

# **Derivatives: Forwards, Futures & Options**

## **The Best Way to Mitigate Volatility**

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### **What is the best way to mitigate volatility?**

In recent times we have witnessed heightened volatility across economies, businesses and asset classes. Be it exchange rate, stock markets or commodity prices - there is flux everywhere. Being unprepared for this can prove to be detrimental. The paper should focus on the strategy that businesses and individuals can/should adopt to cope with rising risks in volatile times.

### **What is the Best Way to Mitigate Volatility?**

#### **Abstract**

This paper suggests the best way to mitigate volatility occurring due to changes in stock markets, exchange rates, commodity prices and various projects of businesses. Volatility is considered a measure of risk, and investors as well as businesses want a premium for investing in risky assets. With emergence of the globalization, various risk management techniques have been developed. Banks and other financial institutions apply so-called value-at-risk models to assess their risks. Risk is the word today every individual or corporate now wants to be alleviated. The corporations today are facing a quantum of risks whether it is global or domestic. Individuals have taken various efforts to mitigate the risk of loss. Risk of loss is due to the volatility existing in the market conditions. The volatility in the economies, currencies, stock markets or commodity prices has augmented to higher level raising the chances of monetary loss. Who knows what would be the news next moment? In order to reduce or transfer the risks the Forwards, Futures & Options have evolved as instruments which could aid an individual or corporate to mitigate the risk and reduce volatility. We collectively call it as Derivatives. Derivatives have evolved as a major instrument for risk management and the most important functions of risk management is the protection against volatility. The study describes the various available opportunities for individuals, firms, multinationals, banks, financial institutions, investors to averse the volatility risks in today's scenario

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## **1. Introduction**

### **a. What is Volatility?**

Volatility refers to the spread of all likely outcomes of an uncertain variable. Volatility is related to, but not exactly the same as, risk. Risk is associated with undesirable outcome, whereas volatility as a measure strictly for uncertainty could be due to a positive outcome. To be more precise it is frequency on movement of upside or downside.

## **2. Why is it necessary to mitigate volatility?**

Volatility today exists in many forms. It exists primarily in stock markets, currency markets, commodities market. Businesses are unaware of the conditions in the market which may bring losses to them. Many sectors also face volatility conditions due to the various factors. Volatility increases the risk of losing in monetary terms. It increases the chances of failure of a project. The term “Risk” associated with the volatility is the most important and the only consequence why it’s necessary to mitigate volatility. An individual buying a security always has a risk of losing money. A firm investing into a project always has a risk of failure. Government taking any decision has risk of affecting the economy and the stock markets. A bank, a financial institution, a business firm, an import-export firm, a Multinational, an individual face risk due to volatility conditions and hence it’s necessary to mitigate or lessen the volatility.

## **3. Why does it occur?**

### **a) Factors creating the volatility in the economy**

The impact of information flow in one economy has a cascading effect to another economy. Recent illustration is sub-prime mortgage which dragged many economies down including the Indian Stock Markets. The political conditions prevailing in the country due to issue of the Nuclear Treaty had an impact on the stock markets.

b) Factors creating volatility in a particular sector

The rising rupee is currently a cause for IT companies in the country to worry. The government policies affecting the sugar sector have also been in the news for many days.

c) Factors affecting the currency prices

Many factors create volatility such as changes in the US Fed policy, the country's exports and import policy affecting the currency prices.

d) Factors affecting stocks

Many factors such as sector slowdown, sluggish financial results, deal failure affect the stock prices. The various activities in the company such as strikes, fire, accidents affect the company's production and thereby stock prices.

e) Factors affecting the company's projects and investments

Many factors affect the company's investments in project. In many cases, a company's subsequent project depends upon success or completion of current projects.

f) Factors affecting commodities prices

The availability of commodities, the arrival of monsoon and production of the commodities determine the commodity prices.

#### 4. Participants

Different types of market participants who make volatility in the market are investors, speculators, hedgers and arbitragers. Speculators are most important participants whose actions increase volatility but they are also important from a viewpoint of maintaining liquidity in the market. Volatility in the market exists due to continuous flow of information related to stocks, sector and economy and the prices get adjusted as the information reaches the market. The Random Walk Theory depicts the same. It emphasizes on the information affecting the security prices.

#### 5. What is the option? - Derivatives (Forwards, Futures & Options)

a. Evolution

Forwards markets have been into existence from many centuries but futures markets was formed in 1848 with introduction of Chicago Board of Trade. Originally, it was formed for

farmers to hedge their risks. Forwards and Futures differ from each other as latter is standardized form of contract and traded on exchanges. The options as we see today are used generally by the investors but it is surprising that the options were first used by tulip traders in Holland in early 1600s. Hence we can say that businesses facing risks can use options as a tool to mitigate volatility and risks arising. Options as an instrument have evolved in order to reduce the risk and thereby increasing the liquidity and decreasing the volatility through the presence of large number of investors. Volatility in the market conditions can easily be hedged through the Derivatives.

b. Why Derivatives?

Over the time, derivatives have grown as a powerful risk hedging instrument. They have played an important role in reducing risks due to volatility in the stock prices. Various standard products right from stock options and futures to non-standard products like real options, insurance derivatives have evolved to hedge the risk and thus volatilities in the various scenarios. Banks, Financial Institutions, Businesses and Investors can hedge against volatility risks.

**6. Forwards to mitigate volatility**

Forwards contracts are most popular in the foreign exchange market. Most of the banks have forex desk and trading rooms for trading in the forward contracts. By entering into a forwards contract an individual or business can lock the future exchange rate at which he may buy or sell a currency. This helps him to determine the cash flows and protects him from volatility in future.

**7. Futures to mitigate volatility**

Futures contract are mostly popular in stock markets. A futures contract gives the holder the obligation to buy or sell the underlying commodity or security.

Futures can be used to reduce risk due to volatility by a person entering in to contract from a standardized exchange. Various types of futures contracts exist in the market:

- a. Stock Futures – An individual holding a particular stock in cash market can alleviate the risk of volatility by entering into a futures contract to sell it at a profitable price and thus reduce the risk.
- b. Index Futures – An individual entering into a contract with regards to many stocks in index may enter into contract
- c. Interest Rate Futures – An individual can lock in interest rates on investment by entering into a contract and thus earn the required yield on investment.
- d. Currency Futures – An individual or business can lock-in the exchange rate at which he might receive the domestic currency in future and thus hedge the loss expected against volatility.
- e. Commodity Futures – In this case a individual or business can hedge against the various commodity prices to protect against unpredictable price of the commodity.

#### **8. Options to mitigate volatility**

Even though we see forwards and futures are used to reduce volatility. The most powerful instrument in the era has been options which have been used to lessen the instability. Various types of options are available. Options provide various structured products which reduce the volatility.

The various types of options such as stock options, index options, real options, swaptions, interest rate options, futures options, currency options, exotic options and other non-standard products has evolved over the time to hedge against volatility risk

Many traditional strategies in the market such as bearish trading strategies, bullish trading strategies and neutral market strategies have developed. The following table gives a glimpse of various strategies and when they can be used.

a.

**Bullish Market Strategy**

<b>Option Strategy</b>	<b>Meaning</b>	<b>When it should be used</b>
Buy a Call	Strongest bullish option position	Undervalued option with increasing volatility
Sell a Put	Neutral bullish option position	High volatility
Buy a Vertical Call Spread	Buy Call and Sell Call of higher strike price	Small debit
Sell a Vertical Call Spread	Sell Put and Buy Put of lower strike price	Large credit

b.

**Bearish Market Strategies**

<b>Option Strategy</b>	<b>Meaning</b>	<b>When it should be used</b>
Buy a put	Strongest bearish position	Undervalued option with increasing volatility
Sell a call	Neutral bearish position	Option overvalued market flat to bearish
Buy vertical bear put spread	Buy at the money Put and Sell out of money Put.	Small debit
Sell vertical bull call spread	Sell call and buy call of higher strike price	Large credit

c.

**Neutral Market Strategies**

<b>Option Strategy</b>	<b>Meaning</b>	<b>When it should be used</b>
Strangle	Sell out of money Put and Call	Trading range market with volatility peaking
Arbitrage	Buy and Sell similar put options simultaneously	Anytime credit received
Calendar	Sell near month, buy far month, same strike price	Small debit, trading range market
Butterfly	Buy at money Call (Put) & Sell 2 out of money. Calls (Puts) & Buy out of money Call(Put)	Anytime credit received
Guts	Sell in the money Put and Call	Options have time premium
Box	Sell Calls and Puts same price	Anytime credit received
Ratio Call	Buy Calls and sell Calls at higher strike price	Large credit and difference between strike price of option bought and sold
Conversion	Buy futures and buy at the money Put and sell out of money Call	Anytime credit received

Source: Aditya Iyengar, Trading Strategies, ICFAI, Treasury Management (July 2007)

All the above trading strategies refer to the investors for their investments and the volatility risk can be mitigated by any of these strategies.

d. Futures Options

A Futures Options is right, but not the obligation, to enter into a futures contract at a certain futures price by a certain date. Futures options thus have evolved as dynamic product as it provides higher liquidity and is easier to trade. Also futures price is known immediately from trading on futures exchange, whereas the spot price of underlying asset may not be so readily available.

e. Interest Rate Options

Interest rate options are options whose payoffs are dependent in some way on level of interest rates. Interest rate options hedges the risk against movement of interest rate on the underlying assets such as bonds. An investor who thinks long term interest rates will rise can buy options on Treasury Bill Futures to hedge or profit against the movements.

f. Swaptions or Swap Options

Swaptions are options on the interest rate swaps. To illustrate use of swaption, consider a company that knows it will enter into 5-year floating rate loan agreement in 6 months and it wishes to swap the floating rate interest payments with fixed rate to convert its loan into a fixed loan. A company would enter into a swaption giving it right to receive LIBOR and pay certain fixed rate (say 9% pa) for the period. If the rate after 6 months turns out to be less than 9% then company may choose not to exercise swaptions and may enter the agreement in a usual way. Thus it hedges the volatility in the interest rate risk.

g. Exotic Options

Many other options strategies such as Forward Start options, Lookback options, Chooser options, Barrier options, Compound options, Binary options, Shootout options, Asian options have been evolved. Each of this provides a different technique to manage volatility risk.

#### h. Credit Derivatives

A credit derivative is a contract where payoff depends on credit worthiness of one or more commercial entities. It allows credit risks to be traded and managed. Credit Default Swaps have emerged to be the most popular credit derivative.

#### i. Weather Derivatives

Many companies are in the position where their performance is liable to be adversely affected by the weather. Weather derivatives have emerged out to be a option for this company for alleviating the risk against the volatility of weather.

#### j. Energy Derivatives

Crude oil which is the most volatile commodities can be hedged through the energy derivatives. Most oil and related companies trade actively in the energy derivatives to manage against volatility risks in oil. Other products traded are natural gas, electricity etc.

#### k. Real Options

Managers around the world are facing increasing uncertainty while taking complex strategic decisions, having an enduring impact on organization profitability. Usually, this uncertainty erodes real value when such decisions are evaluated using conventional techniques, such as NPV or IRR - larger discounting rates are applied to riskier projects. Real options technique presents a way to befriend uncertainty and profit from it. A real option is the right, but not the obligation, to take an action that will either help maximize the upside or limit the downside of a capital investment. Like financial options, real options can be valued using options-pricing models. Real Options Valuation (ROV) is revolutionizing corporate strategy and bridging the gap between finance and strategic planning. Just as an option gives its owner the right - but not the obligation - to take a particular course of action at some time in the future, flexibility embedded in capital investment projects and company strategies allows managers to take a staged approach to corporate strategy and react to changes in the business environment, so they can limit downside losses while fully capitalizing on upside potential opportunities.

**Some of the common real options are as follows:**

Waiting-To-Invest Options: The value of waiting to build a factory, say, until better market information comes along may exceed the value of immediate expansion.

Growth Options: An entry investment may create opportunities to pursue valuable follow-on projects.

Flexibility Options: An option to reallocate resources or switch has value. For example, building two plants instead of one to serve markets on two continents creates the option of switching production from one plant to the other as conditions dictate.

Exit (or Abandonment) Options: The option to walk away from a project in response to new information increases the value of the project.

Learning Options: An initial investment creates better information about a market opportunity and whether more capacity should be built out.

“Real Options: Managing Strategic Investment in an Uncertain World” by Martha Amram

Real-options valuation recognizes that managers can and do obtain valuable information after a project is launched, and that their informed actions can make a big difference. Thus, real options seeks to uncover and quantify a project's embedded options, or critical decision points. The greater the uncertainty and flexibility, the greater the value of management's options. Apart from the benefit of more precise valuations, a subtle side benefit of real options lies in the way it forces managers to chart the entire course of a project, to explore all the options that the project creates. The need to build multiple scenarios to arrive at alternate outcomes also helps widen managerial perspective, and helps them guard against potential downside of decisions. Thus it helps the firms manage volatility risks.

## 9. Conclusion

There are various financial products emerging in the derivatives market which provide the models and strategies to individuals and businesses to hedge against volatility risks. I believe that financial community has made great strides by innovation of various types of options that suits the need of each individual investors as well as large and small business firms. Financial Engineering has been in the news by creating innovative financial products to mitigate volatility. However it's necessary that a proper study of derivatives is done. It would then assist individuals and firms to mitigate volatility. Finance Minister in his recent speech mentioned the investors should enter the derivatives market with proper study. The futures market can protect against volatility risk but also can cause loss when a person trades without proper study. Also in case of real options managers have to build multiple scenarios in order to understand the viability of project. Today many tools are available for investors and firms in form of financial models, financial software and statistical tools to take right decisions. Thus derivatives today is the right choice for any person, investor, banks, firms to mitigate volatility due to the broad area of the spectrum it covers.

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