International Journal of Commerce and Management Research
www.managejournal.com
ISSN: 2455-1627
Received: 22-02-2023, Accepted: 10-03-2023, Published: 25-03-2023
Volume 9, Issue 2, 2023, Page No. 28-32

Role of derivatives in financial risk management: Indian context

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Abstract
Now-a-days, the financial derivatives have become increasingly popular and most commonly used in the world of finance. This has grown with so phenomenal speed all over the world that now it is called the derivatives revolution. With the introduction of financial derivatives, the trading strategies adopted by the investors is changing it reduces the risk and achieve more profits from the investment. The derivative trading, today, has become a powerful segment of the international financial markets. In the last two decades, trading in various equity derivatives have begun at different centres of global financial markets. Numerous overseas centres have developed their own derivatives markets, and as such the global derivatives market has become a reality of this time. No doubt the derivatives are powerful tools for risk management but they might turn out to be disastrous weapons if not used properly. Against this background, the present paper attempts to study the role of derivatives in financial risk management in Indian context.

Keywords: derivative market, financial derivatives, Indian economy, over-the-counter contracts, risk management

Introduction

The risk is present in all human affairs and affects every economic agent in the economy. The word 'risk' is the possibility of loss, damage, or any undesirable event. Risk can be measured and managed. Some risk such as damages due to fire or theft can be handled by paying a premium to the insurance companies. Risk can be also reduced to a larger extent by diversification. However, the risk arising from macroeconomic fluctuation that affects all the participants in the economy can neither be insured nor diversified away. In this context, derivatives have become increasingly important to manage risk by various financial institutions like banks, corporate firms, asset management companies, governments and investor round the world.

The individuals and the corporate sector units are freely using derivatives, also popularly known as future market instruments, in most of the developed countries of the world to manage different risks. Emerged in 1970s, the derivative markets have seen exponential growth and trading volumes have nearly doubled in every three years, making it a multi-trillion-dollar business market. The future markets in various segments have developed so much that now one cannot think of the existence of financial markets without the derivatives instruments. In other words, the derivative markets whether belonging to commodities or financials have become, today, an integral part of the financial system of a country.

Financial derivative is a tool used by the companies to manage the risk. In simple word, it is used to hedge the risk which is being faced by the company. There are two important functions which are played by the financial derivatives namely hedging and speculation. Hedge instruments are used with an attempt to reduce the risk level attached with the underlying transactions. Hedgers protect their assets or liabilities from the adverse change by entering into derivative contract. Speculation presumes the financial risk with the prediction of gain from market fluctuations. Therefore, financial derivative play key role for managing risk. The efficient use of financial derivatives reduces risk level and increases rate of return. Thus, it is improving the financial health of business and climate.

Derivatives

Derivates or derivative securities are future contracts which are written between two parties (counter parties) and whose values are derived from the value of underlying widely held and easily marketable assets such as agricultural and other physical (tangible) commodities, or short term and long term financial instruments, or intangible things like weather, commodities price index (inflation rate), equity price index, bond price index, stock market index, etc. Usually, the counter parties to such contracts are those other than the original issuer (holder of the underlying asset).

The derivatives are financial products. Derivative is derived from another financial instrument/contract called the underlying. In the case of Nifty Futures, Nifty index is the underlying. A derivative derives its value from the underlying. A derivative derives its value from the underlying assets. Accounting Standard SFAS133 defines a derivative as, "a financial derivative or other contract with all three of the following characteristics:

1. It has one or more underlying, and one or more notional amount or payments provisions or both. These terms determine the amount of the settlement or settlements.
2. If requires no initial net investment or an initial net investment that is smaller than would be required for other types of contract that would be expected to have a similar response to changes in market factors.
3. Its terms require or permit net settlement. It can be readily settled net by a means outside the contract or it provides for delivery of an asset that puts the recipients in a position not substantially different from net settlement."

In the 1980s, the financial derivatives were also known as off-balance sheet instruments because no asset or liability underlying the contract was put on the balance sheet as such. Since the value of such derivatives depend upon the

movement of market prices of the underlying assets, hence, they were treated as contingent asset or liabilities and such transactions and positions in derivatives were not recorded on the balance sheet. However, it is a matter of considerable debate whether off-balance sheet instruments should be included in the definition of derivatives. Which item or product given in the balance sheet should be considered for derivative is a debatable issue.

Derivatives are contracts which usually derive their value from some underlying asset. A derivative does not have any physical existence but emerges out of a contract between two parties. It does not have any value of its own, but its value, in turn, depends on the value of other physical assets which are called the underlying assets. These underlying assets may be shares, debentures, tangible commodities, currencies, short term or long term financial securities, etc. If the underlying asset is a financial asset, the derivative is called financial derivatives. On the other hand, if the underlying asset is a commodity, the derivative is called commodity derivative. By using derivative contracts, investors can transfer any undesired risk, for a price, to other parties who either want to assume that risk or have risks which offset that risk.

Features of derivatives

Derivatives possess the undermentioned peculiarities:

- As derivatives are not physical assets, transactions are settled as the difference between spot and future prices in the market.
- Derivatives require little or no initial investments.
- Derivatives are usually traded on screen based computerized exchanges.
- There is no limit on number of units transacted in the derivatives market.
- There is liquidity in the transactions dealing in derivative markets.
- Derivatives provide hedging of various risks of instruments over a certain period.

Derivative market

Commodities futures trading in India was initiated long back in 1950s, however, the 1960s marked a period of great decline in future trading. Market after market was closed usually because different commodities prices increases were attributed to speculation on these markets. Accordingly, the Central Government imposed the ban on trading in derivatives in 1969 under a notification issue. The late 1990s shows these signs of opposite trends- a large scale revival of future markets in India, and hence, the Central Government revoked the ban on futures trading in October, 1995. The Civil Supplies Ministry agreed in principle for starting of futures trading in Basmati rice, further in 1996 the Government granted permission to the Indian Pepper and Spice Trade Association to convert its Pepper Future Exchange into an International Pepper Exchange. In August, 1997, the Central Government proposed that Indian companies with commodity price exposures should be allowed to use foreign futures and option markets. The trend is not confined to the commodity markets alone, it has initiated in financial futures too.

A landmark step taken in the year 1996 as the Securities and Exchange Board of India (SEBI) appointed a committee named the Dr. L. C. Gupta Committee in order to develop appropriate regulatory framework for derivatives trading in India. In June 2000, the National Stock Exchange and the Bombay Stock Exchange started stock index-based futures trading in India. Further, the growth of this market did not take off as anticipated.

Since 1991, due to liberalisation of economic policy, the Indian economy has entered an era in which Indian companies cannot ignore global markets. Before the nineties, prices of many commodities, metals and other assets were controlled. Others, which were not controlled, were largely based on regulated prices of inputs. As such there was limited uncertainty, and hence, limited volatility of prices. But after 1991, starting the process of deregulation, prices of most commodities are decontrolled. As a consequence, volatility and instability in portfolio values and securities prices have been witnessed.

Derivative markets are markets for contractual instruments whose performance is determined by the way in which another instrument performs. Derivative contracts are agreement between a buyer and a seller for monetary considerations. Derivative contracts can either be over-the-counter (OTC) contracts or exchange-traded contracts. OTC contracts are between private parties and the terms of the contract are decided between them initially. These contracts are highly unregulated and less transparent. e.g., forwards, swaps, etc. Exchange traded contracts are traded and regulated on derivative exchanges in order to ensure transparency.

Participants in derivative market

The major participants in a derivative market are

i. **Hedgers:** Hedgers seek to protect themselves against price change in an asset in which they have an interest. They have risk exposure which they offset by a derivative. In hedging, both the parties enjoy a 'win-win' situation.

ii. **Speculators:** Speculators are major players in derivative market without whom, the market probably would not exist. They are the participants who are ready to take a risk for some return. Price differentials of the assets in the same market constitute the profit or loss for speculators.

iii. **Arbitrageurs:** Arbitrageurs try to make profit by taking into account the price differences of two markets. When the price of security is low in one market, they purchases securities and sell the same in an occasion of high security price. An arbitrage opportunity exists when one can make non-zero profit with no net investment or risk.

Types of derivatives

The type of derivatives usually depends on the type of underlying asset. They may be based on physical commodities or on financial assets *viz*.

- **Commodity Derivatives:** For different commodities like sugar, pepper, jute, gur, castor seeds, etc.

- **Financial Derivatives:** The derivatives in currencies, gilt-edged securities, shares, indices, etc. are financial derivatives.

- **Basic Derivatives:** Derivatives on underlying assets like forwards, futures, options, etc.

- **Complex Derivatives:** Derivatives on underlying assets like swaps, etc.

- **Exchange Traded Derivatives:** Standard contracts traded as per the rules and regulations of the exchange. In India, BSE & NSE are online computerized exchanges where financial futures and options are traded.

Role of financial derivatives in risk management

The role of financial derivatives in risk management has been extensively studied by researchers. A few studies are being surveyed hereunder.

The already complex nature of most derivatives is made more complicated by the use of deficient risk measurement mechanisms, inadequate risk management controls, and poor understanding of the significant role of derivatives in investment strategies. This confusion often results from a mixture of these factors that leads to the misuse of derivatives, and eventually, in damaging losses. The most complicated derivatives tend to be customized OTC derivatives, which frequently consist of a combination of several derivatives that are often hypersensitive to changes in the underlying market (Knap, 1994).

Derivatives introduce new ways to manage risks. However, contrary to what one may think the risks involved in derivatives are neither new nor unique. Many of the financial risks to which entities may be exposed by derivative activity are the same as for activities with other financial instruments.

Before the 1990s, information about derivatives was uncommon outside the most sophisticated investment circles (Adams and Runkle, 2000). Two different schools of perspective developed. On the one hand, investors who are victims of extreme financial loss and bankruptcy view derivatives as destructive instruments, similar to the intensity caused by a herd of stampeding buffalos Here, it seems that avoidance is the best solution. On the other hand, enlightened investors associate derivatives to a team of horses, which when harnessed and used appropriately become productive, effective, and efficient tools, maximizing resources and reducing risk.

Masry (2006) [3] conducted the study on the usage of derivatives for UK non-financial firms and its risk management practices. The study aimed to find out the reasons for using the derivatives as well as not using it for risk management. The study results revealed that small and medium firms did not use the derivatives as much as the large firms used. Similarly, derivatives are largely used and practiced by public companies instead of private companies. The results also indicated that most of firms did not use derivatives due to insignificant exposure and its disclosure as required by FASB rules. The study reported that derivatives are widely used to manage the foreign exchange and interest rate risk. He also found that cash flows volatility is main reason for hedging.

Gibson (2007) analysed the relationship between credit derivatives and risk management from the perspective of commercial banks, investment banks and investors. He described that market users use the credit derivative as an important instrument for risk management. The risk on the offered loans is managed through credit derivatives by the commercial banks. The investment banks manage the underwriting securities risk with the help of credit derivatives. Similarly, the risk of credit exposure is aligned with the credit risk profile through the use of credit derivatives by investors. He also reported the challenges of model risk, counterparty risk, rating agency risk and settlement risk being pose by the credit derivatives during risk management.

Sontea (2011) developed a process for financial risk management by resolving problems of risk using derivatives products, options, and futures. This was formulated using a hedging situation of the portfolio. In the first part of the optimization problem, we will get the coverage ratio of the optimal price for exercising the option which is actually the relative cost of the option's value. In the second part of the optimization problem, we obtained an optimal exercise price for a put option which is to hedge a bond.

Malleswari (2013) [12] studied the derivatives role in risk management practices. He stated that change in the technology and growth of the international trade increase the volatility in market. As a result, demand of derivative instruments increase for better risk management. He also reported the three benefits of derivatives such as risk management, discovery of price and improved liquidity position. He described that why the credit derivatives are viewed negatively. It is not because of the instrument but due to the reason that how they are traded and used in the market. Financial derivatives are used as a hedging method that helps the organization to exchange the risk from one group to another group. The different strategies are used by organization in order to manage the risks which face in business life.

conducted a study on derivatives usage for risk management in emerging economies by taking the evidence of non-financial firms of Herzegovina and Bosnia. They showed that banks play an important role in the Over the counter market by offering the various kinds of derivative instruments. They explicit stated that there is low demand for the use of derivatives due to the lack of knowledge about derivatives benefits and less business opeations in global markets Emira Kozarevic *et al.* (2014) [4].

Li and Marnic (2014) examined the use of financial derivatives of US bank holding companies. They find that systematic exposure of Bank holding companies is significantly and positively associated with the usage of financial derivatives. There is an increase in the systematic of credit, exchange rate and interest rate risk due to greater usage of credit, exchange rate and interest rate derivatives. Moreover, there is persistence positive association between the derivatives for hedging and trading with risks. Vuillemey (2015) investigated that how the commercial bank manage the interest rate risk through derivatives. He stated that derivatives are used as a substitute in risk management in order to ensure the financial stability. He also reported that derivatives users enjoy the lending opportunities and hold the better position in good time. In addition to this, all the banks do not take the derivative position despite the appealing features of derivative contracts.

Trenca *et al.* (2015) conducted the study on market risk assessment from the perspective of financial crisis. They stated that managers require the information in advance about the market volatility and its impact on portfolio losses. VaR has been used as statistical tool for measuring the market risk as recommended by Basel Committee for providing the required capital in order to cover the risk.

Gakhar (2016) conducted a study to examine the effect of financial derivatives on the underlying market volatility. The paper also focused on awareness level of derivatives among Indian investors and their perception about the future prospects of the derivatives market in India. The study was done through a survey method.

Yadav (2016) concluded that the financial market of a country signifies the economic capacity of the country. A sound financial health of a country helps in increasing the cash flow and creates capital that contributes to developing a country. After privatization and globalization, financial markets entered into a new segment of global integration and liberalization with new and innovative financial instruments. The stock market is highly volatile as the prices change frequently. During 2001, India launched a risk-minimizing tool, Derivatives. The idea behind announcing derivatives trading in India was to control the fluctuations in the stock and commodity prices. It facilitates increasing the trading volume in the stock market and cash flows in India. This paper is to find out the impact of financial derivatives on spot stock market volatility. Numerous readings contributed different outcomes regarding the impact of the financial derivatives on the spot market volatility. This creates a confusion regarding increasing or decreasing volatility in the stock market due to the introduction of derivatives trading in the stock market. So, there is a requirement to stretch an overview of the literature review. The conclusion of various studies is to be analyzed in this paper so that the role of derivatives trading can be understood in context to the volatility of the stock market.

Chaudhury (2016) conducted a study on market risk and conservative VaR form with the aim to find out its reason. It is argued in the study that stress VaR which is added in the Basel II is overly conservative. The evidence is obtained by comparing the extended value at risk, pre VaR and new VaR.

Mina (2017) observed that the Serbian currency is highly volatile and depreciates by an average of 10% annually. This is because of the dependence of Serbian currency on the international market and the economic underdevelopment and low volume of economic activity. Thus, the business corporate is dependent on hedging contracts with regard to Dinar denominated positions. Thus, it is observed that the most important device to manage risk in Serbia is the financial derivates. It is supporting them from all the effects of national and international markets.

Derivatives are the most important tools in the financial markets in the present days. They are working for reducing the risk for business corporate. The basic purpose of these instruments is to provide commitments to prices for future dates for giving protection against adverse movements in future prices, in order to reduce the extent of financial risks. Derivative markets were novel until the 1970s. However, with the breakdown of Bretton Woods system in 1973, there was a sudden increase in the volatility of exchange rates and interest rates thereby making it necessary for firms and investors to find ways to reduce these risks. There is a need for proper training and orientation programmes are required to increase the growth of derivatives in India (Jones and Sudhir, 2018) [10].

Summing-up

It has been noted that almost all firms either operating domestically or globally, they face some kind of risks. The risks facing by firms might be interest rate, foreign exchange, commodity, credit, liquidity, operational and market risk etc. The risk could be controllable or beyond the limits of firms. Similarly, it could be managed internally or through some external channel. Whether the firms develop its own risk management procedures or outsource this activity. The main concern of the firm is to manage the risks in such a way that foster its operating activities and increase its return. Therefore, it deem necessary to introduce such instruments in market that help to achieve the desired objectives. As a result, financial instruments are introduced that help the firm to manage their risks in such a way that reduce its costs and maximize the return. It has been witnessed that usage of derivatives instruments increased in order to manage the risk domestically and globally. Financial derivatives are categorized into two forms over the counter and exchange traded derivatives.

Risk management plays a key role in the financial industry and an integral part of it. Markets and risk management practices grow with the progress of business. The growth of the business and market expansion pose challenges for managing the risk. As a result, financial instruments evolved to manage the risks which are known as financial derivatives. The derivatives are contracts where the yields of contracts depend upon on underlying value. The underlying can be an interest rate, commodity or currency. The derivatives are securities whose values depend upon the underlying assets. The assets can be a commodity, bond, and foreign exchange rate, stock and weather disasters. There are different forms of contract but most common forms include futures, forwards, options and swaps.

Financial derivatives are useful for dealing with various types of risks, mainly market, credit and operational risks. The importance of derivatives has been increasing since the instrument has been used to hedge against price movements. The financial tool assists with the transfer of risks associated with a specific portfolio without requiring selling the portfolio itself essentially, derivatives allow investors to manage their risks and so reach the desired risk profile and allocation more efficiently.

Derivatives are mainly used to hedge risk associated with the underlying asset to the willing parties to take risk. The risk comes from several sources and is unavoidable Derivatives are mainly intended to reduce the risks through transferring, spreading, etc to the third parties who are risk seekers. The reducible risks include business risk, market risk, interest rate risk. inflation risk. currency risk/exchange rate risk, political risk, credit risk, weather risk, legal and regulatory risks, operational risks, valuation risks, etc. These risks can be reduced in different ways such as,

- By selling to the its source,
- By diversification,
- By buying insurance against losses, etc.

The relationship between derivatives and risk management is relatively simple. Derivatives are seen as the tool that enables banks and other financial institutions to break down risks into smaller elements. From this, the elements can be bought or sold to align with the risk management objectives. So, the original purpose of derivatives was to hedge and spread risks. The main motive of the financial tool has aided with the great development and expansion of derivatives.

The array of derivative products that has been developed in recent years has enhanced economic efficiency. The

economic functions of these contracts are to allow risks that formerly had been combined to be unbundled and transferred to those most willing to assume and manage each risk components. There is a major potential for the growth of financial derivatives markets in India.

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