

Development of Financial Derivatives Market in India- A Case Study

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Abstract

Risk is a characteristic feature of most commodity and capital markets. Variations in the prices of agricultural and non-agricultural commodities are induced, over time, by demand-supply dynamics. The last two decades have witnessed many-fold increase in the volume of international trade and business due to the wave of globalization and liberalization sweeping across the world. This has led to rapid and unpredictable variations in financial assets prices, interest rates and exchange rates, and subsequently, to exposing the corporate world to an unwieldy financial risk. In the present highly uncertain business scenario, the importance of risk management is much greater than ever before. The emergence of derivatives market is an ingenious feat of financial engineering that provides an effective and less costly solution to the problem of risk that is embedded in the price unpredictability of the underlying asset. In India, the emergence and growth of derivatives market is relatively a recent phenomenon. Since its inception in June 2000, derivatives market has exhibited exponential growth both in terms of volume and number of traded contracts. The market turn-over has grown from Rs.2365 crore in 2000-2001 to Rs. 11010482.20 crore in 2008-2009. Within a short span of eight years, derivatives trading in India has surpassed cash segment in terms of turnover and number of traded contracts. The present study encompasses in its scope an analysis of historical roots of derivative trading, types of derivative products, regulation and policy developments, trend and growth, future prospects and challenges of derivative market in India. Some space is devoted also to a brief discussion of the status of global derivatives markets vis-a-vis the Indian derivatives market.

Keywords: Forward, Futures, Options, Financial Derivatives, Risk Management, Exchange rates

JEL Classification Codes: G1, G2

Introduction

Risk¹ is a characteristic feature of all commodity and capital markets. Over time, variations in the prices of agricultural and non-agricultural commodities occur as a result of interaction of demand and supply forces. The last two decades have witnessed a many-fold increase in the volume of international trade and business due to the ever growing wave of globalization and liberalization sweeping across the world. As a result, financial markets have experienced rapid variations in interest and exchange rates, stock market prices thus exposing the corporate world to a state of growing financial risk.

Increased financial risk causes losses to an otherwise profitable organisation. This underlines the importance of risk management to hedge against uncertainty. Derivatives provide an effective solution to the problem of risk caused by uncertainty and volatility in underlying asset. Derivatives are risk management tools that help an organisation to effectively transfer risk. Derivatives are instruments which have no independent value. Their value depends upon the underlying asset. The underlying asset may be financial or non-financial.

The present study attempts to discuss the genesis of derivatives trading by tracing its historical development, types of traded derivatives products, regulation and policy developments, trend and growth, future prospects and challenges of derivative market in India. The study is organised into four sections. Section I deals with the concept, definition, features and types of financial derivatives. Section II has been devoted to a discussion of the growth of derivatives market, and regulation and policy development. Section III discusses status of global derivatives market vis-a-vis Indian derivatives market. The last section specifies summary and concluding remarks.

Section I

1. Concept of Derivatives

The term 'derivatives, refers to a broad class of financial instruments which mainly include *options* and *futures*. These instruments derive their value from the price and other related variables of the underlying asset. They do not have worth of their own and derive their value from the claim they give to their owners to own some other financial assets or security. A simple example of derivative is butter, which is derivative of milk. The price of butter depends upon price of milk, which in turn depends upon the demand and supply of milk. *The general definition of derivatives means to derive something from something else.* Some other meanings of word derivatives are:

- a derived function: the result of mathematical differentiation; the instantaneous change of one quantity relative to another; $df(x)/dx$,
- b derivative instrument: a financial instrument whose value is based on another security, (linguistics) a word that is derived from another word; "electricity' is a derivative of 'electric'.

The asset underlying a *derivative* may be commodity or a financial asset. Derivatives are those financial instruments that derive their value from the other assets. For example, the price of gold to be delivered after two months will depend, among so many things, on the present and expected price of this commodity.

1.1. Definition of Financial Derivatives

Section 2(ac) of Securities Contract Regulation Act (SCRA) 1956 defines Derivative as:

- a) "a security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security;
- b) "a contract which derives its value from the prices, or index of prices, of underlying securities".

¹ Risk may be defined in different ways. In common parlance, it is taken to refer to only the possibilities of incurring losses or some unfavourable outcome. However, in economics of finance it denotes the range of variability of expected returns, thus including possibilities of both loss and profit. Various types of risks include financial risk, interest rate risk, exchange risk, business risk and market risk etc.

1.2. Underlying Asset in a Derivatives Contract

As defined above, the value of a derivative instrument depends upon the underlying asset. The underlying asset may assume many forms:

- i. Commodities including grain, coffee beans, orange juice;
- ii. Precious metals like gold and silver;
- iii. Foreign exchange rates or currencies;
- iv. Bonds of different types, including medium to long term negotiable debt securities issued by governments, companies, etc.
- v. Shares and share warrants of companies traded on recognized stock exchanges and Stock Index
- vi. Short term securities such as T-bills; and
- vii. Over- the Counter (OTC)² money market products such as loans or deposits.

1.3 Participants in Derivatives Market

1. *Hedgers*: They use derivatives markets to reduce or eliminate the risk associated with price of an asset. Majority of the participants in derivatives market belongs to this category.
2. *Speculators*: They transact *futures* and *options* contracts to get extra leverage in betting on future movements in the price of an asset. They can increase both the potential gains and potential losses by usage of derivatives in a speculative venture.
3. *Arbitrageurs*: Their behaviour is guided by the desire to take advantage of a discrepancy between prices of more or less the same assets or competing assets in different markets. If, for example, they see the *futures* price of an asset getting out of line with the cash price, they will take offsetting positions in the two markets to lock in a profit.

1.4. Applications of Financial Derivatives

Some of the applications of financial derivatives can be enumerated as follows:

1. *Management of risk*: This is most important function of derivatives. Risk management is not about the elimination of risk rather it is about the management of risk. Financial derivatives provide a powerful tool for limiting risks that individuals and organizations face in the ordinary conduct of their businesses. It requires a thorough understanding of the basic principles that regulate the pricing of financial derivatives. Effective use of derivatives can save cost, and it can increase returns for the organisations.
2. *Efficiency in trading*: Financial derivatives allow for free trading of risk components and that leads to improving market efficiency. 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.
3. *Speculation*: This is not the only use, and probably not the most important use, of financial derivatives. Financial derivatives are considered to be risky. If not used properly, these can lead to financial destruction in an organisation like what happened in Barings Plc. However, these instruments act as a powerful instrument for knowledgeable traders to expose themselves to calculated and well understood risks in search of a reward, that is, profit.
4. *Price discover*: Another important application of derivatives is the 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.

² Over-the-counter security is a security which is not traded on an exchange, usually due to inability to meet listing requirements. For such securities, broker/dealers negotiate directly with one another over computer networks and by phone. In OTC market security transactions are made via telephone and computer rather than on floor of exchange.

5. *Price stabilization function:* Derivative market helps to keep a stabilising influence on spot prices by reducing the short-term fluctuations. In other words, derivative reduces both peak and depths and leads to price stabilisation effect in the cash market for underlying asset.

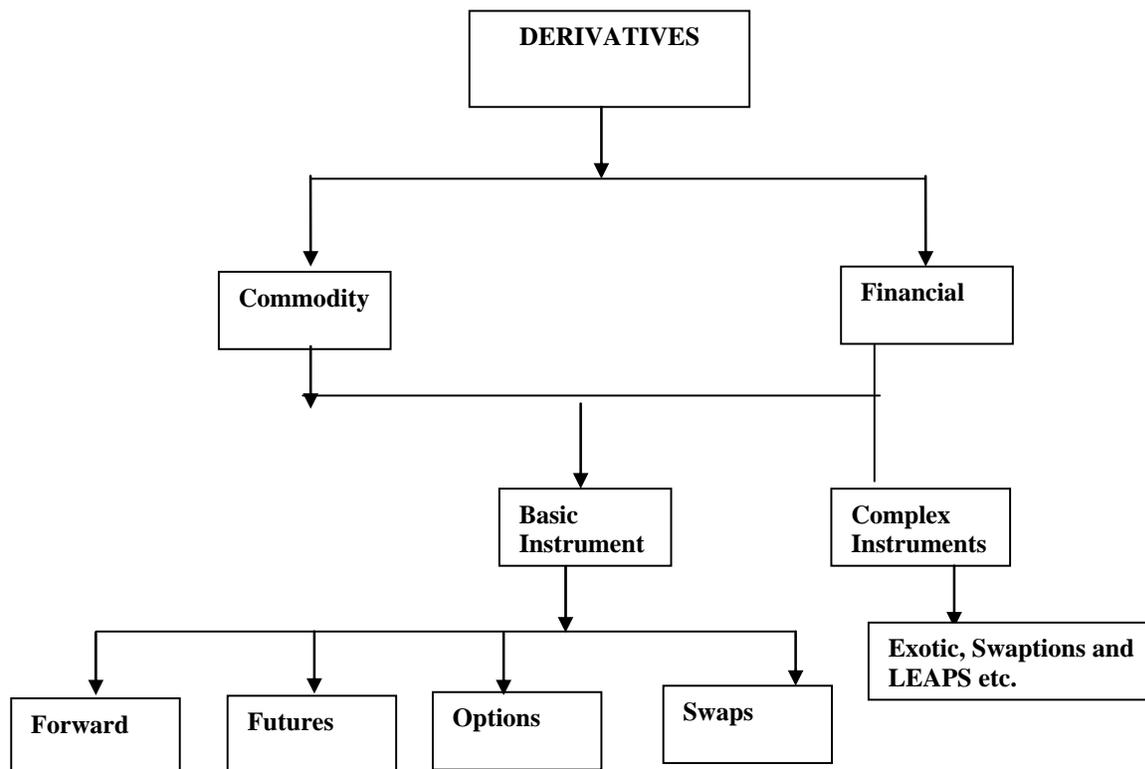
1.5. Classification of Derivatives

Broadly derivatives can be classified in to two categories as shown in Fig.1: Commodity derivatives and financial derivatives. In case of commodity derivatives, underlying asset can be commodities like wheat, gold, silver etc., whereas in case of financial derivatives underlying assets are stocks, currencies, bonds and other interest rates bearing securities etc. Since, the scope of this case study is limited to only financial derivatives so we will confine our discussion to financial derivatives only.

1.5.1. Forward Contract

A forward contract is an agreement between two parties to buy or sell an asset at a specified point of time in the future. In case of a forward contract the price which is paid/ received by the parties is decided at the time of entering into contract. It is the simplest form of derivative contract mostly entered by individuals in day to day's life.

Figure 1: Classification of Derivatives



Forward contract is a cash market transaction in which delivery of the instrument is deferred until the contract has been made. Although the delivery is made in the future, the price is determined on the initial trade date. One of the parties to a forward contract assumes a long position (buyer) and agrees to buy the underlying asset at a certain future date for a certain price. The other party to the contract known as seller assumes a short position and agrees to sell the asset on the same date for the same price. The specified price is referred to as the delivery price. The contract terms like delivery price and quantity are mutually agreed upon by the parties to the contract.

No margins are generally payable by any of the parties to the other. Forwards contracts are traded over-the-counter and are not dealt with on an exchange unlike futures contract. Lack of

liquidity and counter party default risks are the main drawbacks of a forward contract. For instance, consider a US based company buying textile from an exporter from England worth £ 1 million payment due in 90 days. The Importer is short of Pounds- it owes pounds for future delivery. Suppose the spot (cash market) price of pound is US \$ 1.71 and importer fears that in next 90 days, pounds might rise against the dollar, thereby raising the dollar cost of the textiles. The importer can guard against this risk by immediately negotiating a 90 days forward contract with City Bank at a forward rate of say, £ 1= \$1.72. According to the forward contract, in 90 days the City Bank will give the US Importer £ 1 million (which it will use to pay for textile order), and importer will give the bank \$ 1.72 million (1million ×\$1.72) which is the dollar cost of £ 1 million at the forward rate of \$ 1.72.

1.5.2. 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. Exchange sets the standardized terms in term of Quality, quantity, Price quotation, Date and Delivery place (in case of commodity).The **features** of a futures contract may be specified as follows:

- i These are traded on an organised exchange like IMM, LIFFE, NSE, BSE, CBOT etc.
- ii These involve standardized contract terms viz. the underlying asset, the time of maturity and the manner of maturity etc.
- iii These are associated with a clearing house to ensure smooth functioning of the market.
- iv There are margin requirements and daily settlement to act as further safeguard.
- v These provide for supervision and monitoring of contract by a regulatory authority.
- vi Almost ninety percent future contracts are settled via cash settlement instead of actual delivery of underlying asset.

Futures contracts being traded on organized exchanges impart liquidity to the transaction. The clearinghouse, being the counter party to both sides of a transaction, provides a mechanism that guarantees the honouring of the contract and ensuring very low level of default (Hirani, 2007). Following are the important **types** of financial futures contract:-

- i Stock Future or equity futures,
- ii Stock Index futures,
- iii Currency futures, and
- iv Interest Rate bearing securities like Bonds, T- Bill Futures.

To give an example of a futures contract, suppose on November 2007 Ramesh holds 1000 shares of ABC Ltd. Current (spot) price of ABC Ltd shares is Rs 115 at National Stock Exchange (NSE). Ramesh entertains the fear that the share price of ABC Ltd may fall in next two months resulting in a substantial loss to him. Ramesh decides to enter into futures market to protect his position at Rs 115 per share for delivery in January 2008. Each contract in futures market is of 100 Shares. This is an example of equity future in which Ramesh takes short position on ABC Ltd. Shares by selling 1000 shares at Rs 115 and locks into future price.

1.5.3. Options Contract

In case of futures contract, both parties are under obligation to perform their respective obligations out of a contract. But an options contract, as the name suggests, is in some sense, an optional contract. An option is the right, but not the obligation, to buy or sell something at a stated date at a stated price. A “call option” gives one the right to buy; a “put option” gives one the right to sell. Options are the standardized financial contract that allows the buyer (holder) of the option, i.e. the right at the cost of option premium, not the obligation, to buy (call options) or sell (put options) a specified asset at a set price on or before a specified date through exchanges.

Options contracts are of two **types**: *call* options and *put* options. Apart from this, options can also be classified as OTC (Over the Counter) options and exchange traded options. In case of exchange traded options contract, contracts are standardized and traded on recognized exchanges, whereas OTC

options are customized contracts traded privately between the parties. A call options gives the holder (buyer/one who is long call), the right to buy specified quantity of the underlying asset at the strike price on or before expiration date. The seller (one who is short call) however, has the obligation to sell the underlying asset if the buyer of the call option decides to exercise his option to buy.

Suppose an investor buys One European call options on Infosys at the strike price of Rs. 3500 at a premium of Rs. 100. Apparently, if the market price of Infosys on the day of expiry is more than Rs. 3500, the options will be exercised. In contrast, a put options gives the holder (buyer/ one who is long put), the right to sell specified quantity of the underlying asset at the strike price on or before an expiry date. The seller of the put options (one who is short put) however, has the obligation to buy the underlying asset at the strike price if the buyer decides to exercise his option to sell. Right to sell is called a Put Options. Suppose X has 100 shares of Bajaj Auto Limited. Current price (March) of Bajaj auto shares is Rs 700 per share. X needs money to finance its requirements after two months which he will realize after selling 100 shares after two months. But he is of the fear that by next two months price of share will decline. He decides to enter into option market by buying Put Option (Right to Sell) with an expiration date in May at a strike price of Rs 685 per share and a premium of Rs 15 per shares.

1.5.4 Swaps Contract

A *swap* can be defined as a barter or exchange. It is a contract whereby parties agree to exchange obligations that each of them have under their respective underlying contracts or we can say, a swap is an agreement between two or more parties to exchange stream of cash flows over a period of time in the future. The parties that agree to the swap are known as counter parties. The two commonly used swaps are: i) *Interest rate swaps* which entail swapping only the interest related cash flows between the parties in the same currency, and ii) *Currency swaps*: These entail swapping both principal and interest between the parties, with the cash flows in one direction being in a different currency than the cash flows in the opposite direction.

Section II

2. History of Derivatives Markets in India

Derivatives markets in India have been in existence in one form or the other for a long time. In the area of commodities, the Bombay Cotton Trade Association started futures trading way back in 1875. In 1952, the Government of India banned cash settlement and options trading. Derivatives trading shifted to informal forwards markets. In recent years, government policy has shifted in favour of an increased role of market-based pricing and less suspicious derivatives trading. The first step towards introduction of financial derivatives trading in India was the promulgation of the Securities Laws (Amendment) Ordinance, 1995. It provided for withdrawal of prohibition on options in securities. The last decade, beginning the year 2000, saw lifting of ban on futures trading in many commodities. Around the same period, national electronic commodity exchanges were also set up.

Derivatives trading commenced 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, NSE³ and BSE⁴, and their clearing house/corporation to commence trading and settlement in approved derivatives contracts. Initially, SEBI approved trading in index futures contracts based on various stock market indices such

³ The National Stock Exchange (NSE), located in Bombay is the first screen based automated stock exchange. It was set up in 1993 to encourage stock exchange reform through system modernization and competition. It opened for trading in mid-1994 and today accounts for 99% market shares of derivatives trading in India.

⁴ Bombay Stock Exchange (BSE), which is Asia's Oldest Broking House, was established in 1875 in Mumbai. It is also called as Dalal Street. The BSE Index, called the Sensex, is calculated by Free Float Method by including scrips of top 30 companies selected on the market capitalization criterion.

as, S&P CNX, Nifty and Sensex. Subsequently, index-based trading was permitted in options as well as individual securities.

The trading in BSE Sensex options commenced on June 4, 2001 and the trading in options on individual securities commenced in July 2001. Futures contracts on individual stocks were launched in November 2001. The derivatives trading on NSE commenced with S&P CNX Nifty Index futures on June 12, 2000. The trading in index options commenced on June 4, 2001 and trading in options on individual securities commenced on July 2, 2001. Single stock futures were launched on November 9, 2001. The index futures and options contract on NSE are based on S&P CNX. In June 2003, NSE introduced Interest Rate Futures which were subsequently banned due to pricing issue. Table 1 gives chronology of introduction of derivatives in India.

Table 1: Derivatives in India: A Chronology

Date	Progress
14 December 1995	NSE asked SEBI for permission to trade index futures.
18 November 1996	SEBI setup L. C. Gupta Committee to draft a policy framework for index futures.
11 May 1998	L. C. Gupta Committee submitted report.
7 July 1999	RBI gave permission for OTC forward rate agreements (FRAs) and interest rate swaps
24 May 2000	SIMEX chose Nifty for trading futures and options on an Indian index.
25 May 2000	SEBI gave permission to NSE and BSE to do index futures trading.
9 June 2000	Trading of BSE Sensex futures commenced at BSE.
12 June 2000	Trading of Nifty futures commenced at NSE.
31 August 2000	Trading of futures and options on Nifty to commence at SIMEX.
June 2001	Trading of Equity Index Options at NSE
July 2001	Trading of Stock Options at NSE
November 9, 2002	Trading of Single Stock futures at BSE
June 2003	Trading of Interest Rate Futures at NSE
September 13, 2004	Weekly Options at BSE
January 1, 2008	Trading of Chhota(Mini) Sensex at BSE
January 1, 2008	Trading of Mini Index Futures & Options at NSE
August 29,2008	Trading of Currency Futures at NSE
October 2,2008	Trading of Currency Futures at BSE

Source: Compiled from BSE and NSE

2.1. Regulation of Derivatives Trading in India

The regulatory framework in India is based on the L.C. Gupta Committee Report, and the J.R. Varma Committee Report. It is mostly consistent with the IOSCO⁵ principles and addresses the common concerns of investor protection, market efficiency and integrity and financial integrity. The L.C. Gupta Committee Report provides a perspective on division of regulatory responsibility between the exchange and the SEBI. It recommends that SEBI's role should be restricted to approving rules, bye laws and regulations of a derivatives exchange as also to approving the proposed derivatives contracts before commencement of their trading.

It emphasises the supervisory and advisory role of SEBI with a view to permitting desirable flexibility, maximizing regulatory effectiveness and minimizing regulatory cost. Regulatory requirements for authorization of derivatives brokers/dealers include relating to capital adequacy, net worth, certification requirement and initial registration with SEBI. It also suggests establishment of a separate clearing corporation, maximum exposure limits, mark to market margins, margin collection from clients and segregation of clients' funds, regulation of sales practice and accounting and disclosure requirements for derivatives trading. The J.R. Varma committee suggests a methodology for risk containment measures for index-based futures and options, stock options and single stock futures. The risk containment measures include calculation of margins, position limits, exposure limits and reporting and disclosure.

⁵ International Organization of Securities Commission (IOSCO) is an international organization that brings together the regulators of the world's securities and futures markets.

2.2. Derivatives Market India

As mentioned in the preceding discussion, derivatives trading commenced in Indian market in 2000 with the introduction of Index futures at BSE, and subsequently, on National Stock Exchange (NSE). Since then, derivatives market in India has witnessed tremendous growth in terms of trading value and number of traded contracts. Here we may discuss the performance of derivatives products in India markets as follows.

2.2.1. Derivatives Products Traded in Derivatives Segment of BSE

The BSE created history on June 9, 2000 when it launched trading in Sensex based futures contract for the first time. It was followed by trading in index options on June 1, 2001; in stock options and single stock futures (31 stocks) on July 9, 2001 and November 9, 2002, respectively. Currently, the number of stocks under single futures and options is 109⁶. BSE achieved another milestone on September 13, 2004 when it launched Weekly Options, a unique product unparalleled worldwide in the derivatives markets. It permitted trading in the stocks of four leading companies namely; Satyam, State Bank of India, Reliance Industries and TISCO (renamed now Tata Steel). *Chhota* (mini) SENSEX⁷ was launched on January 1, 2008. With a small or 'mini' market lot of 5, it allows for comparatively lower capital outlay, lower trading costs, more precise hedging and flexible trading. Currency futures were introduced on October 1, 2008 to enable participants to hedge their currency risks through trading in the U.S. dollar-rupee future platforms. Table 2 summarily specifies the derivative products and their date of introduction on the BSE

Table 2: Products Traded in Derivatives Segment of the BSE

S.no	Product Traded with underlying asset	Introduction Date
1	Index Futures- Sensex	June 9,2000
2	Index Options- Sensex	June 1,2001
3	Stock Option on 109 Stocks	July 9, 2001
4	Stock futures on 109 Stocks	November 9,2002
5	Weekly Option on 4 Stocks	September 13,2004
6	Chhota (mini) SENSEX	January 1, 2008
7	Futures & Options on Sectoral indices namely BSE TECK, BSE FMCG, BSE Metal, BSE Bankex and BSE Oil & Gas.	N.A.
8	Currency Futures on US Dollar Rupee	October 1,2008

Source: Compiled from BSE website

2.2.2. Derivatives Products Traded in Derivatives Segment of NSE

NSE started trading in index futures, based on popular S&P CNX Index, on June 12, 2000 as its first derivatives product. Trading on index options was introduced on June 4, 2001. Futures on individual securities started on November 9, 2001. The futures contracts are available on 233⁸ securities stipulated by the Securities & Exchange Board of India (SEBI). Trading in options on individual securities commenced from July 2, 2001. The options contracts are American style and cash settled and are available on 233 securities. Trading in interest rate futures was introduced on 24 June 2003 but it was closed subsequently due to pricing problem. The NSE achieved another landmark in product introduction by launching Mini Index Futures & Options with a minimum contract size of Rs 1 lac. NSE crated history by launching currency futures contract on US Dollar-Rupee on August 29, 2008 in Indian Derivatives market. Table 3 presents a description of the types of products traded at F& O segment of NSE.

⁶ As Traded on May 29, 2009.

⁷ Chhota SENSEX was launched on January 1, 2008. With a small or 'mini' market lot of 5, it allows for comparatively lower capital outlay, lower trading costs, more precise hedging and flexible trading. It is a step to encourage and enable small investors to mitigate risk and enable easy access to India's most popular index, SENSEX, through futures & options

⁸ As Traded on May 29, 2009.

Table 3: Products Traded in F&O Segment of NSE

S.no	Product Traded with underlying asset	Introduction Date
1	Index Futures- S&P CNX Nifty	June 12,2000
2	Index Options- S&P CNX Nifty	June 4,2001
3	Stock Option on 233 Stocks	July 2, 2001
4	Stock futures on 233 Stocks	November 9,2001
5	Interest Rate Futures- T – Bills and 10 Years Bond	June 23,2003
6	CNX IT Futures & Options	August 29,2003
7	Bank Nifty Futures & Options	June 13,2005
8	CNX Nifty Junior Futures & Options	June 1,2007
9	CNX 100 Futures & Options	June 1,2007
10	Nifty Midcap 50 Futures & Options	October 5,2007
11	Mini index Futures & Options - S&P CNX Nifty index	January 1, 2008
12	long Term Option contracts on S&P CNX Nifty Index	March 3,2008
13	Currency Futures on US Dollar Rupee	August 29,2008
14	S& P CNX Defty Futures & Options	December 10, 2008

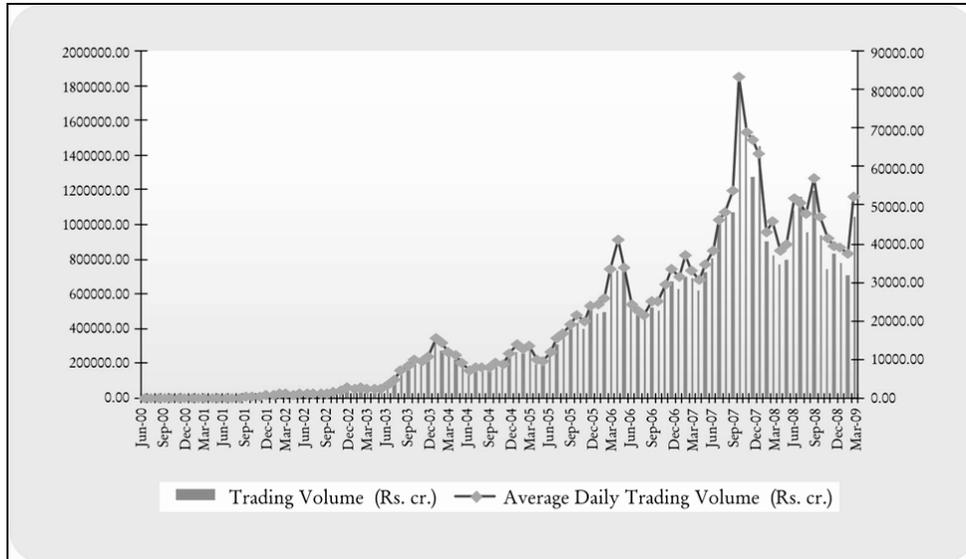
Source: Compiled from NSE website

2.3. Growth of Derivatives Market in India

Equity derivatives market in India has registered an "explosive growth" (see Fig. 2) and is expected to continue the same in the years to come. Introduced in 2000, financial derivatives market in India has shown a remarkable growth both in terms of volumes and numbers of traded contracts. NSE alone accounts for 99 percent of the derivatives trading in Indian markets. The introduction of derivatives has been well received by stock market players. Trading in derivatives gained popularity soon after its introduction. In due course, the turnover of the NSE derivatives market exceeded the turnover of the NSE cash market. For example, in 2008, the value of the NSE derivatives markets was Rs. 130,90,477.75 Cr. whereas the value of the NSE cash markets was only Rs. 3,551,038 Cr. (see Table 4 through Table 7). If we compare the trading figures of NSE and BSE, performance of BSE is not encouraging both in terms of volumes and numbers of contracts traded in all product categories (see Table 8 through Table 10).

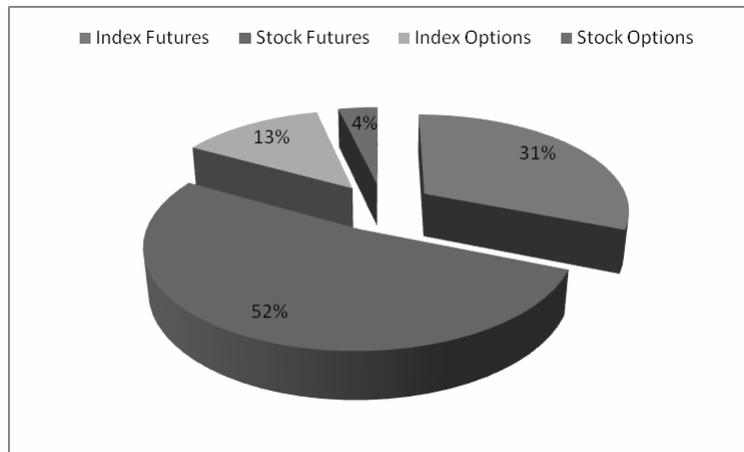
Among all the products traded on NSE in F& O segment, single stock futures also known as equity futures, are most popular in terms of volumes and number of contract traded, followed by index futures with turnover shares of 52 percent and 31 percent, respectively (Fig. 3). In case of BSE, index futures outperform stock futures. An important feature of the derivative segment of NSE which may be observed from Table 6 and Table 7 is the huge gap between average daily transactions of its derivatives segment and cash segment. In sharp contrast to NSE, the situation at BSE is just the opposite: its cash segment outperforms the derivatives segment as can be seen from Table 10.

Figure 2: Business Growth of Derivatives at NSE from 2000-2009



Source: NSE fact book 2008 issue

Figure 3: Product wise Turnover of F&O at NSE from 2000-2008



Source: Author's calculation based on data compiled from NSE

Table 4: NSE Derivatives Segment Turnover

Year	Index Futures	Stock Futures	Index Options	Stock Options	Interest Rate Futures	Total	(Rs. Cr.)
							Average Daily Turnover
2008-09	2583617.92	2558863.55	2358916.90	149498.40	0.00	7650896.80	46938.02
2007-08	3820667.27	7548563.23	1362110.88	359136.55	0.00	13090477.75	52153.30
2006-07	2539574	3830967	791906	193795	0	7356242	29543
2005-06	1513755	2791697	338469	180253	0	4824174	19220
2004-05	772147	1484056	121943	168836	0	2546982	10107
2003-04	554446	1305939	52816	217207	202	2130610	8388
2002-03	43952	286533	9246	100131	-	439862	1752
2001-02	21483	51515	3765	25163	-	101926	410
2000-01	2365	-	-	-	-	2365	11

Source: Compiled from NSE website

Table 5: NSE Cash & Derivatives Segment Turnover

(Rs. in Cr.)

Year	Cash Segment	Derivatives Segment
2007-08	3,551,038	13090477.75
2006-07	1,945,285	7356242
2005-06	1,569,556	4824174
2004-05	1,140,071	2546982
2003-04	1,099,535	2130610
2002-03	617,989	439862
2001-02	513,167	101926
2000-01	1,339,510	2365

Source: Compiled from NSE website

Table 6: Number of contract Traded at NSE Derivatives Segment

Year	Index Futures	Stock Futures	Index Options	Stock Options	Interest Rate Futures	Total
2008-09	136476747	149159997	116790708	7826231	0	410253683
2007-08	156598579	203587952	55366038	9460631	0	425013200
2006-07	81487424	104955401	25157438	5283310	0	216883573
2005-06	58537886	80905493	12935116	5240776	0	157619271
2004-05	21635449	47043066	3293558	5045112	0	77017185
2003-04	17191668	32368842	1732414	5583071	10781	56886776
2002-03	2126763	10676843	442241	3523062	-	16768909
2001-02	1025588	1957856	175900	1037529	-	4196873
2000-01	90580	-	-	-	-	90580

Source: complied from NSE website

Table 7: Average Daily Transaction at NSE in Derivatives and Cash Segment

Year	Derivatives Segment	Cash Segment
2007-08	52153.30	14,148
2006-07	29543	7,812
2005-06	19220	6,253
2004-05	10107	4,506
2003-04	8388	4,328
2002-03	1752	2,462
2001-02	410	2,078
2000-01	11	5,337

Source: Compiled from NSE website and NSE fact book 2008

Table 8: BSE Derivatives Segment Turnover

Year	Index Futures	Stock Futures	Index Options		Stock Options		Total
			Call	Put	Call	Put	
2007-08	234660	7609	31	8	0	0	242309
2006-07	55491	3515	0	0	0	0	59006
2005-06	5	1	3	0	0	0	9
2004-05	13600	213	1471	827	2	0	16112
2003-04	6572	5171	0	0	174	157	12452
2002-03	1811	644	1	0	21	0	2478
2001-02	1276	452	39	45	79	35	1922
2000-01	1673	-	-	-	-	-	1673

Source: Compiled from BSE website & various issues of SEBI bulletins

Table 9: Number of Contract Traded at BSE Derivatives Segment

Year	Index Futures	Stock Futures	Index Options		Stock Options		Total
			Call	Put	Call	Put	
2007-08	7157078	295117	951	210	9	6	7453371
2006-07	1638779	142433	2	2	0	1	1545169
2005-06	89	12	100	0	2	0	03
2004-05	449630	6725	48065	27210	72	17	531719
2003-04	246443	128193	1	0	4391	3230	382258
2002-03	111324	25842	41	2	783	19	138037
2001-02	79552	17951	1139	1276	3605	1500	105527
2000-01	77743	-	-	-	-	-	77743

Source: Complied from BSE website & SEBI bulletin

Table 10: BSE Cash & Derivatives Segment Turnover

(Rs. in Cr.)

Year	Cash Segment	Derivatives Segment
2007-08	1578857	242309
2006-07	956185	59006
2005-06	816074	9
2004-05	518715	16112
2003-04	503053	12452
2002-03	314073	2478
2001-02	307292	1922
2000-01	1000032	1673

Source: Complied from BSE website & SEBI bulletin

Despite of encouraging growth and developments, industry analyst feels that the derivatives market has not yet, realized its full potential in terms of growth & trading. Analysts points out that the equity derivative markets on the BSE and NSE has been limited to only four products- index futures, index options and individual stock futures and options, which in turn, are limited to certain select stocks only. Although recently NSE and BSE has added more products in their derivatives segment (Weekly Options, Currency futures, Mini Index etc.) but still it is far less than the depth and variety of products prevailing across many developed capital markets.

Section III

3. Status of Indian Derivatives Market vis-a vis Global Derivatives Market

The derivatives segment has expanded in the recent years in a substantial way both globally as well as in the Indian capital market. The figures revealed by Futures Industry Association (FIA)⁹ Annual Volume Survey and reported here under Table 11 and Fig. 5 bring out the fact that more than 15 billion futures and options contracts were traded during 2007 on the 54 important exchanges that report to the FIA, reflecting a remarkable increase of 28% from the previous year. Looking back at the last four years, it can be worked out that these figures reflect that the growth rate was 29 % in 2006, 19% in 2006, 12% in 2005, and 9% in 2004. From the same table it also follows that of the total volume traded globally over the period 2000-07, the US exchanges alone constituted as much as 35 percent share. Fig. 6 presents the break down of derivatives volume by region and it is clearly evident that after North America with a share of about 40 percent, Asia-Pacific occupies the second slot with a share of 28 percent and Europe falls at the third place with its contribution of 24 percent.

⁹ Futures Industry Association (FIA) is an association of futures commission merchants, banks and trading advisers operating in the United States, European and Asian futures markets. FIA provides information and education on futures markets and trading. It also represents the interest of its members by lobbying regulatory bodies and exchanges.

If we compare the turnover-wise performance of the derivatives segments over the last five years, it may be noticed from an inspection of the relevant columns of Table 5 and Table 11 that the Indian segment has expanded phenomenally as compared to the global segment. The turnover of the NSE derivatives segment in 2003-04 stood at Rs. 2130610 crores. It grew to an astonishing level of Rs.13090477 crores during the year 2007-08, displaying a more than six-time increase over the five-year period. In marked contrast, at the global level the increase was less than even two-fold: the turnover was \$ 8163 million in 2003 and \$ 15187 million in 2007.

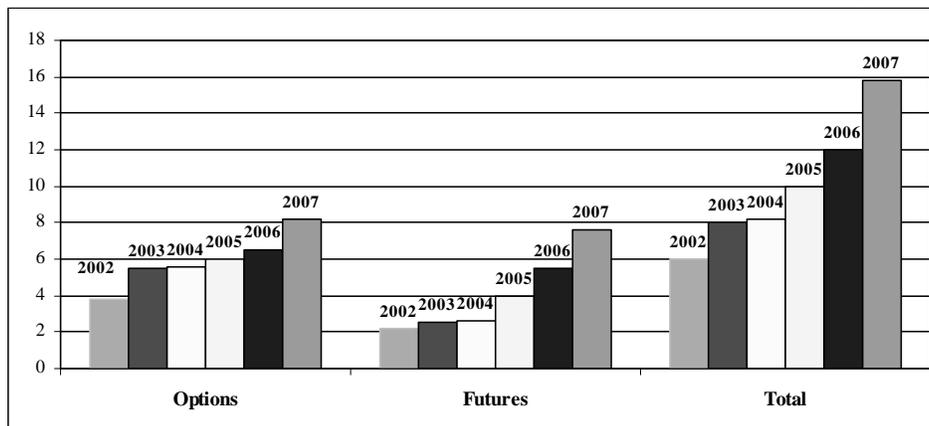
Table 11: Global Trend in Turnover of Derivatives Trading

(in millions)			
Year	US Exchanges	Non- US Exchanges	Global
2000	1313.65	1675.80	2989.45
2001	1578.62	2768.70	4347.32
2002	1844.90	4372.38	6217.28
2003	2172.52	5990.22	8162.54
2004	2795.21	6069.50	8864.71
2005	3525.00	6448.67	9973.67
2006	4616.73	7245.48	11862.21
2007	6137.20	9049.47	15186.67
2000-07	23983 (35.48)	43620 (64.52)	67604 (100)

Source: FI Futures Industry, March/April 2008

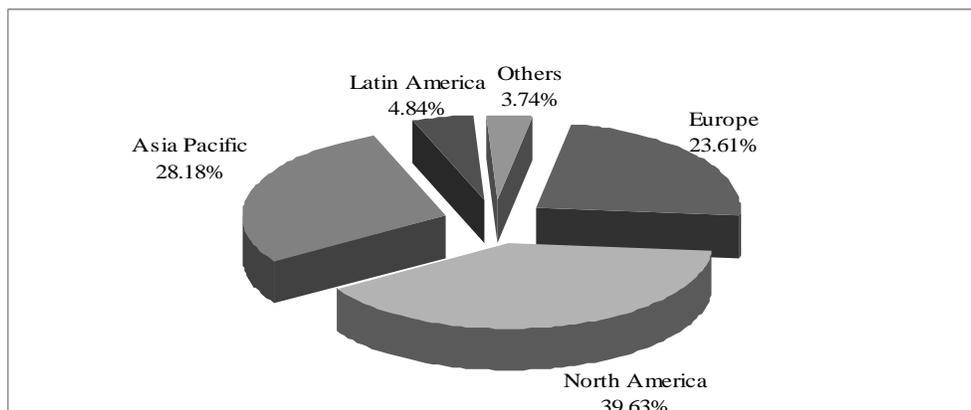
Figure 5: Global Derivatives Volume Growth 2002-2007

(No. of billion Contracts)



Source: WFE/IOMA 2007 Derivatives Market Survey – May 2008 Issue

Figure 6: Derivatives Volume by Region Jan-Dec 2008



Source: Newedge

Section IV

4. Summary and Concluding Remarks

Innovation of derivatives have redefined and revolutionised the landscape of financial industry across the world 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 stakeholders. Derivatives provide an opportunity to transfer risk, from the one who wish to avoid it; to one, who wish to accept it. India's experience with the launch of equity derivatives market has been extremely encouraging and successful. The derivatives turnover on the NSE has surpassed the equity market turnover. Significantly, its growth in the recent years has surpassed the growth of its counterpart globally.

The turnover of derivatives on the NSE increased from Rs. 23,654 million (US \$ 207 million) in 2000-01 to Rs. 130,904,779 million (US \$ 3,275,076 million) in 2007-08. 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 of India's securities markets, which are based on nationwide market access, anonymous safe and secure 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. Factors like increased volatility in financial asset prices; growing integration of national financial markets with international markets; development of more sophisticated risk management tools; wider choices of risk management strategies to economic agents and innovations in financial engineering, have been driving the growth of financial derivatives worldwide and have also fuelled the growth of derivatives here, in India. There is no better way to highlight the significance and contribution of derivatives but the comments of the longest serving Governor of Federal Reserve, **Alan Greenspan**: *"Although the benefits and costs of derivatives remain the subject of spirited debate, the performance of the economy and the financial system in recent years suggests that those benefits have materially exceeded the costs."*

References

- [1] 'Trading statistics of Derivatives segment at BSE', available at: [www. bseindia.com](http://www.bseindia.com)(accessed on May 30,2009)
- [2] Bodla, B. S. and Jindal, K. (2008), 'Equity Derivatives in India: Growth Pattern and Trading Volume Effects', *The Icfai Journal of Derivatives Markets*, Vol. V, No. 1, pp.62-82.
- [3] Growth of Derivatives Market In India, available at: http://www.valuenotes.com/njain/nj_derivatives_15sep03.asp?ArtCd=33178&Cat=T&Id=10 (accessed on May 30, 2008).
- [4] Harish, A. S. (2001) 'Potential of Derivatives Market in India', *The ICFAI Journal of Applied Finance*, Vol. 7, No.5, pp 1-24.
- [5] Hirani, Kapil (2007), 'Understanding Derivatives', available at: <http://kapilhirani.com/News5.php> (accessed on May 20,2009)
- [6] <http://www.indiainfoline.com/news/showleader.asp?lmn=1&storyId=344>(accessed on May 20,2009)
- [7] http://www.valuenotes.com/njain/nj_derivatives_15sep03.asp?ArtCd=33178&Cat=T&Id=10 (accessed on May 28,2009)
- [8] 'Indian Securities Market, A Review' (ISMR)-2008 available at: <http://www.nseindia.com>.(accessed on May 27, 2009)
- [9] 'International Options Market Association (IOMA) Derivatives Market Survey' 2007, available at: <http://www.world-exchanges.org/ioma> (accessed on May 30, 2009).
- [10] 'Introduction to derivatives in India', available at: <http://business.mapsofindia.com/investment-industry/introduction-to-derivatives.html> (accessed on May 27, 2009).
- [11] Kannan, R. (2008), 'Onset of Derivatives Trading in Derivatives market', available at: www.geocities.com/kstability/content/derivatives/first.html (accessed on May 20, 2009).
- [12] Kaur, P.(2004), 'Financial derivatives: Potential of derivative market in India and emerging derivatives market structure in India' available at: www.icwai.org/icwai/knowledgebank (accessed on May 28, 2009)
- [13] Misra Dheeraj and Misra Sangeeta D (2005), 'Growth of Derivatives in the Indian Stock Market: Hedging v/s Speculation', *The Indian Journal of Economics*, Vol. LXXXV, No. 340.
- [14] NSE fact book, 2008 Issue, available at: <http://www.nseindia.com>.(accessed on May 15, 2009)
- [15] Reddy, Y. V. and Sebastin, A. (2008), 'Interaction between Equity and Derivatives Markets in India: An Entropy Approach', *The Icfai Journal of Derivatives Markets*, Vol. V, No.1, pp.18-32.
- [16] Sarkar, A. (2006), 'Indian Derivatives Markets' available at: www.newyorkfed.org/research/economists/sarkar/derivatives_in_india.pdf (accessed on May 10, 2009).
- [17] Srivastava, P. (2004), 'Financial and legal aspect of derivative trading in. India', available at: www.taxmann.net/Datafolder/Flash/article0412_4.pdf (accessed on May 10,2009).

In India, the derivatives market has recorded an impressive CAGR of 34 per cent, in terms of annual turnover, in the last five years. India is one of the most successful developing countries in terms of a vibrant market for exchange-traded derivatives. This reiterates the strength of modern developments in India's securities markets, which are based on nationwide market access, anonymous electronic trading and a predominant retail market. There is an increasing sense that the equity derivatives market plays a major role in shaping price discovery. Indian academia's research could focus on the success. Stories of the growth and development of Derivative Markets in India. We can trace the introduction of Derivatives way back to 1700 BC. Around 580 B C Thales the. Financial derivatives are used for a number of purposes including risk management, Hedging, arbitrage between markets, and speculation. The use of financial derivatives can reduce transaction costs, and/ or aid price discovery. 1 International Research Journal of Finance and Economics ISSN Issue 37 (2010) EuroJournals Publishing, Inc Development of Financial Derivatives Market in India- A Case Study Ashutosh Vashishtha Faculty College of Management, Shri Mata Vaishno Devi University (SMVDU) Katra. (J&K) India Tel: Satish Kumar Research Fellow, Department of Management Studies Indian Institute of Technology Roorkee, India Tel: Abstract Risk is a characteristic feature of most commodity and capital markets. Variations in the prices of agricultural and non-agricultural commodities are induced, over time, by demand-s