ISSN 2454-8596
www.vidhyayanaejournal.org
An International Multidisciplinary Research e-Journal

# Research Report on

# Delta Neutral Trading Strategy

**Kalpesh Thakrar**
Sr. Options Strategist
Marwadi Shares and Finance Ltd.
Rajkot.

ISSN 2454-8596
www.vidhyayanaejournal.org
An International Multidisciplinary Research e-Journal

## Abstract:

In Recent time, Options are one of the most used financial derivatives instruments. The concept at the back of these studies is to investigate special alternatives buying and selling techniques with the usage of Greeks of Options. The study consists of methods to trading in options using Delta neutral strategy.

### 1. Introduction:

An *option* gives right to buy or sell a particular underlying security at a strike price, that right is only for a certain period of time till the expiry day of that particular contract. Mainly there are two types of Options.

#### 1.1 Call Option:

Call option gives its buyer the right to buy underlying security at the certain price. Buying of option gives unlimited profit and limited loss whereas selling of option gives limited profit as much as premium received and unlimited loss so if underlying goes up than call option buyer gets positive return and the profit is unlimited but if underlying decline than the risk of buyer of call option is limited to premium pay.

#### 1.2 Put Option:

Put option gives its buyer the right to sell underlying security at the strike price. If underlying decline than put option buyer gets positive return and the profit is unlimited but if underlying goes up than the risk of buyer of put option is limited to premium pay.

### 2.1 The Greeks:

"Greeks" is a term used in the options market to describe the different aspects of risk involved in options trading. Traders use special Greek values, such as delta, theta, Vega and gamma to assess options risk and manage option portfolios.

#### 2.1.1 Delta:

Delta defined the option's price change with respect to change in the underlying asset's price. In other words, we can say that delta indicate the price sensitivity of the option relative to the underlying. Delta of a call option has a range between 0 to 1 and the delta of a put option has a range between 0

to - 1.

**2.1.2 Theta:**

Theta indicates the depreciation of premium of option with respect to time decay. Theta indicates the premium amount of an option's price would decrease per day.

**2.1.3 Vega:**

Vega indicates the premium of option with respect to change in 1% in underlying securities implied volatility. This is the price sensitivity of the option to volatility.

**2.1.4 Gamma:**

Gamma is the measure to calculate the rate of change in an option's delta. Gamma indicates the change in delta value when the underlying security moves in either direction positive or negative.

3. **Delta Neutral Trading:**

When most people think about the neutral trading strategy they think about the delta neutral strategy once because in recent times this is the most used strategy to manage portfolio with minimum risk and potential maximum return compare to other options trading strategy. If we calculate the deltas of all the options in a position and add them all together, we can get total position delta, which indicate us how much profit or loss we get if the underlying instrument moves one point. If our position of delta is near to zero, then we have a delta neutral position that won't affect much if the underlying stock moves one point. Such a position is considered to be a delta neutral position because it is neutral with respect to delta. The neutral position has always held attraction to investors. In a delta neutral position, the other Greeks that affect the profitability of a portfolio are not perfectly neutral.

*For Example*:

Suppose a trader has a bull spread in place and creates position in one underlying security.

**Stock Price: 100**

1) 10 Lots Long Nov 100 calls
2) 10 Lots Short Nov 110 calls.

ISSN 2454-8596
www.vidhyayanaejournal.org
VIDHYAYANA
An International Multidisciplinary Research e-Journal

He can calculate his portfolio delta by using the individual deltas of the options. The portfolio deltas are:

| Option | Position | Price | Delta |
|---|---|---|---|
| Nov 100 call | Long 10 | 5 | 0.50 |
| Nov 110 call | Short 10 | 2 | 0.30 |

If the stock price moves up 1 Rs, each of his long calls premium price will increase and short calls premium will decrease as per its delta value.

So in position he has 10 long calls of strike price of 100 with 0.50 delta value so his premium of call option will increase by 0.50 Rs. And since he has 10 lots he will get profit of Rs. 500 (10 lots * 0.50 * 100 lot size) in his long call position.

In other options position he has 10 short calls of strike price of 110 with 0.30 delta value so his premium of call option will increase by 0.30 Rs and since he has 10 lots he will make loss of Rs. 300 (10 lots * 0.30 * 100 lot size) in his short call position.

So the net profit – loss per Rs. 1 change in underling results in Rs 200 change in his position. If underling goes up by Rs. 1 he will get profit of Rs. 200 and if goes down he will loss Rs. 200 in his position.

This is called normal bull spread and is very volatile in nature with respect to Profit and Loss so to avoid the huge change in portfolio MtoM now a day Delta Neutral Strategy is used by most of the Portfolio traders.

In the above same example he will reduce risk by doing his delta value neutral.

Delta of Nov 100 call = 10 lots x 100 lot size x 0.50 delta value = 500 shares

Delta of Nov 110 call = - 10 lots x 100 lot size x 0.30 delta value = - 300 shares

So the net position delta = 500 – 300 = + 200

Thus, for delta neutral his portfolio he has to sell 200 shares of underling at this time but Of course, as the underlying stock moves up or down, the deltas of the options will change as per the underling moves. So we can say that this position is now delta neutral and won't make or lose money if the underlying stock moves

one point.

This position is considered as *delta neutral position* because it is neutral with respect to the delta value of portfolio. In this portfolio the other variables that affect the profitability of a position are not always neutral, but at least delta is neutral. However, if the stock price increase or decrease too much, or if time passes, or even if the implied volatility changes, the delta of each option strike will change in portfolio. Once these deltas values changes, the portfolio will generally no longer be delta neutral. Any such big change in price of underling security would change the huge in value of portfolio delta.

4. **Conclusion:**

However, we cannot avoid the fact that the change in price of underling or a change in implied volatility of options can severely change the neutrality of the position. So the price change in underlying security affect the neutrality of the position and it is necessary to readjust the delta to keep the position neutral.

**References:**

The main references are international journals and proceedings. All references should be to the most pertinent and up-to-date sources.

1) McMillan on Options (Second Edition)
2) John C. Hull, Options, *Futures and Other Derivatives*, Prentice Hall; 6 edition (June 20, 2005)