Derivative and Risk Management: A New Dimension of Indian Financial Market

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Abstract: **Starting from the Modigliani-Miller(MM) approach that " One bird in the hand and two birds in the bush" to a local saying that " Higher a monkey climbs the tree, the more it exposes its back", everywhere you will find the element of risk, when someone goes for an additional benefit or return. Forget about additional returns, many times investors worry about what would be his actual return on his investment. Given two options in hand, an investor would be happier, if his investment is protected with a minimal return in comparison to high additional returns at a cost of further risk. In the first option you are completely risk averse. In the second option, it would be more interesting to take the challenge, if there were some mechanism available to freeze the quantum of risk so that one can compare it with the additional return and if the additional return is more than the risk, he will venture into, and otherwise he will abstain. The first option squeezes or seals all opportunities to earn more. The second one explores ample returns, but is subject to uncertainties. In the present high finance economies investors including corporate bodies competing to grab any possible opportunities which may arise. In result this has foster the way for financial engineering to develop sophisticated financial instruments to hedge against these unforeseen aberrations and uncertainties. Derivatives are nothing but the beautiful outcomes of these financial engineering processes. In general, derivatives are financial instruments in the form of futures, options, forwards, swaps, etc. which help investors and corporates manage their risk.**

With the advent of globalization, the Indian economy with the regime of strict control, is now opened up and exposed to price volatility in relation to assets and commodities and more particularly assets of financial nature. Though this volatility was witnessed earlier also, but with the globalization of business and free movement of financial assets, price risk management has become inevitable in India like other developed and developing countries. This scenario has given birth to several financially reengineered instruments known as derivatives. This article throws light on the recent development in Indian derivative market in terms of available derivative instruments, related market for their dealings and participants in the market.

Key Words: **Financial Market, Derivatives, Underlying, Hedging, Participants.**

I. OBJECTIVE AND IMPORTANCE OF THE STUDY

Derivatives have been associated with a number of high-profile corporate events that roiled the global financial markets over the past two decades. To some critics, derivatives have played an important role in the near collapses or bankruptcies of Barings Bank in 19951, Long-term Capital Management in 19982, Enron in 20013, Lehman Brothers4 in and American International Group (AIG)5 in 2008. Warren Buffet even viewed derivatives as time bombs for the economic system and called them financial weapons of mass destruction (Berkshire Hathaway Inc. (2002)).

But derivatives, if "properly" handled, can bring substantial economic benefits. These instruments help economic agents to improve their management of market and credit risks. They also foster financial innovation and market developments, increasing the market resilience to shocks. The main challenge to policymakers is to ensure that derivatives transactions being properly traded and prudently supervised. This entails designing regulations and rules that aim to prevent the excessive risk-taking of market participants while not slowing the financial innovation aspect. And it also calls for improved data quantity and quality to enhance the understanding of derivatives markets. This research paper provides an overview of derivatives, covering three main aspects of these securities: *instruments, markets and participants*. It begins with a quick review of some key concepts, including what derivatives are? Why they exist? Who use these instruments and for what purpose? Etc. It also discusses the factors that have contributed to the rapid

[1]The details of collapse of Barings Bank is available at http://en.wikipedia.org/wiki/Barings_Bank
[2]The details of collapse of Barings Bank is available at http://en.wikipedia.org/wiki/Long-Term_Capital_Management
[3]The information is retrieved from http://en.wikipedia.org/wiki/Enron_scandal
[4]The details of collapse of Barings Bank is available at http://en.wikipedia.org/wiki/Lehman_Brothers
[5]The web source is available at http://en.wikipedia.org/wiki/American_International_Group

growth of the markets over the past few decades in Indian financial market.

II. BASIC CONCEPTS ON DERIVATIVES

In finance, a derivative is a special type of contract that derives its value from the performance of an underlying entity. This underlying entity can be an asset, index, or interest rate, and is often called the "underlying"6. Derivatives can be used for a number of purposes - including insuring against price movements (hedging), increasing exposure to price movements for speculation or getting access to otherwise hard to trade assets or markets.

Some of the more common derivatives include futures, forwards, swaps, options, and variations of these such as caps, floors, collars, and credit default swaps. Most derivatives are traded over-the-counter (off-exchange) or on an exchange such as the Chicago Mercantile Exchange, while most insurance contracts have developed into a separate industry. Derivatives are one of the three main categories of financial instruments, the other two being equities (i.e. stocks or shares) and debt (i.e. bonds and mortgages).

The Oxford dictionary defines a derivative as something derived or obtained from another, coming from a source; not original. In the field of financial economics, a derivative security is generally referred to a financial contract whose value is derived from the value of an underlying asset or simply underlying. There are a wide range of financial assets that have been used as underlying, including equities or equity index, fixed-income instruments, foreign currencies, commodities, credit events and even other derivative securities. Depending on the types of underlying, the values of the derivative contracts can be derived from the corresponding equity prices, interest rates, exchange rates, commodity prices and the probabilities of certain credit events.

III. MAJOR TYPES OF DERIVATIVES

The classification of derivatives can be made on different basis. The categorization is being explained as under.

i. On the basis of Nature and Characteristics:

(a). *Forwards:*
Forward contracts represent agreements for the delayed delivery of financial instruments or commodities in which the buyer agrees to purchase and the seller agrees to deliver, at a specified future date, a specified instrument or commodity at a specified price or yield. Forward contracts are generally not traded on organised exchanges and their contractual terms are not standardised. The reporting exercise also includes transactions where only the difference between the contracted forward outright rate and the prevailing spot rate is settled at maturity, such as non-deliverable forwards (i.e. forwards which do not require physical delivery of a non-convertible currency) and other contracts for differences.

(b). *Future:*
Futures are derivatives wherein all the terms and conditions are standardised and are traded in exchanges. Futures may be defined as standardised forwards being traded at exchange. In case of default by either party, the aggrieved party need not go to the court of law, but the exchange provides the counterparty the guarantee of performance. In forwards the performance of other party is not assured but in futures, the exchange assumes the responsibility and assures the performance of the contract.

(c). *Options*:
Option contracts confer either the right or the obligation, depending upon whether the reporting institution is the purchaser or the writer, respectively, to buy or sell a financial instrument or commodity at a specified price up to a specified future date**.**

(d). ***Swaps:***
Swaps are transactions in which two parties agree to exchange payment streams based on a specified notional amount for a specified period. Forward starting swap contracts are reported as swaps.

ii. On the basis of Underlying Assets:

(a). *Commodity Derivatives:*
Derivative contracts can be based on real assets including different types of commodities such as sugar, jute, metals etc. In India future contracts are available at different commodity exchanges.

(b). *Financial Derivatives:*
Derivatives in currencies, government securities, share, share indices etc. are known as financial derivatives. These derivatives are transacted at different exchanges all over the world. Financial derivative are broadly classified into currency derivatives, stock and stock indices derivatives. In India, stock index futures, stock index options, stock options and stock future are traded at BSE, NSE and MCX-SX. Currency derivatives are traded at NSE, USE and MCX-SX.

(c). *Interest Rate Derivatives:*
These are derivative contracts whose underlying are the interest rates. Interest

[6] The definition of "Underlying" is retrieved from Statement of Financial Accounting Standards No. 133 available at http://www.fasb.org/cs/BlobServer?blobcol=urldata&blobtable=MungoBlobs&blobkey=id&blobwhere=1175820923424&blobheader=application%2Fpdf

rate derivatives are traded in India at various recognised stock exchanges.

(d). *Credit Derivatives:*
In this derivative contract the underlying is the creditworthiness of the borrower. Credit risk faced by the lender can be traded through credit derivatives. Credit default swap is a kind of credit derivative traded in India.

(e). *Weather Derivative:*
The underlying in this derivative contract are weather conditions, temperature, rainfall etc. These derivatives are too complex and are not traded in India.

iii. On the basis of Complexity:

On this basis the derivatives are classified into two categories. One is simple, *Basic or plain vanilla derivatives* and other is *Exotic derivatives*. Plain vanilla derivatives like future, forward and options etc. are not complex; hence these are the basic derivatives. Exotic derivatives are combination of two or more basic derivatives and they are designed to meet the specific requirements and hence complex.

iv. Exchange Traded and OTC Traded Derivatives:

All OTC contracts are direct contracts between parties under the law of contract. These are all regulated by statutory provisions. All forward contracts are the OTC traded derivative contracts. The\he ODTC derivative carries higher risk of default by any of the parties. In India, forward contracts in currencies and swaps are OTC traded.

On the other hand, the exchange traded derivatives are standard contracts traded as per rules and regulations of the exchange. These are traded online in computerised exchanges. All exchange traded derivative contracts are standardised in respect of Price, Strike date and Quantity. These contracts are subject to margins and strict surveillance by the exchange authorities. These contracts are only traded through the members of the exchange. On all exchange traded derivative contracts, exchange gives the guarantee against the counter party default.

IV. GLOBAL PERSPECTIVE OF DERIVATIVE MARKET

The global derivatives market is a main pillar of the international financial system and the economy as a whole. Today, businesses around the world use derivatives to effectively hedge risks and reduce uncertainty about future prices. Derivatives contribute to economic growth and increase the efficiency of markets by improving price discovery for assets.

Derivatives are financial instruments that are traded among market participants over the counter (OTC) or via regulated markets (on-exchange), whereby the former comprises the majority of the world market. Derivatives are used to protect against and manage risks, offering their users various benefits compared to other financial instruments. Considering the key role played by the global derivatives market in the global economy, it is not at all surprising that the market has seen such strong growth over the past decades which are shown in the table below.

Category	**2012**	**2013**
Individual Equity	6,469,512,853	6,401,526,238
Equity Index	6,048,270,302	5,370,863,386
Interest Rate	2,931,840,769	3,330,719,902
Currency	2,434,253,088	2,491,136,321
Energy	925,590,232	1,265,568,992
Agriculture	1,254,415,510	1,213,244,969
Non-Precious Metals	554,249,054	646,318,570
Precious Metals	319,298,665	430,681,757
Other	252,686,977	493,359,639
Total	**21,190,117,450**	**21,643,419,774**

Source: *FIA Annual Volume Survey, 2013*[7]

V. DEVELOPMENT OF DERIVATIVE MARKET IN INDIA

The origin of derivatives can be traced back to the need of farmers to protect themselves against fluctuations in the price of their crop. From the time it was sown to the time it was ready for harvest, farmers would face price uncertainty. Through the use of simple derivative products, it was possible for the farmer to partially or fully transfer price risks by locking-in asset prices. These were simple contracts developed to meet the needs of farmers and were basically a means of reducing risk.

Derivative 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 future trading way back in 1875. This was the first organized futures market. Then Bombay Cotton Exchange Ltd. in 1893, Gujarat Vyapari Mandall in 1900, Calcutta Hesstan Exchange Ltd. in 1919 had started future market.

[7]The figures are derived from FIA Annual Volume Survey available at http://www.futuresindustry.org/downloads/FIA_Annual_Volume_Survey_2013.pdf

After the country attained independence, derivative market came through a full circle from prohibition of all sorts of derivative trades to their recent reintroduction. In 1952, the government of India banned cash settlement and options trading, derivatives trading shifted to informal forwards markets. In 1993 SEBI banned the forward trading and badla system after which there has been a continuous demand for introduction of some products these can be used for hedging and risk containment from the industry side. In response to this SEBI appointed a committee (L.C Gupta Committee) 8 in November 1996 to develop appropriate regulatory framework of derivatives trading in India. The committee recommended that the derivative should be declared as securities so that the regulatory framework applicable to trading of securities could also govern the trading of derivatives.

SEBI accepted the recommendations of L.C Gupta committee and approved the phased introduction of derivative trading in India starting with Stock Index Futures. In December 1999, the Securities Contract Regulation Act 1956 was amended to bring derivative to the ambit of securities.

Indian capital market stepped into future trading on Friday, June 9, 2000 when Bombay Stock Exchange (BSE) launched Index Future on 30 shares BSE SENSEX. The National Stock exchange (NSE) did not lag behind and Index Futures in 50 shares NSE NIFTY started on Monday, June12, 2000. Currently both BSE and NSE have allowed dealings in derivatives of maturity period of 1 month, 2 months and 3 months. Each derivative contract ends on last Thurs day of each calendar month.

The various Equity Derivative products available at BSE and NSE for trading in the table below:

National Stock Exchange	**Bombay Stock Exchange**
• Futures on NIFTY, CNXIT, Bank NIFTY and other indices • Options on NIFTY, CNXIT, Bank NIFTY and other indices • Individual stock futures • Individual Stock options	• SENSXE and other indices futures • SENSXE and other indices options • Individual stock futures • Individual Stock options

A contract for Index (both NIFTY and SENSEX) Futures and Options must be for 50 units. However in case of individual stock futures and options, the minimum value of contract must be Rs 2, 00,000. The exact value of derivative contracts for individual stocks depends upon the market value of the share and number of share in one contract. In 2008 NSE has launched the Mini-Derivative contracts with 20 units.

In India, all options at present are of European nature. These contracts expire on the last Thursday on every calendar month. If the last Thursday is holiday then the preceding business day will be the settlement day. In order to cater the demand for shorter maturity options, BSE in September 2004 has offered SENSEX options for 1 week, 2 weeks, so the better price recovery is possible.

SEBI has provided for the payment of margin in all types of derivatives contracts. Apart from initial margin, daily settlement is also payable in cash on T+1 basis.

Besides Futures and Options in stock and stock indices, three other types of derivatives are also allowed in India. These are:

(a). Currency derivatives in 4 currencies are being traded at NSE, MCX-SX and United Stock Exchange (USE).

(b). Interest rate derivatives are also traded in NSE, MCX-SX and United Stock Exchange (USE).

(c). Credit derivatives in form of credit default swaps have also been allowed at Over-The Counter (OTC) by RBI.

(d). Commodity derivatives are traded at 6 national stock exchanges which are MCX, NCDEX, NMCX, ICE, ACE and UCX.

The more detail about evolution of derivatives are shown in table with the help of the chronology of the events9.

S. No.	**Progress Date**	**Progress of Financial Derivatives**
1	1952	Enactment of the forward contracts (Regulation) Act.
2	1953	Setting up of the forward market commission.
3	1956	Enactment of Securities Contract Regulation Act 1956
4	1969	Prohibition of all forms of forward trading under section 16 of SCRA.
5	1972	Informal carry forward trades between two settlement cycles began on BSE.
6	1980	Khuso Committee recommends reintroduction of

[8]The L.C Gupta Committee Report on derivative trading is available at the following web source http://www.sebi.gov.in/commreport/LC06.html

[9]The details of development of derivative market in India is retrieved from the web page http://en.wikipedia.org/wiki/Bombay_Stock_Exchange

		futures in most commodities.
7	1983	Govt. Amends bye-laws of exchange of Bombay, Calcutta and Ahmedabad and introduced carry forward trading in specified shares.
8	1992	Enactment of the SEBI Act.
9	1993	SEBI Prohibits carry forward transactions.
10	1994	Kabra Committee recommends futures trading in 9 commodities.
11	1995	G.S. Patel Committee recommends revised carry forward system.
12	Dec. 1995	NSE asked SEBI for permission to trade index futures
13	1996	Revised system restarted on BSE.
14	Nov. 1996	SEBI setup LC Gupta committee to draft frame work for index futures
15	May 1998	LC Gupta committee submitted report
16	June 1999	Interest rate swaps/forward rate agreements allowed at BSE
17	July 1999	RBI gave permission to OTC for interest rate swaps/forward rate agreements
18	May 2000	SIMEX chose Nifty for trading futures and options on an Indian index
19	May 2000	SEBI gave permission to NSE & BSE to do index futures trading
20	June 2000	Equity derivatives introduced at BSE
21	June 2000	Commencement of derivatives trading (index futures) at NSE
22	Aug. 2000	Commencement of trading futures & options on Nifty at SIMEX
23	June 2001	Index option launched at BSE
24	Jun 2001	Trading on equity index options at NSE
25	July 2001	Trading of stock options at NSE
26	July 2001	Stock options launched at BSE
27	July 2001	Commencement of trading inoptions on individual securities
28	Nov. 2001	Stock futures launched at BSE
29	Nov. 2001	Commencement of trading infutures on individual security
30	Nov. 2001	Trading of Single stock futuresat BSE
31	June 2003	Trading of Interest rate futures atNSE
32	Aug. 2003	Launch of futures & options inCNX IT index
33	Sep. 2004	Weekly options of BSE
34	June 2005	Launch of futures & options inBank Nifty index
35	Dec. 2006	Derivative Exchange of the Yearby Asia risk magazine
36	June 2007	NSE launches derivatives onNifty Junior & CNX 100
37	Oct. 2007	NSE launches derivatives onNifty Midcap -50
38	Jan. 2008	Trading of Chhota (Mini) Sensexat BSE
39	Jan. 2008	Trading of mini index futures &options at NSE
40	March 2008	Long term options contracts onS&P CNX Nifty index
41	2008	Futures & options on sectorialindices (BSE TECK, BSE FMCG, BSE Metal, BSE Bankex & BSE oil & gas)
42	Aug. 2008	Trading of currency futures atNSE
43	Aug. 2008	Launch of interest rate futures
44	1st Oct. 2008	Currency derivative introducedat BSE
45	10th Dec. 2008	S&P CNX Defty futures &options at NSE
46	Aug. 2009	Launch of interest rate futures atNSE
47	Aug. 2009	BSE-USE form alliance todevelop currency & interest rate derivative markets
48	Dec. 2009	BSE's new derivatives rate to lower transaction costs for all
49	Feb. 2010	Launch of currency future onadditional currency pairs at NSE
50	Apr. 2010	Financial derivatives exchangeaward of the year by AsianBanker to NSE
51	July 2010	Commencement trading of S&PCNX Nifty futures on CME atNSE
52	Oct. 2010	Introduction of European stylestock option at NSE
53	Oct. 2010	Introduction of Currency optionson USD INR by NSE
54	July 2011	Commencement of 91 day GOItrading Bill futures by NSE
55	Aug. 2011	Launch of derivative on

		GlobalIndices at NSE
56	Sep. 2011	Launch of derivative on CNXPSE & CNX infrastructureIndices at NSE
57	March 2012	BSE launched trading inBRICSMART indices derivatives
58	Nov. 2013 2013	BSE launched currencyderivative segment
59	January 2014	Launch of Interest Rate Futures

With the development of capital market in India and increasing interest of FIIs in India, both NSE and BSE have floated derivative products based on foreign stock indices. Some of these indices are FTSE 100, HANG SENG, and DJIA etc.

Two important stock indices, S&P SENSEX and NIFTY have global linkages and the futures and options of these indices are now traded at global stock exchanges. In October 2008, trading in SGX CNX NIFTY Index Futures started at Singapore Stock Exchange (SGX). Then in October 2010, SENSEX Futures and Options started trading at EUREX. BSE has also entered into an agreement with DUBAI Gold and Commodity Exchange for trading of SENSEX Futures.

VI. PARTICIPANTS IN DERIVATIVE MARKET

Derivative can be used by a party who is exposed to risk and wants to pass this risk to some another party who is ready to assume this risk at a price. On the basis of their nature of involvement these parties can be classified into few categories.

a) *Hedgers:*
Hedging is an activity to reduce the inherent risk of an investment. The basic objective of hedging is to reduce the risk of loss. Simply persons doing this hedging activity are known as hedgers. Derivatives have come up to meet the needs of the hedgers. Commodity contracts help farmers to lock-in the prices of their produce and also to the merchants in locking-in the price they are to pay to acquire such produce. Future contracts used by both the parties to hedge. Options protect the hedgers against the price movements while still allowing them to take the benefit of favourable price movements. So hedgers have risk exposures which they offset by a derivative. Hedgers seek to protect themselves against price changes in an asset in which they have an interest.

b) *Speculators:*
If someone is willing to transfer his risk, then there must some other one who is willing to the take the risk. These risk takers could be other hedgers or speculators. Speculators are the participant who are ready to take the risk for some return. A speculator takes on position opposite to other speculators or hedgers and exposes himself in expectation of profit from price change. They take the position in the market either expecting that the prices will go up or go down. Speculative activities in the derivative market are subject to perception of the speculators about the future prices. If perception turns out to be correct, he will gain otherwise he will lose. It is a kind of betting on the movement of future prices undertaken for the sole objective of making a profit is known as speculation.

c) *Arbitrageurs:*
They are another group of participants. The arbitrage is the process of locking-in a riskless profit by simultaneous entering into two transaction in two different derivative market or between derivative or cash market. There is an opportunity for profit because of difference in prices of the same asset in different markets.

d) *Spreaders:*
They are the participants of the derivative market who use various types of future contracts or option contracts to speculate at a low level of risk. Spread in future contracts involves buying one type of future contract and selling another type of future contract. A spread can be created intra commodity or inter commodity. A trader can buy future contracts of one month maturity and sell future contracts of two months maturity. Similarly a trader can buy gold future contracts and can sell appropriate number of silver future contracts. The reason for spread is that the trader perceives that the price differential in future contracts is likely to result in profits.

VII. CONCLUSIONS AND RECCOMENDATIONS

The chapter provides an overview of derivatives markets, products and participants. Derivatives are invented in response to some fundamental changes in the global financial system. They, if properly handled, should help improve the resilience of the system and bring economic benefits to the users. In this context, they are expected to grow further with financial globalization. However, past credit events exposed many weaknesses in the organization of derivatives trading. The aim is to minimize the risks associated with such trades while enjoying the benefits they bring to the financial system. An important challenge is to design new rules and regulations to mitigate the risks and to promote transparency by improving the quality and quantity of statistics on derivatives markets.

India's tryst with derivatives began in 2000 when both the NSE and the BSE commenced trading in equity derivatives. In June 2000, index futures became the first type of derivatives instruments to be launched in the Indian markets, followed by index options in June 2001, options in individual stocks in July 2001, and futures in single stock derivatives in November 2001. Since then, 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. India's experience with the equity derivatives market has been extremely positive. The turnover of derivatives on the NSE increased from 24 billion in 2000–2001 to 2, 92,482 billion in 2010–2011, and reached 3,13,497 billion in 2011–2012. In 2012-13, the figure reached 3, 15,330 billion. The average daily turnover in this segment of the markets on the NSE was 1,266 billion in 2012–13 compared to 1,259 billion in 2011–12. 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, 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 plays a major role in shaping price discovery and in many other areas in times to come.

In order to minimize this systemic risk and to create a well-functioning market, both safety and integrity need to be ensured. As such, a blueprint that effectively reduces the systemic risk in the derivatives market should incorporate the following guidelines:

- Maximum use of derivatives trading on organized markets
- Maximum use of central counterparties where trading on organized markets is not feasible
- Bilateral collateralization of derivatives exposure (preferably handled by a third party) when organized trading or the use of CCPs is not feasible
- Mandatory registration of open risk positions and reporting standards for all derivative contracts

A joint effort by market participants, infrastructure providers and regulators is required to strive for a swift and consistent implementation of the blueprint in order to restore and sustainably strengthen market safety and integrity.

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