

NCFM

NSE's CERTIFICATION IN FINANCIAL MARKETS

Derivatives Market (Dealers) Module Work Book



NATIONAL STOCK EXCHANGE OF INDIA LIMITED

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Distribution of weights in the Derivatives Market (Dealers) Module Curriculum

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Chapter 1

Introduction to derivatives

The emergence of the market for derivative 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. By their very nature, the financial markets are marked by a very high degree of volatility. Through the use of derivative products, it is possible to partially or fully transfer price risks by locking-in asset prices. As instruments of risk management, these generally do not influence the fluctuations in the underlying asset prices. However, by locking-in asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors.

1.1 Derivatives defined

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. The underlying asset can be equity, forex, commodity or any other asset. For example, wheat farmers may wish to sell their harvest at a future date to eliminate the risk of a change in prices by that date. Such a transaction is an example of a derivative. The price of this derivative is driven by the spot price of wheat which is the “underlying”.

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.

Derivative products initially emerged as hedging devices against fluctuations in commodity prices, and commodity-linked derivatives remained the sole form of such products for almost three hundred years. Financial derivatives came into spotlight in the post-1970 period due to growing instability in the financial markets. However, since their emergence, these products have become very popular and by 1990s, they accounted for about two-thirds of total transactions in derivative products. In recent years, the market for financial derivatives has grown tremendously in terms of variety of instruments available, their complexity and also turnover. In the class of equity derivatives the world over, futures and options on stock indices have gained more popularity than on individual stocks, especially among institutional investors, who are major users of index-linked derivatives. Even small investors find these useful due to high correlation of the popular indexes with various portfolios and ease of use.

Box 1.1: Emergence of financial derivative products

1.2 Factors driving the growth of derivatives

Over the last three decades, the derivatives market has seen a phenomenal growth. A large variety of derivative contracts have been launched at exchanges across the world. Some of the factors driving the growth of financial derivatives are:

1. Increased volatility in asset prices in financial markets,
2. Increased integration of national financial markets with the international markets,
3. Marked improvement in communication facilities and sharp decline in their costs,
4. Development of more sophisticated risk management tools, providing economic agents a wider choice of risk management strategies, and
5. Innovations in the derivatives markets, which optimally combine the risks and returns over a large number of financial assets leading to higher returns, reduced risk as well as transactions costs as compared to individual financial assets.

1.3 Derivative products

Derivative contracts have several variants. The most common variants are forwards, futures, options and swaps. We take a brief look at various derivatives contracts that have come to be used.

Forwards: A forward contract is a customized contract between two entities, where settlement takes place on a specific date in the future at today's pre-agreed price.

Futures: 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. Futures contracts are special types of forward contracts in the sense that the former are standardized exchange-traded contracts.

Options: Options are of two types - calls and puts. Calls give the buyer the right but not the obligation to buy a given quantity of the underlying asset, at a given price on or before a given future date. Puts give the buyer the right, but not the obligation to sell a given quantity of the underlying asset at a given price on or before a given date.

Warrants: Options generally have lives of upto one year, the majority of options traded on options exchanges having a maximum maturity of nine months. Longer-dated options are called warrants and are generally traded over-the-counter.

LEAPS: The acronym LEAPS means Long-Term Equity Anticipation Securities. These are options having a maturity of upto three years.

Baskets: Basket options are options on portfolios of underlying assets. The underlying asset is usually a moving average of a basket of assets. Equity index options are a form of basket options.

Swaps: Swaps are private agreements between two parties to exchange cash flows in the future according to a prearranged formula. They can be regarded as portfolios of forward contracts. The two commonly used swaps are :

- *Interest rate swaps:* These entail swapping only the interest related cash flows between the parties in the same currency.
- *Currency swaps:* These entail swapping both principal and interest between the parties, with the cashflows in one direction being in a different currency than those in the opposite direction.

Swaptions: Swaptions are options to buy or sell a swap that will become operative at the expiry of the options. Thus a swaption is an option on a forward swap. Rather than have calls and puts, the swaptions market has receiver swaptions and payer swaptions. A receiver swaption is an option to receive fixed and pay floating. A payer swaption is an option to pay fixed and receive floating.

1.4 Participants in the derivatives markets

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. 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.

1.5 Economic function of the 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.

Early forward contracts in the US addressed merchants' concerns about ensuring that there were buyers and sellers for commodities. However 'credit risk' remained a serious problem. To deal with this problem, a group of Chicago businessmen formed the **Chicago Board of Trade (CBOT)** in 1848. The primary intention of the CBOT was to provide a centralized location known in advance for buyers and sellers to negotiate forward contracts. In 1865, the CBOT went one step further and listed the first 'exchange traded' derivatives contract in the US, these contracts were called 'futures contracts'. In 1919, Chicago Butter and Egg Board, a spin-off of CBOT, was reorganized to allow futures trading. Its name was changed to **Chicago Mercantile Exchange (CME)**. The CBOT and the CME remain the two largest organized futures exchanges, indeed the two largest 'financial' exchanges of any kind in the world today.

The first stock index futures contract was traded at **Kansas City Board of Trade**. Currently the most popular stock index futures contract in the world is based on S&P 500 index, traded on Chicago Mercantile Exchange. During the mid eighties, financial futures became the most active derivative instruments generating volumes many times more than the commodity futures. Index futures, futures on T-bills and Euro-Dollar futures are the three most popular futures contracts traded today. Other popular international exchanges that trade derivatives are LIFFE in England, DTB in Germany, SGX in Singapore, TIFFE in Japan, MATIF in France, Eurex etc.

Box 1.2: History of derivatives markets

1. Prices in an organized derivatives market reflect the perception of market participants about the future and lead the prices of underlying 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. With the introduction of derivatives, the underlying market witnesses higher trading volumes 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. Margining, monitoring and surveillance of the activities of various participants become extremely difficult in these kind of mixed markets.
5. An important incidental benefit that flows from derivatives trading is that it acts as a catalyst for new entrepreneurial activity. The derivatives have a history of attracting many bright, creative, well-educated people with an entrepreneurial attitude. They often energize others to create new businesses, new products and new employment opportunities, the benefit of which are immense.

In a nut shell, derivatives markets help increase savings and investment in the long run. Transfer of risk enables market participants to expand their volume of activity.

1.6 Exchange-traded vs. OTC derivatives markets

Derivatives have probably been around for as long as people have been trading with one another. Forward contracting dates back at least to the 12th century, and may well have been around before then. Merchants entered into contracts with one another for future delivery of specified amount of commodities at specified price. A primary motivation for pre-arranging a buyer or seller for a stock of commodities in early forward contracts was to lessen the possibility that large swings would inhibit marketing the commodity after a harvest.

As the word suggests, derivatives that trade on an exchange are called exchange traded derivatives, whereas privately negotiated derivative contracts are called OTC contracts.

The OTC derivatives markets have witnessed rather sharp growth over the last few years, which has accompanied the modernization of commercial and investment banking and globalisation of financial activities. The recent developments in information technology have contributed to a great extent to these developments. While both exchange-traded and OTC derivative contracts offer many benefits, the former have rigid structures compared to the latter. It has been widely discussed that the highly leveraged institutions and their OTC derivative positions were the main cause of turbulence in financial markets in 1998. These episodes of turbulence revealed the risks posed to market stability originating in features of OTC derivative instruments and markets.

The OTC derivatives markets have the following features compared to exchange-traded derivatives:

1. The management of counter-party (credit) risk is decentralized and located within individual institutions,
2. There are no formal centralized limits on individual positions, leverage, or margining,
3. There are no formal rules for risk and burden-sharing,
4. There are no formal rules or mechanisms for ensuring market stability and integrity, and for safeguarding the collective interests of market participants, and
5. The OTC contracts are generally not regulated by a regulatory authority and the exchange's self-regulatory organization, although they are affected indirectly by national legal systems, banking supervision and market surveillance.

Some of the features of OTC derivatives markets embody risks to financial market stability. The following features of OTC derivatives markets can give rise to instability in institutions, markets, and the international financial system: (i) the dynamic nature of gross credit exposures; (ii) information asymmetries; (iii) the effects of OTC derivative activities on available aggregate credit; (iv) the high concentration of OTC derivative activities in major institutions; and (v) the central role of OTC derivatives markets in the global financial system. Instability arises when shocks, such as counter-party credit events and sharp movements in asset prices that underlie derivative contracts occur, which significantly alter the perceptions of current and potential future credit exposures. When asset prices change rapidly, the size and configuration of counter-party exposures can become unsustainably large and provoke a rapid unwinding of positions.

There has been some progress in addressing these risks and perceptions. However, the progress has been limited in implementing reforms in risk management, including counter-party, liquidity and operational risks, and OTC derivatives markets continue to pose a threat to international financial stability. The problem is more acute as heavy reliance on OTC derivatives creates the possibility of systemic financial events, which fall outside the more formal clearing house structures. Moreover, those who provide OTC derivative products, hedge their risks through the use of exchange traded derivatives. In view of the inherent risks associated with OTC derivatives, and their dependence on exchange traded derivatives, Indian law considers them illegal.

1.7 NSE's derivatives market

The derivatives trading on the NSE commenced with S&P CNX Nifty Index futures on June 12, 2000. The trading in index options commenced on June 4, 2001 and trading in options on individual securities commenced on July 2, 2001. Single stock futures were launched on November 9, 2001. Today, both in terms of volume and turnover, NSE is the largest derivatives exchange in India. Currently, the derivatives contracts have a maximum of 3-month expiration cycles. Three contracts are available for trading, with 1 month, 2 months and 3 months expiry. A new contract is introduced on the next trading day following the expiry of the near month contract.

1.7.1 Participants and functions

NSE admits members on its derivatives segment in accordance with the rules and regulations of the exchange and the norms specified by SEBI. NSE follows 2-tier membership structure stipulated by SEBI to enable wider participation. Those interested in taking membership on F&O segment are required to take membership of CM and F&O segment or CM, WDM and F&O segment. Trading and clearing members are admitted separately. Essentially, a clearing member(CM) does clearing for all his trading members(TMs), undertakes risk management and performs actual settlement. There are three types of CMs:

- *Self Clearing Member:* A SCM clears and settles trades executed by him only either on his own account or on account of his clients.
- *Trading Member Clearing Member:* TM–CM is a CM who is also a TM. TM–CM may clear and settle his own proprietary trades and client's trades as well as clear and settle for other TMs.
- *Professional Clearing Member* PCM is a CM who is not a TM. Typically, banks or custodians could become a PCM and clear and settle for TMs.

Details of the eligibility criteria for membership on the F&O segment are provided in Tables 12.1 and 12.2(Chapter 12). The TM–CM and the PCM are required to bring in additional security deposit in respect of every TM whose trades they undertake to clear and settle. Besides this, trading members are required to have qualified users and sales persons, who have passed a certification programme approved by SEBI.