

## [Time / Diagonal Spreads](#)

### **Understanding and properly calculating accurate volatility levels**

Understanding and properly calculating accurate volatility levels is imperative for spread traders. In order to get accurate volatility levels, you must first determine a base volatility for the two options involved in the spread.

Getting a base volatility must be done because different volatilities in different months can not, and do not, get weighted evenly mathematically.

Since they are weighted differently, you can not simply take the average of the two months and call that the volatility of the spread; it is more complicated than that.

The problem is related to calculating the spread's volatility with two options in different months. Those different months are usually trading at different implied volatility assumptions. You can not compare apples with oranges nor can you compare two options with different volatility assumptions.

It is important to know how to calculate the actual and accurate volatility of the spread because the current volatility level of the spread is one of the best ways to determine whether the spread is expensive or cheap in relation to the average volatility of the stock.

There are several ways to calculate the average volatility of a stock. There are also ways to determine the average difference between the volatility levels for each given expiration month. Volatility cones and volatility tilts are very useful tools that aid in determining the mean, mode and standard deviations of a stock's implied volatility levels and the relationship between them.

The present volatility level of the spread can then be compared to those average values and a determination can then be made as to the worthiness of the spread. If you now determine that the spread is trading at a high volatility, you can sell it. If it is trading at a low volatility, you can buy it. But first you must know the current trading volatility of the spread.

In order to accurately calculate volatility levels for pricing and evaluating a time spread, the key is to get both months on an equal footing. You need to have a base volatility that you can apply to both months. For instance, say you are looking at the June / August 70 call spread.

June's implied volatility is presently at 40 while August's implied volatility is at 36. You can not calculate the spread's volatility using these two months as they are.



You must either bring June's implied volatility down to 36 or bring August's implied volatility up to 40. You may wonder how you can do this.

Actually, you have the tools right in front of you. Use the June vega to decrease the June option's value to represent 36 volatility or use August's vega to increase the August option's value to represent 40 volatility. Both ways work so it doesn't matter which way you choose.

Let's use some real numbers so that we may work through an example together. Let's say the June 70 calls are trading for \$2.00 and have a .05 vega at 40 volatility. The August 70 calls are trading for \$3.00 and have a .08 vega at 36 volatility. Thus the Aug/June 70 call spread will be worth \$1.00.

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