

Derivative markets in India

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ABSTRACT

Trading in derivatives is dominated by NSE with a market share of 99 per cent in the total equity derivatives turnover. In terms of product-wise share in equity derivatives segment, index options have been holding top position for last three years. During 2010-11, the largest share in the total equity derivatives turnover has been contributed by index options with 62.8 per cent. The second largest share was held by single stock futures (18.8 per cent) which was followed by index futures (14.9 per cent) and single stock options (3.5 per cent). In India, the exchange traded currency derivatives were introduced at different points of time through four exchanges, namely NSE, BSE, MCX-SX and USE starting from August 2008 onward. In case of Currency Derivatives Market, USD-INR futures dominates the market share in terms of number of contracts in currency derivatives segment followed by USD-INR options. The currency derivatives segment on NSE and MCX-SX has witnessed an increasing growth over time, indicating an increase of 93.5 per cent and 115.7 per cent in trading volume over the year. In case of Interest Rates Derivatives, Trading in 10 year notional coupon bearing Government of India (GoI) security futures started at NSE on August 31, 2009 and it also gaining importance. In terms of the growth of derivatives markets, and the variety of derivatives users, the Indian market has equaled or exceeded many other regional markets, but large gaps exist in the range of derivatives products that are traded actively. In equity derivatives, almost 90 per cent of activity is due to stock futures or index futures, whereas trading in options is limited to a few stocks and exchange-traded derivatives based on interest rates and currencies are virtually absent. In India, derivative market making is primarily the province of Indian private and foreign banks, with public sector banks lagging in this area. Similarly, credit derivatives, the fastest growing segment of the market globally, are absent in India and require regulatory action if they are to develop. As Indian derivatives markets grow more sophisticated, greater investor awareness will become essential. In addition, institutions will need to devote more resources to develop the business processes and technology necessary for derivatives trading.

Key words : Derivative market, Currency derivative, Interest rate derivative

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The global economic order that emerged after World War II was a system where many less developed countries administered prices and centrally allocated

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resources. Even the developed economies operated under the Bretton Woods system of fixed exchange rates. The system of fixed prices came under stress from the 1970s onwards. High inflation and unemployment rates made interest rates more volatile. The Bretton Woods system was dismantled in 1971, freeing exchange rates to fluctuate. Less developed countries like India began opening up its economies and allowing prices to vary with market conditions. Price fluctuations make it hard for businesses to estimate their future production costs and revenues. But Derivative securities provide them a valuable set of tools for managing this risk (Asani Sarkar, 2005).

Definition and uses of derivatives:

A derivative security is a financial contract whose value

is derived from the value of something else, such as a stock price, a commodity price, an exchange rate, an interest rate, or even an index of prices, some simple types of derivatives are forwards, futures, options and swaps.

Derivatives may be traded for different of reasons. The three major players in the derivative market are hedgers, speculators and arbitrageurs. A derivative enables a trader to hedge some pre-existing risk by taking positions in derivatives markets that offset potential losses in the underlying or spot market (hedging). Another motive for derivatives trading is speculation (*i.e.* taking positions to profit from anticipated price movements). In practice, it may be difficult to distinguish whether a particular trade was for hedging or speculation, and active markets require the participation of both hedgers and speculators. A third type of trader, called arbitrageurs, profit from discrepancies in the relationship of spot and derivatives prices, and thereby help to keep markets efficient.

Derivatives markets:

Derivatives markets broadly can be classified into two categories, those that are traded on the exchange and those traded one to one or 'over the counter'. They are hence known as

Exchange traded derivatives:

OTC derivatives (Over the counter) :

An exchange-traded contract, such as a futures contract, has a standardized format that specifies the underlying asset to be delivered, the size of the contract, and the logistics of delivery. They trade on organized exchanges with prices determined by the interaction of many buyers and sellers. In India, two exchanges offer derivatives trading: the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). However, NSE now accounts for virtually all exchange-traded derivatives in India, accounting for more than 99 per cent of volume. Contract performance is guaranteed by a clearinghouse. Margin requirements and daily marking-to-market of futures positions substantially reduce the credit risk of exchange-traded contracts, relative to OTC contracts.

In the financial world, over-the-counter (OTC) trades are defined as trading of financial instruments such as stocks, bonds, commodities or derivatives directly between two parties without the attendant benefits of trading on exchanges in terms of central counter party, notation, trade guarantee, investor protection, transparency of pricing, etc. OTC derivatives are bilaterally negotiated between two parties. The terms of an OTC contract are flexible and are often customized to fit the specific requirements of the user. OTC contracts have substantial credit risk, which is the risk that the counterparty that owes money defaults on the payment.

Derivatives market in India:

Exchange traded derivatives form an important segment

of Indian stock markets (Chitla, 2003). In the exchange-traded market, the biggest success story has been derivatives on equity products. Index futures were introduced in June 2000, followed by index options in June 2001, and options and futures on individual securities in July 2001 and November 2001, respectively.

The derivatives market has grown substantially over the years in India. Trading in derivatives is dominated by NSE with a market share of more than 99 per cent in the total equity derivatives turnover. Over the years, the derivatives market turnover has been gradually increasing. During 2010-2011, turnover of derivatives market was 29,248,375 crores from 1,034,217,685 traded of contracts.

The market turnover to GDP ratio is an important parameter for evaluation of stock markets. The liquidity of the market can be measured by the traded value to GDP ratio, *i.e.*, value of the shares/ derivatives traded to GDP at current market prices.

Since 2003-04, there has been a considerable improvement in the market turnover to GDP ratio in derivative segment of the stock market. The turnover to GDP ratio was the highest in 2010-2011 under derivatives segment. In the derivative segment, the turnover to GDP ratio increased from 77.6 per cent in 2003-04 to 371.3 per cent in 2010-2011 (Table 1).

Table 1 : Total turnover to GDP ratio of derivative segment of stock market in India

Year	Total turnover to GDP ratio
2003-04	77.6
2004-05	82.1
2005-06	134.7
2006-07	178.9
2007-08	284.1
2008-09	197.4
2009-10	269.7
2010-11	371.3

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

The total number of contracts traded in the equity derivatives segment of NSE rose significantly to 1,03,42,12,062 (52.2 per cent) in 2010-11 from 67,92,93,922 in 2009-2010, whereas, at BSE, the number of contracts traded declined from 9,026 in 2009-2010 to 5,623 in 2010-2011. The value of the contracts traded in the equity derivatives segment of NSE increased by 65.6 per cent to 2,92,48,221 crores in 2010-2011 from 1,76,63,665 crores in 2009-2010, whereas the turnover at the equity derivatives segment of BSE declined by 51.9 per cent to 154 crores in 2010-2011 from 234 crores in 2009-2010 (Table 2).

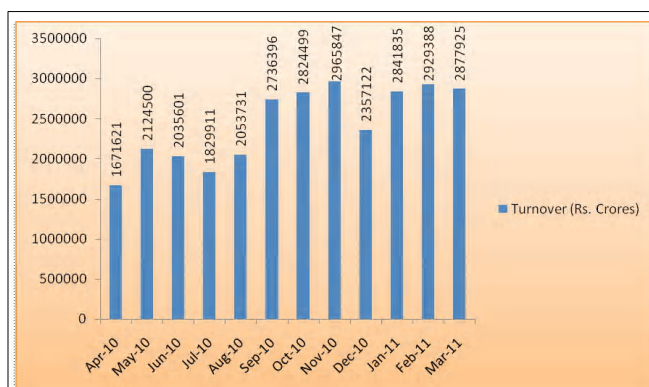
The turnover in the equity derivatives segment at NSE

Table 2 : Trends in notional turnover in derivative segment

Years	No of contracts			Turnover (Rs. crores)		
	NSE	BSE	Total	NSE	BSE	Total
2005-06	15,76,19,271	203	15,76,19,474	48,24,251	9	48,24,260
2006-07	21,68,83,573	17,81,220	21,86,64,793	73,56,270	59,006	74,15,276
2007-08	42,50,13,200	74,53,371	43,24,66,571	1,30,90,477	2,42,308	1,33,32,785
2008-09	65,73,90,497	4,96,502	65,78,86,999	1,10,10,482	11,775	1,10,22,257
2009-10	67,92,93,922	9,026	67,93,02,948	1,76,63,665	234	1,76,63,899
2010-11	1,03,42,12,062	5,623	1,03,42,17,685	2,92,48,221	154	2,92,48,375

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

recorded a mixed trend during 2010-11 (Fig. 1). The highest turnover was recorded in November 2010 (29,65,846 crores) followed by February 2011 (29,29,295 crores) and March 2011 (28,77,900 crores). Growth in the equity derivatives turnover at NSE was the highest in September 2010 when turnover rose by 33.2 per cent, followed May 2010 (27.1 per cent) and January 2011 (20.6 per cent). The average daily turnover at NSE in

**Fig. 1 : Derivatives segment turnover during 2010-11**

2010-2011 increased by 59.1 per cent to 1,15,151 crores from 72,392 crores in 2009-2010.

In terms of product-wise share in equity derivatives segment, index options have been holding top position for last three years. During 2010-2011, the largest share in the total equity derivatives turnover has been contributed by index options with 62.8 per cent compared to 45.5 per cent in 2009-2010. The second largest share was held by single stock futures (18.8 per cent) in 2010-2011 which was followed by index futures (14.9 per cent) and single stock options (3.5 per cent) (Table 3).

Tables 4 to 7 show the product-wise trends in the equity derivatives market in India during the recent years. Turnover in index options and stock options has registered an increase of over 100 per cent in 2010-2011 compared to 2009-2010. In case of index futures and stock futures the year-on-year increase in 2010-2011 has remained moderate (10.73 per cent and 5.78 per cent, respectively).

Trends in currency derivative segment:

India's financial market has been increasingly getting integrated with the rest of the world through increased trade

Table 3 : Product-wise derivatives turnover at NSE and BSE

Years	Index futures	Index options	Single stock options	Single stock futures	Total
2006-07	34.5	10.8	2.6	52.1	100
2007-08	29.2	10.4	2.7	57.7	100
2008-09	32.4	33.9	2.1	31.6	100
2009-10	22.3	45.4	2.9	29.4	100
2010-11	14.9	62.8	3.5	18.8	100

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

Table 4 : Trends in index futures in BES and NSE

Years	No. of contracts			Turnover (Rs. crores)		
	NSE	BSE	Total	NSE	BSE	Total
2006-07	81487424	1638779	83126203	2539575	55491	2595066
2007-08	156598579	7157078	163755657	3820667	234660	4055327
2008-09	210428103	495830	210923933	3570111	11757	3581868
2009-10	178306889	3744	178310633	3934389	96	3934485
2010-11	165023653	5613	165029266	4356755	154	4356909

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

Table 5: Trends in single stock futures in BES and NSE

Year	No. of contracts			Turnover (Rs. crores)		
	NSE	BSE	Total	NSE	BSE	Total
2006-07	104955401	142433	105097834	3830972	3516	3834488
2007-08	203587952	295117	203883069	7548563	7609	7556172
2008-09	221577980	299	221578279	3479642	9	3479651
2009-10	145591240	6	145591246	5195247	0	5195247
2010-11	186041459	0	186041459	5495757	0	5495757

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

Table 6 : Trends in index options in BES and NSE

Year s	No. of contracts			Turnover (Rs. crores)		
	NSE	BSE	Total	NSE	BSE	Total
2006-07	25157438	2	25157440	791912	0	791912
2007-08	55366038	1161	55367199	1362111	39	1362150
2008-09	212088444	373	212088817	3731502	9	3731511
2009-10	341379523	5276	341384799	8027964	138	8028102
2010-11	650638557	0	650638557	18365366	0	18365366

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

Table 7: Trends in stock options in BES and NSE

Years	No. of stocks traded			No. of contracts			Turn over (Rs. crores)		
	NSE	BSE	Total	NSE	BSE	Total	NSE	BSE	Total
2006-07	155	89	244	5283310	6	5283316	193811	0	193811
2007-08	228	3	231	9460631	15	9460646	359136	0	359136
2008-09	250	3	253	13295970	0	13295970	229227	0	229227
2009-10	190	0	190	14016270	0	14016270	506065	0	506065
2010-11	223	0	223	32508393	0	32508393	1030344	0	1030344

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

and finance activity. This has led to a demand for the introduction of exchange traded hedging instruments like currency futures and options to manage foreign currency exchange risk in addition to existing OTC products. With electronic trading and efficient risk management systems, exchange traded currency derivatives were introduced at different points of time through four exchanges, namely NSE, BSE, MCX-SX and USE starting from August 2008 onward. Trading in USD:INR currency futures contracts started on August 29, 2008 at NSE, on October 1, 2008 at BSE and on October 7, 2008 at MCX-SX. BSE has stopped all its operations in the currency derivatives segment from April 7, 2010. Futures on 3 additional currency pairs, namely, EURO: INR, GBP:INR

and JPY:INR were introduced at NSE and MCX-SX on February 1, 2010. Trading on all currency futures pair started at USE on September 20, 2010. Further, options on USD: INR, were introduced at NSE and USE on October 29, 2010.

The currency derivatives segment on NSE and MCX-SX has witnessed an increasing growth over time. At the end of 2010-11, total turnover at NSE stood at 34,49,788 crores as compared to 17,82,608 crores in 2009-10, indicating an increase of 93.5 per cent over the year. MCX-SX witnessed an increase of 115.7 per cent in trading volume during 2010-11 and turnover at MCX-SX was 41,94,017 crores in 2010-11 as against 19,44,654 crores in 2009-10. USE launched its trading platform on September 20, 2010. The turnover at USE stood at 7,62,501

Table 8 : Trends in currency derivative segment

Years	MCX-SX		NSE		USE	
	No. of contracts	Turnover (Rs. crores)	No of contracts	Turnover (Rs. crores)	No. of contracts	Turnover (Rs. crores)
2008-09	29847569	148826	32738566	162563	NA	NA
2009-10	408166278	1944654	378606983	1782608	NA	NA
2010-11	903185639	4194017	749602075	3449788	167772367	762501

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

crores at the end of 2010-2011 (Table 8).

USD-INR futures dominate the market share in terms of number of contracts in currency derivatives segment followed by USD-INR Options, which has consistently increased its market share.

Trends in interest rates derivatives:

Trading in 10 year notional coupon bearing Government of India (GoI) security futures started at NSE on August 31, 2009. The trends in turnover and open interest in interest rate derivatives (10 year notional coupon bearing GoI security futures) at NSE is depicted in Table 9.

Table 9 : Trends in interest rate derivatives at NSE		
Years	No. of contracts	Turnover (Rs. Crores)
2009-10	160894	2975
2010-11	3348	62

Source: Annual Report of the Securities and Exchange Board of India, 2010-11

Conclusion:

In terms of the growth of derivatives markets, and the variety of derivatives users, the Indian market has equaled or exceeded many other regional markets. There remain major areas of concern for Indian derivatives users. Large gaps exist in the range of derivatives products that are traded actively. In equity derivatives, NSE figures show that almost 90 per cent of activity is due to stock futures or index futures, whereas trading in options is limited to a few stocks, partly because they are settled in cash and not the underlying stocks. Exchange-traded derivatives based on interest rates and currencies are virtually absent.

Liquidity and transparency are important properties of any developed market. Liquid markets require market makers who are willing to buy and sell and be patient while doing so.

In India, market making is primarily the province of Indian private and foreign banks, with public sector banks lagging in this area (Fitch Ratings, 2004). And here is no consistent method of accounting for gains and losses from derivatives trading. Thus, a proper framework to account for derivatives needs to be developed.

Further, regulatory reform will help the markets grow faster. Especially in developing countries like India, where Indian commodity derivatives have great growth potential but government policies have resulted in the underlying spot/physical market being fragmented (e.g. due to lack of free movement of commodities and differential taxation within India) (Asani Sarkar, 2005). Similarly, credit derivatives, the fastest growing segment of the market globally, are absent in India and require regulatory action if they are to develop.

As Indian derivatives markets grow more sophisticated, greater investor awareness will become essential. NSE has programmes to inform and educate brokers, dealers, traders, and market personnel. In addition, institutions will need to devote more resources to develop the business processes and technology necessary for derivatives trading.

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