



Innovations In Indian Financial Market – A Study

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ABSTRACT

A wave of financial innovation begun in the early 1960s is now sweeping throughout the developed economies, producing major changes in the financial landscape. A major feature of this process has been the introduction of a wide variety of new products that trade in new market settings, thereby reducing the reliance upon banks for traditional credit instruments and credit evaluations. The Indian financial marketplace has undergone a tremendous expansion in terms of the variety of products, the volume of trading, and the capitalized value of available securities. The data presented in this section suggest that a variety of financial markets, which were in their infancy or nonexistent two decades ago, have grown to become major centers of activity and influence. This study reflects the key aspects related to use, importance, experience, benefits, commonly used tools, implementation in future, learning areas, forms of financial innovation in various financial products, how financial markets change in future. This study optimizes the enhancing of Financial innovation in various financial products in Indian financial markets.

KEY WORDS

Financial Innovation, Liberalization, Deregulation, Securitization, Financial Instruments.

1. INTRODUCTION

A wave of financial innovation begun in the early 1960s is now sweeping throughout the developed economies, producing major changes in the financial landscape. While the details of the process differ country to country, there are several common features, like (i) innovation in development of new financial products and markets; (ii) securitization-a greater tendency toward market- determined interest rates and marketable financial instruments other than bank loans; (iii) liberalization-of domestic financial market practices either through explicit deregulation or a breaking down of conventions; (iv) globalization-as national barriers erode and financial markets grow more integrated; and (v) increased competition among financial institutions, with many of the traditional distinctions between commercial banks,

investment banks, and securities firms becoming blurred in the process.

A major feature of this process has been the introduction of a wide variety of new products that trade in new market settings, thereby reducing the reliance upon banks for traditional credit instruments and credit evaluations. Many of these new products (e.g., currency and interest rate swaps, currency and interest rate options) are of obvious assistance for risk management purposes-to enable the individual or firm to tailor the various dimensions of risk (e.g., currency, maturity, credit, interest rate, default, and so forth) more precisely than before. Other products (e.g., note issuance facilities and Eurocurrency commercial paper) appear to directly reduce the cost of funding a desired financial position. The basic principles underlying today's new financial products are being extended and reapplied to yield still more products [1].

At the level of the financial services firm, innovation has affected the geographic location of activities, the financial product line, the risks that are being traded or carried, the identity of the major players, and the intensity of competition. Nonfinancial firms are faced with a vast array of financial choices-new financial markets and products, each with their own risk and return properties-that require increasingly sophisticated analysis. Naturally, all of these factors feed into macroeconomic performance. Policymakers and regulatory agencies are keen to understand the potential benefits (or costs) of these new products, new procedures, and new players and to incorporate these new factors into macroeconomic policies and regulatory decisions. This paper provides a broad assessment of these recent developments surrounding financial innovation, including their impact on financial stability and national policy-making. This theme suggests several basic questions: (i) What financial product and process changes have occurred over the last twenty to twenty-five years in India, and international financial markets? (ii) What factors account for these changes? (iii) What are the implications of these changes for individuals and the aggregate macro economy from both a positive and policy perspective? This paper lays a foundation that will address these questions.

Section 3.1 outlines the dimensions of the Indian financial marketplace. Data on the extent of securitization and on trading in new risk management and funding vehicles (e.g., futures, options, and swaps) are also presented. Again the picture is one of securities or markets that were virtually

nonexistent a decade ago, but now have grown to substantial importance.

Section 3.2 presents an overview of dimensions of Indian Financial Markets, the types of new financial products that are available and their functions. Several financial market innovations are described to illustrate their workings and recent evolution and to demonstrate how the products add value for market participants. The Foreign Exchange Markets of financial market innovation are explored in section 3.4.1 Section 4.1 highlights the scenario of Indian Derivative market, currency futures. And section 5 highlights bond market.

2. Literature Review

Despite the popular opinion that increased volatility in numerous financial markets was enhanced by trading in derivatives, the empirical evidence regarding this issue is far from conclusive. Some studies provide empirical results that support the opinion that trading in futures can destabilize the spot market. For example, Figlewski (1980) investigates the futures contracts for Treasury Bills (GNMA pass-through certificates) and provides evidence that futures market activity increases the volatility of cash prices. Some of the studies provide evidence on the increase in the spot exchange rate volatility due the trading in currency futures. For instance, the study by Chatrath, Ramchander and Song (1996) explicitly examines the relationship between level of currency futures trading and the volatility in the spot rates of the British pound, Canadian dollar, Japanese yen, Swiss franc and Deutsche mark. The researchers provide strong evidence on the causality between futures trading volume exchange rate volatility, as it is found out that the trading activity in futures has a positive impact on conditional volatility in the exchange rate changes, with a weaker feedback from the exchange rate fluctuations to the futures volatility. Moreover, futures trading activity is found to decline on the day following increased volatility in spot exchange rates. Grammatikos and Saunders (1986) studied the same foreign currency futures traded on the International Monetary Market over the period of 1978-1983. After using numerous causality tests, the researchers could not reject the null hypothesis that volume (price variability) causes price variability (volume) – a finding that is consistent with the presence of significant bidirectional causality in futures market transactions. Many researchers studied also the particular effect that different groups of investors in futures can have on the cash market. According to Adrangi and Chatrath (1998) the overall growth in currency futures commitments has not caused exchange rates to be more volatile, but the surges in the participation of large speculators and small traders do destabilize the markets. The recent study by Bhargava and Malhotra (2007) focuses on trading in futures on four currencies over the time period of 1982-2000. Literature has established that currency risk can be minimized through futures/forward hedging (Solnik (1974), Black (1990), Glen and Jorion (1993), and Chang and Wong (2003)). Recent research recognizes the time varying nature of exchange risk and adopts GARCH (generalized autoregressive conditional heteroskedasticity)

models to generate dynamic hedging strategies (Kroner and Sultan (1993), Lien, Tse, and Tsui (2002), Guo (2003)). However there is no direct evidence that derivatives are actually used to hedge. Hentchel and Kothari (1997) and Simkins and Laux (1997) examine directly firm's use of currency derivatives.

3. FUTURES AND FORWARD CONTRACTS

Currency futures trading in INR-US\$ started on August 29, 2008. Till January 2010, exchange rate futures was available only for US \$ vis-à-vis Indian Rupee. Exchange-traded currency futures have now been expanded to the euro, pound and yen pairing. At the time of introduction of currency futures in India, it was thought that the currency futures market in India would make a notable contribution towards improving the menu of options available for currency risk management. International experience of the emerging markets with the introduction of currency futures is a mixed one. In several cases, the volatility is found to be reduced following the constitution of currency futures market, though empirical evidence to the contrary also exists. The paper is divided into three sections Section I of this paper discusses in brief the relevant literature on foreign exchange market in India. Section II discusses the Derivatives markets in India and the rationale for introduction of currency futures in India. Section III discusses the emerging Bond market conclusions.

3.2 DIMENSIONS OF INDIAN FINANCIAL MARKETS

The Indian financial marketplace has undergone a tremendous expansion in terms of the variety of products, the volume of trading, and the capitalized value of available securities. The data presented in this section suggest that a variety of financial markets, which were in their infancy or nonexistent two decades ago, have grown to become major centers of activity and influence. The growth of these markets demonstrates their significance and potential implications for investors, corporate managers, and national policymakers. We begin by reviewing the growth of three traditional international financial markets-the foreign exchange market, the Eurocurrency market, and the Eurobond market. Then data on the rise of securitization are presented, followed by measures of activity in the markets for futures, options, and swaps.

3.3 Foreign Exchange market

Over the years, the foreign exchange market has emerged as the largest market in the world and the breakdown of the Bretton Woods system in 1971 marked the beginning of floating exchange rate regimes in several countries. The decade of the 1990s witnessed a perceptible policy shift in many emerging markets towards reorientation of their financial markets and these changing contours were mirrored in a rapid expansion of foreign exchange market in terms of participants, transaction volumes, decline in transaction costs and more efficient mechanisms of risk transfer. In India the foreign exchange market has originated in 1978 beginning with the banks to undertake intra-day

trade in foreign exchange. Before the reform process the Indian foreign exchange system was in a critical juncture and in the 1990s the Indian foreign exchange market witnessed far reaching changes along with the shifts in the currency regime. Following the recommendations of Rangarajan Committee on Balance of Payments, the exchange rate of the rupee pegged earlier was floated partially in March 1992 and fully in March 1993. Thus, the unification of the exchange rate was instrumental in developing a market-determined exchange rate of the rupee and an effort towards current account convertibility. Further, following the recommendations O.P.Sodhani Expert Committee, since 1996, wide-ranging reforms have been undertaken for deepening and widening of the Indian foreign exchange market. An Internal Technical Group on the Foreign Exchange Market was constituted in 2005 to undertake a comprehensive review of the measures initiated by the Reserve Bank and identify areas for further liberalization or relaxation of restrictions in a medium-term framework. These efforts have resulted in the momentous developments in the enhanced risk-bearing capacity of banks along with rising foreign exchange trading volumes and finer margins. Thus, the foreign exchange market in India has acquired depth (Reddy, 2005) and the conditions have also generally remained orderly (Reddy, 2006c).

3.4 Evolution of Indian Foreign Exchange Market

The evolution of India's foreign exchange market may be viewed in line with the shifts in India's exchange rate policies over the last few decades. With the breakdown of the Bretton Woods System in 1971 and the floatation of major currencies, the conduct of exchange rate policy posed a serious challenge to all central banks world wide as currency fluctuations opened up tremendous opportunities for market players to trade in currencies in a borderless market. In order to overcome the weaknesses associated with a single currency peg and to ensure stability of the exchange rate, the rupee, with effect from September 1975, was pegged to a basket of currencies. The impetus to trading in the foreign exchange market in India since 1978 when banks in India were allowed to undertake intra-day trading in foreign exchange. The exchange rate of the rupee was officially determined by the Reserve Bank in terms of a weighted basket of currencies of India's major trading partners and the exchange rate regime was characterized by daily announcement by the Reserve Bank of its buying and selling rates to the Authorized Dealers (ADs) for undertaking merchant transactions. The spread between the buying and the selling rates was 0.5 percent and the market began to trade actively within this range and the foreign exchange market in India till the early 1990s, remained highly regulated with restrictions on external transactions, barriers to entry, low liquidity and high transaction costs. The exchange rate during this period was managed mainly for facilitating India's imports and the strict control on foreign exchange transactions through the Foreign Exchange Regulations Act (FERA) had resulted in one of the largest and most efficient parallel markets for foreign exchange in the world, *i.e.*, the hawala (unofficial) market.

The Post-Reform Period (1992 onwards) phase was marked by wide ranging reform measures aimed at widening and deepening the foreign exchange market and liberalization of exchange control regimes. It was recognized that trade policies, exchange rate policies and industrial policies should form part of an integrated policy framework to improve the overall productivity, competitiveness and efficiency of the economic system, in general, and the external sector, in particular. As a stabilization measure, a two step downward exchange rate adjustment in July 1991 effectively brought to close the regime of a pegged exchange rate. Following the recommendations of Rangarajan's High Level Committee on Balance of Payments, to move towards the market-determined exchange rate, the Liberalized Exchange Rate Management System (LERMS) was introduced in March 1992, was essentially a transitional mechanism and a downward adjustment in the official exchange rate and ultimate convergence of the dual rates was made effective and a market-determined exchange rate regime was replaced by a unified exchange rate system in March 1993, whereby all foreign exchange receipts could be converted at market determined exchange rates. On unification of the exchange rates, the nominal exchange rate of the rupee against both the US dollars also against a basket of currencies got adjusted lower. Thus, the unification of the exchange rate of the Indian rupee was an important step towards current account convertibility, which was finally achieved in August 1994, when India accepted obligations under Article VIII of the Articles of Agreement of the IMF. With the rupee becoming fully convertible on all current account transactions, the risk bearing capacity of banks increased and foreign exchange trading volumes started rising. This was supplemented by wide-ranging reforms undertaken by the Reserve Bank in conjunction with the Government to remove market distortions and deepen the foreign exchange market.

3.4.1 Foreign Exchange Market in India:

The continuous improvement in market infrastructure has had its impact in terms of enhanced depth, liquidity and efficiency of the foreign exchange market. The turnover in the Indian foreign exchange market has grown significantly in both the spot and derivatives segments in the recent past. The daily average turnover impressed a substantial pick up from about US \$ 5 billion during 1997-98 to US \$ 18 billion during 2005-06. The turnover has risen considerably to US \$ 23 billion during 2006-07 with the daily turnover crossing US \$ 35 billion on certain days during October and November 2006. The inter-bank to merchant turnover ratio has halved from 5.2 during 1997-98 to 2.6 during 2005-06, US \$ 18,91,609 million during 2011-2012 and increased to 62,40,304 million during 2012-2013, reflecting the growing participation in the merchant segment of the foreign exchange market. Statistics related to Forex market in India is mentioned in the **Table 1**.

3.4.2 Evolution of the Forex derivatives market in India:

This tremendous growth in global derivative markets can be attributed to a number of factors. They reallocate risk

among financial market participants, help to make financial markets more complete, and provide valuable information to investors about economic fundamentals. Derivatives also provide an important function of efficient price discovery and make unbundling of risk easier. In India, the economic liberalization in the early nineties provided the economic rationale for the introduction of Forex derivatives. Business houses started actively approaching foreign markets not only with their products but also as a source of capital and direct

4. DERIVATIVES IN INDIA

Derivative is a product whose value is derived from the value of one or more basic variables, called bases (underlying asset, index, or reference rate), in a contractual manner. In the Indian context the Securities Contracts (Regulation) Act, 1956 (SC(R)A) defines "derivative" to include- 1. 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. 2. A contract which derives its value from the prices, or index of prices, of underlying securities. Derivatives are securities under the SC(R)A and hence the trading of derivatives is governed by the regulatory framework under the SC(R)A. The term derivative has also been defined in section 45U(a) of the RBI Act as follows: An instrument, to be settled at a future date, whose value is derived from change in interest rate, foreign exchange rate, credit rating or credit index, price of securities (also called "underlying"), or a combination of more than one of them and includes interest rate swaps, forward rate agreements, foreign currency swaps, foreign currency rupee swaps, foreign currency options, foreign currency-rupee options or such other instruments as may be specified by the Bank from time to time. Derivative contracts have several variants. The most common variants are forwards, futures, options and swaps.

4.1 PARTICIPANTS IN DERIVATIVE MARKET

The following three broad categories of participants - hedgers, speculators, and arbitrageurs trade in the derivatives market. Hedgers face risk associated with the price of an asset and they use futures or options markets to reduce or eliminate this risk. Speculators wish to bet on future movements in the price of an asset. Futures and options contracts can give them an extra leverage; that is, they can increase both the potential gains and potential losses in a speculative venture. Arbitrageurs are in business to take advantage of a discrepancy between prices in two 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.

4.2 ECONOMIC FUNCTION OF DERIVATIVE MARKET

In spite of the fear and criticism with which the derivative markets are commonly looked at, these markets perform a number of economic functions. 1. Prices in an organized derivatives market reflect the perception of market participants about the future and lead the prices of underlying

investment opportunities. With limited convertibility on the trade account being introduced in 1993, the environment became even more conducive for the introduction of the hedge products. Hence, the development in the Indian forex derivatives market should be seen along with the steps taken to gradually reform the Indian financial markets.

to the perceived future level. The prices of derivatives converge with the prices of the underlying at the expiration of the derivative contract. Thus derivatives help in discovery of future as well as current prices. 2. The derivatives market helps to transfer risks from those who have them but may not like them to those who have an appetite for them. 3. Derivatives, due to their inherent nature, are linked to the underlying cash markets. The underlying market witnesses higher trading volumes with the introduction of derivatives, because of participation by more players who would not otherwise participate for lack of an arrangement to transfer risk. 4. Speculative trades shift to a more controlled environment of derivatives market. In the absence of an organized derivatives market, speculators trade in the underlying cash markets. 5. An important incidental benefit that flows from derivatives trading is that it acts as a catalyst for new entrepreneurial activity. They often energize others to create new businesses, new products and new employment opportunities, the benefit of which are immense.

4.3 CURRENCY FUTURES

Currency futures are a linear product. It means that the losses as well as profits for the buyer and the seller of a futures contract are unlimited. As the date of expiration comes near, the basis reduces - there is a *convergence* of the futures price towards the spot price. On the date of expiration, the basis is zero. If it is not, then there is an arbitrage opportunity. Arbitrage opportunities can also arise when the basis (difference between spot and futures price) or the spreads (difference between prices of two futures contracts) during the life of a contract are incorrect. 2. Incorrect means if the price is not equal to the 'fair value' of the contract. In determining profits and losses in futures trading, it is essential to know both the contract size (the number of currency units being traded) and also the value of tick. A tick is the minimum trading increment or price differential at which traders are able to enter bids and offers. Tick values differ for different currency pairs and different underlying. Currency futures can be cash settled or settled by delivering the respective obligation of the seller and buyer. All settlements however, unlike in the case of OTC markets, go through the exchange.

4.4 RATIONALE FOR INTRODUCING CURRENCY FUTURES

Futures markets were designed to solve the problems that exist in forward markets. A futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future at a certain price. But unlike forward contracts, the futures contracts are standardized and exchange traded. To

facilitate liquidity in the futures contracts, the exchange specifies certain standard features of the contract. A futures contract is standardized contract with standard underlying instrument, a standard quantity and quality of the underlying instrument that can be delivered, (or which can be used for reference purposes in settlement) and a standard timing of such settlement. A futures contract may be offset prior to maturity by entering into an equal and opposite transaction.

Currency futures enable them to hedge these risks. Nominal exchange rates are often random walks with or without drift, while real exchange rates over long run are mean reverting. As such, it is possible that over a long – run, the incentive to hedge currency risk may not be large. However, financial planning horizon is much smaller than the long-run, which is typically inter-generational in the context of exchange rates. As such, there is a strong need to hedge currency risk and this need has grown manifold with fast growth in cross-border trade and investments flows. The argument for hedging currency risks appear to be natural in case of assets, and applies equally to trade in goods and services, which results in income flows with leads and lags and get converted into different currencies at the market rates. Empirically, changes in exchange rate are found to have very low correlations with foreign equity and bond returns. This in theory should lower portfolio risk. Therefore, sometimes argument is advanced against the need for hedging currency risks. But there is strong empirical evidence to suggest that hedging reduces the volatility of returns and indeed considering the episodic nature of currency returns, there are strong arguments to use instruments to hedge currency risks.

4.5 Other Foreign currency derivatives:

There is some activity in other cross currency derivatives products also, which are allowed to be used to hedge the foreign currency liabilities provided these were acquired in accordance with the RBI regulations.

The products that may be used are:

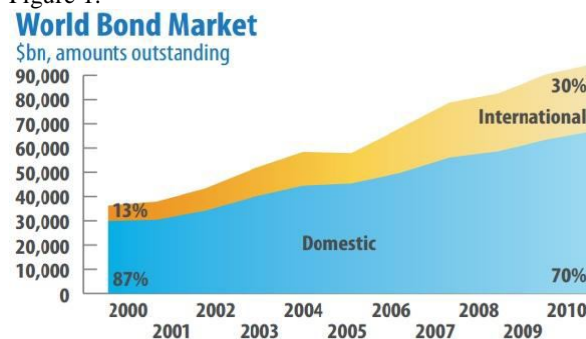
- Currency swap
- Coupon Swap
- Interest rate swap
- Interest rate cap or collar (purchases)
- Forward Rate Agreement (FRA) contract

Turnover related to Indian Equity Derivative market is presented in **Table 2**.

5. International Bond Markets

The international bond markets are important centers of financial activity where governments and businesses raise funds to meet their various expense requirements through issue of bonds. Bonds are fixed-income securities or debt instruments through which investors lend money to an entity borrowing funds for a definite period of time at a fixed interest rate. The following figure captures the growth of bond markets in the last decade. The international bond market has grown to occupy 30% of the overall world bond market indicating that the geographical and regulatory barriers to raising capital has diminished over the decade.

Figure 1:



¹ Includes bonds, notes and money market instruments

Source: Bank for International Settlements

The international bond market can be divided into three sub-segment markets:

- Domestic Bond Markets
- Foreign Bond Markets
- Euro Bond Markets

The Domestic bond markets are fixed income financial markets for buying and selling of bonds issued locally by domestic borrowers and usually denominated in the local currency. The foreign bond market involves issue of bonds in a local market by a foreign borrower in the local currency. Such bond issues are supervised by the local market authorities. The Eurobond markets are for issue of bonds in countries other than the one in whose currency the bond is denominated and outside of the country of the issuer. These bonds are not traded on any particular national markets and are not regulated by any specific agency. Of all the international bond issues, 80% are Eurobond issues.

5.1 Emerging Markets

Emerging markets are nations with social or business activity in the process of rapid growth and industrialization. The economies of China, India, Brazil, Russia, Mexico, Indonesia and Turkey are the seven largest emerging economies of the world.³ Out of these Brazil, Russia, India and China together have been labeled the BRIC nations by Goldman Sachs executive Jim O’Neill. These nations are the fastest growing emerging markets and represent the typical characteristics of countries passing through this transformational phase.

5.2 India and the Eurodollar Bond Market

Though the international bond market and Eurobond markets have been in existence for over half a century and more now, India’s foray into these markets have been relatively recent. It’s only post liberalization of the economy that many Indian companies have forayed to raise dollar funds from abroad. Till 1991, Indian issues in the Eurodollar bond market and other international bonds markets were limited to the few issuances by Public Sector companies that had the backing of the Indian government. Euro issue statistics related to India is

Presented in **Table 3**.

6. CONCLUSION

This paper has offered an overview of some of the financial market innovations we have seen over the last few years in Indian Financial markets, the causes of innovation, and the implications of both in terms of economic effects and policy responses. The incentives for financial innovation are strong and at the foundation of a market system. Self-interest, profit maximization, risk optimization, and technological change are guiding the process. Benefits clearly accrue to those directly involved in the innovating and trading process. Natural barriers that segment Indian-capital markets are under pressure, resulting in a tendency toward greater economic efficiency. And to guide Indian investor to choose a proper instrument to invest.

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Table 1: Turnover In Foreign Exchange Market

(US \$ million)																
Year / Month	P u r c h a s e S a l e s	Merchant						Inter-bank						Grand total (8+15)		
		FCY / INR			FCY / FCY			Total	FCY / INR			FCY / FCY			Total	
		Spot	Forward	Forward cancel-lation	Spot	Forward	Forward cancel-lation	(2 to 7)	Spot	Swap	Forward	Spot	Swap		Forwa rd	(9 to 14)
		1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16
2011-12																
Apr	P	61445.9	29473.7	14681.6	4052.5	11496.7	9600.1	130750	135997	143878	29029	55426.6	40753.8	8877.1	413962	544712
	S	59932.4	30926.6	14180.3	3935.1	11222.2	9575.6	129772	136576	142737	29652.1	55970.6	41419.9	8749.6	415105	544878
May	P	68309.2	36683.7	16008.7	5157	10166.1	7683	144008	160048	184806	33051.6	70239	49429.3	6305	503879	647887
	S	71674.7	32555.1	16480.6	5201.4	10516.7	7761	144190	163634	192994	36544.7	69854.7	51416.3	5892.3	520336	664526
Jun	P	56888.2	37912.2	19140.1	5745.4	10896.4	10759.3	141342	161981	198118	34000.2	79776.2	53099.8	6343.7	533319	674660
	S	56272.9	38443.4	20956.4	5446.8	10946.2	10922.5	142988	163565	196504	38236.8	79043	55883.5	5984.4	539217	682205
Jul	P	52167.2	37691.8	17005.7	5204.3	17328.1	17439.8	146837	147821	145552	27464.5	96950.1	53690.9	6393.6	477872	624709
	S	51717.6	38642.3	19649.5	5215.7	17254.9	17352	149832	150956	147432	29637.2	97575.5	54650.9	5880.8	486132	635964
Aug	P	59448.7	45992.7	23335.8	4054.5	19759.9	18023.1	170615	151828	156616	15627.1	93894.7	40740.9	4912.5	463620	634234
	S	60544.1	50329.2	20296.5	4005.9	21390.8	18408.2	174975	150573	174952	21278	90882.6	39883.3	4187.5	481756	656731
Sep	P	56081.2	43735	25134.2	3757.9	11989.2	9877.8	150575	172007	146819	16802.6	75060.5	34811.9	3578	449079	599654
	S	54210.8	53224	20103.8	3724.9	14208.3	10464.2	155936	167221	162437	23165.2	72789.4	37557.6	3736.4	466906	622842
Oct	P	49418.9	28464.6	17487.3	4639.5	6619.5	6159.8	112790	131197	119644	14646.9	62593.6	33469.6	2660.7	364211	477001
	S	49938.9	33457.3	14621.5	4624.1	7167.2	5804.8	115614	127127	128931	16651.6	63036.9	35084	2540.1	373371	488985
Nov	P	49648.2	32906	19916.2	5378.5	6580.9	6559.1	120989	155461	139389	14314.1	62822.4	36838.3	3217	412041	533030
	S	49467.7	39675.8	18308.1	5366.4	6657.4	6622.4	126098	144990	147430	19445.9	62487.8	36399.3	3168.3	413921	540019
Dec	P	55149.7	26905.5	17214	5044.6	4459.7	4363.1	113137	144256	128183	15338.9	43625.7	37188	2737.9	371329	484466
	S	53993.1	38687.7	15677.3	4969.6	5524.1	4287.4	123139	129978	142673	20460.4	42985	37935.1	2722.1	376753	499892
Jan	P	49694.3	21231.8	14689.6	5305.1	4579.6	4586.4	100087	132911	160571	18998.6	57822.6	28963.6	2869.5	402136	502223
	S	46725.7	33154.8	13037.1	5312.5	5289.9	4520.1	108040	122659	174565	21732.1	57814.5	29973.1	2929.3	409673	517713
Feb	P	55396	20520	13495.2	4435.3	5114.2	4356.2	103317	122804	154707	15425.3	68300.8	27767.9	2003.8	391009	494325
	S	51317.7	31335.1	11367.3	4414.4	6190.7	4325.2	108950	116880	161230	17186.3	68151.6	29474.9	2234	395157	504108
Mar	P	63837.6	22031.8	13369	5250.4	5589.8	5222.9	115302	136359	159792	18360.7	63935.2	33437.4	2987.1	414871	530172
	S	62177.3	35175	10683.9	5367.9	6260.7	5297.5	124962	128045	168058	21304.8	64193.1	32613.2	3119.3	417333	542296
2012-13																
Apr	P	43372.3	21328	11907.2	5208.1	7845.1	7038.5	96699.2	117162	141581	13108.7	66764.9	25596.8	4317.9	368530	465230
	S	44031.8	27291.6	10108.9	5097.5	8944.9	6961.8	102437	112237	154067	15917.8	67934.4	25654.2	4369.1	380179	482616
May	P	53108.6	26181.9	10122.1	6835	4955.3	5423.7	106627	149459	170556	20636.6	69409	26242.5	3144.1	439448	546074
	S	50382.8	36106.6	10768.8	6687.2	5915.6	5264.4	115125	140873	184023	22840.4	70652.5	26089.9	3146.3	447625	562750
Jun	P	49115.7	21887.2	13252.7	5100.5	7642.4	7496	104494	136235	150947	15406.8	81002.6	27060.2	3226.7	413878	518373
	S	53708.1	33755.7	10099.4	5044.8	8381.4	8090	119079	129400	162074	17804.8	81400.3	26564	3308.4	420551	539631
Jul	P	47481.4	27070.1	13288	6030.7	6772.6	7027.5	107670	144144	144359	13330.6	89491.4	26036	2728.8	420089	527760
	S	48534.1	30398.6	14203.2	6018.9	7254.5	7242.6	113652	139848	144177	14853.9	89939.9	26364.1	2724.9	417908	531559

Aug	P	44101.2	25265.1	11675.5	5750.1	9265.4	8956.8	105014	122816	139271	11265.4	74605	26757.4	3308.1	378023	483037
	S	42966.5	27326.3	12713.1	5758.1	9851.5	9080.4	107696	119467	144800	14434.9	74949.8	27686.2	3502	384840	492536
Sep	P	51417.7	33272.6	13164.7	5711.1	7556.3	7256.1	118379	138991	144649	15073.1	76386.2	28284.7	3047	406431	524810
	S	49245.6	33178.8	16619.6	5696.6	8100.2	7137.1	119978	136655	143101	15165.6	76836.5	28806.3	3204.3	403769	523746
Oct	P	49719.1	34007.2	11840.2	6413.3	3847.9	3585	109413	140821	129142	13671.9	78753.1	30022.2	3039.3	395450	504863
	S	48902.5	27870.1	20555.9	6385.8	4069.2	3565.4	111349	138084	132782	16675.4	78695.2	29876.6	3222.3	399335	510684
Nov	P	46304.6	30111.8	11347.7	4574.5	3030.7	2685.6	98054.9	124848	115896	14191.5	60066.5	29756.7	2248.6	347007	445062
	S	46156.8	27340.7	16712.6	4532.6	3262.4	2714.4	100719	121611	119935	16840.4	66573	30604.8	2411.8	357976	458695
Dec	P	60727.3	28466.3	11130.3	5829	3419.7	3037.8	112610	141638	120535	13607	59571.5	32734.4	5542.8	373629	486240
	S	54689.7	28026.5	17064.3	5814.1	3669.3	2900.7	112165	138057	127739	16608.7	59558.3	34009.4	5794.8	381767	493931
Jan	P	54273.2	37431.2	12698.4	6044.1	4258.4	3655.5	118361	165782	142521	19213.5	86123.8	29925.5	4825.9	448392	566753
	S	53842	33620.9	23499.4	6055.3	4787.7	3671.5	125477	163534	140165	20453.6	86203.2	32485.1	5488.5	448330	573806
Feb	P	51441.2	27900.5	12897.4	5842.8	4350.9	3361.1	105794	131301	118029	13709.7	82206.2	24796.1	4897.7	374939	480733
	S	48105.2	29661.5	18670.7	5955.4	4486.1	3311.9	110191	128683	121168	15330.7	82246.6	26154.6	4855.4	378438	488629
Mar	P	59082.1	33856.9	13343.1	6647.8	3906.3	3920.9	120757	170512	140982	16564.7	76931.1	29348.9	2733.1	437072	557829
	S	53803	36894.3	19752.3	6598.1	4388.7	4131.9	125568	168509	163858	19317.3	72037.3	29459.1	2972.3	456153	581721

FCY :Foreign Currency INR: Indian Rupees P: Purchases S: Sales

Note :1. Merchant - Transactions with entities other than banks.

2. Inter-bank - Transactions with banks including Reserve Bank of India.

TABLE 2: TURNOVER IN THE EQUITY DERIVATIVES MARKET (RUPEES IN BILLION)

YEAR	BOMBAY STOCK EXCHANGE(BSE)				NATIONAL STOCK EXCHANGE INDIA LIMITED(NSE)				
	INDEX FUTURES	INDEX OPTIONS	STOCK FUTURES	STOCK OPTIONS	INDEX FUTURES	INDEX OPTIONS	STOCK FUTURES	STOCK OPTIONS	INTEREST RATE FUTURES
2000-2001	16.73	0	0	0	23.65	0	0	0	0
2001-2002	12.76	.78	4.52	1.16	214.83	37.65	515.15	251.63	0
2002-2003	18.11	0.02	6.44	0.21	439.52	92.46	2865.33	1001.31	0
2003-2004	65.72	0.00	51.71	3.32	5544.46	528.16	13059.39	2172.07	0
2004-2005	136.00	22.97	2.13	0.03	7721.47	1219.43	14840.56	1688.36	0
2005-2006	0.05	0.03	0	0	15137.55	3384.69	27916.97	1802.53	0
2006-2007	554.91	0.00	35.16	0.00	25395.74	7919.06	38309.67	1937.95	0
2007-2008	2346.60	0.39	76.09	0.00	38206.67	13621.11	75485.63	3591.36	0
2008-2009	117.57	0.09	0.13	0.00	35701.13	37315.03	34796.44	2292.27	0
2009-2010	0.96	1.38	0.00	0.00	39343.89	80279.65	51952.47	5060.65	0
2010-2011	1.54	0.00	0.00	0.00	43567.53	183653.66	54957.57	10303.44	-
2011-2012	1782.63	6182.81	100.33	14.45	35780.00	227200.32	40746.71	9770.31	-
2012-2013	1213.81	70274.82	34.16	102.47	25271.29	227815.75	42238.71	20004.26	
2013	308.90	29961.55	239.78	19.04	9543.68	95034.68	15469.12	8804.95	-

JULY													
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Source : Bombay Stock Exchange Limited (BSE) and the National Stock Exchange of India Ltd. (NSE).

TABLE 3 : NUMBER AND QUANTUM OF EURO ISSUES (Rupees Billion)

Year/Month	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	Total
1992-93	.	.	.	.	.	.	.	.	.	.	.	.	7.02(2)
1993-94	.	.	.	.	.	.	.	.	.	.	.	.	78.98(27)
1994-95	2.80 (1)	2.21 (2)	6.26 (3)	11.14 (4)	9.36 (5)	0.00	5.30 (2)	9.59 (6)	16.37 (7)	0.02.	0.06.	4.32 (1)	67.43(31)
1995-96	0.04 (1)	0.00	2.77 (1)	0.00	0.00	0.00	0.00	0.00	0.00	1.05 (1)	0.00	9.10 (2)	12.97(5)
1996-97	6.13 (2)	0.53.	1.26 (2)	4.03 (1)	7.00 (1)	4.55 (2)	9.45 (2)	14.26 (2)	1.50 (2)	1.12 (1)	0.00	6.13 (1)	55.94(16)
1997-98	18.43 (1)	3.85 (2)	0.00	0.00	0.00	0.40 (1)	0.00	0.00	16.14 (2)	1.27 (1)	0.00	0.00	40.09(7)
1998-99	0.00	0.00	0.00	0.63 (1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.85 (2)	11.48(3)
1999-00	0.00	0.07 (1)	0.00	0.00	0.00	13.73 (1)	3.75 (1)	0.00	1.30 (1)	0.00	9.49 (1)	6.52 (1)	34.87(6)
2000-01	12.01 (2)	6.49 (2)	0.00	7.75 (2)	3.48 (1)	0.52 (1)	0.80 (1)	0.00	0.00	0.13 (1)	4.63 (1)	6.15 (2)	41.97(13)
2001-02	0.00	0.00	14.80 (3)	0.00	8.13 (1)	0.91 (1)	0.00	0.00	0.00	0.00	0.00	0.00	23.85(5)
2002-03	0.00	1.00 (1)	0.00	0.00	0.00	0.00	11.47 (4)	0.00	19.21 (2)	1.46 (2)	0.00	1.13 (2)	34.26(11)
2003-04	0.71 (1)	0.00	1.53 (1)	1.28 (2)	13.09 (1)	1.58 (2)	0.00	5.79 (3)	4.35 (3)	0.65 (1)	2.00 (4)	0.00	30.98(18)
2004-05	1.55 (1)	6.15 (3)	0.00	0.00	5.97 (2)	0.00	0.00	10.03 (2)	0.00	2.36 (3)	0.00	7.47 (4)	33.53(15)
2005-06	0.59 (2)	15.14 (3)	2.61 (1)	2.93 (4)	3.74 (2)	13.27 (5)	25.10 (8)	13.21 (2)	11.65 (7)	7.01 (6)	5.73 (3)	12.59 (6)	113.58(49)
2006-07	19.58 (10)	26.56 (5)	11.72 (6)	13.32 (6)	0.00	7.98 (2)	2.35 (3)	3.44 (2)	3.45 (1)	69.69 (1)	10.87 (2)	1.09 (2)	170.05(40)
2007-08	0.45 (1)	0.18 (1)	11.87 (1)	82.01 (2)	16.95 (3)	1.38 (2)	23.88 (1)	6.27 (3)	106.73 (3)	9.82 (4)	3.47 (1)	2.56 (4)	265.56(26)
2008-09	21.51 (4)	19.01 (3)	0.03 (1)	0.30 (1)	5.67 (1)	0.00	0.35 (2)	0.00	0.00	0.00	0.00	1.02 (1)	47.88(13)
2009-10	1.67 (1)	0.00	0.48 (1)	0.48 (1)	46.18 (4)	77.63 (1)	4.46 (1)	17.74 (2)	2.99 (2)	3.48 (4)	0.00	4.55 (1)	159.67(18)
2010-11	6.95 (3)	5.82 (4)	35.67 (12)	20.10 (7)	0.00	5.90 (4)	2.84 (2)	5.41 (4)	2.22 (2)	5.26 (2)	0.00	4.25 (2)	94.42(42)
2011-12	7.20 (6)	3.01 (5)	2.17 (2)	0.00	0.45 (1)	8.63 (4)	4.13 (3)	0.00	0.00	1.54 (1)	0.00	0.00	27.12(22)
2012-13	0.00	0.00	2.42 (1)	6.15 (2)	0.00	1.37 (1)	0.41 (1)	0.00	0.00	0.00	0.00	0.00	10.35(5)

Source: Reserve Bank of India web site.