

Derivatives Market in India

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Abstract: Global economic order after World War II emerged as bipolar where at one end existed many less developed countries following the pattern of centrally planned socialist economies where the prices were administered and resources were centrally allocated. At the other end, the developed economies were operated under Bretton Woods system¹ of fixed exchange rate, which eventually came under the stress during the 1970s. High inflation coupled with high unemployment rates made interest rates more volatile. Bretton Woods system was later abandoned in 1971, consequently exchange rates were freed up to fluctuate. Lesser developed countries like India began opening up their economies and allowing prices to vary with the market conditions. As economy was opened up to the world, domestic industry was now vulnerable to external as well as internal shocks yielding uncertainty. With price fluctuations comes uncertainty which makes it difficult for businesses to estimate their future production costs and revenues and hence the risk. In such a scenario, derivatives came as the rescue by providing a valuable set of tools for managing the risk. This paper seeks to throw some light and address the inherent and distinctive issues of derivatives market in India.

Introduction

A derivative security is a financial contract, between two parties, whose value is derived from the value of one or more underlying assets such as stock price, commodity price, exchange rate, interest rate or even index of prices. Its value is determined by fluctuations in the underlying asset². Futures contracts, forward contracts, options and swaps are the most common types of derivatives. Derivatives are contracts and can be used as an underlying asset. There are even derivatives based on weather data, such as the amount of rain or the number of sunny days in a particular region. Derivatives serve a number of purposes. A derivative enables a trader to hedge some preexisting risk by assuming positions in derivatives markets that offset potential losses in the underlying or spot market. Derivatives are generally used as an instrument to hedge risk, but can also be used for speculative purposes. For example, an Indian investor purchasing shares of an American company off an American exchange (using Indian Rupees to do so) would be exposed to exchange-rate risk while holding that stock. To hedge this risk, the investor could purchase currency futures to lock in a specified exchange rate for the future stock sale and currency conversion back into Indian Rupee.

There are three basic types of contracts - options, swaps and futures/forward contracts- with variations of each. Options are contracts that give the right but not the obligation to buy or sell an asset. Investors typically will use option contracts when they do not want to risk taking a position in the asset outright, but they want to increase their exposure in case of a large movement in the price of the underlying asset. There are many different option trades that an investor can employ, but the most common are:

- Long Call - If you believe a stock's price will increase, you will buy the right (long) to buy (call) the stock. As the long call holder, the payoff is positive if the stock's price exceeds the exercise price by more than the premium paid for the call.

¹ A landmark system for monetary and exchange rate management established in 1944. The Bretton Woods Agreement was developed at the United Nations Monetary and Financial Conference held in Bretton Woods, New Hampshire, from July 1 to July 22, 1944. Major outcomes of the Bretton Woods conference included the formation of the International Monetary Fund and the International Bank for Reconstruction and Development and, most importantly, the proposed introduction of an adjustable pegged foreign exchange rate system. Currencies were pegged to gold and the IMF was given the authority to intervene when an imbalance of payments arose.

² Price fluctuations reflect changes in the underlying demand & supply conditions of the asset and thereby providing useful information to the market. Thus volatility is not necessarily harmful.

- Long Put - If you believe a stock's price will decrease, you will buy the right (long) to sell (put) the stock. As the long put holder, the payoff is positive if the stock's price is below the exercise price by more than the premium paid for the put.
- Short Call - If you believe a stock's price will decrease, you will sell or write a call. If you sell a call, then the buyer of the call (the long call) has the control over whether or not the option will be exercised. You give up the control as the short or seller. As the writer of the call, the payoff is equal to the premium received by the buyer of the call if the stock's price declines, but if the stock rises more than the exercise price plus the premium, then the writer will lose money.
- Short Put - If you believe the stock's price will increase, you will sell or write a put. As the writer of the put, the payoff is equal to the premium received by the buyer of the put if the stock price rises, but if the stock price falls below the exercise price minus the premium, then the writer will lose money.

Swaps are derivatives where counterparties to exchange cash flows or other variables associated with different investments. Many times a swap will occur because one party has a comparative advantage in one area such as borrowing funds under variable interest rates, while another party can borrow more freely as the fixed rate. A "plain vanilla" swap is a term used for the simplest variation of a swap. There are many different types of swaps, but three common ones are:

- Interest Rate Swaps - Parties exchange a fixed rate for a floating rate loan. If one party has a fixed rate loan but has liabilities that are floating, then that party may enter into a swap with another party and exchange fixed rate for a floating rate to match liabilities. Interest rates swaps can also be entered through option strategies. A swaption gives the owner the right but not the obligation (like an option) to enter into the swap.
- Currency Swaps - One party exchanges loan payments and principal in one currency for payments and principal in another currency.
- Commodity Swaps - This type of contract has payments based on the price of the underlying commodity. Similar to a futures contract, a producer can ensure the price that the commodity will be sold and a consumer can fix the price which will be paid.

Forward and futures contracts are contracts between parties to buy or sell an asset in the future for a specified price. These contracts are usually written in reference to the spot or today's price. The difference between the spot price at time of delivery and the forward or future price is the profit or loss by the purchaser. These contracts are typically used to hedge risk as well as speculate on future prices. Forwards and futures contracts differ in a few ways. Futures are standardized contracts that trade on exchanges whereas forwards are non-standard and trade OTC.

Origin of Derivatives

Derivatives first came about in Japanese rice markets. As early as the 1650s, dealings resembling present day derivative market transactions were seen in rice markets in Osaka, Japan. The first leap towards an organized derivatives market came in 1848, when the Chicago Board of Trade, the largest derivative exchange in the world, was established.

Today, equity and commodity derivative markets are rapidly gaining in size in India. In terms of popularity too, these markets are catching on like a forest fire.

Derivatives: Indian context

In India, most derivatives users describe themselves as hedgers³ and Indian laws generally require that derivatives be used for hedging purposes only⁴. Another purpose that derivative serves is speculation⁵. 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. Hence both speculators and hedgers are essential for efficient operation of the market.

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. India's long history of arbitrage trading in India has been a gloomy one⁶, with line operators and traders arbitraging prices between inter-city and intra-city. Indian equity derivatives markets in 2002 indicate

³ Fitch Ratings 2004.

⁴ With Securities Laws (Second Amendment) Act, 1999, Derivatives has been included in the definition of Securities.

⁵ taking positions to profit from anticipated price movements

⁶ Jogani and Fernandes (2003).

that markets were inefficient at that time. The lack of knowledge, market frictions and regulatory impediments have led to low levels of capital employed in arbitrage trading in India. However, more recent evidence suggests that the efficiency of Indian equity derivatives markets may have improved. Derivatives markets broadly can be classified into two categories, those that are traded on the exchange and then those traded one to one or 'over the counter'. They are hence known as:

- OTC Derivatives (Over The Counter)
- Exchange Traded Derivatives
- OTC Equity Derivatives

OTC (over-the-counter) contracts, such as forwards and swaps, are bilaterally negotiated between two parties in trade. 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, that arises in the event to default of counter party. In India, OTC derivatives are generally prohibited with some exceptions, which are: those that are specifically allowed by the Reserve Bank of India (RBI) or, in the case of commodities (which are regulated by the Forward Markets Commission), those that trade informally in "havala"⁷ or forwards markets.

An exchange-traded contract, such as a futures contract, is a standard instrument 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 or through the forces of demand and supply. 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% of volume in 2003-2004⁸. Contract performance is guaranteed by a clearinghouse, which is a wholly owned subsidiary of the NSE. Margin requirements and daily marking-to-market⁹ of futures positions substantially reduce the credit risk of exchange traded contracts, relative to OTC contracts.

Development of Indian Derivative Markets

Derivatives markets have been in existence in India in some form or other for a long time. In the area of commodities, the Bombay Cotton Trade Association started futures trading in 1875 and, by the early 1900s India had one of the world's largest futures industry. In 1952 the government banned cash settlement and options trading and derivatives trading shifted to informal forwards markets. In recent years, government policy has changed, allowing for an increased role for market-based pricing and less suspicion of derivatives trading. The ban on futures trading of many commodities was lifted starting in the early 2000s, and national electronic commodity exchanges were created.

In the equity markets, a system of trading called "badla"¹⁰ involving some elements of forwards trading had been in existence for decades. However, the system led to a number of undesirable practices and it was prohibited off and on till the Securities and Exchange Board of India (SEBI) banned it for good in 2001. A series of reforms of the stock market between 1993 and 1996 paved the way for the development of exchange traded equity derivatives markets in India. In 1993, the government created the NSE in collaboration with state-owned financial institutions. NSE improved the efficiency and transparency of the stock markets by offering a fully automated screen-based trading system and real-time price dissemination.

In 1995, a prohibition on trading options was lifted. In 1996, the NSE sent a proposal to SEBI for listing exchange-traded derivatives. The report of the L. C. Gupta Committee, set up by SEBI, recommended a phased Introduction of derivative products, and bi-level regulation¹¹. Another report, by the J. R. Varma Committee in 1998, worked out various operational details such as the margining systems. In 1999, the Securities Contracts (Regulation) Act of 1956, or SC(R)A, was

⁷ a traditional system of transferring money used in Arab countries and South Asia, whereby the money is paid to an agent who then instructs an associate in the relevant country or area to pay the final recipient.

⁸ http://www.sebi.gov.in/Index.jsp?contentDisp=Department&dep_id=13

⁹ This is done most often in futures accounts to make sure that margin requirements are being met. If the current market value causes the margin account to fall below its required level, the trader will be faced with a margin call.

¹⁰ **Badla** was an indigenous carry-forward system invented on the Bombay Stock Exchange as a solution to the perpetual lack of liquidity in the secondary market. Badla were banned by the Securities and Exchange Board of India (SEBI) in 1993, effective March 1994, amid complaints from foreign investors, with the expectation that it would be replaced by a futures-and-options exchange. Such an exchange was not established and badla were legalized again in 1996 (with a carry-forward limit of Rs 200 million per broker) and banned again on 2 July 2001, following the introduction of futures contracts in 2000.

¹¹ i.e., self-regulation by exchanges with SEBI providing a supervisory and advisory role

amended so that derivatives could be declared “securities.” This allowed the regulatory framework for trading securities to be extended to derivatives. The Act considers derivatives to be legal and valid, but only if they are traded on exchanges. Finally, a 30-year ban on forward trading was also lifted in 1999.

The economic liberalization of the early nineties facilitated the introduction of derivatives based on interest rates and foreign exchange. A system of market-determined exchange rates was adopted by India in March 1993. In August 1994, the rupee was made fully convertible on current account. These reforms allowed increased integration between domestic and international markets, and created a need to manage currency risk. Figure 1 shows how the volatility of the exchange rate between the Indian Rupee and the U.S. dollar has increased since 1991. The easing of various restrictions on the free movement of interest rates resulted in the need to manage interest rate risk.

Derivatives Instruments Traded in India

Traditionally equity derivatives have a long history in India in the OTC market. Options of various kinds (called Teji and Mandi and Fatak) in un-organized markets were traded as early as 1900 in Mumbai. The SCRA however banned all kind of options in 1956. 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. As of 2005, the NSE trades futures and options on 118 individual stocks and 3 stock indices. All these derivative contracts are settled by cash payment and do not involve physical delivery of the underlying product (which may be costly).

Derivatives on stock indexes and individual stocks have grown rapidly since inception. In particular, single stock futures have become hugely popular, accounting for about half of NSE’s traded value in October 2005. In fact, NSE has the highest volume¹² in the single stock futures globally, enabling it to rank 16 among world exchanges in the first half of 2005. Single stock options are less popular than futures. Index futures are increasingly popular, and accounted for close to 40% of traded value in October 2005. Figure 2 illustrates the growth in volume of futures and options on the Nifty index, and shows that index futures have grown more strongly than index options. NSE launched interest rate futures in June 2003 but, in contrast to equity derivatives, there has been little trading in them. One problem with these instruments was faulty contract specifications, resulting in the underlying interest rate deviating erratically from the reference rate used by market participants. Institutional investors have preferred to trade in the OTC markets, where instruments such as interest rate swaps and forward rate agreements are thriving. As interest rates in India have fallen, companies have swapped their fixed rate borrowings into floating rates to reduce funding costs. Activity in OTC markets dwarfs that of the entire exchange-traded markets, with daily value of trading estimated to be Rs. 30 billion in 2004¹³.

Foreign exchange derivatives are less active than interest rate derivatives in India, even though they have been around for longer. OTC instruments in currency forwards and swaps are the most popular. Importers, exporters and banks use the rupee forward market to hedge their foreign currency exposure. Turnover and liquidity in this market has been increasing, although trading is mainly in shorter maturity contracts of one year or less¹⁴. In a currency swap, banks and corporations may swap its rupee denominated debt into another currency¹⁵, or vice versa. Trading in OTC currency options is still muted. There are no exchange traded currency derivatives in India.

Exchange-traded commodity derivatives have been trading only since 2000, and the growth in this Market has been uneven. The number of commodities Eligible for futures trading has increased from 8 in 2000 to 80 in 2004, while the value of trading has increased almost four times in the same period¹⁶. However, many contracts barely trade and, of those that are active, trading is fragmented over multiple market venues, including central and regional exchanges, brokerages, and unregulated forwards markets. Total volume of commodity derivatives is still small, less than half the size of equity derivatives¹⁷.

¹² i.e. number of contracts traded

¹³ (FitchRatings, 2004).

¹⁴ (Gambhir and Goel, 2003).

¹⁵ typically the US dollar or Japanese yen

¹⁶ (Nair, 2004).

¹⁷ (Gorham et al, 2005).

Conclusion

In terms of the growth of derivatives markets, and the variety of derivatives users, the Indian market has equalled or exceeded many other regional markets. While the growth is being spearheaded mainly by retail investors, private sector institutions and large corporations, smaller companies and state-owned institutions are gradually getting into the act. Foreign brokers such as JP Morgan Chase are boosting their presence in India in reaction to the growth in derivatives. The variety of derivatives instruments available for trading is also expanding.

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% 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 area¹⁸. A lack of market liquidity may be responsible for inadequate trading in some markets. Transparency is achieved partly through financial disclosure. Financial statements currently provide misleading information on institutions' use of derivatives. Further, there 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. For example, Indian commodity derivatives have great growth potential but government policies have resulted in the underlying spot/physical market being fragmented¹⁹. 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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¹⁸ (FitchRatings, 2004).

¹⁹ e.g. due to lack of free movement of commodities and differential taxation within India