Greek Lessons: Theta Explained

Theta & the Nature of Time Decay in Options Contracts

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There is a common the phrase, ‘some things in life are all about timing’. In regard to options contracts, timing is an extremely important variable in determining price or value of the contracts.

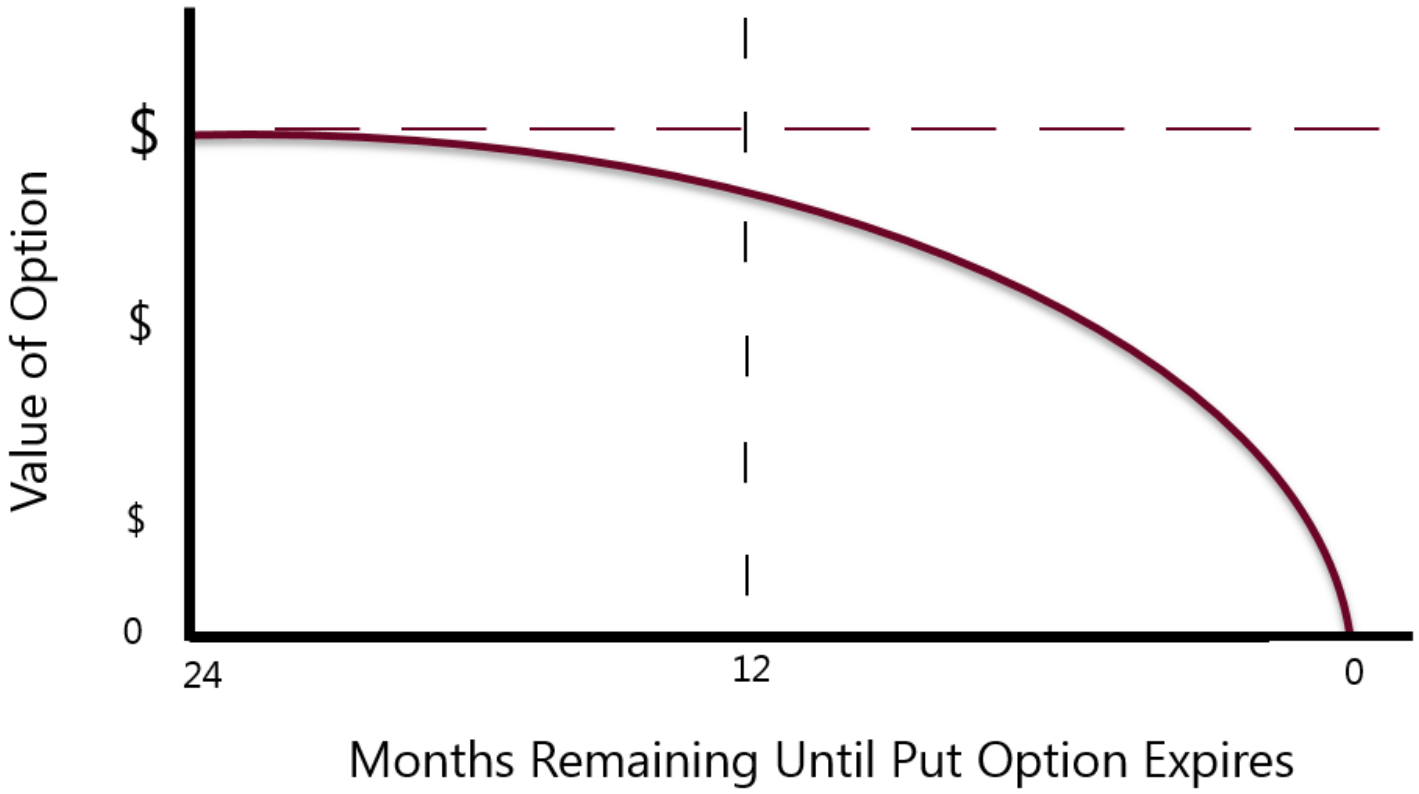
Theta, in options vernacular, refers to the degenerative impact of time on the price of an option contract. An option contract offers the buyer the right, but not the obligation, to buy (call) or sell (put) a security or other financial asset at an agreed-upon price (the strike price) during a certain period of time or on a specific date (exercise date).

How does one value such an instrument? The answer involves the concept of time decay.

Fischer Black, Myron Scholes, and Robert Merton answered this question in the early 1970’s with the famous Black-Scholes option pricing model. Without going into the gory details, the model says several inputs are necessary to value an option, including the current price of the asset, the volatility of the asset’s price, the agreed upon price that the asset can be bought or sold, and the time frame over which the option is valid.

Expiration and Time Decay

That last variable, the time value of the option, is worth exploring in more detail. The closer the expiration date, the lower the time value is of the option. This is known as “time decay” or “theta decay”. An important feature of time decay is that it does not happen in a straight line. Time decay starts off slow and then accelerates as the expiration date draws near. The graph below illustrates the notion of time decay.



Anyone who ever bought a ticket from a scalper to a sporting event should be familiar with this phenomenon. The ticket is like an option; it is an option to attend the event. However, as soon as the game is over the ticket is worthless. If the big game is a month or two away the scalper’s price will fluctuate a bit depending upon the demand for tickets. But if the demand for seats isn’t there, the price of that ticket starts to drop in the days and hours leading up to kick-off. The scalper doesn’t want to be left holding a bunch of unsold tickets (i.e., expired options), so a ticket selling for $200 a month ago might be had for $10 just before the game starts. This is an example of time decay.

A key component of Swan's Defined Risk Strategy (DRS) is to actively manage time decay. Swan purchases long-term two-year put options to help protect its market holdings against downturns. Hence the name, defined risk strategy.

How It Works

During the first year, the market position has protection while the put option is exposed to a small amount of time decay. The DRS then avoids the second half of the above chart by selling off the option in the secondary market about a year before expiration.

Then, the hedge is re-established by purchasing a new two-year LEAP. By engaging in this "rolling hedge" strategy, the DRS is not left holding a bunch of worthless, expired put contracts at the end of the year.

This is a much more efficient, cost-effective way of Protecting a Portfolio Against Systematic Risk and is rather unique to Swan's DRS.

About the Author

Marc Odo, CFA®, CAIA®, CIPM®, CFP®, Client Portfolio Manager, is responsible for helping clients and prospects gain a detailed understanding of Swan's Defined Risk Strategy, including how it fits into an overall investment strategy. Formerly, Marc was the Director of Research at Zephyr Associates for 11 years.

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