</td>
<td>157619271</td>
<td>48242504</td>
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<td>216883573</td>
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</tr>
<tr>
<td>2007-08</td>
<td>425013200</td>
<td>130904779</td>
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<tr>
<td>2008-09</td>
<td>657390497</td>
<td>110104822</td>
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<tr>
<td>2009-10</td>
<td>679293922</td>
<td>176636663</td>
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<tr>
<td>2010-11</td>
<td>1034212062</td>
<td>292482211</td>
</tr>
<tr>
<td>2011-12</td>
<td>1205045464</td>
<td>313497318</td>
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<tr>
<td>2012-13</td>
<td>1131467418</td>
<td>315330040</td>
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<tr>
<td>2013-14</td>
<td>1284424321</td>
<td>382114077</td>
</tr>
<tr>
<td>2014-15</td>
<td>1837041131</td>
<td>556064530</td>
</tr>
</tbody>
</table>

Source: NSE-IMSR/www.bseindia.com

Figure 2: No. of Contracts Traded in NSE & BSE
Although both premier stock exchanges in India have begun trading in derivative contracts in the same period, it is palpable from the Figure 2 that NSE emerged to be a prominent exchange for derivatives products as adduced by the number of trades and the turnover of the F & O segment in that exchange. It is evident from the data compiled that NSE continued to have lion’s share of the market and dominate trading in derivative segment. BSE had only a negligible percentage share in the market since inception till the financial year 2010-11. BSE reworked incentive system to boost futures and options trading and had left no stone unturned to ensure that its ongoing market-making programme to boost activity in its futures and options segment is a success. In view of several positive steps taken BSE’s market share started growing from the financial year 2011-12.

7.2 INSTRUMENT WISE GROWTH ANALYSIS
7.2.1 FUTURES CONTRACT
Futures is a standardized forward contract to buy (long) or sell (short) the underlying asset at a specified price at a specified future date through a specified exchange. Futures contracts are traded on exchanges that work as a buyer or seller for the counterparty. All futures contracts for each member are marked-to-market (MTM) to the daily settlement price of the relevant futures contract at the end of each day. The attractiveness of the futures market lies in the fact that it allows a trader to leverage their position with lower capital requirements as against cash market and the chances of gains being in multiples compared to cash market.

![Figure 3: Growth in No. of Contracts in Futures](source: NSE database)

In June 2000, index futures became the first type of derivative instruments to be launched in the Indian markets. Single stock futures also known as equity derivatives enable investors to bet on the direction of future price of stock. On the other hand a stock index future allows investors to speculate on the entire stock market performance with the spot market index as underlying assets (Nifty). The product composition in derivatives market has undergone drastic change since 2006-07 when single stock futures was the most traded product in India.
It is learnt from the data presented that number of single stock futures contract outnumber the contracts traded in index futures. The same trend is observed in term of turnover of both futures contracts. Equity derivatives have come a long way. New products, an expanding list of eligible investors, rising volumes, and the best risk management framework for exchange-traded derivatives have been the hallmark of the journey of equity derivatives in India so far. It is evident from the figure 4 that India’s experience with the equity derivatives market has been extremely positive except during 2008-09 where stock futures has tumbled due to global crisis.

7.2.2 OPTIONS CONTRACT
In case of futures contact, both parties’ viz. buyer and seller are under obligation to perform their respective obligations out of a contract. But an options contract, as the name suggests, it is a contract between two parties that gives the buyer the right but not the obligation to buy or sell a specific quantity of an instrument at an agreed price for a specified period. Option is an investment instrument with liability, which has the potential to maximize the gains when investors’ prediction proves correct and arrest the loss to the option premium in the event of him loosing bets. Stock index options are options whose underlying is not a single stock but an index comprising many stocks. Investors and speculators trade index options to gain exposure to the entire market or specific segments of the market with a single trading decision and often through one transaction. Obtaining the same level of diversification using individual stocks or individual stock options requires numerous transactions and consequently slower decision making and higher costs. As index options are cash-settled options, the holder of an index option does not possess the right to purchase or sell the underlying stocks of the index but rather, he or she is entitled to demand the equivalent cash value from the option writer upon exercising his option.

It is obvious from Figure 5 that index options comprised the largest share in turnover, while share of single stock futures has been very near to the ground. At the inception stages (2000-04) stock options had a lion share of the option contracts but the trend has reversed as years passed. At present Index option is the most attractive product to the investors in the option market. It can be learnt that investors in Option choose index option which is a portfolio based derivative instrument. The attractiveness of index option demonstrates the willingness of investors in derivatives to bet on a larger hypothetical portfolio of instrument with asymmetrical pay off than a single stock option. Investors in options market tend to be rational in choosing instruments such that an instrument that gets exposure to the
entire market is preferred to the one that has exposure to a specific stock. In terms of number of contracts traded between Index option and stock option, Index option which had just 10% share in the early years has witnessed exponential growth since 2008-09 and recorded 90% share. It could be learnt that sock option is getting faded out gradually over the years since inception.

Figure 5: Notional Turnover of the Option Market (Rs. In Crore)

7.2.3 COMPARISON BETWEEN INDEX FUTURES AND INDEX OPTION

An investor could trade the 'entire stock market' by buying index futures instead of buying individual securities with the efficiency of a mutual fund. Moreover, Index Futures provide higher leverage than any other stocks as it requires low initial capital.

Figure 6: No. of Contracts in Index Futures & Index Option

Option market would be of great help to those investors who wish to participate in the market without trading or holding a large quantity of stock and to investors devising strategies to protect their portfolio by paying small premium amount. It is evident from figure 6 that the number of contracts in the Index option as compared to Index futures has witnessed exponential growth over a period from the beginning. From the figure 6, it is conclude that the Index options contract is a preferred product than index futures.
It is clear from the above analysis that the investors in the futures market prefer Stock Futures to Stock Options. Nevertheless, in Option market investors prefer Index Options to Stock Options. It is to be understood that investors are willing to chase single stock with relatively risky instruments and bet on the index with safe instrument option.

7.2.4 PRODUCT-WISE DISTRIBUTION OF TURNOVER

It is evident from figure 9 that the index options segment has been the most attractive among derivative products and was the clear leader in the product-wise turnover of the futures and options segment in the NSE. In 2013-14, the turnover in the index options category was 72.7 percent of the
total turnover in the F&O segment of the NSE. During the first half of 2014–15, Index options constituted around 68.7 percent of the total turnover in this segment. The Index Futures witnessed a year-on-year decline in turnover of 21 percent. Turnover of Stock options also recorded a drop of 20.4 percent over the previous year (NSE).

7.2.6 FOREIGN INSTITUTIONAL INVESTMENTS IN NSE’S DERIVATIVES SEGMENT

Table 2: FII investment in F & O segment

<table>
<thead>
<tr>
<th>Year</th>
<th>% of FII turnover to total F &amp; O turnover on NSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>8.73</td>
</tr>
<tr>
<td>2007-08</td>
<td>9.56</td>
</tr>
<tr>
<td>2008-09</td>
<td>9.01</td>
</tr>
<tr>
<td>2009-10</td>
<td>9.8</td>
</tr>
<tr>
<td>2010-11</td>
<td>10.7</td>
</tr>
<tr>
<td>2011-12</td>
<td>14.5</td>
</tr>
<tr>
<td>2012-13</td>
<td>15.6</td>
</tr>
<tr>
<td>2013-14</td>
<td>15.2</td>
</tr>
<tr>
<td>2014-15</td>
<td>11.9</td>
</tr>
<tr>
<td>Average</td>
<td>11.67%</td>
</tr>
</tbody>
</table>

Source: NSE

The derivatives market has been stupendously doing well in India because it has attracted variety of investors including foreign portfolio investor who have invested huge amounts in Indian stock exchanges and thus provided liquidity for the markets. As shown in table 2, the FII gross turnover in the F&O Segment of the NSE in 2013–14 was Rs. 116,212,596 million, which was 15.2 percent of the total turnover in the F&O segment (Rs. 764,228,161 million) at the NSE. The share of the FIIs’ gross turnover fell to 11.9 percent of the derivatives turnover on the NSE during 2014–15. Since 2006 on an average it has recorded an 11.67% of FII turnover to total F & O turnover on NSE.

8. Should retail investors participate in the equity derivatives market?

Arthur Leavitt- former Chairman Securities Exchange Commission, USA described “Derivatives are something like electricity: dangerous if mishandled, but bearing the potential to do good” and Warren Buffet, one of the world’s most successful and well known investors, once called derivatives the real weapons of mass destruction. Nevertheless derivatives are tools to mitigate risk. The prerequisite for entering derivatives market is the exposure to risk. It is clear that derivatives can very well be used by retail investors to manage their portfolios efficiently and optimise returns in the process. At the same time, retail investors without any underlying securities with them should stay away from the derivatives market. Because it is heartening to note that the retail trading in equity derivatives has risen to the highest level so much so that average daily turnover for the retail category of investors in futures and options (F&O) amounted to Rs.1.04 trillion (Live Mint). This is the highest retail turnover in this segment since the first quarter of 2012, from when comparable data was available. During the quarter ended 31 December, the average daily turnover for the retail segment was Rs.88,771 crore, suggesting that retail participation in derivatives has gained momentum. The issue of retail investors speculating in F&O segment has been a matter of concern and sensitive to the financial system.

A study by Hyderabad-based Indian School of Business conducted under the leadership of Sankar De, Executive Director at the Centre for Analytical Finance, it was found that Retail equity investors in India systematically lose out to other categories of players because they sell the winning stocks too quickly and hold on to the losing stocks too long. It found that individual retail investors in India, numbering 2.02 million - largest in the world - consistently chase a zero rate of return on their stock investments when they make decisions themselves.

Retail investors incur losses because derivatives are used inappropriately and recklessly. And when prices fall sharply, a retail investor with limited funds would not be able to finance such sudden losses in futures contract. In such a situation, not only his outstanding position be closed by his broker, but he will also be compelled to honor his commitments which would force him to dispose of his other assets
and he may also have to borrow. However the story is entirely different in case of investment in cash market, where the investor can hold on to his investment if prices fall sharply and wait for it to recover.

9. Conclusion
India is one of the most successful developing countries in terms of a vibrant market for exchange-traded derivatives. This reiterates the strengths of the modern development in India’s securities markets facilitated by technological improvements. There is an increasing sense that the equity derivatives market plays a major role in shaping price discovery mechanism and providing clear guidance to the entire stock market as a whole. India’s derivatives market is 15 times larger than its cash market which is highest in the world. Domestic retail investors and proprietary traders account for 87% of all derivatives trading in India (Live Mint). In the event of any downfall in the market it is likely to affect majority of small traders because of their exposure and consequently affect the financial systems as well. In order to keep retail investors from the derivative segment and to avoid possible negative repercussion, SEBI has raised the minimum contract size of equity derivatives from Rs. 2 lakh to Rs.5 lakh. Though this move of the market regulator is laudable it is considered to be insignificant given the systemic risk involved in the transactions. Besides further increasing the lot size, it would be better if SEBI insist on delivery based settlement in the derivatives market. The market regulator need to ensure that only who can understand the nature and purpose of complex derivatives products are permitted to trade because reckless trading will not only result in erosion of wealth of the investors but also seriously impair the dynamics of the securities market.

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