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Hedging Strategies Used in Selection of "Options" and "Forward" Contracts in Derivative Market

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Abstract
This Article focuses on the derivatives market, which has crossed several milestones during its developing phase, but there is still a long way to go, mainly when the International derivatives market has seen a variety of products, with sufficient liquidity, depth, and volume. One remarkable thing in the derivative market was the existence of forwarding contracts. But the major milestone in developing the derivatives market in India was the introduction of Options. The objective of introducing Options was to provide a complicated hedging strategy for the corporate in its risk management activities. Options trading can be taken to the next level with the help of understanding of Greeks (Delta Δ, Gamma Γ, Vega ν, Theta Θ, Rho ρ) and their Hedging techniques. Each Greek separates a variable that can drive an option's price movement, giving insight on how the option's premium will vary if that variable changes.

Keywords: Options, Forwards, Hedging, Volatility, Option Greeks.
JEL Classification: F31; G0; G15; G20; G29.

Introduction

Derivatives Market

Financial markets before liberations, there were only a few financial products, and the stringent regulatory environment also eluded any possibility of construction of a derivatives market in the country. All corporate was mainly relying on the lending institutions for meeting their project financing or any other financing requirements and on commercial banks for meeting working capital finance requirements. Commercial banks, on their part, were not keen on covering the interest rate exposure of their assets and liabilities. The only derivative product they were aware of is the forward communication. But this scenario changed in the post liberalization period. Conservative business practitioners began to take a different view of various aspects of their operations to remain competitive. Financial risks were given adequate attention, and "Treasury function" has assumed a significant role in all major corporate since then.

The five Greeks are Delta (first derivative of the price of underlying), Gamma (2nd derivative of charge), Vega (volatility), Theta (time), Rho (risk-free interest rate). These Greeks can be used as a risk management tool for portfolios containing options. In the following tables are the major influences on a long and a short call option price as well on put option price have been shown.

Call options	Increase in the underlying	Decrease in the underlying	Increase in the time to expiration	Decrease in the time to expiration	Increase in the volatility	Decrease in the volatility	Increase in the interest rates	Decrease in the interest rates
Long	+	-	+	-	+	-	+	-
Short	-	+	-	+	-	+	-	+

Major influences on a short and long call option's price.

Put options	Increase in the underlying	Decrease in the underlying	Increase in the time to expiration	Decrease in the time to expiration	Increase in the volatility	Decrease in the volatility	Increase in the interest rates	Decrease in the interest rates
Long	-	+	+	-	+	-	-	+
Short	+	-	+	+	-	+	+	-

Major influences on a short and long put option's price.

Pelsser and Vorst (1994) discussed the purpose of the mainly used Greeks in the context of the binomial model (Cox and Rubinstein 1983). Garman (1992) christened three more unperformed derivatives with the names speed, charm, and color. The duration of option portfolios was defined in Garman (1985), while Gamma duration and volatility immunization were defined in Garman (1999). Similarly, Haug (1993) discussed the collection of option's vegas of different maturities. Estrella (1995) derived an algorithm for the resolution of arbitrary price derivatives of the BMS option formula. Estrella (1995) examined Taylor series expansions in the stock price and found the radius of convergence. Broadie and Glasserman (1996), Curran (1993), and Glasserman and Zhao (1999) all considered the estimation of security price derivatives using simulation. Bergman (1983) and Bergman, Grundy, and Wiener (1996) derived expressions for Delta and Gamma when volatility is a function of stock price and time. Grundy and Wiener (1996) also received the theoretical and empirical bounds on Deltas for this case.

The Objective of the Study

1. To shed light on Options contracts traded on Exchanges and Forwards contracts traded in OTC Market
2. To establish Options are flexible than Forwards contracts in any category or vice-versa
3. To show hedging Greeks can be treated as a risk management tool

Research Gap

Most companies, different than giant ones, rely on forwards to hedge their trade exposure risk. The difference is the way they look at hedging and the scope of their hedge. Larger companies use derivatives to manage commercial risk, while poorer companies use derivatives mainly to hedge cash movements from transactions. This can be described very much why they often chose forwards as their hedging instrument because forward records are free to enter, and there is no fee or reward like options to obtain them. We can say the cost of forwarding contracts is a hidden cost in the spread that the banks use when dealing. Considering the spread, the size of a forward contract can either be very large or small, so companies' forces are forced to enter bigger or smaller deals than they are looking for. While in case of options, it is very easy to measure the cost, and in the worst scenario, it is to pay up in approach (option premium).

This study is conducted to provide some knowledge and application about the Greeks. Each Greek separates a variable that can drive an option's price movement, giving insight on how the option's premium will vary if that variable changes. An option's price can be prejudiced by various factors like underlying price, interest rates, volatility, etc. The underlying price and strike price of the option determines the intrinsic value. The time till expiration and instability determine the probability of a profitable move. The interest rates determine the cost of money. Dividends can cause an adjustment to share price. These factors influence the traders, depending on the type of options positions they have established. To become an active options trader, it is necessary to understand the factors that influence the price of an option.

Review of Literature

Hedging with Forwards

Hedging refers to managing risk to the extent that makes it bearable. Forward contracts are customized

contracts between two parties to fix the exchange rate for a future transaction. By entering into a forward rate deal with a bank, the businessman simply shifts the risk to the bank, which will now have this risk. Of course, the bank, in deed, may have to do some organization to manage this risk.

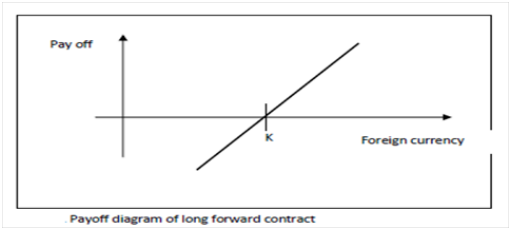
The interest rate parity theorem is a none-arbitrage theorem that states that in the floating exchange rate system between two countries, the nominal interest rate must be the same. Otherwise, there will be an arbitrage opportunity, which you can borrow money from the country with lowers the interest rate and invests in the country with a higher interest rate and gain where in reality, this is not possible. The forward price needs the interest rate of the two countries and the current market rate, and then it can be calculated from the following:

$$F = s_0 e^{(r_d - r_f)T}$$

If rd=rf → F= So; if rd ≠ rf → F≠ So

F is the value of the forward rate, S is the current exchange rate, rd is the domestic interest rate, rf is the different interest rate, and T is the time to maturity.

The pay off from a long forward contract is: $St-k$ where St is the spot rate at the development, and K is the transfer price. The pay off diagram is illustrated in figure 1.



Payoff diagram of long forward contract

Hedging using Options

Options are of two types: One gives the buyer the right to buy a particular currency against the other at a pre-determined price on or before a predetermined date; this is a call option. The other gives the buyer the right to sell a particular currency against the other at a predetermined price on or before a proposed date; this is called a put option. When the right is applied on or before a predetermined date, then it is an American Option, whereas when a right is exercisable only a pre-specified date, it is a European Option. In the money: call option - exercise price less than spot price; Put option-exercise price more than spot price; At the money: exercise price equal to spot price; Out of the money: call option – exercise price more than spot price; put option-exercise price less than the spot price

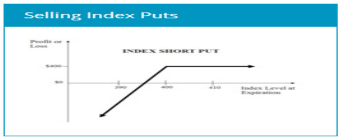
The products available in the International derivatives market to hedge the exposures are Forward Contracts, swaps, and options. But most of the corporate is used to forward for short-term exposures and swaps for long-term exposures. While forwards and swaps help in eliminating the uncertainty by hedging the exposure, options provide a way of obtaining upside profit potential from any market exposure with the production against downside risk for the payment of an upfront premium. Options are gaining popularity both in well-developed economies and in emerging markets. Liberalization measures adopted by various emerging economies had led to increased market exposures of both domestic and foreign entities, which in turn resulted in an increased demand for innovative instruments to manage the market risk.

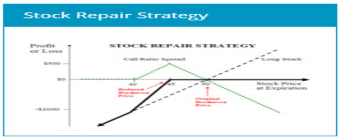
Table: Options and Forwards Tools for Managing Risk: A Comparison

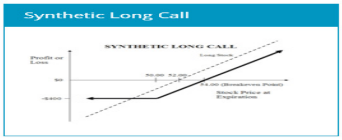
Particulars	Forwards	Options
	Costs	
Initial Margin/Deposit	No	No
Variation Margin	No	No
Need for Speculations to assume the risks the hedgers seek to avoid	No	Yes
Foreign favorable movements	Yes	No
Speculation	Yes	Yes
Arbitrage	Yes	Yes
"Barter" Position	Yes	No
Transaction cost/ Brokerage fee	Yes	Yes
	Benefits	
Diversification benefits	No	No
Liquid market	No	Yes
Can hedge currency	Yes. Counter party may be difficult to find	No
Legal obligation	Yes	No

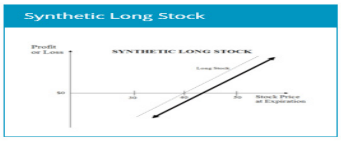
Strategies used in Options

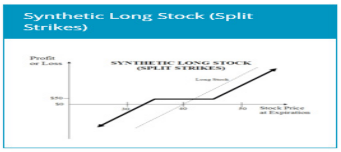
In Option trading potential profit, potential risk, and break-even point of different positions and to know when option exercises can be recognized with the following strategies:

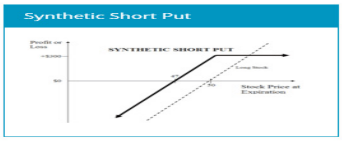


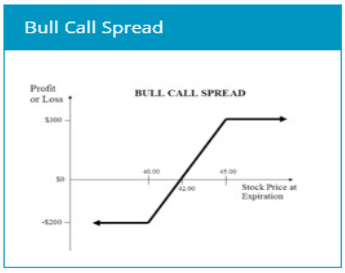


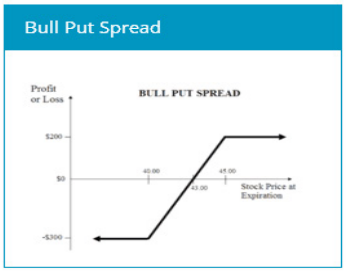


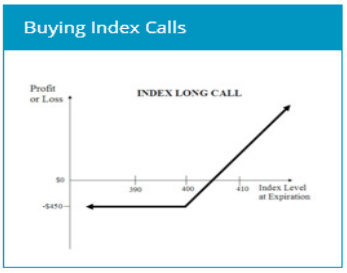


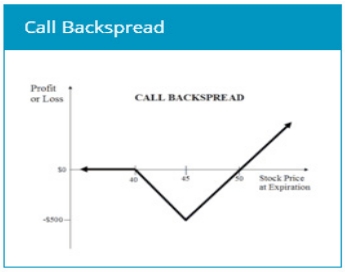


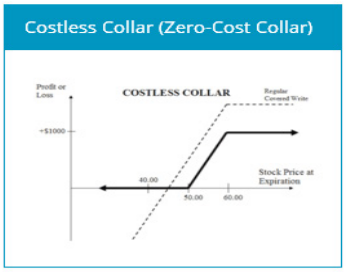


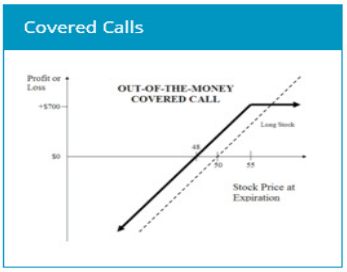


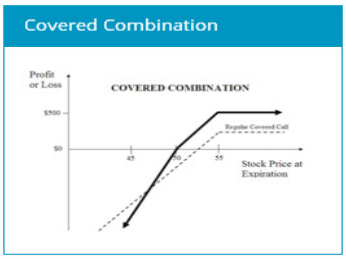


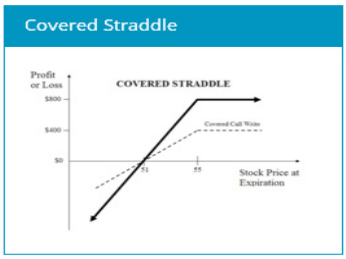


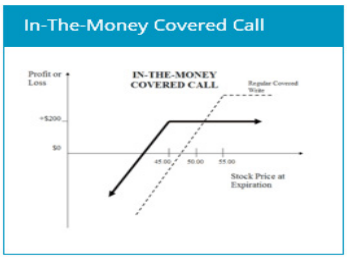


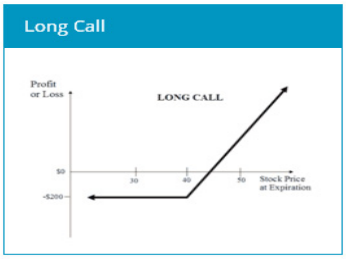


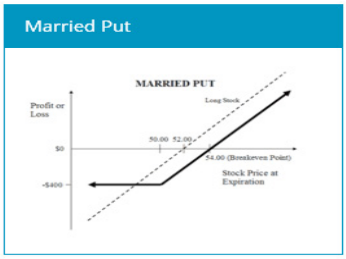


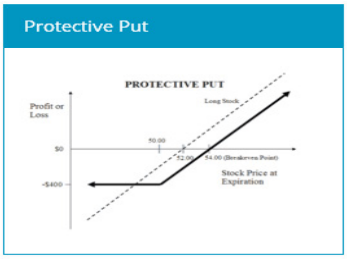


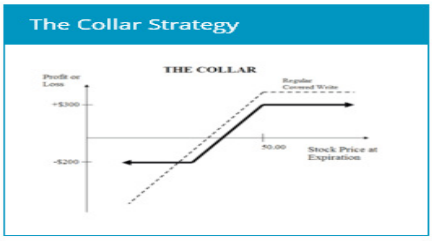


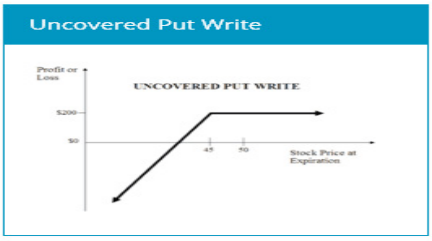












Volatility is one of the important features as most of the input data is given by exchange forces. It is by calculating levity that it is possible to influence the price of the option. It can be said the price of an option is quoted in volatility terms but not in monetary terms (Alan Hicks, 2000). Volatility surface is defined as several Black-Sholes implied volatilities plotted versus some measure of benefit strike and time to option expiration. When the volatility portion that is applied for pricing out of the money option is higher than the volatility applied to options near the money, the buoyancy smile occurs. This means as volatility increases, the price of options increases, and so when the volatility decreases, the price of an option decreases.

PUT-CALL parity is the direct relationship between the price of puts and calls. Put-call parity teaches that at any time before the culture, the price of a European put and a European call, with the same exercise price and the same termination must be same as the contrast between the present value of the exercise price and the present value of the deliverable supply of foreign currency.

$$p + s_0 = c + ke^{-rt}$$

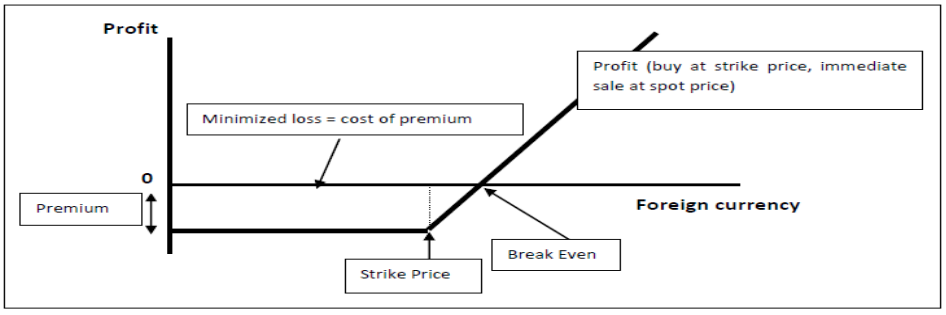
The idea is simply to understanding put-call parity is to recognize that a long call, together with a small in effect, is the same as a forward contract, assuming strike price, amounts and maturity dates are the same. This is because, at the maturity, if the put option is in the money, an option would be exercised, which means deliver foreign currency and receive domestic currency. The same would happen at the maturity, a short call is in the money, the call option would be applied, and the holder of the call would be obligated to deliver foreign exchange and receive. Thus it can be said:

Long forward ≈ Long call + Short put

It should be noticed that this exists only for European options of the same strike price.

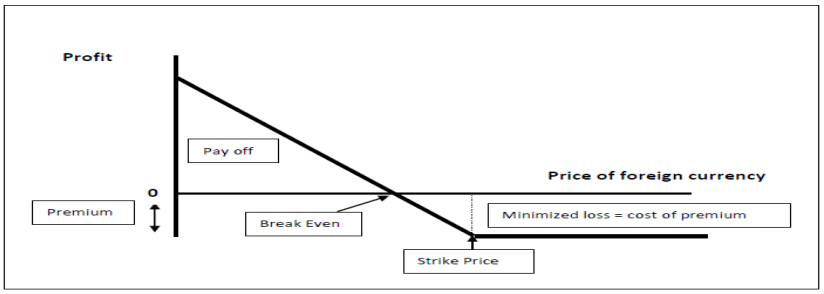
Long Call option and Long Put Option

Loss on a call option is limited to the dividend paid to purchase the call option, and potential profit is unlimited. Profit can be measured as Spot price - Exercise price -premium.



payoff diagrams for long call

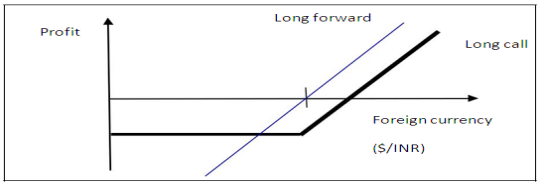
Loss on a put option is limited to the premium paid to obtain the put option, and potential profit is unlimited. Profit can be calculated as Exercise price-Spot price – premium. The pay off diagram for a long on put option will be:



PAY OFF DIAGRAM FOR LONG PUT

Comparing Payoff Structure of Option and Forward

The below figure illustrates a long forward contract and long call option contract. As you can see below, if changes in foreign currency rates are not significant, the long forward is in a better situation than the option, and for larger changes, it's in the other way. This is a good point to consider if the currency pair that the company is going to hedge is significantly active in the period; a hedge is needed or not.



PAY OFF DIAGRAM OF A LONG FORWARD AND LONG CALL OPTION

Break-even is the price at which the option is equal to the gain acquired by exercising the option. For a call option, breakeven is the addition of its premium to its strike price. And for a put option, it is a subtraction of its success price from the premium. Therefore at the maturity if call option is applied, the foreign exchange rate should be greater than the breakeven to make the benefit having a definite pay off and can be compared to the forward rate of a forward deal, that's what a company must spend in total for each unit of the foreign currency according to the agreement.

Valuation of Options

The Black-Scholes model is used for computing option premiums required for mentioning the quotes. The volatility that results in a required premium is called implied volatility, which is also quoted in the market.

Formula after being chosen to value a currency call option, c, is:

$$c = s_0 e^{-rfT} N(d_1) - Ke^{-rdT} N(d_2)$$

- $d_1 = \frac{\ln\left(\frac{s_0}{k}\right) + \left(\frac{r - rf + \sigma^2}{2}\right)T}{\sigma\sqrt{T}}$
- $d_2 = d_1 - \sigma\sqrt{T}$
- K is the strike price of the option
- S current spot price
- rf the foreign interest rate
- rd the domestic interest rate
- σ the volatility of the spot rate

Binomial options pricing model (BOPM) provides a generalizable numerical method for the valuation of options in the three-step process, i.e., price tree generation, calculation of option value at each final node, and sequential calculation of the option value at each preceding node.

The Mundell - Flemming model can be a good tool to evaluate the market expectations vis-à-vis the movements in the exchange rates.

Some of the other techniques which may be utilized to evaluate the efficiency/performance of the market in the hands of the investors/operators for valuation of options may be Goal Programming Model, BCG Matrix, and Cost Profit Benefit Analysis.

Measures of Risk associated with Options Trading

Greeks that are used for hedging are Delta, Gamma, Theta, Vega, and Rho are described as the changes in the option value concerning a change in Price, Time, Volatility, and Interest Rates, respectively.

Formulae for calculating Greek

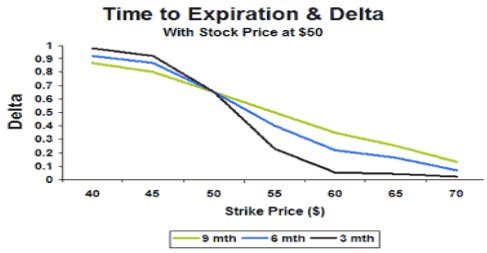
	Calls	Puts
value	$Se^{-q\tau}\Phi(d_1) - e^{-r\tau}K\Phi(d_2)$	$e^{-r\tau}K\Phi(-d_2) - Se^{-q\tau}\Phi(-d_1)$
delta	$e^{-q\tau}\Phi(d_1)$	$-e^{-q\tau}\Phi(-d_1)$
vega	$Se^{-q\tau}\phi(d_1)\sqrt{\tau} = Ke^{-r\tau}\phi(d_2)\sqrt{\tau}$	
theta	$-e^{-q\tau}\frac{S\phi(d_1)\sigma}{2\sqrt{\tau}} - rKe^{-r\tau}\Phi(d_2) + qSe^{-q\tau}\Phi(d_1)$	$-e^{-q\tau}\frac{S\phi(d_1)\sigma}{2\sqrt{\tau}} + rKe^{-r\tau}\Phi(-d_2) - qSe^{-q\tau}\Phi(-d_1)$
rho	$K\tau e^{-r\tau}\Phi(d_2)$	$-K\tau e^{-r\tau}\Phi(-d_2)$
gamma	$e^{-q\tau}\frac{\phi(d_1)}{S\sigma\sqrt{\tau}} = Ke^{-r\tau}\frac{\phi(d_2)}{S^2\sigma\sqrt{\tau}}$	

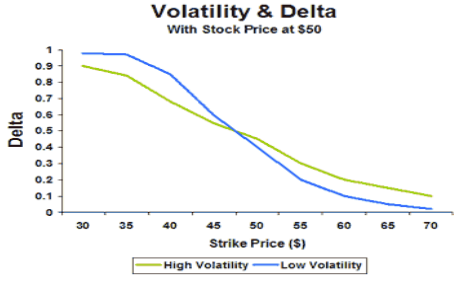
Options have been received from the top-performing five companies from the following sector that has been shortlisted for Greek Calculation. All the calculations are made using VBA, various functions, and add-Ins from Microsoft Excel. The stock and European option data of each company are taken for 29 days, i.e., from 2nd April 2018 to 30th April 2018.

- Automobile
- Finance
- Information Technology
- Media & entertainment group
- Manufacturing

The research study is executed by calculating the option prices using the Black-Scholes option pricing model for the Call Option and Put options and its sensitivities. The secondary data collected from NSE and used Single Strike Price Movement formulas to calculate options prices and its sensitivities. The calculations are taken assuming that 91 days treasury bills rate 6.5% has been used as the risk-free rate of return for calculation, Annualized volatility 30% has been used for calculation.

1. Delta - Measures the appearance of option price to the movement of an underlying stock price.

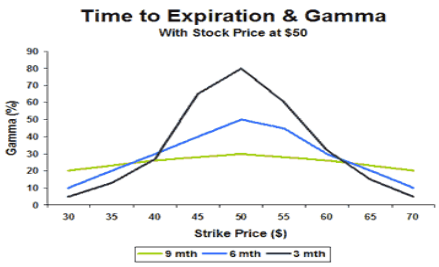


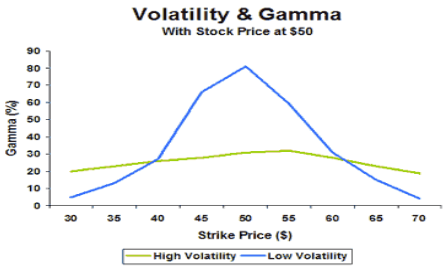


As the time pausing to termination grows shorter, the time value of the option vanishes, and correspondingly, the delta of in-the-money options improvements while the delta of out-of-the-money options decreases. As volatility rises, the time value of the option goes up, and this causes the delta of out-of-the-money options to increase and the delta of in-the-money options to decrease.

Option Type	Approx Delta value (Call)	Approx Delta value (Put)
Deep ITM	between +0.8 to +1	between - 0.8 to -1
Slightly ITM	between +0.6 to +1	between -0.6 to 0.8
ATM	between +0.45 to +0.55	between 0.45 to -0.55
Slightly OTM	between +0.45 to +0.3	between 0.45 to -0.3
Deep OTM	Between +0.3 to +0	Between -0.3 to -0

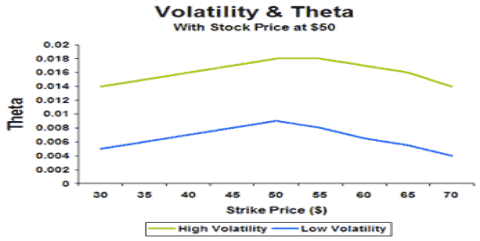
2. Gamma - Measures the exposure of the option delta to the movement of the underlying stock price.





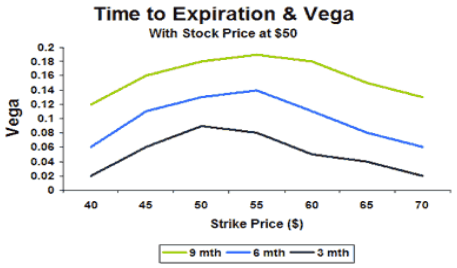
As the time to finish draws nearer, the gamma of at-the-money options increases while the gamma of in-the-money and out-of-the-money options decline. When volatility is low, the gamma of at-the-money options is high, while the gamma for deeply into or out-of-the-money options approaches 0. When volatility is high, gamma tends to be stable across all strike prices.

3. Theta - Measures the appearance of the option price to the passage of time.



Longer-term options have theta of almost 0 as they do not lose value daily. In general, options of high volatility stocks have higher theta than low volatility stocks.

4. Vega - Measures the display of the option price to changes in the volatility of the underlying. The more time was remaining to option expiration, the higher the Vega.



5. Rho - Includes the sensitivity of an option or options portfolio to a change in interest rate.

Hypotheses

H1: Options are flexible than forwarding contracts in any category in Derivative Market

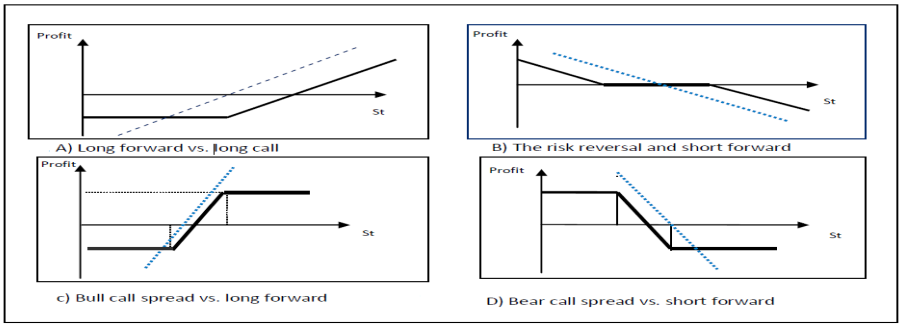
H2: Hedging Greeks can be employed as a risk management tool.

Research Methodology

H1: Options are flexible than forwarding contracts in any category in Derivative Market

The aim of our analysis method is to examine the payoff of a forward contract against the option understanding through the simple hedging strategies. The below analysis shows the graphical comparison of four different options strategies against forwards.

Graphical comparison of four different options strategies against forwards



Analysis and Findings

The above analysis shows the pay off of long put option against long forward. The maximum potential loss for the options agreement is the premium, and for the same hedge policy with forwards, it's unlimited. It should be mentioned that for small changes in volatility, a forward contract is better. In other combined option zero cost strategies, it can be noticed that the potential loss is limited compared to the forward contract.

- Spreads between Long-run and short-run volatility can predict the direction of short-run and long-run changes in a majority of underlying derivatives and maturity pairs. Some of the findings of a research study in this article on the term structure of volatility based on implied volatility in options are
- Implied volatility is more accurate in predicting volatility increase than volatility decrease. When there is an increase in volatility, options are largely used as a hedging tool.
- Implied volatility gives useful information in predicting the direction as well as the magnitude of the movement of volatility in the underlying market.
- Flexible exchange rate regimes result in rewards that are highly volatile.
- Using the implied lightness from benefits pricing, future exchange rates can be predicted.

Forward contracts are not a perfect form of hedging because they will not eliminate all the risks associated with the trade transaction.

- Forward type of contract transaction fixes the market rate. If the market rate moves in trader favor after the trader has fixed it, then the trader will not be able to take advantage of this movement. If your competitors have not fixed the rate, then they may be able to undercut the trade price. The longer the period for which trade fixes the rate, the greater is the risk of this happening. Thus economic' risk remains.
- Forward contracts are frequently used to meet a future requirement. These usually result from obligations under a trade contract with a company operating in a different currency from yours. If this contract is not met and the forward contract is not required, it could be costly reversing the transaction, although this does depend on the market movements in the intervening period.
- Although the forward contracts don't require any upfront payments, they do have significant opportunity costs. If the exchange rates move in the trader's favor, a trader wouldn't be able to take advantage of the same.

Forward contracts can be useful tools to manage market risk. However, as with other instruments, it is important that the relationships of the agreement are fully understood before any agreement is made.

Hence hypothesis H1: Options are flexible than Forwards Contracts is accepted

H2: Hedging Greeks can be employed as a risk management tool.

Table 1 Calculation of Premium and its Sensitivities

Particulars	Companies				
	Escorts Ltd Call Option	Federal bnk Put Option	Hexaware Tech. Ltd Call Option	TV 18 Brdcst Put Optin	India Cem Ltd Call Option
Price of the underlying	834.00	79.50	520.40	65.20	110.00
Risk-free interest rate (%)	6.50	6.50	6.50	6.50	6.50
R: risk free rate of interest	0.065	0.065	0.065	0.065	0.065
Strike price	860.00	90.00	500.00	60.00	110.00
Annual volatility (%)	30	30	30	30	30
o: volatilty	0.3	0.3	0.3	0.3	0.3
Time of expiration (days left)	29	29	29	29	29
T-t: time of expiration	0.0792	0.0792	0.0792	0.0792	0.0792
Price of Call option	22.5	0.7	31.04	5.91	3.99

Price of Put Option	44	10.6	8.06	0.40	3.42
Delta for Call Option	0.340	0.086	0.718	0.861	0.541
Delta for Put Option	-0.660	-0.914	-0.282	-0.139	-0.459
Theta for Call Option	-0.669	-0.019	-0.317	-0.030	-0.074
Theta for Put Option	-0.516	-0.003	-0.229	-0.019	-0.054
Gamma for Call Option	0.007	0.023	0.0077	0.040	0.043
Gamma for Put Option	0.007	0.023	0.0077	0.040	0.043
Vega for Call Option	0.620	0.035	0.496	0.041	0.123
Vega for Put Option	0.620	0.035	0.496	0.041	0.123
Rho for Call Option	0.112	0.005	0.272	0.040	0.044
Rho for Put Option	-0.240	-0.066	-0.123	-0.008	-0.043

Findings

From the above table, some of the inferences drawn are stated below:

The calculations from the above data are from the parameters for five groups, namely Escorts Ltd (Automobile), Federal Bank (Finance), Hexaware Tech. Ltd (Information Technology), TV18 Broadcast (Media & Entertainment) and Cements Ltd (Manufacturing) where the trader has Calls and Puts of the same strike, different underlying prices. From the analysis of the result, the findings are:

- Escorts Ltd Call Option: It is observed that the Escorts call option is out-the-money where Exercise price 860 is more than spot price 834 and its value call 22.5 and put value 44. Delta is slightly is Out-the-money as 0.340 for call showing the market is increasing, and for put value -0.660 where it is slightly in-the-money and showing underlying is increasing. Theta value -0.660 and -0.516 because the time to expiry is near. Gamma for both call and put are 0.007 one date maturity. Vega is positive 0.620 when volatility increases. For Rho, both call and put value 0.112 and -0.240 changes very small friction based on 1 unit change in interest rate.
- Federal bank Put Option: It is suggested that the Federal Bank put option is In-the-money where its exercise price 90 is more than spot price 79.50 and value of call option value 0.26 and put value 10.60. Delta value 0.086 where it is deep out-the-money for call showing the market is increasing and for put value is Deep in-the-money value of -0.914 and showing underlying is developing. Theta value -0.019 and -0.003 because the time to expiry is near. Gamma for both call and put is 0.023 because of one-day maturity. Vega is positive 0.035 when volatility increases. For Rho, both call and put value 0.005 and -0.066 changes very small friction based on 1 unit change in interest rate.
- Hexaware Tech. Ltd Call Option: It is considered that the Hexaware Call option in-the-money where its exercise price 500 is more than spot price 520.40 and its call option value 31.04 and put value 8.06. Delta 0.718 deep-in-the-money for call showing the market is increasing and for put value -0.282 and showing deep out-the-money underlying is increasing. Theta value -0.317 and -0.229 because the time to expiry is near. Gamma for both call and put is 0.0077 because of one-day maturity. Vega is positive 0.496 when volatility increases. For Rho, both call and put value 0.272 and -0.123 changes very small friction based on 1 unit change in interest rate.
- TV Broadcast Put Option: It is noted that TV18 Broadcast Put option is out-the-money where its exercise price 60 is more than its spot price 65.2 and its value of call option value 5.91 and put value 0.40. Delta 0.861 deep-in-the-money for call showing the market is increasing and for put value -0.139 and showing deep out-the-money underlying is rising. Theta value -0.030 and -0.019 because the time to expiry is near. Gamma for both call and put is 0.040 because of one-day maturity. Vega is positive 0.041 when volatility increases. For Rho, both call and put value 0.040, and -0.008 changes very small

friction based on 1 unit change in interest rate.

- India Cement Call Option: It is observed that India Cement Ltd call option is at-the-money where its application price 110 is more than its spot price 110 and its value of call option value 3.99 and put value 3.42. Delta 0.541
- at-the-money for call showing the market is increasing, and for put value at-the-money -0.459 and showing underlying is constant. Theta value -0.074 and -0.054 because the time to expiry is near. Gamma for both call and put is 0.043 because of one-day maturity. Vega is positive 0.123 when volatility increases. For Rho, both call and put value 0.0 and -0.043 changes very small friction based on 1 unit change in interest rate.

Hence hypothesis H2: Hedging Greeks can be treated as a risk management tool is accepted

Suggestions

1. The investor should wait for a time to increase in underlying value to make Escorts.
2. Strike price should increase in Federal bank
3. The investor is advised to purchase a call option in Hexaware and India Cement Ltd.
4. The investor can lose out-the-money in TV18 Broadcast Option should wait for a time to decrease in underlying value to make TV 18 Broadcast Put Option
5. An investor has to give for the expiration of the underlying stock.
6. By calculating sensitive, one can evaluate the price of option exactly by using the Black-Scholes model before making any option trading decisions.
7. Financial tools like Greeks should be used by investors to manage their portfolio risk and derive expected returns on their investments.
8. Options will have multiple strategies to calculate risk management, which will give investors flexible to trade, whereas in forwards, it has minimum policies.

Limitations of the Study

1. The data collected for the study is for a month.
2. The study doesn't cover all the Greek letters.
3. Volatility is annualized
4. The Black-Scholes model is variant knows as ARCH was formed to deal with the limitations in ARCH and GARCH models.
5. ARCH & GARCH are more complicated models of volatility; therefore, in everyday practice; however, the classic Black-Scholes model remains dominant with options traders.
6. ARCH & GARCH models are not helpful to calculate the Greeks in Options; hence in practice, Black-Scholes models remain dominant with Options investors.

Summary and Conclusion

The derivatives market is still in a development stage, offering tremendous growth potential. The growth and development of a vibrant derivatives market in India would critically depend on the extension in the underlying spot and forward markets along with the evolution of a supporting regulatory structure. Factors like investor response, market liquidity, administrative structure, and taxation laws will have a significant impact on the behavior of the market participants.

The introduction of options increases the opportunities for the investors by providing a potential instrument for hedging and taking positions in the market. It provides a way to generate pay-offs that were not possible from other instruments available in the market for hedging. It also provides many beneficial effects on the underlying spot market, according to many empirical studies conducted in the markets. Studies have indicated that the introduction of options reduces the volatility in the spot market. Few authors have confirmed that option can also reduce conditional lightness in the market. Options also result in reducing the bid-ask spread and increase the volumes of trade. Studies have also concluded that the introduction of options also reduces the information asymmetry in the spot market. In a nutshell, one can say that the introduction of options essentially completes the underlying spot market.

However, compared to the size of secondary markets aboard, the derivative market is no doubt smaller and is not yet absolutely free as some amount of regulation is still there is curb the excessive volatility prevailing in the market. The dynamics of

the derivative market is different as it is still mostly driven by supply and demand. Following the facts and figures given in this article, one can conclude that options are nothing but financial landmines rather than a bed of roses if not properly monitored and managed.

In this paper, it is understood that if the option contract is less risky for hedging strategies than forwarding contracts. Our method was to compare the payoff of a simple currency options strategy against the forward contract for the same currency. First of all, it is understood there is no certainty of forecasting the expected gain or loss for the payoff of the hedge portfolio. We conclude that comparing a single call or put option with a separate long or short forward contract, small changes in the foreign currency forwards can do better than options because of the option premium, but if the changes can cover the premium, the premium paid can be considered as insurance. It is true that forwards are risk-free because they are locked in the price and free to enter, but it has been illustrated also that it is possible with the option to make a zero cost hedge portfolio and gain the benefits of using an option contract.

Each company values are different; it operates with demand factors for a particular industry. The options either call or put in European type moves with a non-linear payoff for both parties. This makes investors understand how to price an option strategically and make in-the-money in the options market. The Black-Scholes model gives you a price of the option for forward, based on some parameters (spot price, strike price, interest, volatility, etc.). The Greek letters are used to understand to identify the market price fluctuation or simply it is used to calculate risk sensitivities.

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