

# RATIONAL SELECTION OF DERIVATIVE INSTRUMENT RESULTS IN HEDGING RISK

Dr. Arvind Luhar<sup>1</sup> Jayaraman Balakrishnan<sup>2</sup> and Hiresh Luhar<sup>3</sup>

<sup>1</sup>Member, Board of Studies in Accountancy, University of Mumbai and HOD Accountancy, Government of Maharashtra's Ismail Yusuf College of Arts, Science & Commerce, Mumbai  
Email: luhararvind@rediffmail.com

<sup>2</sup>Assistant Professor, RGR Siddanthi College, Hyderabad  
Email: bjr1972@rediffmail.com

<sup>3</sup>CFO, Nissan Copper Ltd., Nariman Point, Mumbai  
Email: hireshluhar@gmail.com

## ABSTRACT

*This article focuses on analysis and appraisals of rational selection of different classes of Derivatives Instruments and their impact on hedging risk. The number of derivative instruments available to firms is really huge; the selection of the proper derivative instrument should be based on different needs and risks taking by the firm. Analysis is carried in collecting various types of risks taken by the firms in performing and hedging risks in the Derivatives instruments. Further, analysis is also carried for preference of investors in selecting or continuing with the firms.*

**Keywords:** Equity Derivatives, Interest rate Derivatives, Currency Derivatives, Credit Derivatives and Commodity Derivatives.

## INTRODUCTION

Over the past two decades or so, derivatives have demonstrated their important role in the financial markets. At the same time, they have been vilified for some severe financial disasters. Along with the staggering increase in derivatives trading has been an equally dramatic increase of large financial losses involving the use of derivatives, the failures are, to various extent, the result of the lack of understanding the distinctly more complicated risk exposure of derivatives relative to more fundamental securities such as stocks, bonds, and bank accounts.

Financial risk was one of the main risks which considered being important and this study focus on the one rise. The Financial risk in this study will be in terms of how firms may reduce financial risk. It encompasses the financial risks that profits may fall, sales may weaken, costs may escalate out of control or that financial distress might occur.

There are three main types of activity undertaken by participants in the financial markets; hedging, arbitrage and speculation.

Hedging is where a financial risk is eliminated or reduced by passing the risk on to someone else. The person that takes on the risk acts as a speculator, and is often the trader or dealer in the financial institution with whom one carries out the hedging activity. However, a company may leave an exposure open and not attempt to hedge it. Some researchers consider that the decision not to hedge is another form of speculation.

Arbitrage enables a risk-free profit to be made by taking advantage of (i) price discrepancies from geographical and time differences in two or more markets or (ii) price variations in different product markets at the same point in time such as between the cash market and the futures market. This activity is normally carried out by market professionals who deal in these markets. The activity of arbitrageurs helps to keep the prices for similar financial instruments the same around the world, since any deviation from one market to another would lead to transactions which would force prices back toward the same level.

Speculation occurs when a view is taken about the likely direction of prices or rates in the markets; the speculator hopes to make a profit if the price moves in the predicated direction.

### **OBJECTIVE OF THE STUDY**

To study whether the financial crisis arises due to under utilization of derivative instruments

### **Rationales of Hedging**

Many firms hedge their interest rate and foreign exchange risk in practice. There are several reasons the firms might wish to hedge and these are outlined in this study. In addition, empirical evidence on different firms hedging policies is also examined to investigate whether the reasons advanced in the academic literature appear to be supported by company practices.

The following are the eight reasons which signifies the choice of hedging by the firms

1. Hedging relates to tax and regulatory arbitrage
2. Hedging relates to the investment opportunities of the firm
3. Hedging draws on the contracting costs and economics of scale literatures
4. Hedging reduces the possibility of financial distress
5. Hedging is based on managerial self interest and managerial risk aversion
6. Hedging improves the confidence of various stakeholder groups in the firm including customers
7. Hedging can exploit any inside information and information asymmetries participants in these markets.
8. Hedging can exploit imperfect capital markets.

### **How Do Investors Hedge**

Hedging techniques generally involve the use of complicated financial instruments known as derivatives, the most common of which are Forward contracts, Futures, options and Swaps.

### **Usage of Derivatives**

A derivatives instrument is a contract between two parties that specifies conditions in particular, dates and the resulting values of the underlying variable under which payments or payoffs are to be made between the parties. The most common derivatives have a market value and are traded on exchanges.

Derivatives are usually broadly categorized by:

1. The relationship between the underlying asset and the derivative (e.g. Forward, Futures, Option and Swap);
2. The type of underlying asset (e.g. equity derivatives, foreign exchange derivatives, interest rate derivatives, commodity derivatives and credit derivatives);
3. The market in which they trade (e.g., exchange-traded or over-the-counter); and
4. Their pay-off profile.

Derivatives are used by Investors to:

1. Provide leverage or gearing such that a small movement in the underlying value can cause a large difference in the value of the derivative;
2. Speculate and make a profit if the value of the underlying asset moves the way they expect (e.g. moves in a given direction, stays in or out of a specified range, reaches a certain level);
3. Hedge or mitigate risk in the underlying, by entering into a derivative contract whose value moves in the opposite direction to their underlying position and cancels part or all of it out.
4. Obtain exposure to the underlying where it is not possible to trade in the underlying
5. Create option ability where the value of the derivative is linked to a specific condition or event.

There are three major classes of derivatives:

1. Futures/Forwards are contracts to buy or sell an asset on or before a future date at a price specified today?
2. Options are contracts that give the owner the right, but not the obligation, to buy (in the case of a call option) or sell (in the case of a put option) an asset.
3. Swaps are contracts to exchange cash flows on or before a specified future date based on the underlying value of currencies/exchange rates, bonds/interest rates, commodities, stocks or other assets. More complex derivatives can be created by combining the elements of these basic types. For example, the holder of a swaption has the right, but not the obligation, to enter into a swap on or before a specified future date.

Overall derivatives market has five major classes of underlying asset.

UNDERLYING	CONTRACT TYPES				
	Exchange-traded futures	Exchange-traded options	OTC swap	OTC forward	OTC option
Equity	DJA Index future Single-stock future	Option on DJIA Index future Single-share option	Equity swap	Back-to-back Repurchase agreement	Stock option Warrant Turbo warrant
Interest rate	Eurodollar future Euribor future	Option on Eurodollar future Option on Euribor future	Interest rate swap	Forward rate agreement	Interest rate cap and floor Swaption Basis swap Bond option
Credit	Bond future	Option on Bond future	Credit default swap Total return swap	Repurchase agreement	Credit default option
Foreign exchange	Currency future	Option on currency future	Currency swap	Currency forward	Currency option
Commodity	WTI crude oil futures	Weather derivatives	Commodity swap	Iron ore forward contract	Gold option

**Analysis and Appraisal of the study:**

If a firm does not use derivatives for hedging the reasons may be one of the following:

- i. Exposures not significant
- ii. Lack of knowledge about derivatives
- iii. Exposures managed by other means
- iv. Concerns about perception of derivative use
- v. Costs of hedging exceed expected benefits
- vi. Difficulty pricing derivatives
- vii. Concerns about derivatives disclosures

**The following analyses are of use of derivatives in Risk management**

Type of derivatives used by firm

- i. Forward Contract
- ii. Future Contract
- iii. Swaps
- iv. OTC Options
- v. Exchange- Traded Options
- vi. Structured Derivatives
- vii. Hybrid Debt

If use of derivatives to hedge, the firm is trying to manage with the hedge

- i. Accounting earnings
- ii. Balance sheet Accounts
- iii. Cash Flows
- iv. Market Value of the Firm

In the above managing cash flows is the top choice among users and considers most important objective of firm's hedging strategy. Such a focus on stabilizing cash flows is consistent with standard economic explanations of the potential benefits of hedging, such as reducing expected taxes and financial distress costs, ensuring sufficient internal funds to carry out strategic planned investments, and reducing value losses that arise from conflicts between the interests of bondholders and shareholders. Managing the fluctuations in accounting earnings is a close second of the firms indicating this most important objective of their hedging strategy. While in many cases the impact of hedging on reported earnings and cash flows may be similar, the popularity of this objective may suggest that some firms focus hedging strategy more on stabilizing the reported numbers presented to investors than on stabilizing the actual economic internal cash flows. Coming in a distant third among the objectives is managing the total market value of the firm, which is the most important objective. Since firm's value is theoretically equal to the present value of expected future cash flows, the difference in importance between this objective and the cash flow objective may be more a matter of the time frame of hedging than its intent. The limited number of firms focusing on market value of the firm as compared to cash flows suggests that firms worry most about the impact of financial risk on current cash flows and less about distant cash flows. Finally only few firms indicate that they hedge to manage balance sheet ratios.

Degree of concerns of derivatives by firm are:

- i. Credit risk
- ii. Evaluating Risk of Derivatives
- iii. Liquidity Risk
- iv. Tax and Legal Issues
- v. Transaction Costs
- vi. Uncertainty over Accounting Treatment

The use of derivatives in today's market involves many issues. According the users of derivatives, credit risk is the issue that most seriously concerns derivatives users. Whether this concern is due to systemic risk or non-delivery on individual contracts is not clear; however, the issue of timely and complete payment of derivative transactions is currently the focus of a significant worry among derivatives users. Perhaps in light of the large losses in well-known derivatives disasters in 2008, firms also express a substantial amount of concern about their ability to evaluate the risk involved in proposed derivative transactions.

Rules governing in accounting of hedges by firms are:

- i. Have no effect on my firm's hedging activities
- ii. Induce firm to hedge a smaller percent of exposure than otherwise
- iii. Induce firm to hedge a larger percent of exposure than otherwise
- iv. Alter the timing of hedging transactions
- v. Cause firm to forego certain types of derivatives that would otherwise be desirable

- vi. Cause firm to utilize certain types of derivatives that would otherwise not be desirable.

The firms strongly suggest that the current accounting rules cause distortions in firms' hedging activities. The implication of these findings is that new rules on hedge accounting are necessary and should allow more flexibility on the timing, size, and form of hedging transactions. Ideally, new rules for the accounting treatment of derivatives should be designed so that they do not distort the hedging behavior that the firms would otherwise find economically optimal.

How a firm transact in the currency derivatives markets to hedge

- i. Contractual commitments
- ii. Anticipated Transactions < 1 year
- iii. Anticipated Transaction > 1 year
- iv. Competitive/Economic Exposure
- v. Translation of Foreign Currency Statements
- vi. Foreign Repatriations

The firms shows that the most frequently cited motivations for transacting in the foreign currency derivatives markets are for the hedging of contractual commitments and anticipated transactions expected within the year. Anticipated transactions beyond one year are frequently hedged by firms suggests that a majority of firms at least sometimes hedge over a longer horizon. Economic exposure and translation exposure were cited only by a minority of firms as a reason for using foreign currency derivatives. Foreign currency hedging is also done frequently to protect foreign repatriations (dividends, royalties/fees, internal interest payments, etc). Given that not all firms using currency derivatives have foreign operations from which to repatriate, this suggests that an even larger proportion of the set of multinational firms use currency derivatives to at least sometimes hedge the dollar value of foreign repatriations. Options are widely thought to be better suited than forwards and futures for hedging anticipated transactions, particularly those with longer maturities, as well as competitive/economic exposure. Firms were asked to rank the importance of each type of derivative forwards/futures, options or swaps for hedging each different type of exposure.

One area of risk management that has been hard to measure is the degree to which firms alter their strategy based on their view of the direction or level of foreign exchange rates. To gauge the impact of market views on firms' derivatives activity, the firms indicate the frequency with which their market view causes them to alter the timing or size of hedges or to actively take a position in the market using derivatives.

How often firm's market view of exchange rates cause the business

- i. Alter the Timing of Hedge
- ii. Alter the size of a Hedge
- iii. Actively take positions

Firms reported that only about 11% to 12% are frequently altering the size or timing of hedges based on a market view on the exchange rate. A relatively large number of firms will sometimes incorporate their market view into their foreign currency hedging decision. Without entering the debate about what constitutes a hedge and what constitutes speculation, it is apparent that a large percentage of firms sometimes take into account their opinion about market conditions before choosing a strategy. What may be more surprising is the large percentage of firms that “actively take positions” based on a market view of the exchange rate.

Firms maturity of Currency Derivative

- i. < 90 days
- ii. 91 to 180 days
- iii. Within the Fiscal Year
- iv. 1 to 3 years
- v. 3 years

Not much is known about the maturity structure of foreign exchange derivative contracts held by firms, so firms were asked to report on the maturities of their foreign currency derivative contract. According to that firms hold at least some derivatives with maturities less than 90 days; at the other extreme, only few firms hold any foreign currency derivatives with maturities greater than three years.

Such a wide disparity in holdings is to be expected if some firms use derivatives exclusively to hedge near term transactions, while other firms use derivatives as part of their long-term financing activities or as a hedge of the competitive environment.

Firms reasons for preferring “Forwards” higher than “Options”

- i. Firms lacks the knowledge required to use Options
- ii. Options are excessive expensive
- iii. Forwards are better suited to your exposure

Firm transacts following interest rate derivatives

- i. Swap from Floating to Fixed
- ii. Swap from Fixed to Floating
- iii. Fix Spread on New Debt
- iv. Lock in Rate for Future Financing

Most of the firms use interest rate derivatives report that they use derivatives to swap existing floating-rate debt for fixed-rate debt and rest of the firms report doing the opposite swapping fixed-rate debt for floating-rate debt.

**CONCLUSION**

The main concern of managers was to avoid any losses that might occur and to minimize any regret that they might later experience. The managers were normally risk-averse when reviewing profitable options, but were risk-seeking when in the domain of losses or negative outcomes, and showed an inconsistency in decision making dependent upon the context of the decision. This was affected by the importance of the framing and editing of any decision situation and varied according to how the managers viewed the situation whether from an optimistic or pessimistic point of view. Managers preferred to make decisions in accordance with the culture of the company as they were often concerned with their reputation within the organization and did not wish to take decisions that might jeopardize their future careers. Decisions were taken in accordance with company procedures although managers used their judgment and experience rather than focusing on probabilities.

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