A STUDY ON VOLATILITY OF INDIAN STOCK MARKET DURING COVID- 19 WITH REFRENCE TO RISK MITIGATION BY USE OF OPTION STRATEGIES

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Abstract

Evolution of derivatives market in India was initiated with the Enactment of forwards contract Act 1952. Initially, derivatives were utilized to safeguard balanced exchange of rates for goods that are exchanged globally. At Present, derivatives are used on a broad variety of contracts and have multiple usages. Derivatives in India were launched with the objective of to mitigate the risk and make the profits irrespectiveofmarketisbullish,bearish,andsideways.Thesederivativecontractshaveattachedtheirvalue

withunderlying asset.Duetothisoutbreakofcoronavirusstock market witnessedahighvolatilityandfell to 22.77% and making the investors bear losses on their previous investment. There are various strategies under options contract which help to take the advantage of market with fluctuation of prices. This study focusesontheimpactofcoronavirusonstockmarketandhowinvestor'scanmitigateriskbyusingoption strategies.

Keywords

Derivatives, Options, Option Strategies, Covid-19 Impact, Indian Stock Market

Introduction:

Althoughmuchattentionhasbeenpaidtothepossiblehumanand socialcostsofCOVID-19,attentionhas begun to be paid to its potential impacts on financial markets and financial goods. Some of these impacts are more immediate, such as the incapacity due to quarantine measures to fulfil obligations. Those are further discussed below. Others, which may appear quicker, are more indirect, such as the continuing uncertainty in financial markets leading to marginal calls triggering counterparty cash squeeze. For example, since the outbreak, and as a result, there have been some significant movements in the stock markets due to investor fears about the impact of coronavirus on organizations in a variety of domains. There have also been noticeable swings in the commodity and foreign exchange markets. The indirect influence of these market instabilities is mostly observed first in the derivatives markets. (Nortan Rose Fulbright,2020).

Concept of Derivatives?

In the Indian context the Securities Contracts (Regulation) Act, 1956 SC(R) A, defines "derivative" as — "A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contractfordifferencesoranyother formofsecurity"."Acontractwhichderives itsvaluefromtheprices, or index of prices, of underlying securities" "Financial instruments that linked to a specific financial instrument or indicator or commodity and through which specific risks can be traded in financial markets in their own right. The value of a financial derivative derives from the price of an underlying item, such as an asset or index. Unlike debt securities, no principal is advanced to be repaid and no investment income accrues." -The International Monetary Fund (IMF). (Nortan Rose Fulbright, 2020) (Shodhganga,n.d.)

Emergence of Derivatives?

Derivative goods initially appeared as a precaution against volatility. Commodity prices and commodity-linked derivatives remained the primary source of such goods. About three hundred years ago. Financial derivatives came to the fore in the post-1970s. Due to the increasing volatility of the financial markets. These, however, have been since their emergence. Products were common and accounted for around two- thirds of the total Transactions of derivatives. by the 1990s.

In recent years, the demand for financial derivatives has expanded exponentially in terms of available instruments,intermsofcomplexityandin termsofturnover.Intheworld-wideclassofequityderivatives, futures and stock-indices options have become more popular than individual stocks, especially among institutional investors, who are major users of index-linked derivatives. Also, small investors find it useful becauseofthehighcorrelationofcommonindiceswithdifferentportfoliosandeaseofuse.Thelowercost   of   index derivatives vis-à-vis derivative products focused on individual securities is another explanation for their increasing use. (Shodhganga,n.d.)

Types of Derivatives Market in India

One form of classification of derivative instruments is between commodity derivatives and financial derivatives. The fundamental difference between them is the existence of the underlying instrument or possession.Inacommodityderivative,theunderlyinginstrumentisacommoditywhichmayincludewheat,

cotton,pepper,sugar,jute,turmeric,corn,soyabeans,crudeoil,naturalgas,gold,silver,copperandsoon. In the case of a financial derivative, the underlying instrument could betreasury

Bills, stocks, shares, foreign exchange, stock index, inactive securities, index of living costs, etc. It should be noted that financial derivatives are fairly common and that there are no quality issues while the quality of commodity derivatives may be the underlying issue. However, considering the difference between the two,bothfromastructuralandfunctionalpoint   ofview,theyarealmostofasimilartype.The   most   widely   used financial contracts are stocks, futures, options, and swaps. (Shodhganga,n.d.)

Forwards:

A forward contract is a personalized agreement between two parties, where settlement is necessary. In the future position a particular date at the pre-agreed price today.

The principal characteristics of forward contracts are

- Theseare contractualcontractsand arethussubjecttothepossibilityofacounterpartyrisk.
- Every contract is custom crafted and is therefore unique in terms of the size of thecontract,
- Date of expiry and form and condition of theproperties.
- The contract price in the public domain is usually notavailable.
- The contract must be concluded on the expiry date by the delivery of theitem.
- If the party wants to cancel the deal, it must go to the same obligatorily. The counterpart, which is in a situation of monopoly, will demand the price it needs. (Shodhganga,n.d.)

Futures:

A futures contract is an arrangement between two parties to purchase or sell an asset at a given price in the future.Future contractsarespecialtypesofforwardcontractsinthe caseofstandardizingexchange-traded contracts being theformer.

The principal characteristics of futures contracts are:

- Trade in the future is usually structured under the auspices of a business association. Such trade shallbelimitedtoorconductedoutbythemembersoftheassociationin.Accordingtotheprocedure given for in the association 's rules and byelaws.

- The regular variety known as the "Basis Variety" is usually entered. Authorization to supply other specified varieties known as "treatable varieties" (Shodhganga,n.d.)

Options:

Options are of two types –calls and puts. While "Calls" give the buyer the right, but not the obligation, to buyagivenqualityoftheunderlyingassetatagivenpriceonorbeforeagivenfuturedate,"puts"givethe seller the right, but not the obligation, to sell a given quantity of the underlying asset at a given price on or before a given date. (Shodhganga,n.d.)

Swaps:

Swaps are private contracts between two parties for the potential exchange of cash flows according to a pre-arranged formula. They can be looked at as forward contract portfolios.

The two Swaps that are widely used are:

Interest rate swaps: These include simply exchanging the interest-related cash flows in the same currency between the parties.

Currency swaps: This entails exchanging both the principal and the interest between the parties, with the cash flows in one direction being in a currency different from those in the other. (Shodhganga, n.d.)

Impact of Covid-19 on Indian Derivative market.

The worldwide outlook on the financial markets was somber. This is expressed in frequent share-market declines in all parts of the world. India's capital markets are currently experiencing extreme uncertainty as a consequence of global market failures. The fall was in line with the global benchmark indices, as the domestic market typically follows the main global indices, and the high volatility is likely to continue in the near future. In addition, with overseas investors (FPIs) flying to the protection of dollar-backed assets from emerging markets has resulted in a dramatic decline in the Indian Stock market. S&P BSE Sensex which on 20 January 2020 was 42273 points is 29894 points on 08 April and Nifty was 11,500 and 8973 on 8[th]April 2020. There have been extremely unlikely incidents in history that take almost all by surprise and can potentially have a significant effect on the status quo by upsetting human activities and causing chaos. Such occurrences are called black swans. (Ram, 2020)

The decrease in the fall of indexes at that time was because of the global players like QIIs, HNIs, Mutual Fund houses, FDIs and FIIs revoked the massive capital as at that time even such giants were in the mood of sitting on cash and that created a situation of pressure selling which took the market on a swing which resulted in the capital markets tasing the turf. As the situation was controlled and all the activities were againontrackandwerealmostonthevergeofareopenthemarketfaced   infusionofmoneyagainfromthe

giantinvestorswhichtookthefinancialmarketonanupdrive.Evennow   itwouldbeveryfoolishtoexpect   a   quick rebound from the currentoutbreak.

Sofurther wewillstudyabout,howthederivativemarketwentonaswingandspeciallyshowhowtraders in derivative market fooled around with some strategies to make profit even at the time of panic with the help of Nifty50Index.

Research Methodology

NEED FOR THE STUDY- Derivatives assist in reducing the risk and provide investors the betterreturns with a smaller amount of risk. Therefore, To understand the profit potential for investor in this back-swan event using optionstrategies.

SCOPEOFTHESTUDY-ThisStudyislimitedtooptioncontractswithspecialreferencetouseofoption strategiesunderdifferentmarketconditions.Pricesofnifty50hasbeentakenforperiodofMarch-May'20   to   analyse optionstrategies.

OBJECTIVES OF THE STUDY-

- To analyse the option strategies in different marketconditions
- Tounderstandthestockmarketconditionandprofitpotentialfor investor duringthe3month(Mar- May) Covid-19period
- To understand the impact of coronavirus on Indian stockmarket
- To understand the notion of derivativecontracts

DATA COLLECTION METHOD- This research is based on secondary data which is collected from various books, journals, newspapers and reports. The analysis is done based on data taken from NSE website.

Data Analysis and Interpretation

Table 1: Nifty 50 closing prices for month of March'20

Date	Close Price
02-Mar-20	11132.75
03-Mar-20	11303.3
04-Mar-20	11251
05-Mar-20	11269
06-Mar-20	10989.45
09-Mar-20	10451.45
11-Mar-20	10458.4
12-Mar-20	9590.15
13-Mar-20	9955.2
16-Mar-20	9197.4
17-Mar-20	8967.05
18-Mar-20	8468.8
19-Mar-20	8263.45
20-Mar-20	8745.45
23-Mar-20	7610.25
24-Mar-20	7801.05
25-Mar-20	8317.85
26-Mar-20	8641.45
27-Mar-20	8660.25
30-Mar-20	8281.1
31-Mar-20	8597.75

(National Stock Exchange, 2020)

Interpretation:

- The above table show the closing price of Nifty 50 from the date 02[nd]March'20 to 31[st]April'20

- During this period market was highly volatile due spread of coronavirus which led to halt on economic activity. Nifty 50 prices fell from 11132.75 to8597.75

- Index moved in a downward direction with losing total22.77%

Strategies Applicable During This Period-

(Assumingstrategiesinitiatedbyinvestoron2ndMarch'20andexpiryofcontractison26March'20)

Long Straddle- It is option strategy which is used when investor believe that underlying security will face high volatility. Investor get the chance of unlimited profit and limitedrisk.
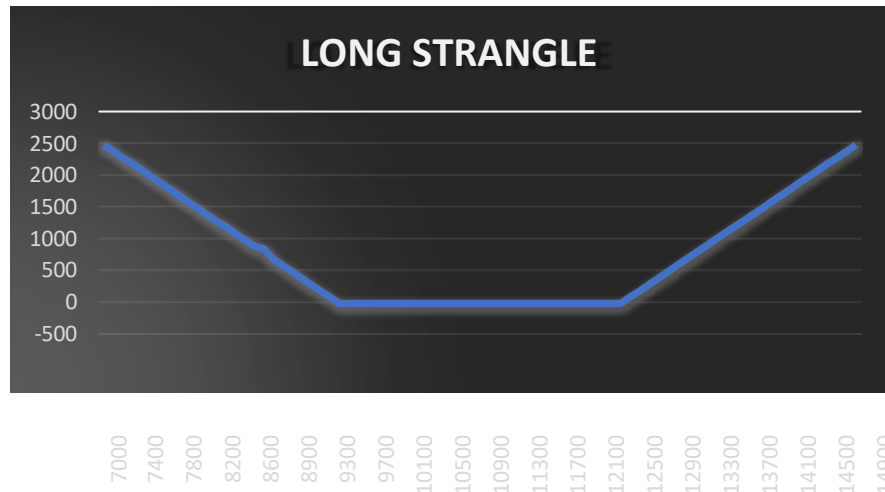
Graph 1:
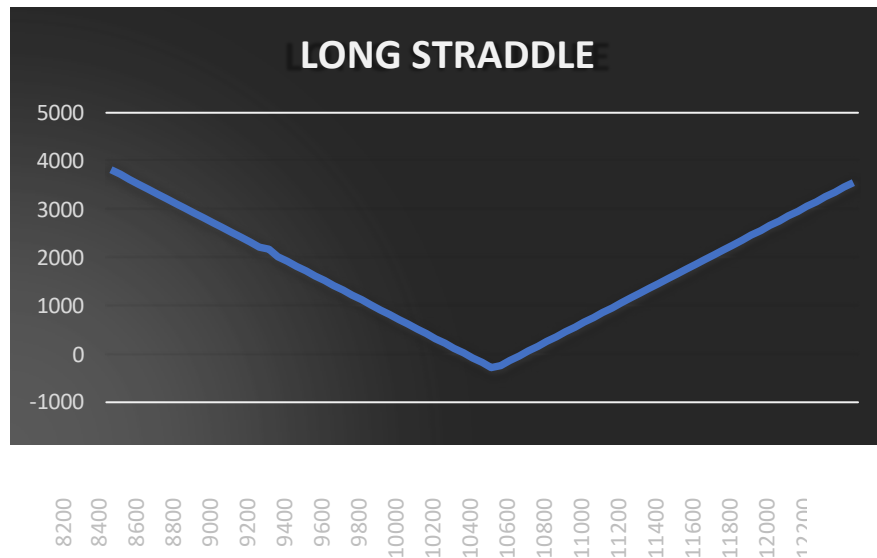
Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice
- Investor has taken two positions by buying ATM put at 11100 and buying ATM call at 11100, paying total premium of310.55
- **In this strategy**, Max Profit= Unlimited, total profit made by investor at expiry is2178
- Max loss= Limited, i.e. Net premium paid(310.55)
- Upper side Breakeven Point = Long Call Strike Price + Net Premium i.e.11440.55
- Lower side Breakeven Point = Long Put Strike Price - Net Premium i.e.10819.45

Long Strangle- It is option strategy which is used when investor believe that underlying security will face high volatility. It facilitates unlimited profit and limited risk and require less premium than long straddle **Graph 2:**Net Payoff for long strangle
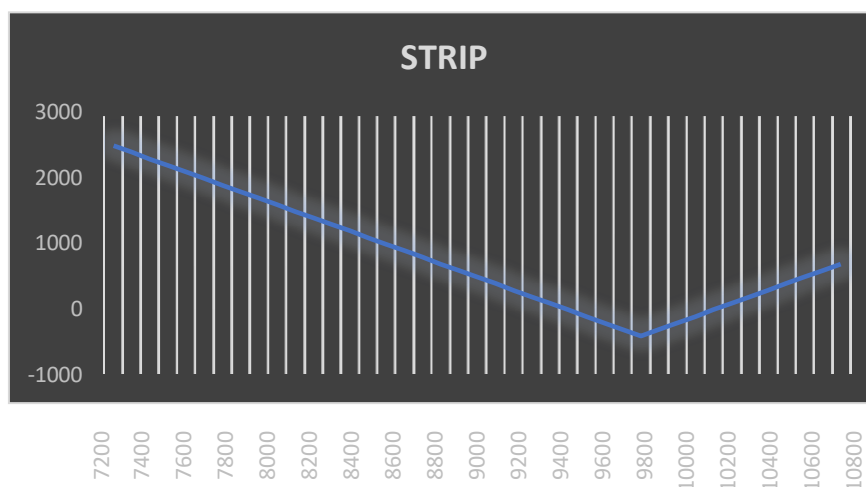
Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice
- Taking two positions by buying OTM put at 9500 and buying OTM call at 12500, paying total premium of24.75
- **In this strategy**, Max Profit= Unlimited, i.e. total profit at expiry is833.8
- Max loss= Limited, i.e. Net premium paid(24.75)
- Upper side Breakeven Point = Long Call Strike Price + Net Premiumi.e.12524.75
- Lower side Breakeven Point = Long Put Strike Price - Net Premium i.e.9475.25

Strip- It is option strategy which is used when investor believe that underlying security will face high volatility and price is more likely to fall than go up. It facilitates unlimited profit and limited risk

Graph 3: Net Payoff of Strip

Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice

- Taking two positions by buying ATM call with x quantity at 11100 and buying ATM putat 11100 with 2x quantity, total premium paid is 423.75

- **In this strategy**, Max Profit= Unlimited, total profit made by investor on expiry is2034.8

- Max loss= Limited, i.e. net premium paid(423.75)

- Upper side Breakeven Point = put or call strike Price + Net Premium i.e.11523.75

- Lower side Breakeven Point = put or call strike Price - Net Premium i.e.10676.25

Table 2: Nifty 50 closing prices for month of April'20

| DATE	CLOSING PRICE
01-Apr-20	8253.8
03-Apr-20	8083.8
07-Apr-20	8792.2
08-Apr-20	8748.75
09-Apr-20	9111.9
13-Apr-20	8993.85
15-Apr-20	8925.3
16-Apr-20	8992.8
17-Apr-20	9266.75
20-Apr-20	9261.85
21-Apr-20	8981.45
22-Apr-20	9187.3
23-Apr-20	9313.9
24-Apr-20	9154.4
27-Apr-20	9282.3
28-Apr-20	9380.9
29-Apr-20	9553.35
30-Apr-20	9859.9

(National Stock Exchange, 2020)

Interpretation:

- The above table show the closing price of Nifty 50 from the date 01stApril'20 to 30thApril'20
- Nifty 50 prices has move upward from 8253.8 to9859.9
- Index witnessed high volatility during thisperiod
- Index moved in a upward direction with gaining total19.45%

Strategies Applicable During This Period-

(Assuming that investor will initiate the strategy on 1stapril'20 and expiry is on 30thApril'20)

Strap-It is option strategy which is used when investor believe that underlying security will face high volatility and price is more likely to fall than go up. It facilitates unlimited profit and limited risk
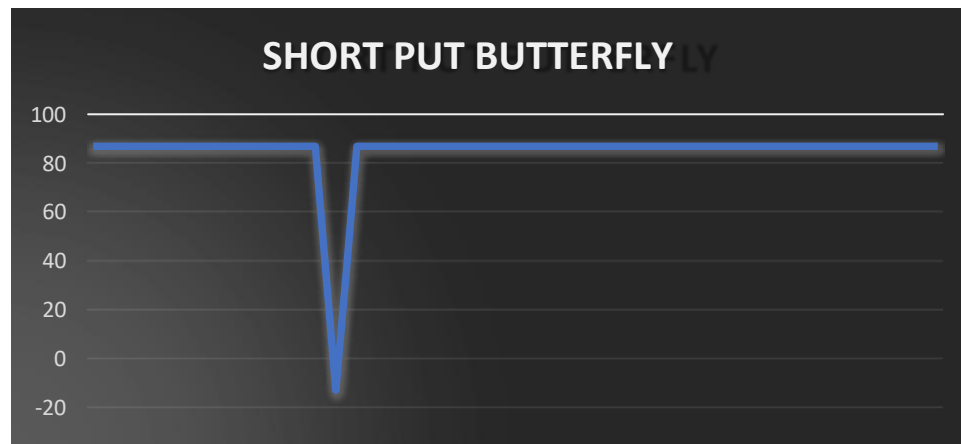
Graph 4: Net payoff of Strap
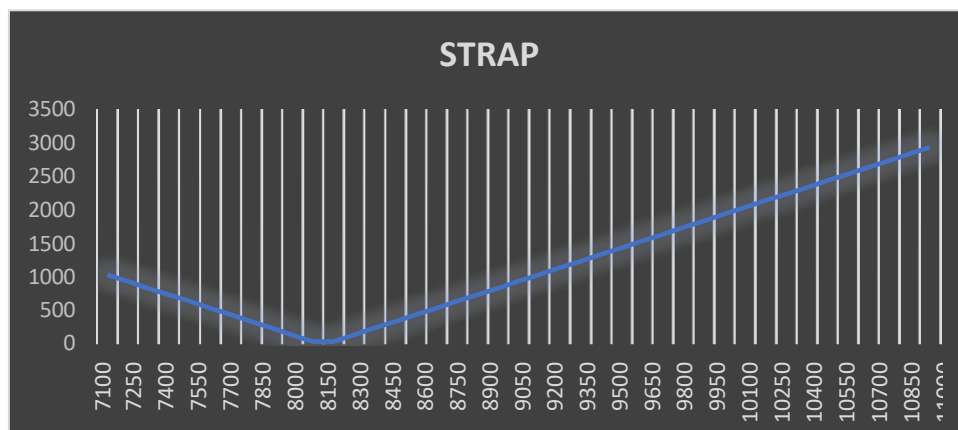
Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice
- Taking two positions by buying ATM call with 2x quantity at 8250 and buying ATM putat 8250, total premium paid is21.4
- **In this strategy**, Max Profit= Unlimited, profit atexpiry1,588.5
- Max loss= Limited, i.e. net premium paid(21.4)
- Upper side Breakeven Point = put or call strike Price + Net Premium i.e.8271.4
- Lower side Breakeven Point = put or call strike Price - Net Premium i.e.8228.6

1. **Short put butterfly-**This strategy gives high profit if underlying price is more than higher strike or if less than lower strike at date of expiry. It is used when high volatility isexpected.
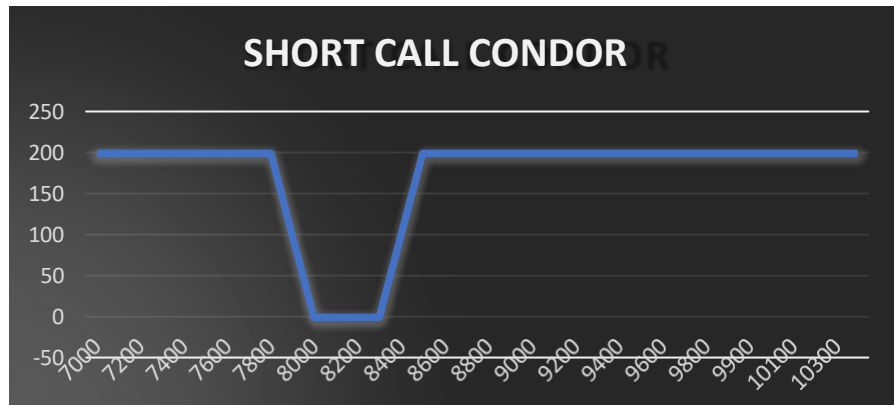
Graph 5-Short put butterfly

Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice
- TakingthreepositionsbysellingITMputat8350,sellingOTMputat82150witheachatx quantity and buy ATM put at 8250 with 2x quantity. Total premium received86.85
- **In this strategy**, Max Profit= limited, profit at expiry86.85
- Max loss= Limited (13.15), i.e. Short Put strike price - long Put strike price - netpremium
- Upper side breakeven point = strike price of ITM short put - net premium i.e.8263.15
- Lower side breakeven point = strike price of OTM short put + net premium i.e.8263.85

2. **Short call condor**- This strategy gives high profit if the underlying price is more than highest strike or if less than lowest strike on date of expiry. It is used when high volatility isexpected.

Graph 6:

Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice

- Taking four positions by selling ITM call lower strike at 7800, sell OTM call higher strike at8750,buyITMcallat8000strikeandOTMcall8300strikeprices.Netpremiumreceived 198.8

- **In this strategy**, Max Profit= net premium receives, profit at expiry198.8

- Max loss= Limited (-1.2), i.e. lower strike of long call - lower strike of short call - net premiumreceives

- Upper side breakeven Point = higher strike of long call - net premium i.e.8301.2

- Lower side breakeven Point = lower strike of long call + net premium i.e.8498.8

Table 3: Nifty 50 closing prices for month of May'20

DATE	CLOSING PRICE
04-May-20	9293.5
05-May-20	9205.6
06-May-20	9270.9
07-May-20	9199.05
08-May-20	9251.5
11-May-20	9239.2
12-May-20	9196.55

13-May-20	9383.55
14-May-20	9142.75
15-May-20	9136.85
18-May-20	8823.25
19-May-20	8879.1
20-May-20	9066.55
21-May-20	9106.25
22-May-20	9039.25
26-May-20	9029.05
27-May-20	9314.95
28-May-20	9490.1
29-May-20	9580.3

(National Stock Exchange, 2020)
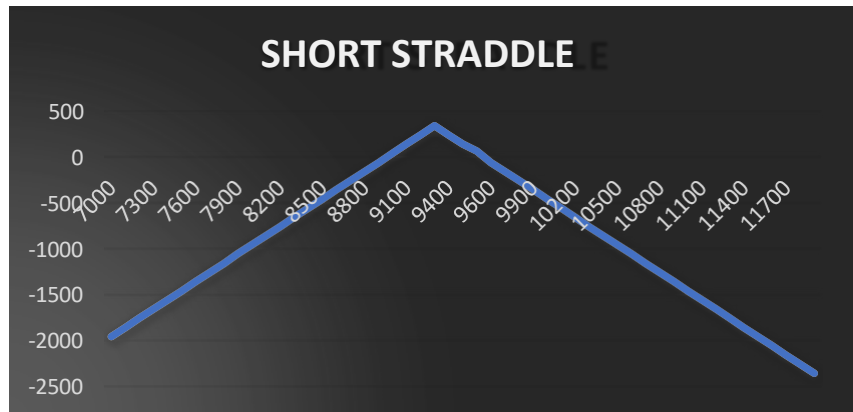
Interpretation:

- The above table show the closing price of Nifty 50 from the date 04thMay'20 to 29thMay'20
- OnMay12HonourablePrimeMinisterNarendraModicameupwith20lakhcrorepackagetomake India a truly Self-reliantCountry
- During this period market was less volatile, it ranged between8800-9600
- Index remained in a rangebound with gaining total3.08%

Strategies Applicable During This Period-

(Assuming that investor will initiate the strategy on 4thMay'20 and expiry is on 28thMay'20)

Short straddle-It is option strategy which is used when investor believe that underlying security will face less volatility and spot price will be in a range.
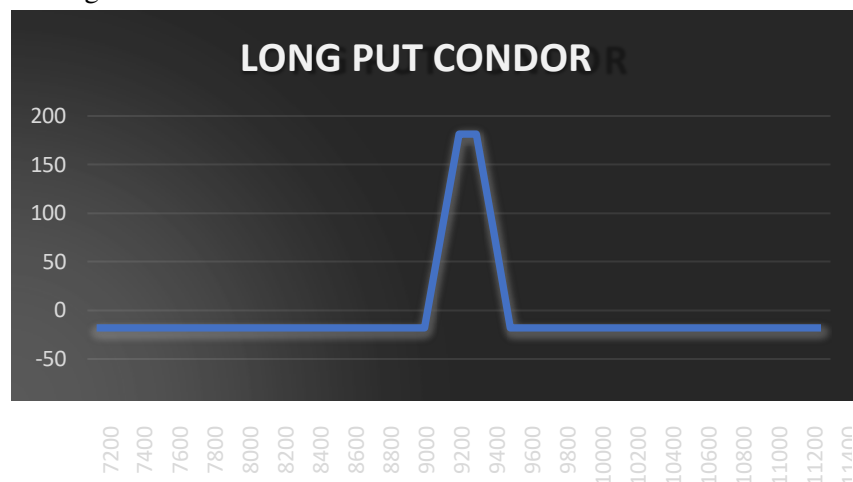
Graph 7:

Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice

- Takingtwopositionsbysellingl ATMputat9300andsellingATMcallat9300,payingtotal premium of349.4

- **In this strategy**, Max Profit=limited i.e. paid net premium (349.4), profit at expiry69.1

- Max loss= Unlimited, underlying price - short call strike price - net premiumreceives

- Upper side breakeven Point = short call strike price + net premium receives i.e.9649.4

- Lower side Breakeven Point = short put strike price - paid net premium i.e.8950.6

Long Put Condor- This strategy is less risky, and non-directional strategy which is designed to make limited gain, in a range-bound market.
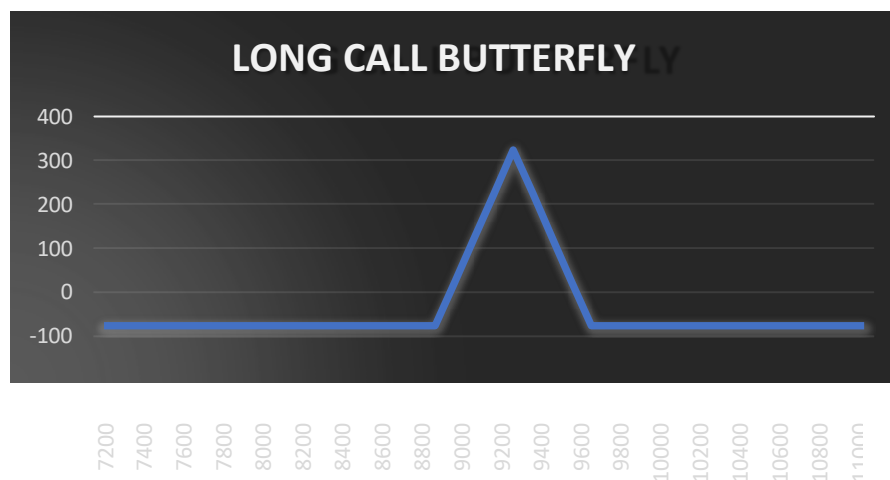
Graph 8: Net Payoff of Long Put Condor

Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice

- Taking four positions by buying OTM put at 9600, selling OTM put at 9400, buying ITM put at 9100 and selling ATM put at 9300 paying total premium of18.65

- **In this strategy**, Max Profit= Limited (181.35), i.e. High strike long put – high strike short put – paid net premium. Profit at expiry1.05

- Max loss= Limited (18.65), i.e. paid netpremium

- Upper side Breakeven Point (9118.65) = high strike long put - paidpremium

- Lower Breakeven Point (9581.35) = low strike long put + paidpremium

Long Call Butterfly- This strategy is used in a range-bound market with limited loss as well as gain.

Graph 9: Net Payoff of Long Call Butterfly

Interpretation:

- This graph shows the spot prices on x-axis and net payoff on y-axis which will be achieved at different level of spotprice

- Taking three positions by selling ATM call at 9300, taking 2x quantity of long position, buying OTM call at 9700, taking x quantity and buying ITM call at 8900 with x quantity, net premium paid 76.15. (say,x=1)

- **In this strategy**, Max Profit= limited (323.85), i.e. short call strike price - long call lower strike – paid net premium. Profit at expiry43.55

- Max loss= Limited (76.15), i.e. paid netpremium

- Upper side breakeven point (9263.85) = long call high strike - paid netpremium

- Lower side breakeven point (8976.15) = long call lower strike + paid netpremium

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