DERIVATIVES MARKET IN INDIA: EVOLUTION, TRADING MECHANISM AND FUTURE PROSPECTS

DR. (MRS.) KAMLESH GAKHAR*; MS. MEETU**

* PROFESSOR
INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH
MAHARSHI DAYANAND UNIVERSITY, ROHTAK-124001, HARYANA, INDIA

** SENIOR RESEARCH FELLOW
INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH
MAHARSHI DAYANAND UNIVERSITY, ROHTAK-124001, HARYANA, INDIA

ABSTRACT

The Indian derivative market has become multi-trillion dollar markets over the years. Marked with the ability to partially and fully transfer the risk by locking in assets prices, derivatives are gaining popularity among the investors. Since the economic reforms of 1991, maximum efforts have been made to boost the investors’ confidence by making the trading process more users’ friendly. Still, there are some issues in this market. So, the present paper is an attempt to study the evolution of Indian derivative market, trading mechanism in its various products and the future prospects of the Indian Derivative market. The present paper is descriptive in nature and based on the secondary data. Inspite of the growth in the derivative market, there are many issue (e.g., the lack of economies of scale, tax and legal bottlenecks, increased off-balance sheet exposure of Indian banks need for an independent regulator etc), which need to be immediately resolved to enhance the investors’ confidence in the Indian derivative market.

KEYWORDS: Derivatives, Exchange, Futures, Options, Regulation.

INTRODUCTION

Fixed exchange rate was in existence under the Bretton Woods system. According to Avadhani (2000), Financial derivatives came into the spotlight, when during the post- 1970 period, the US announced its decision to give up gold- dollar parity, the basic king pin of the Bretton Wood System of fixed exchange rates. With the dismantling of this system in 1971, exchange rates couldn’t be kept fixed. Interest rates became more volatile due to high employment and inflation rates. Less developed countries like India opened up their economies and allowed prices to vary with market conditions. Price fluctuations made it almost impossible for the corporate sector to estimate future production costs and revenues. The derivatives provided an effective tool to the problem of risk and uncertainty due to fluctuations in interest rates, exchange rates, stock market prices and the other underlying assets. The derivative markets have become an integral part of modern financial system in less than three decades of their emergence. This paper describes the evolution of Indian derivatives market, trading mechanism in its various securities, the various unsolved issues and the future prospects of the derivatives market.
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”.

The International Monetary Fund (2001) defines derivatives as “financial instruments that are linked to a specific financial instrument or indicator or commodity and through which specific risks can be traded in financial markets in their own right. The value of a financial derivative derives from the price of an underlying item, such as an asset or index. Unlike debt securities, no principal is advanced to be repaid and no investment income accrues.”

Participants in the derivative market:

Patwari and Bhargava (2006) stated that there are three broad categories of participants in the derivative market. They are: Hedgers, Speculators and Arbitrageurs.

A Hedger is a trader who enters the derivative market to reduce a pre-existing risk. In India, most derivatives users describe themselves as hedgers (Fitch Ratings, 2004) and Indian laws generally require the use of derivatives for hedging purposes only.

Speculators, the next participant in the derivative market, buy and sell derivatives to book the profit and not to reduce their risk. They wish to take a position in the market by betting on future price movement of an asset. Speculators are attracted to exchange traded derivative products because of their high liquidity, high leverage, low impact cost, low transaction cost and default risk behavior. Futures and options both add to the potential gain and losses of the speculative venture. It is the speculators who keep the market going because they bear the risks, which no one else is willing to bear.

The third participant, Arbitrageur is basically risk-averse and enters into the contracts, having the potential to earn riskless profits. It is possible for an arbitrageur to have riskless profits by buying in one market and simultaneously selling in another, when markets are imperfect (long in one market and short in another market). Arbitrageurs always look out for such price differences. Arbitrageurs fetch enormous liquidity to the products which are exchanges traded. The liquidity in-turn results in better price discovery, lesser market manipulation and lesser cost of transaction.

According to Murti 2000, “the hedgers, the speculators and the arbitrageurs all three must co-exist. In simple words, all the three type of participants are required not only for the healthy functioning of the derivative market, but also to increase the liquidity in the market. The market would become mere tools of gambling without the hedgers, as they provide economic substance to the market. Speculators provide depth and liquidity to the market. Arbitrageurs help price discovery and bring uniformity in prices.”
**Literature Review**

According to Greenspan (1997) “By far the most significant event in finance during the past decades has been the extraordinary development and expansion of financial derivatives…” Avadhani (2000) stated that a derivative, an innovative financial instrument, emerged to protect against the risks generated in the past, as the history of financial markets is replete with crises). Events like the collapse of the fixed exchange rate system in 1971, the Black Monday of October 1987, the steep fall in the Nikkei in 1989, the US bond debacle of 1994, occurred because of very high degree of volatility of financial markets and their unpredictability. Such disasters have become more frequent with increased global integration of markets. Sahoo (1997) opines “Derivatives products initially emerged, as hedging devices against fluctuation in commodity prices and the commodity-linked derivatives remained the sole form of such products for many years. Marlowe (2000) argues that the emergence of the derivative market products most notably forwards, futures and options can be traced back to the willingness of risk-averse economic agents to guard themselves against uncertainties arising out of fluctuations in asset prices.

It is generally stated that regulation has an important and critical role to ensure the efficient and smooth functioning of the markets. According to Sahoo (1997) the legal framework for derivatives trading is a critical part of overall regulatory framework of derivative markets. The purpose of regulation is to encourage the efficiency and competition rather than impeding it. Hathaway (1998) stated that, while there is a perceived similarity of regulatory objective, there is no single preferred model for regulation of derivative markets.

Derivatives include a wide range of financial contracts, including forwards, futures, swaps and options. Forward contract is an agreement between two parties calling for delivery of, and payment for, a specified quantity and quality of a commodity at a specified future date. The price may be agreed upon in advance, or determined by formula at the time of delivery or other point in time” (Web 2). Just like other instruments, it is used to control and hedge currency exposure risk (e.g. forward contracts on USD or EUR) or commodity prices (e.g. forward contracts on oil). Patwari and Bhargava (2006) explain it in simple words and further add that one of the parties to a forward contract assumes a long position and agrees to buy the underlying asset at a certain future date for a certain price and the other agrees to sell it. The specified price is referred to as the delivery price. The parties to the contract mutually agree upon the contract terms like delivery price and quantity.

Web4 states that “A Futures Contract is a standardized contract, traded on a futures exchange, to buy or sell a certain underlying instrument at a certain date in the future, at a pre-set price. The future date is called the delivery date or final settlement date. The pre-set price is called the futures price. The price of the underlying asset on the delivery date is called the settlement price. The futures price, naturally, converges towards the settlement price on the delivery date”. Sirisha (2001) explain the **Types of Futures** which are as follows:

- **Foreign Exchange Futures**
- **Currency Futures**
- **Stock Index Futures**
- **Commodity Futures**
Interest Rate Futures

Web 5 defines “An Options Contract is the right, but not the obligation, to buy (for a call option) or sell (for a put option) a specific amount of a given stock, commodity, currency, index, or debt, at a specified price (the strike price) during a specified period of time. For stock options, the amount is usually 100 shares. Each option contract has a buyer, called the holder, and a seller, known as the writer. If the option contract is exercised, the writer is responsible for fulfilling the terms of the contract. For the holder, the potential loss is limited to the price paid to acquire the option. When an option is not exercised, it expires. No shares change hands and the money spent to purchase the option is lost. For the buyer/holder, the upside is unlimited. For the writer, the potential loss is unlimited and the profits are just limited to the amount of option premium. Hull (1995) has also talked of call option and put option.

Web 6 opines “A swap is a derivative product, where two counterparties exchange one stream of cash flows against another stream. These streams are called the legs of the swap. The cash flows are calculated over a notional principal amount. The notional amount typically does not change hands and it is simply used to calculate payments. Swaps are often used to hedge certain risks, for instance interest rate risk. Another use is speculation”. There are two basic kinds of swaps: Currency Swaps and Interest Rate Swaps.

Objectives of the Study
The objectives of the study are as follows:

- To have an overview of Indian derivative market.
- To have a look on the evolution of various derivative products.
- To find out the trading mechanism of different derivative products.
- To examine the various issues in the Indian derivative market and future prospects of this market.

Development of Derivatives Markets in India
Indian Derivatives markets 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 in 1875. In 1952, with the ban on cash settlement and option trading by the Government of India, derivatives trading shifted to informal forwards markets. In recent years, government policy has shifted in favor of an increased role of market-based pricing and less suspicious derivatives trading. The first step towards the introduction of financial derivatives trading in India was the promulgation of the Securities Laws (Amendment) Ordinance, 1995. This provided for withdrawal of prohibition on options in securities. In the last decade, beginning the year 2000, ban on futures trading in many commodities was lifted out. During 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, NSE and BSE, 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 as, S&P CNX, Nifty and Sensex. Subsequently, index-based trading was permitted in options as well as individual securities.
Derivatives Products Traded in Derivatives Segment of BSE
The Bombay Stock Exchange (BSE) created history on June 9, 2000 when it launched trading in Sensex based futures contract for the first time. It was then 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. 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 1 summarily specifies the derivative products and their date of introduction on the BSE.

Table 1: Products Traded in Derivatives Segment of the BSE

<table>
<thead>
<tr>
<th>S. No</th>
<th>Product</th>
<th>Traded with underlying asset</th>
<th>Introduction Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Index Futures</td>
<td>Sensex</td>
<td>June 9,2000</td>
</tr>
<tr>
<td>2</td>
<td>Index Options</td>
<td>Sensex</td>
<td>June 1,2001</td>
</tr>
<tr>
<td>3</td>
<td>Individual Stock Option</td>
<td>Concerned Company Stock</td>
<td>July 9, 2001</td>
</tr>
<tr>
<td>4</td>
<td>Individual Stock futures</td>
<td>Concerned Company Stock</td>
<td>November 9,2002</td>
</tr>
<tr>
<td>5</td>
<td>Weekly Option</td>
<td>4 Stocks</td>
<td>September 13,2004</td>
</tr>
<tr>
<td>6</td>
<td>Chhota (mini) SENSEX</td>
<td>SENSEX</td>
<td>January 1, 2008</td>
</tr>
<tr>
<td>7</td>
<td>Currency Futures</td>
<td>US Dollar Rupee</td>
<td>October 1,2008</td>
</tr>
</tbody>
</table>

Source: Compiled from BSE website

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 in index options was introduced on June 4, 2001. On November 9, 2001, Futures on individual securities started. As stated by the Securities & Exchange Board of India (SEBI), futures contracts are available on 233 securities. Trading in options on individual securities commenced w.e.f. July 2, 2001. The options contracts, available on 233 securities, are of American style and cash settled. Trading in interest rate futures was started 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 created history by launching currency futures contract on US Dollar-Rupee on August 29, 2008 in Indian Derivatives market. Table 2 presents a description of the types of products traded at F& O segment of NSE.
Table 2: Products Traded in F&O Segment of NSE

<table>
<thead>
<tr>
<th>S.no</th>
<th>Product</th>
<th>Traded with underlying asset</th>
<th>Introduction Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Index Futures</td>
<td>S&amp;P CNX Nifty</td>
<td>June 12,2000</td>
</tr>
<tr>
<td>2</td>
<td>Index Options</td>
<td>S&amp;P CNX Nifty</td>
<td>June 4,2001</td>
</tr>
<tr>
<td>3</td>
<td>Individual Stock Option</td>
<td>Concerned Company Stock</td>
<td>July 2, 2001</td>
</tr>
<tr>
<td>4</td>
<td>Individual Stock futures</td>
<td>Concerned Company Stock</td>
<td>November 9,2001</td>
</tr>
<tr>
<td>5</td>
<td>Interest Rate Future</td>
<td>T – Bills and 10 Years Bond</td>
<td>June 23,2003</td>
</tr>
<tr>
<td>6</td>
<td>IT Futures &amp; Options</td>
<td>CNX IT</td>
<td>August 29,2003</td>
</tr>
<tr>
<td>7</td>
<td>Nifty Futures &amp; Options</td>
<td>Bank</td>
<td>June 13,2005</td>
</tr>
<tr>
<td>8</td>
<td>Nifty Junior Futures &amp; Options</td>
<td>CNX</td>
<td>June 1,2007</td>
</tr>
<tr>
<td>9</td>
<td>Futures &amp; Options</td>
<td>CNX100</td>
<td>June 1,2007</td>
</tr>
<tr>
<td>10</td>
<td>Midcap 50 Futures &amp; Options</td>
<td>Nifty</td>
<td>October 5,2007</td>
</tr>
<tr>
<td>11</td>
<td>Mini index Futures &amp; Options</td>
<td>S&amp;P CNX Nifty index</td>
<td>January 1, 2008</td>
</tr>
<tr>
<td>12</td>
<td>Long Term Option contracts</td>
<td>S&amp;P CNX Nifty Index</td>
<td>March 3,2008</td>
</tr>
</tbody>
</table>

Source: Compiled from NSE website

Trading Mechanism
Web10 states that the trading system of derivatives at NSE, known as NEAT-F&O trading system, provides a fully automated screen-based trading for all kinds of derivatives products available on NSE on a national wide basis. It supports an anonymous order driven market, which operates on a time priority/strict price basis. It offers great flexibility to users in terms of kinds of orders that can be placed on the terminal. Various time and price-related conditions like Immediate/Cancel, Limit/Market Price, Stop Loss, etc. can be built into an order. The trading in derivatives is essentially similar to that of trading of securities in the Capital Market segment.

There are four entities in the trading system of a derivative market:
1. Trading members: Trading members can trade either on their own account or on behalf of their clients including participants. They are registered as members with NSE and are assigned an exclusive trading member ID.
2. **Clearing members**: Clearing members are members of NSCCL. They carry out confirmation/inquiry of trades and the risk management activities through the trading system. These clearing members are also trading members and clear trade for themselves or/and other.

3. **Professional clearing members**: A clearing member who is not a trading member is known as a professional clearing member (PCM). Typically, banks and custodian become PCMs and clear and settle for their trading members.

4. **Participants**: A participant is a client of trading members like financial institutions. These clients may trade through multiple trading members, but settle their trades through a single clearing member only.

The terminals of trading of futures & options segment are available in 298 cities at the end of March 2006. Besides trading terminals, it can also be accessed through the internet by investors from anywhere.

**Trade Details of Derivatives Market**

After recording a 60.43 percent growth (2009–2010) in trading volume on year-on-year basis, the NSE’s derivatives market continued its momentum in 2010–2011 by having a growth rate of 65.58 percent (Table 3). The NSE further strengthened its dominance in the derivatives segment in 2010–2011 by having a share of 99.99 percent of the total turnover in this segment. The share of the BSE in the total derivatives market turnover fell from 0.0013 percent in 2009–2010 to 0.0005 percent in 2010–2011. The total turnover of the derivatives segment increased by 26.56 percent during the first half of 2011–2012 compared to the turnover in the corresponding period in the previous fiscal year. In terms of product wise turnover of futures and options segment in the NSE, index options segment was the clear leader in 2010–2011 (Figure III).

**Figure I: Trade Details of Derivatives in NSE**

![Figure I: Trade Details of Derivatives in NSE](source: NSE Website)

**Figure II: Trade details of Derivatives in BSE**
Source: NSE Website

Figure III: Product-wise distribution of turnover of F&O segment of NSE (2010-11)

Table 3: Trade Details of Derivatives Market
Unresolved Issues and Future Prospects

Even though the derivatives market has shown good progress in the last few years, the real issues facing the future of the market have not yet been resolved. The number of products allowed for derivative trading have increased and the volume and the value of business has zoomed, but the objectives of setting up different derivative exchanges may not be achieved and the growth rates witnessed may not be sustainable unless these real issues are sorted out as soon as possible. Some of the main unresolved issues are as under.

- **Commodity Options**: Trading in commodity options contracts has been stopped since 1952. The market for commodity derivatives is not completed without the presence of this important derivative. Both futures and options are necessary for the healthy growth of the market. There is an immediate need to bring about the necessary legal and regulatory changes to introduce commodity options trading in the country. The matter is believed to be under the active consideration of the Government and the options trading may be introduced in the near future.

**Source**: NSE Website
Issues for Market Stability and Development: The enormous size and fast growth of the Over the Counter (OTC) derivatives market has attracted the attention of regulators and supervisory bodies. Some OTC derivatives have been viewed as amplifiers of the stress in the present global financial crisis. The more common criticisms relate to the fact that the OTC markets are less transparent and highly leveraged, have weaker capital requirements and contain elements of hidden systemic risk.

The Warehousing and Standardization: For commodity derivatives market to work smoothly, it is necessary to have a sophisticated, cost-effective, reliable and convenient warehousing system in the country. The Habibullah (2003) task force admitted, “A sophisticated warehousing industry has yet to come about”. Further, independent labs or quality testing centers should be set up in each region to certify the quality, grade and quantity of commodities so that they are appropriately standardized and there are no shocks waiting for the ultimate buyer who takes the physical delivery.

Cash vs. Physical Settlement: Only about 1% to 5% of the total commodity derivatives trade in the country is settled in physical delivery. It is probably due to the inefficiencies in the present warehousing system. Therefore the warehousing problem obviously has to be handled on a war footing, as a good delivery system is the backbone of any commodity trade. A major problem in cash settlement of commodity derivative contracts is that at present, under the Forward Contracts (Regulation) Act 1952, cash settlement of outstanding contracts at maturity is disallowed. In other words, all outstanding contracts at maturity should be settled in physical delivery. To avoid this, participants settle their positions before maturity. So, in practice, most contracts are settled in cash but before maturity. There is a need to modify the law to bring it closer to the widespread practice and save the participants from unnecessary hassles.

Increased Off-Balance Sheet Exposure of Indian Banks: The growth of derivatives as off-balance sheet (OBS) items of Indian Banks has been an area of concern for the RBI. The OBS exposure/risk has increased significantly in recent years. The notional principal amount of OBS exposure increased from Rs.8,42,000 crore at the end of March 2002 (approximately $181 billion at the exchange rate of Rs.46.6 to a US $) to Rs.149,69,000 crore (approximately $321 billion) at the end of March 2008. (RBI, 2009)

The Regulator: As the market activity pick-up and the volumes rise, the market will definitely need a strong and independent regulator; similar to the Securities and Exchange Board of India (SEBI) that regulates the securities markets. Unlike SEBI which is an independent body, the Forwards Markets Commission (FMC) is under the Department of Consumer Affairs (Ministry of Consumer Affairs, Food and Public Distribution) and depends on it for funds. It is imperative that the Government should grant more powers to the FMC to ensure an orderly development of the commodity markets. The SEBI and FMC also need to work closely with each other due to the inter-relationship between the two markets.
• **Competition of OTC derivatives with the Exchange-traded Derivatives:** A general view emerging after the recent financial crisis is that OTC derivatives trading should be moved to an exchange platform. The proponents of this view hope that this would increase liquidity and reduce significantly the opacity of the market. They argue that exchanges provide transparent and reliable price formation mechanisms, neutrality, robust and appropriate technology, better regulation and, above all, centralized clearing and settlement system. These arguments are based on the assumption that the existing method of trading in OTC products is all based on telephone trading and there is no clearing system in place.

• **Lack of Economies of Scale:** There are too many (3 national level and 21 regional) commodity exchanges. Though over 80 commodities are allowed for derivatives trading, in practice derivatives are popular for only a few commodities. Again, most of the trade takes place only on a few exchanges. All this splits volumes and makes some exchanges unviable. This problem can possibly be addressed by consolidating some exchanges. Also, the question of convergence of securities and commodities derivatives markets has been debated for a long time now. The Government of India has announced its intention to integrate the two markets. It is felt that convergence of these derivative markets would bring in economies of scale and scope without having to duplicate the efforts, thereby giving a boost to the growth of commodity derivatives market. It would also help in resolving some of the issues concerning regulation of the derivative markets. However, this would necessitate complete coordination among various regulating authorities such as Reserve Bank of India, Forward Markets commission, the Securities and Exchange Board of India, and the Department of Company affairs etc.

• **Strengthening the Centralized Clearing Parties:** CCIL, which started functioning in 2002, is the only centralized clearing party for trade processing and settlement services in India. It currently provides a guaranteed settlement facility for government securities trading, clearing of collateralized borrowing and lending obligations (CBLO), guaranteed settlement of foreign exchange trading, and settlement of all Indian Revenue Service (IRS). Though the concentration of business relating to money, securities and forex markets with the CCIL helps in pooling risks and reducing the overall transactions costs for the system, the Certified Financial Services Auditor’s (CFSA) report opined that the concentration of such a wide spectrum of activities leads to concentration of risks in one entity. Therefore, there is the need to strengthen more and more clearing parties.

• **Tax and Legal bottlenecks:** In India, at present there are tax restrictions on the movement of certain goods from one state to another. These need to be removed so that a truly national market could develop for commodities and derivatives. Also, regulatory changes are required to bring about uniformity in octroi and sales taxes etc. VAT has been introduced in the country in 2005, but has not yet been uniformly implemented by all states.

• **New Derivatives Products for Credit Risk Transfer (CRT):** Credit risk transfer (CRT), in a broad sense (including guarantees, loan syndication, and securitization),
has a long history. However, there has been a sustained and rapid growth of new and innovative forms of CRT associated with credit derivatives. The most common credit derivatives are credit default swaps (CDS) on single corporate entity (single-name CDS) and collateralized debt obligations (CDOs). Since 2005, CRT activity became significant for two additional underlying asset classes – asset backed securities (ABS) and leveraged loans. Internationally, banks and financial institutions are able to protect themselves from credit default risk through the mechanism of credit derivatives. However, credit derivatives were not allowed in India until recently. The RBI has made an announcement in its second-quarter monetary policy 2009-10 that it has considered it appropriate to proceed with caution on this issue. To start with Ist December 2011, RBI has introduced guidelines for a basic, over-the-counter, single name CDS for corporate bonds for resident entities, subject to safeguards.

**Conclusion:** The Indian derivative market has achieved tremendous growth over the years, and also has a long history of trading in various derivatives products. The derivatives market has seen ups and downs. The new and innovative derivative products have emerged over the time to meet the various needs of the different types of investors. Though, the derivative market is burgeoning with its divergent products, yet there are many issues. Among the issues that need to be immediately addressed are those related to, lack of economies of scale, tax and legal bottlenecks, increased off-balance sheet exposure of Indian banks, need for an independent regulator etc. Solution of these issues will definitely lead to boost the investors’ confidence in the Indian derivative market and bring an overall development in all the segments of this market.

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