



Analytical Study of Short Straddle and Short Strangle

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ABSTRACT: -

The usage of options techniques in the financial markets is thoroughly reviewed in this research study. We investigate how short straddle can be a better wager than short strangle by looking at historical data and performing some calculations. The report also examines the benefits and drawbacks of utilising options as a financial instrument. Overall, for investors, scholars, and practitioners interested in options, this study offers insights into the numerous facets of straddle trading and serves as an invaluable resource.

Keywords: - Straddle, Strangle, options, call, put, NSE

Introduction: -

Options: There are mainly 2 types of option

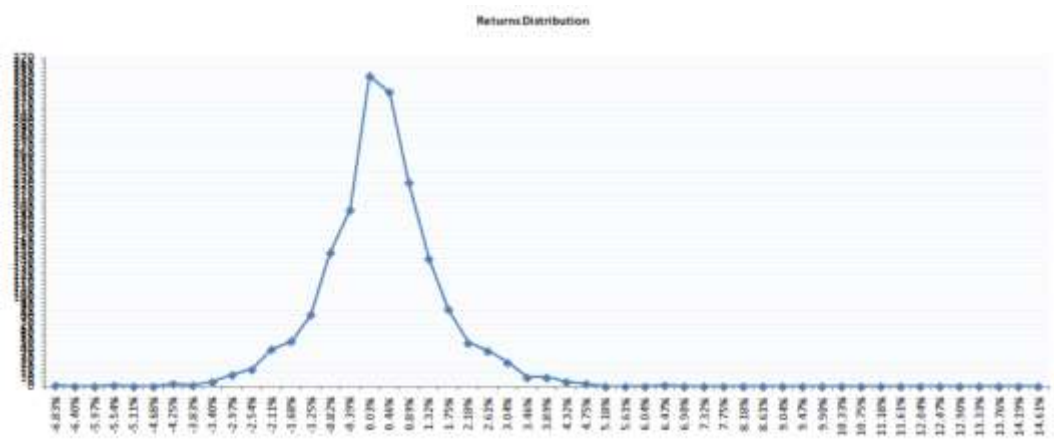
Call Option (CE) – The holder of a call option has the right, but not the responsibility, to purchase the underlying asset at the fixed price (referred to as the strike price) within a given time frame. A stock, commodity, money, or other financial instrument could be the underlying asset. A call option buyer anticipates that the price of the underlying asset will rise, enabling them to acquire it for less than market value and benefit on the price discrepancy. If the buyer decides to exercise the option, the seller is compelled to sell the underlying asset at the predetermined price.

Put Option (PE) – The holder of a put option has the right, but not the responsibility, to sell the underlying asset for a predefined price (known as the strike price) within a given time frame. The underlying asset can be a stock, commodity, currency, or other financial instrument, just like call options. A put option buyer anticipates a decline in the value of the underlying asset, which will enable them to sell it for more than the market value and make money on the difference. If the buyer elects to exercise the option, the seller is compelled to acquire the underlying asset for the fixed price.

The premium that the buyer of an option pays to the seller in both situations represents the buyer's maximum loss and the seller's maximum profit from the exchange. In contrast to the seller, whose profit is restricted by the premium received and whose loss is unbounded, the buyer's risk is defined by the premium paid but the profit is theoretically boundless.

	Return	Risk
Long	<i>Unlimited</i>	<i>Premium Paid</i>
Short	<i>Premium Received</i>	<i>Unlimited</i>

Market data shows that trends only occur 30% of the time, with the other 70% of the time being range-bound. Because a protracted period of range-bound market action results in a higher rate of premium decay, this is advantageous for option sellers.



As you can see in the image above, the market moves laterally for the majority of the day and is range-bound, moving between -0.05% and 0.05%. The market may also open with a gap up or down. We use non-directional trading tactics including straddle, strangle, butterfly spreads, and calendar spreads for these types of markets.

Literature Review: -

Since Frank Knight realised there was a distinction between risk and uncertainty, financial economists have been working to understand, record, and quantify risk (Knight, 1921). While the latter cannot be quantified, the former could. Although expected or forward-looking risk cannot be immediately observed, there are many techniques to quantify it. The most popular risk estimators include more forward-looking implied volatility from option pricing as well as backward-looking metrics like historical volatility and other GARCH models, such as Exponentially Weighted Moving Averages (EWMA). The best risk metric continues to be a topic of discussion today.

Poon and Granger (2003) conducted a thorough review by compiling 93 publications that had been published and looked at various volatility models. They conclude from their analysis that the Black-Scholes-Merton model's implied volatility, which they calculated from option prices (Black & Scholes, 1973; Merton, 1973), was superior to historical volatility and a number of GARCH models.

Looking into S&P100® options, Canina and Figlewski (1996) discovered that implied volatility was "a poor prediction of later realised volatility. Implied volatility had almost little association with future volatility overall and across subsamples divided by maturity and strike price, and it did not take into account the information in recent observed volatility. Options markets offer a potentially reliable framework for quantifying risk based on market participants' expectations. Risk managers and strategists have relied on options prices to account for the immeasurable metric of projected volatility for many years. The first volatility index, known as the VIX, was created by the Chicago Board Options Exchange (CBOE) in 1993 using option prices for the S&P 500. (VIX White Paper 2019). The VIX gained widespread attention during the 2008 credit crisis and is now known as the "investor fear gauge" (VIX White Paper, 2019; Whaley, 2009).

Several academic articles have used the VIX to predict future risk and evaluate how it may affect certain companies, other indexes, and different assets other than the traditional S&P 500 benchmark. It has been well established in the literature that implied volatility and stock returns, as well as the VIX and S&P 500 returns, are mainly inversely correlated (Brenner and Galai, 1989; Anderson T. G. et al., 2001; Coval and Shumway, 2001; Granger and Poon, 2003; Giot, 2005; Whaley, 2009; Fu, Sandri & Shackleton, 2016).

While volatility predictions are a crucial component of risk management for any financial institution today, understanding the relationship between implied volatility and future stock returns has received much less attention. Also, there isn't a lot of research on the effectiveness of specific option trading tactics, specifically naked option short selling (Coval and Shumway, 2001; Bollen and Whaley, 2004; Chaput and Ederington, 2005). As "zero beta at-the-money long straddle bets" result in substantial losses, Coval and Shumway (2001) argue that there must be another component factored into option returns. So, shorting the identical tactics ought to result in gains.

Short-term S&P 500 put options are "grossly overpriced," according to Bondarenko (2014). Bollen and Whaley (2004) agree that there can be instances where the implied volatility exceeds the real volatility of the underlying asset, but they come to the conclusion that there is a "volatility markup" that covers the operating expenses of market makers. Additionally, they discover that S&P500® option prices are significantly higher than what the Black-Scholes-Merton model with real volatility would predict. They were unable to uncover viable arbitrage opportunities, though, when they took into account the cost of insuring the risk involved with shorting options. Similar to the last example, Fleming (1999) demonstrates how implied volatility for S&P100® options routinely overestimates future stock market volatility while simultaneously showing that any trading gains would vanish once transaction costs are taken into account.

Objective of the study

In order to determine the best technique for consistently generating profits when trading on the Nifty index of the Indian stock market, the study compares the performance of two strangle tactics at various legs.

Analysis -

Short Straddle: -

Using the same strike price and expiration date, the trader sells both a call option and a put option as part of the short straddle options trading strategy. The trader is exposed to potentially limitless danger with this method, but it also earns a premium from the sale of the options. In order for both options to expire out of the money and for the trader to be able to keep the premium from selling the options, the price of the underlying asset must remain reasonably steady when selling a short straddle. However, because the trader is required to purchase or sell the asset at the strike price, they might sustain huge losses if the price of the underlying asset changes significantly in either way. A short straddle's maximum gain is constrained to the premium obtained from the sale of the options, while its potential loss is theoretically limitless. The short straddle is therefore a high-risk, high-reward trading technique that is normally only employed by seasoned traders with a high risk tolerance.

Strategy: - Short Straddle

Risk: - Unlimited

Profit: - Premium Received

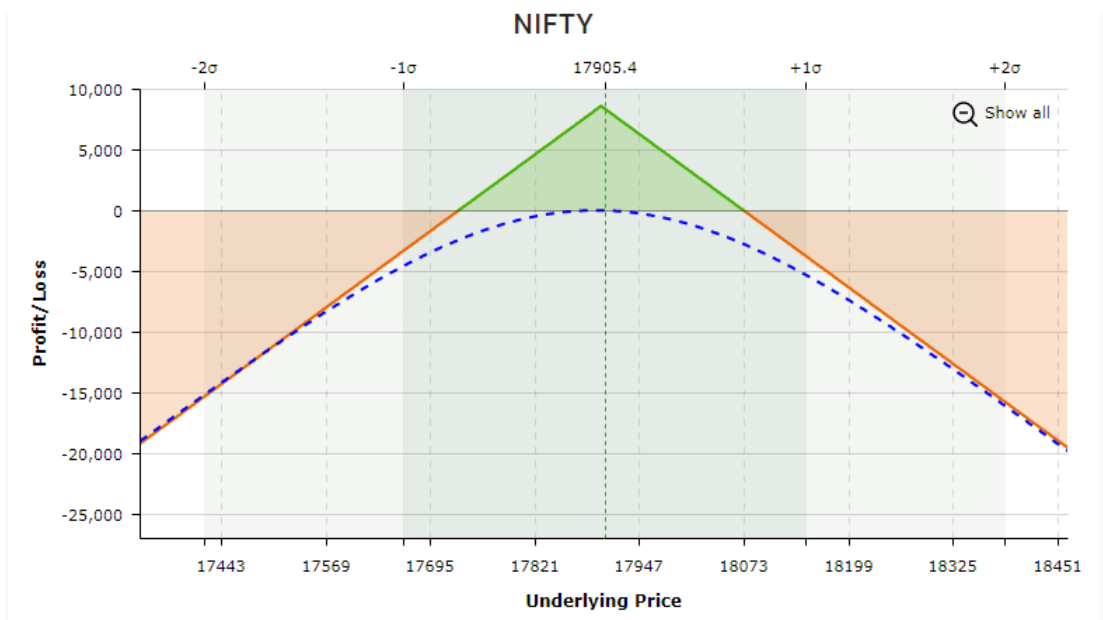
Type: - Non Directional Strategy (Hedged)

Breakeven: -

- Upside = ATM + Net Premium
- Downside = ATM – Net Premium

Margin require: - It totally depend upon the broker you choose, but still you can make this under 2.5L

Payoff Chart: -



Construction: -

- Sell at the money Call and Put Option of same strike price and same expiry date.
- Ideal situation is when both Call and Put option trading at near to same price.

Ideal time: - When your anticipation is the market will not give any large move and remain in range bound or sideways.

Example: -

- Let suppose Nifty is at neat to 18,000, so our ATM strike is 18,000

- We have to short both 18,000 CE and PE options
- Let suppose they both are trading around 100 each.
- So total premium collected by this strategy is 200 (Max Profit).
- Breakeven are = $(18000 + 100 = 18100)$ & $(18000 - 100 = 17900)$
- But the loss has no limits, if market can move either side seller has credit of only 100 points on each side after that loss begins.

	Call	Put
Long / Short	Short	Short
Strike	18000	18000
Premium	100	100
Spot	18000	

How it is better than short strangle: -

- 1) In short straddle we get higher premium as compare to short strangle.
- 2) Due to higher premium it is easier to do any adjustment in the trade while due to low premium in straddle it is hard to do any adjustments.
- 3) Main motive of deployment of these both strategies to earn time value, ATM Strike has highest time value that's why straddle is a better bet than strangle.
- 4) In sideways and choppy market straddle gives better return than strangle.
- 5) Straddle has wider breakeven range than strangle.
- 6) The total Delta in short straddle is near to Zero.
- 7) Volatility is way higher than straddle while deploying this strategy which results in high Mark to Market swings, by holding this position decrease the volatility.
- 8) We can deploy this strategy before any major event like budget days, Result Days, Financial meetings where premium is too high due to volatility and after the event volatility cools down result in decrease in premium.

Drawbacks of short straddle: -

- It exposes the trader or investor to unlimited loss.
- Max profit is only the premium collected (Profit is limited).
- High margin requirement which limits the investor ability to engage with other trades
- Carry high overnight risk.
- It is very sensitive, if the volatility increase it results in large price swings which results in huge losses and it also affect the psychology of trader.
- High M2M swings at the deployment of strategy.
- It can't work on trending days.

Conclusion: -

In conclusion, traders and investors trying to manage risk and maybe boost returns may find options methods to be effective tools. There are numerous alternative tactics accessible, each with certain advantages and disadvantages. The finest trading tactics for non-directional traders are the straddle and the strangle. Any person can reduce their losses in accordance with their risk tolerance by employing good risk management and stop losses. Understanding the risks involved with options trading, including the possibility for substantial losses if not employed properly, is crucial for traders and investors. Hence, before using any options techniques, it's essential to have a firm grasp of options pricing, volatility, and other vital elements. The ideal options strategy will ultimately depend on the objectives, risk appetite, and market view of the trader. Traders and investors may be able to enhance their overall performance and reach their financial objectives by carefully analysing market trends and employing the suitable options methods.

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