

A detail study of the role of options, futures and forward contracts in market ri...

[Business, Risk Management](#)



Abstract:

Market Risk management includes managing different types of risks like commodity price risks, interest rate fluctuations risks and currency risks. The research aims at a thorough study of the market risk management through the identification of the factors of these risks, the critical study of Value at Risk (VAR) and other models that are used to measure them. The risk control methods would be specified to the use of futures, options and forwards contracts in doing so. It also aims at critically evaluating the roles played by these and their effective management.

Objectives:

The primary objective of the research is to study the role played by Financial Derivatives namely forward contracts, futures and options in managing market risks. It also aims at having a clear understanding of the methods or risk measurement, analysis and management techniques. Thereby aims to understand the intricacies of derivative markets.

Introduction:

Basel Committee that was formed in 1974 laid the regulatory framework for Financial Risk Management. (McNeil, A. J., Frey, R., Embrechts, P. 2005).

Basel II (2001) defines Financial Risk Management to be formed of 4 steps: “identification of risks into market, credit, operational and other risks, assessment of risks using data and risk model, monitoring and reporting of risk assessments on a timely basis and controlling these identified risks by senior management.”(Alexander, C. 2005). It determines the probability of a

negative event taking place and its effects on the entity. Once identified risk can be treated in following manners:

Eliminated altogether by simple business practices. These are the risks that are detrimental to the business entity.

Transferred to other participants.

Actively managed at firm level.

Market Risk constitutes of commodity risk, interest risk and currency risks. Commodity price risk includes the potential change in the price of a commodity. The rising or falling commodity prices affect the producers, traders and the end-users of the various commodities. Moreover if they are traded in foreign currency, there arises the risk of currency exchange rate. These are normally hedged by offering forward or future contracts at fixed rates. This is especially important for commodities like oil, natural gas, gold, electricity etc whose prices are highly volatile in nature. However the hedging doesn't always ensure profits. (Berk, J and Demarzo, P. 2010).

Interest Risk relates to change in interest rates of bonds, stocks or loans. A rising rate of interest would effectively reduce the price of a bond. Increased interest rates result in increasing the borrowing costs of the firm and thereby reduce its profitability. It is hedged by swaps or by investing in short term securities.

Currency risks arise from the exceedingly volatile exchange rates between the currencies of different countries. For e. g. Airbus, an aircraft manufacturing company based in France requires oil for its production. Oil

being traded in US dollars and the company doing trading in Euros, has a foreign exchange risk. It would be therefore beneficial for Airbus to enter a forward contract with its oil suppliers. Options are another way of hedging against currency risks. They facilitate the holder to exchange currency at a fixed pre-determined exchange rate. If the option rate is higher than the exchange rate, the company will not exercise the option. However if the rate increases the company would benefit by exercising the option. (Berk, J and Demarzo, P. 2010).

The above risks basically depend on the time value of assets. Moreover with the increased level of multinational functioning of business entities and the highly volatile nature of markets, risk management has now become a mandatory part of running the business. It therefore becomes important to analyze the various methods of assessing risks, measuring them and the preventive measures implemented against them. Also the hedging techniques stated above do not always ensure profits. The research would thereby include a detail study of the effectiveness of the methods implemented. It would also study the hazards of the failures of the implemented methods.

Market risks are measured by Value at Risk (VaR) model. This model is used extensively to measure market risks. It aggregates the portfolio market risks in a single number. However authors McNeil, Frey and Embrechts (2005) have debated over the model stating that it doesn't take into account the costs of liquidation. It takes into account historical data and a series of assumptions. Therefore its ability to measure future risks is highly

disputable. The research would thereby include the study of VaR and other relative models used to measure market risks.

Literature Review:

Forward contracts, Futures and Options are called the Financial Derivatives and are used largely to reduce market risks.

Walsh David (1995) explains that if two securities have same payoffs in future, they must have same price today. Thus the value of a derivative moves in the same way as that of underlying asset. This is called arbitrage.

Hedging of risks is nothing but the holder of an asset has two positions in opposite directions. One is of the derivative and other of the underlying asset respectively. As such if the value of the asset decreases then value of the derivative will also decrease. But the change in value is off-set by the opposite positions to each other. Thus risk is reduced. This is called hedging. Long Hedge refers when an investor anticipates increase in market price and therefore buys future contracts. Short Hedge is when an investor already has a futures contract and expects the value of asset to fall and therefore sells it beforehand. (Dubofsky, D and Miller, T. Jr. 2003).

Forward Contracts- These involve buying or selling specific asset at a specific price at a specified time. They are Over the Counter (OTC)

Derivatives. These are used for locking-in the price and require no cash transfer in the beginning, thereby involve credit risks. They are typically used to hedge the exchange rate risks. (Claessens, S. 1993).

Futures- These are more standardized than the Forward contracts. They are traded at Foreign Exchanges. The standardized contract specifying the asset, price and delivery time is either bought or sold through broker. The delivery price depends on market and determined by the exchange. Initial margin amount is required and profit-loss calculations are done daily. Hence involve margin calls. Credit risk involved is minimum but these cannot be tailored to individual demands. (Claessens, S. 1993). These exist typically for commodities, interest rate risks, currencies etc. (Walsh, D., 1995).

Fig. 2: Hedging through Futures. (Walsh, D. 1995).

Options- The holder can buy from or sell to, the asset at a strike rate at a future maturity date. However the holder of the option has no moral obligation to do so. The cost of buying the option involves a premium which is to be paid up front. The option that enables the holder to buy an asset is called Call option while in Put option the holder is able to sell the asset. (Claessens, S. 1993). These can be bought Over the Counter (OTC) at a bank or can be exchange traded options.

Walsh David (1995) further explains that options have a non-linear relation with payoff. Its payoff increases with the price of the asset if it is in-the-money and has a constant payoff which is the option premium if it is out-of-the-money. While futures and forward contracts have a linear relation with the payoffs in both, profit as well as loss. Therefore options might be preferred over futures and forwards for hedging. The research would include the detailed characteristics, similarities and differences in futures, forward

contracts and options, along with the concept of delta hedging in which perfect hedging is created by use of options.

Data and Methodology:

The Research would be Qualitative in nature, based on the primary data available through online journals and books. The popularity of the derivatives and their exponential growth has favoured the availability of many articles on this topic and would thereby form the basis of research. It might include interviews of professionals having extensive research or expertise in this area.

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