

# OPTIONS WORKSHOP

Spring '18



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PLATINUM  
SECURITIES**



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**Full Information Session: 6:30PM February 6<sup>th</sup> (Tuesday) in KMEC-360**

**Event Link: <https://goo.gl/nromW4>**

**To apply, submit resume and brief application to**

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**Application Deadline: 11:59PM February 10<sup>th</sup> (Saturday)**

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# BRAINTEASER

You can play a game where you roll a dice and simply receive the dollar amount of whatever number you rolled (5\$ for a 5). What's the max amount you'd pay to play?

How much would you pay for the game if you also had the option to re-roll and take whatever the second roll is instead?

# SOLUTION

$$1/6 * (1+2+3+4+5+6) = 3.5$$

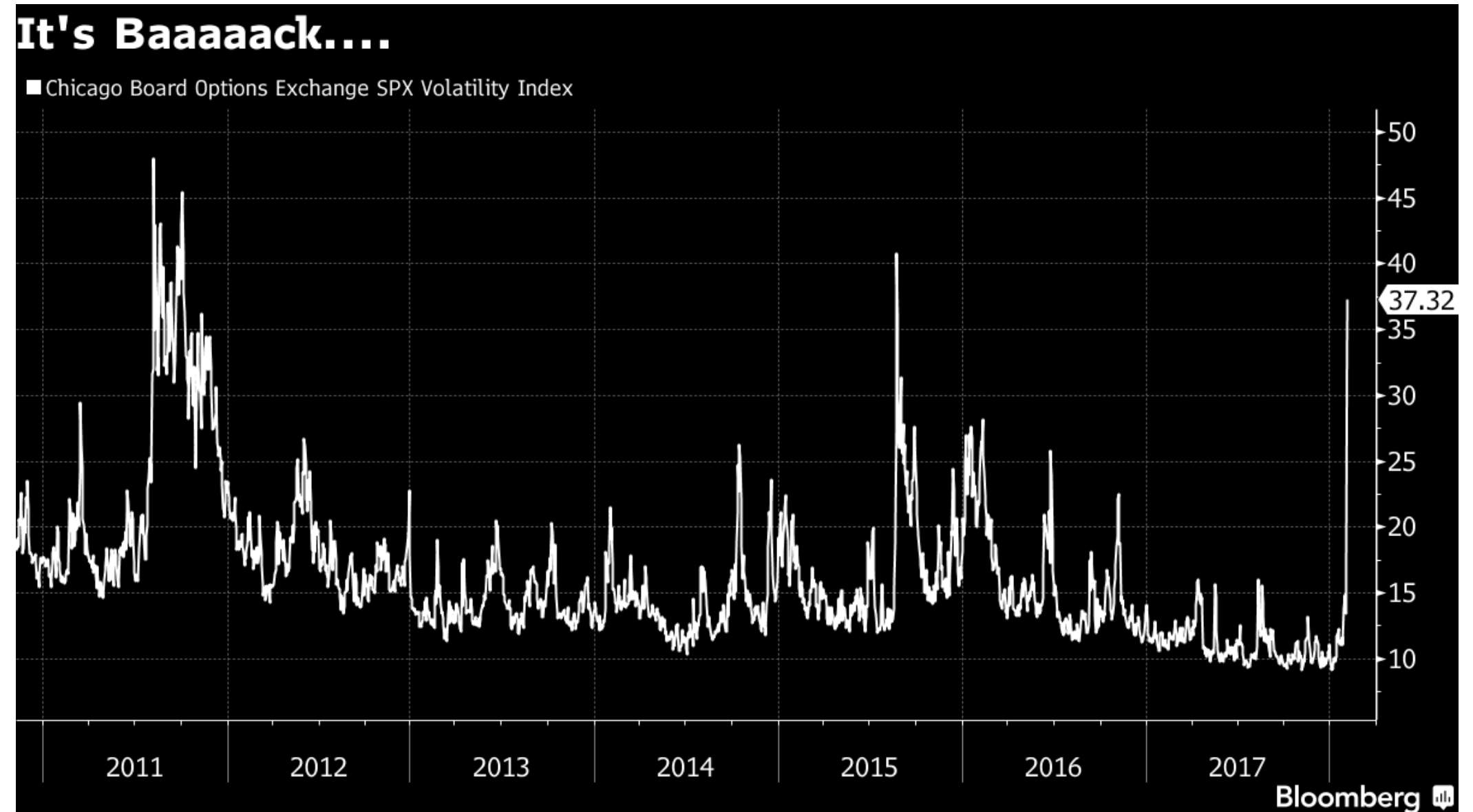
Re-roll if  $x < 3.5$ , keep if  $x > 3.5$   
If you keep, your expected value is  
 $1/3 * (4+5+6) = 5$

If you re-roll, you just get another fair dice roll  
3.5 from above

$$\begin{aligned} &50\% \text{ chance of keeping} \\ &50\% \text{ chance of re-rolling} \\ &0.5 * 5 + 0.5 * 3.5 = 4.25 \end{aligned}$$

# Market Update

- Stock Market woes
  - Volatility
  - Inflation fears
  - Steeper yield curve
- Role of Risk Parity and CTA's
- Crypto falling



# WELCOME!

Options 101

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A few things before we start....

# Definition of an Option

## Option Definition:

An option is a contract which gives the buyer (the owner or holder of the option) the right, but not the obligation, to buy or sell an underlying asset or instrument at a specified strike price on a specified date.

# OKAY, LET'S BREAK DOWN THIS DEFINITION...

An option is a contract which gives the buyer (the owner or holder of the option) the right, but not the obligation, to buy or sell an underlying asset or instrument at a specified strike price on a specified date.

RIGHT

UNDERLYING  
ASSET

STRIKE  
PRICE

Right – I don't have to buy or sell the asset if I don't want to (i.e. option is not exercised)

Underlying Asset – What is the option on? Is it on AAPL Stock?

Strike Price – Parties will agree on a set price... Example: I want to the right to buy AAPL stock at 150 dollars for the next 100 days.





## BUY CALL

The right to buy underlying at a specific strike price for a specified time.



## BUY PUT

The right to sell underlying at a specific strike price for a specified time.



## WRITING (SELL OPTION)

You are selling the right to someone – which means you **MUST** take obligation. You can sell both a put and call.

# THREE EXAMPLES

BUY AAPL STOCK @  
130

BUY CALL @ 130  
STRIKE

This will cost something (~\$1 for 5 day  
option)

BUY PUT @ 130  
STRIKE

This will cost something (~\$1 for 5 day  
option)

What happens when AAPL Stock goes to 120, 130, 140?

# ANOTHER EXAMPLE

IS BUYING A 130 STRIKE CALL THE SAME AS SELLING A 130 STRIKE PUT?

# What Not To Do

A screenshot of a Facebook post from the page "NYU Secrets". The post is dated "January 28 at 8:07pm" and is public. The text of the post is "#10,179: 'I sell naked puts to pay tuition.'" Below the text are four interaction buttons: "Sad" (with a sad face emoji), "Comment", "Share", and a profile picture icon with a dropdown arrow. Below these buttons, it says "You and 93 others" reacted with a thumbs up, a sad face, and an angry face emoji. To the right, it says "Top Comments". Below that, it shows "1 Share" and "5 Comments". A comment box is visible with the text "Write a comment..." and icons for emojis, photos, GIFs, and stickers. Below the comment box, a comment from "Zachary Jingleb Maranos" is visible, reading "OP Please don't :(". This comment has a "Like" button with a count of "1" and "5d" (5 days) ago. Below the comment, it says "1 Reply".

**NYU Secrets**  
January 28 at 8:07pm · 🌐

#10,179: "I sell naked puts to pay tuition."

**Sad**    **Comment**    **Share**

You and 93 others    **Top Comments** ▾

1 Share    5 Comments

Write a comment...

**Zachary Jingleb Maranos** OP Please don't :( 1  
Like · Reply · 5d

1 Reply

Volatility

More on this later

REASON 3

LEVERAGE

Cheaper to buy calls/puts than stock

REASON 2

PROTECTION AND  
HEDGING

Used to protect downside (think of payoff)

REASON 1

USE OF AN  
OPTION

There are many reasons to buy an option instead of stock.

# ROHAN THE SPIV

## ► What should Rohan do?

Rohan put all his life savings to buy Qualcomm stock. If Qualcomm walks away from the Broadcom merger, the stock is sure to go down a lot. How can Rohan protect himself on the downside?

BUY CALL?

BUY PUT?

SELL CALL?

SELL PUT?

# EVAN THE OIL REFINER

## ► What should Evan do?

As an oil refiner (he buys crude oil, runs a refining process, and sells heating oil), Evan wants to hedge its oil exposure through options. What should he do?

BUY CALL?

BUY PUT?

SELL CALL?

SELL PUT?





# LEVERAGE

**Leveraging** is creating potential for bigger gains using a smaller amount of capital. For the investor, however, buying options provides inherent financial leverage. Without needing to use borrowed capital, by investing in options, you can control a **larger number of shares** for the same **initial investment**, than if you purchased the shares themselves.



# AMERICAN VS. EUROPEAN



## AMERICAN

- Can exercise the option at any time
- Nearly all exchange traded options are American

## EUROPEAN

- Can only exercise at expiry
- Most index option are European

Exercising means converting the option into the stock with an entry price at the strike price. Note: Don't mistake exercising an option with selling the position. You may not be able to exercise a European option, but you can sell your position by selling the option any time you want.

# MONEYNESS

## Out of the Money

**Out of the money** (OTM) is term used to describe a call option with a strike price that is higher than the market price of the underlying asset, or a put option with a strike price that is lower than the market price of the underlying asset.

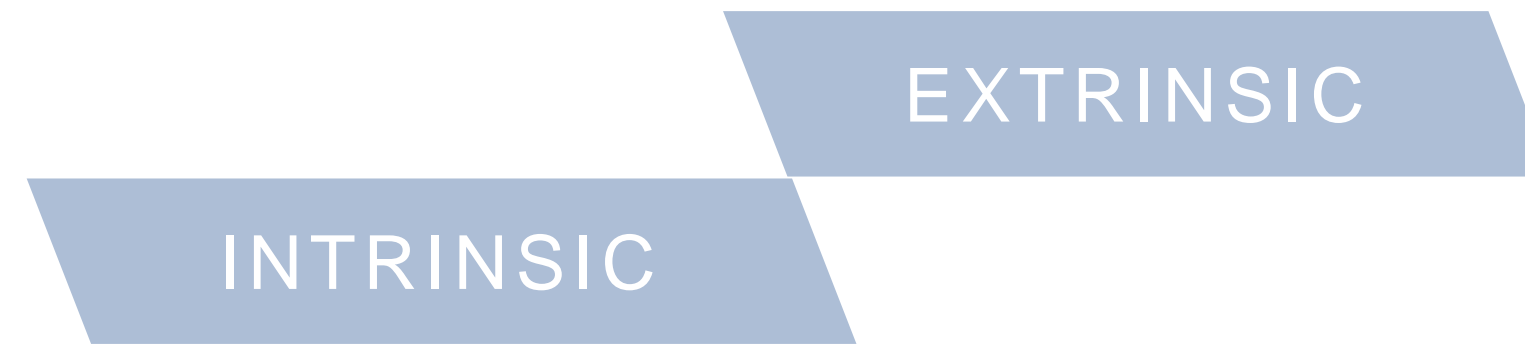
## At the money

**At the money** (ATM) is a situation where an option's strike price is identical to the price of the underlying security. Both call and put options are simultaneously at the **money**. For example, if XYZ stock is trading at 75, then the XYZ 75 call option is at the money and so is the XYZ 75 put option.

## In the money

**In the money** (ITM) is term used to describe a call option with a strike price that is lower than the market price of the underlying asset, or a put option with a strike price that is higher than the market price of the underlying asset.

If AAPL is trading at 130 would an 80 Strike Call be ITM, OTM, or ATM. What if AAPL Traded at 60? 80?



Intrinsic Value: How much ITM the option is

Extrinsic Value: The rest of option's value is attributed to extrinsic value (time value)

## Value of an Option

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There is something called the Black-Scholes options pricing model, but let's divide the value in a simpler manner: intrinsic and extrinsic.

# PRACTICE QUESTIONS

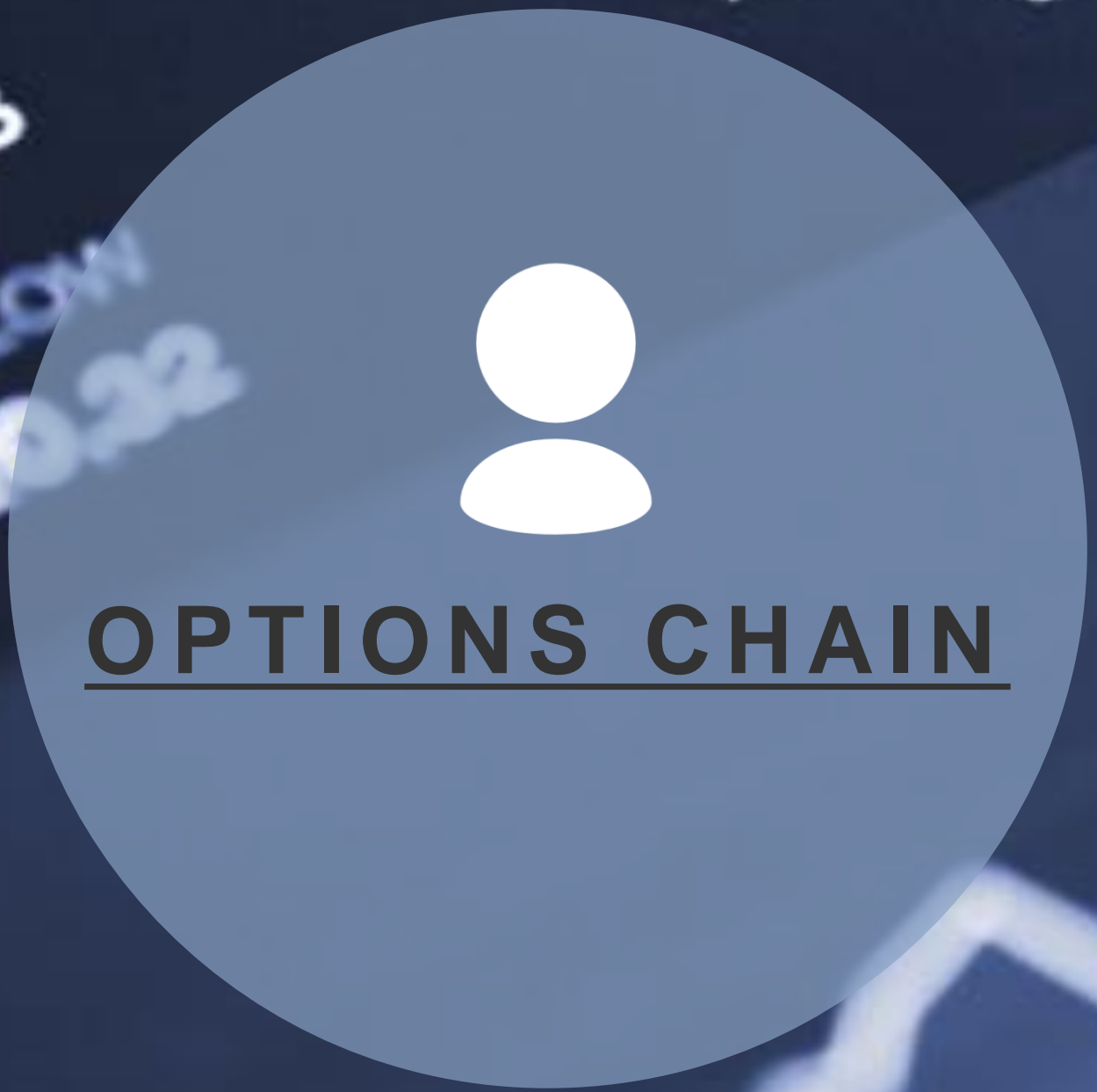
Why does a call with strike 100 but underlying trade at 110 necessarily have to cost more than \$10?

What is the intrinsic value of a call option with strike 110 and underlying trades at 100, with option price costing 3 dollars?

What is the extrinsic value of a call option with strike 110 and underlying trades at 100, with option price costing 3 dollars?

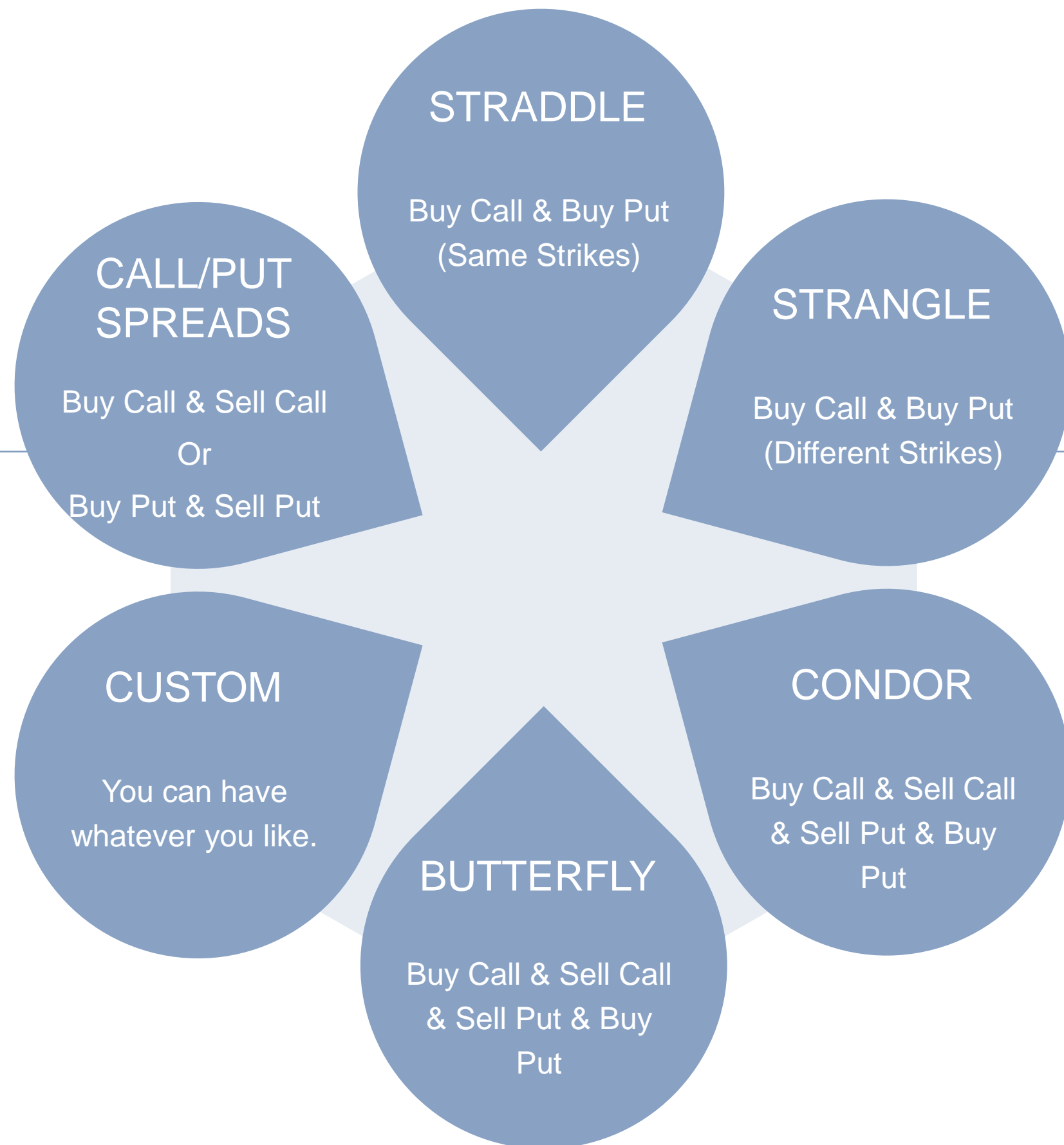
PREVIOUS CLOSE  
24.91  
TOTAL VOLUME  
823.149

24.91  
24.14  
25.88  
25.16  
24.66  
24.00



**OPTIONS CHAIN**





# 6 OPTIONS STRATEGIES

## ► VARIETY OF EXPRESSIONS

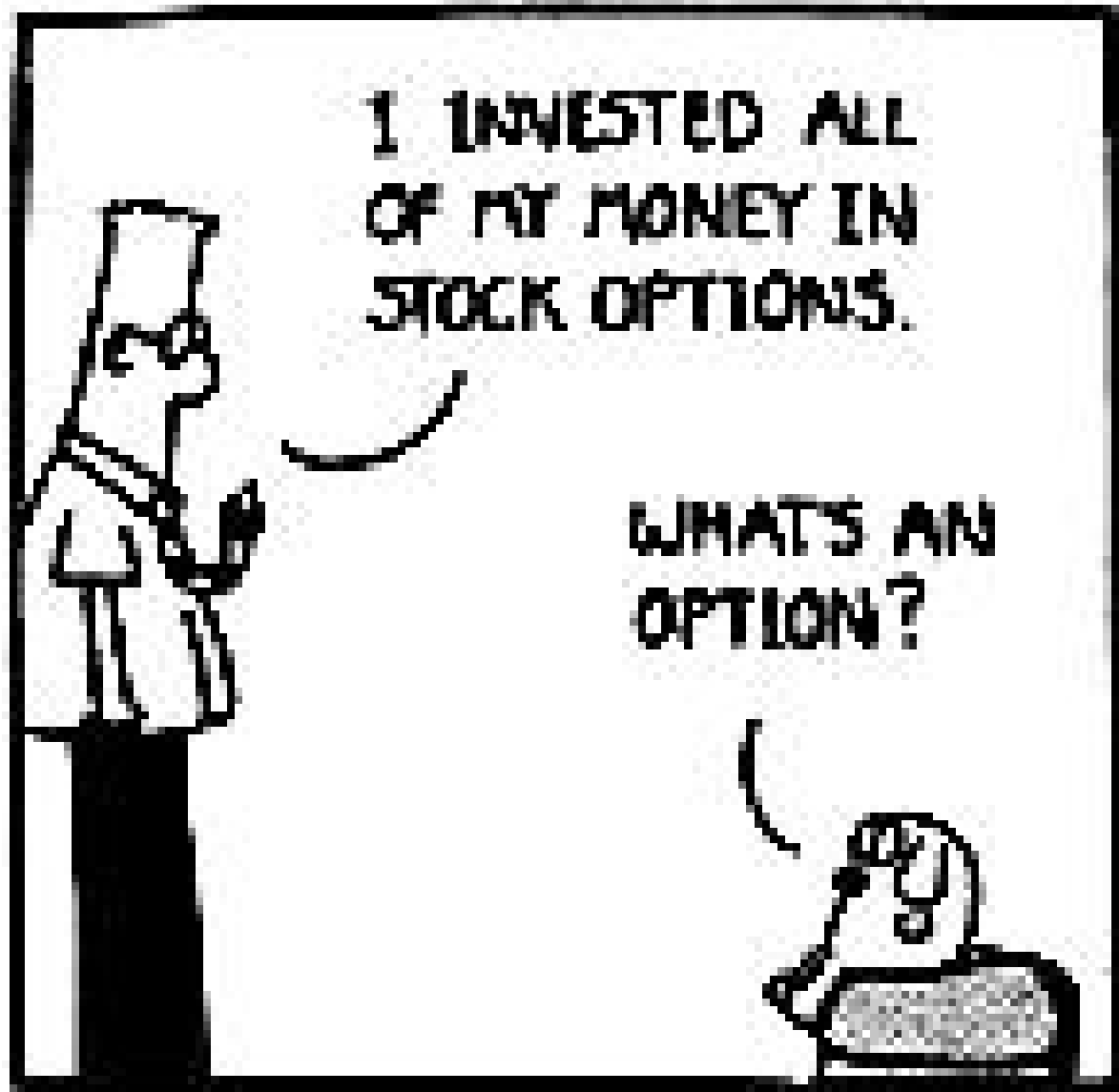
Different strategies allow to customize trade expression to cater any investors needs

## ► WHAT RISKS DO YOU WANT?

Some strategies are riskier. We will go into risk sensitivities next lecture (1<sup>st</sup> Derivative and 2<sup>nd</sup> Derivative Greeks).

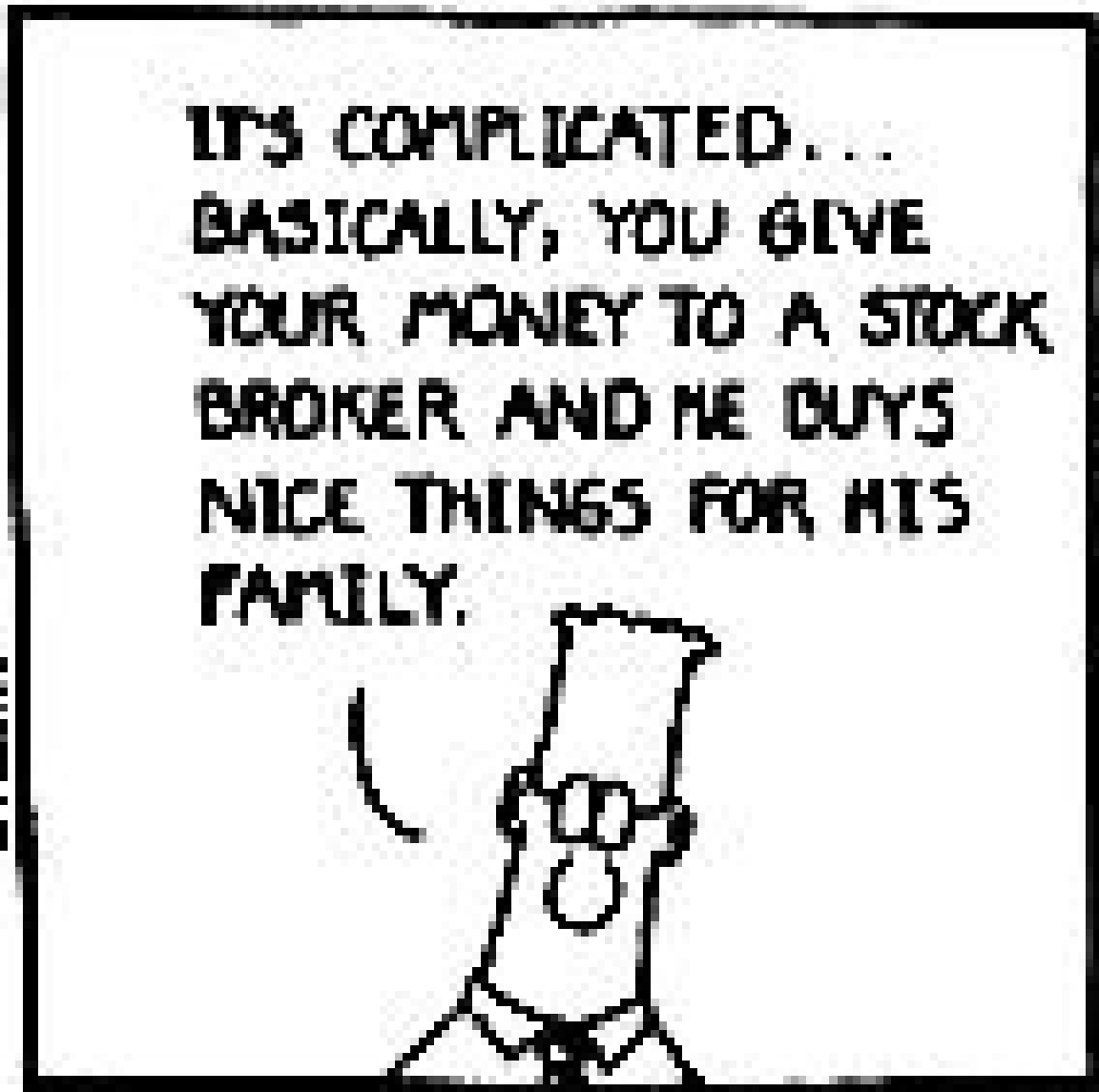
## Option Chain for Apple Inc. (AAPL)

Calls	Last	Chg	Bid	Ask	Vol	Open Int	Root	Strike	Puts	Last	Chg	Bid	Ask	Vol	Open Int
Feb 16, 2018			15.25	16.05	0	0	AAPL	143	Feb 16, 2018	0.53		0.51	0.65	459	2687
Feb 16, 2018	14.17		14.50	14.85	10	0	AAPL	144	Feb 16, 2018	0.70	0.45	0.60	0.74	174	1052
Feb 16, 2018	12.50	-0.59	13.45	13.95	11	4428	AAPL	145	Feb 16, 2018	0.75	0.02	0.71	0.85	603	11082
Feb 16, 2018	17.75		12.50	13.20	0	10	AAPL	146	Feb 16, 2018	0.87	0.12	0.81	0.94	43	320
Feb 16, 2018			11.60	12.30	0	0	AAPL	147	Feb 16, 2018	1.23	0.16	0.92	1.06	264	2087
Feb 16, 2018	10.50	-2.25	10.90	11.25	3	54	AAPL	148	Feb 16, 2018	1.39	0.16	1.07	1.20	169	3677
Feb 16, 2018	11.25		10.05	10.40	0	91	AAPL	149	Feb 16, 2018	1.69	0.18	1.24	1.36	236	703
Feb 16, 2018	8.25	0.05	9.20	9.55	837	7574	AAPL	150	Feb 16, 2018	1.91	0.31	1.42	1.54	4397	21512
Feb 16, 2018	6.35	-0.15	7.30	7.60	116	520	AAPL	152.5	Feb 16, 2018	2.64	0.19	2.00	2.10	2674	7034
Feb 16, 2018	4.90	0.18	5.65	5.85	4193	12413	AAPL	155	Feb 16, 2018	3.40	0.03	2.80	2.97	3266	37560
Feb 16, 2018	3.55	-0.05	4.20	4.40	1688	6445	AAPL	157.5	Feb 16, 2018	4.55	0.20	3.85	4.05	1343	10557
Feb 16, 2018	2.55	-0.05	2.97	3.15	5232	21413	AAPL	160	Feb 16, 2018	6.25		4.95	5.35	2632	25202
Feb 16, 2018	1.75	0.18	2.05	2.17	3484	10565	AAPL	162.5	Feb 16, 2018	7.83	0.23	6.60	6.90	276	5243
Feb 16, 2018	1.08	-0.06	1.36	1.47	5684	28049	AAPL	165	Feb 16, 2018	9.56	-0.12	8.40	8.80	1885	38435
Feb 16, 2018	0.67	-0.17	0.87	0.96	4035	11373	AAPL	167.5	Feb 16, 2018	11.80	0.26	10.40	10.85	104	5111
Feb 16, 2018	0.45	-0.07	0.56	0.60	9612	41492	AAPL	170	Feb 16, 2018	13.90	-0.45	12.60	13.10	1666	52388
Feb 16, 2018	0.27	-0.05	0.34	0.41	2024	9939	AAPL	172.5	Feb 16, 2018	14.77	-0.03	14.90	15.40	54	2319



I INVESTED ALL OF MY MONEY IN STOCK OPTIONS.

WHAT'S AN OPTION?



IT'S COMPLICATED... BASICALLY, YOU GIVE YOUR MONEY TO A STOCK BROKER AND HE BUYS NICE THINGS FOR HIS FAMILY.



DO YOU HAVE ANY SNIDE COMMENTS?

NO. YOU TOOK ALL THE FUN OUT OF IT.



# STRADDLE

## BUY ATM CALL & ATM PUT

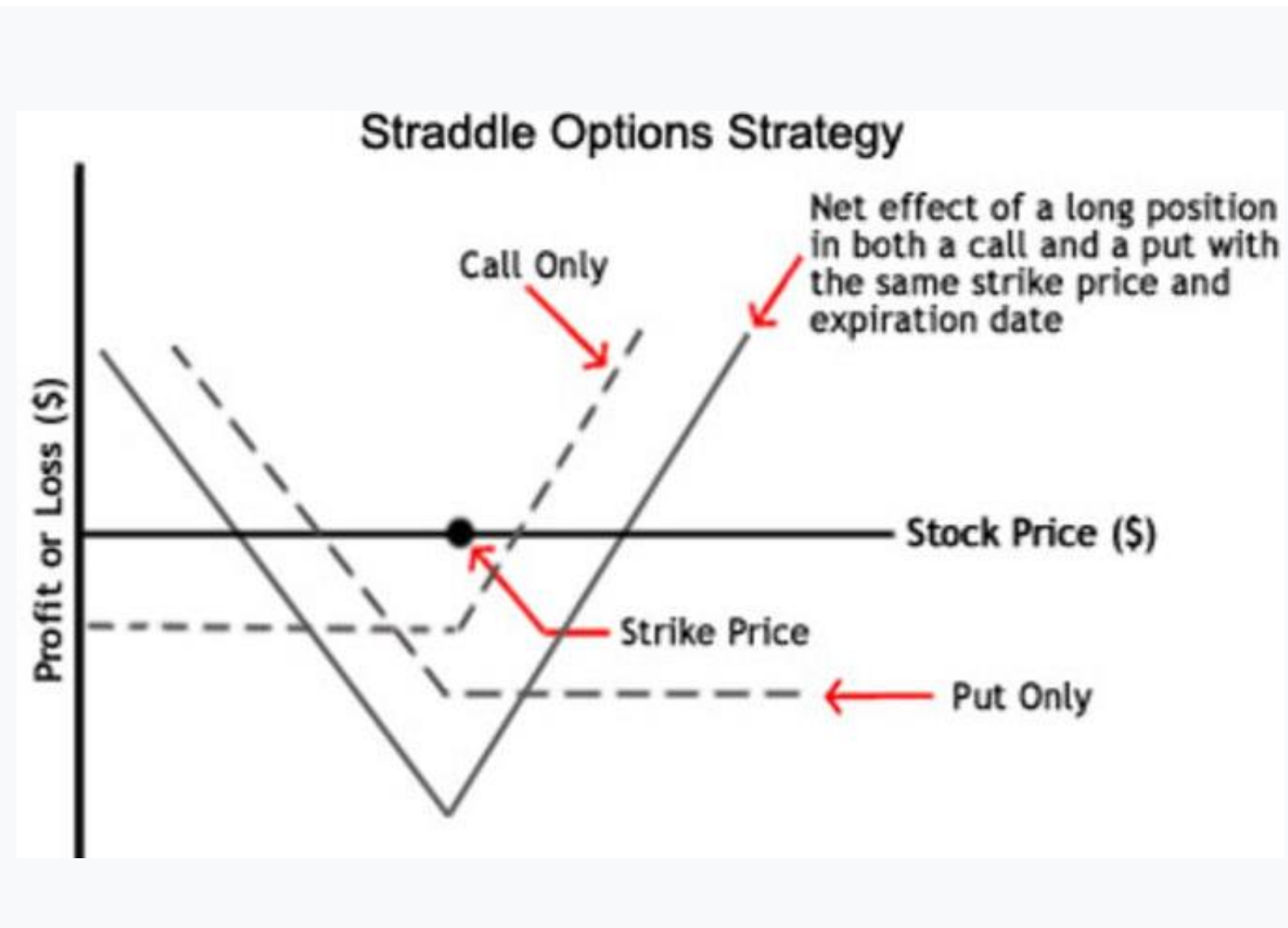
The result of buying the two leads to a V-Shape

## NON-DIRECTIONAL VIEW

You can make money if the underlying moves in either direction

## LONG VOLATILITY VIEW

You want higher volatility (greater movements up or down)



# STRANGLE

## BUY OTM CALL & OTM PUT

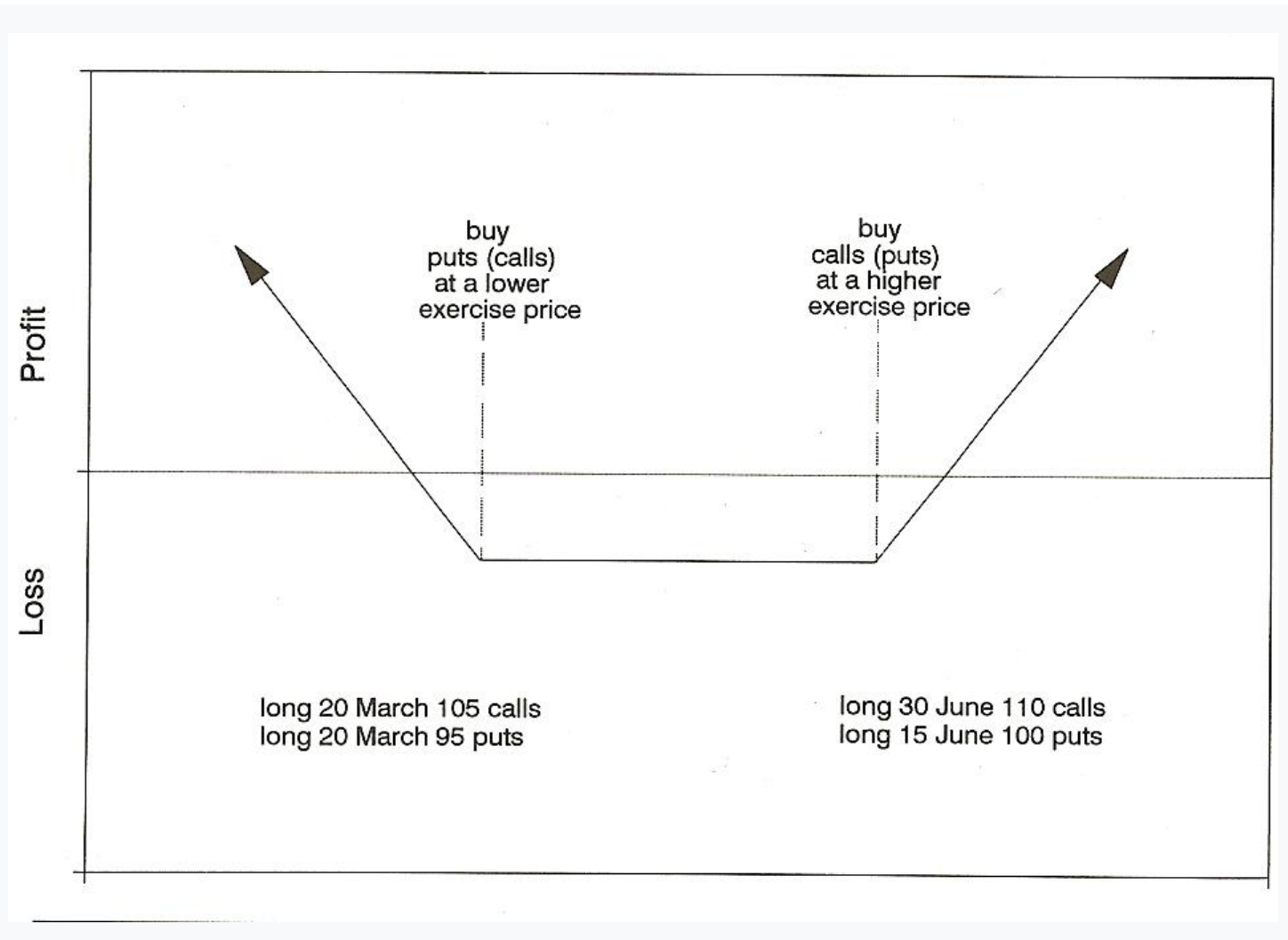
The result of buying the two leads to a U-Shape

## NON-DIRECTIONAL VIEW

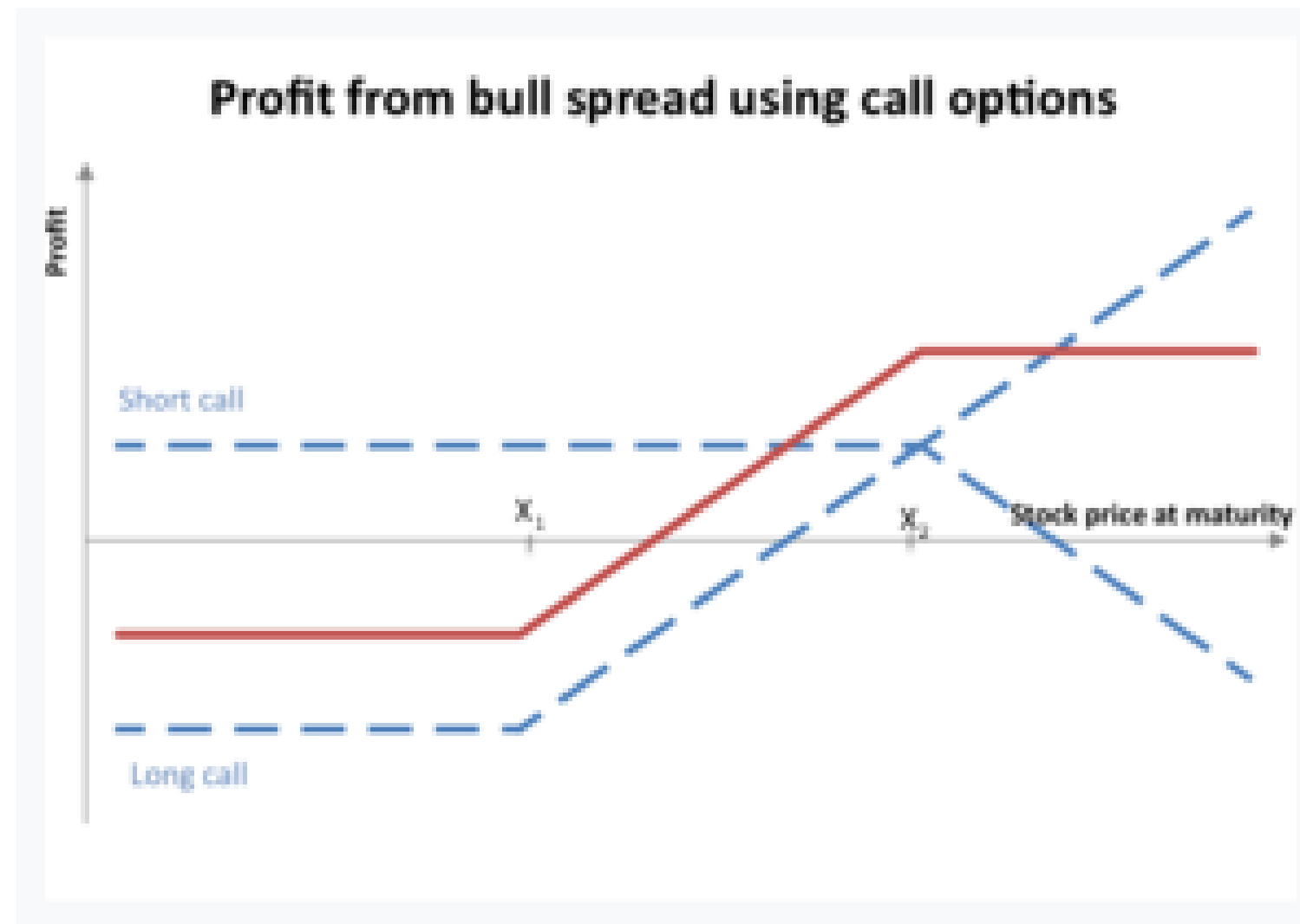
You can make money if the underlying moves in either direction

## LONG VOLATILITY VIEW

You want higher volatility (greater movements up or down)



# OPTION SPREADS



## BUY LOWER STRIKE / SELL HIGHER STRIKE CALL

The result is limited downside, but you also sold your upside

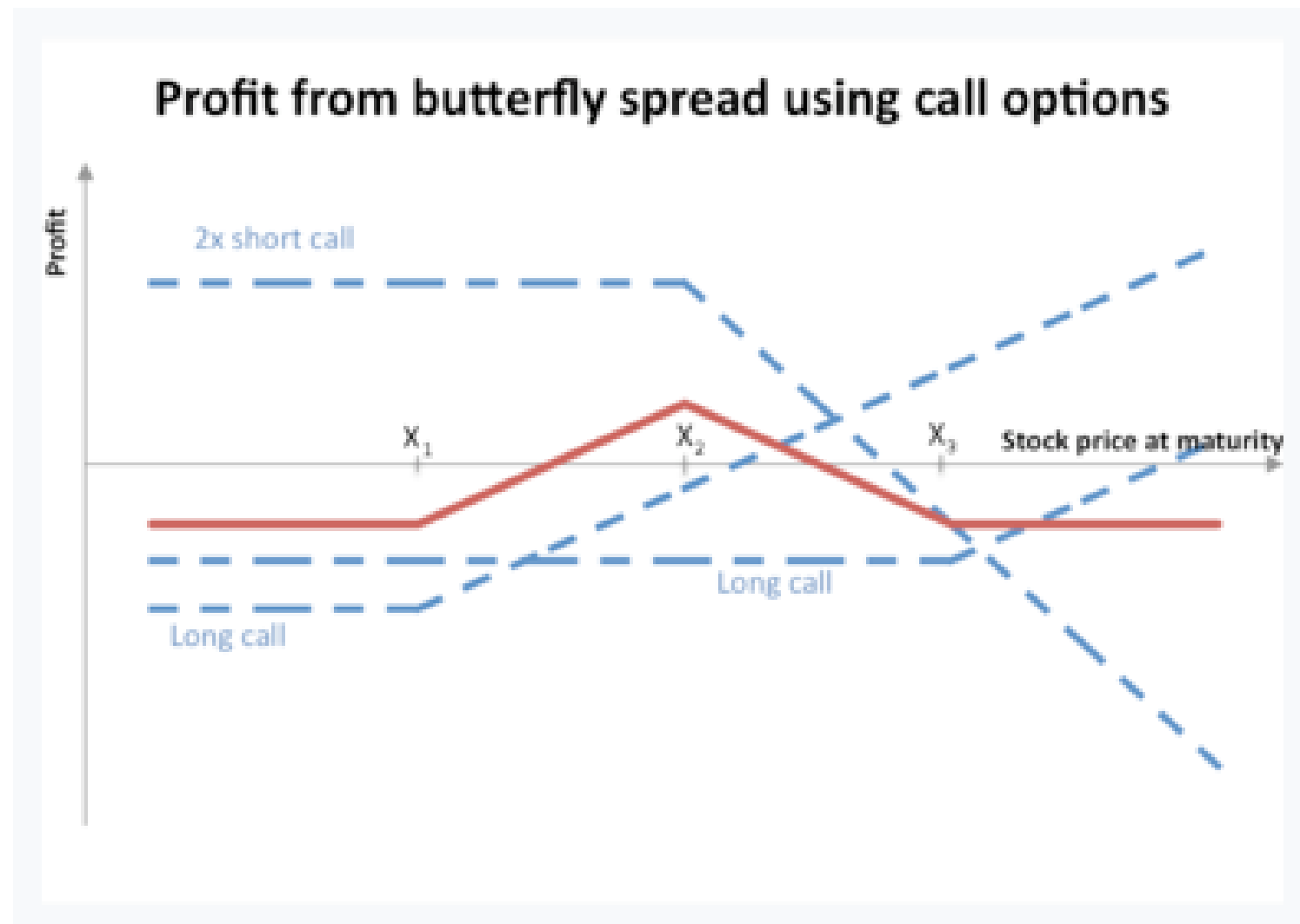
## DIRECTIONAL VIEW

For this particular option spread, you are bullish on underlying but think there won't be a large movement up though

## VOLATILITY VIEW

Not really a view on volatility – but benefit as volatility decreases as you are more correct.

# BUTTERFLY



▶ **LONG 1x ITM CALL, SHORT 2x ATM CALL, LONG 1x OTM CALL**

You can also build it through puts or a combination of puts and calls as well

▶ **NON-DIRECTIONAL VIEW**

You don't really care if it goes up or down – you can still make money

▶ **SHORT VOLATILITY VIEW**

So long as the underlying doesn't move up or down a lot, you stand to make money on the strategy

# CONDOR

## ► SIMILAR TO BUTTERFLY

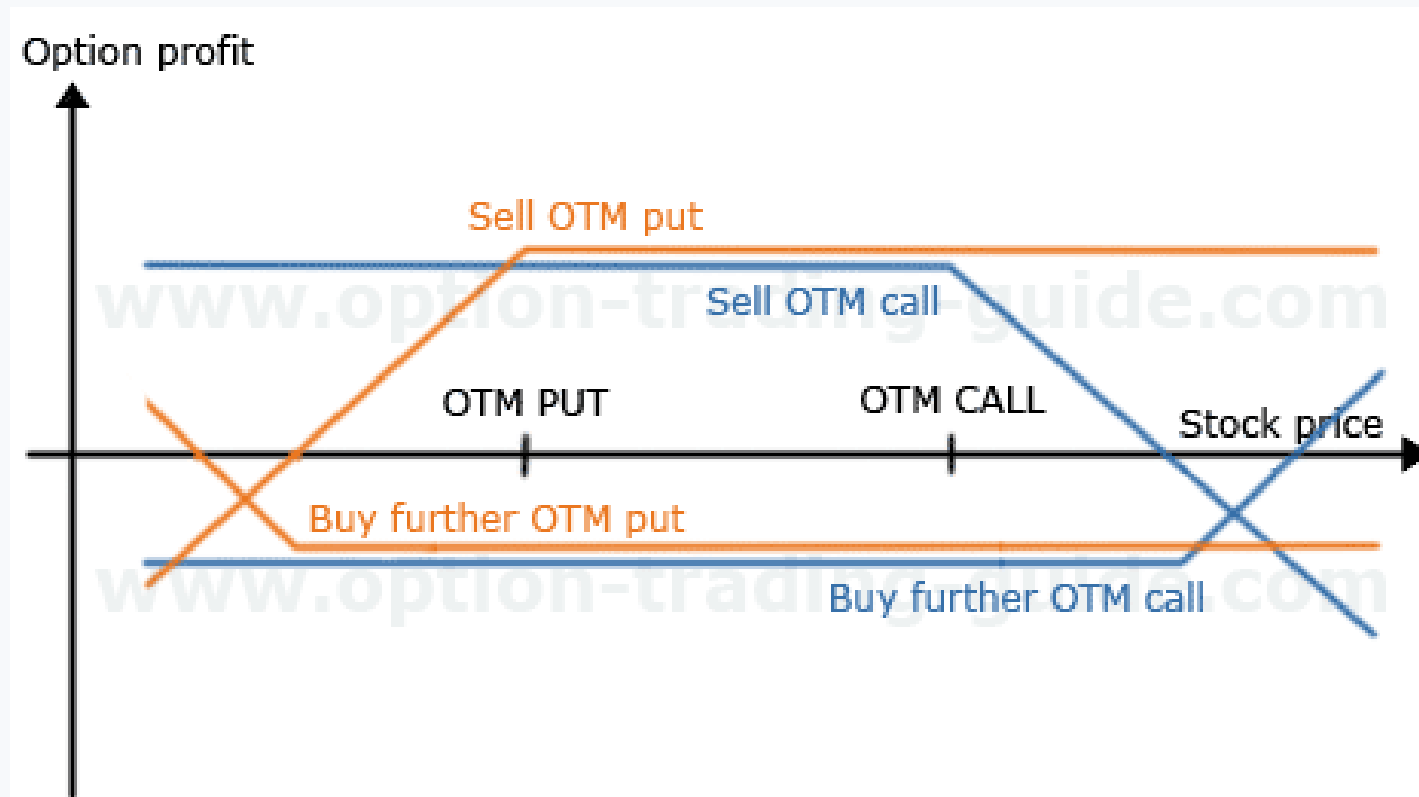
You can also build with just puts or just calls as well

## ► NON-DIRECTIONAL VIEW

Doesn't matter which direction the underlying moves

## ► VOLATILITY VIEW

Like butterflies, we are also short butterflies



# NEXT WEEK

BLACK  
SCHOLES



ASSUMPTIONS  
OF B/S MODEL



OPTION  
GREEKS



SKEW



PUT / CALL  
PARITY



OPTIONS  
PITCH

