

# thinkMoney®/45

Random musings for traders at TD Ameritrade—FALL 2019

# WOL MANAGED GED DON

## HOW TO TRADE A CRASH

PAGE 16

**PLUS**

26/DELTA:  
A LITTLE  
GOES A  
LONG WAY

30/SIZING  
UP A HEDGE



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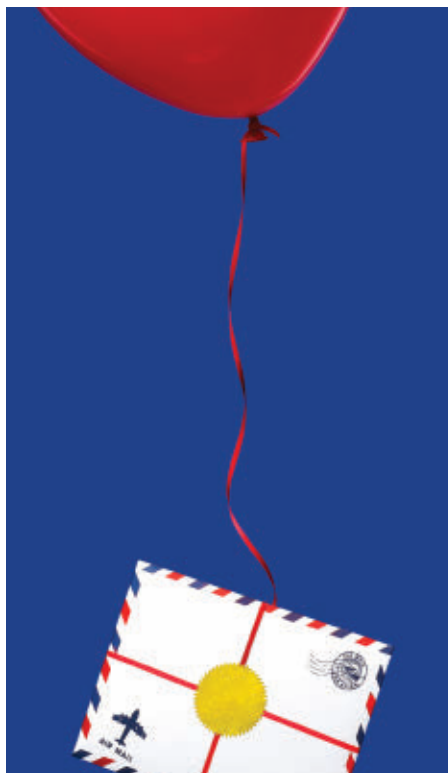
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Cover Photograph by  
**Dan Saelinger**

# 16

COVER STORY

## **Volmageddon: How to Trade a Crash**

When the markets are going down, things can get tough. You can't stay focused, can't make good decisions, and are prone to make errors. But there are a few strategies that could be worth turning to when things go awry.



**“Delta is a theoretical metric based on current market conditions, not a guarantee.”**

Delta: A Little Goes a Long Way  
**Page 26**

# 22

## **It's Your Loss. What Are You Going to Do?**

Even your most thought-out plans may not go as expected. And when that happens, it may be difficult to think logically. One way to prepare yourself: Create a decision tree where you define all possible scenarios to help play your best moves.

# 26

## **Delta: A Little Goes a Long Way**

Option traders know and use delta—it's the most “talked about” greek. The more you know about it, the more you'll be able to see how it responds to changes in price.

# 30

## **How to Hedge Your Basket**

There are endless things you can do with options. Stretch your options knowledge and learn some strategies you may not have thought of, like using index options as a hedging tool.

## Bring it on!

• DO THE OCTOBER JITTERS keep you up at night worrying that the markets might crash at the open? Maybe some breaking news came out that could impact the markets. You have open positions and are cursing yourself for not closing them earlier. Anything could happen overnight—trade deals gone awry, global turmoil, or just plain fear—that could make traders anxious. And given that some of the most notable market crashes have taken place in October, it's not unusual to find traders crouched under a table, rocking back and forth, waiting it out for the month.

But volatility (vol) is part of the game, and as a trader, you have to know how to deal with it. And it can happen at any time. To confront vol, you need a plan, the discipline to exercise that plan, and a superhero attitude to take on anything that comes your way.

Our cover feature, “Volmageddon: How to Trade a Crash” on page 16, talks about strategies you could use as markets are going down. Whether you hold stocks for the long term, are comfortable trading in a volatile environment, or are a baller trader willing to go large, there's likely to be a strategy you could use and incorporate into your trading plan.

But how do you come up with a trading plan so your strategies aren't obsolete? One way to go about it is to create a decision tree. It's like putting game theory into action. In “It's Your Loss. What Are You Going to Do?” on page 22, we walk you through the process of creating the different branches of a decision tree. Traders often have strong reasons to enter a trade, but no matter how strong the reasons, things

can go against you, and you need to know when to make that exit. Using a decision tree can make the process more logical and less emotional.

Even if your portfolio is made up of stocks for the long haul, there may be times when you have to make adjustments. Every position—long or short term—needs to be protected. There's no such thing as “set it and forget it” when it comes to trading. In “How to Hedge Your Basket” on page 30, you'll learn about ways to size up a portfolio hedge using index options and some different strategies to consider for various market scenarios.

So, in case you hadn't noticed, the theme for this issue is a nod to the possibility that things are changing. Of course, we have no way of knowing which way this market will go next, but when vol increases over prolonged periods of time, as we've seen in 2019, it can't hurt to learn a cautious strategy or two.

Happy trading,  
**Kevin Lund**  
Editor-in-Chief, *thinkMoney*

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# 1

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# 2

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# IN THE MONEY

## INDUSTRY SPOTLIGHT

# Reach the Unreachable: CME Micro E-mini Futures

First it was the minis; now it's the micros. And the micros may give sidelined traders more of a reason to trade with futures.

• WHEN A NEW FUTURES CONTRACT IS launched, it usually takes months or years to get noticed. But some contracts attract attention quickly. In the spring of 2019, when CME Group introduced bite-size versions of four top equity indices—the S&P 500 (SPX), Nasdaq 100 (NDX), Dow Jones Industrial Average (\$DJI), and the Russell 2000 (RUT)—retail traders and investors appeared to jump on board from day one.

If you haven't caught wind of the action, here are some things you should know about CME Micro E-mini futures.



**GET TO KNOW MICROS.**

Learn more at <https://active.trader.cmegroup.com/microemini/>

### THEY MAY SOUND SMALL, BUT ...

After a decade-long bull market, SPX, \$DJI, and RUT quadrupled from their financial crisis lows, while NDX rose sevenfold. Even the e-mini contracts got a little too rich. The new micros are 1/10 the size of the corresponding e-minis, which means they're 1/10 the tick value and 1/10 the margin requirement.

Think of it as 'right-sizing' for today's futures trader. Remember when the e-minis were launched in the late '90s? This happened for kind of for the same reasons—a long bull market pushed

notional values up so much they became out of reach for some traders.

### MICRO E-MINI FUTURES: FOUR WAYS TO PLAY

**Dip one toe in the water.** If you're an experienced trader and want to venture into the world of futures, micros, with their \$5 tick size and smaller margins, could be one way to ease yourself in without going "all in."

**Pairs trading.** Each index has different components and serves a different purpose.

You could use micros to help target long-only exposure, or even do some long/short pairs trading. With micros, you can target your exposure in any ratio you want.

**Hedge during earnings season.** When the market turns volatile, as it often does during earnings season, you might consider hedging to minimize portfolio risk. At \$50 times the index, and with the SPX at 2900, that's a notional value of \$145,000 for each contract of /ES, but only \$14,500 for Micro E-mini S&P 500 (/MES). So whether you'd like to hedge a percentage of the notional portfolio value, or if you use beta weighting to figure your optimal hedge, micros can help you set the right size. And speaking of beta weighting, the smaller contract size can help if you'd like to select different benchmark indices (SPX, RUT, etc.) for different parts of your portfolio.

**Scale in or out.** Ever found yourself sitting on a winning position and couldn't decide whether to hang on or take the money and run? Perhaps you're considering two go-to technical indicators. One says it's time to bail, but the other says the trend has room to run. With micros, you can have (some of) your cake and eat it, too by scaling in and out. And scaling strategies will incur additional transaction costs.

REGARDLESS OF YOUR TRADING STYLE or objective, if you rely on the major indices, CME Micro E-mini futures could be something to add to your watchlist to help you better pinpoint your target.

—Words by DOUG ASHBURN

*Doug Ashburn is not a representative of TD Ameritrade, Inc. The material, views, and opinions expressed in this article are solely those of the author and may not be reflective of those held by TD Ameritrade, Inc.*

*For more on the risks of trading and trading futures, see page 38, #1 & 3.*

THINKTANK

# A Tools Tour

Whether you're a newbie or a pro, volatility and options greeks can be perplexing. These tools on your thinkorswim® trading platform can help keep you in the loop.

**Today's Options Statistics: WHAT'S SIZZLING?**

The life of an option trader revolves around making strategy decisions, and that involves analyzing a bunch of metrics such as implied volatility (vol), historical vol, how many puts or calls traded, where they traded with respect to bid or ask prices, and so on. But just knowing the numbers may not be enough. Sure, you may be able to make more educated trading decisions, but you should also know what the numbers mean. We'll start with some of the options stats.

## UPCOMING EVENTS

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**Technical Analysis & Options Strategies Workshop**

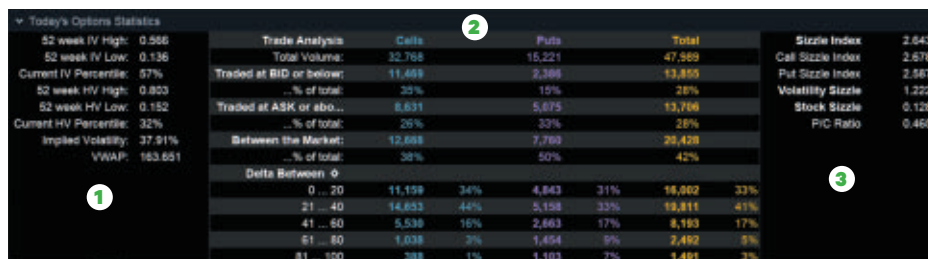
This two-day event covers everything from using charts to placing vertical spreads.

**UPCOMING LOCATIONS**

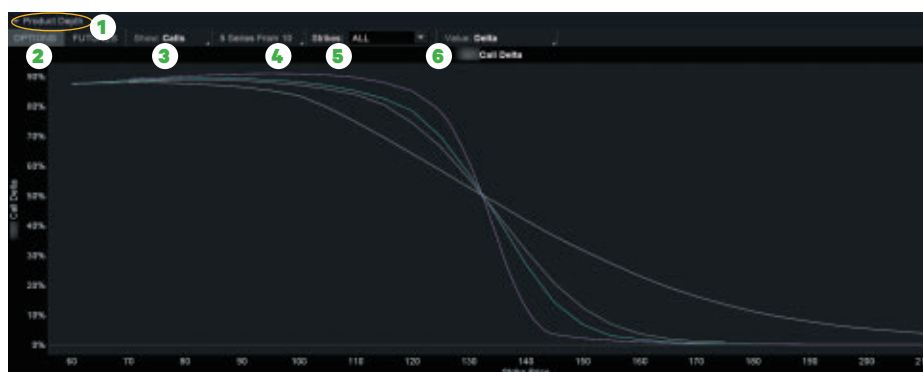
Portland, OR; Denver, CO; Chicago, IL; San Jose, CA

From the **Trade** tab on the thinkorswim® platform from TD Ameritrade, scroll down to **Today's Options Statistics**, which you'll find below the option chain (see Figure 1). The statistics are divided into three sections:

- 1- Vol Data.** The 52-week implied volatility (IV) high and low show you the IV range for the last year. The current IV percentile tells you where the prevailing IV is with respect to its range.
- 2- Trade Analysis.** This displays how many contracts traded. You can see how many were calls and how many were puts. You can also see if they traded at or below the bid or at or above the ask. This information can be helpful when determining where to enter or exit your trade. Delta is another helpful metric; note that you can change the default intervals.
- 3- Sizzle Index.** This tells you if trading activity is within normal ranges. A Sizzle Index value above 1 indicates unusual trading levels. You'll find the overall Sizzle Index as well as the sizzle for calls, puts, vol, and the stock.



**FIGURE 1: Figuring out vol, trading activity, and any unusual activity.** The thinkorswim platform offers options statistics such as implied vol, historical vol, number of calls and puts traded, where they traded, and the Sizzle Index. Source: thinkorswim from TD Ameritrade. For illustrative purposes only.



**FIGURE 2: Product Depth.** You can follow the relationship between price and delta for various options series. Source: thinkorswim from TD Ameritrade. For illustrative purposes only.

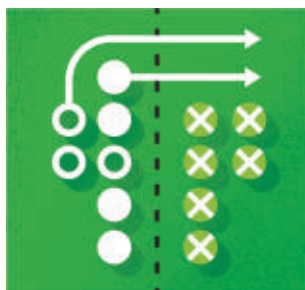
### Product Depth: A DEEPER DIVE

The **Product Depth** screen may look like a mess of lines, but each of them has something to tell. When you analyze a trade, the current greeks, vol values, and other parameters are relevant for that moment. But after you place a trade, they're likely to change, which is why it's a good idea to analyze the relationship between prices and other parameters.

Suppose you want to analyze the relationship between call options prices and delta. Here's how you could do it using the Product Depth tool (see Figure 2).

- 1-** In thinkorswim, select the **Trade** tab and scroll down to **Product Depth**.
- 2-** Select **Options**.
- 3-** From the drop-down menu under **Show**, choose the options values you want to calculate. You might select calls, puts, out-of-the-money options, an average, or puts and calls together.
- 4-** Select the options series for which you want to calculate values. The fewer series, the less messy the chart will look. Each series is represented by a different color (you can customize these).
- 5-** Select the number of strikes.
- 6-** If you want to study the relationship between delta and options prices, select **Delta** from the menu on the right. You'll see a long list of other values you could also choose.

Once the curves are plotted, they'll change in real time. Deltas will be close to 50% for at-the-money options. You can watch how price changes as the options become further out of the money or move in the money.



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# Getting Schooled on the Futures Universe

When the same questions plaguing new and veteran futures traders kept cropping up, the idea for a new course was born. **Ryan Campbell**, one of the brains behind this idea, answers some pressing questions you may have before you enroll.



**RYAN CAMPBELL**  
SENIOR CONTENT PRODUCER  
TD Ameritrade, Inc.

## Hey, Ryan! What's this Fundamentals of Futures Trading course you rolled out over the summer?

We wanted to reshape our educational offerings to cater to those who want to learn to trade futures. Many traders are interested in the futures market mostly because of the leverage. Futures provide leverage much like options but without the same complexity levels. But that doesn't mean trading futures is easy. We wanted to create a pathway for our clients to approach this major financial market.

So we created the futures trading course to give traders an opportunity to learn the basics of futures and how a

futures hedging strategy could be applied to their portfolio.

We wanted to keep with the overall structure of all our courses, so we made it simple and informative by explaining different futures concepts, incorporating illustrations, and developing videos.

Futures trading can be challenging, and we wanted to bring our clients the tools to make them better educated traders. It could be good for those who haven't followed the futures market in a while. They can fill any knowledge gaps by going through the course.

## How is the course structured?

The first lesson is an intro to the futures markets—how they

work, how they might tie in with your portfolio, and a few benefits and risks of futures trading.

The second lesson covers the basics of futures—contract specs and how futures margin works.

And if you're ready to take it further, qualified savvy investors and traders may choose to use futures markets to try to reduce portfolio risk. The third lesson walks you through the process—product selection, beta weighting a portfolio to a benchmark such as the S&P 500 Index (SPX), and defining your entry and exit routines.

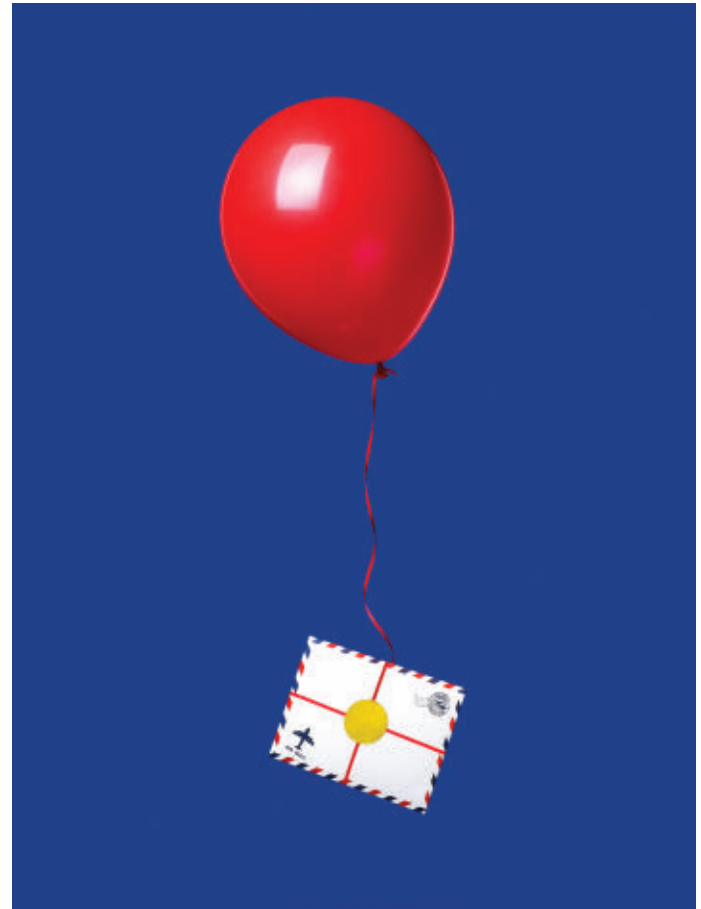
The final lesson wraps it all up by outlining next steps. You can take the final assessment, watch a webcast or three, or if you'd like some practice, try trading risk free using real market data

with the paperMoney® platform.

If you're thinking of taking the plunge into futures trading, or at least want to poke around a bit, the Fundamentals of Futures Trading course could be one place to start.

### HOW TO ACCESS EDUCATIONAL OFFERINGS

The futures course and all the education offerings, from tools and strategy demos to webcasts and links to live events, are now available on the thinkorswim® platform from TD Ameritrade. So whether you trade on thinkorswim or from the tdameritrade.com site, it's all at your fingertips. To access the course, under the **Education** tab, select **Futures > Fundamentals of Futures Trading > Start**.





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**LET'S GET CHATTING**

**CHAT SWIMMER #1**

Yesterday was a sloooow degradation all day.

**CHAT SWIMMER #2**

So, kind of like we do to you, huh?

**CHAT SWIMMER #1**

ROFLMAOINPJs

**CHAT SWIMMER #1**

I'd like to hear everyone's input on how things will look tomorrow. Go!

**CHAT SWIMMER #2**

Fubar?

**CHAT SWIMMER #1**

I'll need to do a search for that word.

**CHAT SWIMMER #2**

It's something that's out of order, maybe even damaged beyond repair.

**CHAT SWIMMER #1**

Maybe there's a custom drink named Fubar—best consumed after a rough day at the markets.

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SAVING TRADERS ONE QUESTION AT A TIME

**Q: I see that some cash-settled futures like /ES and /NQ have options that expire before the futures. If I'm assigned on a short option in January or February on a futures contract that expires in March, what position do I have?**

Options on futures settle into the future, even if the

futures contract settles into cash or a physical commodity. If you exercise a long option, or are assigned on a short option in an expiration that doesn't coincide with the expiration of the underlying futures, the option will turn into a long or short futures.

**futures may gravitate to that level?**

You're referring to "pinning," where the price of an underlying stock, index, or futures settles at, or very near, a strike price. That can happen in stocks where market-maker hedging activity will push a stock close to a strike near expiration. But that's a short-term thing. Further into the future and in a huge market like oil, the open interest may not be an indicator of direction.

**Q: I trade a lot of /CL crude oil futures options. If I see a significantly higher number for open interest in the options in a back-month expiration, is that a sign the**





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SKILL  
LEVEL  
EASY

**TAKE AWAY:**  
*Options strategies to consider when markets are falling down.*

# VOL MA DGED DON

HOW TO  
TRADE  
A CRASH

**BIG IDEA:**  
IMAGINE THE MARKETS ARE TUMBLING. DO YOU CUT AND RUN, OR ARE YOU AN OPPORTUNIST? WHETHER YOU'RE A STOCK INVESTOR, VOLATILITY TRADER, OR SPECULATOR, THERE COULD BE A STRATEGY WORTH PURSUING.



WORDS BY  
THOMAS PRESTON  
PHOTOGRAPHS BY  
DAN SAELINGER







# STARTING

on September 29, 2008, the S&P 500 Index (SPX) dropped nearly 26% in 10 days. That was a real crash. In the 10 years that followed, the SPX more than doubled its price. Many people look at that and think, “Coulda, shoulda, woulda. If only I’d bought back then ....”

If you remember 2008 and 2009 vividly, you know how hard it was to pull the trigger—to make the contrarian speculation that the markets would recover, volatility (vol) would settle, and the economy wouldn’t collapse. When it comes to trading, though, when the heart’s afraid, reason has to step in with a plan.

You’ve heard that trading and investing require discipline. Exercising daily discipline such as choosing strategies and carefully managing a portfolio is tough. But in a crash, exercising that same discipline can be downright scary. That’s when you have to take a deep breath and look for potential opportunities, regardless of what type of trader you are.

## THE STOCK INVESTOR

Say you’re on the front line in a crash while holding stocks. You’re in for the long term, but man, when the markets drop precipitously, you feel every downtick. Now is the time to put your homework into practice.

A crash can change all sorts of stock valuations, whether it’s price-to-earnings ratio, price-to-book ratio, dividend

 **TRADER GLOSSARY**  
TURN TO  
PAGE 37

yield, or something else. As long as a company’s fundamentals don’t change, a crash can mean the stock price might look more attractive than it

did when it was 20% higher. Don’t fear the correction. A crash could be the time to pick up quality stocks at a relatively low price.

There are a few things you can consider doing here, depending on whether you own stock or not.

**Sell puts.** When you don’t own stock but want to, you could take advantage of inflated put premiums and sell short, **out-of-the-money** (OTM) puts on stocks you want to own. One disadvantage is the limited upside potential of a **short put**—the premium you receive. But if the stock price drops below the strike you sold, you could be assigned at any time prior to or at the put’s expiration. You could be forced to buy the stock at a price below the market price. Another choice is to attempt to roll (extend the expiration by closing out the current option and opening another one) it into a lower strike price and a further expiration.

**Collar your stocks.** If you already own stocks and they’re sucking wind, what can you do? With vol likely through the roof as the market crashes, options prices are likely too high for you to be buying puts outright. Find something that’s “vega neutral,” where you’re buying and selling vol at the same time to help offset the risk of volatility collapsing from the options.

For example, you might consider a collar, which means selling an OTM call in addition to buying an OTM put against your long stock. The increased vol pushes up call prices, too, and the credit from selling them can help offset the cost of the long put. You give up all upside potential because of the short call, but because the premiums should mostly offset one another, the trade is relatively **vega neutral**. In the end, the collar may not be as sensitive to changes in implied vol (IV) as a long put would be.

**Sell covered calls.** If you don’t want to buy the protection of a long put, selling

covered OTM calls against stock you own can reduce its effective cost. Like the short put or collar, a **covered call** has limited upside and limited hedging value. Your max profit is limited to the premium plus the difference between the strike price and stock price. When the stock’s down and IV is higher, the short calls could generate larger credits, which pushes the effective cost of the long stock lower.

For example, if you bought a stock for \$75 and it’s now trading for \$60, selling a 65 call for a \$1.50 credit would bring the effective cost down to \$73.50. If you continue to sell calls against the stock, you can reduce the effective cost point further. Of course, there’s no guarantee of being able to do this successfully on a consistent basis, and you may want to consider whether you’re still bullish on the stock.

**Sell call vertical spreads on indices.** Another choice might be to sell short call verticals (long and short calls at different strikes in the same expiration) using options on an index that closely resembles your portfolio. Again, higher IV means the credits are higher, too. And choosing an index means you don’t have to pick a specific stock’s options to trade. That can save time. As for how many index call spreads to sell, you may want to consider using the beta-weighting tool on the thinkorswim® platform from TD Ameritrade to see how many **deltas** your portfolio has in terms of that index. For more on how to use delta with beta weighting to size up a position, see page 29.

## THE VOLATILITY TRADER

As a vol trader, you have your eyeballs on, well, volatility. And a crash can pop those eyeballs right out of your head. In the 2008 crash, for example, the **Cboe Volatility**



**FIGURE 1: 20 years of VIX.** Charting VIX on the thinkorswim platform will show you how volatile it can get.  
Source: thinkorswim from TD Ameritrade. For illustrative purposes only.

Index (VIX) was trading in the 80s for short amounts of time and even hit a high around 89 (see Figure 1). Because such levels are rare, it's times like these when you might be able to make your bank. Or at least try. As you can see in Figure 1, between 2009 and 2019, there have been at least nine instances in which the VIX spiked above 30 and four in which it spiked above 50. Of course, there's no guarantee that a spike above 30 won't remain above 30, especially because the VIX tends to live comfortably within its range "regimes."

A crash and a big jump in IV can mean inflated options prices and a potential mean reversion of vol, as it tends to spike up and down like a rubber band stretching. Yet, strategies are available. When options prices are inflated, consider **short put verticals** on an index like the SPX, NDX, or DJX. Here's why.

On September 26, 2008, before the crash, the SPX put that was 100 points OTM with 55 days to expiration was worth about 25 points. On October 25, 2008, after the crash and spike in the VIX, the SPX put that was 100 points OTM with 55 days to expiration

was worth about 50.50, more than twice as much. That extra options premium is something a trader could potentially take advantage of. Although you may not want to sell naked puts in an index during a crash, a defined-risk put vertical (short an OTM put and long a further OTM put) could also have a larger credit and thus higher potential profit.

If you believe the spike in the VIX during a crash is temporary, consider a bearish strategy in VIX options. Now, it's extremely risky to have naked, bearish positions like short VIX calls, even when the VIX is high. There's no telling how high it can go. So defined risk is one way to speculate on a VIX drop. First, a long put vertical combines defined risk and a bearish bias. But if the VVIX (that is, the volatility index on the VIX) is also high, prices in the VIX call options could be higher as well. In that case, consider a short call vertical as a bearish strategy to collect a larger credit and larger potential profit. It, too, has defined risk.

## THE BALLER

OK, suppose you either have enough money that a big losing trade won't mean much, or you have "Speculator" tattooed on your arm. If you want to take the biggest contrarian bet with the biggest risk when the

### THINKING ABOUT TRADING FUTURES?

To apply for futures trading at TD Ameritrade, your account must be enabled for margin, have Tier 2 or Tier 3 options trading approval, and have Advanced Features enabled. Log in to your account at [tdameritrade.com](https://tdameritrade.com), and under the Trade tab, select **Futures or Forex** for more information.

market is melting down, a highly leveraged trade buying S&P 500 futures (symbol /ES) could be one way to go. You don't have to worry about the premium in the options or fiddle around with individual stocks.

Be careful, though. The leverage on futures means the margin requirement is relatively low compared to the notional value and risk of the underlying contract. If you're right and the market rallies, you could potentially afford to tattoo the rest of your body. But if you're wrong—let's just say you may have to move back into Mom's basement.

CRASHES NORMALLY DON'T HAPPEN often, and there's no way to predict one. They're called crashes because they take everyone by surprise. Although a market drop of 20% or more might be the "official" number on Wall Street to signify a bear market or be labeled a crash, there are lots of smaller selloffs that can be just as scary, yet offer potential opportunity. When they appear, you want to have a plan.

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*Thomas Preston is not a representative of TD Ameritrade, Inc. The material, views, and opinions expressed in this article are solely those of the author and may not be reflective of those held by TD Ameritrade, Inc.*

*For more on the risks of trading and trading futures, see page 38, #1 & 3.*

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# 2020 WALL CALENDAR for Options Monkeys

Swinging from one expiration to another can get tricky when there are so many options expirations to keep track of. To stay on top of your game, carefully peel these pages and keep them at tail's length.

## OPTIONS EXPIRATION DAYS



Equity, index, ETF & ETN options, and cash-settled currency options expiration dates: Jan 17, Feb 21, March 20, April 17, May 15, June 19, July 17, Aug 21, Sept 18, Oct 16, Nov 20, Dec 18



Last day to trade expiring standard a.m.-settled equity index options: Jan 16, Feb 20, March 19, April 16, May 14, June 18, July 16, Aug 20, Sept 17, Oct 15, Nov 19, Dec 17



VIX expiration date: Jan 22, Feb 19, March 18, April 15, May 20, June 17, July 22, Aug 19, Sept 16, Oct 21, Nov 18, Dec 16



Exchange holiday: Jan 1, Jan 20, Feb 17, April 10, May 25, July 3, Sept 7, Nov 26, Dec 25

### Note:

- Weekly expirations occur every Friday with the exception of standard expiration Fridays and when there is an exchange holiday. On an exchange holiday, the expiration and expiration processing will be moved to the preceding Thursday.
- VIX weekly futures and options expirations occur every Wednesday with the exception of standard expiration Wednesdays.
- Equity LEAPS<sup>®</sup> expire in January. Index LEAPS expire in December, January, and June.

## Jan

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

## Feb

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
1	2	3	4	5	6	7

## Mar

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	29
29	30	31	1	2	3	4
5	6	7	8	9	10	11

## Jul

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	7	8	9

## Aug

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

## Sep

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10

## January 1

Despite a New Year's resolution to diet, the January Effect creates increases in weight and select assets.

## February 14

The couple that trades together, stays together. Open a joint brokerage account as a Valentine's Day gift.

## March 20

Triple-witching? Or triple-chocolate brownie? Hmm, I'm going with the brownie.

## April 15

Are energy bars consumed during the trading day tax deductible?

## May 1

International Traders Day—when self-directed investors around the globe feel united as they sit alone at their trading screens.

## June 20

Happy summer solstice! Stay inside lest you see a neighbor dressed only in a thin layer of blue paint.

## July 4

No one wants to be a nine-fingered trader. Light the fuse and get away quickly.

## August 7

Erect statue to Willis Haviland Carrier, inventor of air conditioning—the second-best invention behind the thinkorswim® platform from TD Ameritrade.

## September 8

Notice that the school bus conveniently picks up kids right before the bond market opens.

## October 31

Dress up as an iron condor and frighten nontrading trick-or-treaters.

## November 26

Remind family that /ES starts trading at 5 p.m. Not that you don't love them, but they need to get moving on that pumpkin pie.

## December 28

Do trading analysis for the year and realize you traded more times than you called your mother. Mom's too busy trading to talk, anyway.

## Apr

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

## May

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
30	1	2	3	4	5	6

## Jun

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

## Oct

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

## Nov

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12

## Dec

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

SKILL

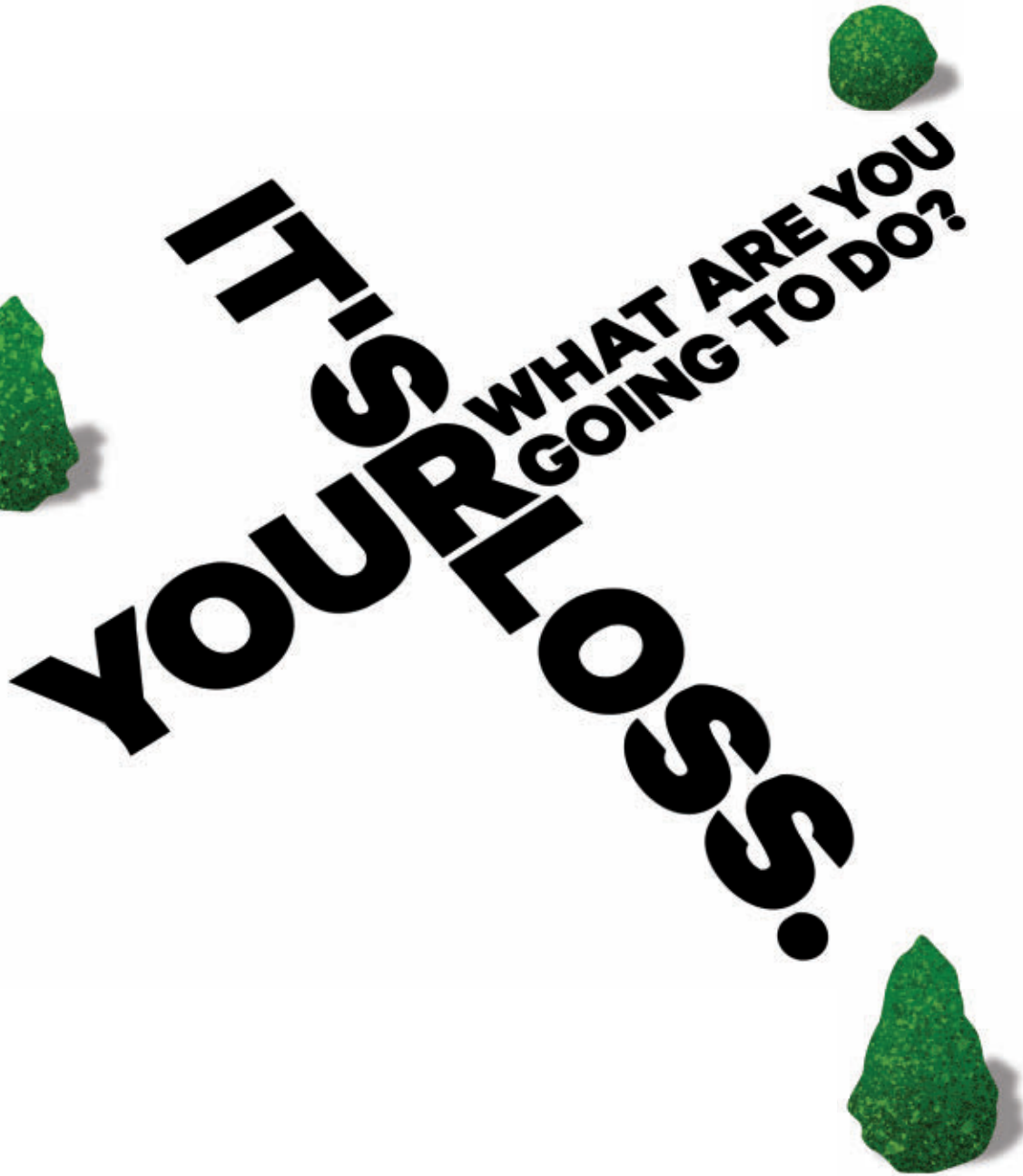
LEVEL

SAVVY

**TAKE AWAY:**

*How to manage your portfolio risk with index options.*

**BIG IDEA:** FACE IT. EVEN YOUR BEST TRADING IDEAS WON'T ALWAYS GO AS EXPECTED. SO WHEN YOU'RE LOOKING DOWN THE BARREL OF A LOSER, WHAT CAN YOU DO? WHY NOT EMPLOY A LITTLE GAME THEORY, JUST LIKE THE CHESS MASTERS.



WORDS BY **DOUG ASHBURN**

PHOTOGRAPHS BY  
DAN SAELINGER





e've all been there. You've got the best-laid plans for your trades. Yet, you know in your heart you can't win 'em all. Some-

times even your most solid ideas go south. But you also know the importance of an exit strategy. When you get in, what are your chances of getting out with a profit? And if the trade goes against you, what's your pain point on the downside? Do you have a time limit, a dollar limit, or both?

**GAME ON**

Game theory might conjure images of math PhDs crunching complex equations. But at a basic level, it's just codifying what you do every trading day—infusing your decisions with logic, reasoning, and yep, a bit of math. It all starts with the “decision tree”—a map of a trade's possible outcomes. This includes steps you might take,

the possible outcomes of those steps, and so on, right down to when you would want to close out the trade. Despite the name, decision trees take the decisions out of the decisions.

In game-theory geek-speak, the sequences of steps are called “nodes.” After building a decision tree, you play the game in reverse. You know the endpoint (end node) of each path in the sequence, so you could let the game play itself. It's like a chess master who looks at the board and knows the best response to an opponent's any move. That's because the chess master has played the game in reverse, all the way back to that current spot in the game, from each possible node.

On the bright side, your trade's life cycle won't have as many possible paths as a chessboard. Your tree won't involve thousands of nodes—just a few. Yet, the concept is the same: Build the scenarios and possibilities, and let things run their course. When decision time comes, consult the tree.

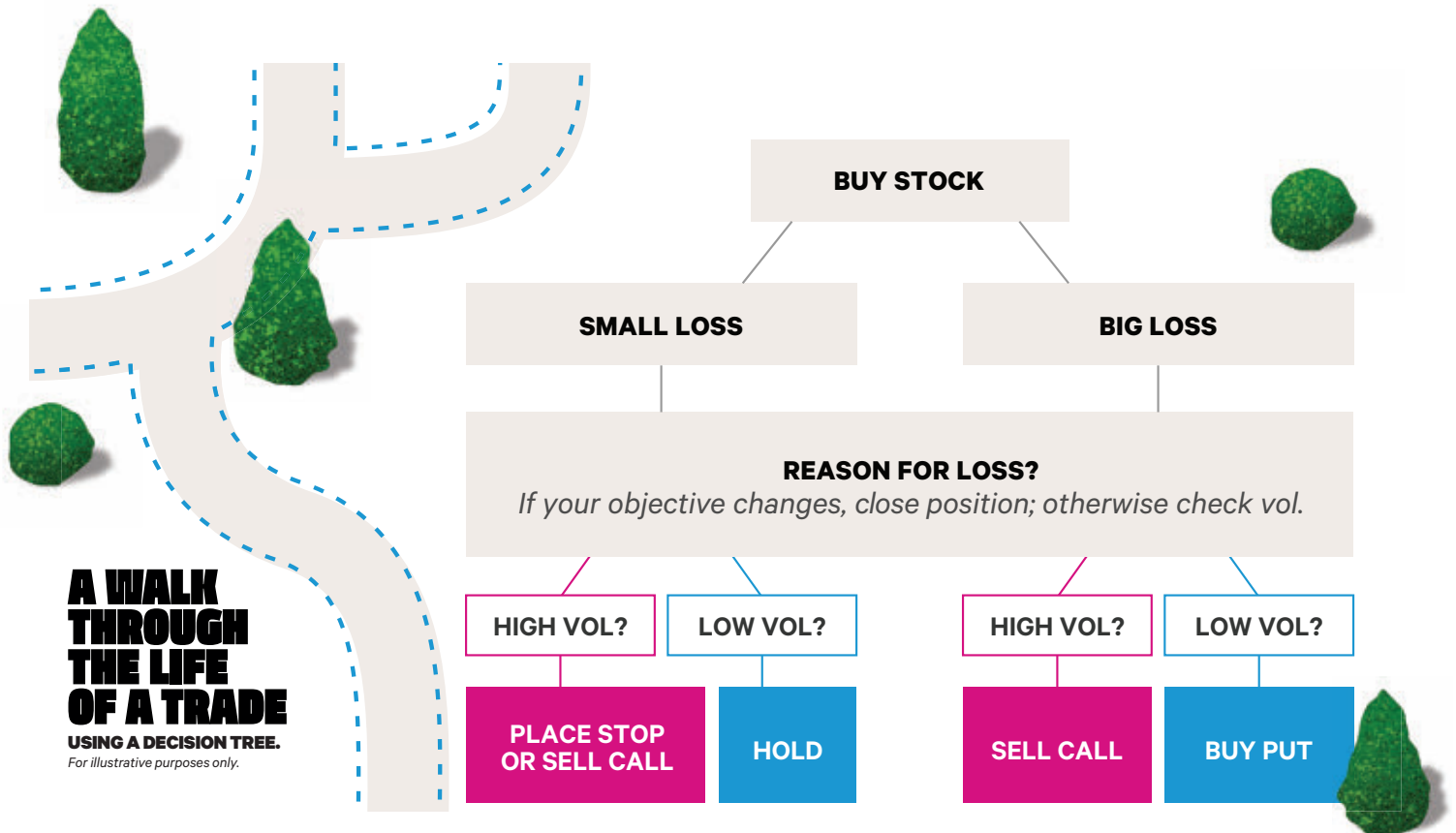
**BUILDING THE TREE**

Let's say you put on a trade in hopes of making a profit. Although dealing with profit is a part of any trade's decision tree, let's focus for now on losing positions—decisions that must be made when a trade goes against those profitable expectations. Or as a famous boxing champ once quipped, “Everybody has a plan until they get punched in the mouth.” Here's how to build a decision tree for a trade that gut punches you.

Say you just bought a stock. Perhaps you spotted a nice trend setup and decided it was time to jump on it. Turns out you were wrong. You entered too early and find yourself in a losing position. Now what?

Because losses typically come in two varieties—either you lose a little, or you lose a lot—those become the first two nodes of the tree.

With the first set of nodes in place, you could build the next layer. For each of the two loss scenarios, consider these questions. First, how quickly did the stock move? Was it swift and severe or a slow



**A WALK THROUGH THE LIFE OF A TRADE**  
USING A DECISION TREE.  
*For illustrative purposes only.*



bleed? Or, put another way, what's the stock's **implied volatility (IV)**, and how does it compare to historical volatility (vol) levels? Second, what caused the loss? Was it a trend breakout or reversal that turned out to be a false positive ("head fake")? Or is there news that could impact the company's fundamentals, such as a scandal or "accounting irregularities"? In other words, does the reason for the adverse move change your overall objective?

Next, it's time to build the final layer. Consider a list of possible next moves (see decision tree, lower left):

**Hold the position.** Maybe you weren't wrong—just early. This trade is a marathon, not a sprint.

**Sell a covered call against the stock.** This can help you reduce the effective cost of the stock, but you'll limit your upside potential.

**Buy a put option.** You'll give yourself a level of protection on the downside (for a limited amount of time) and maintain the upside potential if the stock recovers. But you'll be risking the entire amount you spent on the put (the premium plus transaction costs).

**Place a stop order.** If the stock keeps going south, you've got an exit strategy in place at your point of maximum pain. But a stop order won't guarantee execution at or near the activation price. Once activated, it will compete with other incoming market orders.

**Close the position.**

You now have two scenarios outlined: small loss and big loss. And you have five ultimate choices for each scenario. But each one has different probabilities based on price action and vol. Now it's time to review your goals and ask yourself whether owning the stock can get you across the finish line.

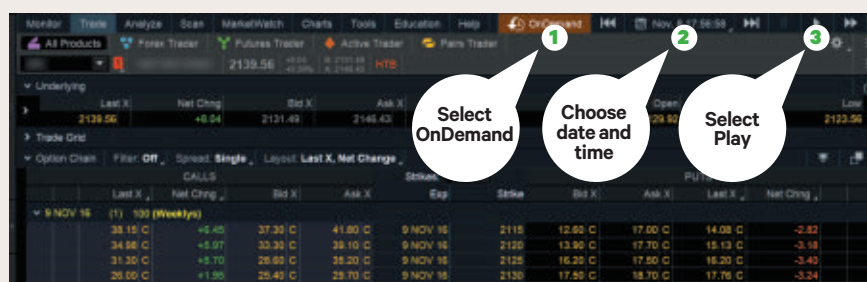
Using a decision tree can help you take the emotion out of the trading process, especially when you're facing a losing trade. When the market goes against you, consider following the tree.

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TURN TO  
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## PLAY THE GAME IN REVERSE WITH thinkOnDemand

When planning an exit strategy the game theory way, build each node to the end, then play the game in reverse. Want to shift into reverse for real? Fire up the live trading screen on the thinkorswim® platform and try out the thinkOnDemand backtesting tools. You can backtest stocks, options, futures, and forex, right down to the tick level, all the way back to December 2009.

Want to know how your trading strategy might've fared during the 2016 election? Make sure you're using your virtual account (paperMoney®), then roll the calendar back to November 2016, place your simulated trades, and watch the action unfold (see Figure 2).



**FIGURE 1: Roll back the clock.** With thinkOnDemand, you can backtest any strategy for any time period going back to December 2009. Source: thinkorswim from TD Ameritrade. For illustrative purposes only. Backtesting is the evaluation of a particular trading strategy using historical data. Results presented are hypothetical, they did not actually occur, and there is no guarantee that the same strategy implemented today would produce similar results.

1. Select **OnDemand**.
2. Choose the date and time from the calendar.
3. Select the **Play** button and watch how price changes. You have the choice to step forward, step backward, fast-forward 3x, and pause. To go back to real time, select the **OnDemand** button again.

### WHAT'S THE PROBABILITY?

Want to take game theory to the next level? Try assigning dollar values to the outcomes of your scenarios. There are no guarantees or exact probabilities, but the market does offer some clues. For example, the IV of a stock is the market's best guess of the stock's potential price range. Historical vol is a measure of a stock's actual variability over a specific time period. You can find both measures in the thinkorswim® platform from TD Ameritrade. Look at the **Options Statistics** at the bottom of the **Trade** tab. (For more on how to use these statistics, see "thinkTank" on page 10.) This can help you define the parameters—winner, small loser, big loser, and so forth—and assign an annualized level of vol.

For options positions, you can use options **delta** to approximate the likelihood of a position finishing **in the money** or **out of**

**the money.** (For more on delta, turn to page 26 in this issue.)

LIFE WOULD BE MORE FUN IF ALL TRADES were winners, but that's not the way it works. If you can define the possible scenarios, probabilities, and your best move at any point in time with a well-thought-out decision tree, you can keep your emotions in check. And let the "theoretical" game play itself out.

Doug Ashburn is not a representative of TD Ameritrade, Inc. The material, views, and opinions expressed in this article are solely those of the author and may not be reflective of those held by TD Ameritrade, Inc.

For more on the risks of trading and trading options, see page 38, #1 & 2.

# DELTA a little goes a long way

**BIG IDEA:** DELTA IS USUALLY THE FIRST GREEK OPTION TRADERS THINK OF AND FOR GOOD REASON. IT CONTAINS THE INFORMATION THAT MATTERS MOST WHEN YOU'RE LOOKING FOR A PROFIT: HOW MUCH YOU CAN MAKE. BUT THERE'S MORE. LET'S UNPACK.

WORDS BY **THOMAS PRESTON**  
PHOTOGRAPHS BY DAN SAELINGER

Black-Scholes and **delta**—they're kind of a “which came first, the chicken or the egg” situation. Delta is a derivative of the Black-Scholes Option Pricing Model, so you'd think Black-Scholes came first. But delta is also a key part of the Black-Scholes equation, so maybe delta did come first. Even the chicken could be scratching her head on this one.

Either way, delta is the most critical “greek” when it comes to options trading. The stock price is the main determinant of whether an options trade is profitable or not, and delta is the metric that tells you how much the price of an option may theoretically respond to changes in the stock price (see Figure 1). Sure, the other greeks (like **vega** and **theta**) are important, and we covered those in the previous two issues. But it's delta that tells you where most of your risk and potential opportunity lie.

## **DELTA WORKS IN MYSTERIOUS WAYS**

Say FAHN is trading for \$140 per share. The September 145 call has a theoretical value of \$3.80 and a delta of 0.39. If the stock price rises from \$140 to \$141, theoretically the 145 call will go up from \$3.80 to \$4.19, all other things (like time and volatility) being equal. If FAHN drops from \$140 to \$139, theoretically the 145 call will drop from \$3.80 to \$3.41. So, delta is the theoretical measure of how much the price of an option will change when the underlying stock, index, or futures changes \$1.



Delta is an instant metric, meaning it's accurate only for current data. Let's say FAHN increases \$10 to \$150. If you multiply the 0.39 delta by \$10, you might think that 145 call would grow from \$3.80 to \$7.70 (\$3.80 + \$3.90). But that 145 call might actually be worth \$9.50. That's because as the stock price rises, the delta of that 145 call increases as well, from 0.39 to some higher amount—say 0.80—thanks to changes in **gamma**. (We looked at this in “Unpacking Gamma—Delta’s Evil Enabler,” *thinkMoney* 40). So the impact on the 145 call's price when FAHN rose from \$146 to \$147 is greater than when FAHN rose from \$140 to \$141.

Also, delta changes as time passes. If that 145 call has 90 days to expiration when its delta is 0.39, and the stock price doesn't change, it might have 0.20 delta with 30 days to expiration. Because delta rep-

resents the options position's sensitivity to a change in the stock price, that 145 call is becoming less and less “bullish” on FAHN. Remember, positive deltas are bullish, and long stock, long calls, and short puts have positive deltas. Negative deltas are bearish, and short stock, short calls, and long puts have negative deltas.

## DELTA 101

This article skips the basics of delta, so if you need a refresher course, check out “Looking for Options Strikes? How Delta Can Help Balance Risk” at <https://bit.ly/2Nh6xGV>

resents the options position's sensitivity to a change in the stock price, that 145 call is becoming less and less “bullish” on FAHN. Remember, positive deltas are bullish, and long stock, long calls, and short puts have positive deltas. Negative deltas are bearish, and short stock, short calls, and long puts have negative deltas.

As far as bullish or bearish speculations go, delta can be interpreted as how many shares of stock the options position's risk represents. When that 145 call had a delta of 0.39, it theoretically had the same directional risk as 39 shares of FAHN. When the 145 call had a delta of 0.20, it theoretically had the same directional risk as 20 shares of FAHN. This is the genius of Black-Scholes in recognizing that an options position's price is determined by the number of shares required to hedge it, plus a loan to borrow that number of shares.

Technically, 39 shares of FAHN is a riskier, more bullish position than 20 shares,

## PUTTING DELTA TO WORK

There are two important points that need to be considered here.

**Delta is always changing.** As stock price, time, and volatility change, delta sometimes changes a lot or little. You need to monitor the deltas of your trades regularly to make sure they're giving the risk exposure you want—not too high, not too low. For more

on how delta changes, see “thinkTank” on page 10 in this issue.

### Delta is probability.

Understanding delta in this way offers insight into the probability that an option will be **in the money** (ITM) or **out of the money** (OTM) at expiration. To get into the theoretical weeds a bit, delta depends on how far (expressed as a percentage) the strike price is away from the current stock price.

For example, with FAHN at \$140, the 145 call is 3.57% OTM. If you plopped the current stock price and strike price onto a normal distribution (bell curve), the stock

price would sit at the peak of the mean and the 3.57% OTM call strike price would sit to its right. At the mean, there's a 50% probability of being above or below (which is why the **at-the-money** [ATM] option has a delta close to 0.50).

Because that strike price is to the right of the mean, the probability of being to the left of the strike price is higher than the probability of being to the right. So the probability of the stock being above that OTM call strike price is lower than the probability of the stock being below.

Lower-delta options have a lower probability of being ITM at expiration. Delta can range from zero to 1, so an option with a zero delta has a low theoretical probability of being ITM at expiration, while an option with a delta of 1 has a high theoretical probability of being ITM at expiration. Options with a delta of 1 don't always wind up ITM because there is never a zero probability a stock could crash to zero or soar infinitely high. Delta is a theoretical metric based on current market conditions, not a guarantee.

When you create an options trade, delta reflects how much risk the position has in terms of shares of stock and its probability of profit at expiration. Here are three examples to consider.

## LONG STOCK OR SHORT PUTS

Are you bullish on a stock and deliberating between buying shares or shorting (selling) puts? A position that's long 100 shares of stock has +100 deltas. If an ATM put has a delta of -0.50, shorting two of them would

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CALLS		PUTS					
Delta	Ga...	Th...	Vega	Delta	Ga...	Th...	Vega
.69	.01	-.16	.59	-.31	.01	-.14	.58
.66	.01	-.16	.61	-.34	.01	-.14	.61
.63	.01	-.16	.63	-.37	.01	-.14	.63
.60	.01	-.16	.63	-.40	.01	-.14	.65
.57	.01	-.16	.63	-.43	.01	-.15	.66
.54	.01	-.16	.67	-.46	.01	-.14	.67
.51	.01	-.16	.67	-.49	.01	-.14	.67
.48	.01	-.16	.67	-.52	.01	-.14	.67
.45	.01	-.16	.66	-.55	.01	-.14	.66
.42	.01	-.16	.66	-.59	.01	-.13	.65

**FIGURE 1: Watch delta.** From the Trade tab on the thinkorswim® platform, on the Layout menu in the Option Chain, select Delta, Gamma, Theta, Vega, or customize the layout to include delta. View the Delta column to see how delta changes based on the stock's price. Source: thinkorswim from TD Ameritrade. For illustrative purposes only.



**FIGURE 2: Beta weight your positions.** From the Monitor tab on the thinkorswim platform, you can beta weight positions in your portfolio to an index or symbol. This makes it more of an apples-to-apples comparison so you can see which positions might be riskier than others. Source: thinkorswim from TD Ameritrade. For illustrative purposes only.

create a position with +100 deltas, giving you the same risk exposure as the long 100 shares. So what's the difference?

Well, if the stock price doesn't change by the options position's expiration, the short puts can be profitable, while the long stock would have no profit or loss (unless it pays dividends). In this case, the short puts have positive theta. In exchange for that positive theta, as the stock price moves up or down a point or two, the profit and loss of the short puts will be similar to the long stock. But if the stock drops sharply, the put deltas will move from -0.50 to closer to -1, and the short two puts will have a delta closer to +200. So the options position has more risk and greater potential loss than the long 100 shares. Conversely, if the stock price rises sharply, the put deltas will move from -0.50 to closer to zero, and the short two puts will also have a delta closer to zero. In this case, the long 100 shares can be more profitable than the short two puts.

### MARRIED PUTS

This leads us to the next strategy, the married put. That's when you buy 100 shares of stock because you have a long-term bullish outlook and want to collect any dividends, but you also want to fine-tune your delta risk by buying puts.

Say a stock is \$150 and you buy 100 shares to give you +100 deltas. If you bought an ATM put, that would generate approximately -50 deltas, giving the married put strategy a net +50 of delta exposure. But say

you want between +25 and +30 of delta exposure. In that case, you could buy two puts that each have 0.35 delta. They generate -70 deltas and combined with the +100 deltas of the long stock would give the married put strategy +30 deltas.

By selecting a certain OTM strike, and depending on how many puts you buy, you can get the delta you want without having to buy an odd number of shares. As the stock moves up and down, you can adjust the puts to higher or lower strikes, or roll to further expirations to maintain the same delta exposure and continue the trade if you choose. Keep in mind that rolling strategies can incur significant transaction costs.

Synthetically, a married put is similar to a long call, which has the same risk profile. The reason you might consider the married put is that the long stock never expires, so you can treat the long stock and long put independently for a longer-term trade. If the stock price drops, the long puts could be profitable and help to offset the loss on the long stock. You may want to consider selling the puts, taking the profit, and holding the long 100 shares, hoping they'll bounce back. You could even take things a step further by selling an OTM call against the stock. This strategy gives you a lot of flexibility but will limit the stock's upside potential.

### BETA WEIGHTING

Finally, delta finds one of its most powerful uses with beta weighting on the

thinkorswim® platform from TD Ameritrade. Beta weighting is a way to convert the deltas of individual stock positions to be comparable to the deltas of an index, say, the S&P 500 Index (SPX). This way you can see how many deltas your FAHN position has in SPX terms and also compare it to the deltas for another position in SPX terms. When you compare your beta-weighted deltas, you can see which of your positions has more delta risk than the others.

In short, beta is a measure of a stock's risk relative to an index like the SPX. Beta weighting uses that information to normalize individual deltas into the delta of a single symbol for comparison purposes.

For example, Figure 2 shows a portfolio composed of 100 shares each of a bunch of different stocks, as seen in the **Position Statement** section of the **Monitor** tab.

Before beta weighting, each position has 100 deltas. It's difficult or impossible to judge which positions have more risk than others. But if you select the **Beta Weighting** box at the top and type "SPX" in the field, the deltas will be converted into SPX deltas.

The first symbol on the list has the equivalent of 7.46 SPX deltas. Another position has the equivalent of 41.12 deltas—about 5.5 times bigger. Clearly, the 41.12 delta position has more delta risk, so if you're looking to reduce the exposure of your portfolio, you might consider reducing the deltas of the higher-delta position first. That could be done with short covered calls or long married puts, for example.

IT'S EASY TO TOGGLE BETWEEN BETA-weighted and non-weighted deltas as you drill down into the risk of your portfolio. And a deep understanding of delta can help you make informed and confident choices as you manage your trades and portfolio.

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*For more on the risks of trading and trading options, see page 38, #1 & 2.*

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SKILL

LEVEL

SAVVY

**TAKE AWAY:**

*How to manage your  
portfolio risk with  
index options.*

# HOW

**BIG IDEA:** OPTIONS AREN'T ALWAYS FOR SPECULATION. SIMILAR TO HOW WE PROTECT OUR HOMES AND CARS BY PURCHASING INSURANCE, A BASIC OPTIONS STRATEGY CAN OFFER SOME PROTECTION FOR A LIMITED PERIOD OF TIME FOR MOST STOCK PORTFOLIOS.

# TO

# HEDGE

# YOUR

WORDS BY **KEVIN LUND**  
PHOTOGRAPHS BY  
**DAN SAELINGER**

# BASKET



**Y**ou've been sleeping under a rock if you've never heard the adage, "Don't put all your eggs in one basket"—sage advice for the buy-and-hold investor, but Greek to most traders. (What's a basket? Are you selling me egg futures?) If you are an option trader and also plan on owning a diversified basket of stocks for the long haul, this might be a good time to stretch your knowledge and learn how to put on a portfolio hedge using index options.

### STOCK "PROTECTION" 101

You probably know that puts are often used by option traders to speculate if they believe the price of a stock or the market in general is going down, or to help protect a position in case the market or stock goes down. The latter—trying to protect a single stock position—is simple. But it gets a little more complicated when you size up an index put to hedge a basket of stocks.

Let's back up a minute. Put hedges are simple in principle. If you insure your home, your car, or your precious Persian kitty, you probably own insurance policies that, in theory, work similarly to puts. You're well aware that if the sky falls and your car is a pancake, the car may be worthless, but that auto policy you spent \$1,000 on suddenly becomes worth a whole lot more. In fact, you get to "put," or transfer, the cost of the car replacement to your insurance company.

Puts give traders the right to sell their underlying stock at the strike price for a limited time (until the option expires). If you own index puts, there's no underlying stock deliverable. They are "cash settled." So, at the expiration of your long index put, if your puts are **in the money** (put strike is higher than index-settlement price) you'd receive the cash difference between the

price where the index ended up and the put strike. This cash becomes part of the asset value of your portfolio. It may not correlate perfectly (i.e., dollar-for-dollar cash gained per dollar lost in your stocks), but it can certainly help make a stock loss less painful.

### HOW MUCH DO YOU NEED?

There's no hard-and-fast rule, but you might expect to spend between 3% and 5% of your portfolio value on each hedge. Don't let that scare you. There are ways to potentially bring the cost down so you don't empty your wallet.

When assessing the correct amount of limited protection (or hedge), first find an index that closely resembles (correlates with) the stock mix in your portfolio. If your basket is balanced across sectors, consider using the S&P 500 Index (SPX), as shown in Figure 1. If it's weighted in big-cap technology, the Nasdaq-100 (NDX) might be a better fit, and so on.

Once you've snagged the best correlating index, calculate how many puts you need to buy. Suppose your hypothetical stock portfolio worth \$250,000 contains a dozen or so different large-cap stocks that can be found in the S&P 100 Index (OEX).

At this point, using OEX put options, you might be able to create a hedge using the following steps.

**1**

### CALCULATE THE INDEX'S CASH VALUE.

The cash value of OEX is an average of the 100 stocks in the index. It's calculated using a multiplier of 100 (which happens to be the multiplier on most indices). On May 1, 2019, the index closed at 1297. Therefore, the cash value of OEX was \$129,700.

**2**

### DETERMINE THE NUMBER OF PUTS YOU NEED TO BUY.

Simply divide your hypothetical portfolio value by the cash value of the hedging index to get the number of offset deltas you need to be fully hedged:  $\$250,000 \div \$129,700 = 1.93$  (or 193 deltas).

Here, delta measures the degree for which a put might offset a dollar loss in the underlying. (See page 26 in this issue for more on delta hedges.) Typically, **at-the-money** (ATM) put options have a delta near -50. So to put on an ATM hedge for this position, you'd likely need at least four ATM OEX puts to hedge your hypothetical portfolio, which would put you near -200 deltas. Close enough.

**3**

### CALCULATE THE COST OF YOUR HEDGE.

Next, decide how far out in time you want protection, say, a minimum of three months, then choose where you'd like your greatest amount of protection to be—perhaps near the index price.

On May 1, the 1300-strike option expiring in 106 days was \$40. The cost of the transaction would be calculated as the number of puts times the put price times 100:  $4 \times 40 \times 100 = \$16,000$ .\*

**ONE OF THE EASIEST WAYS** to find an index that correlates with your portfolio is to pull up the **Monitor** tab in the thinkorswim® platform from TD Ameritrade.





**FIGURE 1: Beta weighting your portfolio.** The Beta Weighting tool in the thinkorswim® platform from TD Ameritrade converts the deltas of individual positions into index-equivalent deltas.  
Source: thinkorswim from TD Ameritrade. For illustrative purposes only.

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## HOW IT ALL PLAYS OUT

### STOCKS DECLINE

Should your portfolio decline in value, the correlating index you've hedged against (in this case, OEX) will likely decline in value as well, increasing the value of your puts. Ideally, you want the increase in the put value to offset the decline in your portfolio value. At any point before the puts expire, you could likely close out your hedge and the net proceeds would be swept into your account.

You might decide to use any gains to buy more stock at cheaper prices, or simply put on a new hedge at the index's lower prices. The maximum potential return for a long put is limited by the amount the underlying can fall. Remember, this strategy provides only temporary protection from a decline in the price of the corresponding index. Should the long put position expire worthless, the entire cost of the put position would be lost.

### STOCKS RISE

On the other hand, should the markets continue to rise and as OEX moves further away from the put strikes, your hedge will begin to lose less than your portfolio gains. That's because of the "convexity" of options during the life of the trade. Figure 2 shows what happens to your position at expiration, without considering convexity, when there's no time premium left in the hedge—in which case, your effective cost is now the stock price plus the put price.

## HOW DO YOU PAY FOR IT?

Of course, there's always the possibility you don't have \$16,000 at your disposal. And you may not want to sell part of your portfolio to raise the cash to buy the hedge.

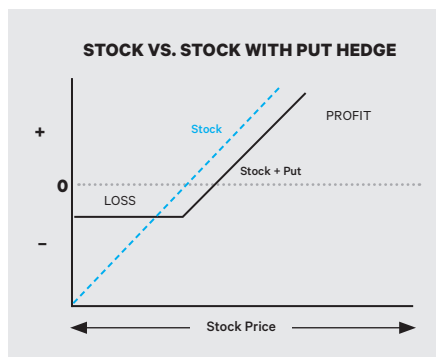
### COVER 'EM

You might consider selling calls against each of your stock holdings to offset some of the cost of the put hedge. Provided you own a minimum of 100 of the underlying stock shares per each call you sell, you're "covered" and may not need to incur additional margin requirements. The premium you get from

the calls reduces the cost of your put hedge. If the calls you sell are the same distance from the stock price as the put hedge, the credit you receive could potentially offset the entire cost of the put. Your

new position is now a "collar" on the stock. (For more on collars, see page 18.)

But watch out for caveats. If the stock price moves in the money (ITM) beyond the short call strikes, you could be "assigned" and get your stock position called



**FIGURE 2: Protecting an egg.** With a stock and put position (solid line), the maximum risk is defined. You could still have unlimited upside potential, but your break-even price increases. For illustrative purposes only.

away. Keep in mind that short options can be assigned at any time up to expiration, regardless of the ITM amount.

To avoid assignment, you might consider buying back the calls at the higher price. If closing out the calls isn't a choice, you might simply wait to have your stocks called away. You'll keep the cash from the sale of the calls and potentially profit on the sale of the stock at the strike price (assuming you sell the stock for more than you paid for it). But you'll also lose ownership of the stock and miss out on any additional appreciation above the strike price.

### EVEN TRADERS NEED PROTECTION.

But if hedging with index options seems foreign to you, consider it as simply adding a new dimension to your put strategy—in other words, an indirect way to hedge your holdings. The key is to make sure that whatever index you might choose correlates well with your portfolio.

Kevin Lund is not a representative of TD Ameritrade, Inc. The material, views, and opinions expressed in this article are solely those of the author and may not be reflective of those held by TD Ameritrade, Inc.

For more on the risks of trading and trading options, see page 38, #1 & 2.

\*Prices listed do not include commissions and fees.

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is down a little one day, but traders think it won't follow through on the downside, the VIX can go lower. As such, day-to-day moves in the SPX versus the VIX may not always correlate. You might see the SPX up 0.50, for example, and the VIX up 0.05. Conversely, the SPX might be down 0.75 and the VIX down 0.05.

Those small moves in the market are often considered noise, and most of the time traders ignore them. Instead, they may focus on what the market might do when future news or a financial event arrives. For example, after a Federal Open Market Committee (FOMC) meeting, the SPX can move sharply higher or lower as the market digests the Fed's report. So you might see the VIX increase ahead of the meeting, while the SPX moves up or down a small amount. In this case, the SPX and VIX don't track each other closely. But after the FOMC meeting, if the news is bearish and the SPX drops, the VIX could dutifully rally. If the news is bullish and SPX rallies, the VIX could drop. With the uncertainty resolved, the SPX and VIX may resume a more correlated relationship.

#### HOW DO YOU APPLY ALL THIS?

If you're bullish and the VIX is high after the market sells off, consider short, **out-of-the-money (OTM) put spreads** in an index to collect a higher credit. On the other hand, if you're bullish and the VIX is low, you might consider long call spreads. If you're bearish and the VIX is high, you might consider short, OTM **call spreads**, again, to collect a higher credit. If you're bearish and the VIX is low, consider a long put spread or OTM put **calendar**.

The key? Don't overthink short-term moves in the VIX vis-à-vis the SPX. Look at the big picture and consider using an options strategy designed to take advantage of the VIX.—Words by THOMAS PRESTON

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*For more on the risks of trading and trading options, see page 38, #1 & 2.*



## Do Vol and Price Tango? Sort Of.

DOES VOLATILITY AFFECT OPTIONS PRICES? TO SOME EXTENT, YES. BUT AVOID FOCUSING ON THAT RELATIONSHIP TO MAP YOUR STRATEGIES.

• Traditionally, there's been an inverse relationship between volatility (vol) and the price of a stock or index. When the price of a stock goes up, its vol goes down. When the price of the stock goes down, its vol goes up. That's what most traders believe, anyway. And it's largely true.

For example, when you look at the S&P 500 Index (SPX) and its overall vol indicator, the **Cboe Volatility Index (VIX)**, over a long period, they seem to have an inverse relationship. Spikes in the VIX usually occur when the SPX drops sharply, and the VIX sinks back when the SPX rallies. Remember what the SPX and VIX did in late 2008 and early 2009? The SPX crashed and the VIX spiked dramatically higher. Over the last couple of years, as the SPX has rallied, what's the VIX been doing? It's been mostly lower or flat. Also, when the SPX had its short-lived but dramatic selloffs during these last few years, the VIX rallied. Why was this happening?

#### HERE'S THE SCOOP

The VIX is based on the prices of SPX options. When the market starts to drop, traders sometimes think the next crash is near and start bidding up the prices of put options, which should become much more valuable if the market does indeed crash. That's the logic, anyway, but in fact, it increases the VIX whether the market ends up crashing or not.

When the market rallies, general complacency sets in. Traders don't expect any big moves in the SPX. They may sell SPX calls and puts because they believe the market won't crash and won't rally too quickly. Selling options to take advantage of positive time decay pushes down the prices of SPX call and put options. That, in turn, drives the VIX lower.

But trader sentiment can be fickle, changing from one day to the next regardless of what the SPX is doing. If the SPX is up a little bit one day, but traders think it might drop the next, the VIX can go higher. If the SPX

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# The Downside of Selling Time

THETA CAN BE A TRADER'S BEST FRIEND. BUT YOU CAN ONLY DEPEND ON IT AFTER YOU'VE CLOSED THE TRADE.

Words by Jayanthi Gopalakrishnan

Strike	Bid X	Ask X	Impl Vol	Volume	Theta
302.5	5.90 B	6.05 Z	45.97%	0	49.58% (±18,097)
305	6.90 Z	7.15 Z	45.19%	0	-0.4806
307.5	8.00 B	8.25 Z	44.53%	0	-0.4748
310	9.20 X	9.40 Z	44.50%	0	-0.4633
290	10.95 X	11.20 B	49.94%	0	55.54% (±43,238)
295	12.60 C	12.90 N	49.13%	0	-0.2396
300	14.55 Z	14.90 Z	48.26%	0	-0.2438
305	16.60 H	16.90 X	47.49%	0	-0.2450
310	18.95 X	19.25 X	46.79%	0	-0.2436

**FIGURE 1:** Theta values for different expirations. From the Analyze tab, bring up the option chain for different expirations. Set up the layout to include theta and IV. Compare theta values of strikes at the different expirations. Source: thinkorswim from TD Ameritrade. For illustrative purposes only.

Strike	Bid X	Ask X	Impl Vol	Volume	Theta
162.5	1.20 Z	1.26 Z	22.09%	0	7.08% (±1,396)
165	2.00 Z	2.06 Z	18.98%	0	-0.1086
167.5	3.10 Z	3.25 X	12.86%	0	-0.0477
170	4.65 N	4.80 M	12.85%	0	0.00
150	1.00 P	1.03 C	28.11%	0	12.38% (±5,164)
155	1.71 N	1.76 Z	26.20%	0	-0.0427
160	2.87 X	2.95 Z	24.33%	0	-0.0536
165	4.65 Z	4.75 Z	22.29%	0	-0.0613
170	7.10 C	7.30 C	19.47%	0	-0.0457
175	10.35 C	10.60 M	12.85%	0	-0.0079

**FIGURE 2:** Implied Vol and theta. Options with lower IVs tend to have lower theta values. Source: thinkorswim from TD Ameritrade. For illustrative purposes only.

in mind it's valid only for that moment.

Another general theory is that time decay may have less impact when an option has more time to expiration. As an option gets closer to expiration, the rate of decay goes through a rapid decline. (Again, in reality, it may not be as clear-cut.)

**YOU CAN'T LOOK AT THETA BY ITSELF**

The time, or extrinsic, premium of an option has to do with theta (time decay) and vega or volatility (vol). When you add vol into the mix, pricing dynamics change. Higher IV can mean higher options prices. And the rise in IV can cause the rate of time decay to increase.

To see how theta and vol impact options prices, fire up your thinkorswim® platform from TD Ameritrade. Figure 1 shows an option chain where IV is around 50%. The 305 puts with seven days to expiration (DTE) have a theta value of -0.48, whereas the puts at the same strike with 35 DTE have a theta value of -0.24. Nothing surprising here—theta for options

closer to expiration tends to be higher. Figure 2 shows an option chain with an IV of around 10%. Theta values are much lower. The 165 puts with seven DTE are at -0.10, and those with 35 DTE are at -0.06.

This is how theta works on single options. For spreads, theta's impact could be less. Either way, these values can change at any time. So regardless of what the P&L looks like, you still need to anticipate uncertainties creeping in and changing the entire scenario.

Theta can be helpful in evaluating how the price of the option might change over time. However, don't count on it until you've closed the trade.

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*For more on the risks of trading and trading options, see page 38, #1 & 2.*

• Some things, like fine wine and denim, get better with time. Lots of other things just age. The time premium of an options contract falls into the latter category. It decays from inception to expiration.

Theta measures the time decay on an options contract's value. Although positive theta is considered a good thing, how many times have you executed an options trade with positive theta, only to find your anticipated profit and loss (P&L) never comes to fruition? When you execute an options trade, you know how things stand at the moment: price, theta, implied volatility, and so on. But the next hour, day, or week may bring a different story. Anything could happen to

change the value of an option significantly and send your P&L astray.

**REALITY IS STRANGER THAN THEORY**

An options contract's extrinsic value is subject to theta. But theta's value doesn't just depend on time. Theta is a theoretical number that indicates what price might be if implied volatility (IV) and price remained equal. But in reality, that never happens; markets are always changing. And although theta can impact the price of options, so can IV and price movement. So even though your risk curve may look ideal when you execute your trade, it's not going to include "unknowns." Focus on the information you have. Just keep





## At the money (ATM)

- An option whose strike is “at” the price of the underlying equity. Like out-of-the-money options, the premium of an at-the-money option is all “time” value.

**Calendar** — A defined-risk spread strategy, constructed by selling short-term options and buying longer-term options of the same type (calls or puts). The goal: as time passes, the shorter-term options typically decay faster than the longer-term options and profit when the spread can be sold for more than you paid for it. The risk is typically limited to the debit incurred.

**Covered call** — A limited-reward strategy constructed of long stock and a short call. Ideally, you want the stock to finish at or above the call strike at expiration. If the stock price settled above the strike price, you’d have your stock “called away” at the short call strike. You would keep your original credit from the sale of the call as well as any gain in the stock up to the strike. Breakeven on the trade is the stock price you paid minus the credit from the call.

**Gamma** — A measure of what the delta of an option is expected to change per \$1 move in the underlying.

**Delta** — A measure of the sensitivity of an option to a \$1 change in the underlying asset. All else being equal, an option with a 0.50 delta (for example) would gain 50 cents per \$1 move up in the underlying. Long calls and short puts have positive (+) deltas, meaning they gain as the

underlying gains in value. Long puts and short calls have negative (–) deltas, meaning they gain as the underlying drops in value.

**Implied volatility (IV)** — This is the market’s perception of the future volatility of the underlying security and is directly reflected in the premium of an option. IV is an annualized number expressed as a percentage, is forward-looking, and can change.

**In the money (ITM)** — Options with premium that contains “real” value, i.e., not just time value. For calls, it’s any strike lower than the price of the underlying equity. For puts, it’s any strike that’s higher.

**Long call vertical** — A defined-risk, bullish spread strategy composed of a long and short option of the same type (i.e., calls). Long verticals are purchased for a debit at the onset of the trade. The risk of a long vertical is typically limited to the debit of the trade.

**Long put** — Gives the owner the right, but not the obligation, to sell shares of stock or other underlying assets at the strike price within a specific time period. The put seller is obligated to purchase the underlying at the strike price of an option if the owner of the put exercises the option. In the case of index options, it’s a

cash-settled transaction with no underlying index changing hands.

**Out of the money (OTM)** — An option whose premium is not only all “time” value, but the strike is also away from the underlying equity. For calls, it’s any strike higher than the underlying. For puts, it’s any strike that’s lower.

**Short put** — A bullish directional strategy with unlimited risk in which a put option is sold for a credit, without another option (of a different strike or expiration) or instrument used as a hedge. The strategy assumes the stock will stay above the strike sold, in which case, as time passes and/or volatility drops, the option can be bought back cheaper or expire worthless, resulting in a profit.

**Short put vertical (spread)** — A defined-risk, directional spread strategy composed of an equal number of short (sold) and long (bought) puts in which the credit from the short strike is greater than the debit of the long strike, resulting in a net credit taken into the trader’s account at the onset. Short put verticals are bullish. The risk in this strategy is typically limited to the difference between the strikes less the received credit. The trade is profitable when it can be closed at a debit for less than the credit received. Breakeven is calculated by subtracting the credit received from the higher (short) put strike.

**Theta** — A measure of the sensitivity of options to time passing one calendar day. For example, if a long put has a theta of -0.02, the options premium will decrease by \$2.

**Vega** — A measure of the sensitivity of options to a one-percentage-point change in implied volatility. For example, if a long option has a vega of 0.04, a one-percentage-point increase in implied volatility will increase the options premium by \$4 per contract.

**Cboe Volatility Index (VIX)** — The de facto market volatility index used to measure the implied volatility of S&P 500 Index options. Often referred to as the “fear index,” it is most often used to gauge the level of fear or complacency in a market over a specified period of time. Typically, as the VIX rises, options-buying activity increases, and options premiums on the S&P 500 Index increase as well. As the VIX declines, options-buying activity decreases. The assumption is that greater options activity means the market is buying up hedges in anticipation of a correction. However, the market can move higher or lower, despite a rising VIX.

## DISCLAIMERS

IMPORTANT INFORMATION YOU NEED TO KNOW

# 1

## GENERAL DISCLAIMER

The information contained in this article is not intended to be investment advice and is for illustrative purposes only. Be sure to understand all risks involved with each strategy, including commission costs, before attempting to place any trade. Clients must consider all relevant risk factors, including their own personal financial situations, before trading. Past performance of a security or strategy does not guarantee future results or success.

Transaction costs (commissions and other fees) are important factors and should be considered when evaluating any options trade. Options are not suitable for all investors as the special risks inherent to options trading may expose investors to potentially rapid and substantial losses. Options trading is subject to TD Ameritrade review and approval. Please read *Characteristics and Risks of Standardized Options* (<http://www.optionsclearing.com/about/publications/character-risks.jsp>) before investing in options.

It is not possible to invest directly in an index.

# 2

## OPTIONS STRATEGIES

Trading options involves unique risks and is not suitable for all investors.

Spreads, condors, butterflies, straddles, and other complex, multiple-leg options strategies can entail substantial transaction costs, including multiple commissions, which may impact any potential return. These are advanced options strategies and often involve greater risk, and more complex risk, than basic options trades. Be aware that assignment on short options strategies discussed in this article could lead to unwanted long or short positions on the underlying security.

The maximum potential reward for a long put is limited by the amount that the underlying stock can fall. Should the long put position expire worthless, the entire cost of the put position would be lost.

When trading short options strategies, there is a risk of getting assigned early on the options sold, even if they go in the money by \$0.01, obligating you to deliver shares you don't own (in the case of a short call) or purchase shares (in the case of a short put).

The risk of loss on an uncovered short call options position is potentially unlimited since there is no limit to the price increase of the underlying security. Option writing as an investment strategy is absolutely inappropriate for anyone who does not fully understand the nature and extent of the risks involved.

Short naked put and cash-secured put strategies include a high risk of purchasing the corresponding stock at the strike price when the market price of the stock will likely be lower.

Short naked options strategies involve the highest amount of risk and are only appropriate for traders with the highest risk tolerance.

A covered call strategy can limit the upside potential of the underlying stock position, as the stock would likely be called away in the event of a substantial stock price increase. Additionally, any downside protection provided to the related stock position is limited to the premium received. (Short options can be assigned at any time up to expiration regardless of the in-the-money amount.)

# 3

## FUTURES

Futures trading is not suitable for all investors, as the risk of loss in trading futures is substantial. Futures accounts are not protected by the Securities Investor Protection Corporation (SIPC). Futures and futures options trading services are provided by TD Ameritrade Futures & Forex LLC. Trading privileges are subject to review and approval. Not all clients will qualify.

Futures and futures options trading are speculative and are not suitable for all investors. Please read the *Risk Disclosure for Futures and Options* prior to trading futures products (<https://www.tdameritrade.com/retail-us/resources/pdf/TDA631.pdf>).

# 4

## SPREAD DISCLOSURES

**Options collar:** The collar position involves the risks of both covered calls and protective puts.

**Options covered call:** The covered call strategy can limit the upside potential of the underlying stock position, as the stock would likely be called away in the event of a substantial stock price increase. Additionally, any downside protection provided to the related stock position is limited to the premium received. (Short options can be assigned at any time up to expiration regardless of the in-the-money amount.)

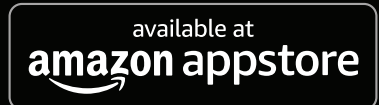
**Options long put:** The maximum potential reward for a long put is limited by the amount that the underlying stock can fall. This strategy provides only temporary protection from a decline in the price of the corresponding stock. Should the long put position expire worthless, the entire cost of the put position would be lost.



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