
THE GREEKS

MANAGING AND PROFITING FROM DELTA, VEGA, THETA, GAMMA RISK

THE 'GREEKS' RISK MANAGEMENT GRID

Line	Max Profit? *	VEGA POSITION	DELTA POSITION	Max Profit? *	PORTFOLIO BIAS**
1	↓	← Long Vega	Short Delta →	↓	BEARISH
2	↑	← Short Vega	Short Delta →	↓	NEUTRAL
3	↓	← Long Vega	Long Delta →	↑	NEUTRAL
4	↑	← Short Vega	Long Delta →	↑	BULLISH

*** TABLE KEY:**

If you are LONG VEGA you will make a larger profit when the market moves DOWN

If you are SHORT VEGA you will make a larger profit when the market moves UP

If you are LONG DELTA you will make a larger profit when the market moves UP

If you are SHORT DELTA you will make a larger profit when the market moves DOWN

**** PORTFOLIO BIAS** This is the direction you want your positions to move in when your Vega and your Delta are combined and have similar or approx valuations.

The following is an explanation of the table above, how to use it to manage the risk (the Greeks) of your portfolio and how to create profits in your trading business above and beyond what you would normally achieve through Theta decay alone, or in addition to Theta decay:

Editorial Note:

For the purposes of this report, 'short' and 'long' refer to position or portfolio biases and 'negative' and 'positive' refers to values of the individual Greeks. Normally in your trading software, if you're 'short' any Greek a minus "-" sign will be in front of it.

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LINE 1: LONG VEGA + SHORT DELTA POSITION

If your overall portfolio is Long Vega AND Short Delta with the approx same values you would make a greater profit when the positions in your portfolio go DOWN in price – this profit is in addition to any Theta decay you may accumulate in your position. For example: If you are long Vega +230 and short Delta -223 you will make approx \$453 (\$230 on your long Vega plus \$223 on your short Delta) in profit if your positions go down by one point and the VIX rises by 1%. If your positions go down you should, on average, make \$223 in profit on just the Delta for the first point in a move down. For a one percentage increase in the VIX you will make \$230 on your long Vega position. Combined, these two – long Vega and short Delta will make approx \$453 (230+223) in profit when your positions decline in price and the VIX rises by 1%. Remember though, the Vega and Delta will change after that first dollar or first 1% VIX move – after that the Gamma will be recalculating the new Delta position. For example: After the first one dollar move your Delta may go from a -223 to a -186, the next point, without any adjustments to your positions, may take your Delta from -186 down to -154 etc... depending on your Gamma value at the time.

NOTES: You may get a one point move down in price and capture \$223 in profits on your short Delta but the VIX may not move at all, or move less than expected, and will generate a small profit or none at all... that does happen. But on average you will be MORE profitable in a Down market move if you're Long Vega and Short Delta.

Also - and this may be obvious - but I will include this anyway: If you are long Vega and Short Delta and the market and your positions start to move UP in price you will lose money at the same rate you would gain profits if the market moved DOWN. Being long Vega and Short Delta is equivalent to trading a Bearish market position such as shorting stocks and buying puts – if the market moves down you generate profits, if it moves up, you will lose money. See the section on **How To Adjust Your Delta and Vega Values** for information on how to add long/short delta's and long/short vega's to your portfolio.

LINE 2: SHORT VEGA + SHORT DELTA POSITION

If your overall portfolio is Short Vega and Short Delta and they have approximate and near equal values (for example: Delta is -300 and Vega is -267 or Delta is -289 and Vega is -342), they will cancel each other out and your overall profit position will not benefit from moves in the price of your positions up or down however you will achieve maximum Theta decay while in this Delta/Vega NEUTRAL position in your Greeks. This is somewhat equivalent to a 'Delta Neutral' position without the additional cost of becoming Delta neutral through an adjustment.

NOTES: If your Delta and Vega values are NOT equal or have approximately equal values then your position will be directionally BIASED to the upside or downside. For example if your Delta value is -700 and your Vega value is -100, you are net -600 Deltas ($-700 - (-100) = -600$) ! Being short 600 Deltas in a market moving up in price, despite your short Vega position, will cause you to lose \$600 for

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every point your positions move higher in price. In addition, if your Vega is -600 and your Delta is a relative neutral -50, you are net about -550 Vega which means that if Vega should increase because the market and your positions are moving down in price you will lose \$550 for every percentage point the VIX moves up.

LINE 3: LONG VEGA + LONG DELTA POSITION

If your overall portfolio is Long Vega and Long Delta and they have approximate and near equal values (for example: Delta is +220 and Vega is +317 or Delta is +258 and Vega is +322), they will neutralize each other and your overall profit position will not benefit from moves in the price of your positions up or down however you will achieve maximum Theta decay while in this Delta/Vega NEUTRAL position in your Greeks. This is somewhat equivalent to a 'Delta Neutral' position without the additional cost of becoming Delta neutral through an adjustment.

NOTES: If your Delta and Vega values are NOT equal or DO NOT have approximately equal values then your position will be directionally BIASED to the upside or downside. For example if your Delta value is +700 and your Vega value is +100, you are net +800 Deltas ($+700 + 100 = +800$) ! Being long 800 Deltas in a market moving down in price, despite your long Vega position, will cause you to lose approx. \$800 for every point your positions move LOWER in price. In addition, if your Vega is +600 and your Delta is a relative neutral +50, you are net about +650 Vega which means that if Vega should DECREASE because the market and your positions are moving up in price you will lose \$650 for every percentage point the VIX moves down.

LINE 4: SHORT VEGA + LONG DELTA POSITION

If your overall portfolio is Short Vega AND Long Delta with approx. the same values you would make a greater profit when the positions in your portfolio go UP in price – this profit is in addition to any Theta decay you may accumulate in your position. For example: If you are short Vega -245 and long Delta +233 you will make approx \$478 (\$245 on your short Vega plus \$233 on your long Delta) in profit if your positions go up by one point and the VIX drops by 1%. If your positions go up you should, on average, make \$233 in profit on just the Delta for the first point in a move up. For a one percentage decrease in the VIX you will make \$245 on your short Vega position. Combined, these two – short Vega and long Delta will make approx \$478 ($233+245$) in profit when your positions INCREASE in price and the VIX goes lower by 1%. Remember though, the Vega and Delta will change after that first dollar or first VIX 1% move – after that the Gamma will be recalculating the new Delta position. For example: After the first one dollar move your Delta may go from a +233 to a +196, the next point up, without any adjustments to your positions, may take your Delta from +196 to +164 etc... depending on your Gamma value at the time.

NOTES: You may get a one point move up in price and capture \$233 in profits on your long Delta but the VIX may not move at all, or move less than expected, and will generate a small profit or none at all... that does happen. But on average you will be MORE profitable in an UP market move if you're

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Short Vega and Long Delta.

Also - and this may be obvious - but I will include this anyway: If you have a negative Vega value and a long Delta value, as mentioned above, and the market and your positions start to move DOWN in price you will lose money at the same rate you would gain profits if the market moved UP. Being short Vega and long Delta is equivalent to trading a Bullish market position such as long stocks and buying long call options – if the market moves up you generate profits, if it moves down, you will lose money. See the section on **How To Adjust Your Delta and Vega Values** for information on how to add long/short delta's and long/short vega's to your portfolio.

Adjusting Your Delta and Vega Values

This is how professionals adjust their portfolios. They can be neutral, bearish or bullish at the touch of a button simply by adjusting the Delta and Vega of their positions.

1) ADJUSTMENTS TO VEGA AND DELTA (INCREASES THETA)

Use this chart when adjusting your portfolio to add or subtract Delta and Vega values while, at the same time, adding positive Theta! You can add positive or negative Vega's or Delta's to your portfolio by looking at the top row and adding the types of trades under the goal. For example, if your goal is to add positive Vega's to your portfolio you can look at the boxes below “+Vega / + Theta” and you'll see the Calendar spread is at the top of the list.

These are not the only ways to add positive or negative Delta or Vega to your portfolio, but they are the ways to add Delta's or Vega's that also adds Theta. Our goal is to increase Theta as much as possible even when adjusting our Delta or Vega values. Finally, some positions create larger Vega and Delta values at the same time, but the predominate value created is the one listed under each goal. “+” means we are adding a positive value of that Greek, “-” means we are adding negative value of that Greek:

To ADD or SUBTRACT Vega's or Delta's to your portfolio follow this chart (ALL are positive Theta):				
Goal:	+ Vega / + Theta	- Vega / + Theta	+ Delta / + Theta	- Delta / + Theta
Add these positions:	Calendar Spread (4)	Sell Iron Condor (5)	Bull Put Spread	Call Diagonal Spread (1a)
	Double Calendar (4)	ATM Calendar	ATM Put Butterfly (2)	ATM Call Butterfly (2)
	4X4 Diagonal Spread (1b)	Sell OTM Put Spread	Put Diagonal Spread (1a)	Bear Call Spread (3)
	Buy Iron Condor	Sell Call or Put	Buy Iron Condor	Sell Iron Condor (5)

ATM=at-the-money ; OTM = out-of-the-money

(1) The amount of negative Delta or positive Vega you can add depends on the width of the strikes you create on the Diagonal. The wider the strikes, the higher the value of negative Delta. (b) A 4X4, 3X3 or even a 2X2 would do the job. A 4X4 Diagonal Spread is a diagonal spread four strikes apart and 4 months separating the front and back months. For

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example you would sell the Jun 141 call and buy the Sep. 145 call.

(2) Call Butterfly: Spread the short ATM Call option and long middle strike option to achieve a higher negative Delta value. Put Butterfly: Spread the short ATM Put option and long middle strike option to achieve a higher positive Delta value.

(3) You can achieve large negative Delta values with this position and slightly negative Vega position rather than positive Vega.

(4) ATM Calendar spreads create the highest positive Vega values with low positive Delta values. OTM Call Calendar Spreads create positive Vega and positive Delta for a neutral position (See Line 3: Long Delta/Long Vega above). OTM Put Calendar Spreads create positive Vega and negative Delta for a bearish position (See Line 1: Short Delta/Long Vega above). Double Calendars (using both calls and puts) just slightly above and below the ATM strike achieve the same goal. In general the farther out the month you are buying the higher the positive Vega value you will achieve. However, use caution with going too far away from the current month. Buying 1-3 months out should return a good ROM as long as there is a positive skew (see Module 4 – Trade Selection-ADSK calendar spread video on negative and positive skews)

(5) If you want less Vega, shorten your strikes, if you want greater Vega widen the strikes. You can also create a Bullish position by having wider strikes on the put side than the call side (creates a long Delta/Short Vega position- see Line #4). A Neutral position can be obtained with wider strikes on the put side than the call side and creates short Delta/short Vega (see Line #2 above).

2) ADJUSTMENTS TO VEGA AND DELTA (DECREASES THETA)

Every once in a while you may want to quickly add or subtract Delta's or Vega's to your portfolio if you expect a large move is coming. In the grid below are positions you can take that will adjust your Greeks to the desired levels but with the loss of Theta. This may be acceptable if you already have a large Theta value to begin with. Adjusting your portfolio with the purchase of calls and puts can be a way to add Vega quickly if you believe a large move is coming. Yes, you'll give up some Theta, but it may be worth the short term cost to capture a big move. How much you dig into your Theta will be determined by how many long calls and long puts or combinations you purchase.

To ADD or SUBTRACT Vega's or Delta's to your portfolio follow this chart (ALL are negative Theta):				
Goal:	+ Vega / - Theta	- Vega / - Theta	+ Delta / - Theta	- Delta / - Theta
Add these positions:	Buy Call or Call Spread	Buy ATM Butterfly	Buy Call	Buy Put
	Buy Put or Put Spread	Buy ATM Condor (1)	Buy Call Spread	Sell Stock
	Buy Straddle/Strangle		Buy Stock	
	Buy ATM Iron Condor (1)			

(1) A 'Condor' is one sided – all calls or all puts in the position. An 'Iron Condor' (IC) is a position the contains both calls and puts. Condors and Iron Condors can be sold or bought to open