What Are **Options**?

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- Hi, my name is Don Fishback, and welcome to What Are Options?
- In this course, our objective is to teach you a different way to build wealth.
- To achieve that goal, we’re going to use options.
- And that means you need to be able to answer this basic question:
- What Are Options?

Change the way you think about building wealth

THINK DIFFERENTLY

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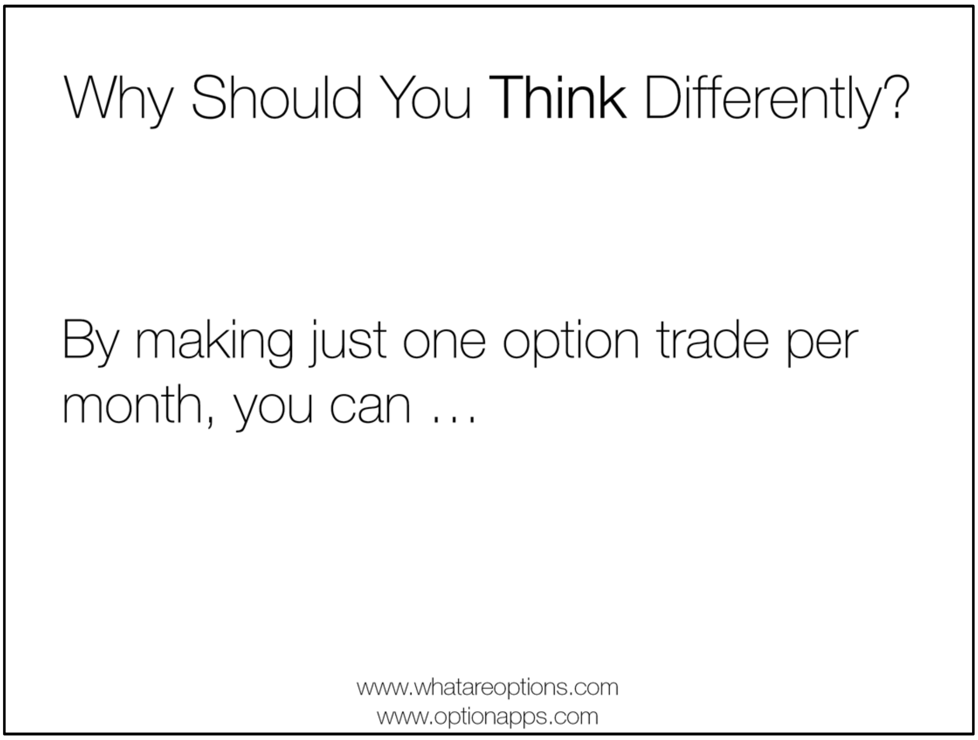
- [Chapter 1]
- During this learning process, you must, must, MUST learn to THINK DIFFERENTLY.
- If we accomplish our objective, by the time you complete this course, you will
- **Change the way you think about building wealth**.
- What's the benefit of thinking differently?
- Consider this:



- By making just one option trade per month ...
- And realize, this is just one example.
- In fact, it is perhaps the easiest options trade you can imagine...
- By making this one option trade per month, you can:

Reduce Risk 35%

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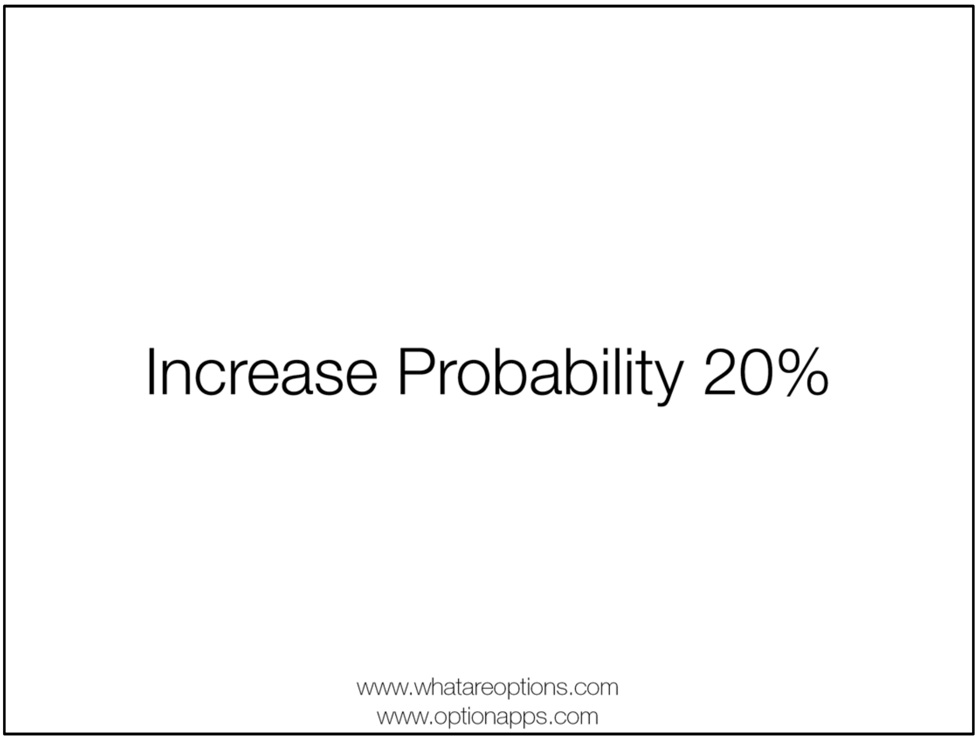
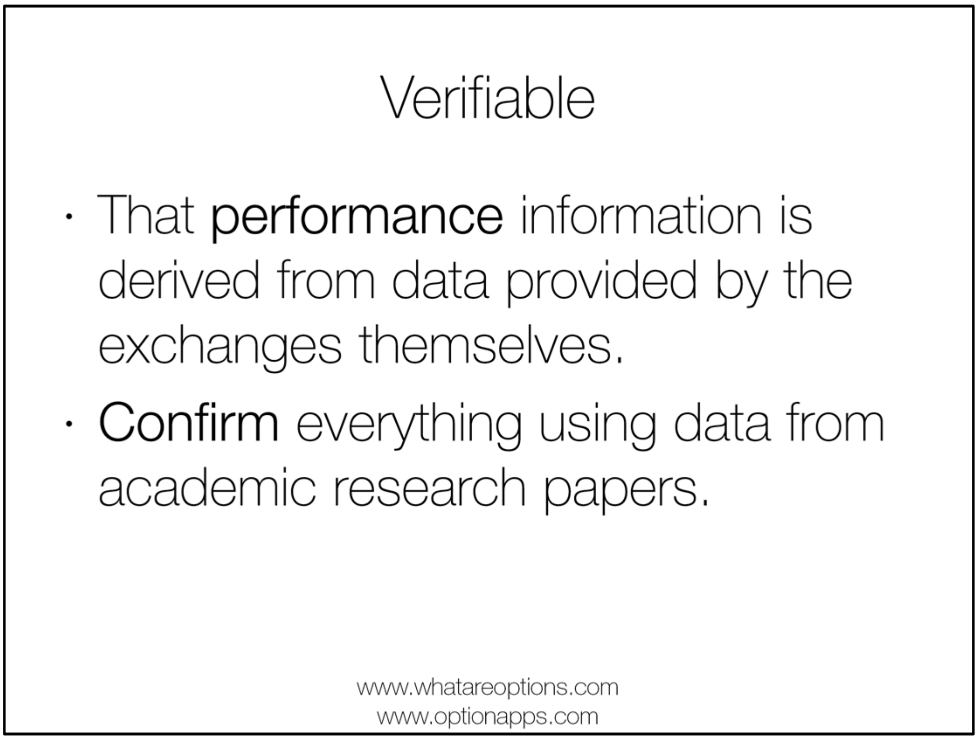
- Reduce Risk 35%

- Increase Reward 24%



- Increase Probability 20%



- Those performance numbers are all verifiable
- I'LL SHOW YOU THE CHARTS AND THE NUMBERS TO PROVE IT.
- The performance data comes directly from the options exchanges, not from me.
- I'm just the messenger who will share it with you.
- Plus, we'll show you numerous academic research papers that confirm all of this.
- So those performance claims you just saw... They're real, and you can count on them being accurate.

This **simple** method is **automatic**

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- Here’s something else you should know.
- This very simple method I just described – the one with the outstanding performance – it’s automatic.

No need to make any calculations.

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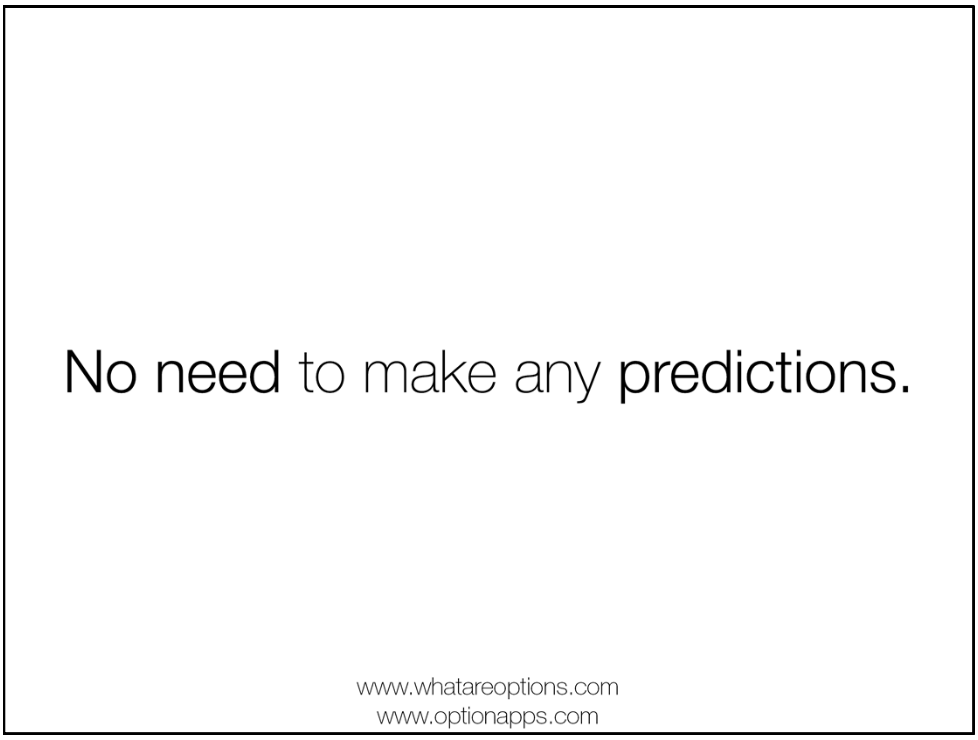
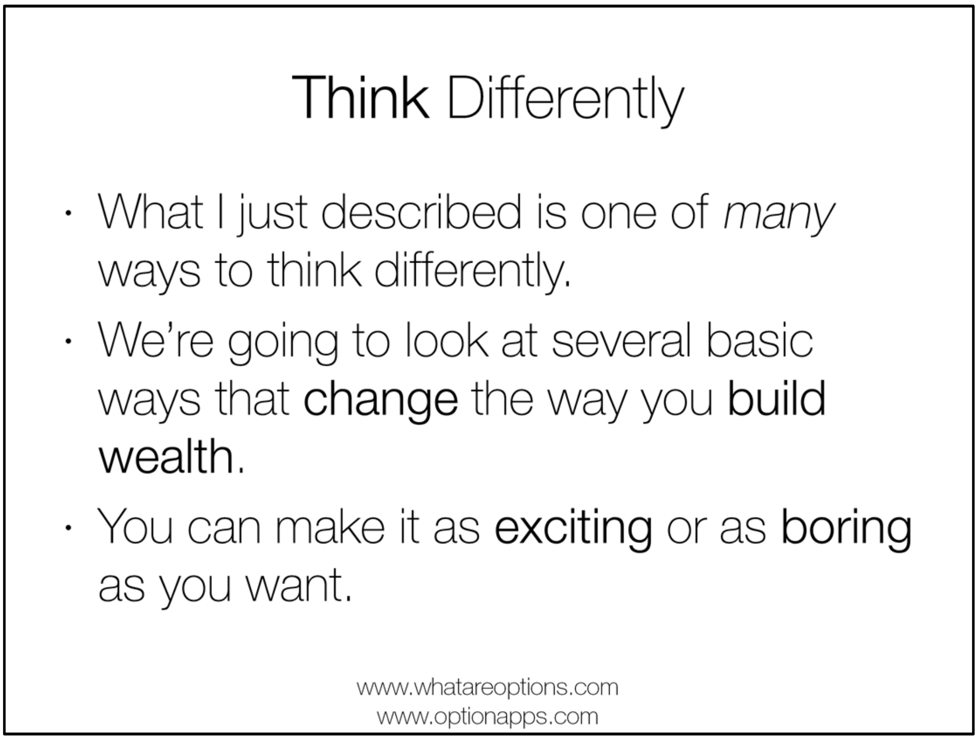
- To get those vastly improved profits, there is no need for you to make any calculations.



- To reduce your risk, there is no need to make any predictions.

- This particular method doesn’t require that you watch or monitor positions more than one day a month.



- What I just described is one of many ways to think differently.
- Not all of them are as easy as this one particular strategy.
- To make sure you have a good grasp of what options can do, we're going to look at several basic ways that change the way you build wealth.
- You can make it as exciting or as boring as you want.

- So how do you think differently?
- The normal methods people think of when they think of making money is to ...
- Buy low, sell high
- And fixed income, such as bonds and CDs.
- The thing is, these investments require you to make forecasts.
- In the case of stocks, you must correctly forecast the direction of whatever company you've invested.
- With fixed income, the forecast is purchasing power as measured by Income vs. inflation.
- You also need to assess the repayment ability of the entity you're giving your money to.
- With options, you are also making a forecast. But it's a completely <u>different</u> kind of forecast.
- And, as you'll see later on in this course, you can put this to your advantage over and over.

How Do You **Think** Differently?

- We're going to forecast something else: **magnitude** over **time**.
  - For example, how **big** will the moves be over the next **month**?

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- The thing we're going to forecast is: magnitude over time.
- For example, how big will the moves be over the next month?

- Here is a chart of Google. The normal way you would make money is to buy the stock.
- Hopefully, you buy it at a low price and it goes up.

Normal Way of Building Wealth

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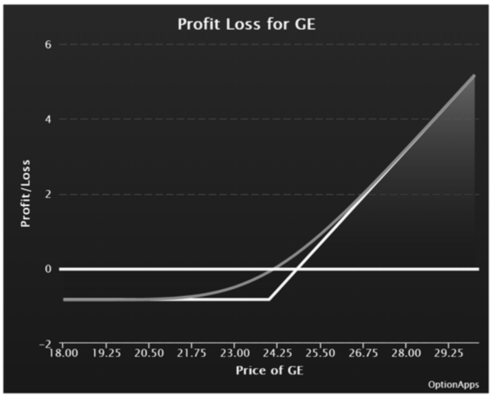
- Here's a profit loss chart showing what happens if you buy the stock.
- You profit if you buy a stock at one price and the price rises, and you sell it at that higher price.
- If the price goes down, you lose. If it goes up, you win.
- The only way for you to make money is if you pick that direction correctly.
- The good news is that the market typically moves higher due to an ever expanding economy, although the way things were in 2008 and 2009, that's not always true.
- Inflation also pushes all prices higher, including stocks

Different Way of Building Wealth

- This is a call purchase.



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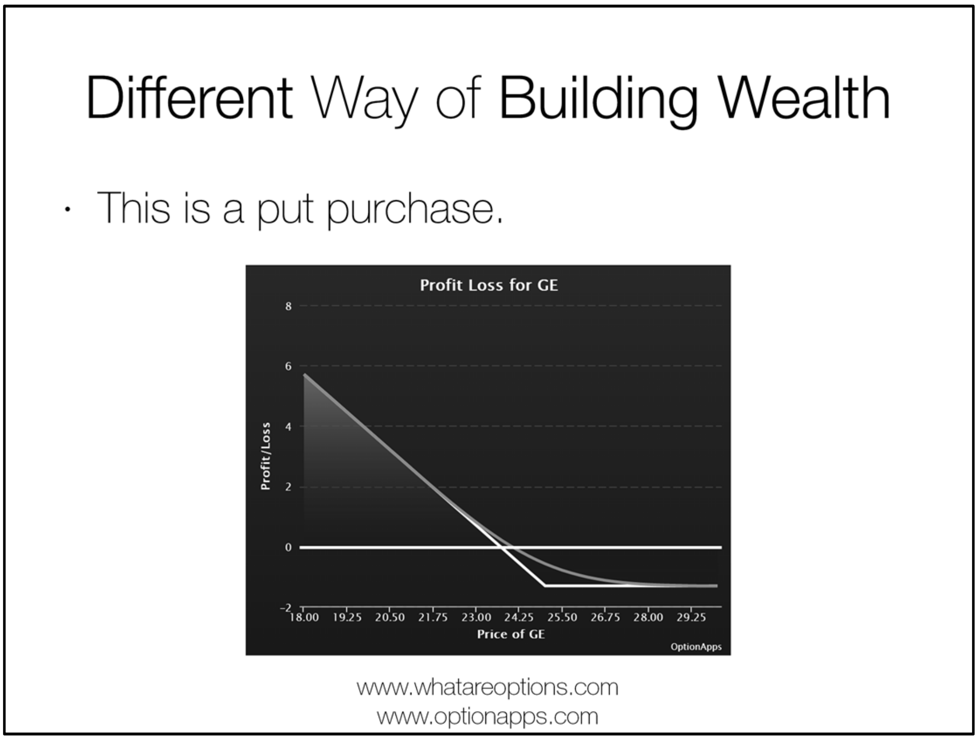
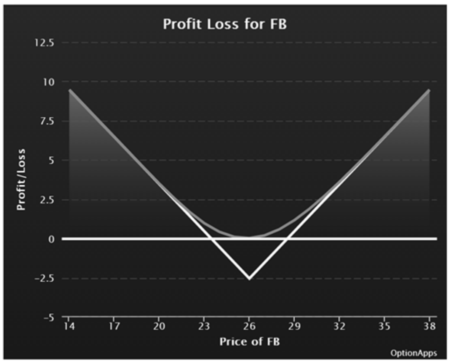
- Here’s a profit loss chart of an option
- It shows what happens if you buy a call.
- You can see something is very different.
- If the stock goes up, you win.
- If it goes down, you lose.
- But your losses are capped
- The risk and reward is “asymmetrical”.



- Here’s a profit loss chart showing what happens if you buy a put.
- If the stock goes down, you win.
- If it goes up, you lose.
- But notice again that losses are capped.
- The risk and reward is “asymmetrical”.

Different Way of Building Wealth: Direction is Irrelevant

- This is a **straddle** on Facebook (FB).
  - Buy call
  - Buy put
- **Makes money** if the stock makes a **big move**.



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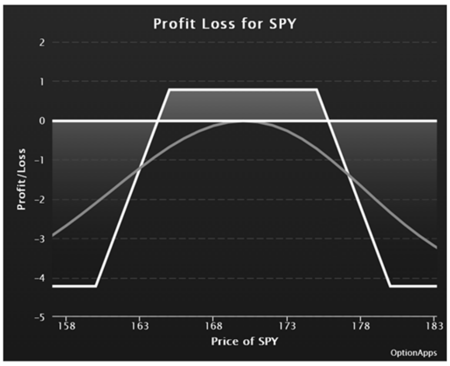
- The real magic happens when you combine options.
- Direction can become irrelevant
- This is a straddle on Facebook (FB).
- In a straddle, you buy a call and buy a put.
- There’s a little more to it than that. Which we’ll get into later.
- The key thing is, a straddle makes money if the stock makes a big move.
- The only thing that matters is magnitude over time.

Different Way of Building Wealth: Direction is Irrelevant

- This is a **spread** on the SPDR® S&P 500® ETF (SPY).
- **Makes money** if the market does **not** make a **big move**.



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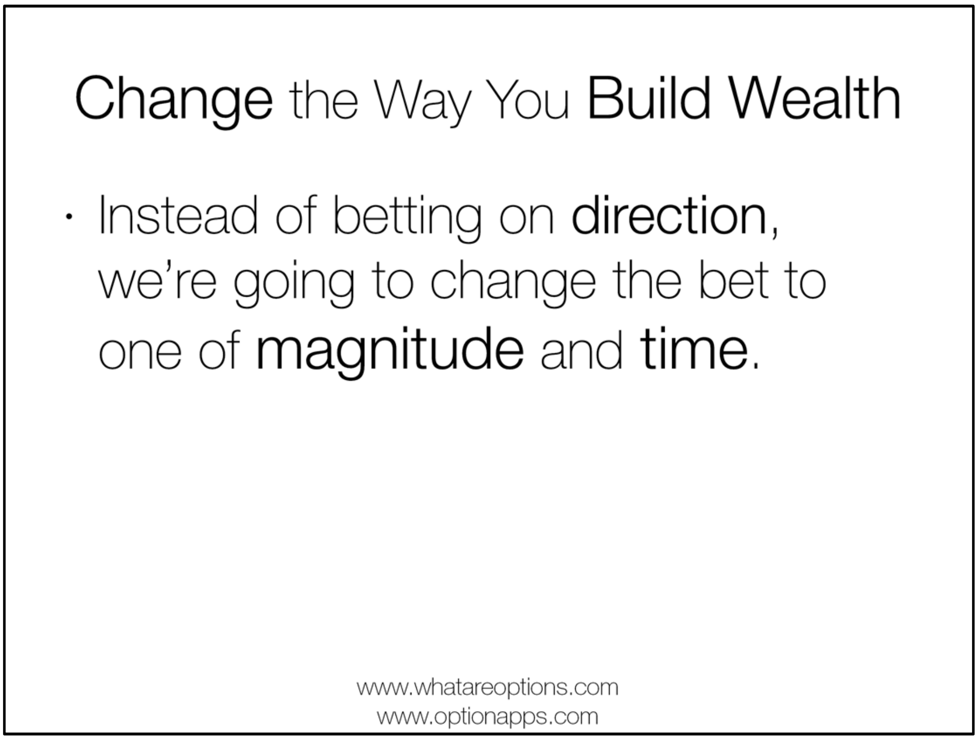
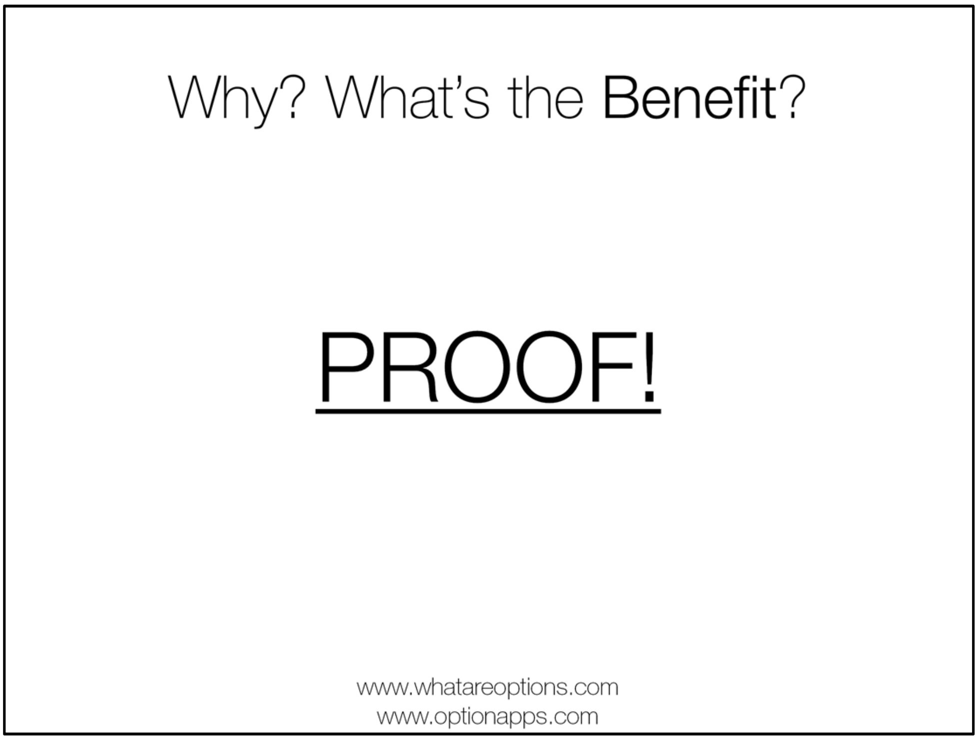
- Here is another combination
- This is a spread on the S&P 500 ETF.
- Again, direction is irrelevant.
- It doesn’t matter if the stock goes up or down.
- Makes money if the market does NOT make a big move.
- The only thing that matters is magnitude over time.



- As you can see, we're changing the way you build wealth. We're changing the normal rules.
- Instead of betting on direction, we're going to change the bet to one of magnitude and time.



- Okay, so what's the benefit? Why would we do this?
- Well, we're focused on numbers pure and simple.
- And we need proof.
- So numerical evidence is important to us.
- By focusing on magnitude over time, we can employ statistics in ways you may not have imagined.
- And get the proof we need.

Benefit of Numbers

- **Statistical analysis** allows us to determine how far an asset price moves over a set period of time.
- We have **60 years of data** we can use.
- Plus, **academic studies** show that the stock market very rarely moves down more than 6% in a month.
    - Mark Broadie, Mikhail Chernov, and Michael Johannes, *Understanding Index Option Returns*, Rev. Financ. Stud. (2009) 22 (11): 4493-4529

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- Statistical analysis allows us to determine how far an asset price moves over a set period of time.
- We have a database of daily market history containing more than 110 years of data.
- We're going to use the most recent 60 years.
- Why we use that time frame will be explained in a moment.
- In addition to our data, we can also look at published academic research.
- These studies show that the stock market very rarely moves down more than 6% in a month.

Look at the **Evidence**

- 2005-2006: 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did **NOT** move 6% or more 100% of the time.

Date	S&P 500	Percent Move
1/21/2005	1167.87	-2.20%
2/18/2005	1201.59	2.89%
3/18/2005	1189.65	-0.99%
4/15/2005	1142.62	-3.95%
5/20/2005	1189.28	4.08%
6/17/2005	1216.96	2.33%
7/15/2005	1227.92	0.90%
8/19/2005	1219.71	-0.67%
9/16/2005	1237.91	1.49%
10/21/2005	1179.59	-4.71%
11/18/2005	1248.27	5.82%
12/16/2005	1267.32	1.53%
1/20/2006	1261.49	-0.46%
2/17/2006	1287.24	2.04%
3/17/2006	1307.25	1.55%
4/17/2006	1285.33	-1.68%
5/19/2006	1267.03	-1.42%
6/16/2006	1251.54	-1.22%
7/21/2006	1240.29	-0.90%
8/18/2006	1302.3	5.00%
9/15/2006	1319.87	1.35%
10/20/2006	1368.6	3.69%
11/17/2006	1401.2	2.38%
12/15/2006	1427.09	1.85%

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- The table to the right shows the percent move of the S&P 500 from one option expiration to the next.
- This table is from our data set. It's not a part of the academic study just mentioned.
  - This, by the way, is a perfect example of just how prevalent the data is for validating any performance claim someone might make.
- The 1st column is the third Friday of the month, the 2nd column is the S&P 500 on that date and the 3rd column is the change in the S&P 500 from one month to the next.
- -0.46% on 1/20/2006 means that from the December 2005 expiration to the January 2006 expiration, the S&P 500 moved down 0.46%
- In this example, 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did NOT move or even drop 6% or more 100% of the time.

Look at the **Evidence**

- 1994-1995: 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did **NOT** move 6% or more 100% of the time.

Date	S&P 500	Percent Move
1/21/1994	474.72	1.79%
2/18/1994	468.15	-1.38%
3/18/1994	471.06	0.62%
4/22/1994	447.63	-4.97%
5/20/1994	454.92	1.63%
6/17/1994	458.45	0.78%
7/15/1994	454.16	-0.94%
8/19/1994	463.68	2.10%
9/16/1994	471.19	1.62%
10/21/1994	464.89	-1.34%
11/18/1994	461.47	-0.74%
12/16/1994	458.8	-0.58%
1/20/1995	464.78	1.30%
2/17/1995	481.97	3.70%
3/17/1995	495.52	2.81%
4/21/1995	508.49	2.62%
5/19/1995	519.19	2.10%
6/16/1995	539.83	3.98%
7/21/1995	553.62	2.55%
8/18/1995	559.21	1.01%
9/15/1995	583.35	4.32%
10/20/1995	587.46	0.70%
11/17/1995	600.07	2.15%
12/15/1995	616.34	2.71%

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In this example from 19 years ago, 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did NOT move 6% or more 100% of the time.

Look at the **Evidence**

- 1963-1964: 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did **NOT** move 6% or more 100% of the time.

Date	S&P 500	Percent Move
1/18/1963	65.18	4.05%
2/15/1963	66.41	1.89%
3/15/1963	65.93	-0.72%
4/19/1963	69.23	5.01%
5/17/1963	70.29	1.53%
6/21/1963	70.25	-0.06%
7/19/1963	68.35	-2.70%
8/16/1963	71.49	4.59%
9/20/1963	73.3	2.53%
10/18/1963	73.32	0.03%
11/15/1963	72.35	-1.32%
12/20/1963	74.28	2.67%
1/17/1964	76.56	3.07%
2/20/1964	77.62	1.38%
3/20/1964	78.92	1.67%
4/17/1964	80.55	2.07%
5/15/1964	81.1	0.68%
6/19/1964	80.89	-0.26%
7/17/1964	84.01	3.86%
8/21/1964	82.07	-2.31%
9/18/1964	83.48	1.72%
10/16/1964	84.83	1.62%
11/20/1964	86.28	1.71%
12/18/1964	84.29	-2.31%

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In this example from 50 years ago, 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did NOT move 6% or more 100% of the time.

Look at the **Evidence**

- 1953-1954: 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did **NOT** move 6% or more 100% of the time.
- But it doesn't always work this way …

Date	S&P 500	Percent Move
1/16/1953	26.02	-0.50%
2/20/1953	25.63	-1.50%
3/20/1953	26.18	2.15%
4/17/1953	24.62	-5.96%
5/15/1953	24.84	0.89%
6/19/1953	23.84	-4.03%
7/17/1953	24.35	2.14%
8/21/1953	24.35	0.00%
9/18/1953	22.95	-5.75%
10/16/1953	24.14	5.19%
11/20/1953	24.44	1.24%
12/18/1953	24.99	2.25%
1/22/1954	25.85	3.44%
2/19/1954	25.92	0.27%
3/19/1954	26.81	3.43%
4/19/1954	27.76	3.54%
5/21/1954	28.99	4.43%
6/18/1954	29.04	0.17%
7/16/1954	30.06	3.51%
8/20/1954	31.21	3.83%
9/17/1954	31.71	1.60%
10/15/1954	31.71	0.00%
11/19/1954	33.45	5.49%
12/17/1954	35.02	4.69%

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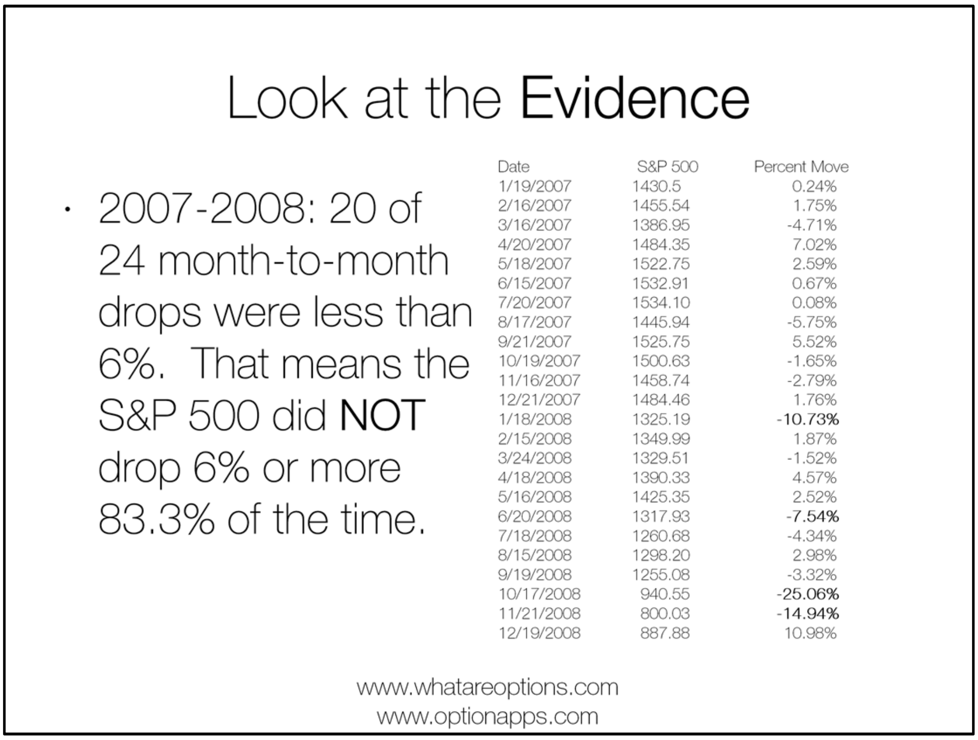
- In this example from 60 years ago, 24 of 24 month-to-month changes were less than 6%. That means the S&P 500 did NOT move 6% or more 100% of the time.
- But it doesn't always work this way …



Look at the **Evidence**

- 2007-2008: 20 of 24 month-to-month drops were less than 6%. That means the S&P 500 did **NOT** drop 6% or more 83.3% of the time.

Date	S&P 500	Percent Move
1/19/2007	1430.5	0.24%
2/16/2007	1455.54	1.75%
3/16/2007	1386.95	-4.71%
4/20/2007	1484.35	7.02%
5/18/2007	1522.75	2.59%
6/15/2007	1532.91	0.67%
7/20/2007	1534.10	0.08%
8/17/2007	1445.94	-5.75%
9/21/2007	1525.75	5.52%
10/19/2007	1500.63	-1.65%
11/16/2007	1458.74	-2.79%
12/21/2007	1484.46	1.76%
1/18/2008	1325.19	**-10.73%**
2/15/2008	1349.99	1.87%
3/24/2008	1329.51	-1.52%
4/18/2008	1390.33	4.57%
5/16/2008	1425.35	2.52%
6/20/2008	1317.93	**-7.54%**
7/18/2008	1260.68	-4.34%
8/15/2008	1298.20	2.98%
9/19/2008	1255.08	-3.32%
10/17/2008	940.55	**-25.06%**
11/21/2008	800.03	**-14.94%**
12/19/2008	887.88	10.98%

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- From 2007-2008, only 19 of 24 month-to-month changes were smaller that +or -6%. Still, that means the S&P 500 did NOT move 6% or more 79.2% of the time.
- Of the 5 times the move was larger than + or -6%, one was up, 4 were down.
- So in this sample, 20 of 24 month-to-month drops were worse than -6%. That means 83% of the time, the market did not drop more than 6%.

Look at the **Evidence**

Analysis of Expiration-to-Expiration Moves
(third Friday to third Friday)

Biggest move up	16.43%
Biggest move down	-25.06%
Average move	3.22%
Median move	2.52%
Number of observations	733
Number of Observations < -6%	689
Percent Observations < -6%	94%

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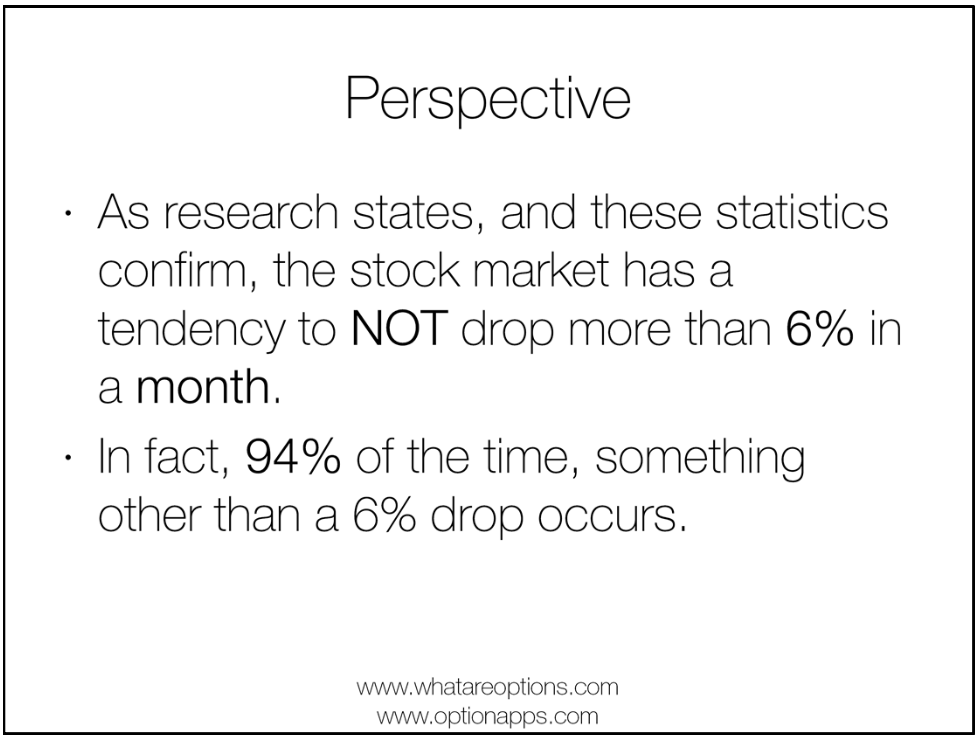
- So those show some selected periods.
- Let’s look at the total statistics. By the way, this is the reason we only go back so far.
- Prior to 1952, the stock market was open on weekends.
- Weekend trading ended in May 1952.
- Here are the numbers since then.
- The crucial information here is that bottom line;
- the market does NOT make a 6% move down in one month 94% of the time.



- Let's put that into perspective
- As research states, and these statistics confirm, the stock market has a tendency to NOT drop more than 6% in a month.
- In fact, 94% of the time, something other than a 6% drop occurs.

Implications

- If you construct an option trade that **makes money** as long as the market does **NOT** drop **6% in a month**, then you should **win 94%** of the time.

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- So what are the implications as it pertains to trading?
- Think about this: If we construct an option trade that makes money as long as the market does NOT drop 6% in a month, then we should win 94% of the time.

Change the Way You THINK

Make money as long as something does NOT happen.

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- Think about what I just said. Make money if something does **NOT** happen.
- Now think about these businesses:

Casinos

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- Casinos

Lotteries

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- Lotteries

- Insurance

- These are businesses that make money when something does not happen.
- Casinos and lotteries make money when players don’t win. Insurance companies make money when you don’t get sick, you don’t have a car wreck, your house does not catch fire.

Is there an **option trade** that **makes money** as long as something does **not** happen?

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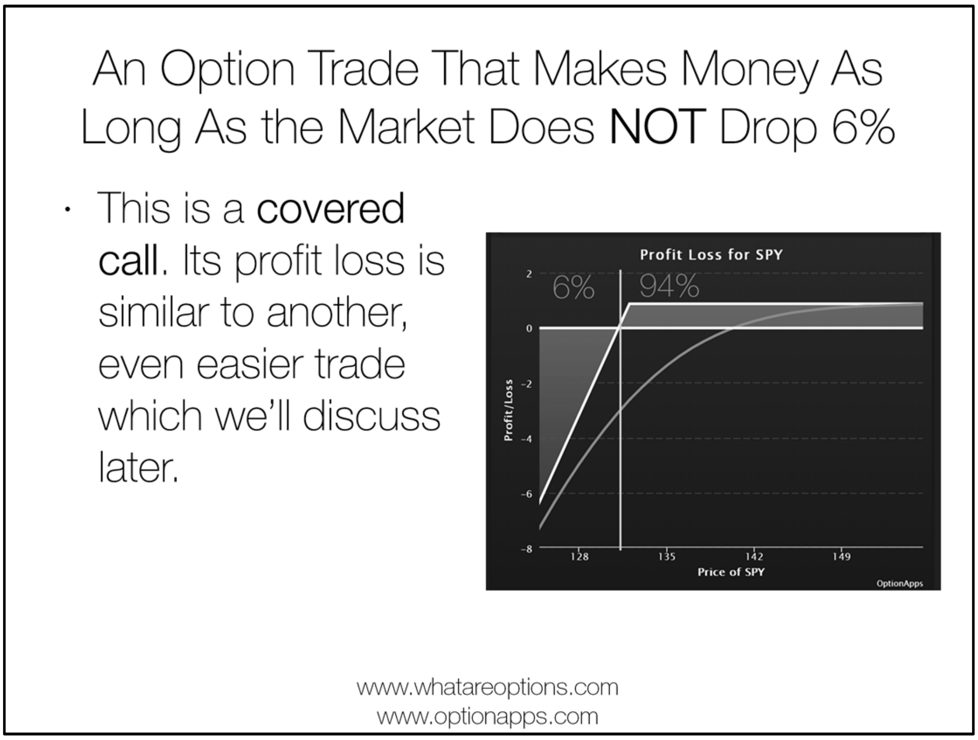
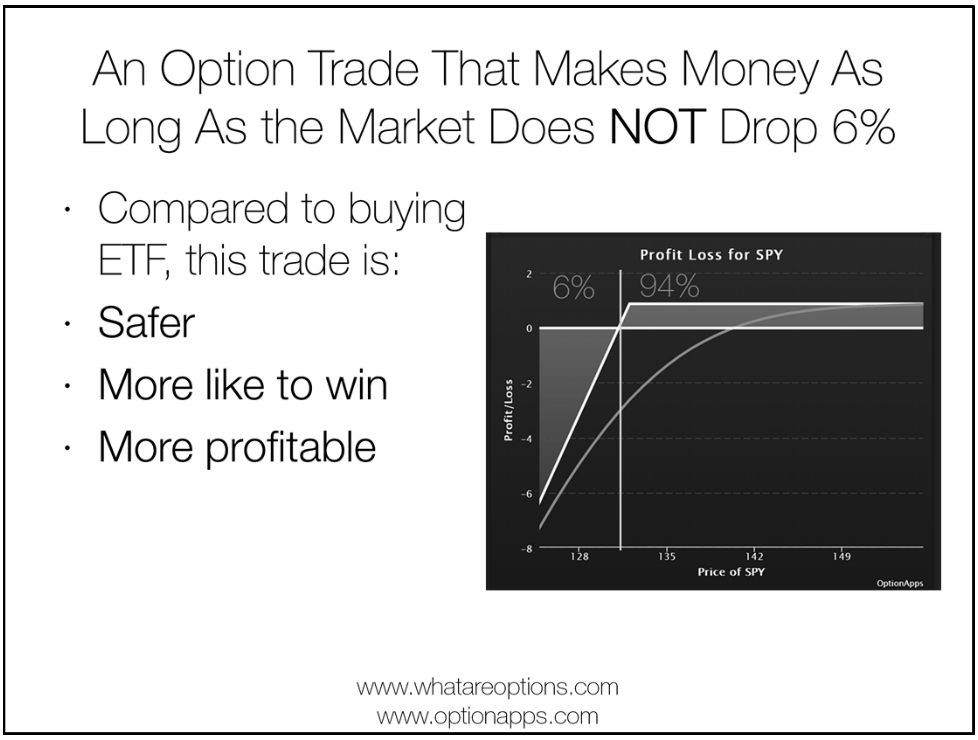
- Is there a similar type option trade that makes money as long as something does not happen?



- The answer is yes.
- Here's an example of an option trade that makes money as long as the market does NOT drop 6%
- This is a covered call. Its profit loss is similar to another, even easier trade which we'll discuss later.
- Compared to buying the ETF, this trade is:



- Safer. It has a much lower risk than buying the stock or ETF.
- More likely to win. It has a much, MUCH higher probability of profit.
- It's more profitable. While this single trade has a lower profit *potential*, over the course of time it has a higher total return.

Constructing a Trade That **Makes Money** as Long as the Stock Market Does NOT drop 6% or More Would Have Resulted in a **94% Win** Rate.

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- So to summarize so far, we've looked at how we can use past market moves to determine our probability of profit, assuming the market's behavior over the past 60 years doesn't change.
- We know that constructing a trade that makes money as long as the stock market does not drop 6% would have resulted in an 94% win rate.

- In this strategy, we are making money when something does NOT happen.
- Now, let’s look at something completely different.

Make Money When Something **Does** Happen

- Academic studies show that stocks often make **large moves** after an **earnings announcement**.
  - Xing, Yuhang and Zhang, Xiaoyan, *Anticipating Uncertainty: Straddles Around Earnings Announcements*, (2013).

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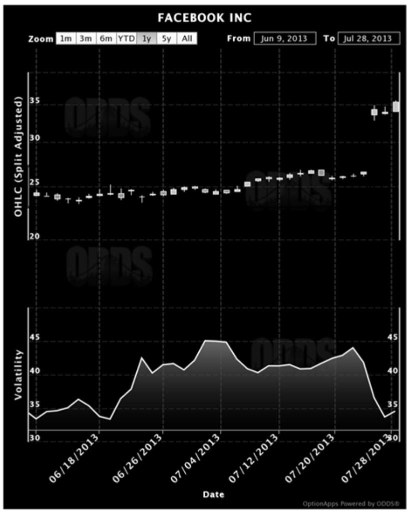
- Although option strategies designed to make money when the market does not move tend to be very profitable over the long haul, there are exceptions.
- There are times when the opposite occurs.
- Researchers found that stocks often make unexpectedly large moves after an earnings announcement.
- By the way, the measuring period for this analysis was from 1996 to 2010.

Let's Look at an Example



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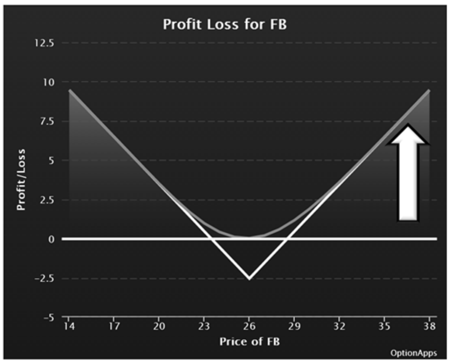
- Let's look at an example
- This is chart of Facebook. The stock is relatively listless in June and early July.
- But then the company reported earnings.
- Note the huge move after earnings were reported.

- According to the research, creating a strategy that makes money from an earnings surprise like what we saw with Facebook will generate profits over the long-haul, if the market behavior from 1996 to 2010 continues.
- So what kind of trade makes money from a big move?
- Let’s take a look.

Option Trade That Makes Money As Long As the Stock Makes a **Big Move**

- This is a **straddle** on Facebook (FB).
  - Buy call
  - Buy put
- Makes money if stock makes a **big move**.
- **Direction is irrelevant.**



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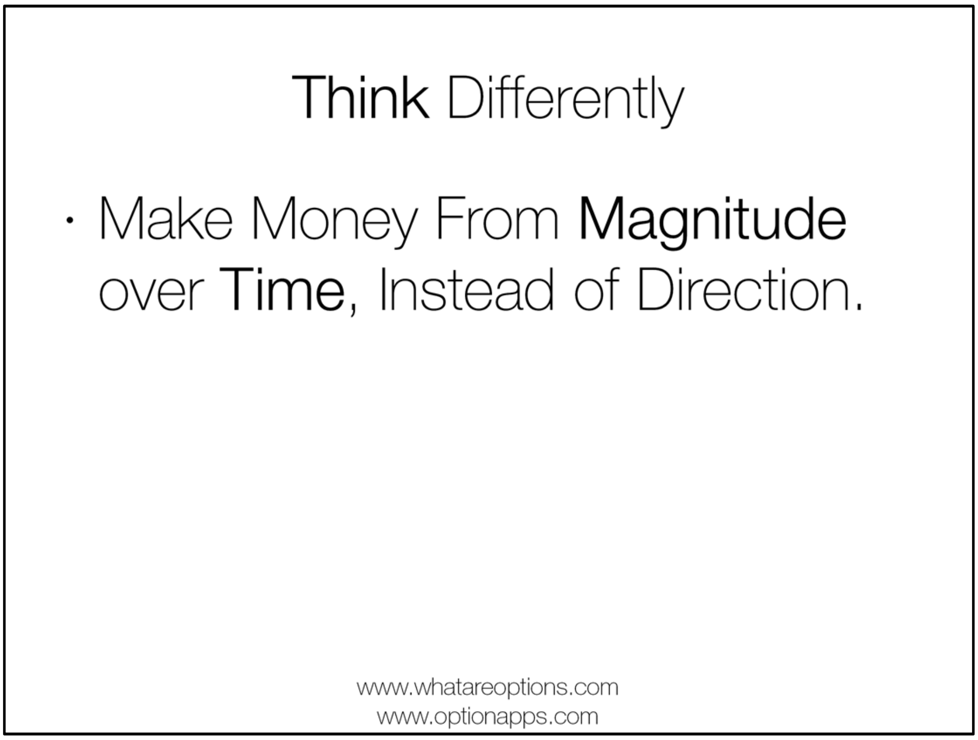
- Here’s an option trade that makes money as long as the stock makes a big move
- It’s that earlier trade. It’s a straddle.
- When FB came out with earnings, the stock eventually moved up beyond 36.
- The result was a quadrupling of the initial investment.



- So now we have two ways to make money that are independent of direction.
- These strategies make money from magnitude over time.

Make Money If Something Does NOT Happen.

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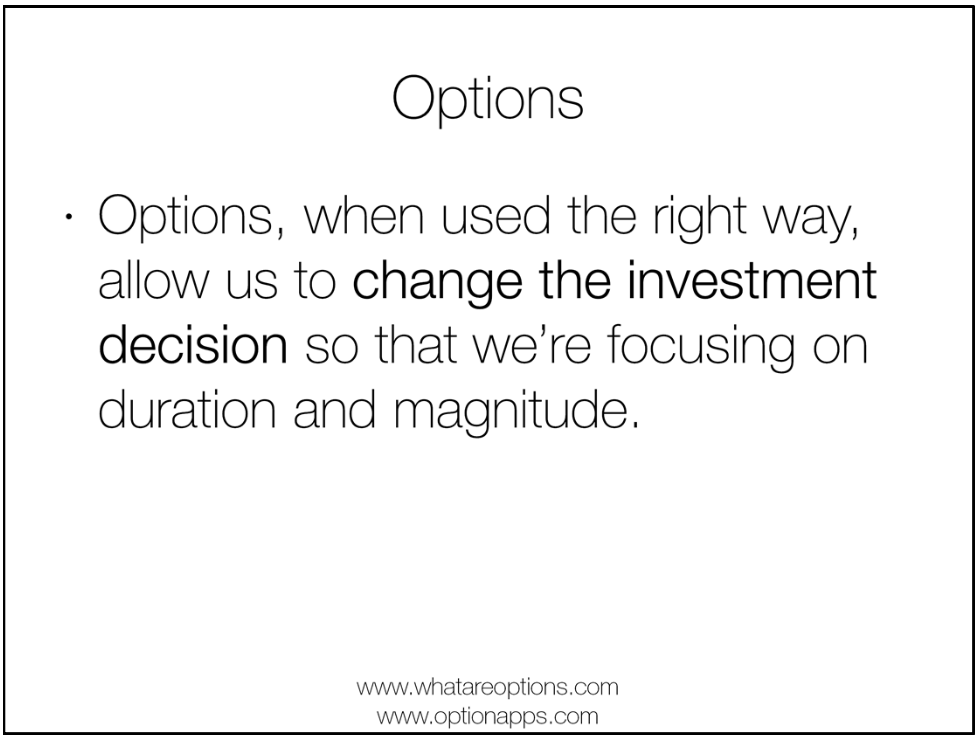
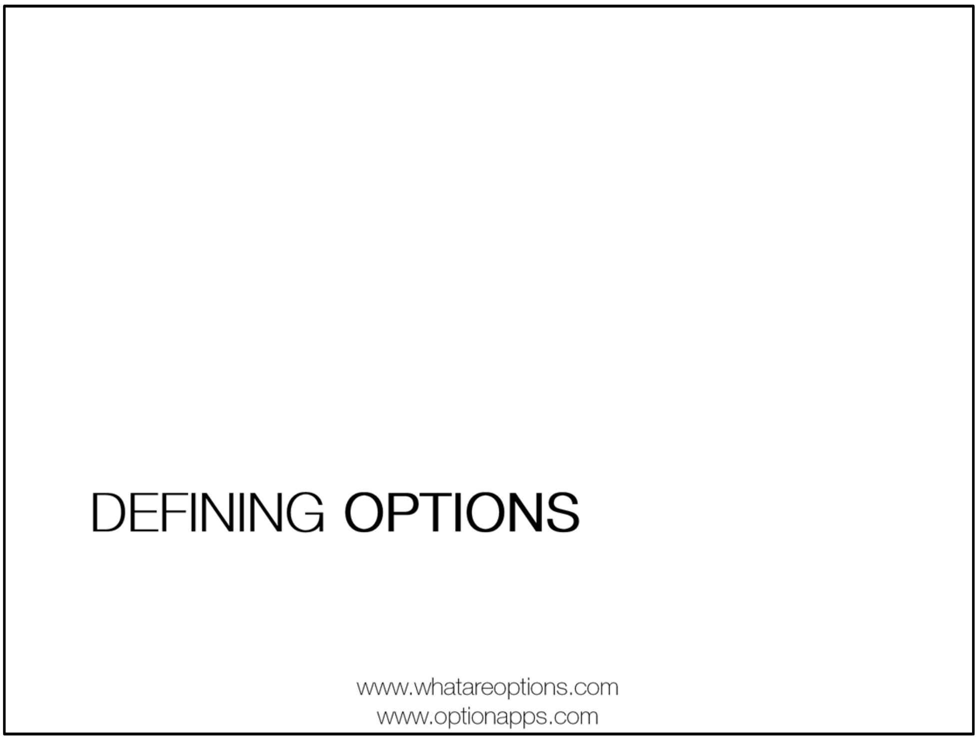
- One makes money if something does not happen …
- If the stock market does NOT drop 6% in a month.

- The other makes money if something does happen … if the stock makes a big move.
- Both are dependent on magnitude over time, not necessarily direction.

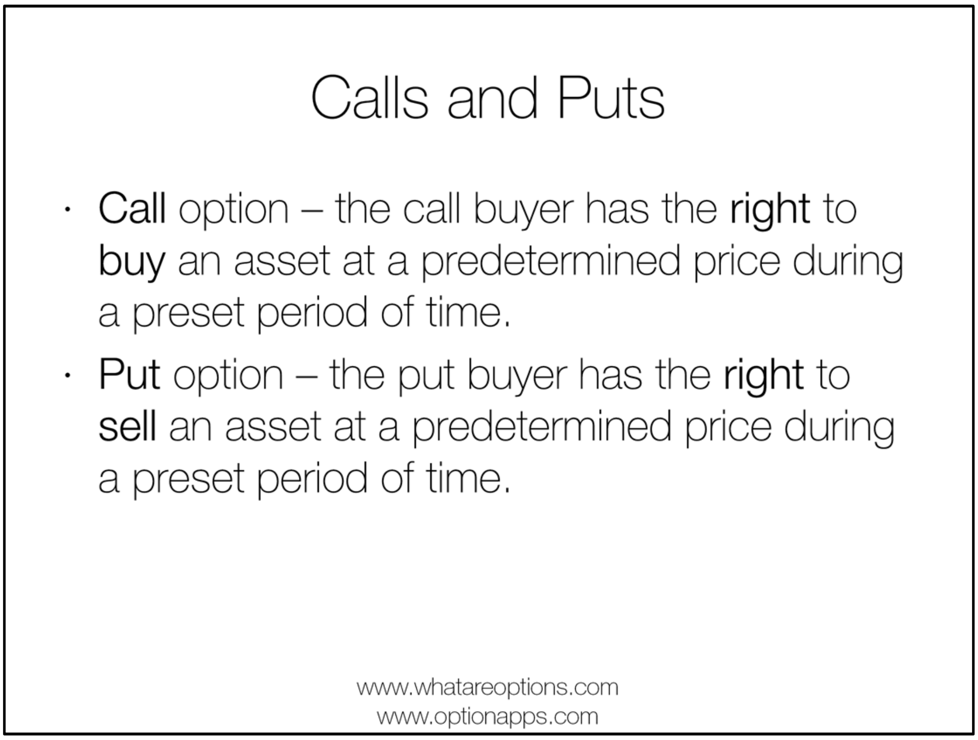


- That's what options give you. They give you the ability to profit in ways that are completely different from the normal way of investing.
- Options, when used the right way, allow us to change the investment decision so that we're focusing on duration and magnitude.
- So here's the key takeaway for this first chapter:
- Think Differently
- Options let you change the way you think about building wealth.
- [END]

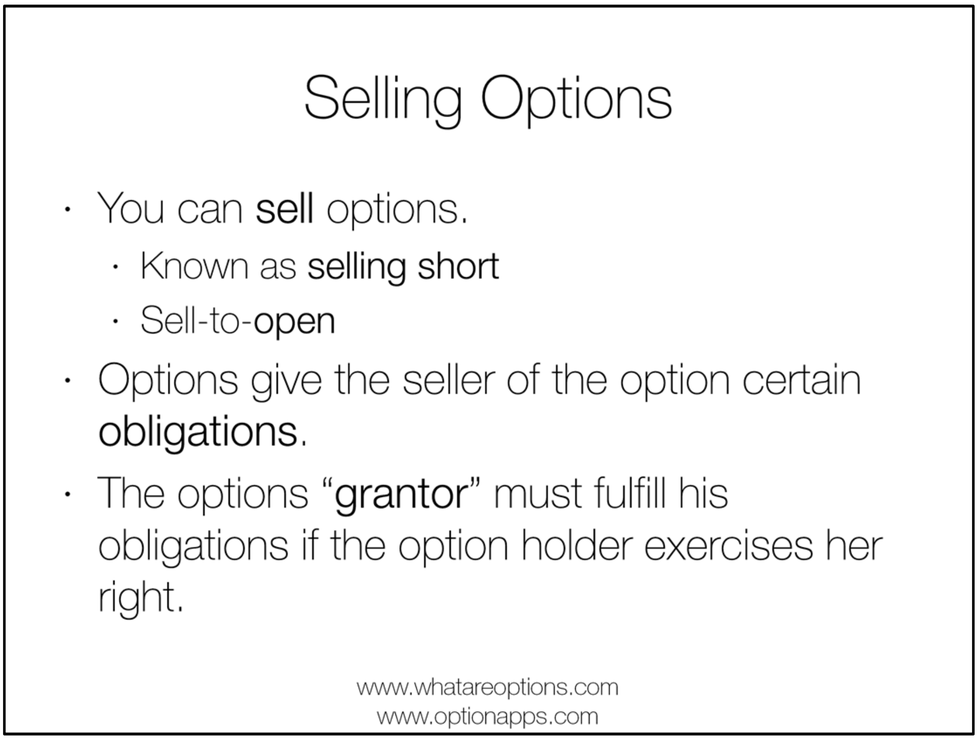


- [Chapter 2]
- Welcome to Chapter 2 of What Are Options?
- My name is Don Fishback.
- In our last chapter, we learned how options allow us to change the way we build wealth.
- We learned how options strategies can earn a profit under a variety of different market conditions.
- Well, if we’re going to use options, then we need to know options terminology.
- Options have their own language.
- Let’s start by asking and answering a very important question.

- What are options?
- The dictionary tells us that an option is a choice.
- With respect to finance, options are a financial instrument that gives you choices.
- You can buy options.
- The terminology you'd use to enter a trade like this is "Buy-to-open"
- Options give the buyer of the option rights to make certain choices.
- The option "holder" can either exercise her right, or do nothing.



- There are different types of options. Calls and Puts. We said option buyers get rights. Here are the rights are you get when you buy an option.
- Call option – the call buyer has the right to buy an asset at a predetermined price during a preset period of time.
- Put option – the put buyer has the right to sell an asset at a predetermined price during a preset period of time.



- You can also sell options.
- Known as selling short, just like selling short stock.
- The transaction to enter into an options short sale is “Sell-to-open”
- Options give the seller of the option certain obligations.
- The options “grantor” must fulfill his obligations if the option holder exercises her right.

Obligations of Sellers

- Call option – the call seller has the **obligation to sell** to the call buyer an asset at a predetermined price during a preset period of time, no matter what the price.
- **Put** option – the put seller has the **obligation to buy** from the put buyer an asset at a predetermined price during a preset period of time, no matter what the price.

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- Let’s go over what those obligations are for the different option types.
- With a call option, the call seller has the obligation to sell to the call buyer an asset at a predetermined price during a preset period of time, no matter what the price.
- For a put option, the put seller has the obligation to buy from the put buyer an asset at a predetermined price during a preset period of time, no matter what the price.

Strike Price and Term

- With an option, the predetermined price at which an asset is either bought (call) or sold (put) is called the **strike price** or **exercise price**.
- The preset period of time in which an option exists is called the **term**.

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- In that last explanation, we said something important: predetermined price and preset period of time.
- With an option, the predetermined price at which an asset is either bought in the case of a call, or sold in the case of a put, is called the strike price or exercise price.
- The preset period of time in which an option exists is called the term.

The Power of Option Combinations

- You can **combine options**: buy long or sell short, use puts or calls in different quantities.
- This is where the **real power** of options is realized.

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- Options on their own are terrific tools for investing.
- But you don’t have to be restricted to just buying or selling a single option.
- You can combine options: buy long or sell short, use puts or calls in different quantities.
- This is where the real power of options is realized.

The Power of Option Combinations

- You will see that option combinations offer **incredible flexibility** to tailor an investment strategy to meet your own **personal preferences**.

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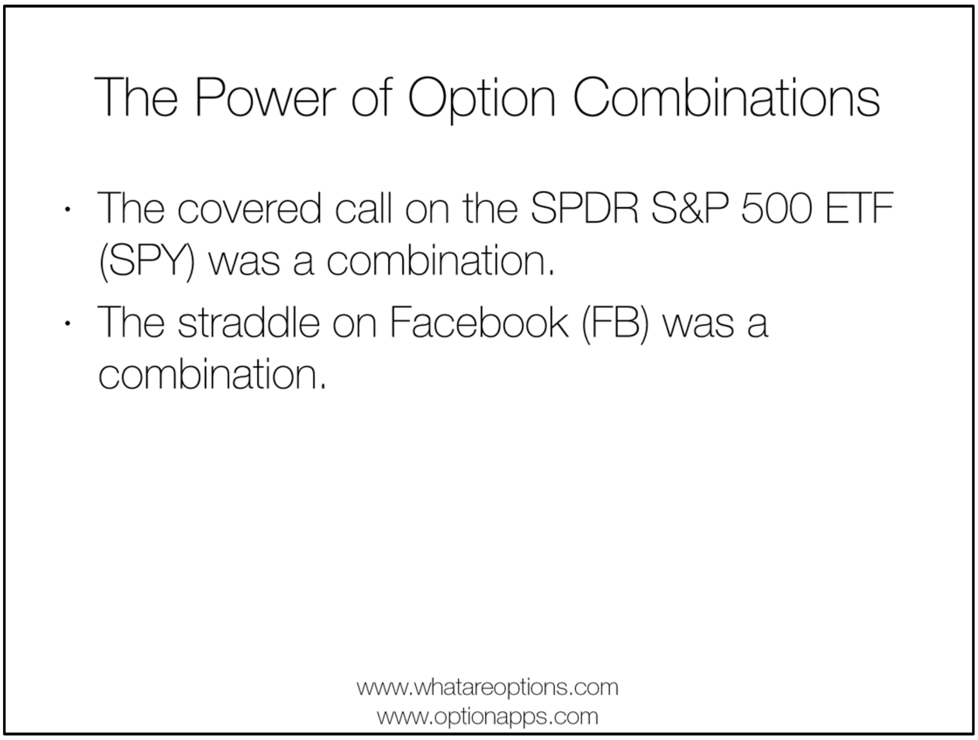
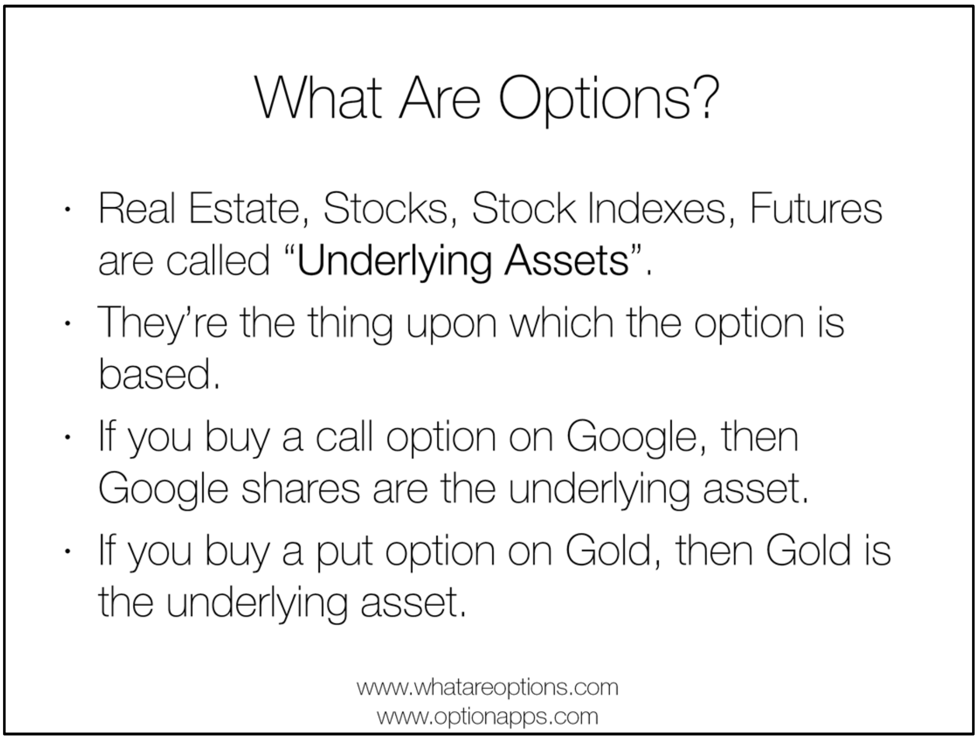
- You will see that option combinations offer an incredible flexibility to tailor an investment strategy to meet your own personal preferences.



- We’ve already talked about two combinations.
- The covered call on the SPDR S&P 500 ETF (SPY) was a combination. It combined an option with stock.
- The straddle on Facebook (FB) was a combination. It combined a call and a put purchase.

- So far, we've focused exclusively on options on stocks and ETFs. But you can implement options on a variety of different assets.
- Options on real estate
- Options on stocks
- Options on stock indexes
- There are no longer needed by most traders because index-based ETFs are now available. The allows us to avoid the settlement risk (we'll discuss settlement risk later).
- Options on futures



- Those assets are called underlying assets.
- So when you hear somebody talk about the underlying, they're talking about whatever it is that the option gives you the choice to either buy or sell.
- The underlying asset is the thing upon which the option is based.
- If you buy a call option on Google, then Google shares are the underlying asset.
- If you buy a put option on Gold, then Gold is the underlying asset.

Options on Real Estate

- Real estate example: There is a piece of land worth $100,000. You think that the land will increase in value substantially. You get the right to buy the land for $120,000 during the next twelve months. To acquire that 12-month right, you pay the land owner $10,000.

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- I'm going to begin by using an example on a piece of real estate. It makes a great example.
- Let's say there is a piece of land worth $100,000.
- You think that the land will increase in value substantially.
- You get the right to buy the land for $120,000 during the next twelve months.
- To acquire that 12-month right, you pay the land owner $10,000.

Options on Real Estate

- Option to buy the land for $120,000 during the next 12 months. Option buyer pays the option seller $10,000 for that right.

Land price	Option Value	Opening transaction	P/L
$0	$0	-$10,000	-$10,000
$120,000	$0	-$10,000	-$10,000
$500,000	$380,000	-$10,000	$370,000

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- Here’s how you would value the option.
- You go to the property owner. The land is worth 100,000.
- You give the land owner $10,000 for the option to buy the land for $120,000.
- Let’s go through a few scenarios to see what might happen.
- A black liquid comes up out of the ground...
    - EXAMPLE OF AN OIL DISCOVERY
    - EXAMPLE OF A TOXIC SLUDGE DUMP.
- The option value shown here is based on the amount of money one could receive if they exercised their option. Therefore, it’s known as exercise value.
- By the way, these are extreme examples.

Options on Real Estate

- Real estate example: A more realistic outcome.

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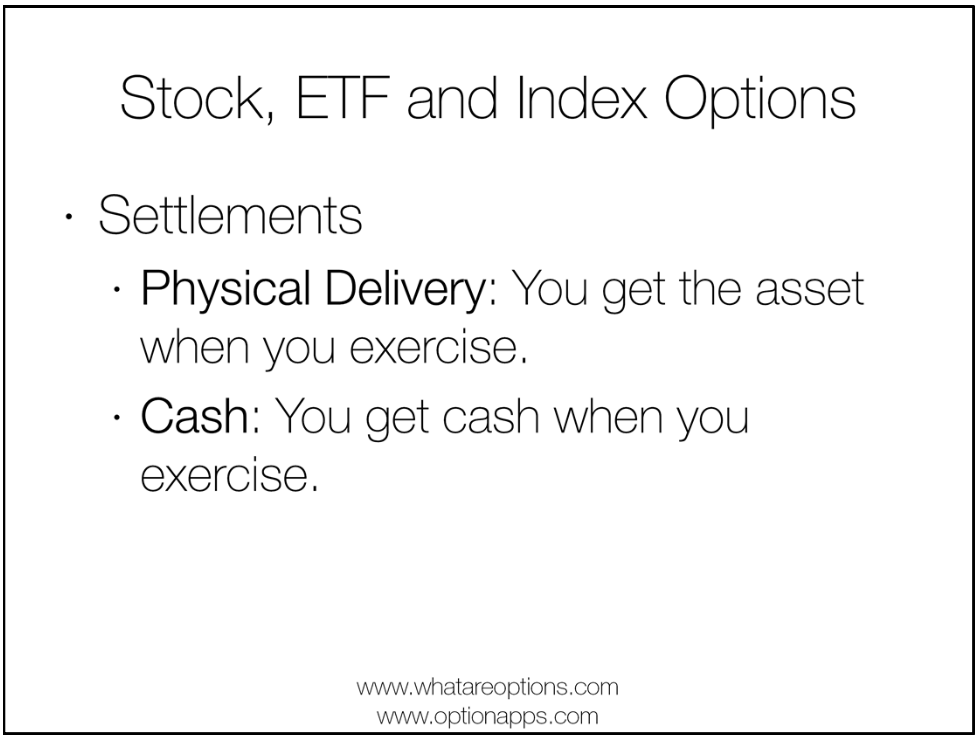
- Here is a more realistic set of outcomes. The extreme results are, well, extreme. They're rare.
- The more likely outcome is a slight drift to the upside or downside.
- The MOST likely outcome is that the property will not move enough for the option buyer to make money.
- Now in this instance, if you exercised your option and bought the property, you'd get the property.
- That's what would be delivered when the option is settled.



- In the options we're talking about, there are two ways in which options are settled.
- Physical Delivery: You get the asset when you exercise.
- Cash: You get cash when you exercise.

Stock, ETF and Index Options

- Styles
  - **American**: You can exercise at any time.
  - **European**: You can only exercise at expiration.
- No matter the style, you can **buy or sell the option anytime** the stock is trading.

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- This next topic discusses when the options can be exercised. It’s called “style”.
- There are two styles common to listed options in the U.S.: American and European.
- American style options can be exercised at any time.
- European style options can only be exercised at expiration.
- No matter the style, you can buy or sell anytime the stock is trading and the options market is open.
- So, even though you may not be able to exercise the option, you can still trade it as long as the market is open.

- Now let’s look at the ways settlement and style correspond to the options we’re going to be discussing.
- For options on Stocks and ETFs, they are:
  - Physical delivery settled
  - American-style
- Options on Indexes are:
  - Cash settled
  - Most are European-style, a few are American
    - A word of warning: Beware cash-settled, American-style!

- Now, here is something important, especially anyone considering trading currency options in the U.S.
- Be sure that the options you're trading are traded on an exchange.
- Do NOT trade off-exchange options. You're asking for trouble if you do.
- Here's a list of the exchanges as of today.

- Only exchange listed options offer counterparty integrity. Counterparty integrity is important, because without it, there is no way to be sure the other guy will be able or willing to pay if you win.
- Unfortunately, there is a lot of fraud in off-exchange products tailored to retail traders.

- I mentioned this earlier, but I want to reiterate it.
- When you’re entering a position, whatever you are doing, you are doing it “to open”.
- So when you buy an option, you buy-to-open – You’re going long
- When your entry trade into an option is to sell, you sell-to-open – You’re going short

Exiting

- Offsetting Transaction
  - Sell-to-close
  - Exercise
  - Buy-to-close
- Exercise by Exception
  - **Automatic Exercise** at expiration

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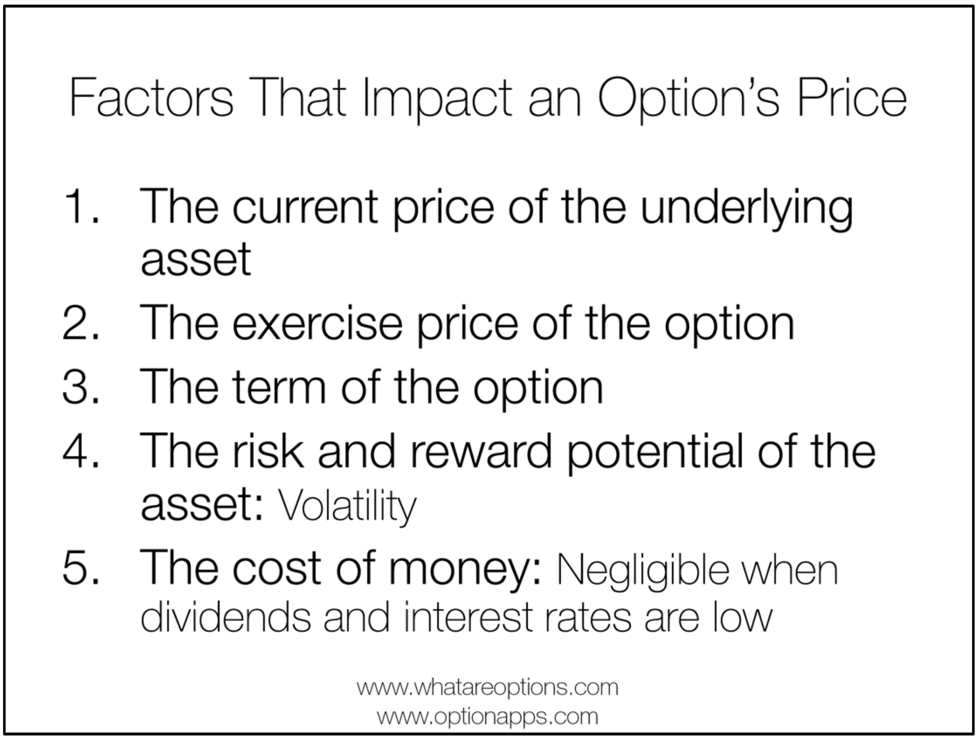
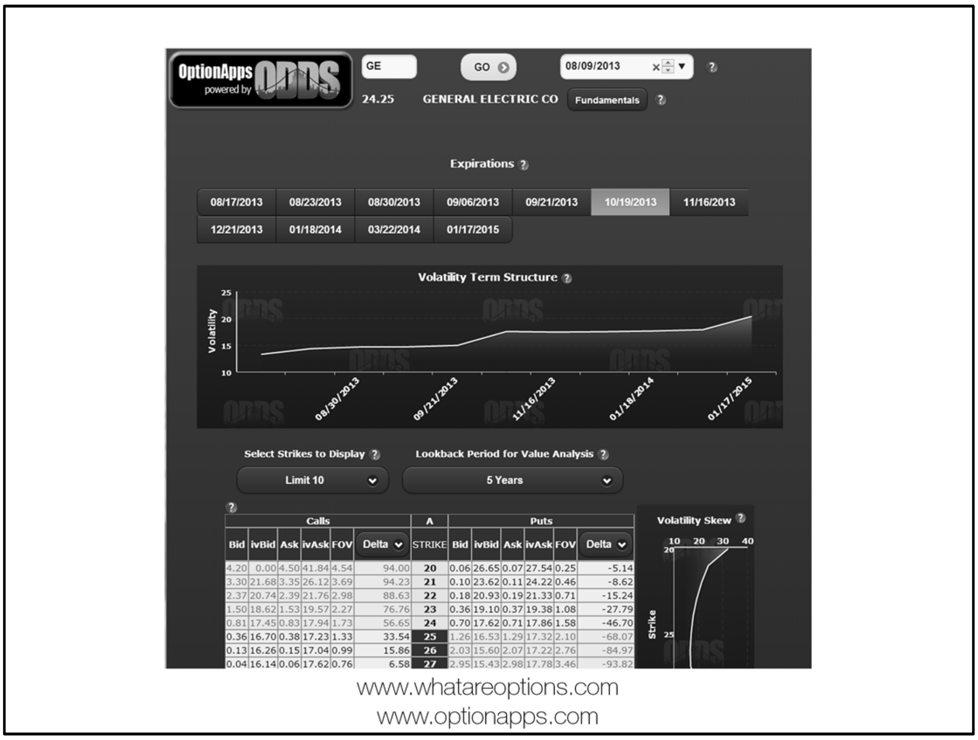
- You do not need to exercise your option to take profits or exit a position.
- If you bought an option, you can simply sell your option to another person.
- Instead of exercising the option, taking possession of the property, and then selling to someone else, simply sell your option to that person. Then they can exercise the option or even sell it to another party.
- On the other hand, you do have the option to exercise if you bought the option
- If you sold an option short, you can simply buy it back to close.
- Don’t forget that there are automatic exercise provisions for listed options in the U.S.
- It’s formally called Exercise by Exception.
- BOTTOM LINE: KNOW WHAT YOU’RE TRADING

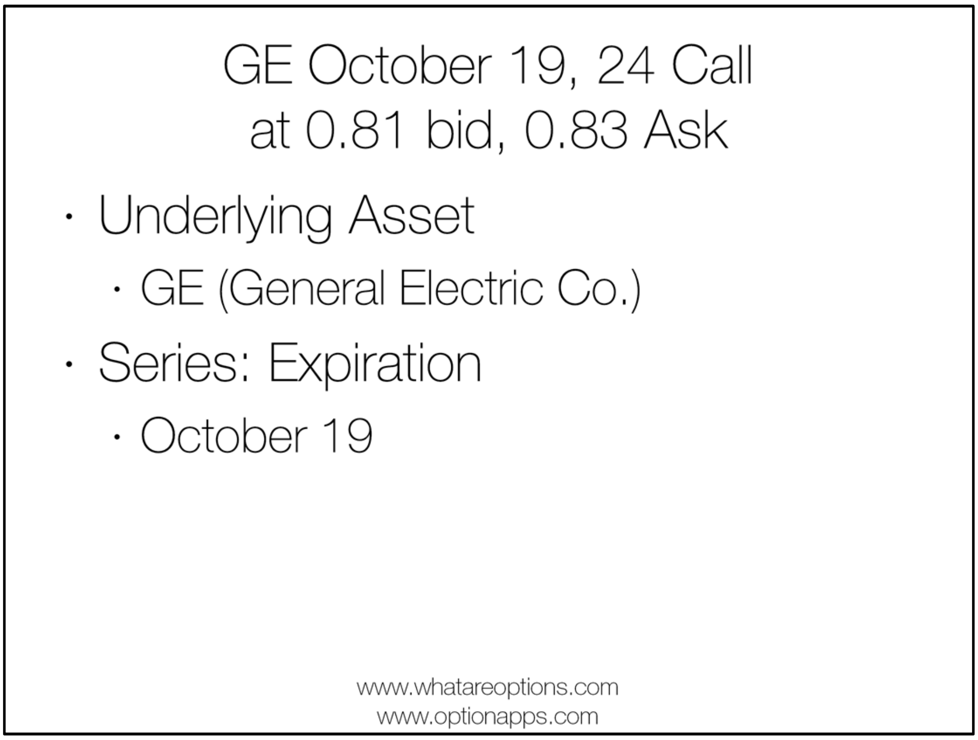


- Everything we’ve covered is important, but this is especially important.
- These are the factors that impact an option’s price.
- Those factors are:
- The current price of the underlying asset
- The exercise price of the option
- The term of the option
- The risk and reward potential of the asset
    - The risk and reward potential is called the Volatility
- The cost of money
    - This factor is negligible when dividends and interest rates are low
- We’ll be going over all of these factors quite a bit as we proceed through the course

- Here's some more jargon. It's something called the options chain.
- A table of option prices is called an option chain.
- Organized by expiration date (series) and strike price (exercise price).
- Let's look at an option chain next.



- This is an option chain for GE.
- You can see how it's organized by expiration date. In this case, we're showing the October options.
- In the past, it was easy to describe options by their expiration month. That is no longer the case.
- Look at August and September. They have multiple expirations each month. That's because of weekly options.
- So now, we have to describe options by their precise expiration day.
- In the table, we see the strike prices. They are shown in ascending order, meaning the strike prices are getting bigger.
- Calls are on one side, puts on the other.
- This chain is color-coded by "moneyness".
- I'll discuss that in a few moments.
- We're going to zero in on one of those options, October 19 24 call.



- GE October 19, 24 Call at 0.81 bid, 0.83 Ask
- Underlying Asset
- GE (General Electric Co.)
- Series: Expiration
- October 19

- Here are some details about expiration that are important.
- Earlier, I mentioned weekly options as well as the regular options.
- There are actually even more. There are quarterly options as well.
- Here's what you need to know about when the different options expire.
- We have the regular options
- They expire the Saturday after the third Friday of the month.
- We have the Weeklys
- They expire on Fridays that are not the third Friday of the month.
- And we have Quarterlys
- They expire on the last trading day of the quarter.

GE October 19, 24 Call at 0.81 bid, 0.83 ask

- Strike price: exercise price
  - 24
- Type
  - Call: right to buy asset at the strike price
- Market
  - 0.81 bid (price if option sold), 0.83 ask (price if option bought)

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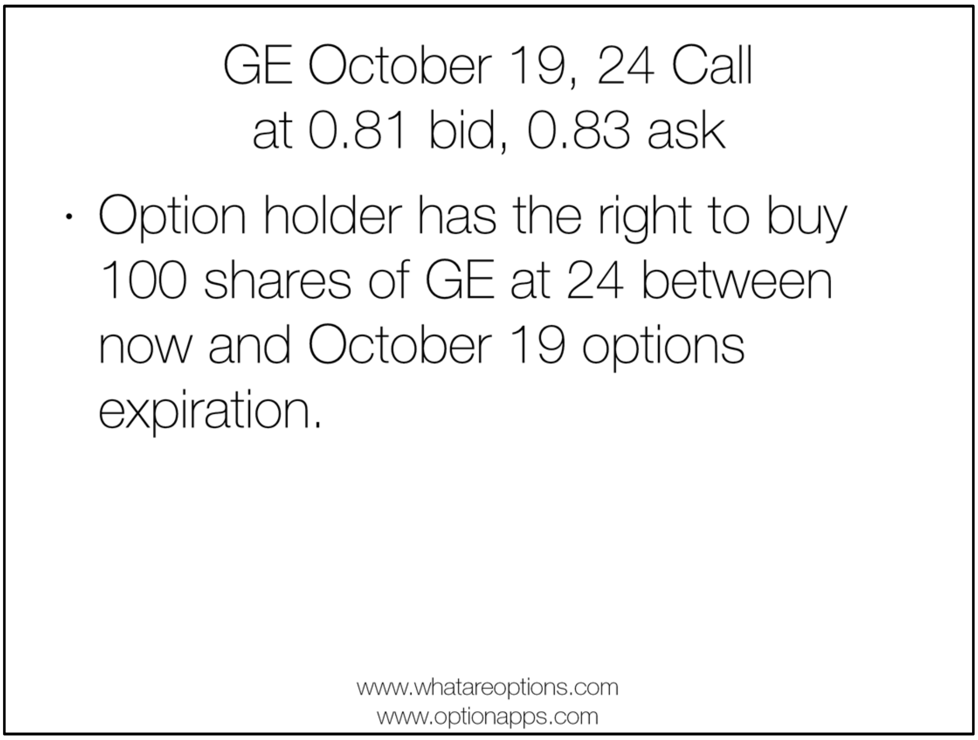
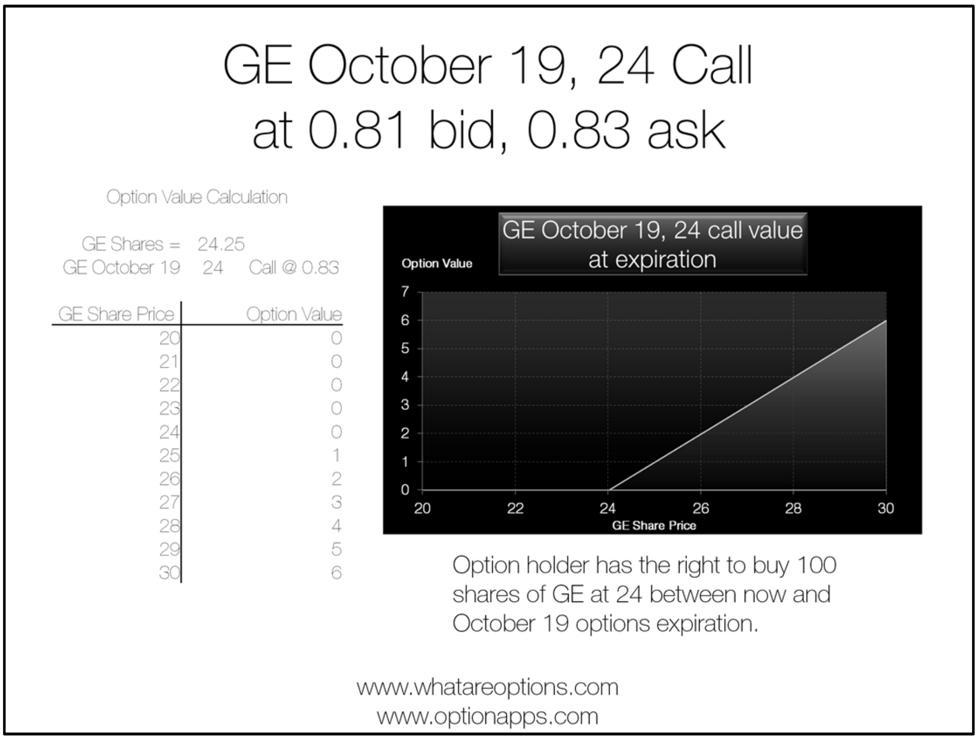
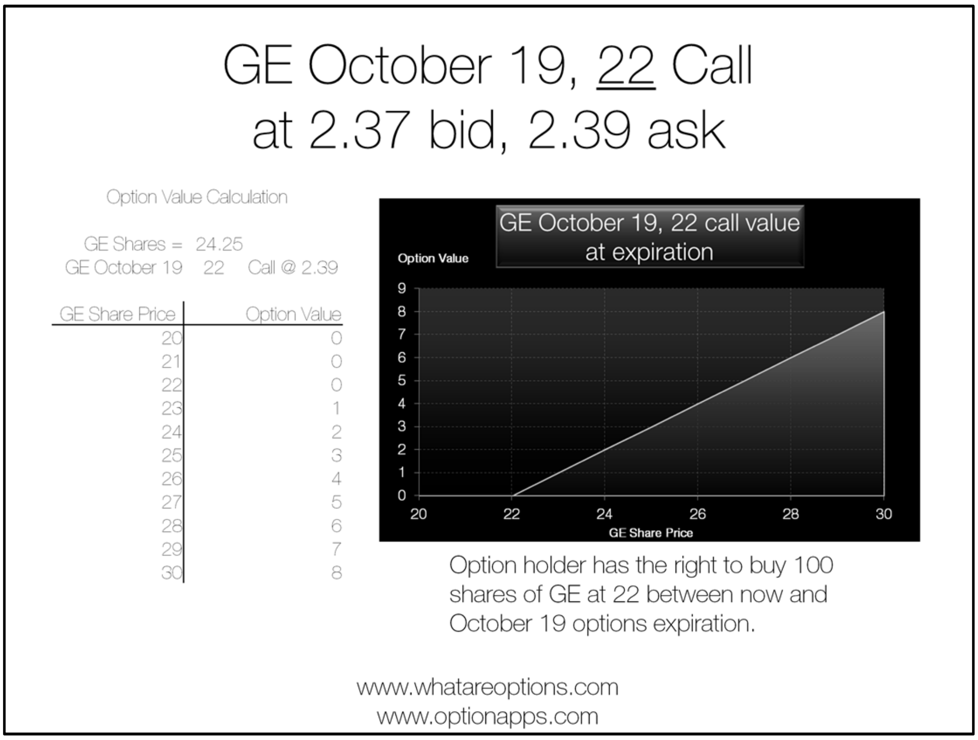
- Okay, back to the GE option.
- The strike price or exercise price is 24
- The type of option is a call: right to buy asset at the strike price
- The market is where the option is trading.
- So the “market” on this GE option is 0.81 bid (price if option sold), 0.83 ask (price if option bought)



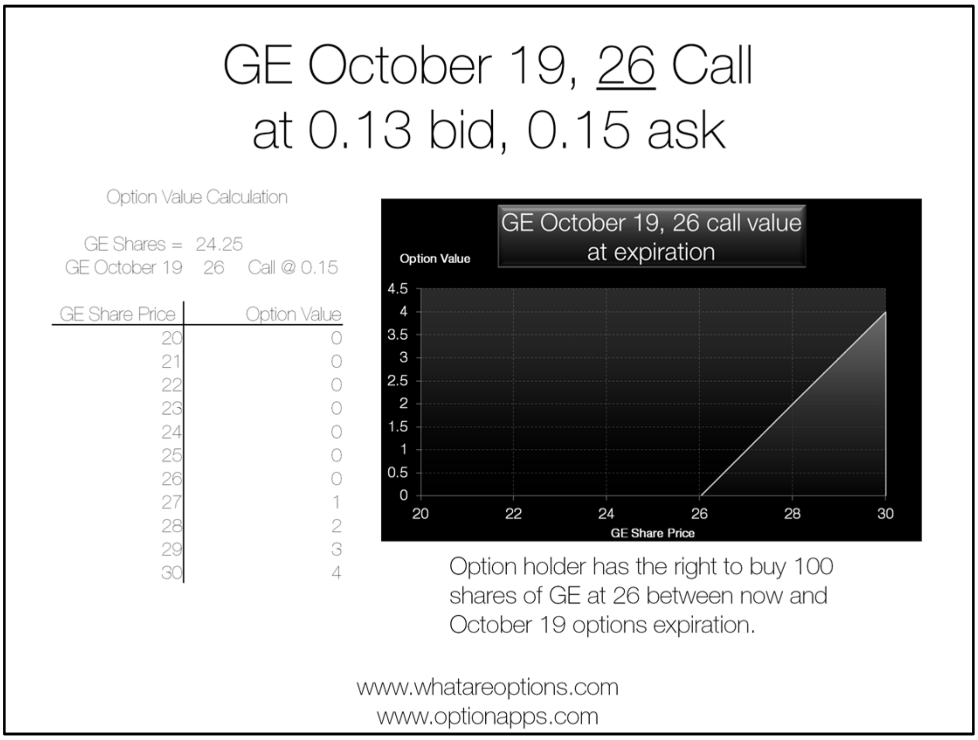
- So if you buy that option, you’re the option holder. What do you get?
- Option holder has the right to buy 100 shares of GE at 24 between now and October 19 options expiration.



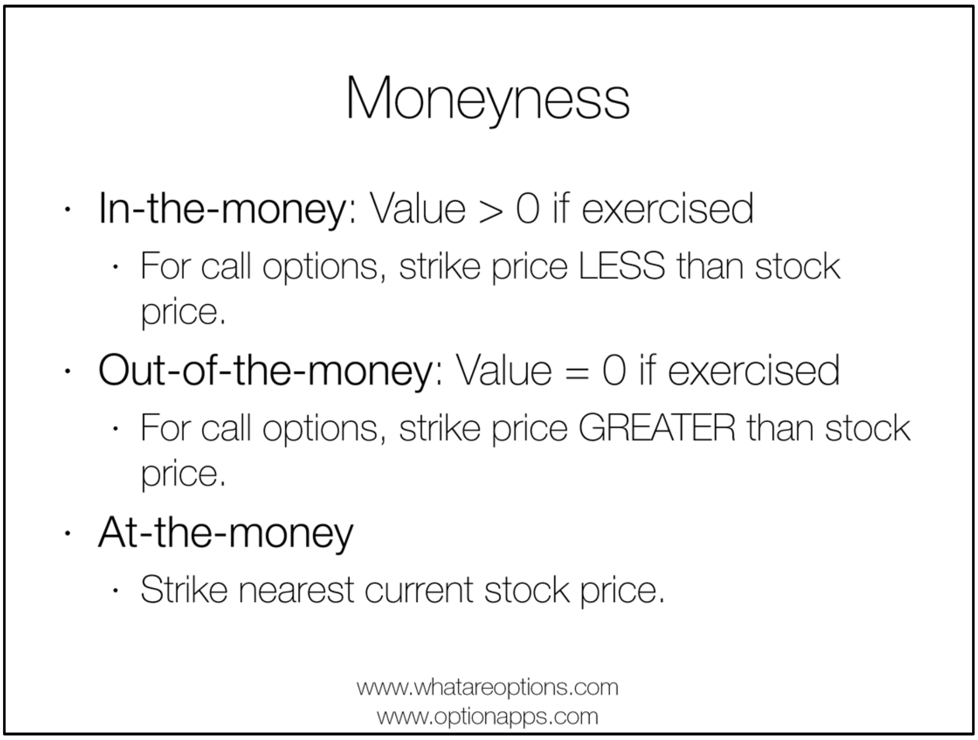
- Let's go through the math over a few different stock prices.
- At 30, you could exercise your right to buy the stock at 24, buy it, then sell it at the open market price of 30.
- Buy at 24, sell at 30, you make 6.
- If the stock was at 20, you could exercise your right to buy the stock at 24, buy it, then sell GE shares at the open-market price of 20.
- Buy at 24, sell at 20, you lose 4, so why would you do that?!
- You choose to do nothing; your option is worthless.
- If the stock is at 24, it's a wash. You could exercise to buy at 24, then sell it in the open market at 24. You make nothing.
- So you choose to do nothing. No need to generate a commission.
- Your option is worthless.
- Notice how the option starts gaining value at the strike price of 24.



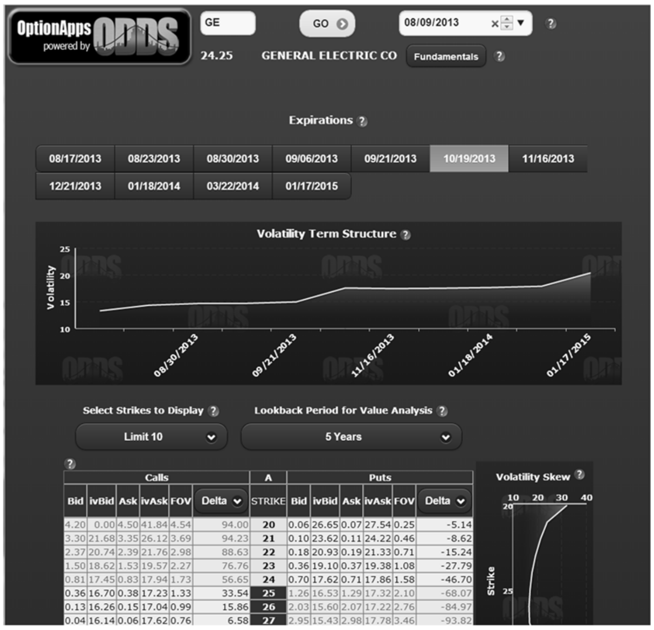
- Here is the 22 call.
- Let’s go through the math again at a couple of stock prices on this option.
- At 30, you could exercise your right to buy the stock at 22, buy it, then sell it at the open market price of 30.
- Buy at 22, sell at 30, you make 8.
- If the stock was at 20, you could exercise your right to buy the stock at 22, buy it, then sell it at the open market price of 20.
- Buy at 22, sell at 20, you lose 2, so why would you do that?!
- You choose to do nothing; your option is worthless.
- Notice how the option starts gaining value at the strike price of 22.



- Let's look at one more. Here is the 26 call.
- We're going to go through the math one more time at a couple of different stock prices.
- If the stock is at 30, you could exercise your right to buy the stock at 26, buy it, then sell it at the open market price of 30.
- Buy at 26, sell at 30, you make 4.
- If the stock is at 20, you could exercise your right to buy the stock at 26, buy it, then sell it at the open market price of 20.
- Buy at 26, sell at 20, you lose 6, so why would you do that?!
- You choose to do nothing; your option is worthless.
- If the stock is at 26, it's a wash. You could exercise to buy at 26, then sell it in the open market at 26. You make nothing.
- So you choose to do nothing. No need to generate a commission.
- Your option is worthless.
- Notice the same pattern how the option starts gaining value at the strike price of 26.



- Speaking of strike price, earlier, when we were talking about chains, I mentioned moneyness. Let’s delve into that a little deeper.
- In-the-money means the value of the option would be > 0 if you exercised it.
  - For call options, in the money options are those where the strike price is LESS than stock price.
- Out-of-the-money options are those whose value is = 0 if exercised
  - For call options, out-of-the-money options are where the strike price is GREATER than stock price.
- At-the-money
  - Strike nearest current stock price.



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- So let’s revisit that option chain.
- In the-money options are colored one color.
- Out of the money options are a different color.
- That makes it easy for you to quickly see which options are in or out of the money.

What Are Options?

- **Call** option – the call buyer has the right to buy an asset at a predetermined price during a preset period of time.
- **Put** option – the put buyer has the right to sell an asset at a predetermined price during a preset period of time.

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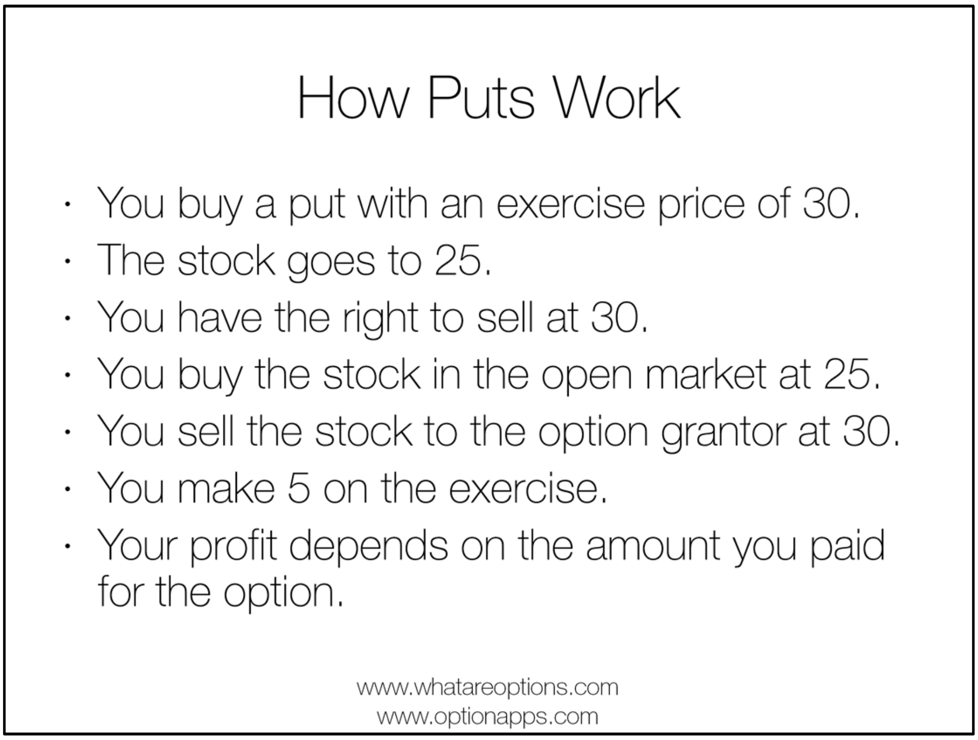
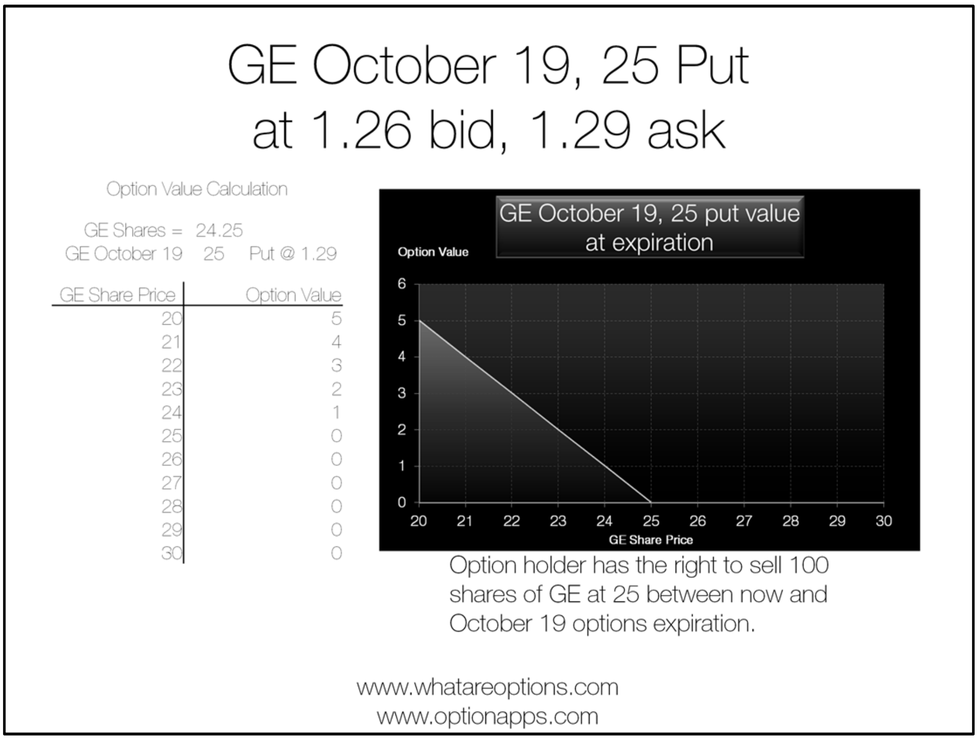
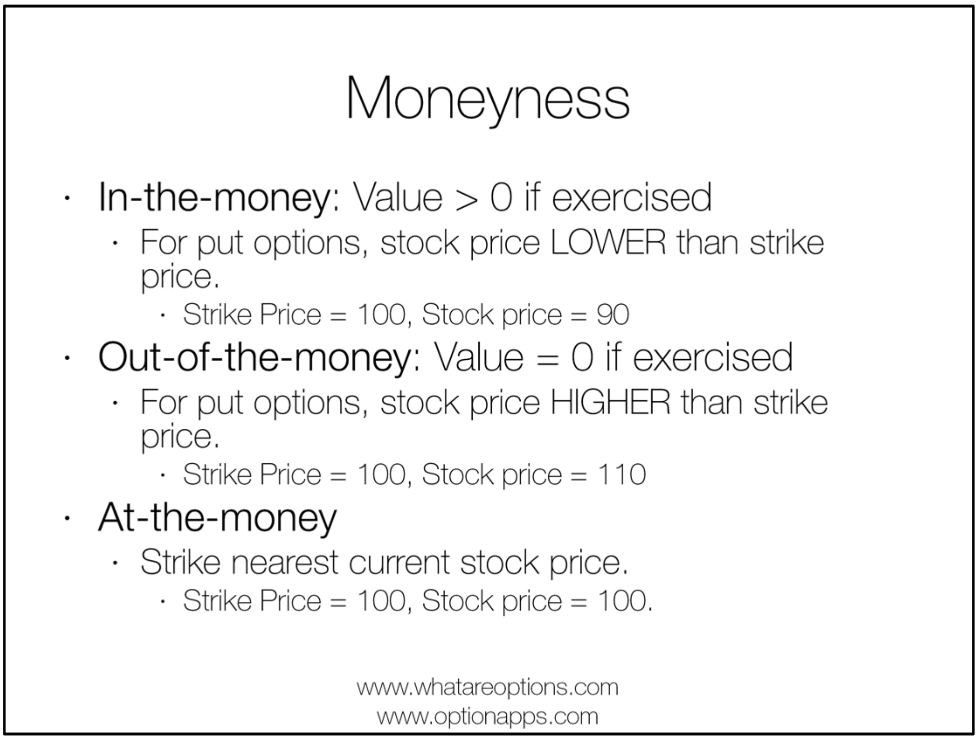
- So we’ve looked at call options.
- The call buyer has the right to buy an asset at a predetermined price during a preset period of time.
- But what about the other type of option - puts?
- Earlier, we said that the put buyer has the right to sell an asset at a predetermined price during a preset period of time.
- How does that work?



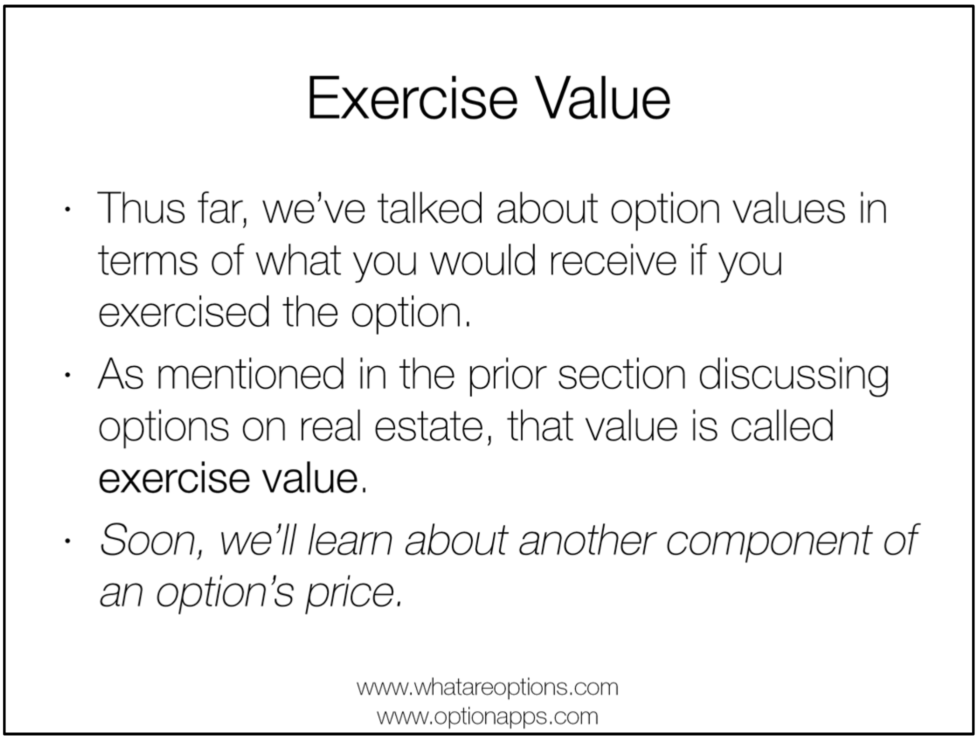
- Let's imagine this situation.
- You buy a put with an exercise price of 30.
- The stock goes to 25.
- As the put holder, You have the right to sell at 30.
- So you buy the stock in the open market at 25.
- You then sell the stock to the option grantor at 30.
- You make 5 on the exercise.
- Now, whether you made a profit or not depends on the amount you paid for the option.



- I want to take a moment to go through thing in detail, because it can be confusing.
- Here is the 25 put. Let's say you are the holder, or buyer of that option.
- Remember, you have the right to SELL at 25. So when you put something in somebody's hand, you are selling it, they are buying it.
- If the stock drops to 20, you can buy the stock at 20 in the open market, and then *put* the stock to the option seller. You can sell it at 25, even if the stock goes to a penny.
- If the stock goes to 20, you buy at 20, sell at 25, you make 5.
- If the stock is at 30, you could exercise your right to sell at 25. You'd buy the stock at 30, then sell at 25, you would instantly lose 5.
- But why would you do that?!
- You choose to do nothing; your option is worthless.
- If the stock is at 25, it's a wash. You could buy the stock at 25 and exercise your right to sell at 25. You make nothing.
- So you choose to do nothing. No need to generate a commission.
- Your option is worthless.
- Notice the reverse pattern how the option starts gaining value below the strike price of 25.



- With respect to puts, the higher the strike price, the more in-the-money the option is.
- Remembering the money examples from the calls, the in-the-money options have a value > 0 if exercised
    - For put options, in-the-money options are those where the stock price is LOWER than strike price.
    - Put another way, in-the-money put options are those where the strike price is GREATER than stock price.
    - Here's an example: If the strike price = 100, the stock price is lower at 90
- Out-of-the-money options have a value = 0 if exercised.
    - For put options, out-of-the-money options are those where the stock price is GREATER than strike price.
    - In other words, out-of-the-money put options have a strike price LESS than stock price.
    - Here's an out-of-the-money example: If the strike price = 100, the stock price is higher at 110
- At-the-money options are those whose strike is nearest current stock price.
    - In this at-the-money example, the strike price is 100 and the stock price is also 100.



- Thus far, we've talked about option values in terms of what you would receive if you exercised the option.
- As mentioned in the prior section discussing options on real estate, that value is called "exercise value".
- Soon, we'll learn about another component of an option's price.

Option Approval Levels

- Traders are approved for trades of different risk levels.
  - Approval levels are based on financial requirements and experience.
  - What level you are approved for is based on your financial capabilities and your experience.
- These levels are set by firms.
  - They are inconsistent.

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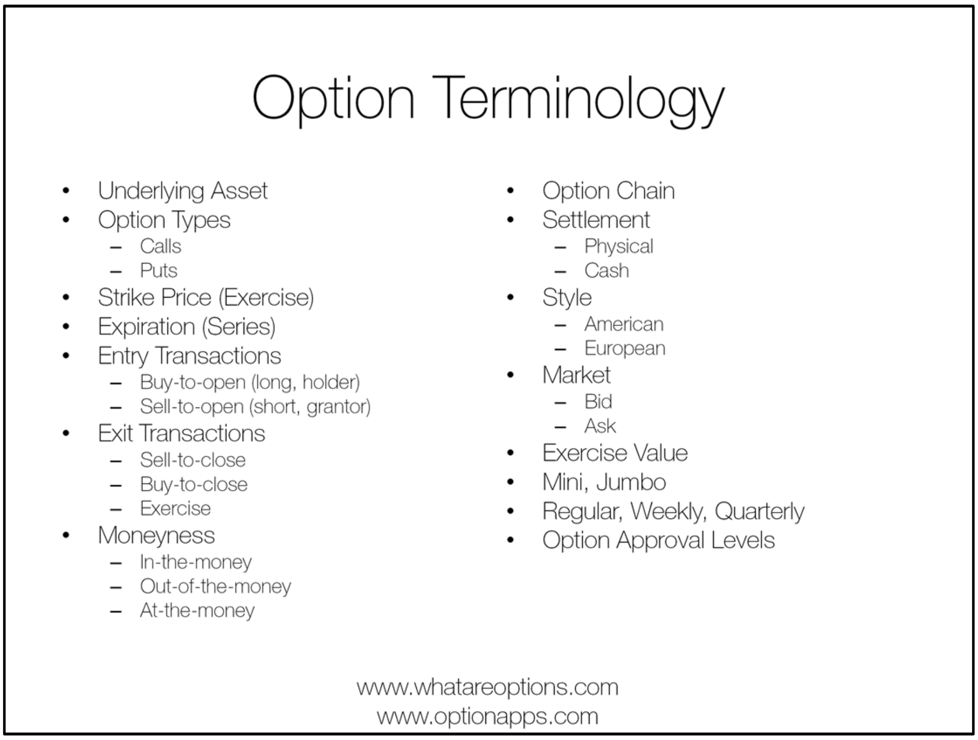
- Here's something important to know when you actually start trading if you aren't trading options now.
- Not every trader is approved to make every type of trade.
- Traders are approved for trades of different risk levels.
- Approval levels are based on financial requirements and experience.
- What level you are approved for is based on your financial capabilities and your experience.
- Unfortunately, the approval levels are not set by the industry. They're set by firms.
- They are inconsistent.
- So check the firm you plan on working with to see what levels they have.
- You'll need to submit your detailed financial information to see what you are approved to do.

- Although there is inconsistency in approval levels when the strategy gets more complex, a couple of strategies tend to be pretty consistent no matter what firm you deal with.
- Buying calls and puts is typically Level 2.
- Covered call trading is typically Level 1.

- The last bit of general information I want to discuss before getting into strategies is something relatively new.
- Previously all standard options came in one flavor, one quantity.
- Stock options gave you the right to buy 100 shares of stock.
- But something happened the last decade.
- Some stocks went up a huge amount, but the companies chose not to split.
- For instance, Google eclipsed $1,000.
- Some of their at-the-money options were priced at 70.
- The cost of a standard option is that price times the number of shares.
- So an option at 70 cost $7,000.
- Since the company wasn’t splitting, the options exchanges effectively split the options.
- Mini options give you the right to buy 10 shares instead of 100.
- So the Google mini option at 70 cost $700, not $7000.
- The Chicago Board Options Exchange also launched Jumbos.
- These options give you the right to buy 1,000 shares.
- Obviously, these options are purely for institutional traders, because an option that is price at 20 cost $20,000.



- So we've come to the end of second chapter.
- Here is what we've covered. It's a lot.
- We covered looking at making money in a manner that is different than the normal way.
- We make money on movement, as opposed to direction.
- That means we need to use options.
- To use options, we need to know the terminology.
- That's what this list provides.
- We'll be using this terminology extensively in the rest of the course.
- So if you are unfamiliar with any of these words, you'll want to watch this video again until you're ready for the next step.
- I know you learned something in this chapter. But we're just getting started. There's a whole lot more.
- But before you move on to the next chapter, make sure you understand this chapter completely.
- Thanks for watching.
- [END]

We're going to begin by examining the most basic option strategies.

BUYING OPTIONS

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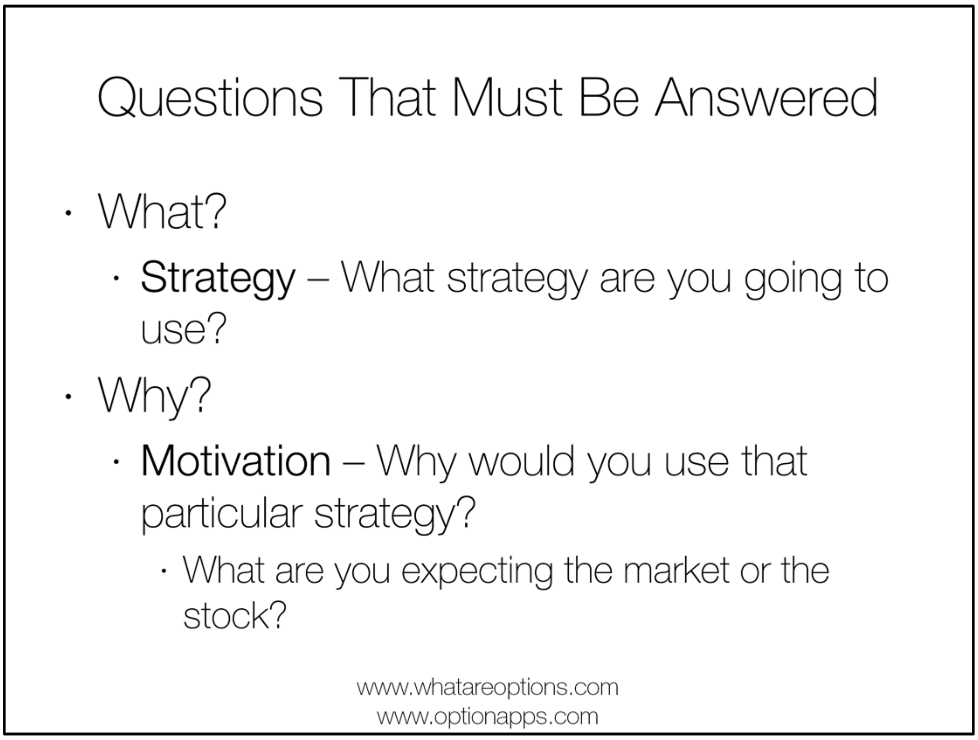
- [Chapter 3]
- Welcome to Chapter 3 of What Are Options.
- My name is Don Fishback, and in this session, we are going to begin looking at strategies.
- We're going to start by examining the most basic option strategies:
- Buying Options



- I want to begin by discussing something you should get in the habit of doing with every trade you take.
- You need to ask a series of questions, and then get the answers to each one.
- Now, you can skip this step if you want.
- But don't be surprised if taking short cuts causes you to have unsatisfactory results.
- As you get experience, this will become automatic.
- But if you're relatively new to options, or if you have some experience but your results aren't where you want them to be, I urge you to follow this question and answer process.
- Here they are:
- Question 1: What?
- What strategy are you going to use?
- Question 2: Why?
- Why would you use that particular strategy?
- What's your motivation?
- What are you expecting the market or the stock to do?

Questions That Must Be Answered

- How?
  - **Implementation** – How are you going to enter the position?
    - What are the mechanics?
- When?
  - **Timing** – When is the best time to enter that type of trade?

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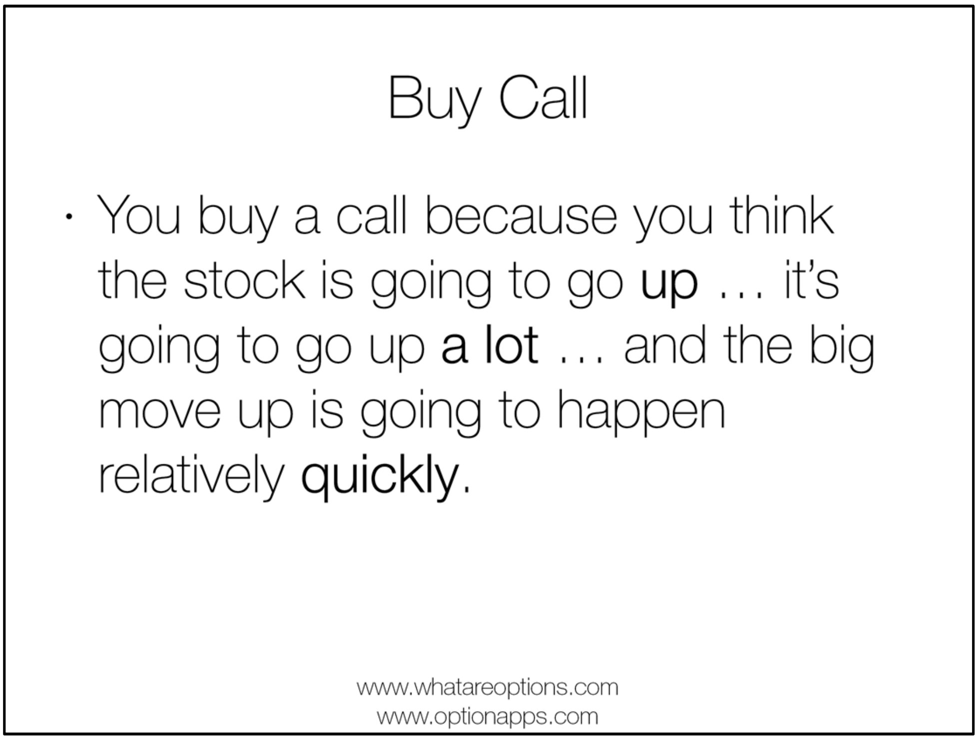
- Question 3: How?
- How are you going to enter the position?
- What are the mechanics of entering and exiting the trade?
- Question 4: When?
- When is the best time to enter that type of trade?

- The strategy we're going to begin with is to Buy a Call.
- That's our "what".
- The next question is why?
- Why would you buy a call?
- Remember, options require you to think differently.
- Not only are you thinking direction, but you are also thinking in terms of magnitude and time.
- In the case of a call purchase
- The direction is Bullish
- The magnitude you expect is Large
- And time works Against You
- The option approval level is Low.



- So our motivation is:
- You buy a call because you think the stock is going to go up
- it's going to go up a lot
- and the big move up is going to happen relatively quickly.

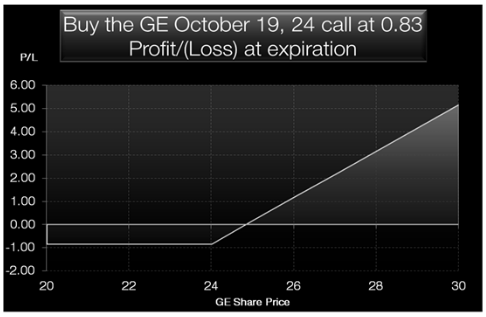
Buy the GE October 19, 24 Call at 0.83 ask

Profit/Loss Calculation

GE shares =24.25

Buy the GE October 19, 24 Call @ 0.83

GE	Exercise Value	Opening transaction	P/L
20	0	-0.83	-0.83
21	0	-0.83	-0.83
22	0	-0.83	-0.83
23	0	-0.83	-0.83
24	0	-0.83	-0.83
25	1	-0.83	0.17
26	2	-0.83	1.17
27	3	-0.83	2.17
28	4	-0.83	3.17
29	5	-0.83	4.17
30	6	-0.83	5.17



Maximum Risk = Amount paid to buy the option.
Maximum Profit = Unlimited
Strike Price + Option Price = **Breakeven Price** at Expiration

Maximum Risk = $83
Maximum Profit = Unlimited
Breakeven Price at Expiration = 24.83

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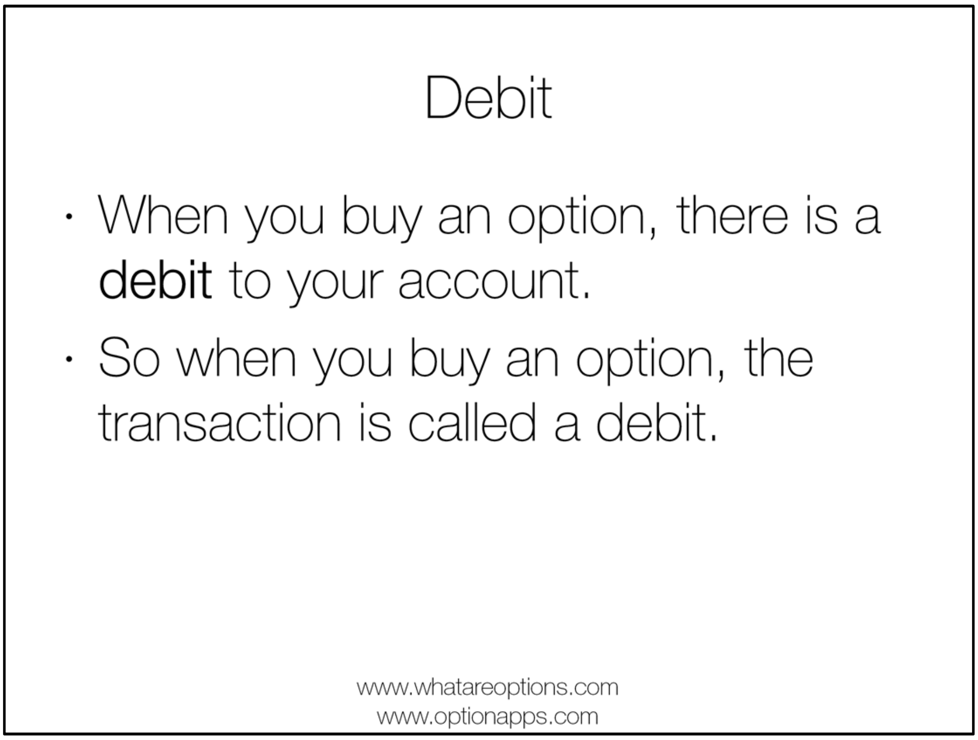
- Here is a profit/loss chart of that first GE call we looked at earlier.
- The option value is equal to the exercise value.
- The difference between this analysis and the value analysis is that we are now considering the price we paid for the call.
- Here is what you would say, or enter if you were placing the trade online
- Buy to open the GE October 19, 24 call at 0.83.
- Below the chart are important statistics for the trade.
- You can see the option value.
- The difference in this table from the value table is that we have the opening transaction.
- Risk
- Profit
- Breakeven price
- I'm going to take that breakeven price and turn it into a percentage move.
- Stock needs to gain +2.4% in order to breakeven.
- Stock needs to gain +5.6% in order for option to double.



- When you buy an option, there is a debit to your account.
- So when you buy an option, the transaction is called a debit.

Buy the GE October 19, 22 Call at 2.39 ask

Profit/Loss Calculation

GE shares =24.25

Buy the GE October 19, 22 Call @ 2.39

GE	Exercise Value	Opening transaction	P/L
20	0	-2.39	-2.39
21	0	-2.39	-2.39
22	0	-2.39	-2.39
23	1	-2.39	-1.39
24	2	-2.39	-0.39
25	3	-2.39	0.61
26	4	-2.39	1.61
27	5	-2.39	2.61
28	6	-2.39	3.61
29	7	-2.39	4.61
30	8	-2.39	5.61

Maximum Risk = Amount paid to buy the option.
Maximum Profit = Unlimited
Strike Price + Option Price = Breakeven Price at Expiration

Maximum Risk = $239
Maximum Profit = Unlimited
Breakeven Price at Expiration = 24.39

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- Here’s the profit/loss chart of an in-the-money call
- Here is what you would say, or enter if you were placing the trade online
- Buy to open the GE October 19, 22 call at 2.39
- Here’s how profits and losses are calculated.
- Here is the option value
- We then take into consideration the purchase price of the option, which is a debit
- That gives us the profit/loss
- To the right, we have our key datapoints
- I’m going to take that breakeven price and turn it into a percentage move.
- Stock needs to gain +0.6% in order to breakeven.
- Stock needs to gain +10.4% in order for option to double.

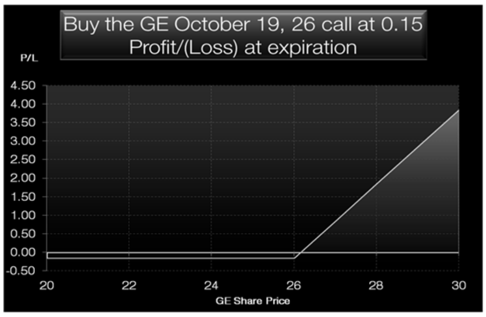
Buy the GE October 19, 26 Call at 0.15 ask

Profit/Loss Calculation

GE shares =24.25

Buy the GE October 19, 26 Call @ 0.15

GE	Exercise Value	Opening transaction	P/L
20	0	-0.15	-0.15
21	0	-0.15	-0.15
22	0	-0.15	-0.15
23	0	-0.15	-0.15
24	0	-0.15	-0.15
25	0	-0.15	-0.15
26	0	-0.15	-0.15
27	1	-0.15	0.85
28	2	-0.15	1.85
29	3	-0.15	2.85
30	4	-0.15	3.85



Maximum Risk = Amount paid to buy the option.
Maximum Profit = Unlimited
Strike Price + Option Price = Breakeven Price at Expiration

Maximum Risk = $15
Maximum Profit = Unlimited
Breakeven Price at Expiration = 26.15

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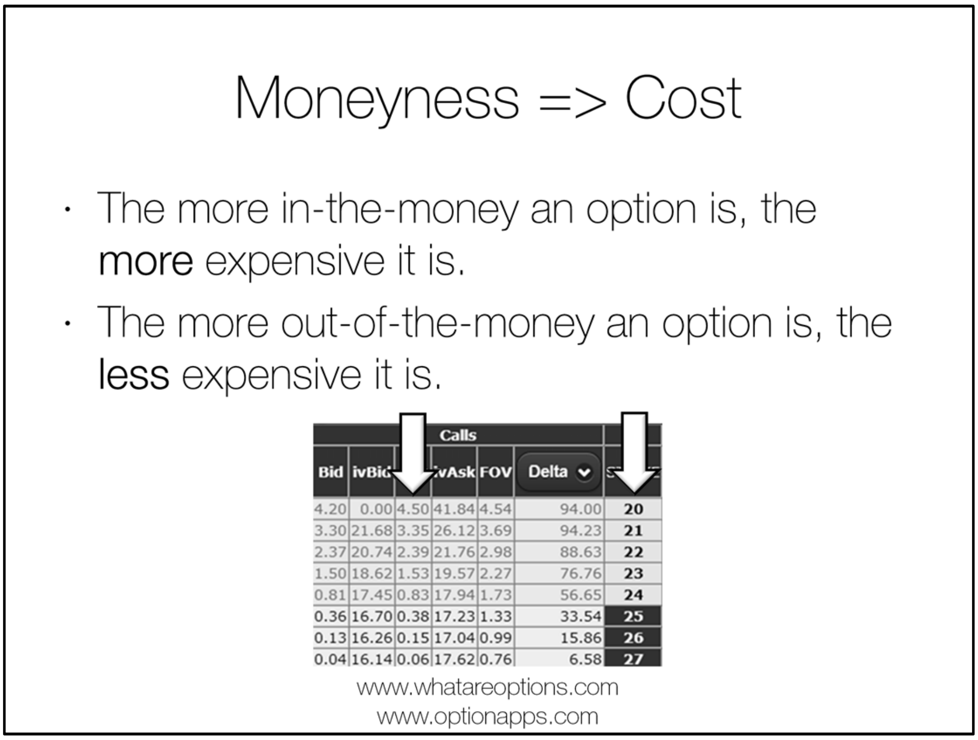
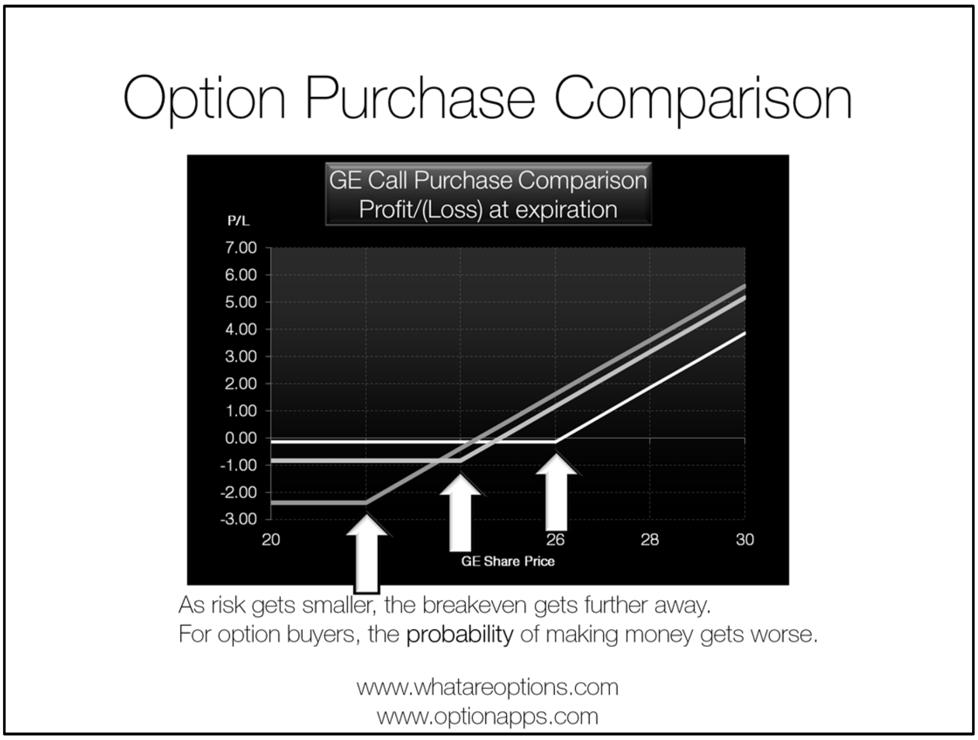
- Here's the profit/loss chart of an out-of-the-money call
- Here is what you would say, or enter if you were placing the trade online
- Buy to open the GE October 19, 26 call at 0.15
- Here's how profits and losses are calculated.
- Here is the option value
- We then take into consideration the purchase price of the option, which is a debit
- That gives us the profit/loss
- To the right, we have our key datapoints
- I'm going to take that breakeven price and turn it into a percentage move.
- You need GE shares to move quite a bit higher just to break even.
- Stock needs to gain +7.8% in order to breakeven.
- But then it doesn't need to move much at all for the option to double.
- Stock needs to gain +8.5% in order for option to double.



Bid	ivBid		ivAsk	FOV	Delta	
4.20	0.00	4.50	41.84	4.54	94.00	20
3.30	21.68	3.35	26.12	3.69	94.23	21
2.37	20.74	2.39	21.76	2.98	88.63	22
1.50	18.62	1.53	19.57	2.27	76.76	23
0.81	17.45	0.83	17.94	1.73	56.65	24
0.36	16.70	0.38	17.23	1.33	33.54	25
0.13	16.26	0.15	17.04	0.99	15.86	26
0.04	16.14	0.06	17.62	0.76	6.58	27

- What you can see from those prior examples is that moneyness impacts the cost of an option.
- The more in-the-money an option is, the more expensive it is.
- The more out-of-the-money an option is, the less expensive it is.
- You can see how the option prices get smaller in this column
- As the strike prices rise in this column



- Here's a chart you won't see very often.
- It compares the different call purchases.
- The dark blue line is the 22 call
- The light blue line is the 24 call
- The white line is the 26 call
- You can see, as risk gets smaller, the breakeven gets further away.
- That means it is less probable that you'll make money.
- The range over which you lose gets bigger as the risk shrinks.
- Your probability of making money gets worse.
- So better risk leads to worse probability.

- That leads to this critical concept
- Risk, reward and probability will always remain in balance.
- As probability increases, risk increases.
- As probability decreases, risk decreases.

- What this leads to is a very interesting concept that we mentioned earlier, when we talked about making money when something does NOT happen.
- We’ll explore this deeper in a later chapter:
- Options are similar in concept to probability-based businesses.
- We can use the same analysis principles as Casinos and Insurance companies
- Speaking of insurance, let’s revisit the put option to check out its profit/loss information.

Buy Put

- Why would you buy a put?
  - Direction: **Bearish**
  - Magnitude: **Large**
  - Time: Works **against** you
- Option Approval Level is **Low**.

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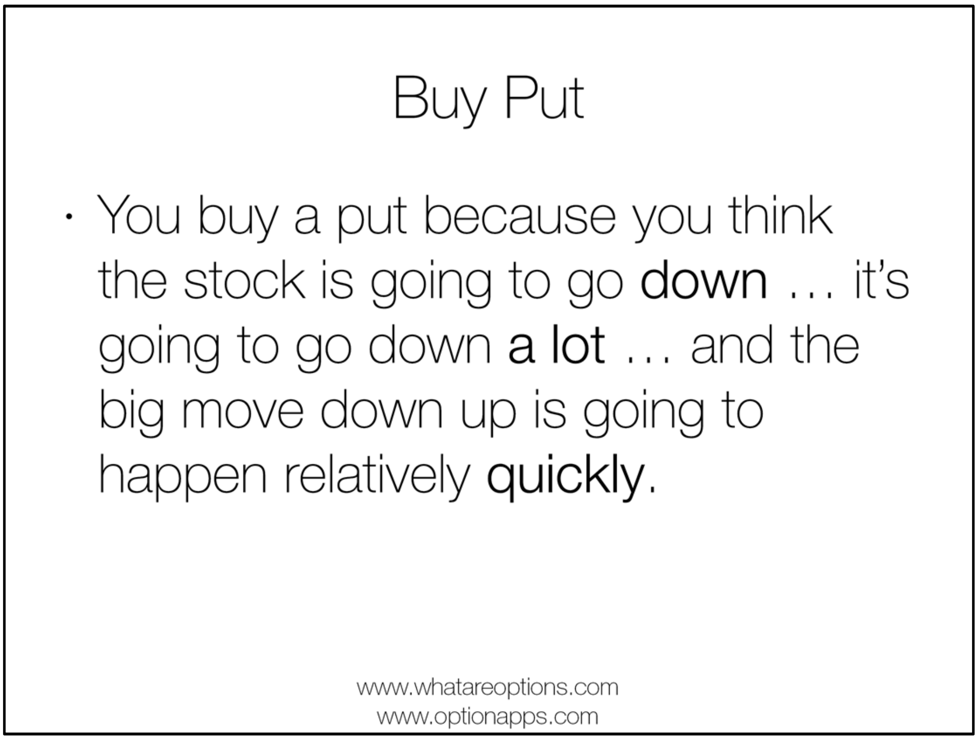
- Remembering our questions, what, why, how and when …
- We know the answer to the first question: What?
- The strategy is to buy a put.
- The next question is Why would you buy a put?
- You buy a put because you expect the direction to be bearish.
- You expect the magnitude to be large.
- Time works against you.
- Option Approval Level is low.



So our motivation is, you buy a put because you think the stock is going to go down it's going to go down a lot
and the big move down is going to happen relatively quickly.

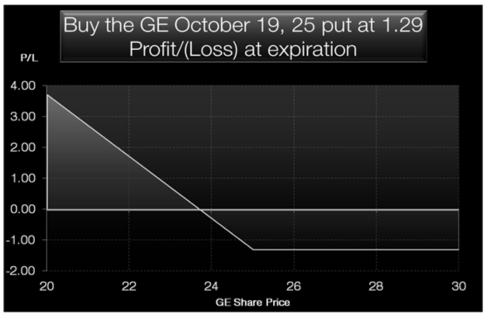
Buy the GE October 19, 25 Put at 1.29 ask

Profit/Loss Calculation

GE shares = 24.25

Buy the GE October 19, 25 Put @ 1.29

GE	Exercise Value	Opening transaction	P/L
20	5	-1.29	3.71
21	4	-1.29	2.71
22	3	-1.29	1.71
23	2	-1.29	0.71
24	1	-1.29	-0.29
25	0	-1.29	-1.29
26	0	-1.29	-1.29
27	0	-1.29	-1.29
28	0	-1.29	-1.29
29	0	-1.29	-1.29
30	0	-1.29	-1.29



Maximum Risk = Amount paid to buy the option.
Maximum Profit = Limited to stock going to zero
Strike Price - Option Price = Breakeven Price at Expiration

Maximum Risk = $129
Maximum Profit = Unlimited
Breakeven Price at Expiration = 23.71

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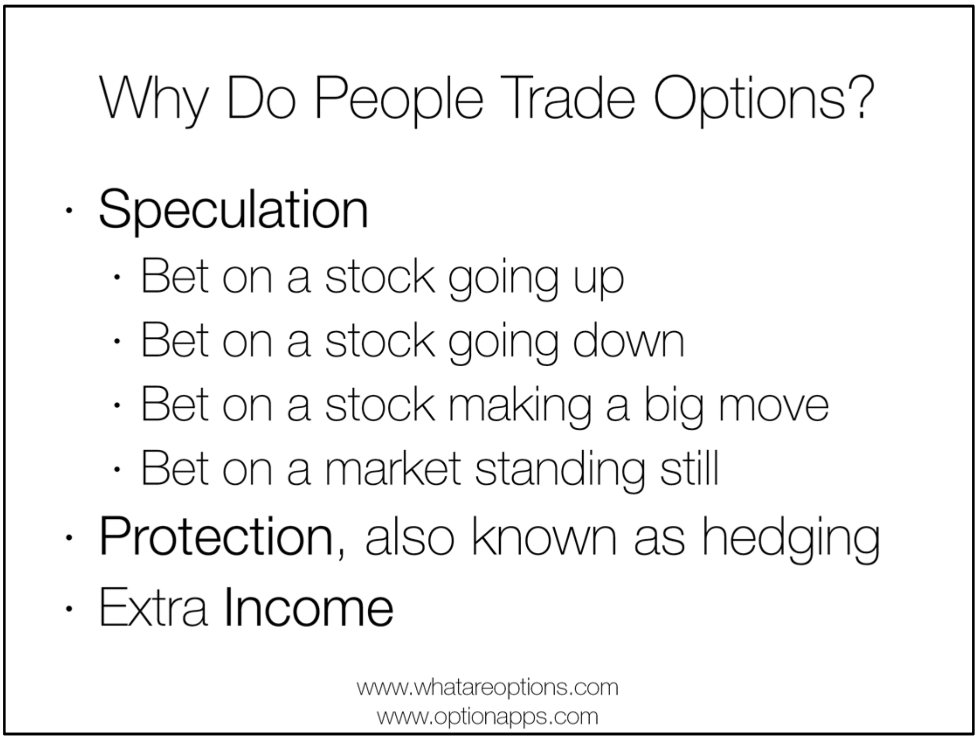
- Here's the profit/loss chart of an in-the-money put
- Here is what you would say, or enter if you were placing the trade online
- Buy to open the GE October 19, 25 put at 1.29
- Here's how profits and losses are calculated.
- Here is the option value
- We then take into consideration the purchase price of the option, which is a debit
- That gives us the profit/loss
- To the right, we have our key datapoints
- I'm going to take that breakeven price and turn it into a percentage move.
- You need GE shares to drop -2.2% in order to breakeven.
- But then it doesn't need to move much at all for the option to double.
- Stock needs to drop -7.5% in order for option to double.
- If it keeps going down, the put continues to make money.



- So we've looked at how profit and losses are calculated on two strategies: buying calls and buying puts.
- We know how to calculate reward, risk and breakeven.
- We're going to cover a third strategy, but before we do, I want to take a moment to answer an obvious question
- Why Do People Trade Options?
- Speculation
- They may want to bet on a stock going up
- Bet on a stock going down
- Bet on a stock making a big move
- Bet on a market standing still
- People also trade options for protection, also known as hedging
- And, as I alluded to earlier with the covered call, people trade options for Extra Income

Protective Put or Married Put

- Buy stock & buy put.
- Own stock & buy put.

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- I want to discuss that second to the last bullet point. Protection.
- Traders can use options to protect things.
- Just a few moments ago, I spoke of insurance.
- You can use options as insurance.
- You can use options to insure your assets, whether they’re stocks, bonds, commodities or real estate.
- We’re going to talk about how to use an option to protect a stock you own or you’re considering buying.
- The easiest way to do that is to buy a protective put.
- This is a combination. You are combining a put purchase, which we just talked about, with a stock you already own or you are going to buy.

Buy GE shares at 24.25
Buy the GE October 19, 24 Put at 0.71 ask
Total Net Debit = 24.96

Profit/Loss Calculation

Buy 100 shares of GE @ 24.25
Buy the GE October 19, 24 Put = 0.71

GE	Option Value	Opening transaction	P/L
20	4	-24.96	-0.96
21	3	-24.96	-0.96
22	2	-24.96	-0.96
23	1	-24.96	-0.96
24	0	-24.96	-0.96
25	0	-24.96	0.04
26	0	-24.96	1.04
27	0	-24.96	2.04
28	0	-24.96	3.04
29	0	-24.96	4.04
30	0	-24.96	5.04

Maximum Risk = Stock Price +Option Price – Strike Price
Maximum Profit = Unlimited
Stock Price + Option Price = **Breakeven Price** at Expiration

Maximum Risk = $96
Maximum Profit = Unlimited
Breakeven Price at Expiration = 24.96

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- The “what” in this case is a protective put.
- This particular protective put is a combination where you buy GE shares, and at the same time, you buy a GE put.
- In this case, you are going to buy GE shares at 24.25
- At the same time, you are going to buy the October 19, 24 put at 0.71
- Your net cost is the combined price of 24.96.
- To place your order, you would say or enter:
- Buy to open 100 shares of GE, buy to open one GE October 19, 24 put for a total net debit of 24.96
- Here’s how it works
- Explain stock price
- Explain option value
- Explain opening transaction
- You can see that once the stock drops below the strike price, the put gains what the stock loses.
- This gives us a limited loss.
- The cap on the loss is the stock price plus the option price minus the strike price.
- The maximum profit is unlimited because the stock starts gaining, but the put stops losing.
- The breakeven is equal to the cost of the position, 24.96.
- Now I want you to look at that chart.
- It should look familiar.
- We’re going to talk about that in a moment, but first I want to address those questions we should answer for every trade we take.
- This information we’re looking at now addresses the how, let’s talk about the why?

Protective Put or Married Put

- Why would you buy a protective put?
  - Direction: **Bullish, but worried**
  - Magnitude: **Large**
  - Time: Works **against** you
- Option Approval Level is **Low**.

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- Remembering our questions, the “what” … The strategy is called a Protective Put or Married Put
- The “why” … You buy a protective put because you’re bullish, but you’re afraid that there *might* be a temporary decline. But you don’t want to give up the upside.
- Direction: Bullish, but … you’re worried about a decline.
- Magnitude: Large
- Time: Works against you
- Option Approval Level is Low.

Protective Put

- You buy a protective put because you want a long-term bullish position in a stock, but you worry about a temporary dip.
- You think the stock is going to **eventually go up** but a drop is possible … the drop could be **large** … and it could happen **soon** … but it won't last.

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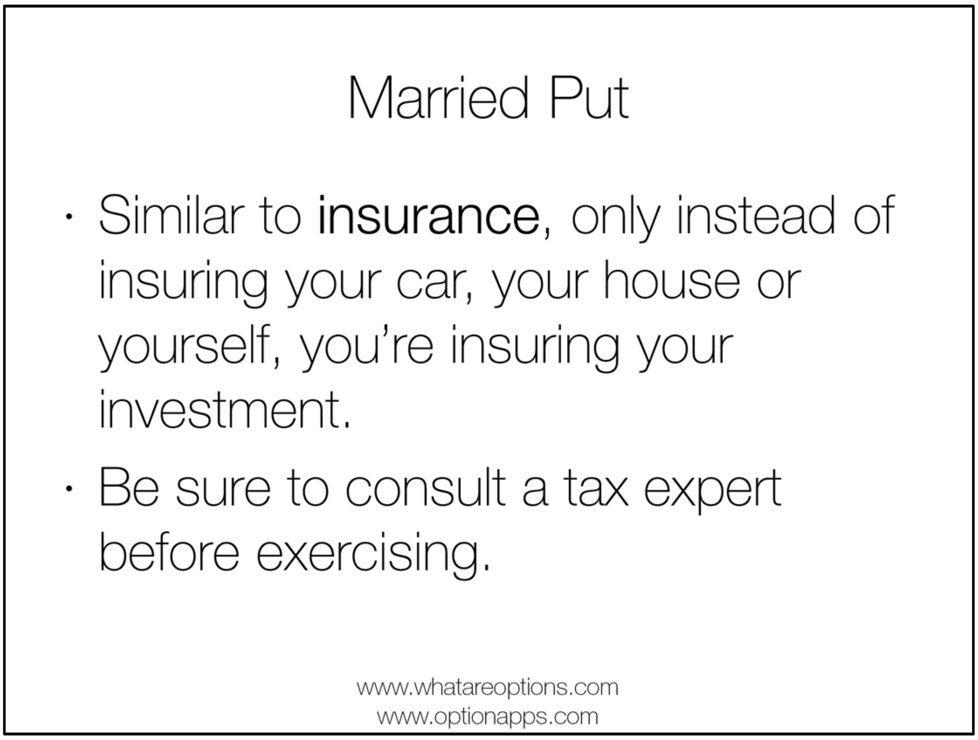
- So what's our motivation?
- You buy a protective put because you want a long-term bullish position in a stock, but you worry about a temporary dip.
- You think the stock is going to eventually go up but a drop is possible
- the drop could be large
- and it could happen soon
- but it won't last.



- A protective put is similar to insurance, only instead of insuring your car, your house or yourself, you're insuring your investment.
- Be sure to consult a tax expert before you exercise your put. Remember, exercising a put means you are selling the underlying asset. You don't want to create a taxable event if you don't need to.

Equivalent Positions

- **Equivalent Positions** are different option combinations that have similar risk-reward profiles.
- Call Purchase and Married Put are **equivalent** if the call and the put have the same strike price and expiration.

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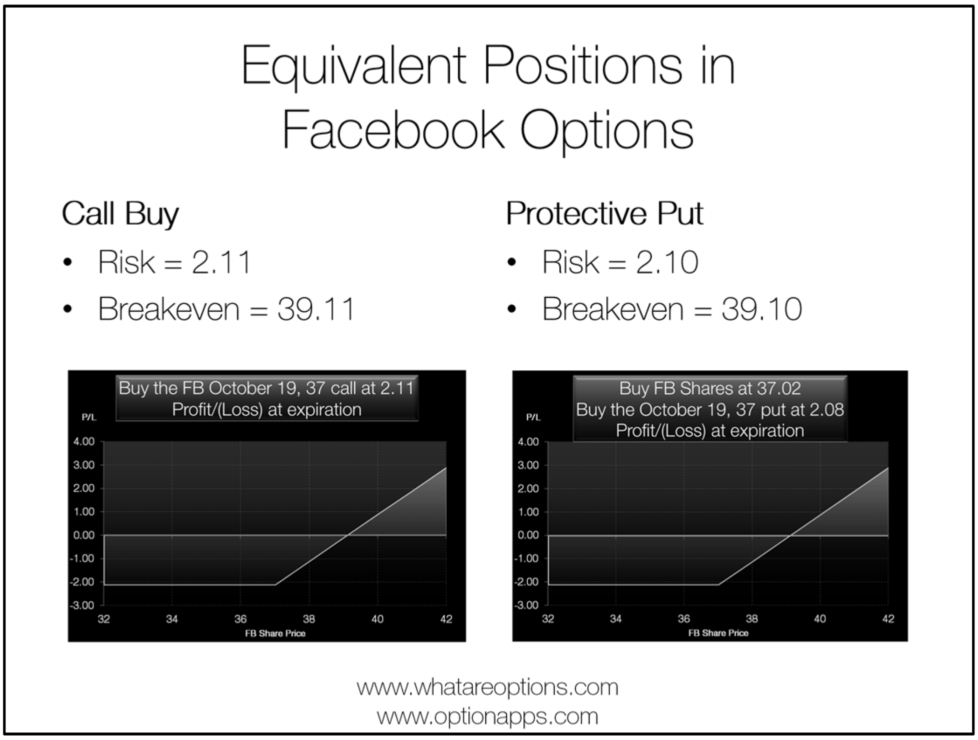
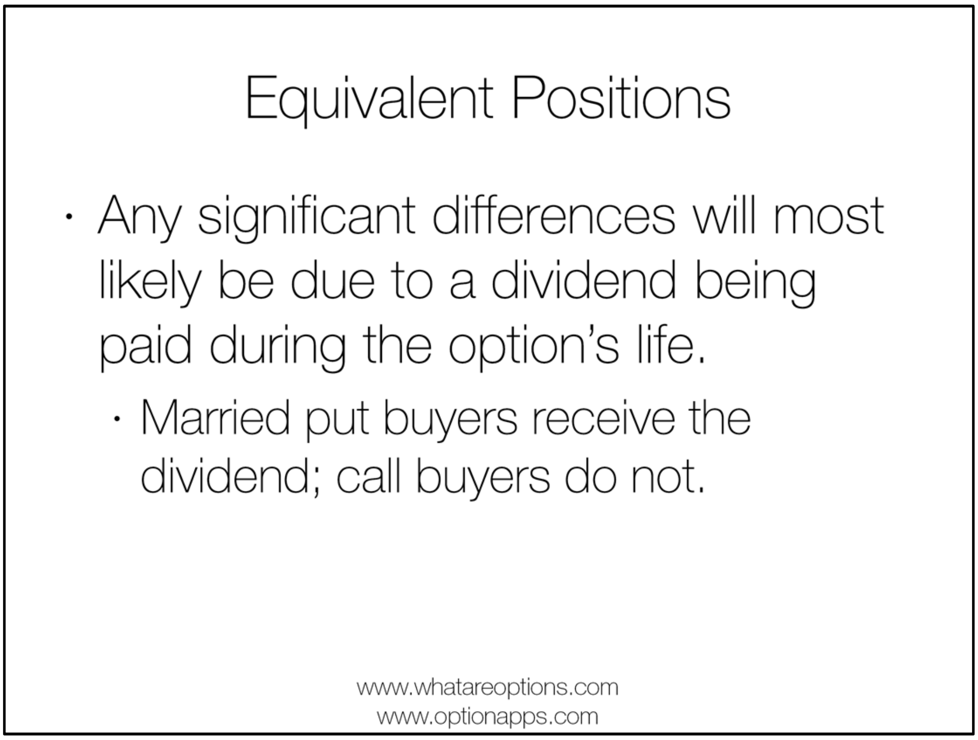
- In a minute, I'm going to talk about how options have a remarkable similarity to insurance. But before I do, I want to discuss something that is pretty unique to options.
- I'm talking about Equivalent Positions. Equivalent positions are where you have two different option strategies that have similar risk/reward profiles.
- We just looked at married puts. I asked you about the profit/loss chart and whether it looked familiar.
- Now, recall that, previously, we looked at buying calls.
- Those two strategies -- buying calls and protective puts -- are called equivalent positions.
- If the call and the protective put have the same strike price and expiration, they will have a similar profit/loss chart.



- Take a look at these two charts.
- One is a Facebook call purchase.
- The other is a Facebook protective put.
- The risk and reward is nearly identical. Only one penny separates the two.
- The breakeven is nearly identical. Again, only one penny separates the two.
- For all intents and purposes, they're identical.



- If there are any significant differences, the most likely culprit will be the dividend paid during the option's life.
- Married put buyers receive the dividend; call buyers do not.
- In the end, although it appears as though they have different profit/loss charts, once the dividend is paid, the difference will disappear.

- That brings us to the end of this chapter on buying options.
- We covered buying calls
- We covered buying puts
- We covered buying a protective put
- We covered the what, why, when and how of each of these trades.
- And finally, you were introduced to the concept of an equivalent position.
- In the next chapter, we are going to introduce you to a very interesting concept.
- We touched upon it already when we talked about how options can be used as insurance.
- We're going to expand that concept as we investigate the similarities between options and insurance.
- I think you're going to be shocked.
- Again, each chapter builds upon the previous chapter.
- So if you're unsure about any of the subject matter discussed so far, please review these first three chapters again until you master them. We want you to get the most out of this course.
- Thanks for watching.

- [Chapter 4]
- Welcome to Chapter 4 of What Are Options?
- My name is Don Fishback, and in this chapter, we are going to introduce you to a very interesting concept.
- We touched upon it already when we talked about how options can be used as insurance.
- We're going to expand that concept as we investigate the similarities between options and insurance.
- I think you're going to be shocked because,
- Whether you realize it or not, when you trade options, you've entered the insurance business.

- [Chapter 4, Section 1]
- Because the topic is so extensive, we’re going to break things down into three sections.
- The first topic we’re going to cover in this section of chapter 4 is the strike price.
- By the time we’re finished, it will be obvious to you that the strike price of an option is equivalent to the deductible of an insurance policy.

How the Deductible Impacts Probability

- A smaller deductible increases the **likelihood** of an insured filing a claim.
- Compare two policies:
  - $100 deductible, $10,000 deductible.
  - Both have a $500,000 cap.
    - Risk is identical!
- Which policy is most likely to suffer a loss that results in a claim?

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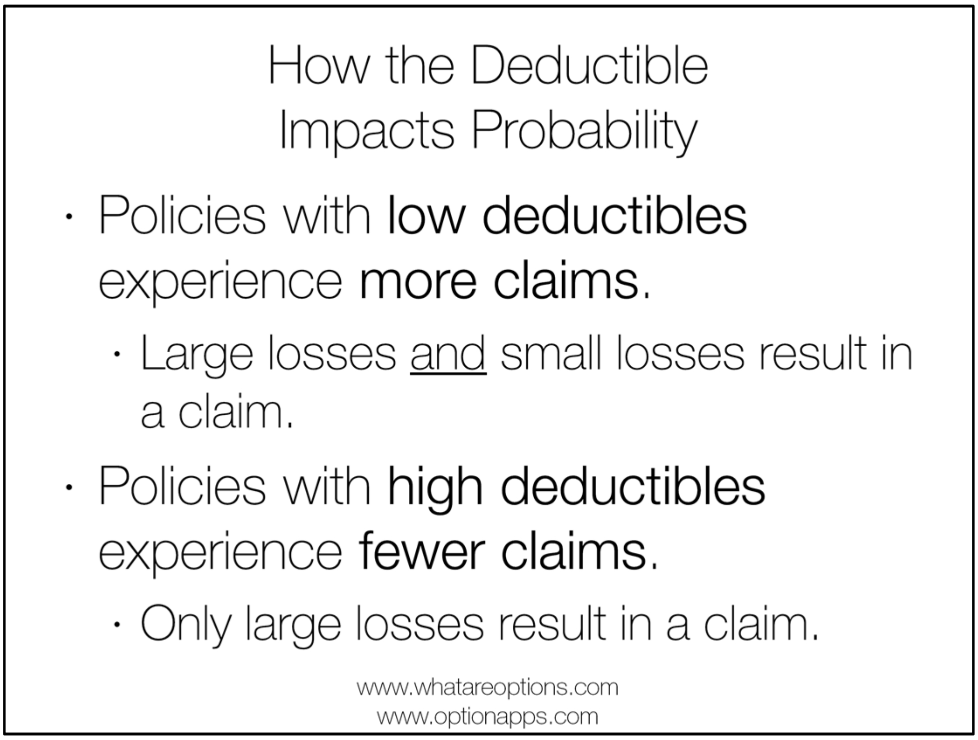
- Most of us have insurance of some kind.
- Either health insurance, car insurance, homeowners or renters insurance.
- All of those types of insurance have what’s called a deductible.
- Let’s look at what we know about deductibles.
- A smaller deductible increases the likelihood of an insured filing a claim.
- Let’s look at two policies two see why
- Compare two policies: $100 deductible, $10,000 deductible
- The two policies have a cap. That is, the amount the insurance company will payout is limited. So their maximum risk is identical.
- Which policy is most likely to suffer a loss that results in a claim?
- It’s an obvious answer. The $100 deductible is more likely to experience a loss than the $10,000 policy



- Policies with low deductibles experience more claims.
- Large losses and small losses result in a claim.
- Policies with high deductibles experience fewer claims.
- Only large losses result in a claim.

How the Deductible Impacts Probability

- The number of claims—the **frequency** of claims—shrinks in a high deductible policy.
- The likelihood, or **probability** of a claim decreases in a high deductible policy.
- For the insurance issuer, **probability** of loss is **better**.

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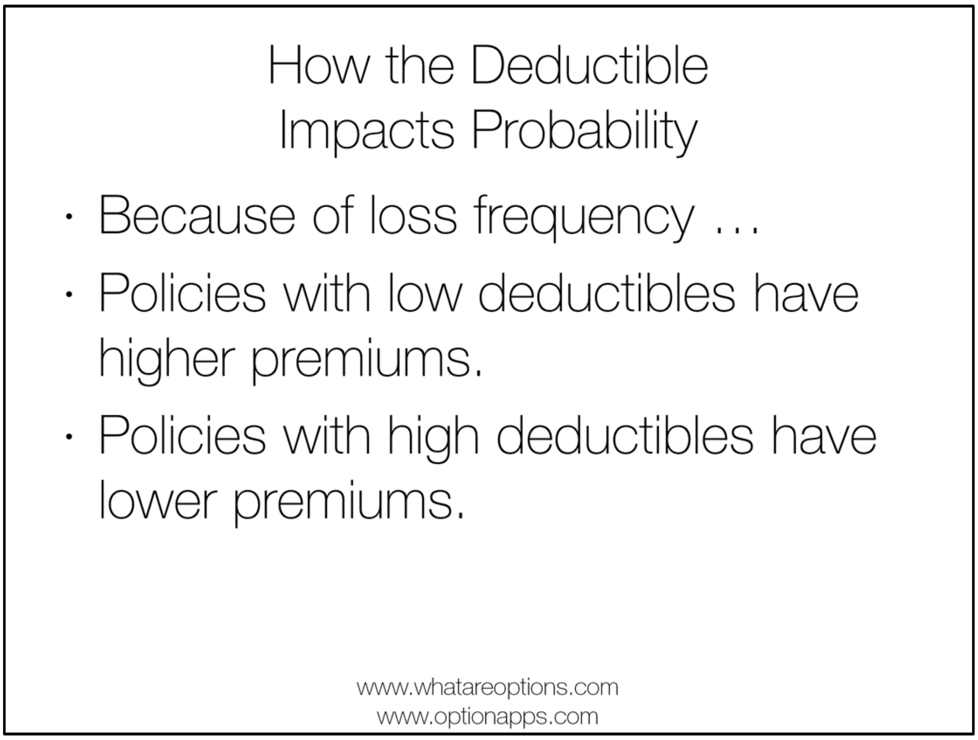
- The number of claims—the frequency of claims—shrinks in a high deductible policy.
- The likelihood, or probability of a claim decreases in a high deductible policy.
- For the insurance issuer, probability of loss is better.



- Because of loss frequency …
- Policies with low deductibles have higher premiums.
- Policies with high deductibles have lower premiums.
- That's the probability side.

How the Deductible Impacts Probability

- The premium is the **reward** potential for the insurance company.
- Remember, the loss cap is the same, so **risk** is identical.

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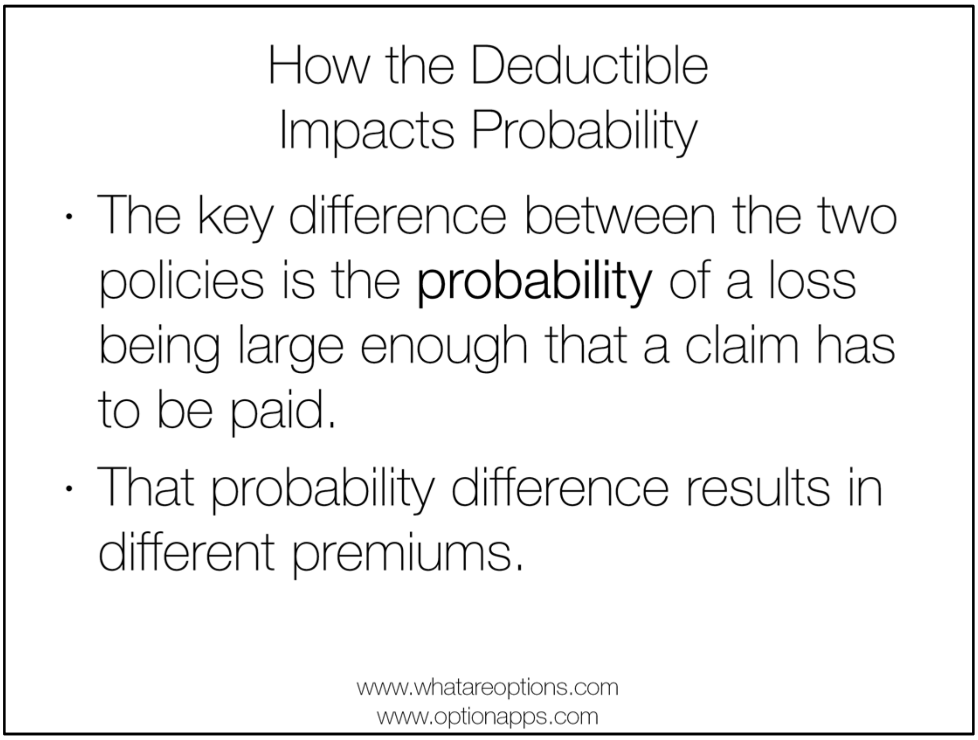
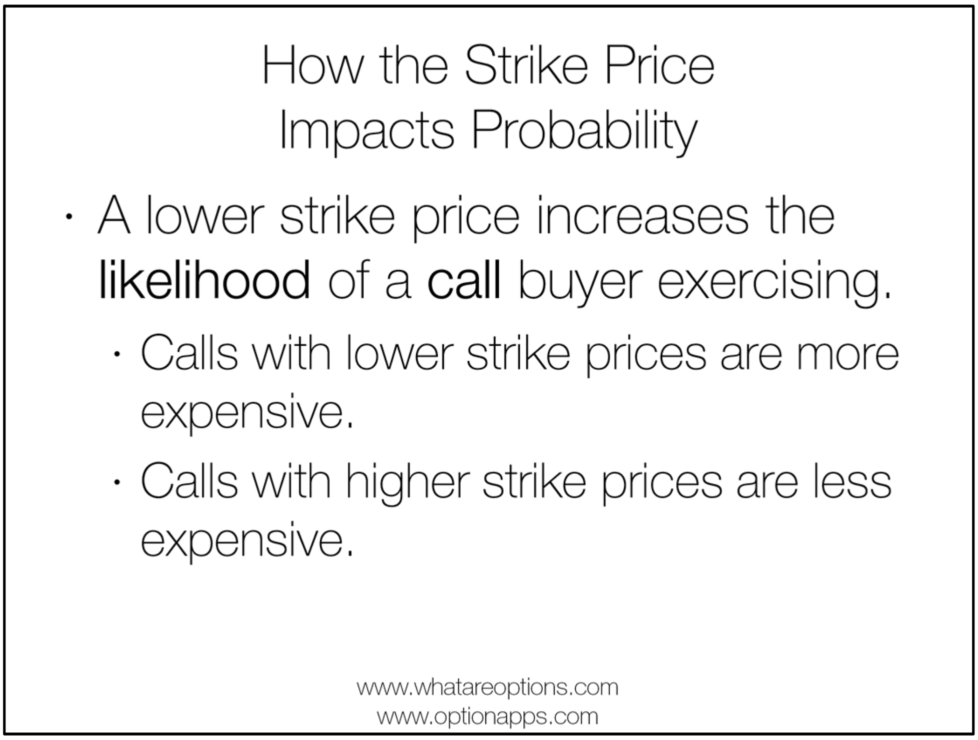
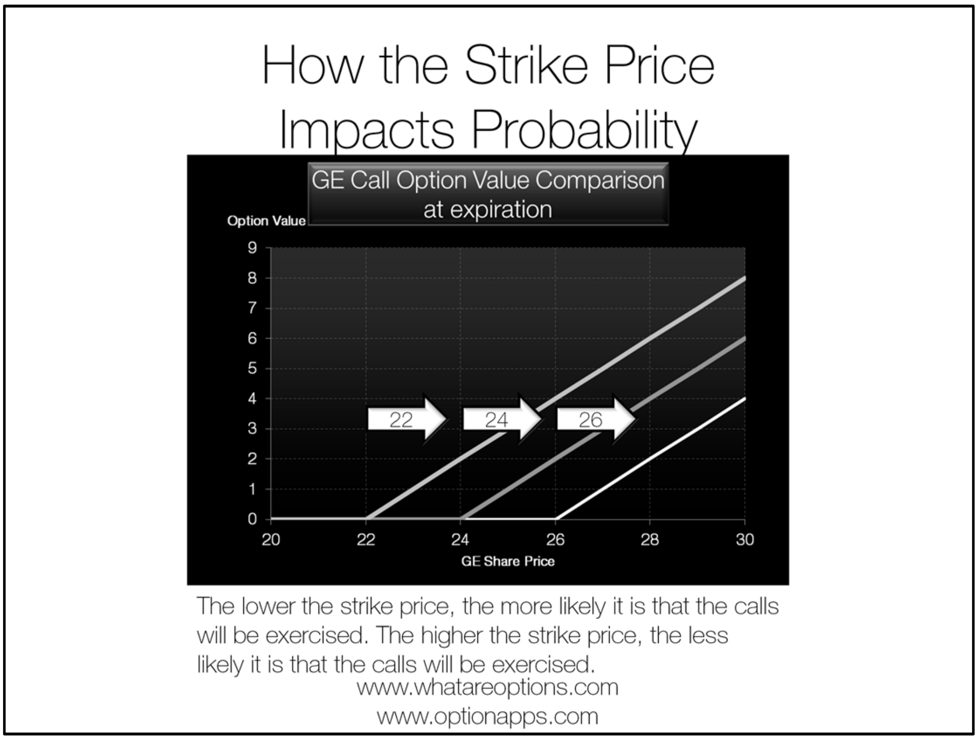
- Now I’m going to throw something else into the mix. Reward.
- The premium is the reward potential for the insurance company.
- Remember, the loss cap is the same.
- Risk is identical.



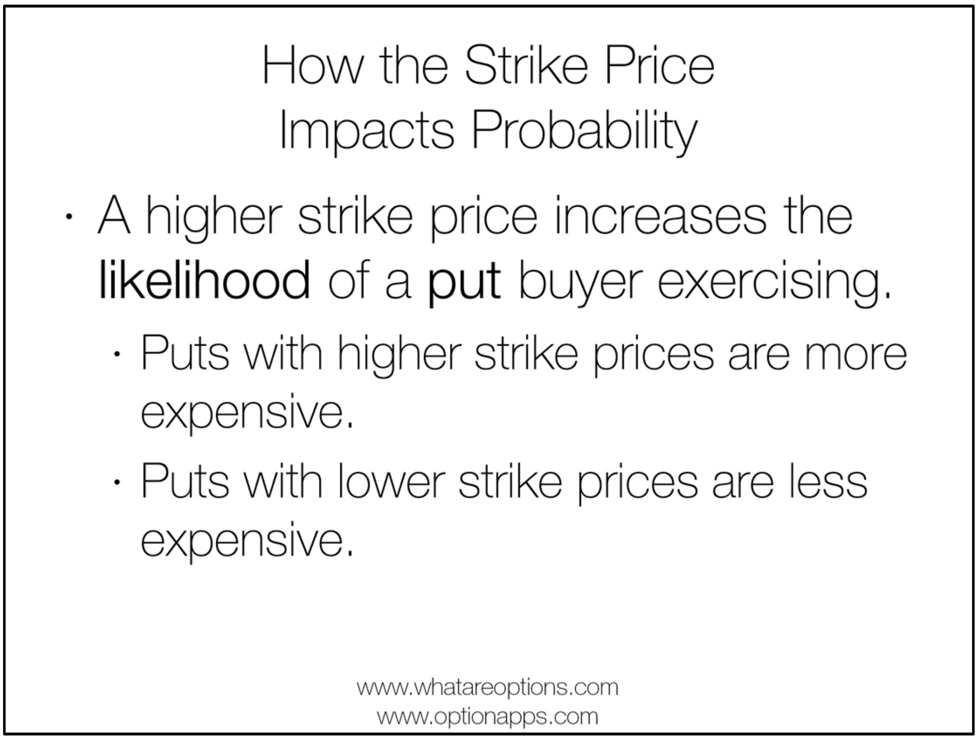
- The difference between the two policies is the probability of a loss being large enough that a claim has to be paid.
- That probability difference results in different premiums.



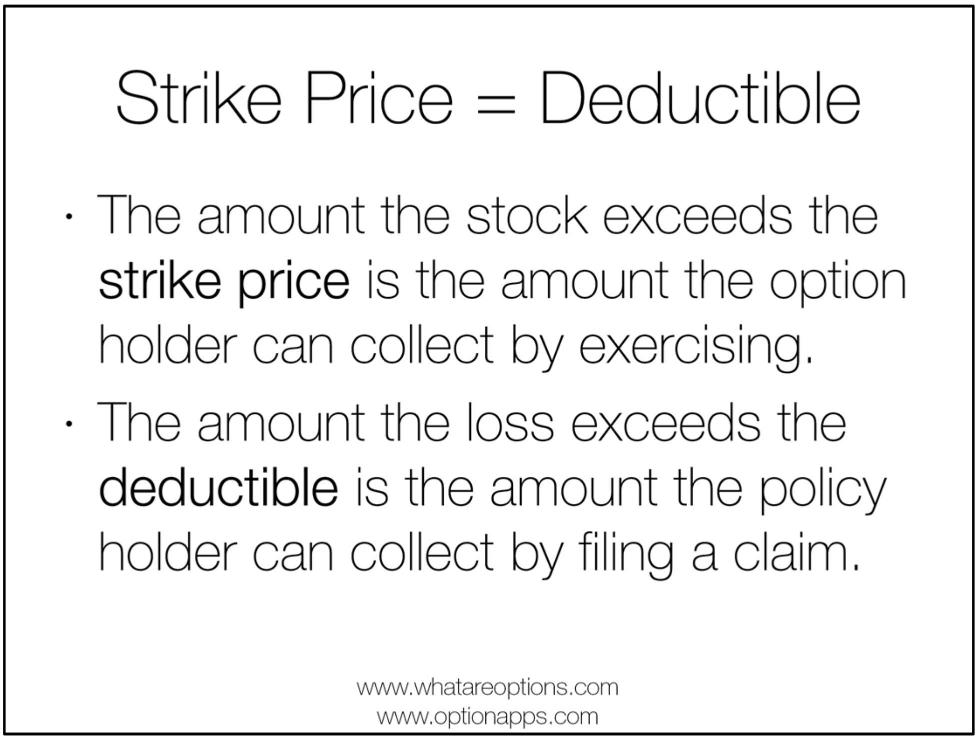
- Now let’s consider options.
- A lower strike price increases the likelihood of a call buyer exercising.
- Calls with lower strike prices are more expensive.
- We saw this with the GE 22 call, which was $239.
- Calls with higher strike prices are less expensive.
- We saw this with the GE 26 call, which was just $15.



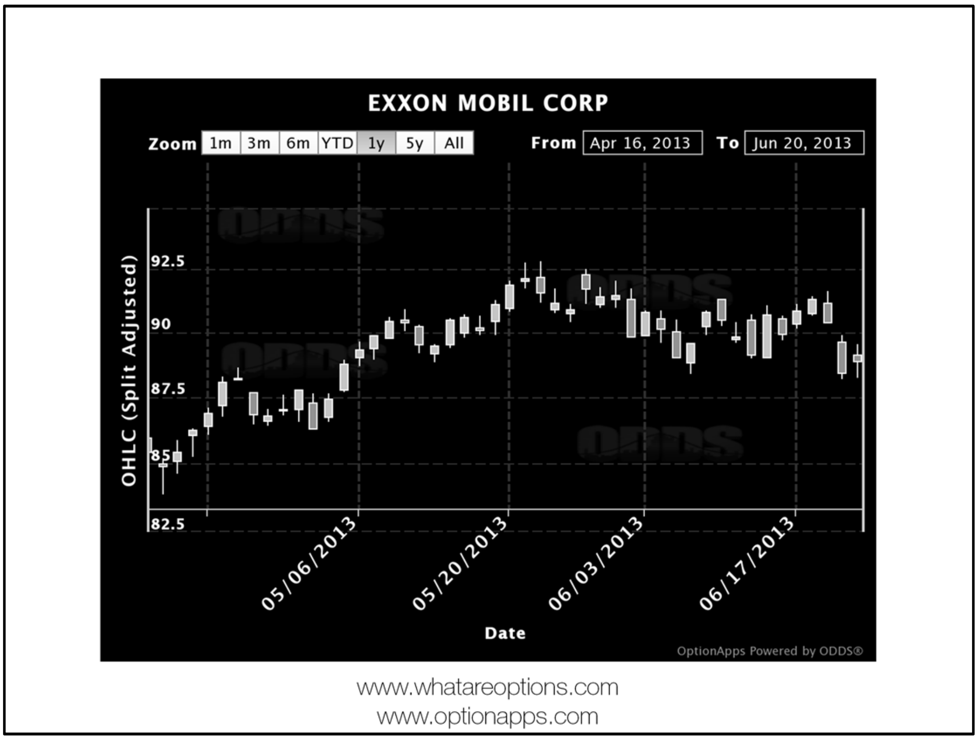
- Here's another chart you're not going to see anywhere else.
- This chart shows the option values of those GE calls all on the same graph.
- The lower the strike price, the wider the range over which the option holder can exercise the call.
- As the strike price increases, the area to the right shrinks. That is, the area in which the option has value shrinks.
- A lower strike price makes it more likely that the option buyer will exercise the call. A higher strike price makes it less likely an option holder will exercise the call.



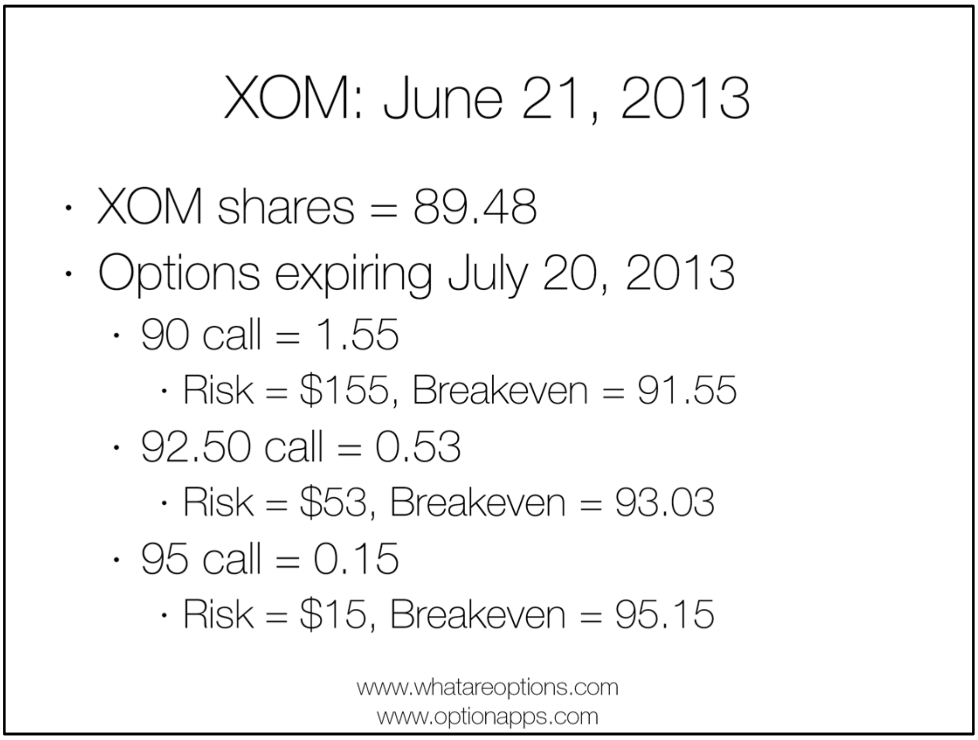
- With a put, it's the reverse.
- A <u>higher</u> strike price increases the likelihood of a put buyer exercising.
- Puts with higher strike prices are more expensive.
- Puts with lower strike prices are less expensive.



- So let's compare the two …
- The amount the stock exceeds the strike price is the amount the option holder can collect by exercising.
- The amount the loss exceeds the deductible is the amount the policy holder can collect by filing a claim.

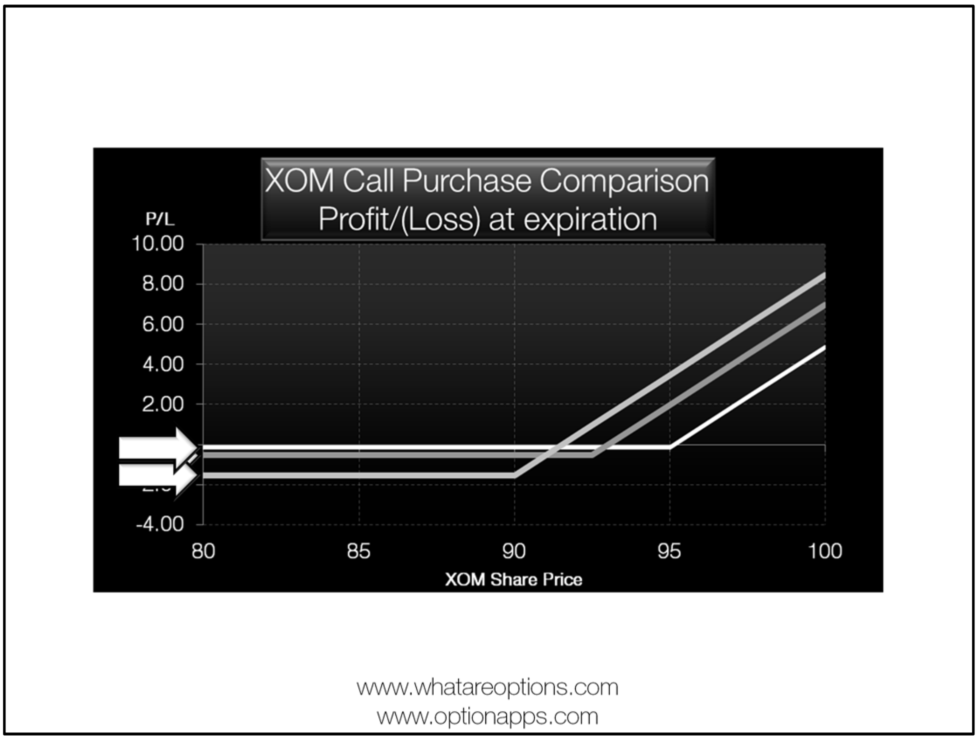


- Let's look at an example.
- Say you had a bullish view of Exxon Mobil. Your chosen strategy was to buy a call.



- XOM shares were at 89.48.
- We're going to look at call options that have the same expiration date.
- The only difference between these options is the strike price.
- The 90 call cost $155. It's breakeven is 91.55
- The 92.50 call cost $53. It's breakeven is 93.03
- The 95 call cost $15. It's breakeven is 95.15
- The lowest strike price, which is the 90, is more expensive, so you risk more.
- But is the breakeven is lower, so the probability of the call making money is higher.
- In the middle strike price, the price is lower, so it's less expensive and you risk less
- But the breakeven is higher, so the probability of the call making money is worse.
- In the highest strike price, it is even less expensive, so your risk is even less
- But the breakeven is higher still, so the probability of the call making money is the worst.

- What we can observe is this: the Strike Price Impacts Risk, Reward and Probability
- For calls, lower strikes = more expensive, higher risk, higher probability, less leverage.
- For calls, higher strikes = less expensive, lower risk, lower probability, more leverage.



Here is a chart of the three options in the same profit/loss chart.
The 90 call is the light blue line.
The 92.50 call is the dark blue line.
The 95 call is the white line.
You can see how each line is flat in negative territory below the strike price.
Then when each line reaches it’s strike price, the line begins to turn upward, eventually climbing into positive territory.

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- Now let's look what happened.
- You said XOM was going to go up.
- You said it was going to go up before July expiration.
- You were correct on both accounts.
- But, depending on your strike price selection, you were either very happy, or very sad.

XOM: July 19, 2013

- XOM shares = 94.41
- Options expiring July 20, 2013
  - 90 call = 4.41, profit = +185%
  - 92.50 call = 1.91, profit = +260%
  - 95 call = 0.00, LOSS = -100%
- Lower strikes = more expensive, higher risk, higher probability, less leverage.
- Higher strikes = less expensive, lower risk, lower probability, more leverage.

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- XOM did go up, rising to 94.41.
- The lowest strike price, the 90 call … it was more expensive, so you risked more
- It had a higher probability of profit.
- But lower leverage so the percent profit was lower.
- In the middle strike price, the 92.50, the option was less expensive, so you risked less.
- It had a lower probability of profit.
- The leverage was better so the percent profit was better.
- In the highest strike price, it was the least expensive, so you risked the smallest amount.
- It had the lowest probability of profit.
- The leverage was terrific.
- Unfortunately, XOM shares didn’t rise enough for that leverage to kick in. The 95 call suffered a 100% loss.
- You only risked $15, but the odds of winning were so far against you, even a rally that more than doubled the two other options wasn’t enough to prevent a total loss.
- It’s like a health insurance policy with a $10,000 annual deductible.
- For call options, a low strike price is like an insurance policy with a low deductible. It’s more expensive, so there is more risk, but a higher probability with less leverage.
- For call options, a really high strike price is like a really high deductible. A high strike price in a call is out-of-the-money.

Cost, Risk, Probability and Leverage for Puts

- For puts, higher strikes = more expensive, higher risk, higher probability, less leverage.
- For puts, lower strikes = less expensive, lower risk, lower probability, more leverage.

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- What we can observe is this: the Strike Price Impacts Risk, Reward and Probability
- For puts, higher strikes = more expensive, higher risk, higher probability, less leverage.
- For puts, lower strikes = less expensive, lower risk, lower probability, more leverage.

Married/Protective Puts as Insurance

- The higher the strike price of the put, the greater the protection.
- The lower the strike price of the put, the smaller the protection.

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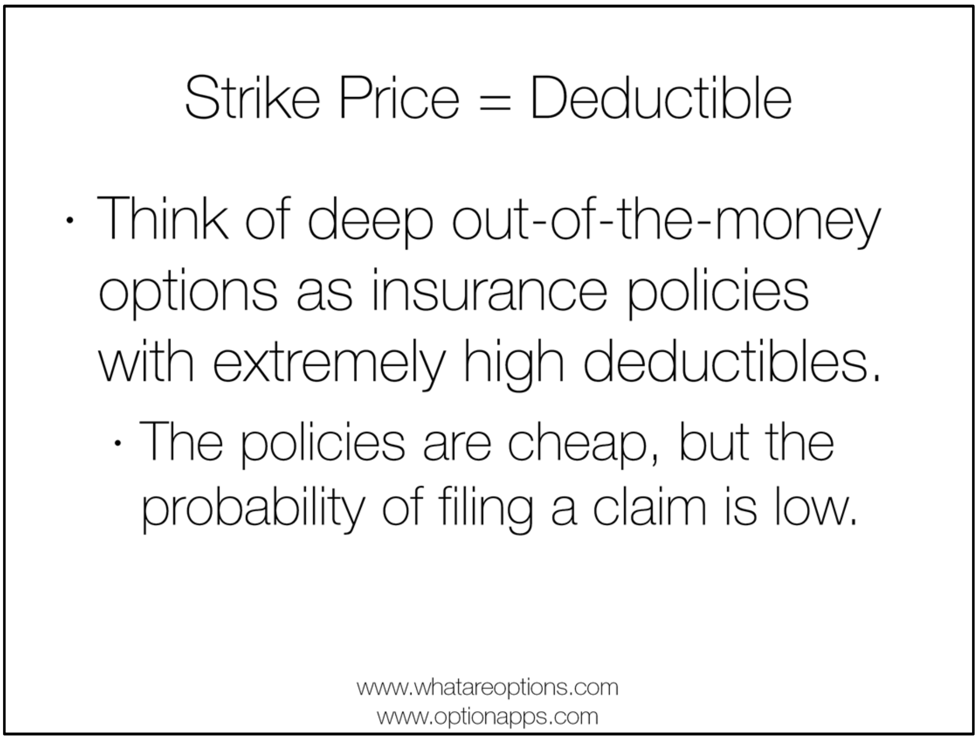
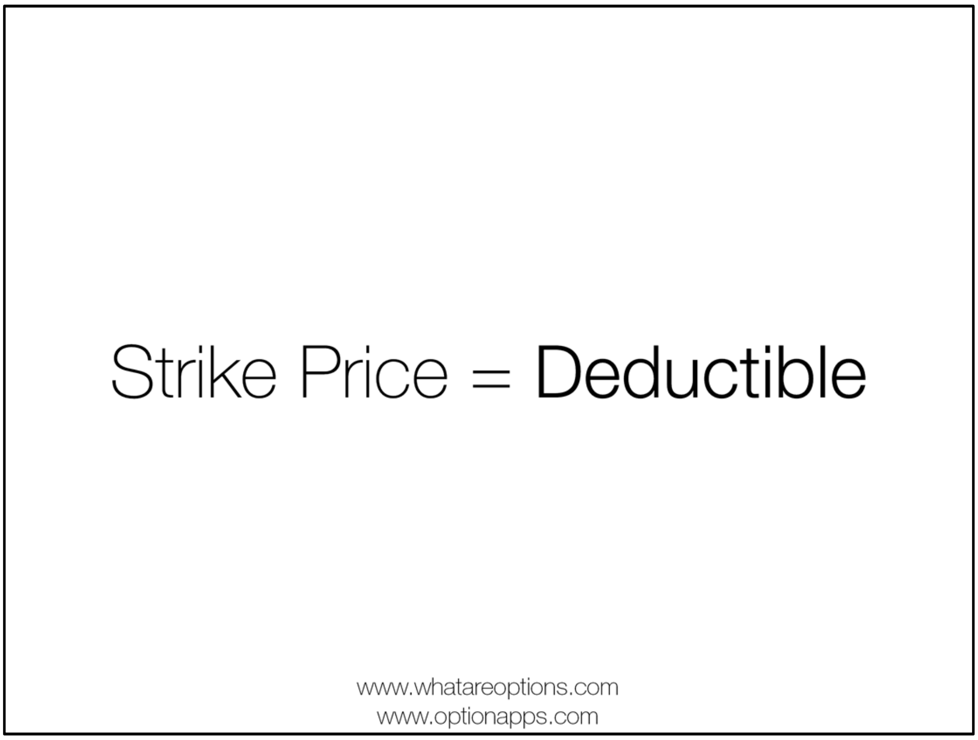
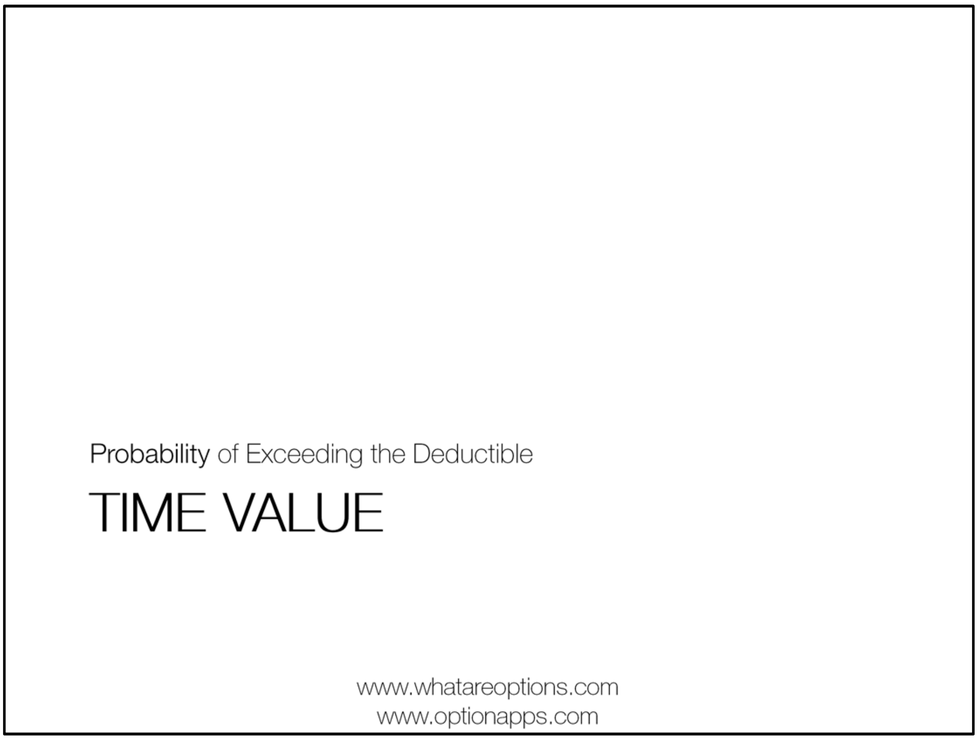
- Thinking back to our married put example...
- The higher the strike price of the put, the greater the protection.
- With an insurance policy, the more protection you have, the more expensive the premium
- The lower the strike price of the put, the smaller the protection.
- And just like an insurance policy, the less protection you have, the cheaper the premium



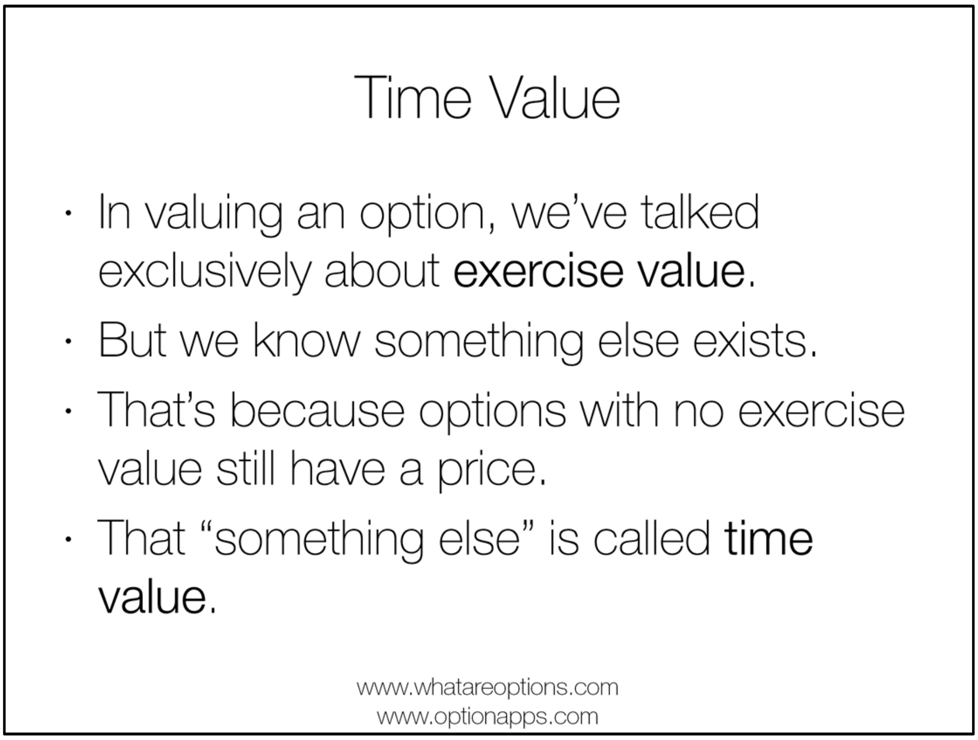
- So out-of-the-money options are like high deductible insurance policies.
- Think of deep out-of-the-money options as insurance policies with extremely high deductibles.
- The policies are cheap, and the reason they're cheap is because the probability of filing a claim is low.



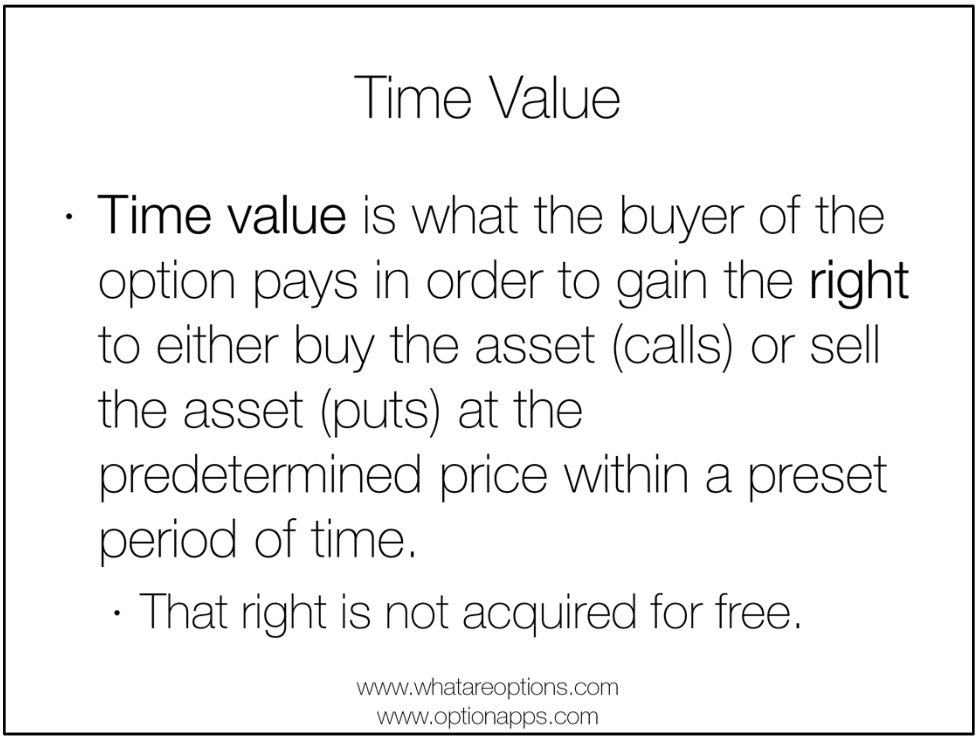
In short, the strike price of an option is closely related to the deductible in an insurance policy.
This illustrates what we talked about in Chapter 3, risk, reward and probability are all held in balance together, whether you’re talking insurance, or options.



- [Chapter 4, Section 2]
- Welcome back to What Are Options. My name is Don Fishback.
- We're at the second section of Chapter 4.
- In the first section of Chapter 4, we observed how the strike price is similar to the deductible.
- Here's something else we learned. In an insurance policy, the premium changes as the deductible changes.
- But what other factors drive changes in premiums?
- And how does that relate to determining the right price for the option?
- We're going to begin investigating another one of those key factors right now.



- Up till now, when valuing an option, we've talked exclusively about exercise value.
- But we know something else exists.
- That's because options with no exercise value still have a price.
- That "something else" is called "time value".



- Time value is what the buyer of the option pays in order to gain the right to either buy the asset (calls) or sell the asset (puts) at the predetermined price within a preset period of time.
- That right is not acquired for free.

Time Value

- **Time value** is what the seller of the option receives as compensation for taking on the **obligation** of delivering the asset.

- Time value is what the seller of the option receives as compensation for taking on the obligation of delivering the asset.

Time Value

- **Time value** is based on the **probability** that an option might be exercised.

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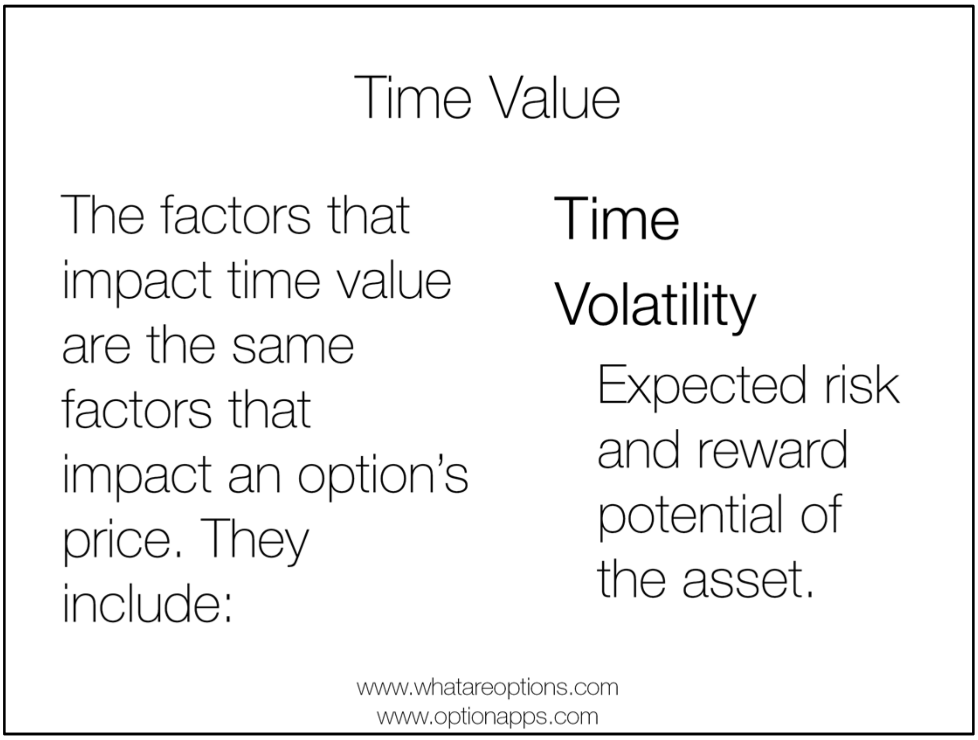
- And here's something that I think is just absolutely awesome.
- Time value is based on the probability that an option might be exercised.



- So what impacts that probability. What are the factors that impact time value?
- As a matter of fact, they are the same factors that impact an option’s price. In particular:
- Time
- Expected risk and reward potential of the asset, which is the volatility.

Time Value

- The longer the time left till expiration, the higher the time value.
- The greater the expectation for risk and/or reward from the asset – the greater expectation for price movement – the higher the time value.

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- The longer the time left till expiration, the higher the time value.
- The greater the expectation for risk and/or reward from the asset – the greater expectation for price movement – the higher the time value.
- Let’s look at the latter factor first.

Expectation for Price Movement Impacts Time Value

- We’re going to look at the options of two different stocks.
- The stock prices are nearly identical.
- The strike prices are identical.
- The option expiration dates are identical.

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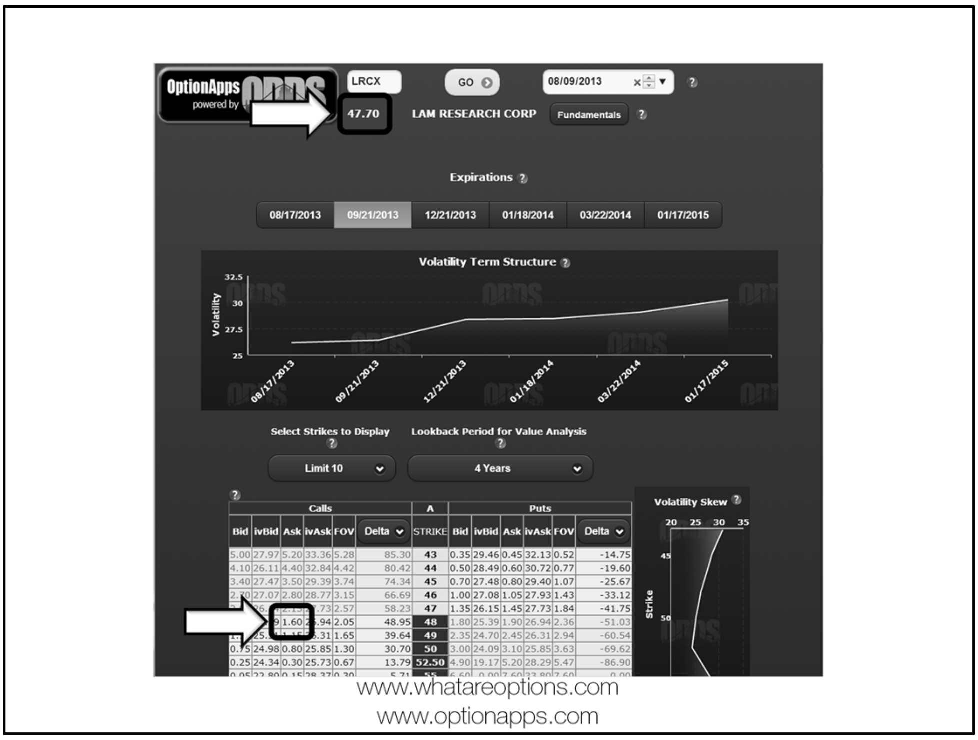
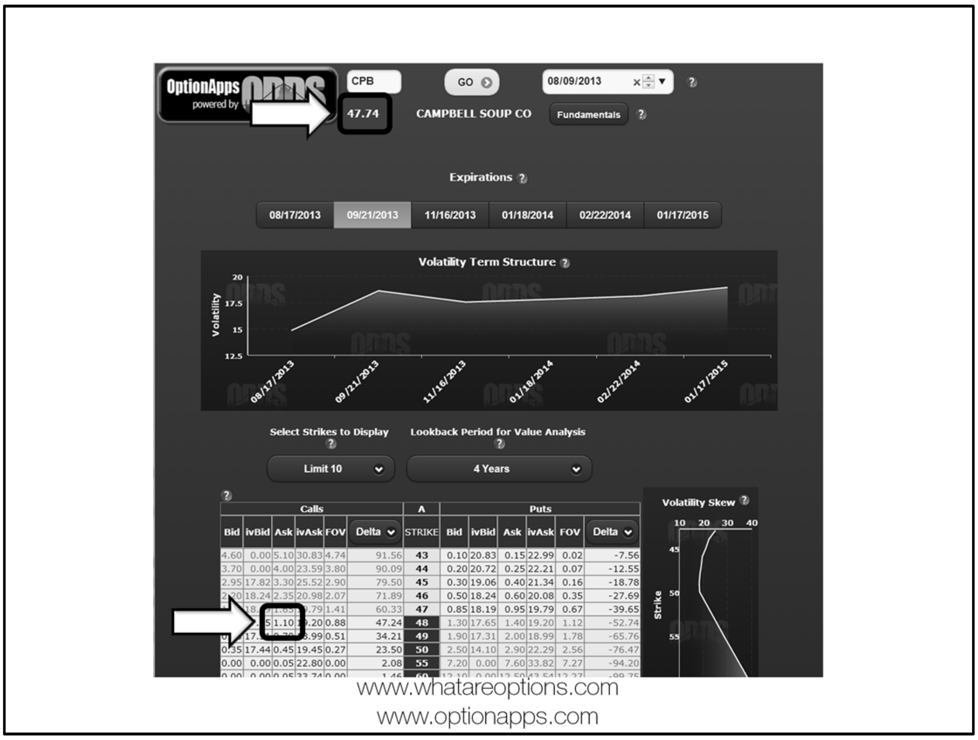
- To gain an understanding of how expectations for price movement impacts time value …
- We’re going to look at the options of two different stocks.
- The stock prices are nearly.
- The strike prices are identical.
- The option expiration dates are identical.

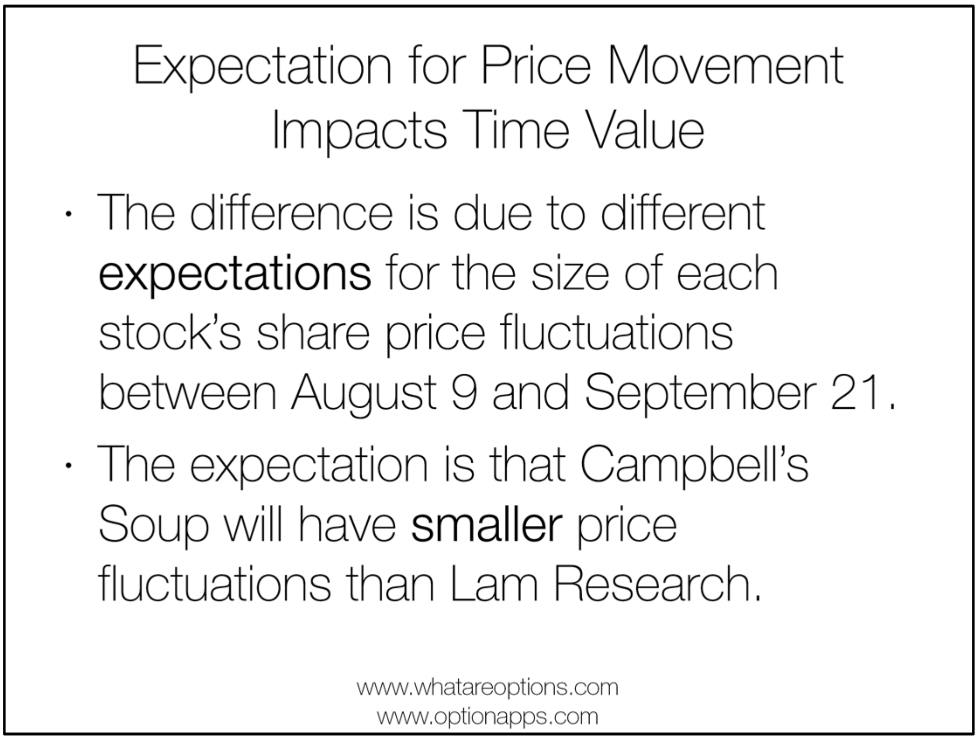


- This is the option chain for LAM Research.
- Highlighted in the option chain is the September 21, 48 call
- You can see that the ask is 1.60
- The stock price is 47.70



- This is Campbell Soup.
- Highlighted in the option chain is the September 21, 48 call
- You can see that the ask is 1.10
- The stock price is 47.74

- So you have two stocks, two options, neither option has any exercise value
- The stock prices are nearly identical (4 cent difference)
- The option strike prices are identical
- The option expiration dates are identical
- Yet they have DIFFERENT OPTION PRICES
- The LRCX September 21, 48 Call = 1.60
- The CPB September 21, 48 Call = 1.10
- The question is why … Why is there a difference?



- There is a difference because there are differing expectations for price fluctuations between August 9 and September 21.
- The expectation is that Campbell's Soup will have smaller price fluctuations than Lam Research.

Expectation for Price Movement Impacts Time Value

- Time value is based on the **probability** that an option might be exercised.
- LCRX shares tend to have larger price swings than CPB shares.

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- Remember, time value is based on the probability that an option might be exercised.
- LCRX shares tend to have larger price swings than CPB shares.

Expectation for Price Movement Impacts Time Value

- Because LRCX shares tend to have larger price swings than CPB shares, it is **more likely** that LRCX shares will make a move beyond the option’s exercise price of 48.

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- Because LRCX shares tend to have larger price swings than CPB, it is more likely that LRCX shares will make a move beyond the option’s exercise price of 48.

Expectation for Price Movement Impacts Time Value

- Because a move past the strike price is more likely with more volatility, the **probability** of the option holder exercising the option is higher.

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- Because a move past the strike price is more likely with more volatility, the probability of the option holder exercising the option is higher.

- Therefore, bigger price swings => higher volatility => higher time value.

Expectation for Price Movement Impacts Time Value

Therefore:

smaller price swings =>

lower volatility =>

lower time value.

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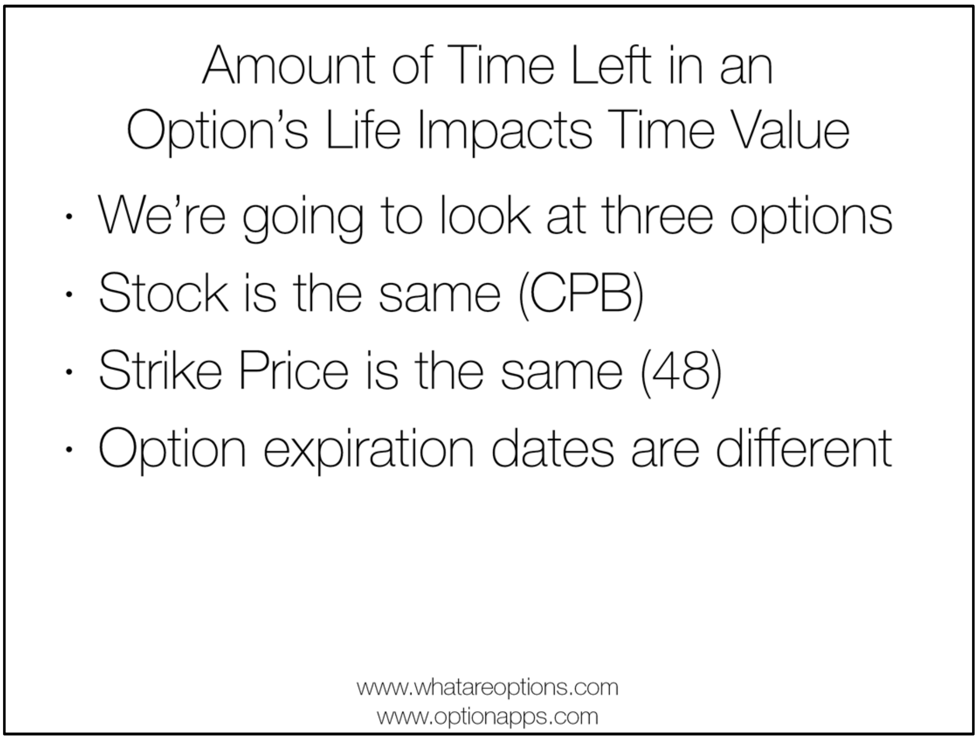
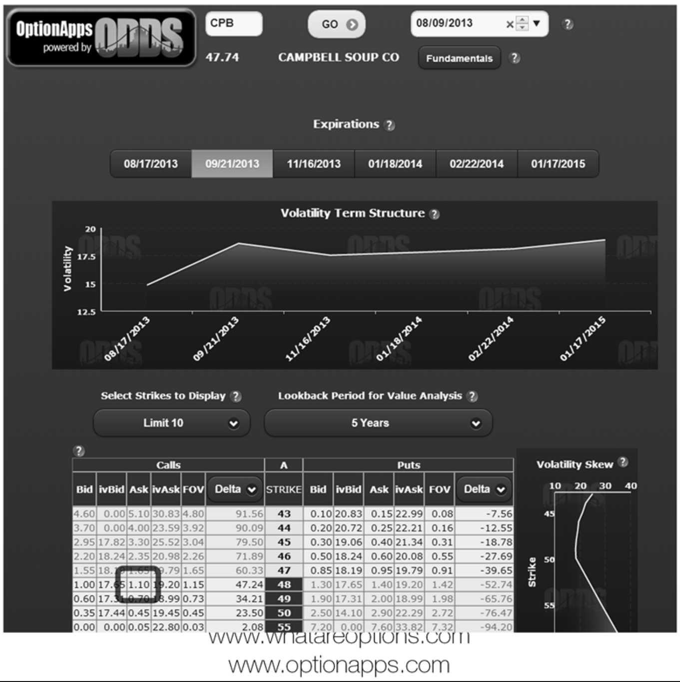
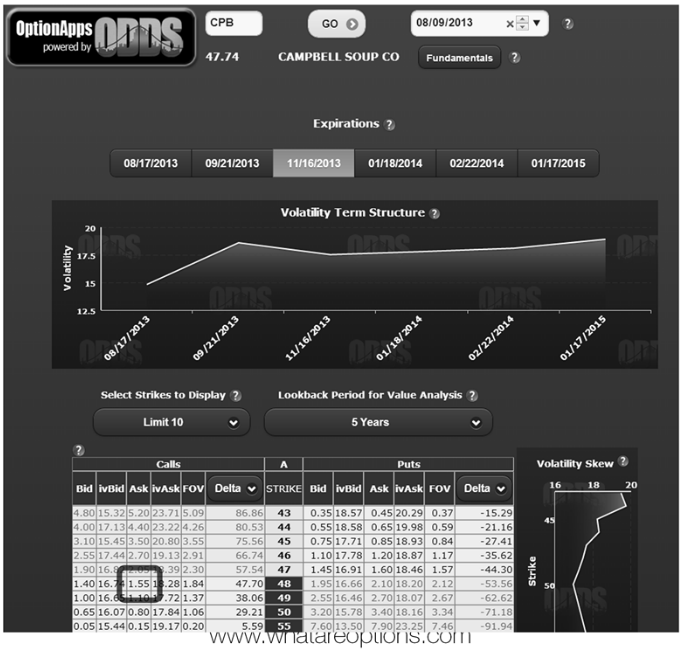
- The opposite is also true.
- smaller price swings => lower volatility => lower time value.
- That covers one of the factors that impacts time value. The expectations for price movement.
- There is another factor that we need to examine. That is time itself.



- Amount of Time Left in an Option’s Life Impacts Time Value
- We’re going to look at three options.
- Stock is the same. All three options are going to be based on Campbell’s Soup.
- Strike Price is the same. All three options are going to have a 48 strike.
- The option expiration dates, however, are different.



• Here is the CPB 40 call that expires on September 21, 2013 = 1.10



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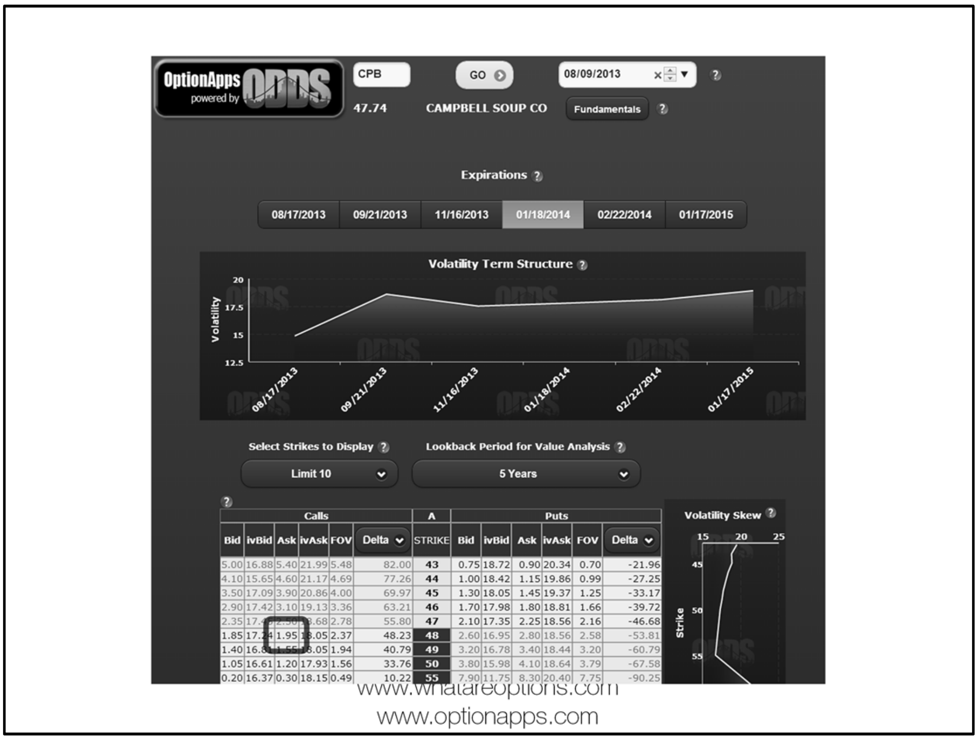
- Here is the CPB 40 call that expires on November 16, 2013 = 1.55



Calls						A	Puts					
Bid	ivBid	Ask	ivAsk	FOV	Delta	STRIKE	Bid	ivBid	Ask	ivAsk	FOV	Delta
5.00	16.88	5.40	21.99	5.48	82.00	43	0.75	18.72	0.90	20.34	0.70	-21.96
4.10	15.65	4.60	21.17	4.69	77.26	44	1.00	18.42	1.15	19.86	0.99	-27.25
3.50	17.09	3.90	20.86	4.00	69.97	45	1.30	18.05	1.45	19.37	1.25	-33.17
2.90	17.42	3.10	19.13	3.36	63.21	46	1.70	17.98	1.80	18.81	1.66	-39.72
2.35	[illegible]	[illegible]	[illegible]	2.78	55.80	47	2.10	17.35	2.25	18.56	2.16	-46.68
1.85	17.24	$\boxed{1.95}$	18.05	2.37	48.23	48	2.60	16.95	2.80	18.56	2.58	-53.81
1.40	[illegible]	1.55	[illegible]	1.94	40.79	49	3.20	16.78	3.40	18.44	3.20	-60.79
1.05	16.61	1.20	17.93	1.56	33.76	50	3.80	15.98	4.10	18.64	3.79	-67.58
0.20	16.37	0.30	18.15	0.49	10.22	55	7.90	11.75	8.30	20.40	7.75	-90.25

- Here is the CPB 40 call that expires on January 18, 2014 = 1.95

CPB 48 Calls at Different Expirations

- September 21, 2013 = 1.10
- November 16, 2013 = 1.55
- January 18, 2014 = 1.95

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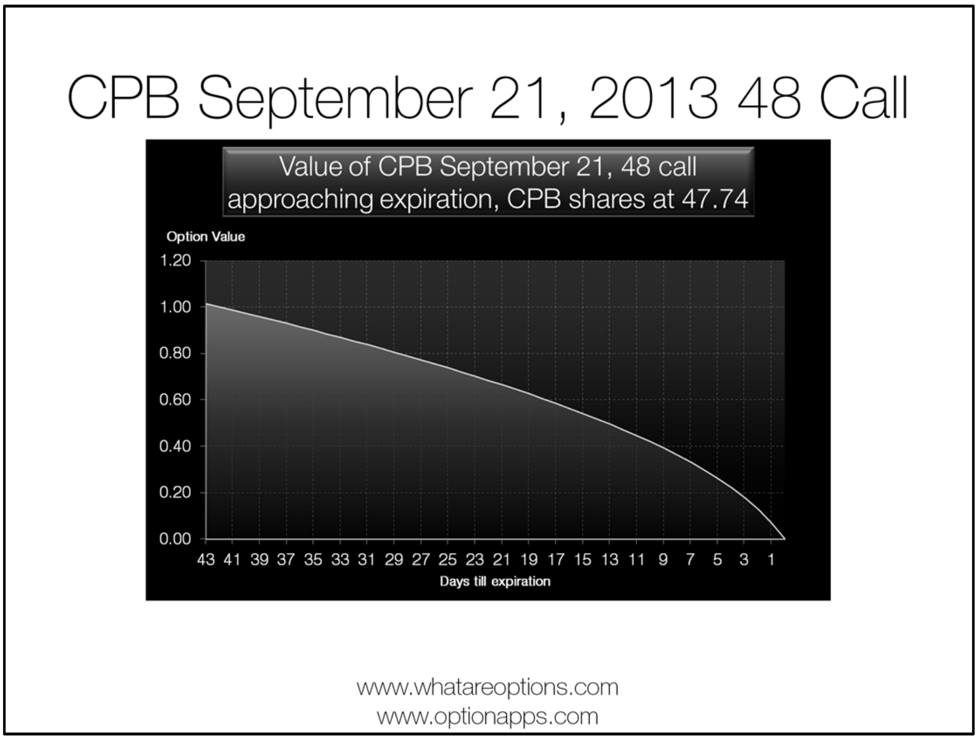
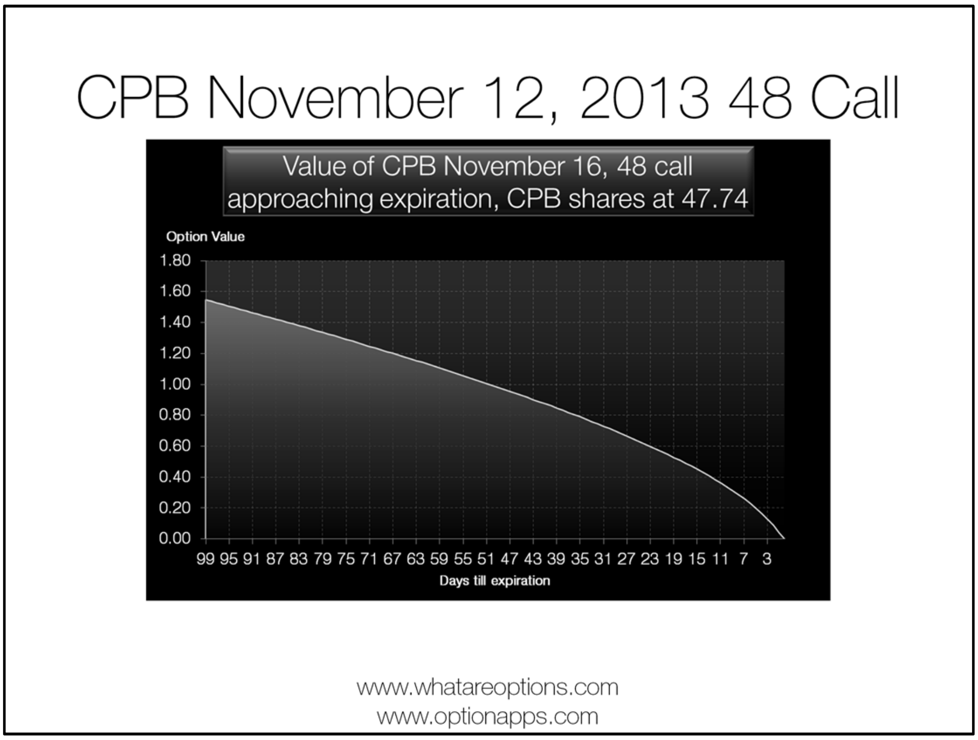
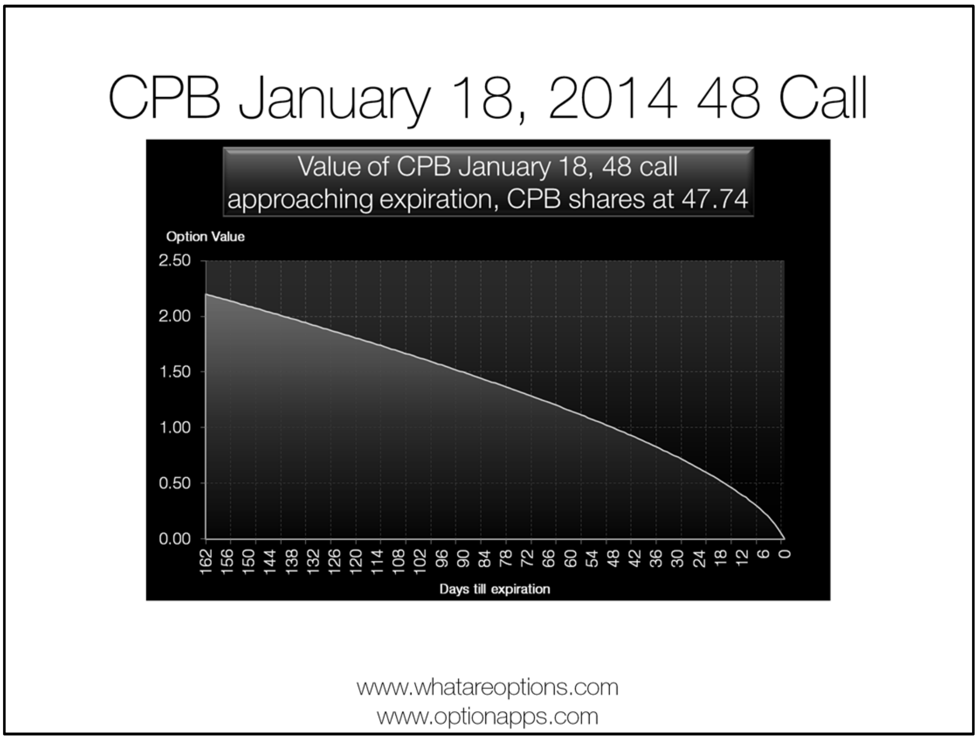
- So you have three options, all the same stock, same strike, but different expirations.
- What we're going to do now is look at something completely different.
- We're going to look at a chart of time value.
- This is not a chart of an options profit/loss or its exercise value.
- It's pure time value.



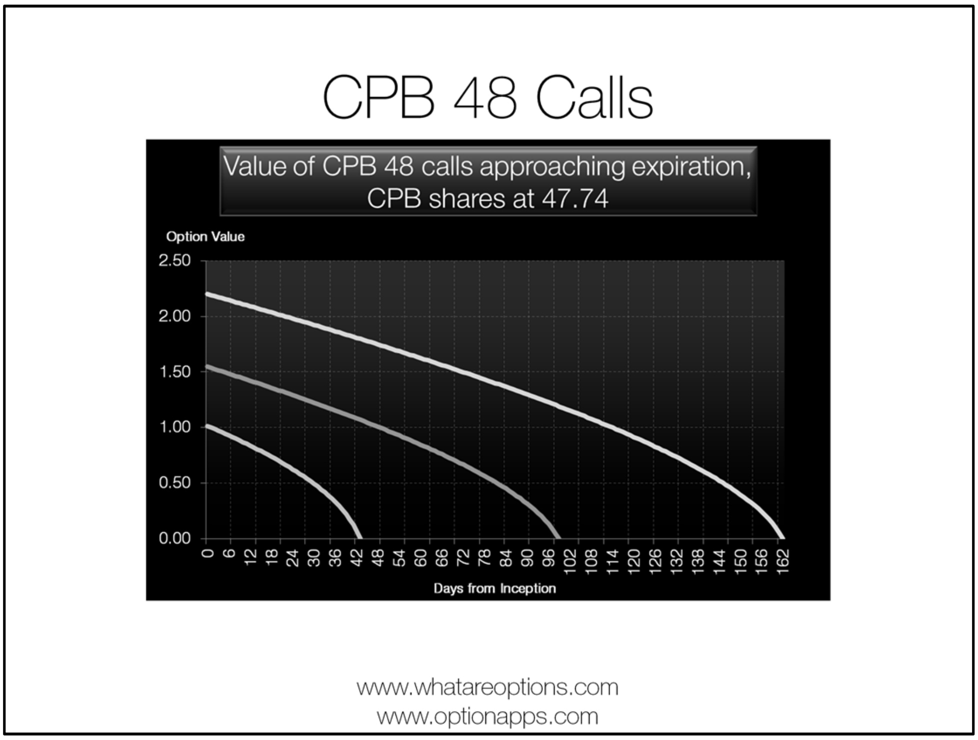
- Here it is.
- The y-axis is the time value.
- The x-axis is the number of days till expiration.
- Notice how the numbers get smaller as you move to the right.
- That means you are getting closer and closer to expiration.
- Notice how the speed of the descent increases as expiration approaches.
- The option loses value exponentially.
- It loses about half its value over the first two thirds, then then rest over the last third.
- Time erosion accelerates.
- Now one thing to realize, this assumes that everything except for time value remains steady. The stock price doesn't move, the expectations for the stock's price swings don't change, everything remains fixed except time.
- This chart is for the September expiration series.



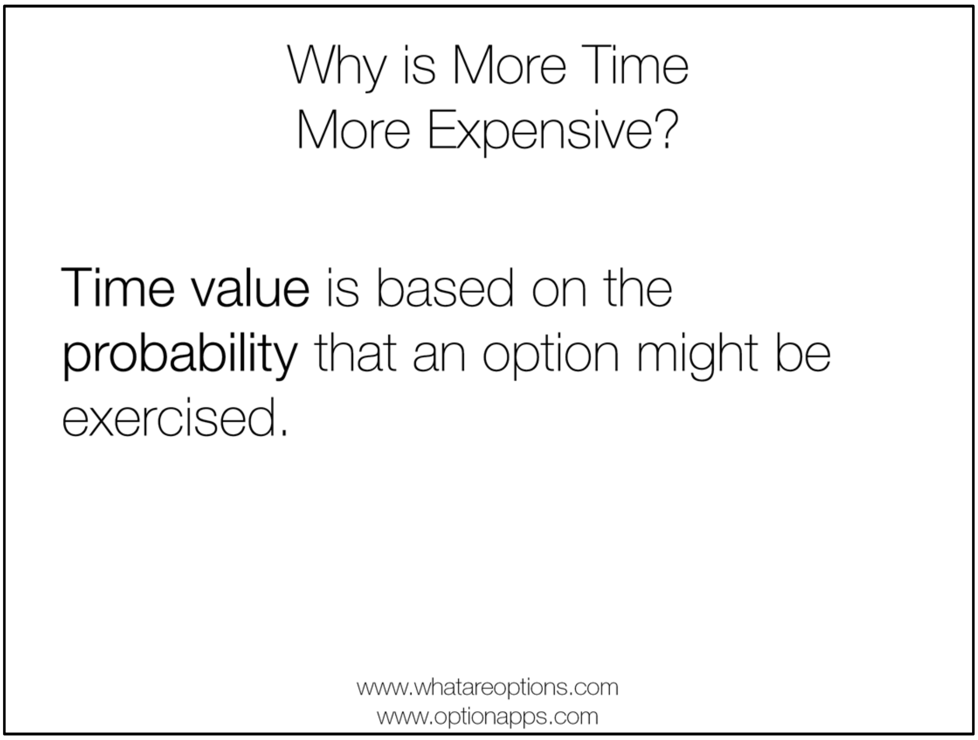
- This is the November series call.
- Again, the y-axis is the time value.
- The x-axis is the number of days till expiration.
- Notice how the numbers get smaller as you move to the right.
- That means you are getting closer and closer to expiration.
- The same thing happens here that happened with the September
- The speed of the descent increases as expiration approaches.
- The option loses value exponentially.
- It loses about half its value over the first two thirds, then then rest over the last third.
- Time erosion accelerates.



- This is the January series call. Again, it’s the same situation.
- You have time value as the y-axis.
- The x-axis is the number of days till expiration.
- Again, the numbers get smaller as you move to the right.
- You are getting closer and closer to expiration.
- The same thing happens here that happened with the September and November.
- The speed of the descent increases as expiration approaches.
- The option loses value exponentially.
- It loses about half its value over the first two thirds, then then rest over the last third.
- Time erosion accelerates.

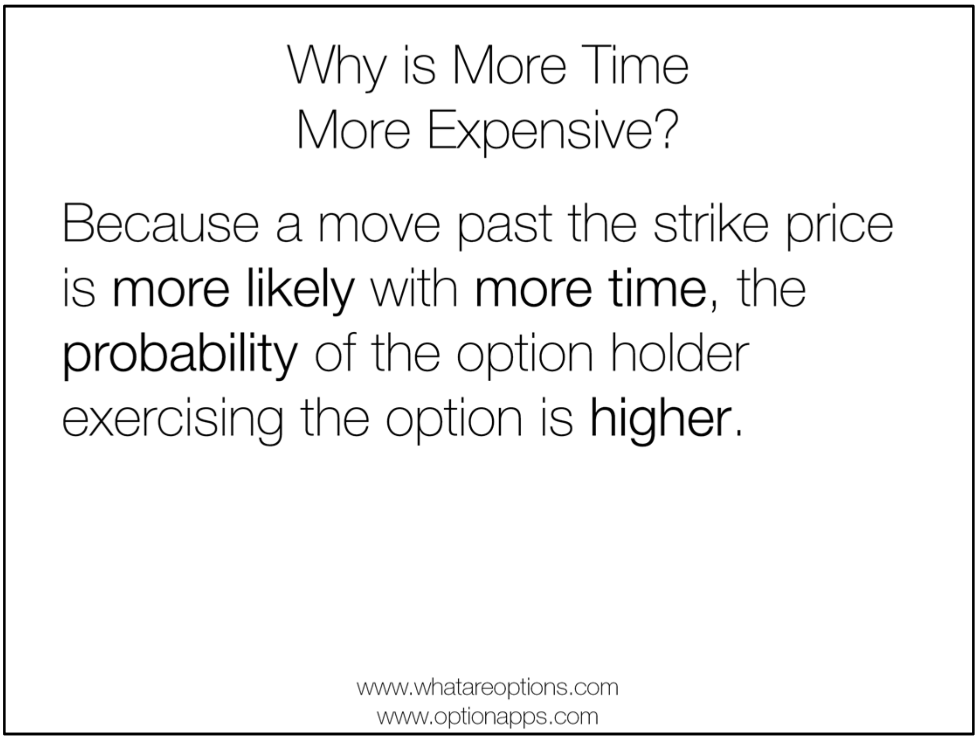


- Here is something you'll rarely see. A time value graph of options at the same strike but with different expirations all on the same chart.



- So what’s the underlying reason for this?
- Why is time more expensive?
- Well, remember what we said at the beginning of this section.
- Time value is based on the probability that an option might be exercised.

- With more time comes more opportunities for a catalyst to propel the stock past the 48 strike price, making exercise worthwhile for the option holder.



- Because a move past the strike price is more likely with more time, the probability of the option holder exercising the option is higher.

- Therefore:
- more time =>
- more opportunity =>
- higher time value.

Time Value

- **Time value** is dependent on **time** till expiration.
- **Time value** is dependent on the **expected price fluctuations** of the underlying asset.

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- So let’s summarize what we’ve learned about time value
- Time value is dependent on time till expiration.
- Time value is dependent on the expected price fluctuations of the underlying asset.

Time Value is Dependent on Time and Magnitude.

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- As it relates to insurance, the comparison to time is pretty similar.
- The longer the policy term, the higher the premium.
- Magnitude, on the other hand, would be similar to the characteristics of the person being insured.
- For instance, a stock with large price swings would be similar to a teenage driver with bad grades, a drinking habit, a need for speed and a horrible driving record.
- A stock with small price swings would be similar to a middle-aged minivan driver who has never had a ticket.
- Just as the insurance premium is dependent on the term of insurance policy and the characteristics of the insured,
- Time value of an option is dependent on the term of the option and the characteristics of the underlying asset.

Combining Time Value and Exercise Value

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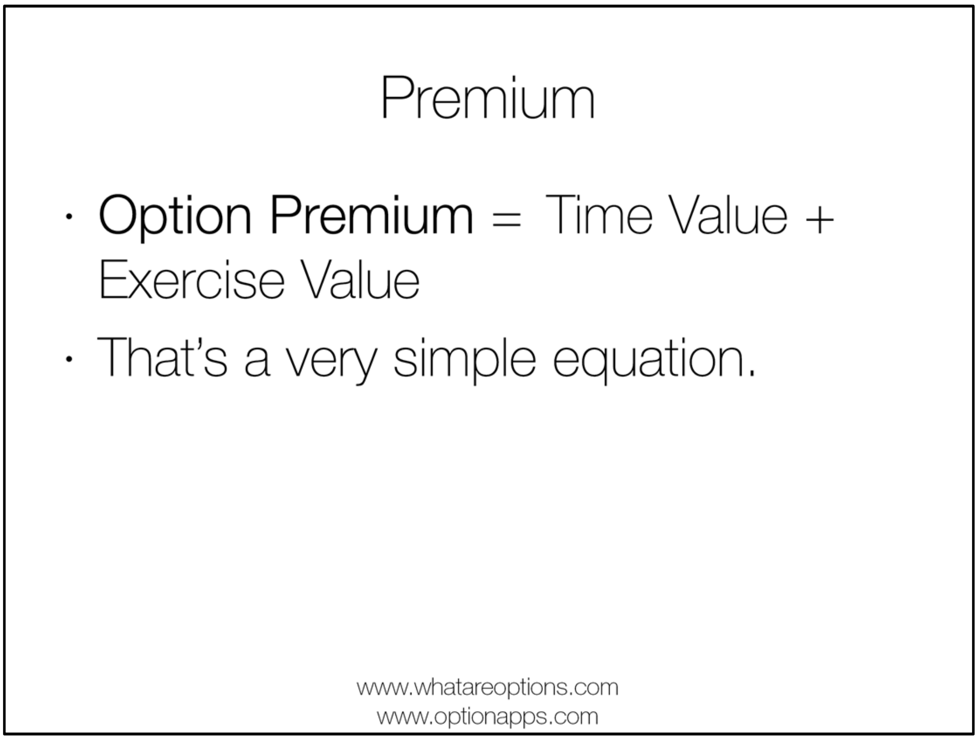
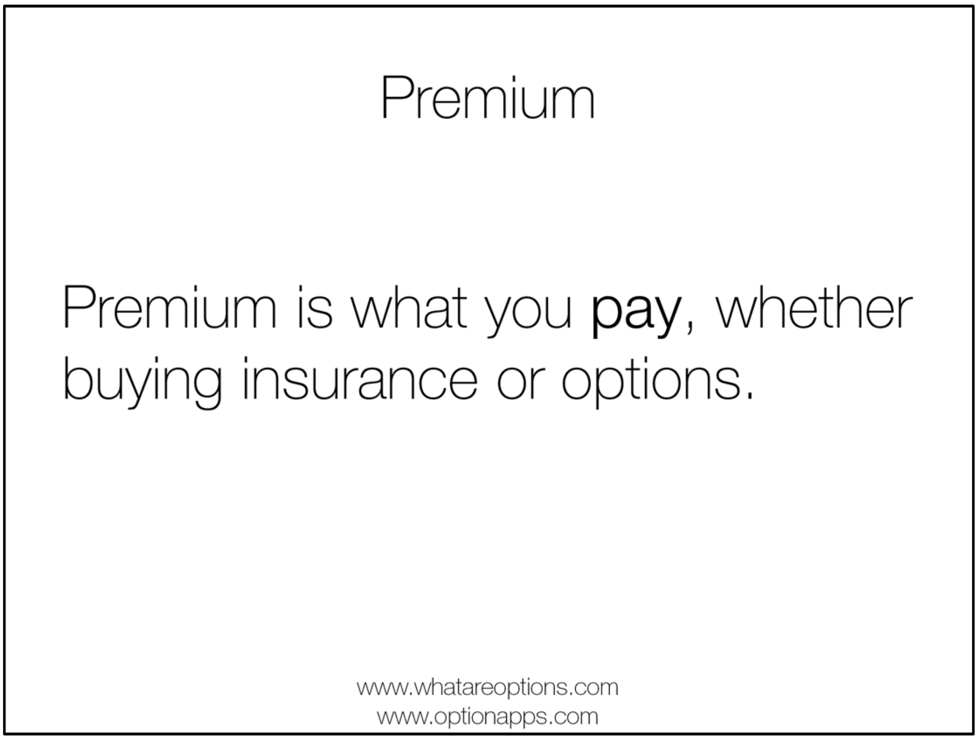
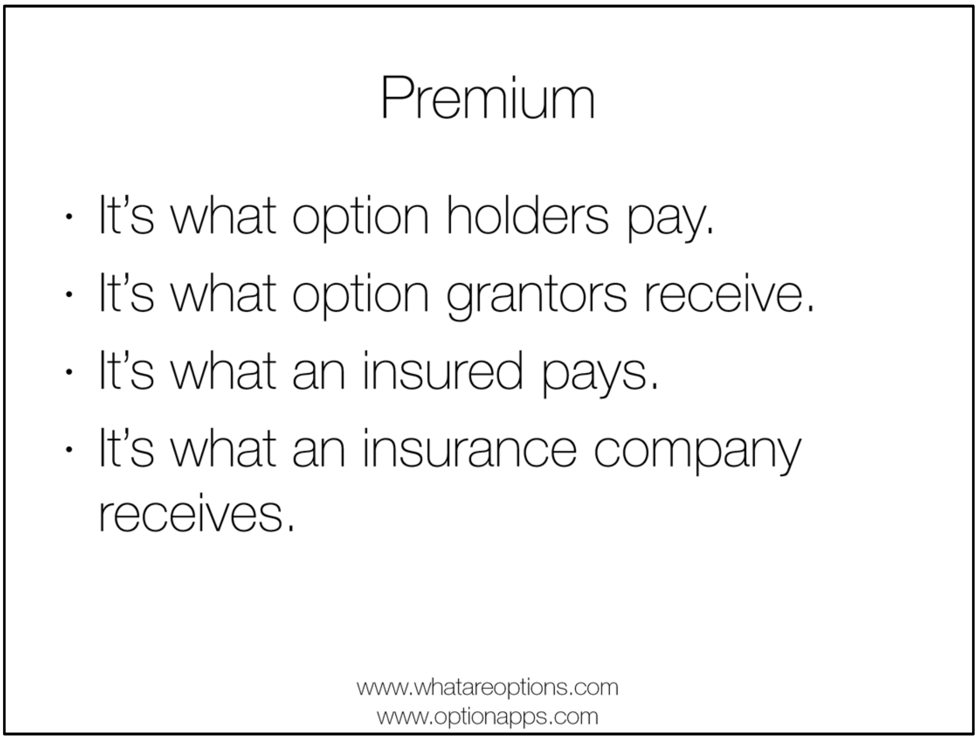
- [Chapter 4, Section 3]
- Welcome to What Are Options. My name is Don Fishback and this is the third section of Chapter 4.
- In Part 2 of this chapter, we covered time value and its similarities to insurance
- Prior to that, in earlier chapters, we covered how to calculate exercise value.
- What we're going to do now is combine them.
- Now, I'm going to be brief, because I don't want to dive into messy math.
- There are tools all over the place that can perform the math calculations for you.
- But I do want you to understand the terms and definitions, and the concepts.



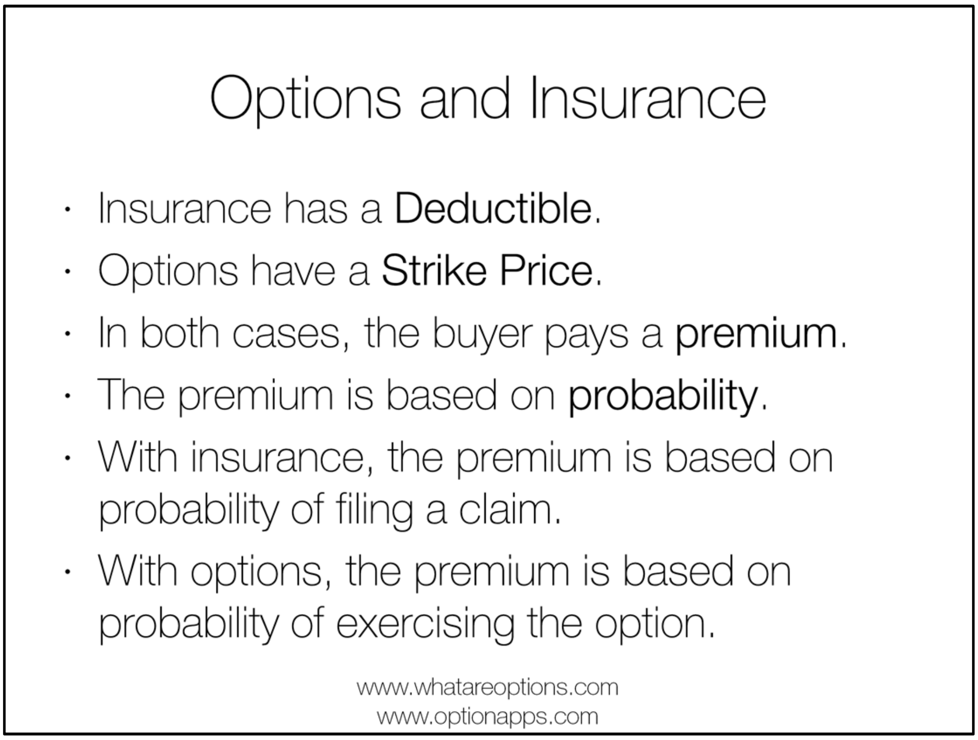
- When you combine time value and exercise value, you get the option price, otherwise known as the premium.
- Very simple, so far.
- Exercise value is quite simple and we’ve covered it extensively in earlier chapters.
- Time value is more complicated. We got a hint of that when we saw those time value curves.
- Like I said, there are tools available – many of them free – that make all of these calculations easy.
- You are not enrolled in this course to learn how to be a quantitative derivatives trader.
- Nevertheless, I do want you to understand a couple of concepts regarding option premium.



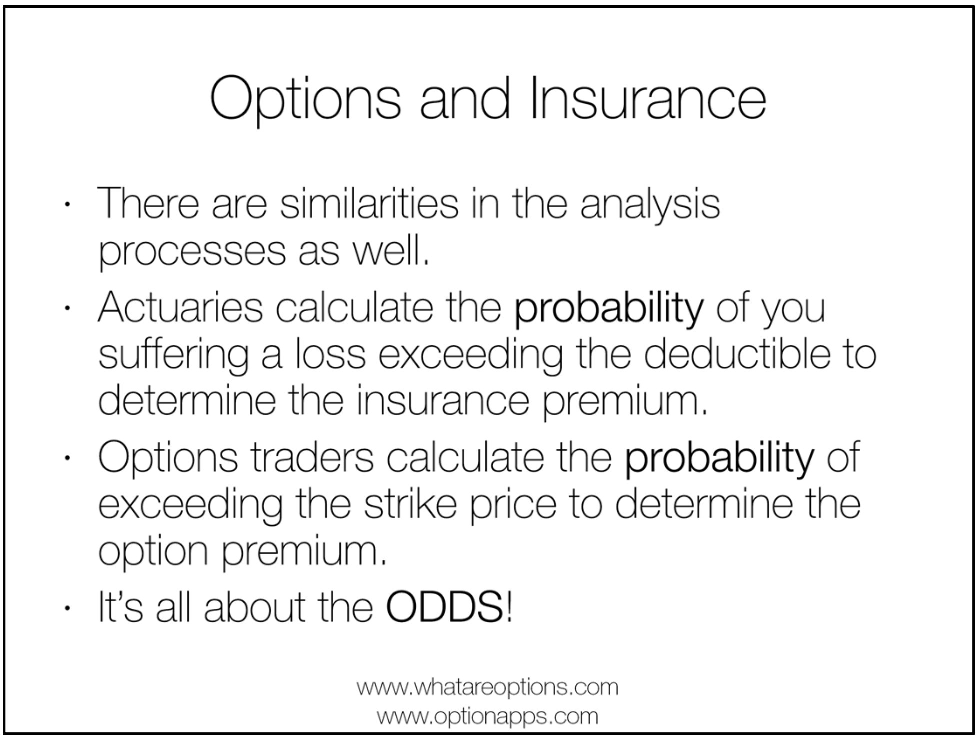
- First, there's an interesting word coincidence … premium.
- Remembering that Chapter 4 is devoted to covering the similarities between options and insurance...
- Premium is what the buyer pays, whether buying insurance or options.



- It’s what option holders – that is, the option buyers – pay.
- It’s what option grantors – that is, the option sellers –receive.
- It’s what an insured pays.
- It’s what an insurance company receives.



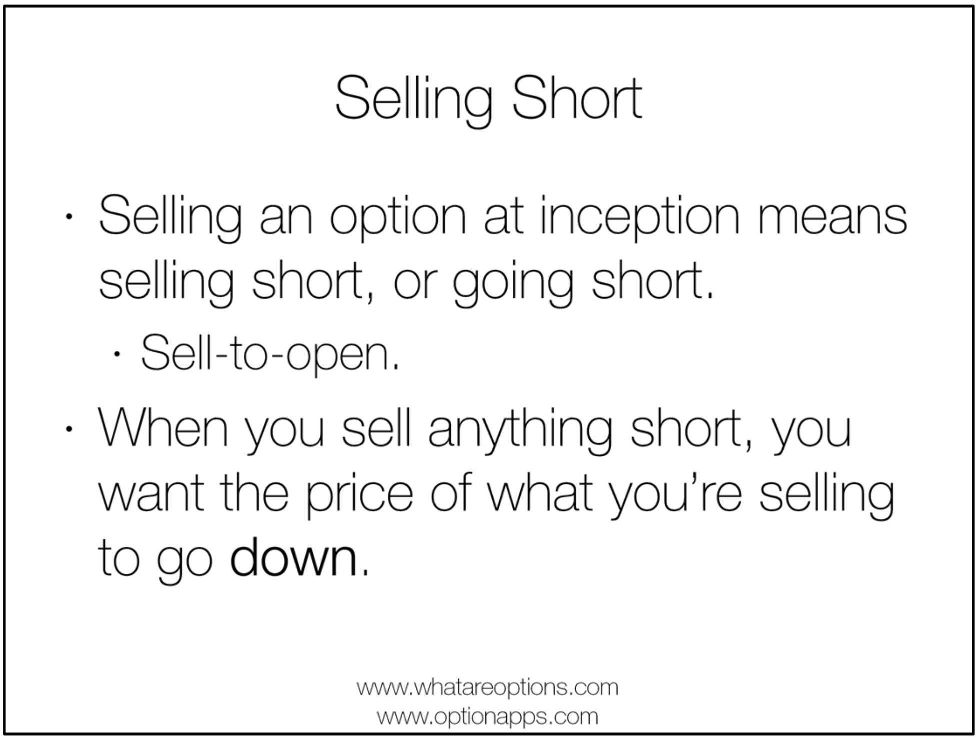
- So let’s review.
- Insurance has a Deductible.
- Options have a Strike Price.
- In both cases, the buyer pays a premium.
- The premium is based on probability.
- With insurance, the premium is based on probability of filing a claim.
- With options, the premium is based on probability of exercising the option.



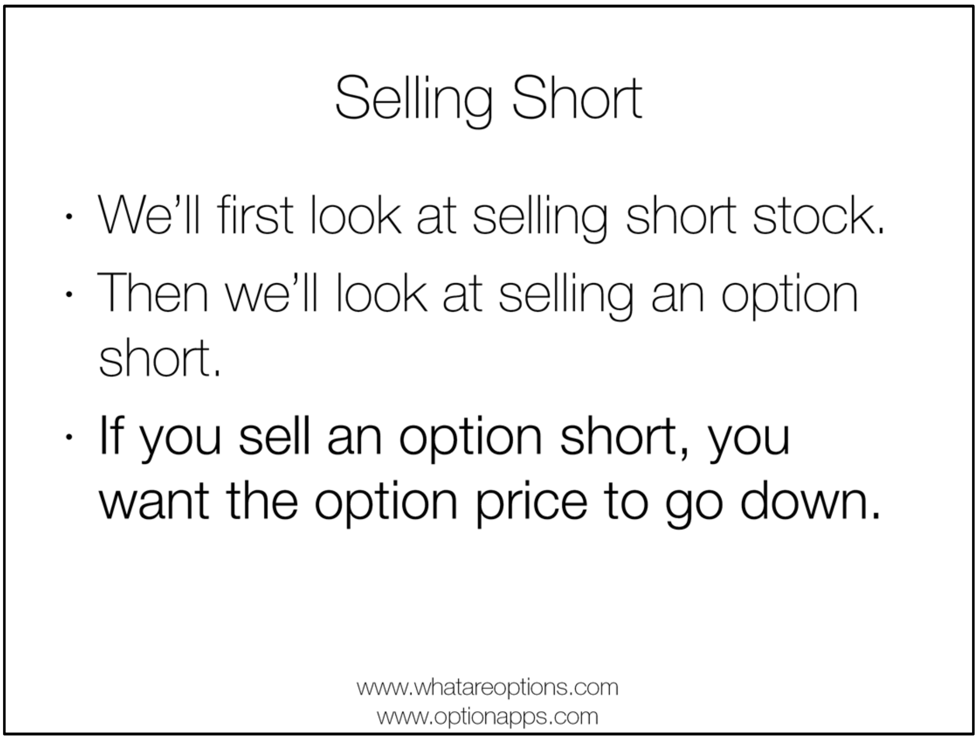
- There are similarities in the analysis processes as well.
- Actuaries calculate the probability of you suffering a loss exceeding the deductible to determine the insurance premium.
- Options traders calculate the probability of exceeding the strike price to determine the option premium.
- It’s not an exact duplication of the process. I over simplified things a bit. But the principles are remarkably similar.
- And because probability has such a big role, it’s all about the ODDS.

- [Chapter 5]
- Welcome to Chapter 5 of What Are Options.
- My name is Don Fishback.
- We've covered an immense amount of information.
- But as far as transactions are concerned, we have focused exclusively on buying options. We looked at buying a call, buying a put on its own and buying a put in conjunction with stock.
- Now we're going to look at selling options. These are not exit strategies where we're selling an option that we bought earlier. These are option strategies where the implementation of the position is to go short the option.
- Because there is so much to cover, we're going to break this chapter into sections. This first section will introduce to you the concept of selling short, then we'll expand to selling calls, then pairing an options position with a stock position and creating a "combination", then we'll look at an equivalent position of covered calls – something simpler and less expensive to implement.
- So let's get started.
- When you sell an option, it is very similar to selling insurance. You make money if something does not happen. You make money if the asset price does not cross the strike price of the option.

- [Chapter 5, Section 1]
- So the strategies we're going to focus on in this chapter are...
- selling calls
- covered calls
    - Which is to buy stock and sell a call
    - or sell a call on a stock you already own.
- and selling puts.
- Covered calls are a combination.



- Selling an option at inception … that is, at the time you initiate the trade … means selling short, or going short.
- If you were to place this trade, you would say "Sell-to-open". If you're doing this online, you'll select sell-to-open.
- If you're unfamiliar with selling short, that's alright. I'll explain it in a minute.
- But here's a key point you want to understand...
- When you sell anything short, you want the price of what you're selling to go down.



- To get a good handle on this, we're going to begin by first looking at selling short stock.
- Then we'll look at selling options short.
- And remember, this is important...
- If you sell an option short, you want the OPTION price to go down.
- That does not mean necessarily mean you want the stock to go down.

Selling Short Stock

- **Borrow** stock
  - Pay interest and dividends
- Sell it immediately
  - Collect proceeds, invest and collect interest
- Wait for the price to change
- Buy the stock back
- Return the stock to lender

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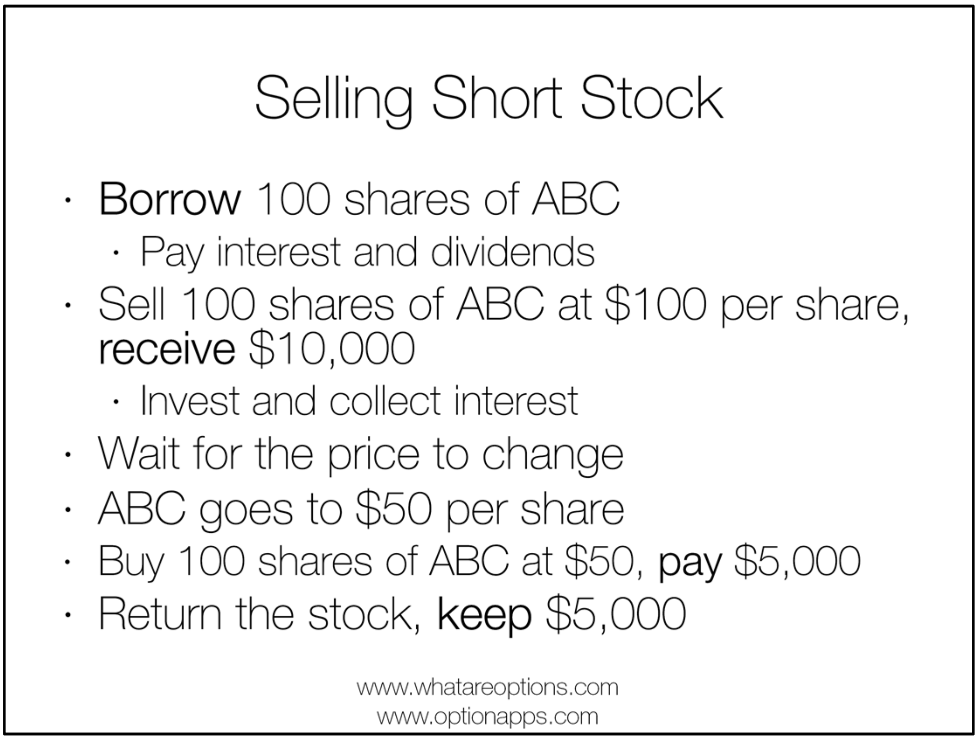
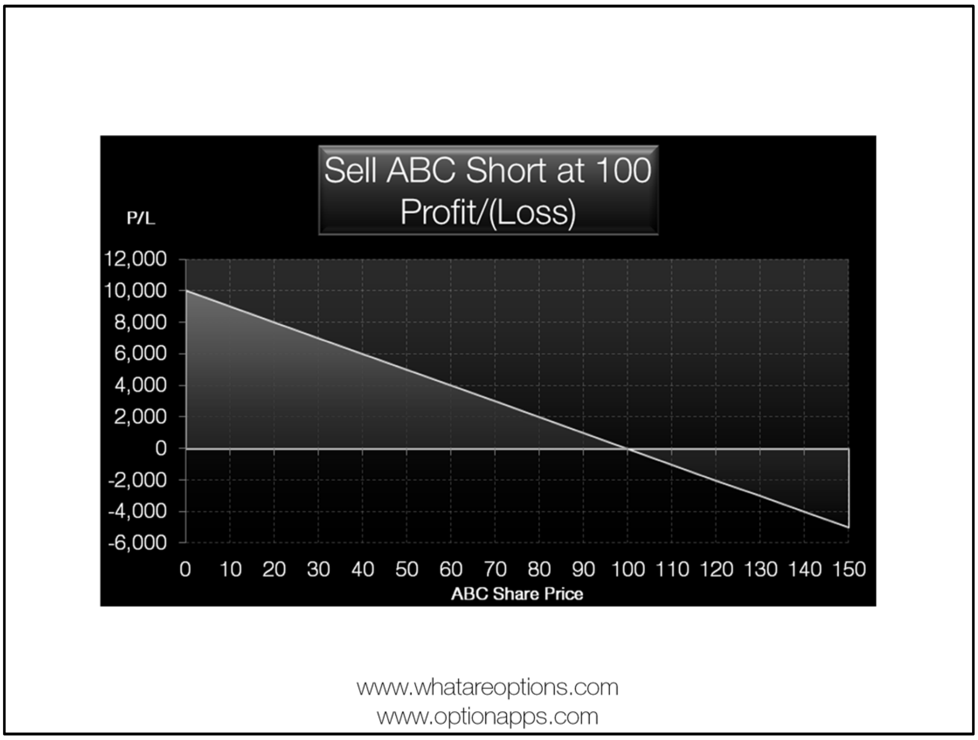
- So how does selling short stock work?
- Well it starts with a simple request. Let's say you are interested in selling a stock short.
- The first thing you do is find stock to borrow, then you borrow it.
- Finding stock to borrow is a key step.
- When you find it, and then borrow it, you have to pay interest plus you are responsible for any dividends the company might pay.
- Once the stock is in your hands, you sell it immediately
- When you do, you will collect the proceeds from that sale. In some instances, you can invest those proceeds and collect interest
- Then, you wait for the price to change
- When it's time to close down the position, you buy the stock back
- And then you return the shares to the person from whom you borrowed the shares.

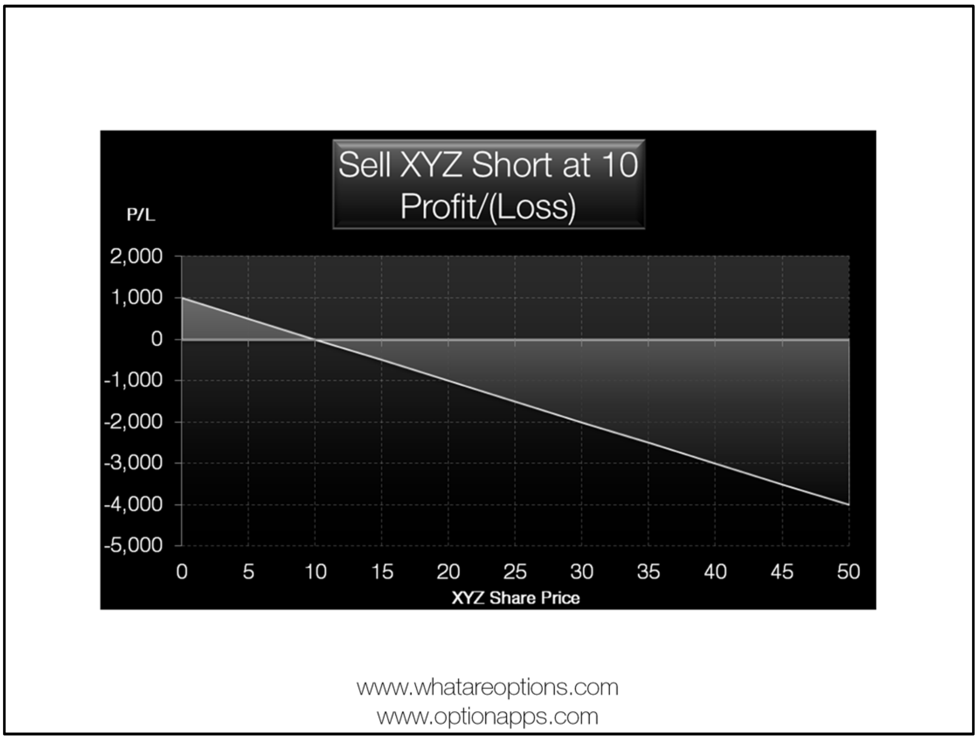


- Let’s look at an example. To make it simple, we’re not going to consider interest or dividends.
- You borrow 100 shares of ABC
- So you now have 100 shares of ABC.
- We’re going to ignore the interest payments and dividends, so we’ve grayed out that section.
- You sell 100 shares of ABC at $100 per share, collect $10,000
- Again, we’re going to ignore the interest earned, so we’ve grayed out that section.
- Once you’ve sold the borrowed shares, you wait for the price to change
- ABC goes to $50 per share
- You buy the stock back
- So you buy 100 shares of ABC at $50, that costs $5,000
- You return the stock. Turns out you get to keep $5,000
- This is what happens if the stock drops after you sell it short.

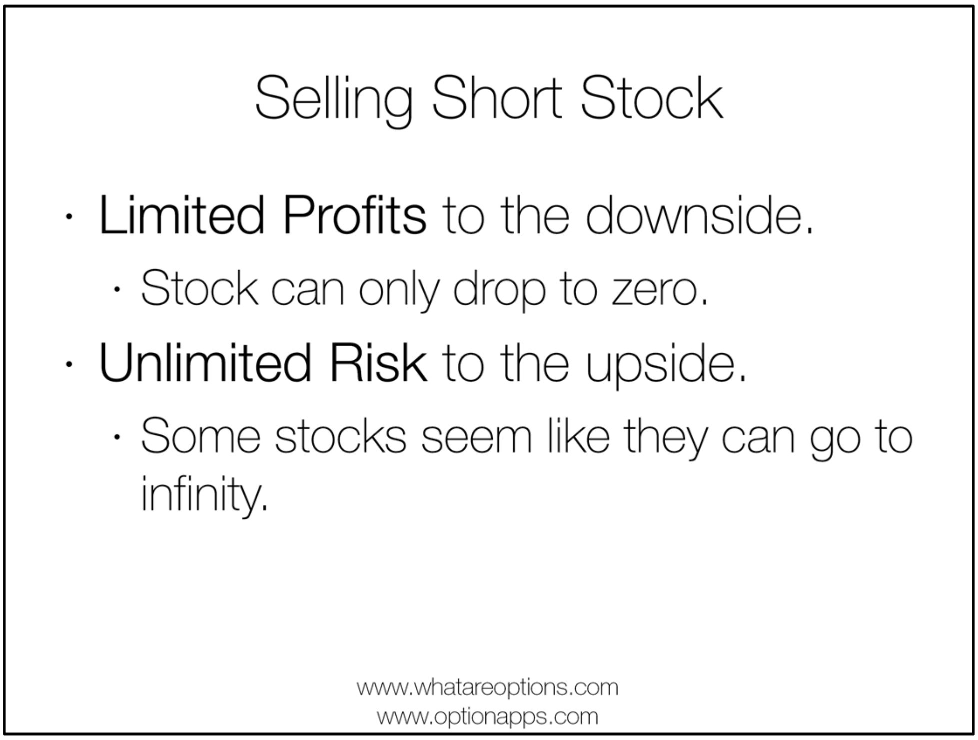


- This is a profit/loss chart of what a short sale looks like when the stock is priced at $100.
- It's basically the inverse of buying a stock.
- For every dollar the stock drops, your position gains $1.
- For every dollar the stock rises, your position loses $1.
- The maximum profit is the stock price, because the stock can only go to zero.
- Risk is theoretically unlimited; there is no reason why the stock couldn't go past $150.

- Here's what happens if the stock rises after you sell it short.
- You borrow 100 shares of XYZ
- As soon as you get the shares, you begin paying interest and dividends, but we're going to ignore that for the purpose of simplicity.
- So you now have 100 shares of XYZ.
- You sell 100 shares of XYZ at $10 per share.
- XYZ shares are much cheaper than ABC. You collect $1,000
- Then you wait for the price to change
- XYZ goes to $50 per share
- You buy the stock back
- That means you buy 100 shares of XYZ at $50, pay $5,000
- You collected $1,000 when you put the short position on, but you had to pay $5,000.
- To finish closing out the position, you return the stock. The result is a $4,000 loss.



- This is a profit/loss chart of what a short sale looks like when the stock is priced at $10.
- Like before, for every dollar the stock drops, your position gains $1.
- For every dollar the stock rises, your position loses $1.
- The maximum profit is the stock price, because the stock can only go to zero.
- Risk is theoretically unlimited; there is no reason why the stock couldn't go past $50.



- So that’s a quick lesson on selling stock short.
- It’s basically the inverse of buying stock, only there are some borrowing issues that you have to deal with.
- For instance, what if you can’t find stock to borrow?
- What if no one wants to lend you the stock in the first place?
- That can actually lead to some interesting issues in the options market, and it’s a very advanced topic.
- In the end, here are key risk/reward factors you need to know about shorting stock
- Short sales offer limited profits. The stock can only drop to zero
- Short sales have unlimited risk. Some stocks seem like the can go to infinity.
- Okay, that covers short selling of stock.
- Now, what about selling options short?
- We’ll be back to cover that in section 2 of this chapter.

Selling Options

SELLING A CALL OPTION

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- [Chapter 5, Section 2]
- Welcome to Chapter 5, Part 2.
- My name is Don Fishback, and in Part 1 of this chapter, we covered how short-selling stock works.
- Now we're going to look at selling short options.
- When we covered option values and option buying, we began with call options.
- So that's what we're going to start. But before we begin, I want you to know that we are going to learn how to sell a call option on its own, so that you understand the concept.
- I will NEVER advocate that anyone except a sophisticated expert sell a call option "uncovered".
- But you do need to know how selling a call option works, because we will combine that strategy with others to create a very conservative, top-performing investment strategy that can reduce risk and increase reward.

- Let me begin with some warnings about selling calls when they are not “covered”.
- After I get through with this, I hope you take heed.
- And for what it’s worth, many of these risk issues do NOT exist for selling puts.
- Let’s start with a discussion of risk. Selling calls is very risky.
- Because they’re so risky, the margin requirements are extremely high
- Account size requirements are also quite high.
- Basically, the brokerage firm wants to make sure you have the cash on hand to withstand the eventual blow-up.
- What does that tell you?
- Also, they want to make sure you think you know what you’re doing.
- They’re going to require a lot of experience.
- The brokerage firms only want those folks who think they’re the savviest investors to have the opportunity to get hammered.
- So Option Approval Level is at highest or 2nd highest.
- Selling a call by itself – which is sometimes called “naked” selling or “uncovered” selling -- is unsuitable for most individuals

- So with all that bad news, why would we even think about selling a call.
- Well, I gave a hint in that last bullet point when I said, “Selling a call by itself…”
- The key words are “by itself”.
- As I noted before, options really bloom when you use them in combination with other options or stock.
- We need to understand how selling calls works so we can combine it with stocks (covered calls) and other options (spreads).
- Covered calls, by the way, is the most widely used options strategy by individuals.
- We’ll get into that in a minute.
- But first, let’s look at how selling a call works.

Sell Call

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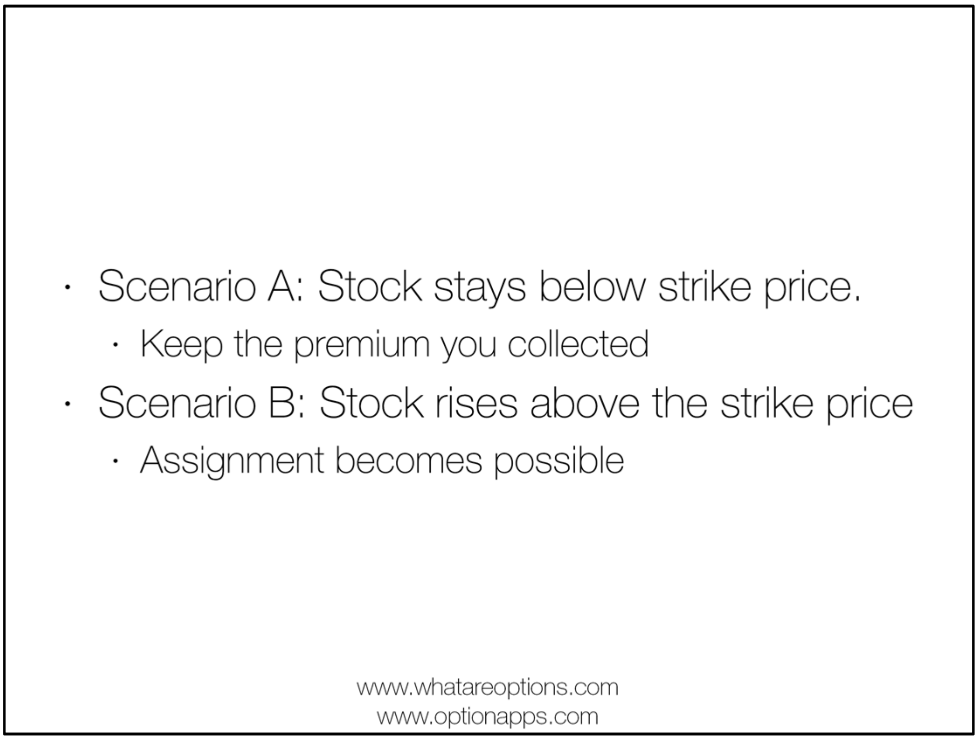
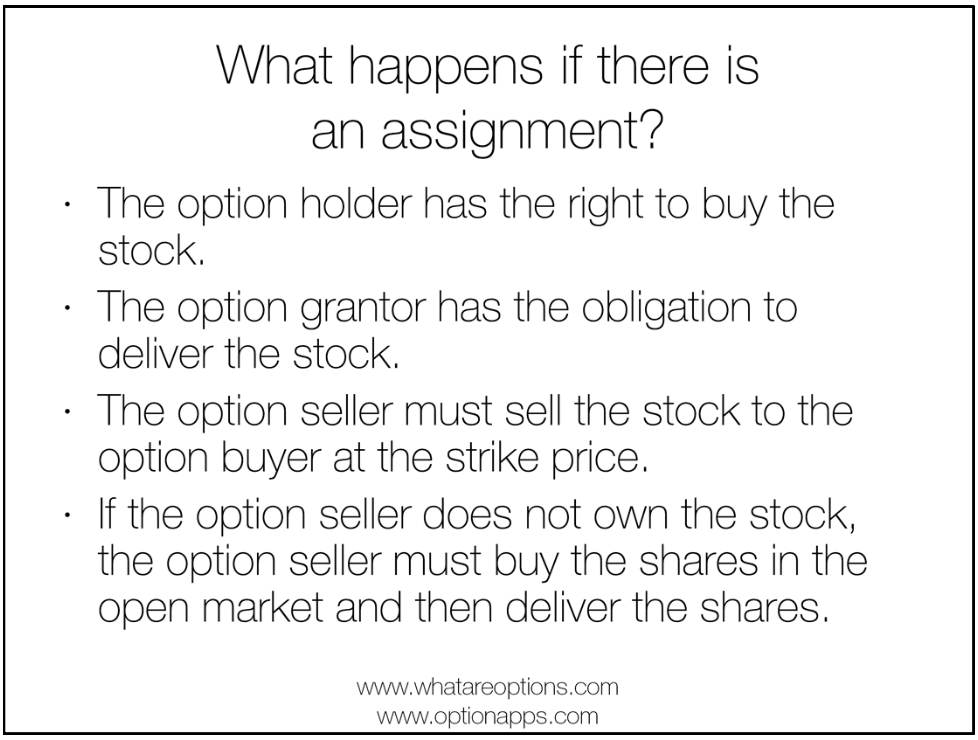
- So let’s look to see “HOW” this works.
- Because it does work differently than selling short stock.
- First, you sell the call

- Then you collect premium
- Now think about that. What other businesses do we know about where you collect the premium?
- Insurance companies!
- When you sell an option, you are essentially entering the insurance business where you make money when something does NOT happen.
- Once you’ve collected the premium, there are one of two things that can happen.



- Scenario A: Stock stays below strike price.
- Keep the premium you collected
- Scenario B: Stock rises above the strike price
- Assignment becomes possible



- What happens if there is an assignment?
- The option holder has the right to buy the stock.
- The option grantor has the obligation to deliver the stock.
- The option seller must sell the stock to the option buyer at the strike price.
- If the option seller does not own the stock, the option seller must buy the shares in the open market and then deliver the shares.

Sell Call

- If you sell a call with a strike price of 50, you – the seller, writer or grantor – collect the premium. If the stock stays below 50, you keep the premium.
- If the stock goes above 50, say to 60, then the buyer – the holder – of the option can exercise the option to buy the stock from you at 50.

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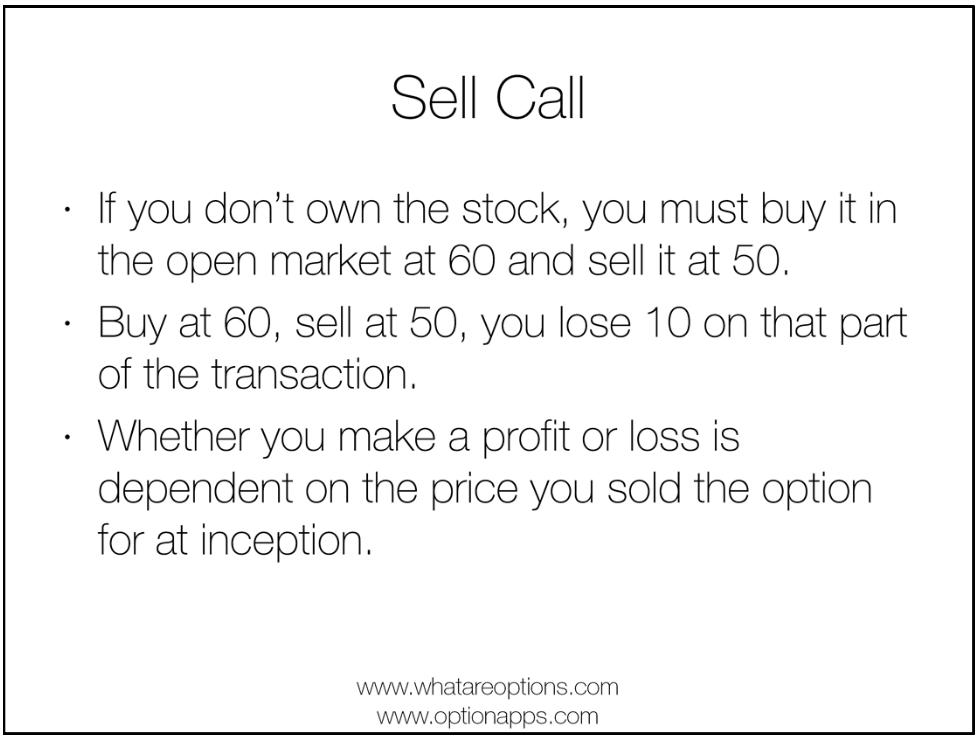
- Let's look at a sample scenario to see how this works.

- If you sell a call with a strike price of 50, you – the seller, writer or grantor – collect the premium. If the stock stays below 50, you keep the premium.
- If the stock goes above 50, say to 60, then the buyer – the holder – of the option can exercise the option to buy the stock from you at 50.



- If you don't own the stock, you must buy it in the open market at 60 and sell it at 50.
- Let's look at the math. If you buy at 60 and sell at 50, you lose. You lose 10 on that part of the transaction.
- Now, did you make a profit or a loss.
- That depends on the price you sold the option for at inception.
- We know this position lost 10 on the exercise.
- But if you sold the option for more than 10, you could have made money.
- Let's look at a real-world example.

TSLA Option Chain

Calls						A	Puts					
Bid	ivBid	Ask	ivAsk	FOV	Delta	STRIKE	Bid	ivBid	Ask	ivAsk	FOV	Delta
18.70	0.00	18.90	141.89	18.83	0.00	29	0.05	79.97	0.15	95.65	0.00	-2.08
17.40	0.00	18.10	148.87	17.83	0.00	30	0.05	74.78	0.15	89.65	0.00	-2.21
16.70	0.00	17.00	134.63	16.83	96.36	31	0.10	77.89	0.20	88.69	0.00	-3.14
15.70	0.00	16.00	127.07	15.83	96.13	32	0.15	78.13	0.20	82.76	0.00	-3.73
14.70	0.00	15.00	119.68	14.83	95.88	33	0.20	76.97	0.30	84.25	0.00	-5.05
13.70	0.00	14.00	112.45	13.83	95.61	34	0.25	74.93	0.30	78.20	0.00	-5.76
12.70	0.00	13.00	105.35	12.83	95.30	35	0.35	75.13	0.40	77.81	0.00	-7.48
11.70	0.00	11.90	92.26	11.83	0.00	36	0.40	71.69	0.50	76.36	0.00	-8.97
10.70	0.00	11.00	91.51	10.83	94.55	37	0.50	70.07	0.60	74.16	0.00	-10.82
9.70	0.00	10.00	84.72	9.83	94.10	38	0.65	69.56	0.75	73.10	0.00	-13.29
8.70	0.00	9.00	77.98	8.83	93.56	39	0.80	68.03	0.90	71.18	0.00	-15.84
7.80	0.00	8.10	75.25	7.83	88.95	40	1.00	67.17	1.10	69.98	0.00	-18.92
6.90	59.97	7.20	71.80	6.83	85.21	41	1.20	65.37	1.30	67.94	0.00	-22.14
6.10	61.37	6.30	67.63	5.83	80.60	42	1.45	64.00	1.60	67.55	0.00	-25.97
5.30	60.22	5.60	68.11	5.79	74.97	43	1.80	63.98	1.85	65.08	0.99	-30.05
4.60	60.12	4.80	64.84	5.02	69.72	44	2.10	61.88	2.25	65.02	1.28	-34.47
4.00	60.73	4.20	65.04	4.41	63.69	45	2.55	61.95	2.65	63.96	1.60	-39.16
3.40	59.92	3.60	64.01	3.92	57.99	46	3.00	61.01	3.20	64.94	1.99	-43.95
2.95	60.92	3.10	63.90	3.32	52.29	47	3.50	60.07	3.70	63.98	2.47	-48.82
2.50	60.74	2.60	62.71	2.89	46.78	48	4.10	60.13	4.30	64.07	2.95	-53.52
2.10	60.47	2.20	62.47	2.31	41.51	49	4.70	59.22	4.90	63.26	3.55	-58.29
1.75	60.19	1.85	62.25	1.96	36.54	50	5.40	59.41	5.60	63.61	4.17	-62.58
1.10	60.16	1.25	63.71	1.26	26.16	52.50	7.30	59.45	7.50	64.30	5.94	-72.07
$\boxed{0.70}$	61.09	0.75	62.55	0.76	17.83	55	9.40	59.49	9.60	65.45	8.03	-79.44
[illegible]	64.10	0.40	68.71	0.27	9.19	60	14.00	60.31	14.20	70.12	12.35	-88.19
0.10	63.89	0.20	72.24	0.00	4.31	65	18.80	51.75	19.10	80.02	17.17	-92.03

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- Here's the TSLA option chain from April 19.
- TSLA shares are at 47.83.
- The call option we're going to sell is the May 18, 55 call.
- That means the call is out-of-the-money.

Sell the TSLA May 18, 55 Call at 0.70 bid

Profit/Loss Calculation

TSLA shares =47.83
Sell the TSLA May 18, 55 Call @ 0.70

TSLA	Option Value	Opening transaction	P/L
40	0	0.70	0.70
45	0	0.70	0.70
50	0	0.70	0.70
55	0	0.70	0.70
60	-5	0.70	-4.30
65	-10	0.70	-9.30
70	-15	0.70	-14.30
75	-20	0.70	-19.30
80	-25	0.70	-24.30
85	-30	0.70	-29.30
90	-35	0.70	-34.30
95	-40	0.70	-39.30
100	-45	0.70	-44.30

Maximum Risk = Unlimited
Maximum Profit = Amount received for selling the option.
Strike Price + Option Price = **Breakeven Price** at Expiration

Maximum Risk = Unlimited
Maximum Profit = $70
Breakeven Price at Expiration = 55.70

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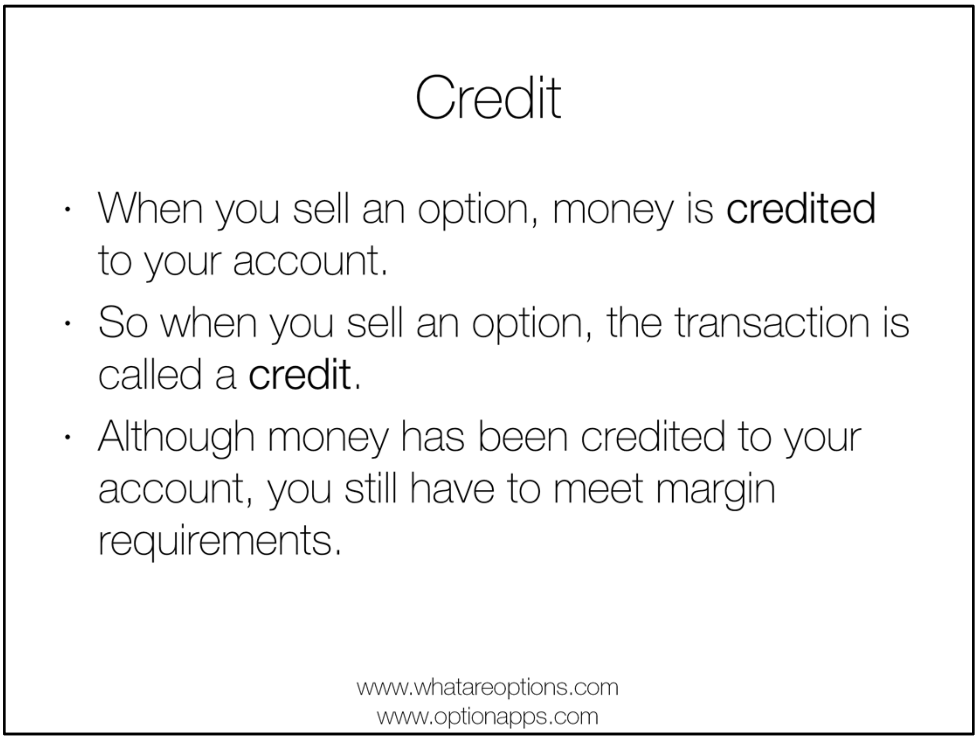
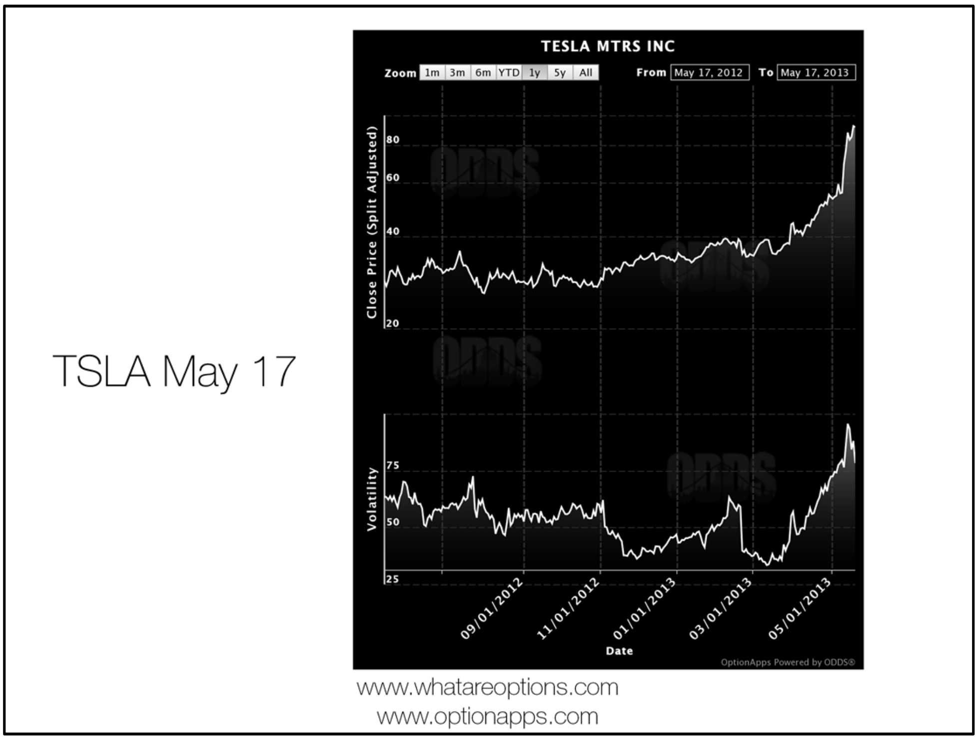
- Here's the profit/loss chart of an out-of-the-money call sale looks like.
- Here is what you would say, or enter if you were placing the trade online
- Sell to open the TSLA May 18, 55 call at 0.70
- Here's how profits and losses are calculated.
- Here is the option value
- We then take into consideration the selling price of the option, which is a credit
- That gives us the profit/loss
- To the right, we have our key datapoints

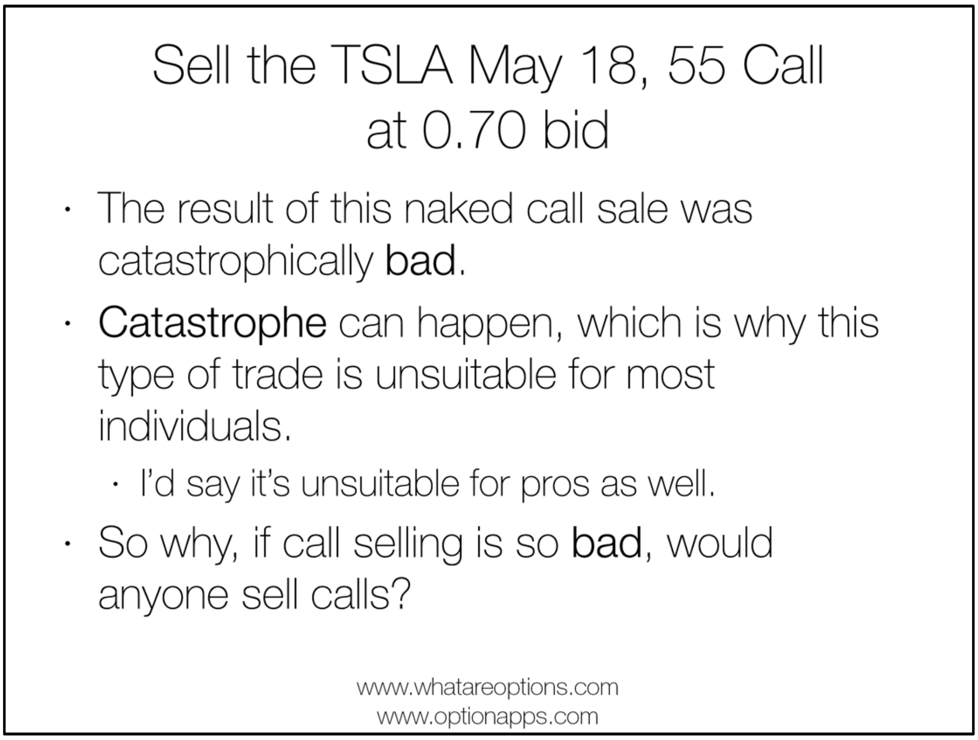


- Now, I just said this a minute ago: Credit
- When you sell an option, money is credited to your account.
- So when you sell an option, the transaction is called a credit.
- Although money has been credited to your account, you still have to meet margin requirements.

- Okay, so that's credit.
- Now, I'm going to add another term: naked.
- This TSLA trade is called a naked call sale.
- Naked option trades are single option trades.
- They're also known as uncovered.
- Examples of naked option trades:
- Buy call
- Buy put
- Sell call
- Sell put (to be discussed)
- Basically, a naked option is anything that is not an option combination.



- Okay, so what happened with that TSLA option?
- Here’s what happened.
- TSLA shot higher.
- A lot higher.



- The result of this naked call sale was catastrophically bad.
- Catastrophe can happen, which is why this type of trade is unsuitable for most individuals.
- I'd say it's unsuitable for pros as well.
- So why, if call selling is so bad, would anyone sell calls?

- The reason is “combinations”
- Specifically option combinations
- On their own, call sales are incredibly risky.
- When paired with other options or with stocks, call sales can accomplish wonderful things.
- ----------
- [Chapter 5, Part 3]
- Welcome back to What Are Options. My name is Don Fishback
- This is Chapter 5, Section 3, and we’re going to continue our coverage of option combinations.
- On their own, options are wonderful financial tools.
- But they really shine when you combine them with other options or with stocks into combinations.

Option **Combination**: Covered Call

- Previously: Buy Stock & Buy Put
  - Protective Put or Married Put
- Now: Buy Stock & Sell Call
  - **Covered Call**
  - **Buy-Write**
- By far **the most widely used options strategy**.

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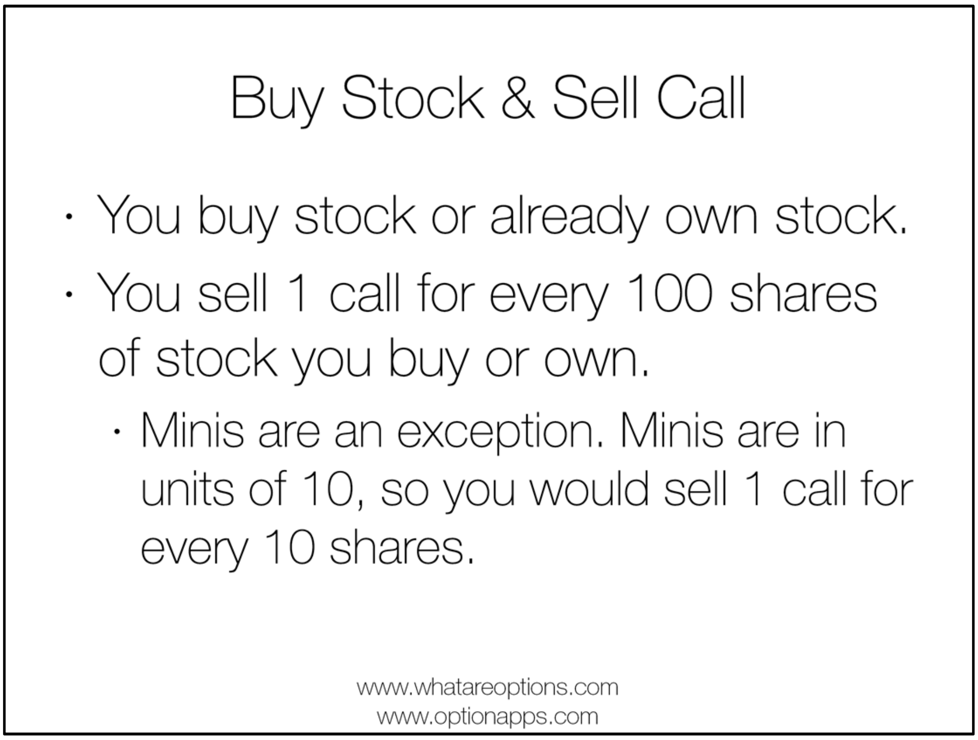
- Previously we looked at an option combination called the protective put, or married put as it's sometimes called.
- Now, we're going to look at the covered call, or the buy-write.
- This options strategy is by far the most widely used options strategy by individuals.
- Remembering our questions, "covered call" is the what.



- Here's the HOW.
- You need to have stock. Either you buy it, or perhaps you already own it.
- You sell 1 call for every 100 shares of stock you buy or own.
- Minis are an exception. Minis are in units of 10, so you would sell 1 call for every 10 shares.
- I'm not going to get into jumbos. Their liquidity is horrible.

Buy Stock & Sell Call

- If the stock goes up and is above the strike price at expiration, the stock will get called away and you will have to sell your shares at the strike.
  - You will have made your maximum profit.
- If the stock is below the strike price at expiration, the option will expire and you will remain a shareholder unless you sell the stock.

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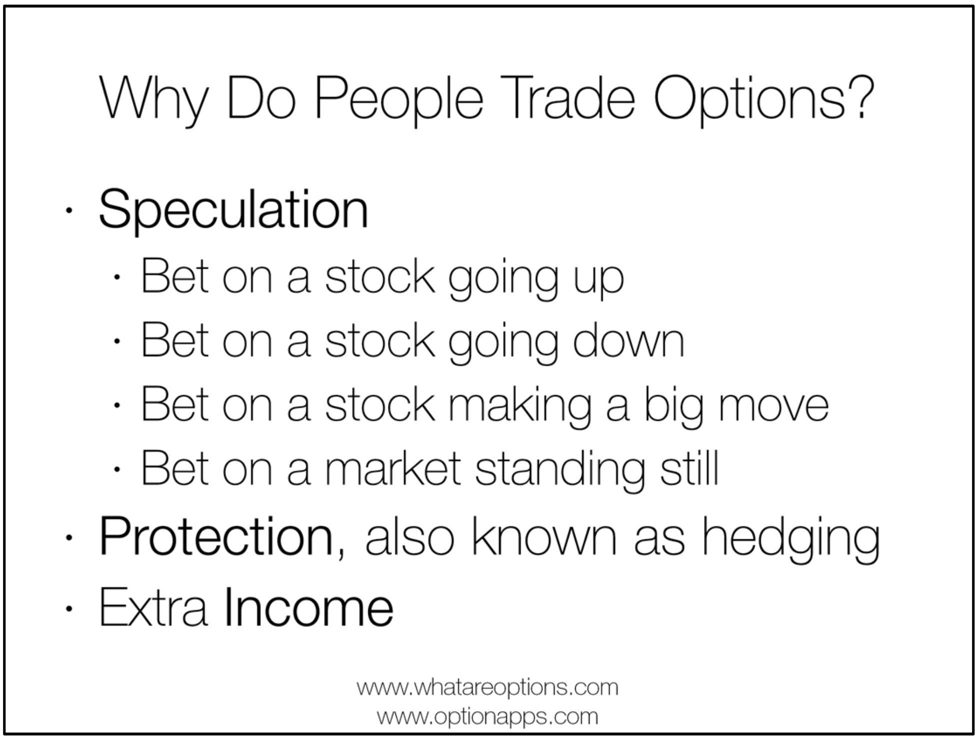
- So here's how covered calls make and lose money.
- If the stock goes up and is above the strike price at expiration, the stock will get called away and you will have to sell your shares at the strike.
- You will have made your maximum profit.
- If the stock is below the strike price at expiration, the option will expire and you will remain a shareholder unless you sell the stock.
- So we've covered the what, and now the how. Let's look at the why?



- Remember this?
- We looked at this list when we discussed buying a protective put.
- It’s a list of reasons why people use options.
- Keeping these reasons in the back of our mind, let’s look at why someone use covered calls.

Buy Stock & Sell Call vs. Buy Stock

- Selling the call reduces your cash outlay below the cost of just buying stock.
  - This **reduces your risk**.
- Selling the call reduces your breakeven price below the breakeven price of just buying stock.
  - This **improves your probability** of profit.

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- When we do this, we’re going to compare the covered call to just buying the stock.
- After all, with every investment, it’s important to note that an alternative exists.
- For instance, doing nothing really isn’t “doing nothing”.
- When you have money just sitting around, it’s probably in a bank account or money market fund earning interest.
- You’ve chosen to earn interest on your investment.
- We’re going to compare a covered call strategy to buying a stock.
- Selling the call reduces your cash outlay below the cost of just buying stock.
- This reduces your risk.
- Selling the call reduces your breakeven price below the breakeven price of just buying stock.
- This improves your probability of profit.

Buy Stock & Sell Call vs. Buy Stock

- Selling the call generates **added cash** flow.
- Selling the call **limits your potential profit**.
    - No free lunch. This is the tradeoff for those other improvements.

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Selling the call generates added cash flow.
Selling the call limits your potential profit.
No free lunch. This is the tradeoff for the other improvements.

- Now, all of that sounds good.
- There's an unanswered question, however.
- Is it as good as it sounds?
- We'll look at a covered call trade and compare it to buying stock.
- One stock, one trade.
- We'll then expand our research and look at a wider performance measure.

Buy 100 shares of T at 35.26
Sell one T July 20, 35 Call at 0.90 bid
Net Debit = 34.36

Profit/Loss Calculation

T shares @35.26
Sell the T July 20, 35 Call @ 0.90

T	Option Value	Opening transaction	P/L
33	0	-34.36	-1.36
33.5	0	-34.36	-0.86
34	0	-34.36	-0.36
34.5	0	-34.36	0.14
35	0	-34.36	0.64
35.5	0.5	-34.36	0.64
36	1	-34.36	0.64
36.5	1.5	-34.36	0.64
37	2	-34.36	0.64

Maximum Risk = Stock Price - Option Price
Maximum Profit = Option Price - Stock Price + Strike Price
Stock Price - Option Price = **Breakeven Price** at Expiration

Maximum Risk = $3,436
Maximum Profit = $64
Breakeven Price at Expiration = 34.36

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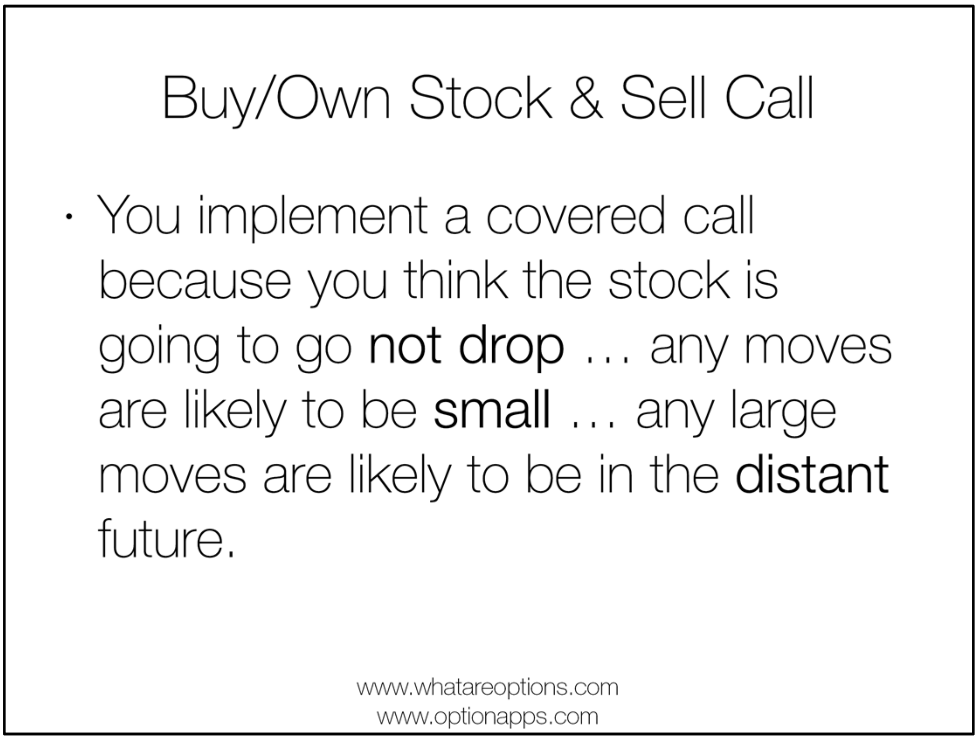
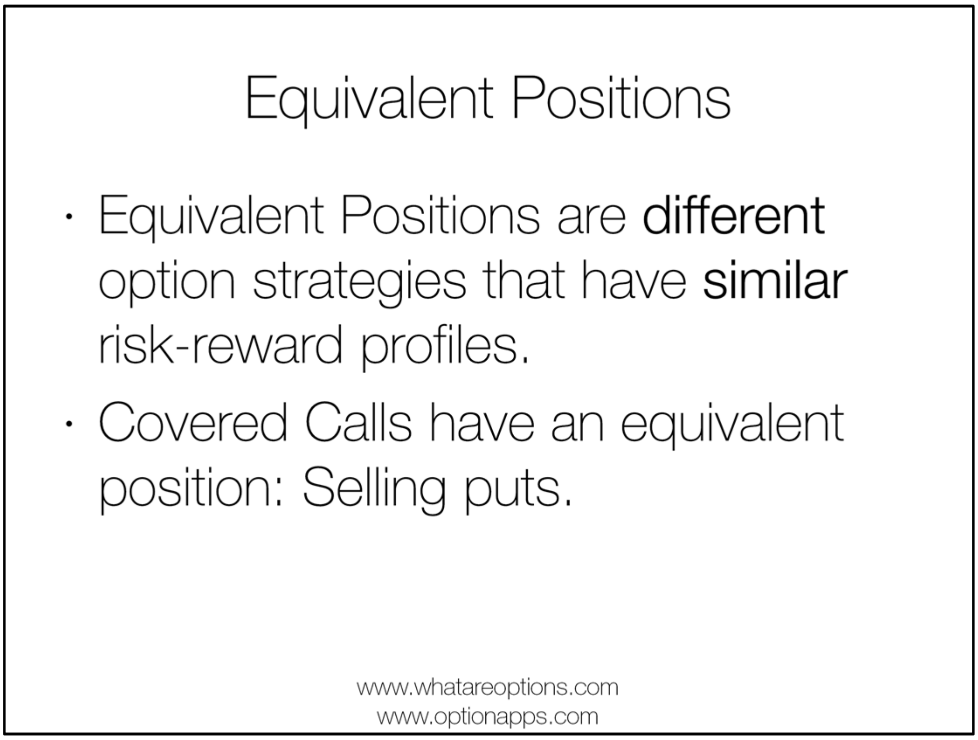
- Here’s the profit/loss chart of a covered call compared to purchasing the stock.
- Now, if you were to place a covered call trade, here is what you would say, or enter if you were placing the trade online
- By the way, the stock is AT&T
- Buy 100 shared of AT&T, sell one AT&T July 20, 35 call
- For a total net debit of 34.36
- Here’s how profits and losses are calculated.
- Here is the stock price
- Here is the option value.
- Here is the opening transaction
- Remember, you sold the option initially, which was a credit. So to close it out, you have to buy it back, which will be a debit.
- To get the profits and losses, you take the stock price, and subtract from it the option value and the opening transaction.
- To the right, we have our key datapoints
- You can see from the chart that in nearly all instances, the covered call performs better than the stock purchase.
- It’s only if the stock skyrockets that the stock purchase is better.

- So, remembering our questions, the “what” … The strategy is called a covered call or buy-write
- The “why” … You implement a covered call because you have a slight bullish bias, but you’re not extremely bullish. You’re willing to forego extreme upside potential to generate extra income.
- Direction: Mostly Bullish.
- Magnitude: Small to steady
- Time: Works in your favor
- Option Approval Level is Low.



So our motivation is,
You implement a covered call because you think the stock is going to NOT drop
You think that any moves that do occur are likely to be small
And any large moves are likely to be in the distant future.
In our next section, we're going to look at a similar position to the covered call.
Recall that previously, we said that option trades that have similar risk/reward profiles are considered "equivalent positions".
That's what we're going to cover next.



- [Chapter 5, Part 4]
- Welcome to Chapter 5, Section 4
- Earlier we talked about equivalent positions.
- Equivalent Positions are different option combinations that have similar risk-reward profiles.
- A call purchase and a married put are equivalent.
- Well, a covered call has an equivalent position.
- The equivalent position to a covered call is a naked put sale.

Equivalent Positions

- When the strike prices are the same, selling a put has the same risk and reward profile as buying stock and selling a call.

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- When the strike prices are the same, selling a put has the same risk and reward profile as buying stock and selling a call.

- Selling a put has the same risk and reward profile as a covered call.
- Selling a put can actually have a higher return potential because there is only one transaction expense.
- Only one bid/ask spread.
- Only one commission.

Selling Puts

- **Sounds good**. But is it?
- We'll look at a put sale trade.
- Then we'll compare it to a covered call.
- Later we'll expand our research.

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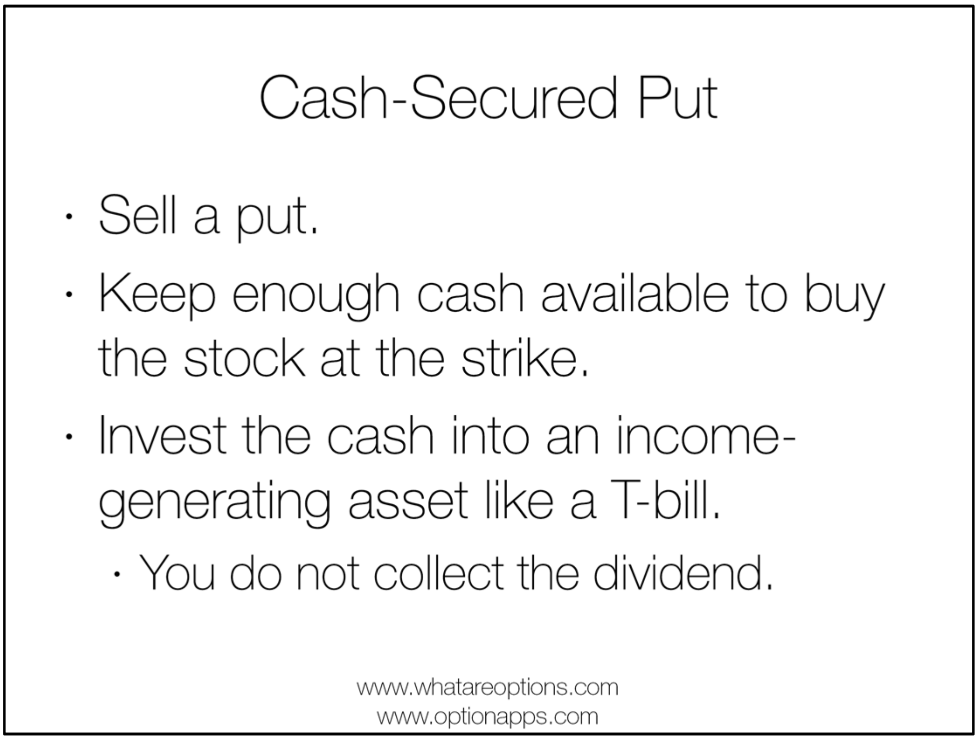
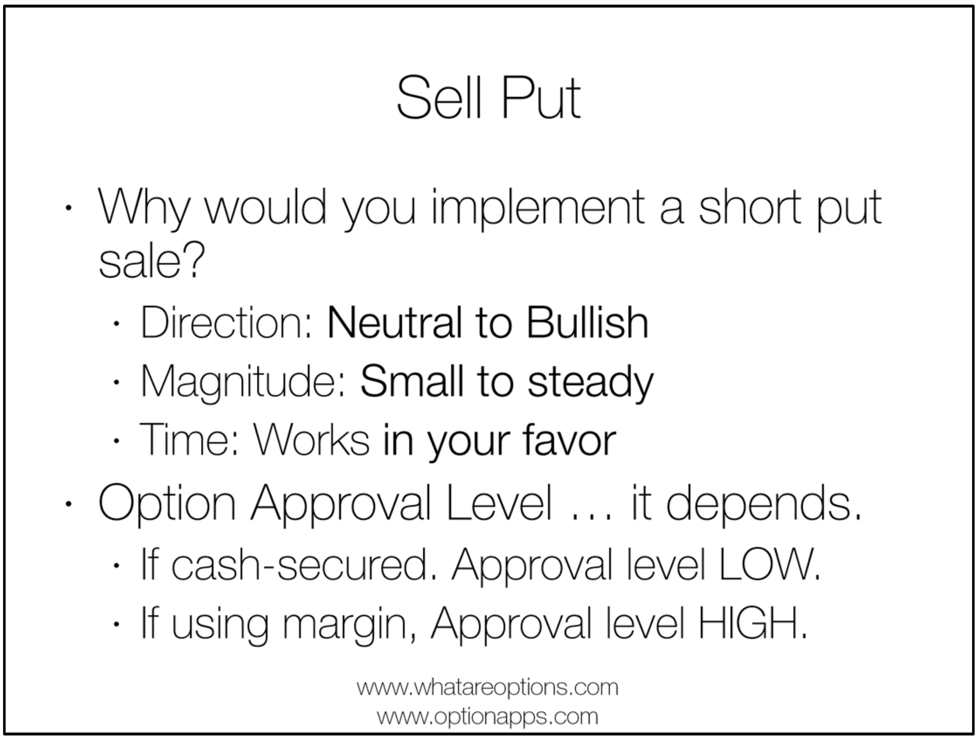
- Again, all of that sounds good.
- But we need to find proof that it is as good as it sounds.
- So we'll begin by looking at a single put sale position.
- Then we'll compare it to a covered call.
- Then later on in the course, we'll expand our research and look at a wider performance measure.



- So let’s look at the details on this subject.
- There are a couple of ways to sell a put.
- You do it with cash or use margin.
- We’re going to look at cash-secured put selling first.
- In a cash-secured put, you sell the put, and then you keep enough cash on had to buy the stock at the strike if you need to.
- You invest that cash in an income-generating asset that can be liquidated to buy the stock if necessary.
- You do not collect the dividend. The shareholder does that.



- So, we've talked about the "what" … The strategy is called a short put or a put sale.
- And we now know the "how". You can sell a cash-secured put off one on margin. The one using margin is more risky.
- That leaves the "why" … You sell a naked put because you have a slight bullish bias, but you're not extremely bullish. You're willing to forego extreme upside potential to generate extra income.
- Regarding direction: Mostly Bullish.
- Magnitude: Small to steady
- Time: Works in your favor
- Option Approval varies.
- If you're keeping enough cash on hand to buy the stock, the approval level is Low.
- If you're going to use margin, the approval level is High.

Sell Put

- You sell a put because you think the stock is **not** going to go down … if it does move, it's **not** going to move a lot … any big move that does occur is **not** going to happen soon.

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So our motivation is

You sell a put because you think the stock is not going to go down …
if it does move down, it's not going to move a lot …
any big move that *does* occur is not going to happen soon.

Sell the FB July 20, 25 Put at 1.20 bid

Profit/Loss Calculation

FB shares =24.53

Sell the FB July 20, 25 Put @ 1.20

FB	Option Value	Opening transaction	P/L
20	5	1.20	-3.80
21	4	1.20	-2.80
22	3	1.20	-1.80
23	2	1.20	-0.80
24	1	1.20	0.20
25	0	1.20	1.20
26	0	1.20	1.20
27	0	1.20	1.20
28	0	1.20	1.20
29	0	1.20	1.20
30	0	1.20	1.20

Maximum Risk = Strike Price - Option Price
Maximum Profit = Option Price
Strike Price - Option Price = **Breakeven Price** at Expiration

Maximum Risk = $2,380
Maximum Profit = $120
Breakeven Price at Expiration = 23.80

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Sell Put vs. Buy Stock

- Selling the put reduces your cash outlay below the cost of just buying stock.
  - This **reduces your risk**.
- Selling the put reduces your breakeven price below the breakeven price of just buying stock.
  - This **improves your probability** of profit.

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- Just like we did with the covered call, we're going to compare a put sale to buying the stock
- Selling the put reduces your cash outlay below the cost of just buying stock.
- This reduces your risk.
- Selling the put reduces your breakeven price below the breakeven price of just buying stock.
- This improves your probability of profit.

Sell Put vs. Buy Stock

- Selling the put generates **immediate cash** flow.
- Selling the put **limits your potential profit**.
  - No free lunch. This is the tradeoff for those other improvements.

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Selling the put generates immediate cash flow.
Selling the put limits your potential profit.
No free lunch. This is the tradeoff for the other improvements.

- Now, there are some important things to keep in mind with a put sale.
- First, as noted before, a put sale is a “naked” option trade. It’s uncovered.
- This is the last of the 4 naked option trades. The others we already covered are buy call, buy put and sell call.
- The second thing to keep in mind is assignment risk. What does that mean?
- It means that, if the stock goes below the strike price, you would have to buy the shares at the strike price.
- If you have the cash as you would in a cash-secured put sale, that’s not a problem.
- But it could be a huge problem if you use lots of leverage.
- That’s why it’s important to keep any leverage from getting excessive.
- The amount of money required to implement a short put position is very small.
- So it’s easy to build up a huge position with a small amount of money.
- As long as things go right, having a huge position with little expense is great.
- But if things don’t go right, it’s a quick way to end up in the poor house.
- So you need to be careful.

Assignment Risks

- Remember, if there is an assignment, you get stock. So now you have **the same risk and reward** potential as owning the stock, only you were already paid the premium.
- Because you collected the premium, the risk is still similar to the covered call
- But now reward **potential is unlimited**.

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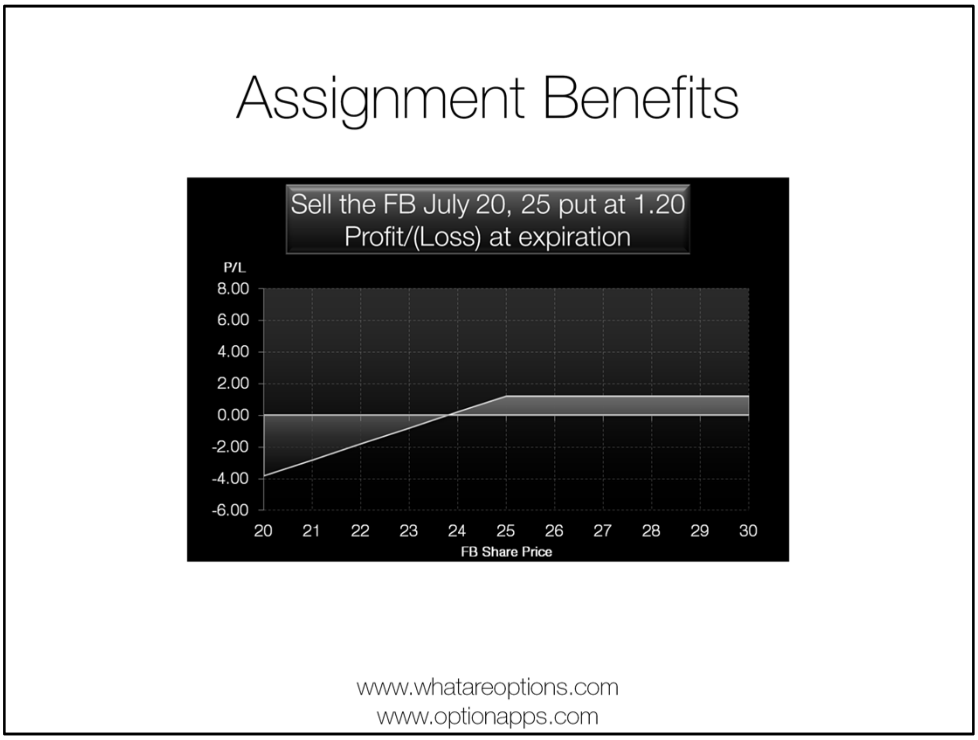
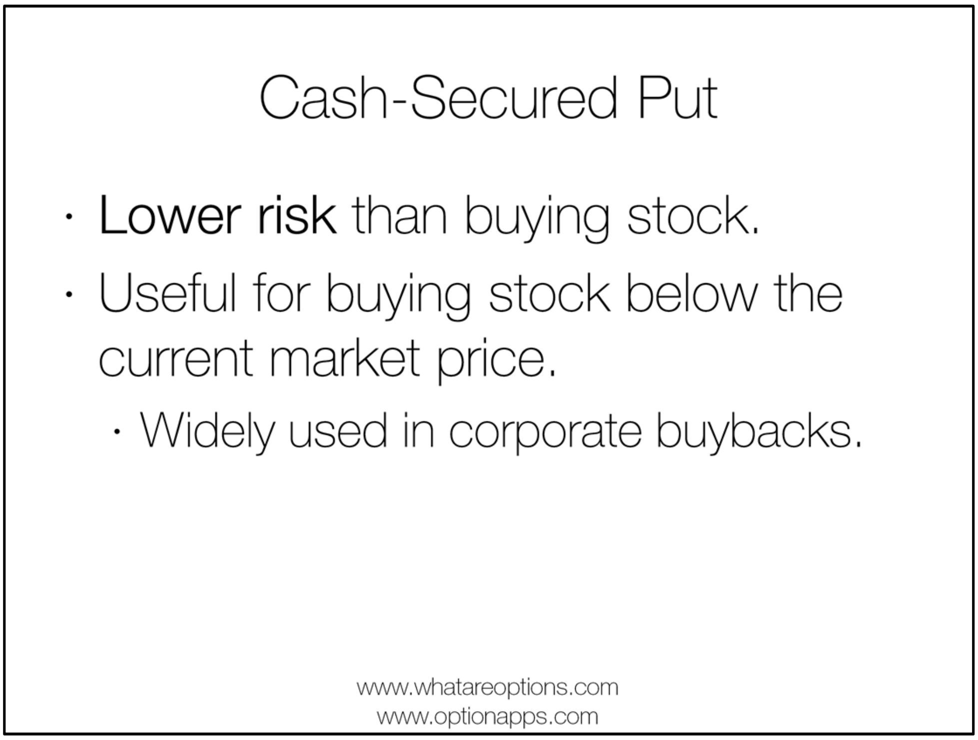
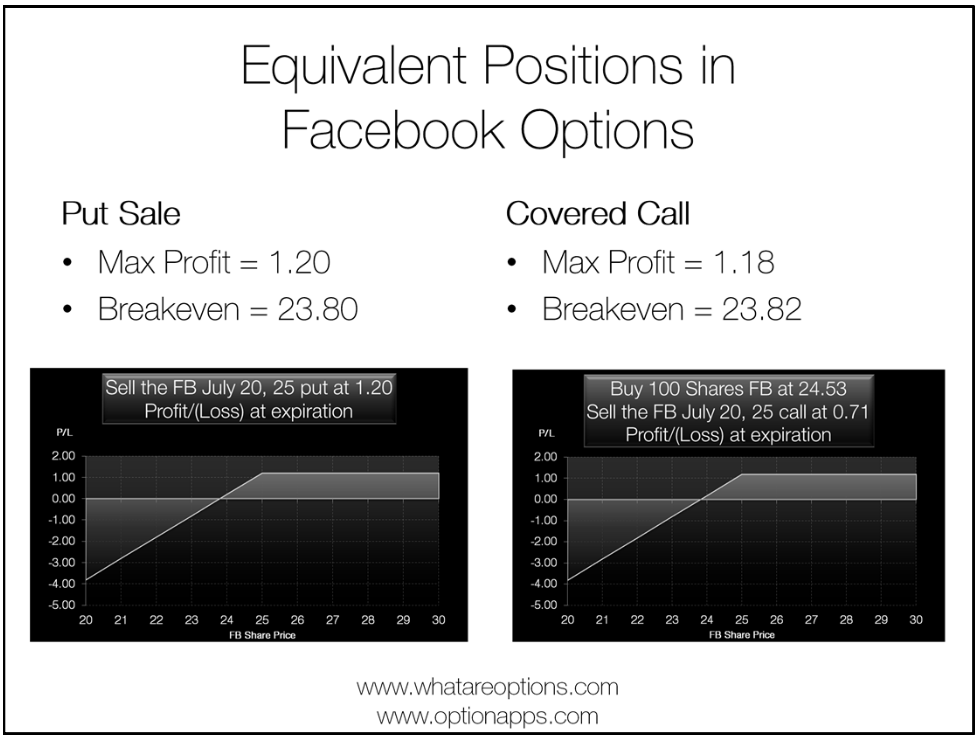
- Now, I just mentioned assignment risk, and how, if you get assigned on a short put, you end up with stock.
- The only difference is that you bought the stock at the strike price, not the stock price.
- Plus, you've collected the premium, so that effectively reduced the purchase price even more.
- Because you collected the premium at inception, you basically have a long stock position at the same breakeven price as implementing a covered call.
- Only now, there is no sold option.
- So if the stock turns around and heads higher, you've got unlimited profit potential.



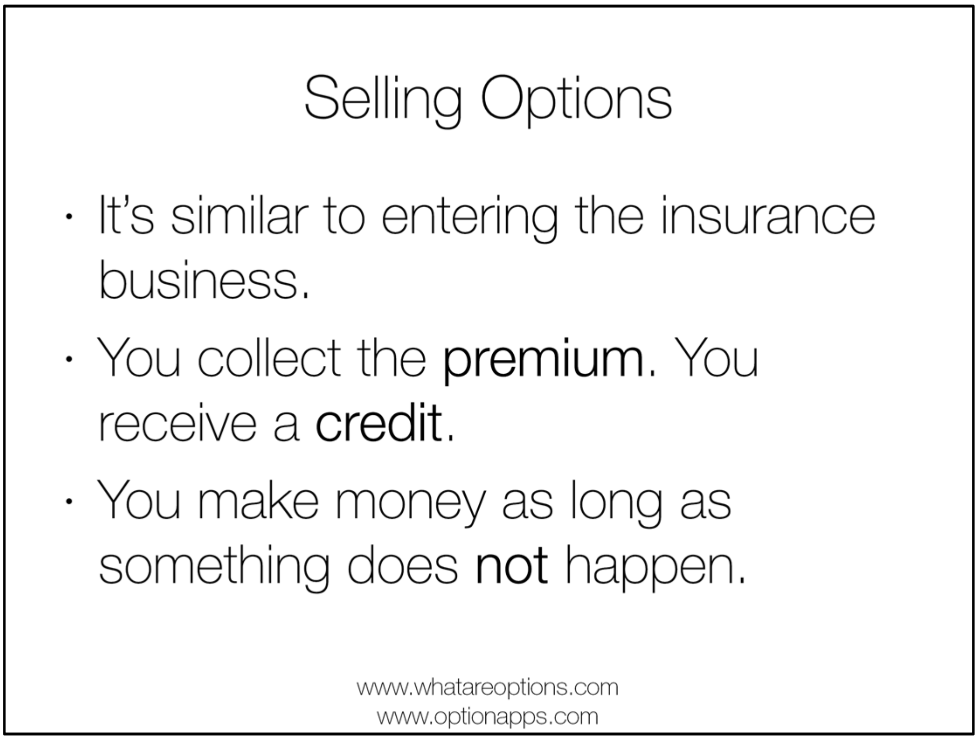
- Here's what I mean.
- This is what that short put chart looks like.
- But look what happens when the assignment takes place and you have the long position in the stock.
- And here's what happens once the assignment takes place.
- Notice that the risk doesn't change, and the breakeven doesn't change.
- But the profit potential does!
- If you've got the cash to pay for the stock, getting assigned actually turns into a benefit.
- But if you've don't have the cash to pay for the position, assignment could mean that you'd have to liquidate the position unless you had sufficient margin. So that advantage disappears.
- That's one reason why too much leverage can be a problem.



- So here are the key things to know about selling puts.
- They have lower risk than buying the stock.
- They are useful for buying stock below the current market price, as that assignment graph shows.
- Because of that feature, these are widely used in corporate buybacks.



- One final thing to note about put sales.
- I talked about how put sales were equivalent to selling covered calls.
- Take a look at these two charts.
- One is a Facebook put sale.
- The other is a Facebook covered call.
- Look how close these two are to one another.
- Only two cents separates the profit potential.
- The breakeven is nearly identical with only two cents separating the two.
- For all intents and purposes, they're identical.
- The thing about a covered call is that the benefit we saw with the short put after assignment is impossible with a covered call.
- That's because the stock is called away from you.
- Another benefit to short puts over covered calls is that the transaction costs can often be lower.
- Later on in this course, we're going to look at two indexes provided by the Chicago Board Options Exchange that will compare the performance of these two option strategies. Armed with that information, we'll be able to see how basic options strategies compare to stock market investments.



- In sum, selling options is similar to entering the insurance business.
- You collect the premium. You receive a credit.
- You make money as long as something does NOT happen.

Selling Options

- You generate cash flow when you receive the **credit**.
- You get to invest the money credited to your account similar to the way insurance companies invest the premiums paid.
- If you use leverage, you must meet **margin** similar to the way insurance companies must meet reserve requirements.

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- You generate cash flow when you receive the credit. But you also have to meet margin.
- You get to invest the money credited to your account similar to the way insurance companies invest the premiums paid.
- If you use borrowed money, i.e., leverage, you must meet margin similar to the way insurance companies must meet reserve requirements.

Selling Options

- Naked short option positions leave you exposed to high risk.
- Combinations **reduce** and **control** **that risk**.

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- Naked short option positions leave you exposed to high risk.
- Combinations reduce and control that risk.

MORE OPTION **COMBINATIONS**

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- [Chapter 6]
- Welcome to What Are Options? My name is Don Fishback, and this is Chapter 6
- Let’s think about what option strategies we’ve covered so far.
- Call purchase
- Put purchase
- Call Sale
- Put sale
- Covered call and
- Protective put
- It’s time to expand our strategies even further.

- But before we do, I want to revisit the reasons why people trade options.
- People trade options in order to speculate, to protect, and to generate cash flow.
- In this instance, we're going to be looking at an inexpensive way to get protection.

Option Trades Discussed So Far

- Trades involving just one option.
- Buy option
- Sell option
- Option + stock

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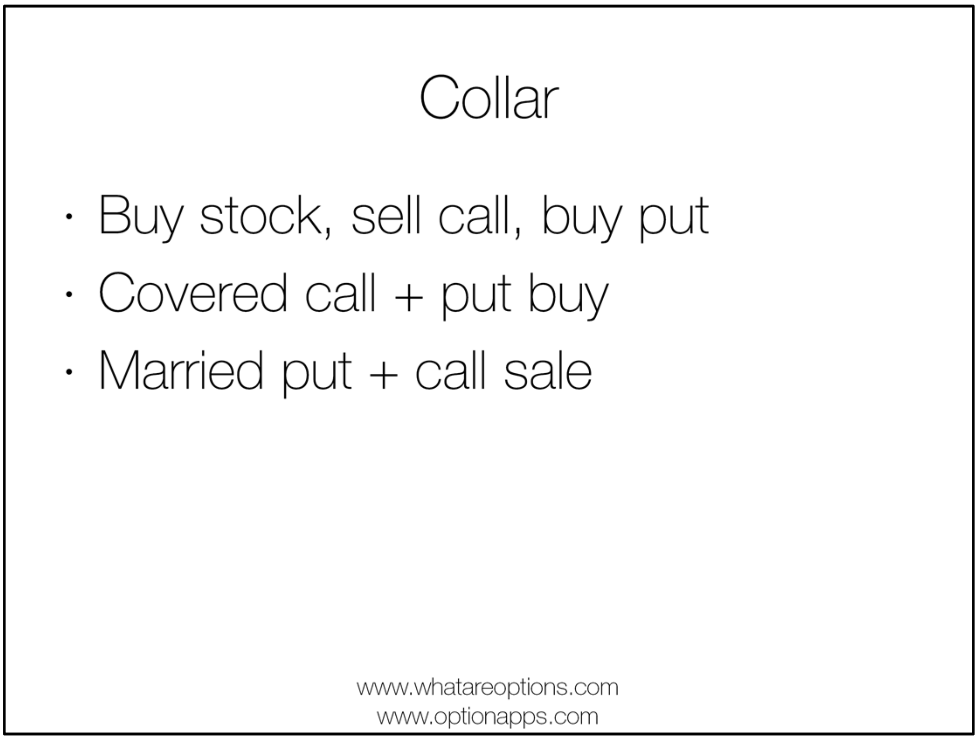
- Now, up till this point, we've only covered combinations involving just one option.
- Either buy option
- Sell Option
- Or a combination involving stock & a single option
- It's time to expand things a bit.
- I do NOT want to get things too complicated.
- That's why this next strategy is going to be very conservative.
- It is hugely popular with institutions because they can control risk so well with this strategy.
- Whether it's worth the popularity? … well fortunately, we can answer that question with a performance index.
- Which we'll cover later on in the course.

- The trade is called a collar.
- It involves a stock and two options.
- You buy the stock, or you own the stock already.
- You then sell a call and you simultaneously buy a put.
- I am going to get into the details in a minute, but first, I want to mention the other combination trade
- That trade is a straddle.
- A straddle is the simultaneous purchase of a call and put at the same strike price and same expiration.



- Let’s get into the details of that collar.
- It involves buying a stock, selling a call and buying a put.
- Now think about that.
- Buying stock and selling a call is a covered call.
- So this is like a covered call and a protective put.
- Or, think of it this way, buying stock and buying a put, is like a protective put.
- So this trade is like a married put with a call sale.
- It’s similar to earlier trades we looked at, with an added wrinkle.

Collar

- Why would you implement a collar?
  - Direction: **Bullish, but nervous**
  - Magnitude: **Small to steady**
  - Time: Is not a consideration
- Option Approval Level
  - Mid-level.

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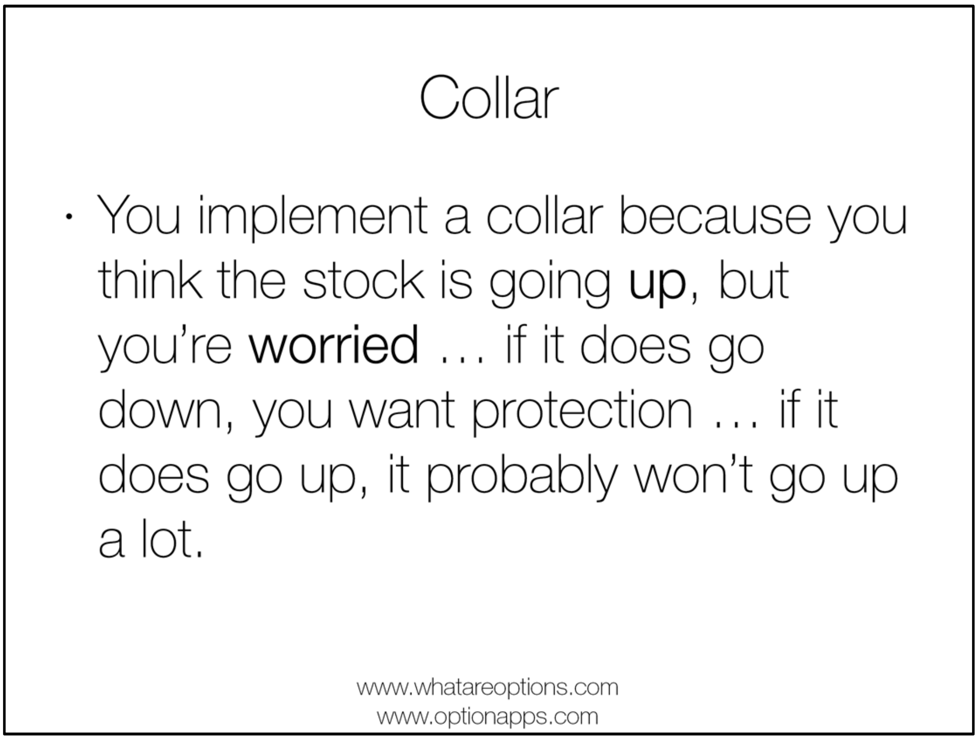
- So, we've talked about the "what" … The strategy is called a collar.
- The how is buying stock, selling a call, and using the proceeds to buy a put.
- That leaves the "why" … You implement a collar because you are bullish, but you are also worried about a near-term sell off.
- You want temporary protection.
- Regarding direction: Bullish but nervous.
- Magnitude: Small to steady
- Time: is not a consideration because you are selling one option and buying another, so the time decays work in your favor and against you in nearly equal amounts. So they offset one another.
- Option Approval tends to be mid-level, not at the highest level, but not the lowest either.



- So our motivation is
- You implement a collar going to go up, but you're worried …
- if it does go down, you want protection …
- if it does go up, it probably won't go up a lot.
- By the way, this strategy is very common among experience financial advisors and wealth managers because of the low cost of protection.

Verizon: VZ

Calls						A	Puts					
Bid	ivBid	Ask	ivAsk	FOV	Delta	STRIKE	Bid	ivBid	Ask	ivAsk	FOV	Delta
20.60	0.00	22.20	79.35	22.00	0.00	28	0.01	51.38	0.02	55.40	0.00	-0.39
19.65	0.00	21.70	98.19	21.01	0.00	29	0.02	52.32	0.03	54.95	0.00	-0.62
19.95	0.00	20.05	58.73	19.94	99.35	30	0.02	49.33	0.03	51.83	0.00	-0.66
18.35	0.00	19.15	63.97	18.98	0.00	31	0.02	46.43	0.04	50.68	0.00	-0.80
17.40	0.00	18.30	68.49	17.94	0.00	32	0.02	43.61	0.04	47.65	0.00	-0.85
16.35	0.00	17.30	64.54	16.95	0.00	33	0.02	40.88	0.04	44.70	0.00	-0.90
15.40	0.00	16.30	60.69	15.92	0.00	34	0.03	40.23	0.05	43.19	0.00	-1.20
14.40	0.00	15.30	56.92	14.98	0.00	35	0.03	37.52	0.06	41.44	0.00	-1.41
13.35	0.00	14.20	48.98	13.93	0.00	36	0.02	33.08	0.07	39.52	0.00	-1.51
12.35	0.00	13.30	49.64	12.90	0.00	37	0.03	32.28	0.08	37.48	0.00	-1.88
11.40	0.00	12.20	42.26	11.94	0.00	38	0.03	29.74	0.09	35.34	0.00	-2.16
10.90	0.00	11.35	44.24	10.96	95.61	39	0.05	29.42	0.10	33.13	0.00	-2.75
9.90	0.00	10.15	33.75	9.94	97.90	40	0.08	29.06	0.10	30.28	0.01	-3.40
8.90	0.00	9.15	30.70	8.97	97.71	41	0.10	27.47	0.13	28.96	0.01	-4.40
7.50	0.00	8.40	35.10	7.98	0.00	42	0.13	26.08	0.15	26.91	0.03	-5.52
7.10	22.79	7.20	26.31	7.07	93.06	43	0.17	24.70	0.19	25.37	0.05	-7.19
5.85	0.00	6.35	26.99	6.12	93.80	44	0.22	23.23	0.24	23.78	0.10	-9.33
5.10	17.15	5.35	23.57	5.17	89.07	45	0.29	21.83	0.31	22.28	0.19	-12.26
4.35	20.12	4.45	21.98	4.31	83.32	46	0.40	20.72	0.42	21.09	0.33	-16.49
3.50	19.09	3.60	20.66	3.50	77.82	47	0.56	[illegible]	[illegible]	[illegible]	0.51	-22.12
2.75	18.66	2.78	19.07	2.68	70.60	48	0.77	[illegible]	0.79	[illegible]	[illegible]	-29.35
2.05	17.82	2.08	18.19	2.13	61.65	49	1.07	[illegible]	[illegible]	18.09	[illegible]	-38.33
[illegible]	[illegible]	1.48	17.41	1.61	51.29	50	1.48	17.21	1.50	17.44	1.61	-48.71
0.50	[illegible]	0.52	16.47	0.68	25.17	52.50	3.00	15.93	3.05	16.66	3.25	-74.90
[illegible]	[illegible]	0.15	16.51	0.24	9.10	55	5.10	14.33	5.20	17.37	5.28	-91.48
0.04	17.02	0.05	17.67	0.09	3.16	57.50	7.30	0.00	8.15	32.87	7.55	-90.92
0.01	17.62	0.04	21.21	0.03	1.67	60	9.75	0.00	10.65	39.01	10.12	-92.90

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- This is Verizon.
- In this case study, we're going to buy Verizon shares and sell the September 52,50 call at 0.50 and buy the September 48 put at 0.79.

Buy 100 shares of VZ at 49.96
Sell the VZ September 21, 52.50 Call at 0.50
Buy the VZ September 21, 48 Put at 0.79
Net Debit = 50.25

Profit/Loss Calculation

Buy 100 shares of VZ @ 49.96
Sell the VZ September 21, 52.50 Call @ 0.50
Buy the VZ September 21, 48 Put @ 0.79

VZ	Option Values Call	Put	Opening transaction	P/L
45	0	3	-50.25	-2.25
45.5	0	2.5	-50.25	-2.25
46	0	2	-50.25	-2.25
46.5	0	1.5	-50.25	-2.25
47	0	1	-50.25	-2.25
47.5	0	0.5	-50.25	-2.25
48	0	0	-50.25	-2.25
48.5	0	0	-50.25	-1.75
49	0	0	-50.25	-1.25
49.5	0	0	-50.25	-0.75
50	0	0	-50.25	-0.25
50.5	0	0	-50.25	0.25
51	0	0	-50.25	0.75
51.5	0	0	-50.25	1.25
52	0	0	-50.25	1.75
52.5	0	0	-50.25	2.25
53	0.5	0	-50.25	2.25
53.5	1	0	-50.25	2.25
54	1.5	0	-50.25	2.25
54.5	2	0	-50.25	2.25
55	2.5	0	-50.25	2.25

Maximum Risk = Stock Price - Put Strike - Call Price + Put Price

Maximum Profit = Call Strike - Stock Price + Call Price - Put Price

Stock Price - Call Price + Put Price = **Breakeven Price** at Expiration

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- Here's the trade. Note there are three parts, but one final price.
- To enter the trade, you'd say buy 100 shares of VZ, sell to open one VZ September 21, 52.50 Call, buy to open 1 VZ September 21, 48 Put for a total net debit of 50.25
- Here's how profits and losses are calculated. You can see things are getting a bit more complicated.
- To the right are the formulas for calculating key profit/loss and breakeven stats.

Buy 100 shares of VZ at 49.96
Sell the VZ September 21, 52.50 Call at 0.50
Buy the VZ September 21, 48 Put at 0.79
Net Debit = 50.25

Maximum Risk = $225
Maximum Profit = $225
Breakeven Price at Expiration = 50.25

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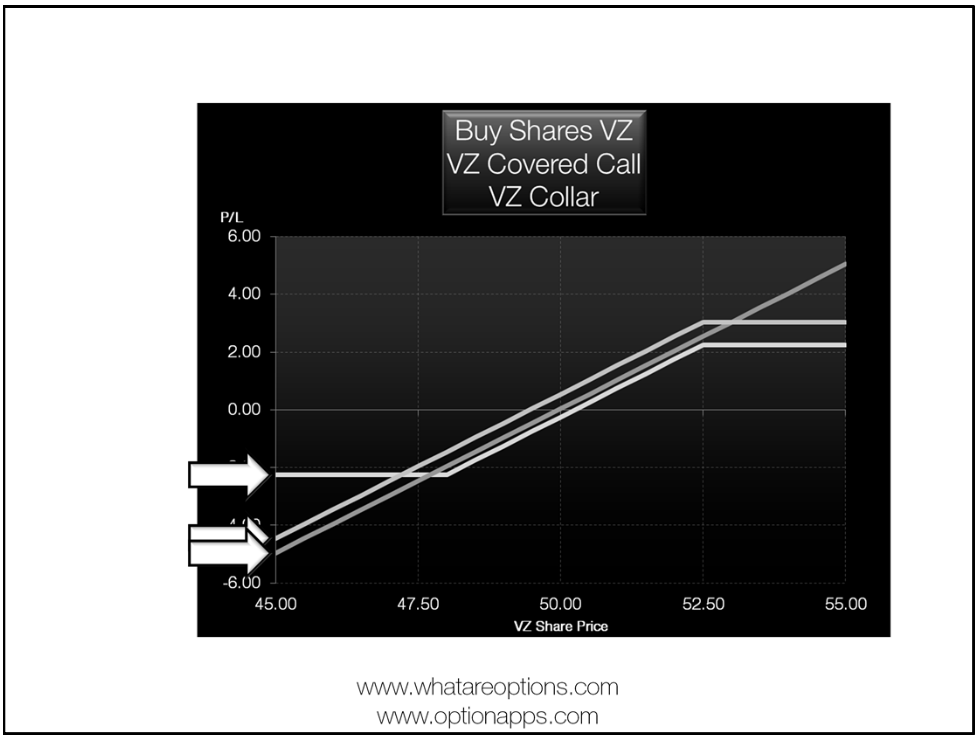
- Here's the profit loss chart. Note how it has a peak profit, but it also has a peak loss.
- Even if VZ shares collapse, your losses are capped.
- You also get the dividend, which is pretty substantial.



- Now, we've talked about this in the abstract before, but now we're going to introduce it to you definitively.
- We're going to introduce to you the concept called "opportunity cost".
- Here's what it means.
- Whenever you do something, you lose the opportunity to do something else.
- So if you invest in a collar, it means you can't invest in a covered call, and you can't invest in a stock.
- So to see which one is best, you need to compare the three strategies, because you want to make the most of your opportunity.
- That's what this chart does.
- Here we have the collar in white
- Then we have the covered call in light blue
- And here is the stock purchase in dark blue
- You can see that the collar has a profit potential very close to the stock in between the strike prices: 48 and 52.50.
- Beyond that, however, they behave quite differently.
- The profits on the collars are limited.
- But the losses on the collar are also limited.
- Losses are far smaller.
- Later on in this course, when we look at the covered call performance index and put selling performance index, we'll also look at an index that measures the performance of collar investments over an extended period.

Collar Equivalent Positions

- Buy stock, sell call, buy put
- Covered call + put buy
  - Covered call = put sale, so …
  - Collar = Put sale + put buy
- Married put + call sale
  - Married put = call buy, so …
  - Collar = call buy + call sale

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- I want to leave you with one last thought on collars before we go to our next strategy.
- Remember, earlier I said that a collar was equivalent to a covered call + a put buy.
- Well, remember that a covered call has an equivalent position, which is a put sale.
- So a collar is equivalent to a put sale and a put buy.
- A collar is also equivalent to a married put + a call sale.
- A married put is equal to a call buy.
- So a collar is equivalent to a call buy and a call sale.
- These strategies are known as vertical spreads.
- You can implement a vertical spread as either a credit or a debit.
- We investigate this more extensively in our advanced course.

- Alright, let’s bring back this list
- We’re going to look at another strategy.
- In this instance, we’re going to be looking at a speculative trade that makes money when a stock makes a big move.

- This strategy is called a straddle purchase.
- It’s also called a long straddle or a buy straddle
- Buying a straddle involves simultaneously purchasing a call and a put, with the same expiration date and same strike price.
- You can also sell a straddle, but that is an extremely risky strategy that is not suitable for most traders.
- We will not be covering that in this course.

- So, what we're going to look at is a straddle. That's the "what".
- A straddle purchase is where you buy a call and a put. That's the "how".
- That leaves the "why" …
- Why would you implement a long straddle?
- You implement a straddle because you think the stock is going to move big. You just don't know the direction.
- So direction is not a consideration.
- The magnitude is large, at least going forward. The recent movement could have been quite small. You expect movement in the future to be big.
- Time works against you. You need that big move to happen soon.
- Because it's a combination, Option Approval tends to be mid-level, not at the highest level, but not the lowest either.

Straddle Purchase

- You implement a straddle purchase because you are **unsure** of the direction … but you expect any move to be **big** … and you expect that big move to happen **soon**.

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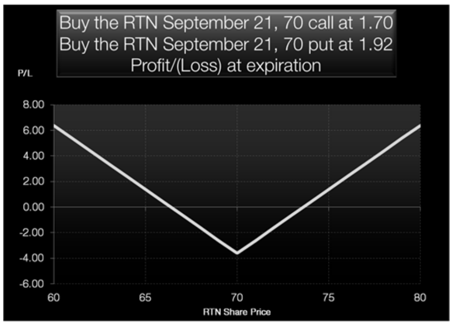
- So our motivation for buying a straddle is
- You implement a straddle purchase because you are unsure of the direction …
- but you expect any move to be big …
- and you expect that big move to happen soon.

Buy RTN September 20, 70 Call at 1.70
Buy RTN September 20, 70 Put at 1.92
Net Debit = 3.62

RTN = 69.75

Buy the RTN September 21,	70	Call @	1.70
Buy the RTN September 21,	70	Put @	1.92
		Net debit =	3.62

	Option Values		Opening	
RTN	Call	Put	transaction	P/L
60	0	10	-3.62	6.38
61	0	9	-3.62	5.38
62	0	8	-3.62	4.38
63	0	7	-3.62	3.38
64	0	6	-3.62	2.38
65	0	5	-3.62	1.38
66	0	4	-3.62	0.38
67	0	3	-3.62	-0.62
68	0	2	-3.62	-1.62
69	0	1	-3.62	-2.62
70	0	0	-3.62	-3.62
71	1	0	-3.62	-2.62
72	2	0	-3.62	-1.62
73	3	0	-3.62	-0.62
74	4	0	-3.62	0.38
75	5	0	-3.62	1.38
76	6	0	-3.62	2.38
77	7	0	-3.62	3.38
78	8	0	-3.62	4.38
79	9	0	-3.62	5.38
80	10	0	-3.62	6.38



Maximum Risk = Net Debit
Maximum Profit = Unlimited
1st Breakeven Price at Expiration = Strike Price - Net Debit
2nd Breakeven Price at Expiration = Strike Price + Net Debit
Maximum Risk = $362
Maximum Profit = Unlimited
Lower Breakeven Price at Expiration = 66.38
Upper Breakeven Price at Expiration = 73.62

Here are the details. There’s a lot of information here! Notice first that there are TWO breakevens.

Long Straddle – Change the Rules

- This is **purely magnitude** over time.
- You need the stock to move a certain amount over a certain period of time.
  - In this specific example, you need the stock to go **up 5.5%** or **down 4.8%** in 59 days to breakeven.

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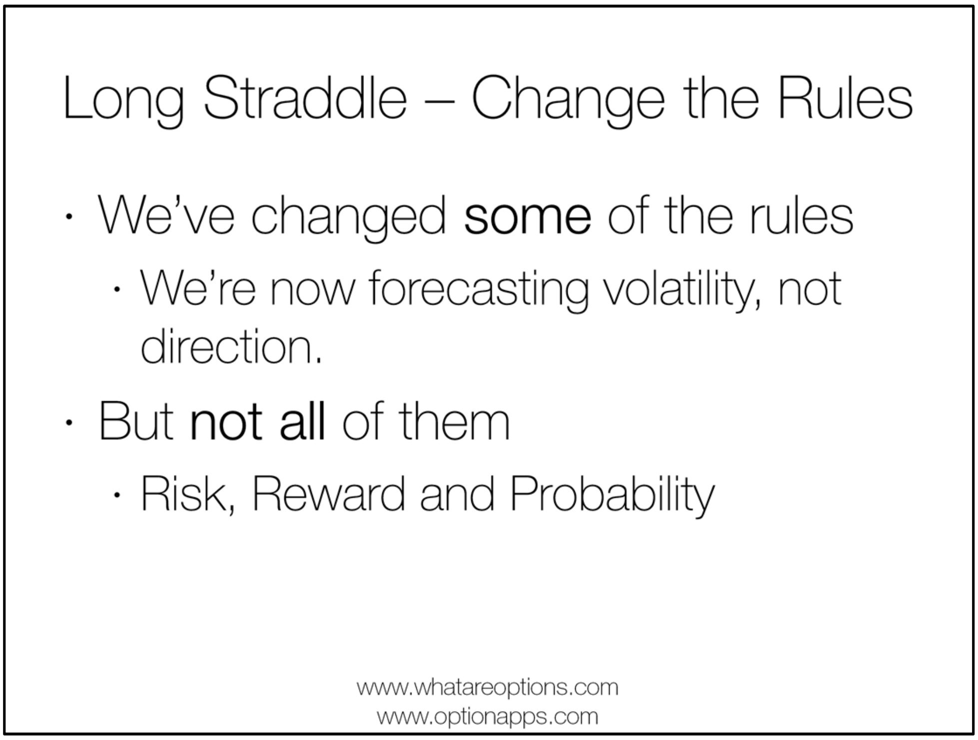
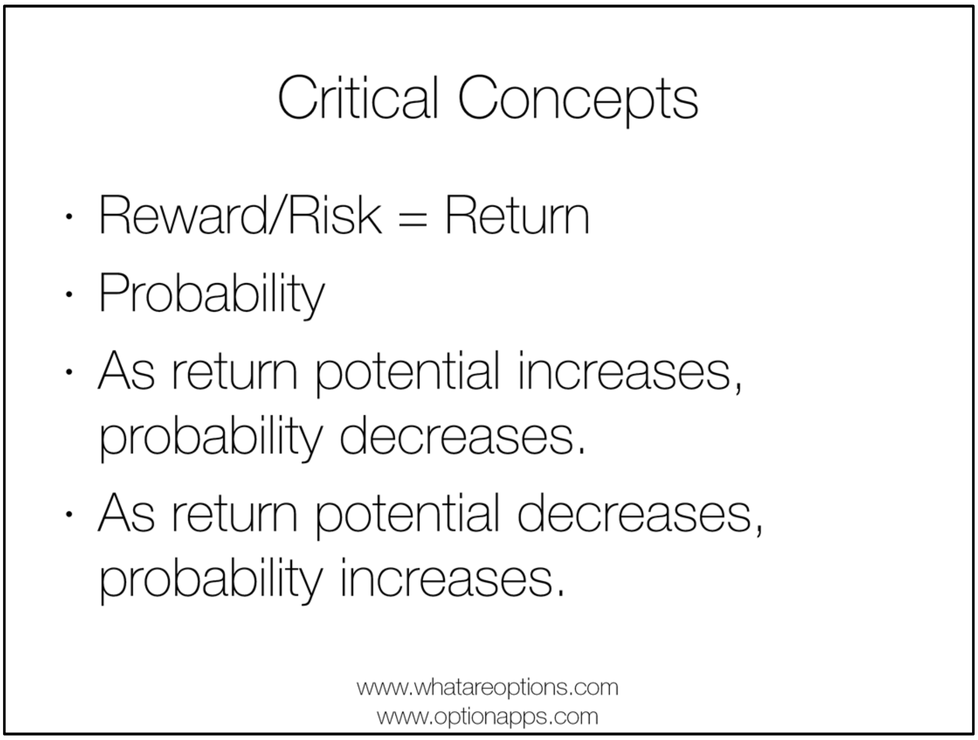
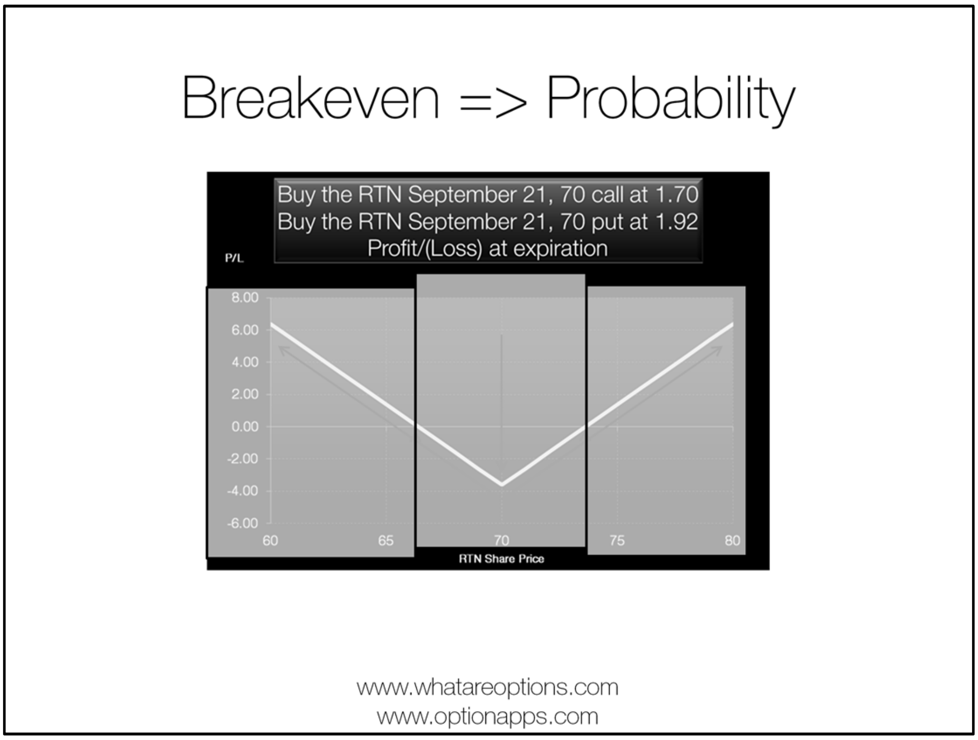
- From that chart, we can clearly observe what we mean when we say we are completely changing the rules of trading.
- A straddle purchase … a long straddle is purely magnitude over time.
- Direction is meaningless.
- You need the stock to move a certain amount over a certain period of time.
- The normal ways of making money in the markets are suspended, because you are no longer concerned about up or down.
- All you care about is magnitude -- around 5% -- over time – 59 days.



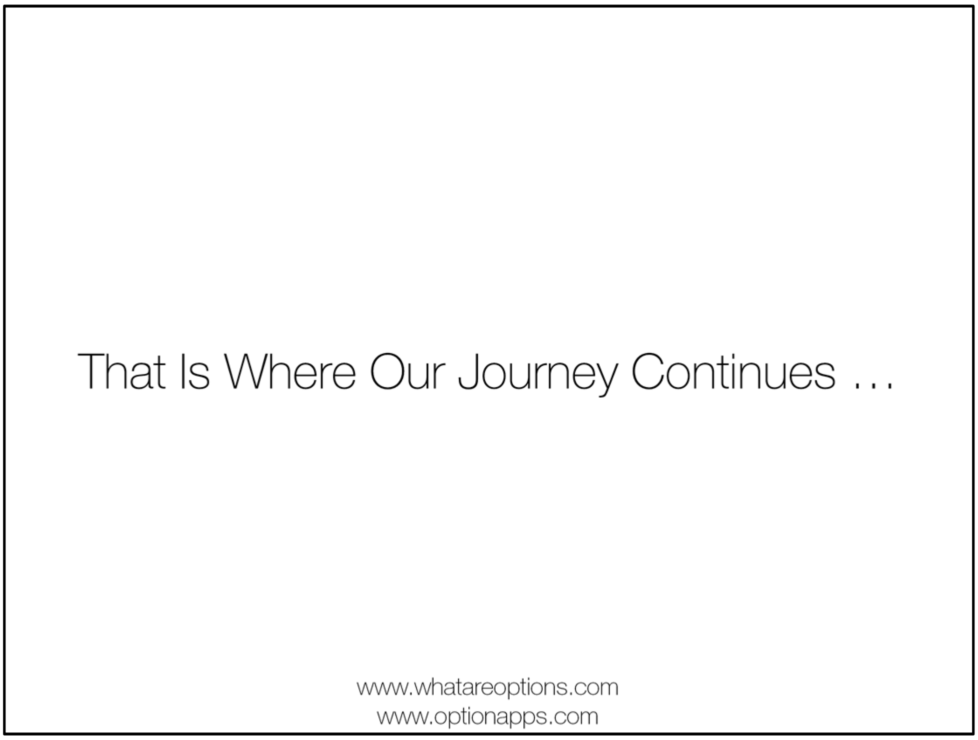
- Although we've changed some of the rules …
- we've changed our forecast from direction to volatility …
- We haven't changed them all.
- Those rules you can never change involve risk, reward and probability, and how they relate to one another.



- Earlier in this course, we discussed critical concepts.
- It’s so important, I want to go over it again.
- Risk, reward and probability will always remain in balance.
- That’s a rule you will never suspend.
- Also, we said that as probability increases, risk increases.
- And, as probability decreases, risk decreases.
- Let’s add a definition … Return
- Return is nothing more than reward divided by risk.
- Let’s also look at the inverse of that relationship between probability, risk and reward.
- As return potential increases, probability decreases.
- As return potential decreases, probability increases.
- That is, a T-bill has a higher probability of making money than a lottery ticket.
- The amount of money you make is going to be small, but it’s pretty certain you’re going to get paid back.
- The bottom line is, probability is a crucial ingredient when it comes to analyzing ANY investment
- Whether it’s a bond, a stock, a commodity, a building, or an option. It doesn’t matter.
- You can’t properly assess and investment without knowing your risk, your reward and your probability of winning and probability of losing.



- So how does all of this relate to option trades?
- Well, we've spent a substantial amount of time discussing the *concept* of risk and reward.
- And we've spent a substantial about of time discussing the details of risk
- Plus we've spent a substantial about of time discussing the details of reward.
- And we've spent a decent amount of time discussing the concept of probability.
- We've reached the point where it's almost time to start discussing the details of probability.
- I will say this, when discussing the risk and reward potential for all those options strategies we looked at, we also covered breakeven …
- We showed you how to calculate the breakeven at expiration for each and every trade …
- Well, that breakeven price is crucial.
- In the straddle, if the stock is in between the lower and upper breakeven, the trade loses money.
- If the stock is outside of those boundaries, the trade makes money.
- So we know the price range in which profits are generated and the price range in which losses are generated.
- Basically, we need to determine the odds that the stock will be within that range at expiration.
- And what are the odds the stock will be outside that range.



And that is where our journey continues.

"L' èsperance mathematique du spèculateur est nul"

PROBABILITY

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- [Chapter 7]
- Welcome to Chapter 7 of What Are Options? My name is Don Fishback.
- We have spent a considerable amount of time learning about options.
- We've learned the terminology.
- We've learned the mechanics.
- We've learned the what, the how and the why for a wide variety of simple options strategies you can begin using right away to speculate, protect and generate extra income.
- We've also learned how options are similar to insurance, which we've learned is a probability-based business.
- Now it's time to learn how to assess the probability those options strategies.
- To do that, we're going to begin with a history lesson.
- And then, we are going to get into some of the math.
- We will show you the formulas, so you can perform the calculations on your own if you so choose.
- But don't fret, there is a wide array of software that can perform these calculations for you.
- So I don't want you to worry about the exact equations.
- I *DO*, however, want you to understand the concept behind this process.
- So let's get started.
- It all begins with a phrase from a French mathematician.

"The mathematical expectation of a speculator is zero."

-- Louis Bachelier

Theorie de la Speculation, Paris, 1900

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- Translated, that means "The mathematical expectation of a speculator is zero."
- That's going to be very important because it speaks to concept of fair odds.

Now, we're going to explore the ways in which the principles **probability** and **fair odds** can be applied to the evaluation of **options** strategies.

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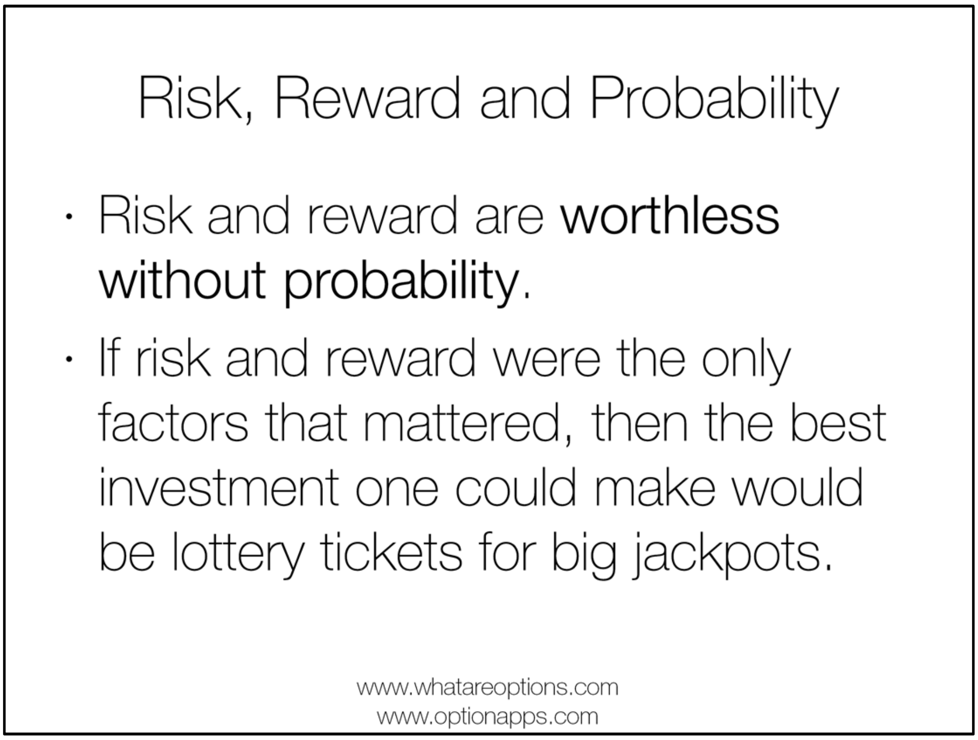
- We're going to explore the ways in which the principles probability and fair odds can be applied to the evaluation of options strategies.



- As we noted before, risk and reward are important. But without probability, risk and reward are useless.
- If risk and reward were the only factors that mattered, then the best investment one could make would be lottery tickets for big jackpots.

Risk, Reward and Probability

- Probability varies as risk and reward varies.
- Now, we're going to switch gears and look at a **game of chance**.

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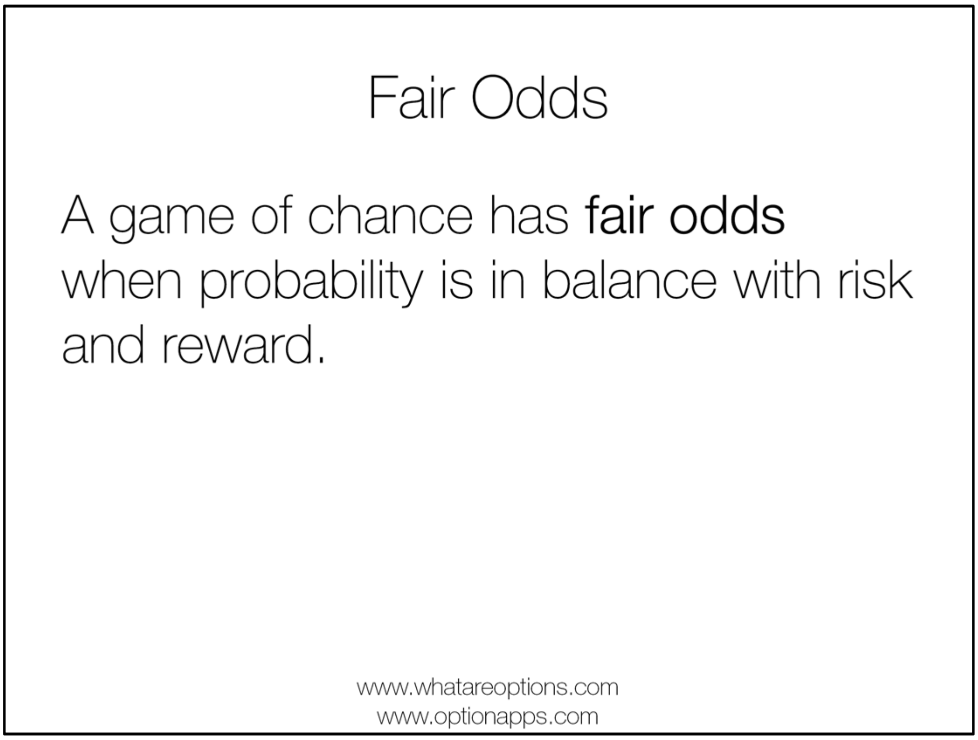
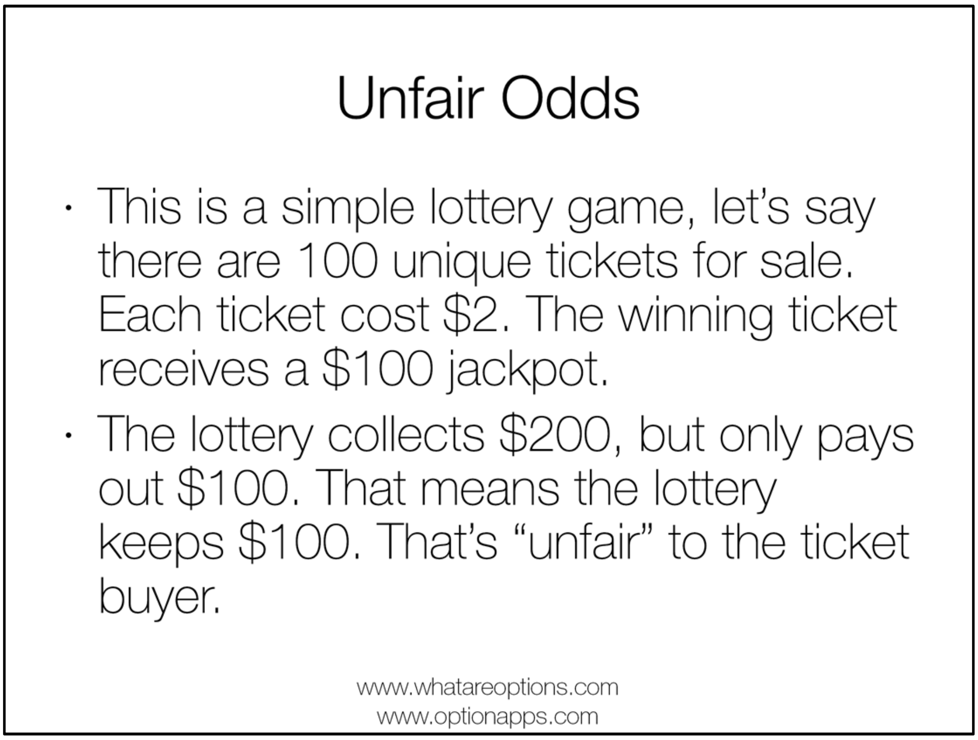
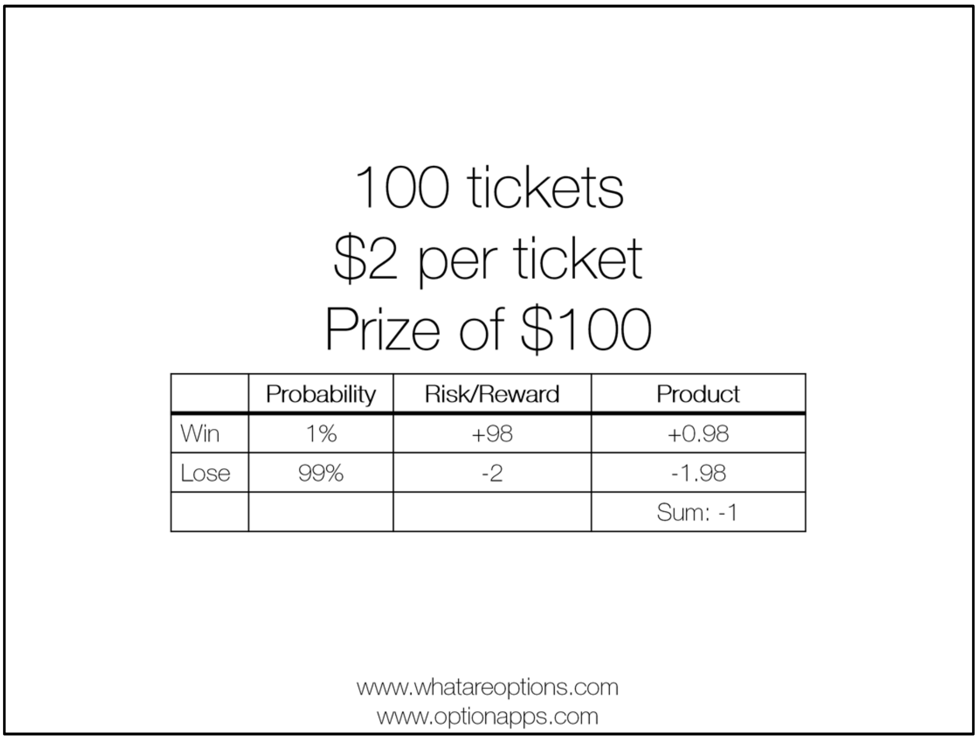
- As we discussed previously, probability varies as risk and reward varies.
- We're going to look more deeply at how those odds vary, and to do that …
- We're going to switch gears and look at a game of chance.



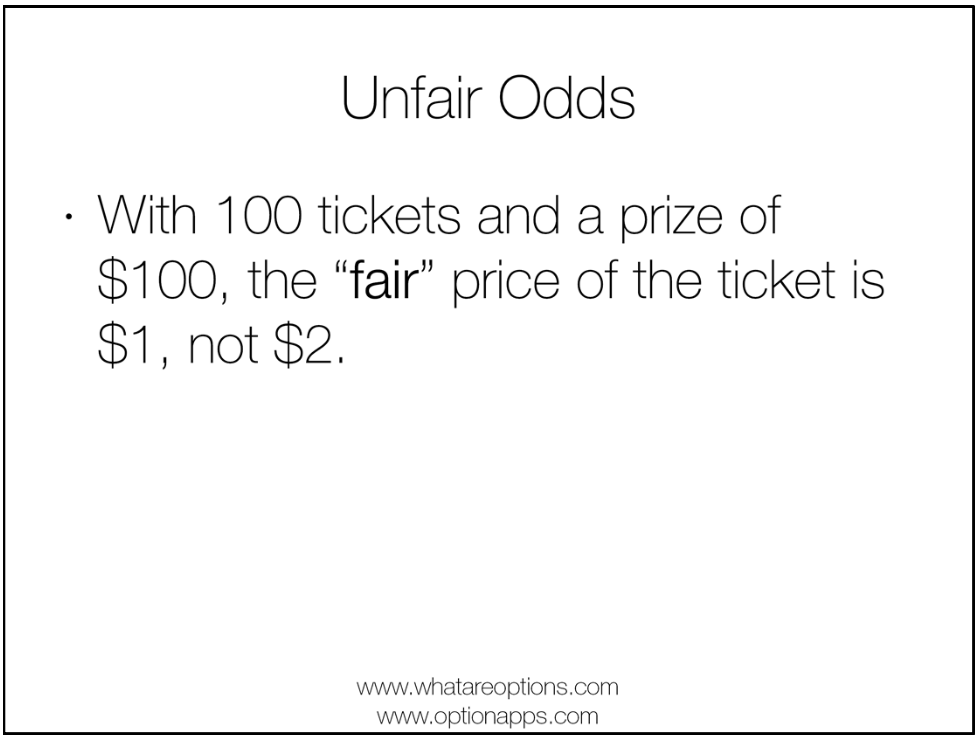
- In a game of chance, it’s important to realize that rational players are only going to play the game if they think the odds are fair.
- If they think the odds are unfair, a rational player won’t play.
- Now, let me just say that in the case of lotteries and casinos, because the state and the casino have an advantage, the odds are unfair.
- That tells you something about those players … they are irrational.
- But that’s another matter.
- We’re going to assume that options traders are more rational than that.
- And that means, for options traders, and for rational players in any speculation, probability, risk and reward must be in balance.
- Let’s look at an example to illustrate what we mean.



- We're going to assume a simple game of chance.
- This is a simple lottery game, let's say there are 100 unique tickets for sale. Each ticket cost $2. The winning ticket receives a $100 jackpot.
- The lottery collects $200, but only pays out $100. That means the lottery keeps $100. That's "unfair" to the ticket buyer.



- What we’re going to do now is learn how to mathematically evaluate that game.
- We’re going to create a probability-weighted evaluation of winning and losing … of risk and reward.
- Let’s look at the win first.
- If you buy one ticket, and only one out of 100 are winners, you have a 1% chance of winning.
- You spent $2, and you get a prize of $100, so your reward potential is $98.
- Now, we multiply probability of winning by the reward potential; the result is +0.98.
- Now let’s look at the losing side.
- If you buy one ticket, and only one out of 100 are winners, you have a 99% chance of losing.
- We multiply probability of losing by the loss amount; the result is -1.98.
- Now, we simply add the two.
- The result is -1.
- That means if we play this game over and over, we should, on average, lose $1.
- We’ll almost always lose 2 dollars, but every now and then we’ll get a big score.
- But that big score won’t be sufficient to offset all those losses.
- So on average, we lose $1 per game.



- That negative $1 tells us that the fair PRICE of the ticket is $1 too high.
- If the price of the ticket is $2, and that price is $1 too high, then we can conclude that that the fair price of the ticket is $1.

100 tickets
$1 per ticket
Prize of $100

	Probability	Risk/Reward	Product
Win	1%	+99	0.99
Lose	99%	-1	-0.99
			Sum: 0

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- We can do the math to confirm that.
- If you buy one ticket, and only one out of 100 are winners, you have a 1% chance of winning.
- The probability hasn't changed.
- But the amount you bet did change.
- You spent $1, and you get a prize of $100, so your reward potential is now $99.
- Now, we multiply probability of winning by the reward potential; the result is +0.99.
- Now let's look at the losing side.
- If you buy one ticket, and only one out of 100 are winners, you have a 99% chance of losing.
- We multiply probability of losing by the loss amount which is $1; the result is -0.99.
- We add the two and the result is zero.
- That means if we play this game over and over, we should, on average, neither lose nor win.
- It's a wash.

Reverse the Analysis

- With a prize of $100 and a $2 ticket, the number of tickets to sell to make the game "**fair**" is 50, not 100.
- We can use risk ($2) and reward ($100) to determine **fair odds** (50 tickets).

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- What we just did is modify the price while keeping the probabilities consistent to get the fair odds.
- But what if, instead of modifying the price, we fixed the price and modified the probabilities to see what the probability needs to be in order to get fair odds.
- It's actually quite simple. You just take the prize and divide it by the ticket price to determine how many tickets need to be sold.
- But think about what we just did.
- And then realize that we can use risk and reward to determine fair odds.

50 tickets
$2 per ticket
Prize of $100

	Probability	Risk/Reward	Product
Win	2%	+98	1.96
Lose	98%	-2	-1.96
			Sum: 0

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- We can do the math to verify.
- Let's look at the win first.
- If you buy one ticket, and only one out of 50 are winners, you now have a 2% chance of winning.
- You spent $2, and you get a prize of $100, so your reward potential is $98.
- Now, we multiply probability of winning by the reward potential; the result is +1.96.
- Now let's look at the losing side.
- If you buy one ticket, and only one out of 50 are winners, you have a 98% chance of losing.
- We multiply probability of losing by the loss amount; the result is -1.96.
- Now, we simply add the two.
- The result is 0.
- That means if we play this game over and over, we should, on average neither make money nor lose money.
- It's a wash.
- The odds are fair to all players.

Price can tell us the **fair odds.**
Odds can tell us the **fair price.**

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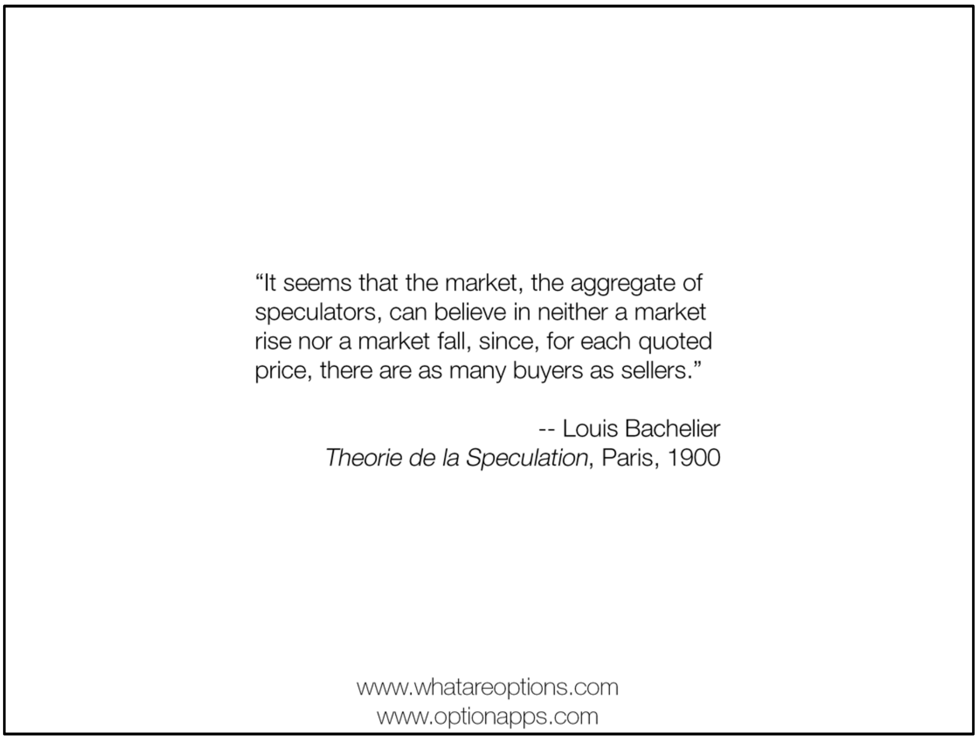
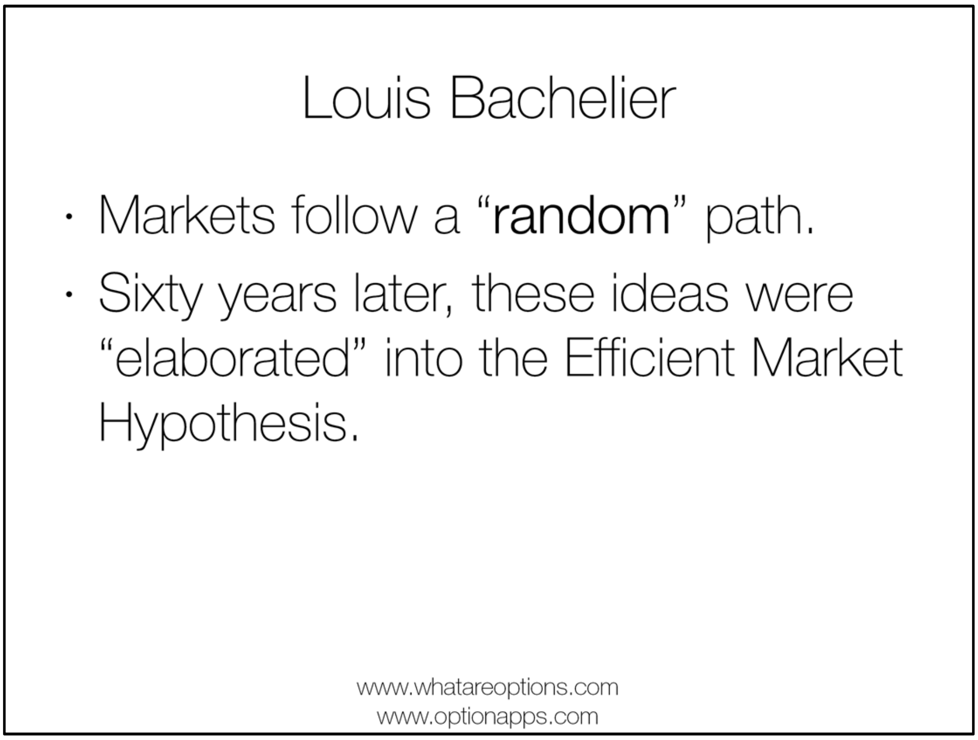
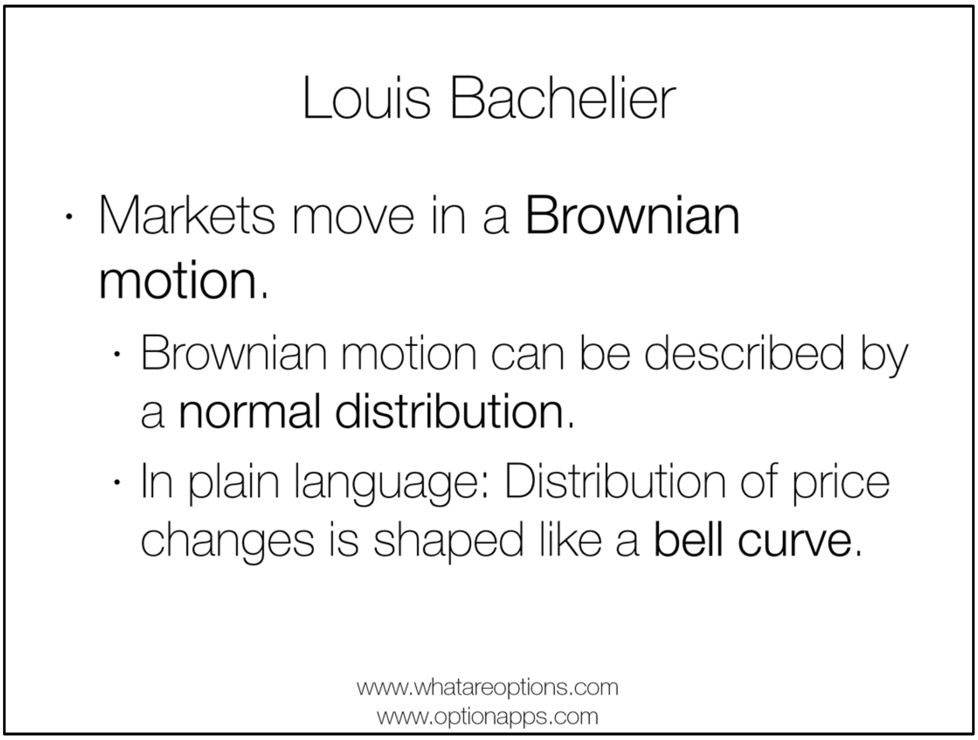
- So what this proves is that price … risk of $2 reward potential $100 … can tell us the fair odds.
- And odds … 1 ticket out of 100 … can tell us tell the fair price.



- Now we're going to look at another pioneering idea first enunciated by the famous French mathematician, which was totally radical at the time, and remains hotly debated even today.
- "It seems that the market, the aggregate of speculators, can believe in neither a market rise nor a market fall, since, for each quoted price, there are as many buyers as sellers."



- Bachelier proposed the idea that the markets follow a "random" path.
- Sixty years later, these ideas were "elaborated" into the Efficient Market Hypothesis.



- Here’s what Bachelier proposed.
- Markets move in a Brownian motion.
- Brownian motion is named after a botanist who found that pollen grains tended to bounce around randomly.
- What’s interesting is that Brownian motion can be described by a normal distribution.
- In plain language, that means the distribution of price changes is shaped like a bell curve.

Louis Bachelier

- Option prices should be related to **volatility**, as measured by **standard deviation**.

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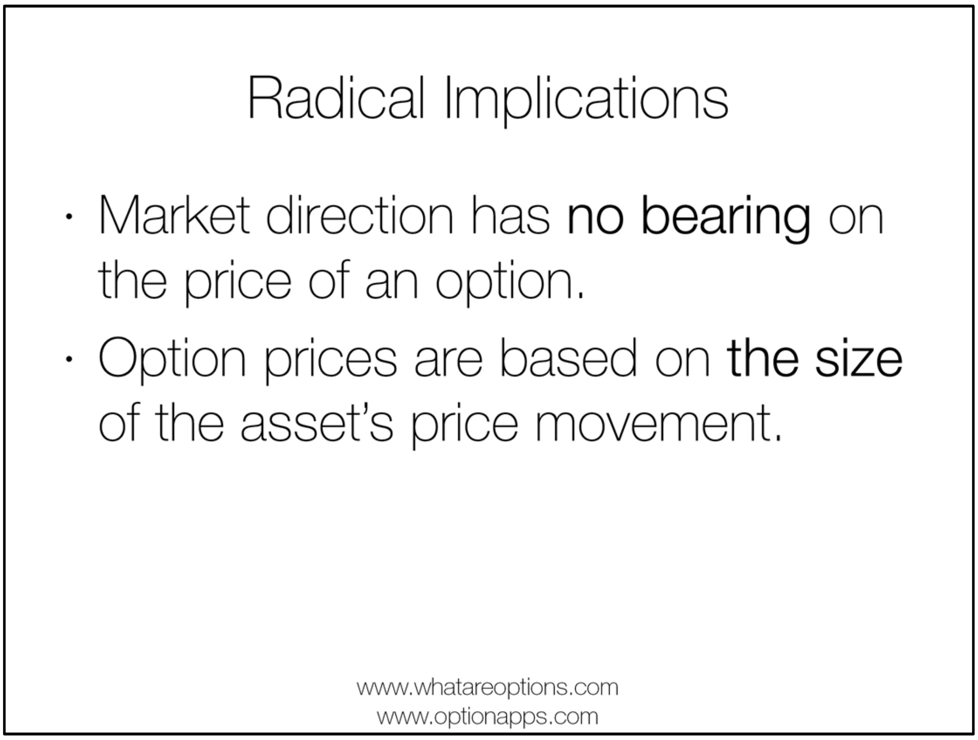
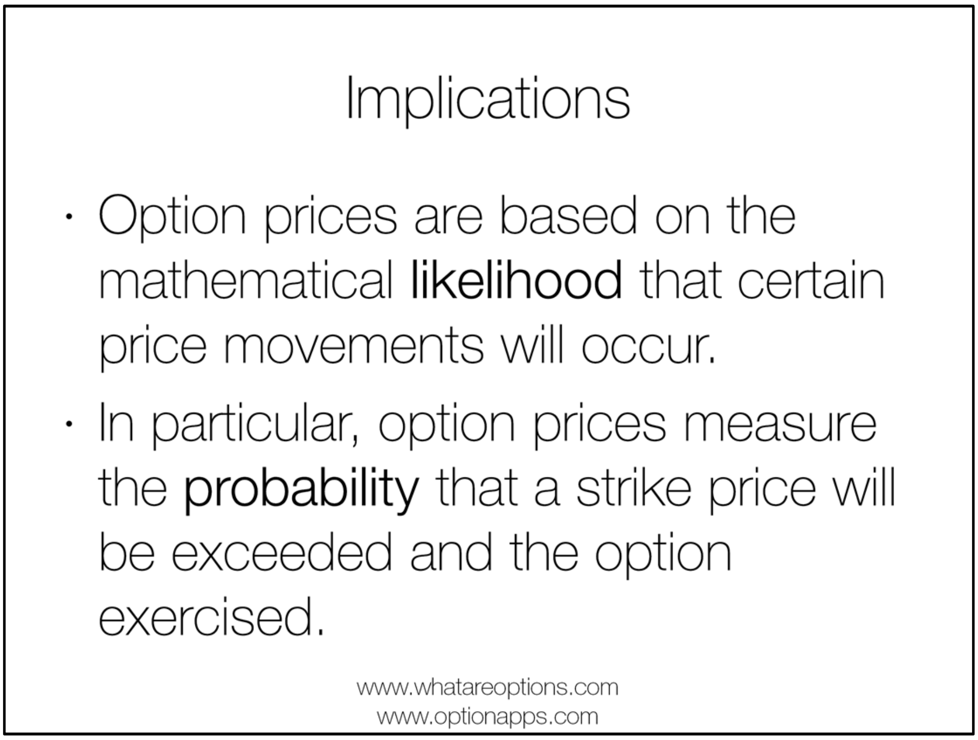
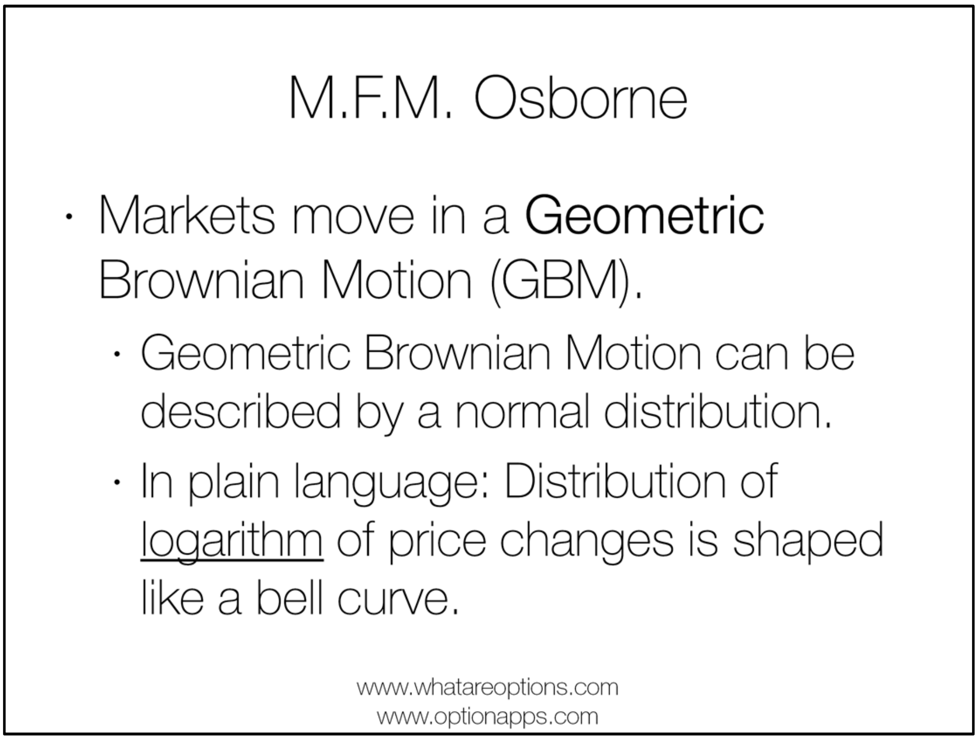
- Here’s why that last sentence is important.
- Through the use of statistics, you can use a normal distribution to determine probability.
- We use a statistic called standard deviation to do that.
- In the financial world, we call standard deviation: volatility.
- I’ll get into the details in a minute, but first, let’s think about what Bachelier proposed.
- His revolutionary idea was that option prices were based on the standard deviation of stock price changes.



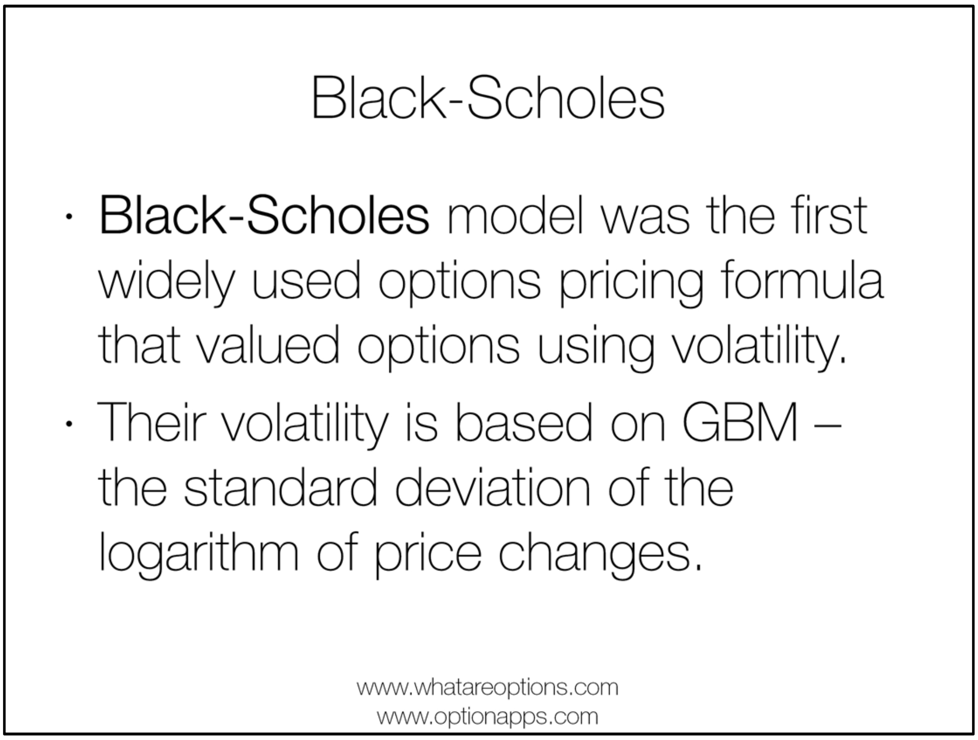
- Now think what that means, because that has some radical implicatoins.
- Market direction has no bearing on the price of an option.
- Option prices are based on the *size* of the asset's price movement.



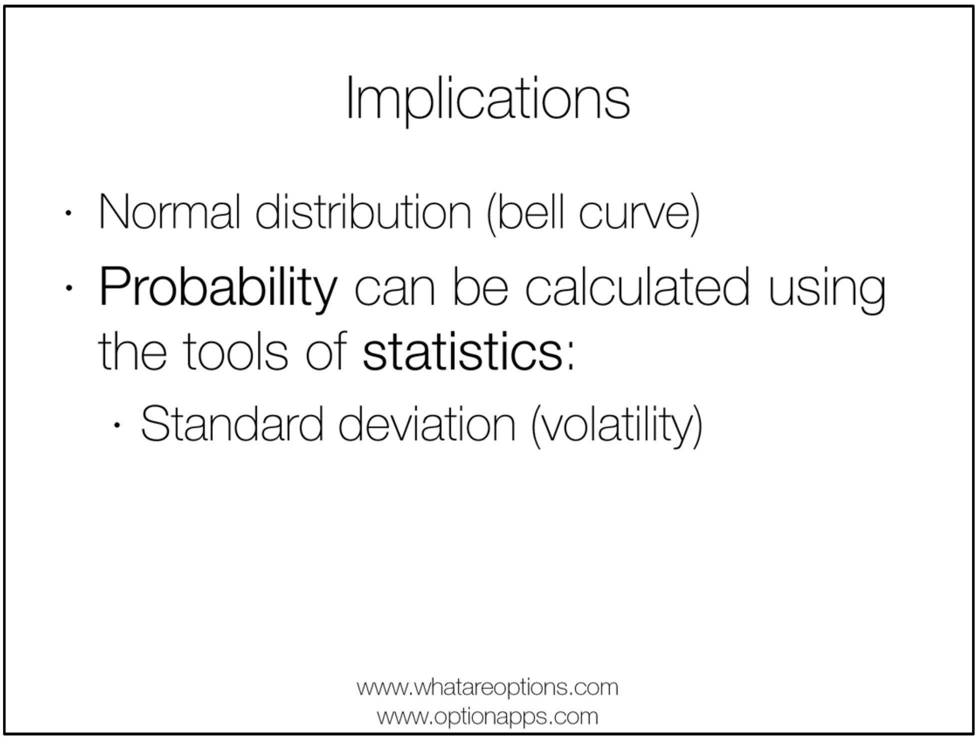
- Specifically, option prices are based on the mathematical likelihood that certain price movements will occur.
- In particular, option prices measure the probability that a strike price will be exceeded and the option exercised.
- It’s kind of like that game of chance, where the price of the ticket and the jackpot amount told us how many tickets, and consequently, the probability of winning should be for the game to be fair.
- What’s really interesting is that Bachelier wasn’t the typical mathematical theoretician.
- He actually tested his ideas.
- He calculated that the buyer of a 45-day option had a 40% chance of making a profit.
- Looking at real trading data, he found that 39% of the options made money for their buyers.
- The ironic part of all of this is that Bachelier’s work was buried after he wrote it.
- It basically disappeared for decades until it was revealed to Nobel Prize winning economist Paul Samuelson by Jimmy Savage.



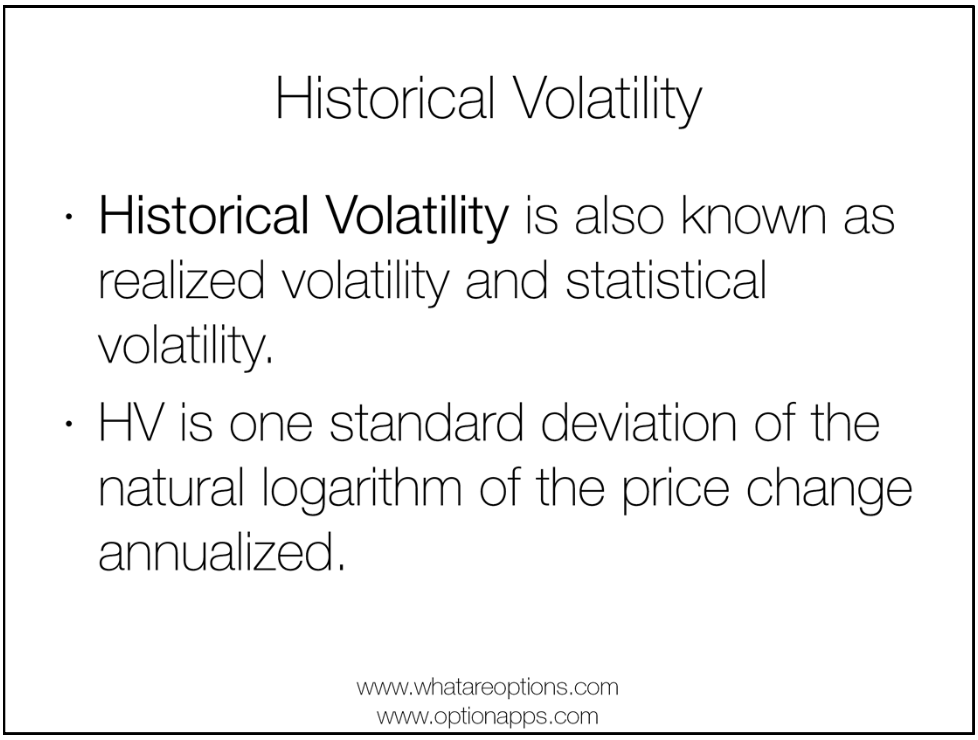
- Independent of Bachelier, a gentleman named M.F.M. Osborne came to a similar conclusion as Bachelier.
- But there was a key difference.
- Instead of Brownian motion, he found that markets moved in a Geometric Brownian Motion.
- Like normal Brownian motion, the movement can be described by a normal distribution.
- Instead of raw percentages, however, GBM used the logarithm of price changes.



- A few years after Osborne's work, Fischer Black and Myron Scholes developed an option valuation model.
- Again, they performed their work independently.
- Yet the result of their work brought them to the exact same conclusion:
- An option's value is related to the underlying asset's volatility and ...
- Assets tend to follow a GBM, so that volatility calculates the standard deviation of log returns.
- That last statement has vitally important implications.



- Remember earlier, we said that brownian motion can be described by a normal distribution.
- That means we can use the properties of the bell curve.
- One of those properties Probability.
- We can use statistics to calculate probability.
- The statistic we're most interested in is called standard deviation.
- We're going to use standard deviation to describe volatility.



- There are different kinds of volatility.
- The one that is calculated by measuring the movement of stock prices is called historical volatility.
- Some people call historical volatility by a different term.
- It’s been called realized volatility.
- It’s also been called statistical volatility.
- No matter what you call it, measured volatility describes the following mathematical formula.
- Volatility is one standard deviation of the natural logarithm of the price change annualized.

10-day Historical Volatility

- Measures standard deviation of 10 price changes/relatives.

Date	SPY	Price relatives	Natural log of price relatives	std. deviation	10-day volatility
7/1/2013	161.36				
7/2/2013	161.21	0.9991	-0.0009		
7/3/2013	161.28	1.0004	0.0004		
7/5/2013	163.02	1.0108	0.0107		
7/8/2013	163.95	1.0057	0.0057		
7/9/2013	165.13	1.0072	0.0072		
7/10/2013	165.19	1.0004	0.0004		
7/11/2013	167.44	1.0136	0.0135		
7/12/2013	167.51	1.0004	0.0004		
7/15/2013	168.16	1.0039	0.0038		
7/16/2013	167.53	0.9963	-0.0038	0.005491	8.72%

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- Here’s the exact method for calculating historical volatility.
- In this example, we’re going to calculate the 10-day historical volatility.
- That means we need 10 days of price changes for the stock we’re going to measure.
- So our first step is to get the prices.
- Then, we calculate the price change in relative terms.
- That’s nothing more than taking current day’s price and dividing it by the previous day’s price.
- Next, we calculate the natural logarithm of that price change.
- Then, we calculate the standard deviation of the most recent 10 price changes.
- Then we annualize that standard deviation by multiplying the it by the square root of the number of periods in a year.
- Because we’re using daily data, it means we need to use 252 trading days.
- When you use 252, it’s best to be consistent and use trading days in any calculations that require this volatility figure.

Date	SPY	Price relatives	Natural log of price relatives	std. deviation	10-day volatility
7/1/2013	161.36				
7/2/2013	161.21	0.9991	-0.0009		
7/3/2013	161.28	1.0004	0.0004		
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7/8/2013	163.95	1.0057	0.0057		
7/9/2013	165.13	1.0072	0.0072		
7/10/2013	165.19	1.0004	0.0004		
7/11/2013	167.44	1.0136	0.0135		
7/12/2013	167.51	1.0004	0.0004		
7/15/2013	168.16	1.0039	0.0038		
7/16/2013	167.53	0.9963	-0.0038	0.005491	8.72%
7/17/2013	167.95	1.0025	0.0025	0.005268	8.36%
7/18/2013	168.87	1.0055	0.0055	0.005117	8.12%
7/19/2013	169.17	1.0018	0.0018	0.004691	7.45%
7/22/2013	169.50	1.0020	0.0019	0.004666	7.41%
7/23/2013	169.14	0.9979	-0.0021	0.004738	7.52%
7/24/2013	168.52	0.9963	-0.0037	0.005090	8.08%
7/25/2013	168.93	1.0024	0.0024	0.003132	4.97%

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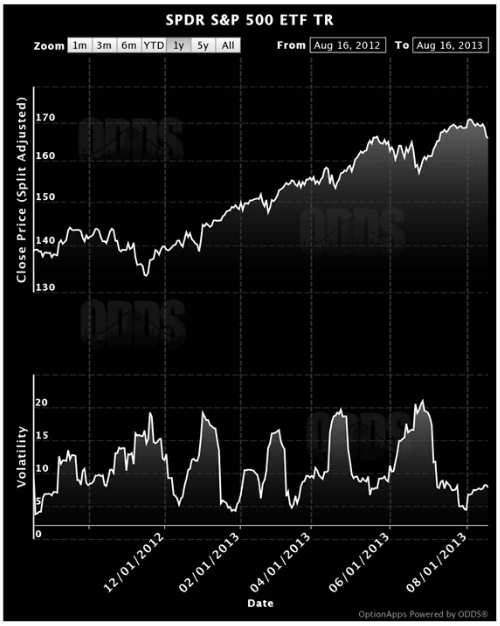
- Now that prior table gave us the 10-day historical volatility for one day.
- But what about other days?
- You can extend that by performing the volatility calculation over a rolling 10-day period.
- So the 10-day historical volatility on July 16 was 8.72%
- The 10-day historical volatility on July 17 was 8.36%
- The 10-day historical volatility on July 18 was 8.12%
- You can perform this calculation repeatedly over as many days as you want, and you can graph it.

10-Day Historical Volatility



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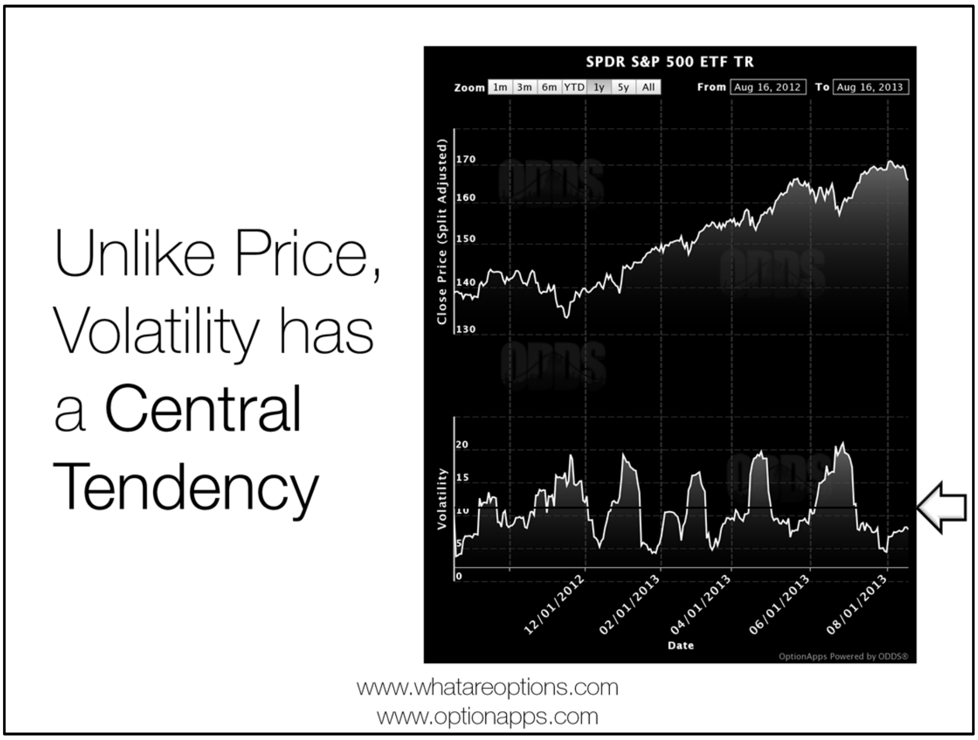
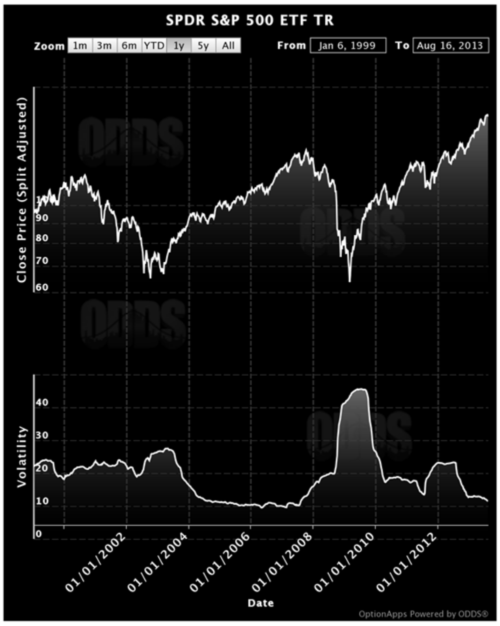
- If you do, you get a chart that looks like this. The upper chart is the stock price.
- The lower chart is the 10-day historical volatility.
- You can see that it varies day-by-day.
- During a recent 1-year period, the 10-day historical volatility got as high as 20% and as low as 4%.



- Here's something important to note about this chart.
- Look at the top chart first; it's the asset PRICE.
- It's in a clear uptrend.
- There is a DIRECTION to it.
- Now look at the bottom chart.
- When it gets high, it goes down.
- When it gets low, if goes up.
- When the price swings of an asset get too big, they tend to shrink.
- When the price swings of an asset get too small, they tend to increase.
- In other words, unlike a stock's price, Volatility has a tendency to move to the center.
- That is an important property that you can only take advantage of with options.

- Remember this?
- It’s from an earlier chapter.
- It’s a checklist outlining the reasons WHY you would buy a call.
- We provided you with a checklist like this for every trade.
- Look at the second bullet point below the question: Magnitude
- MAGNITUDE, it’s a critical component of every option trade.
- Now, about what we just said about central tendency.
- When volatility is extremely low, it’s likely to go up. The magnitude is likely to increase.
- When volatility is extremely high, it’s likely to go down. The magnitude is likely to decrease.
- What this means is, you can look at a volatility today and compare it to history, and from that you can get an idea as to what type of trade might be the most appropriate for the situation.
- For example, when volatility is extremely high, central tendency says it volatility is most likely to drop.
- Therefore, you should focus on option selling strategies.

1-Year Historical Volatility



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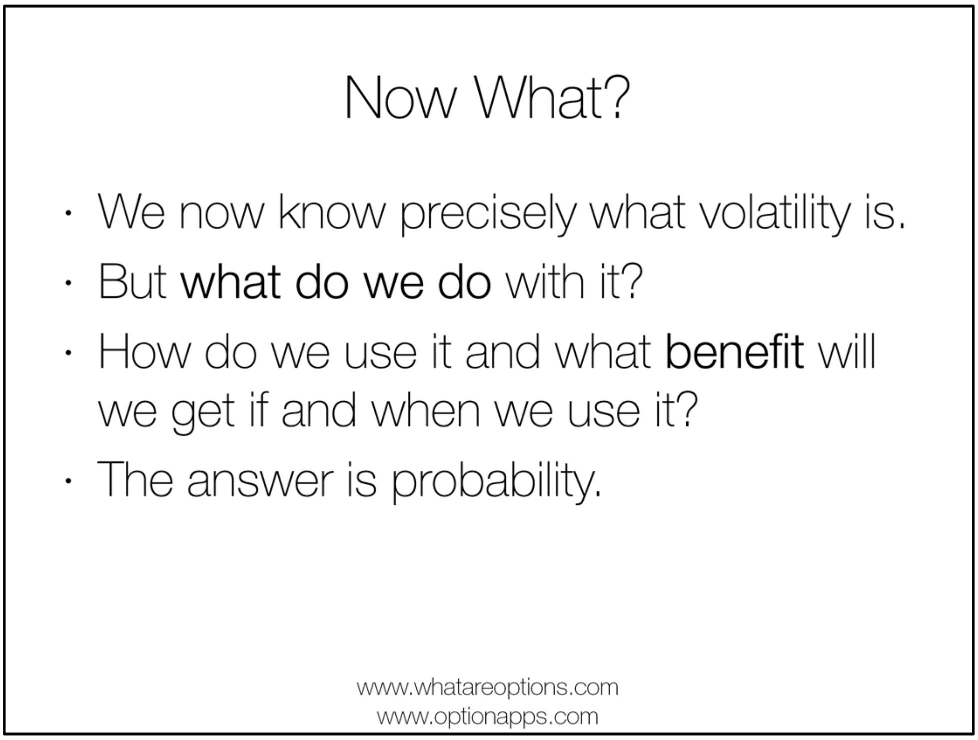
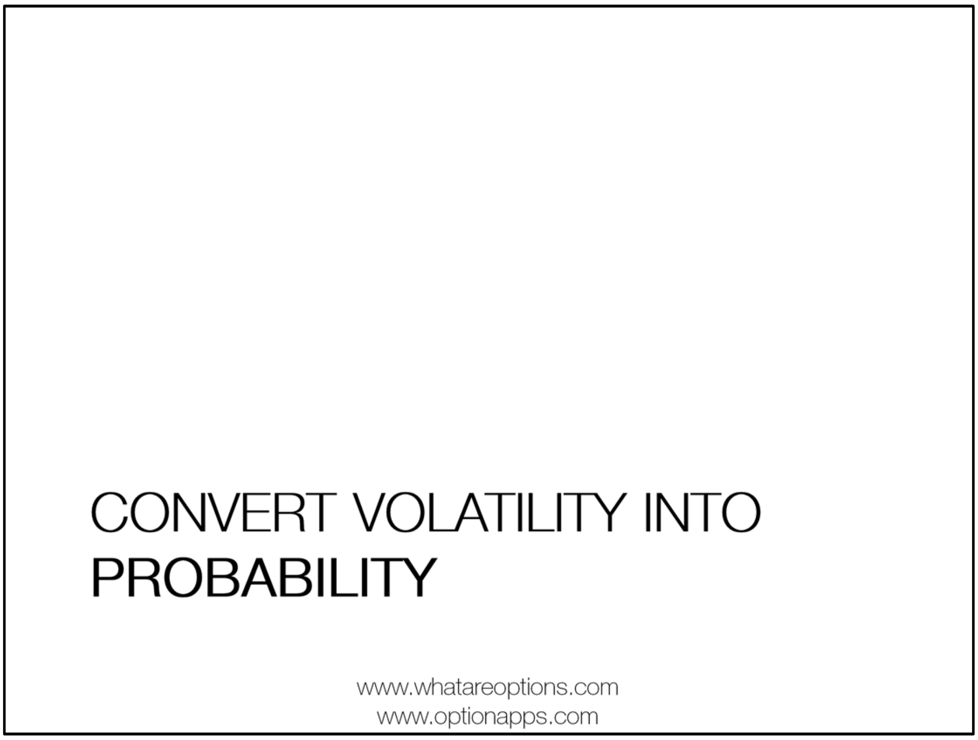
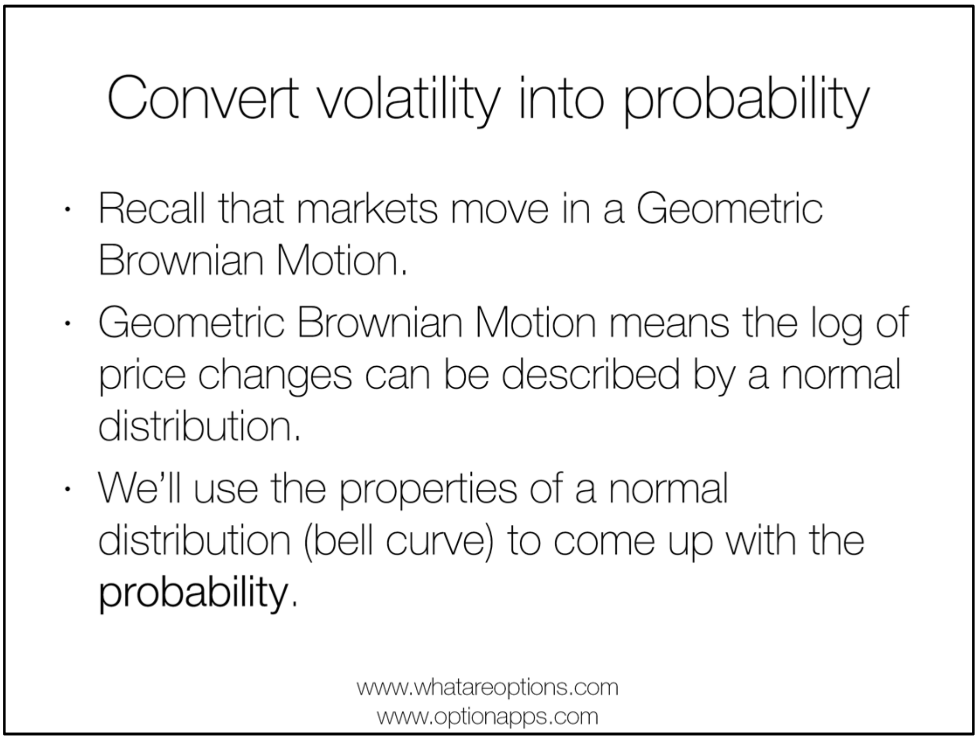
- So far, we covered volatility over a 10-day period. What if we wanted to extend the measuring period from 10 days to 1 year?
- That's easy, instead of calculating the standard deviation of 10 price changes, we calculate the standard deviation of 252 price changes.
- This is pretty easy to do in a spreadsheet.
- And it's REALLY easy if you let options software do it for you.
- Here we see the 1-year volatility of the S&P 500 SPDR ETF.
- Take a look at the date range at the top of the chart … this goes all the way back to 1999.
- This is a long-term chart encompassing more than 14 years.
- You can see how the market fluctuated, as well as volatility itself.
- In 2006 and 2007, volatility was low.
- Then it started to climb.
- In 2008, volatility skyrocketed to a level not seen since the 1930s.
- Since that peak, volatility has pulled back to a moderate level.



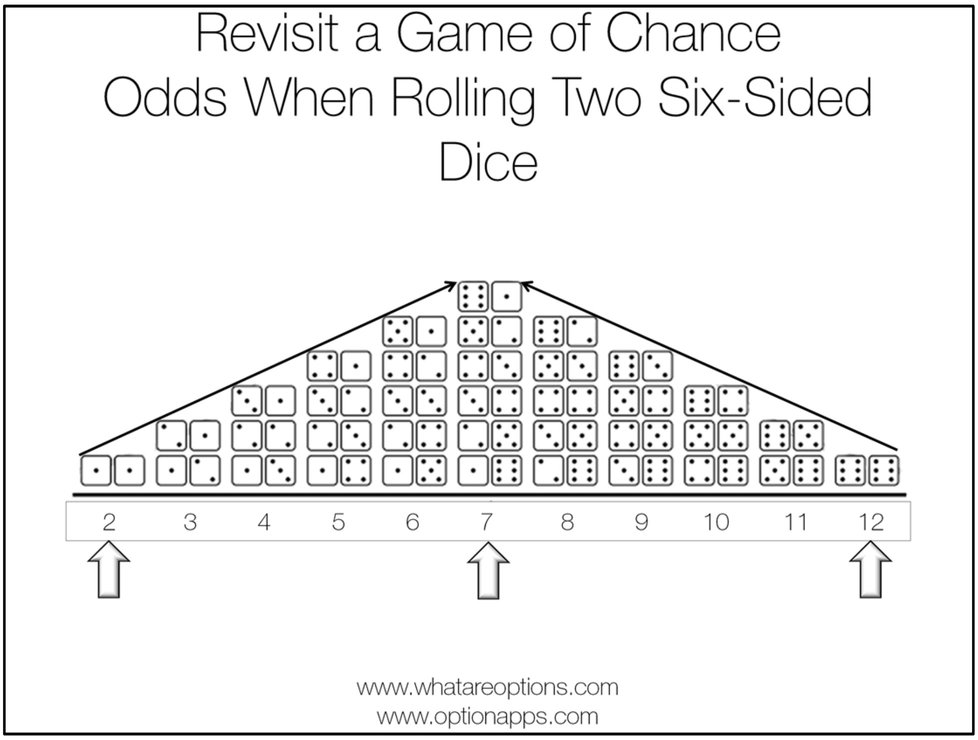
- So that's what volatility looks like.
- We've learned how to calculate it.
- We've even learned a bit about its history.
- Now what?
- How do we use it and what benefit will we get if and when we use it?
- We've briefly discussed how you can use the central tendency of volatility as a trade selection tool.
- But is that it? Or is there something more?
- Yes, there is something more.
- The answer is probability, and that's what our next chapter will investigate.



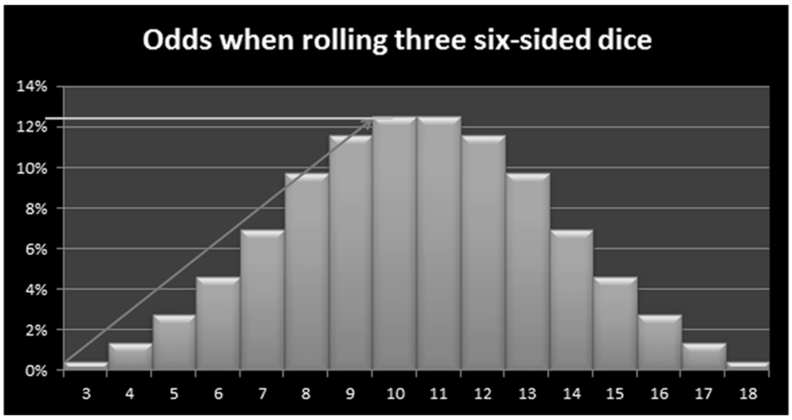
- [Chapter 8]
- Welcome back to What Are Options. My name is Don Fishback, and we've arrived at Chapter 8.
- Let's begin by reviewing what we've learned.
- We've learned that risk and reward and probability are the major factors that determine the outcome of a speculation.
- We have not yet learned how to calculate probability.
- But we have learned how to calculate the risk and reward of an option trade.
- We've also learned how to calculate the breakeven.
- And we've learned how to calculate volatility.
- But like I said, we have not learned how to calculate probability … yet.
- Well the that time has arrived.
- I want to emphasize that there is software that perform these calculations for you.
- You do not need to do this yourself.
- I am providing this information only so you have the opportunity to understand the concept.
- You do not need to get into the details unless you want.



- To begin, I want you to recall a key point in the last chapter.
- That is, markets move in a Geometric Brownian Motion. I hate that name, because it makes it sound so complicated, but it's not.
- Geometric Brownian Motion means the log of the price changes can be described by a normal distribution.
- The reason we use logarithms has to do with percentages. If a stock is at 100 and drops to 50, it fell 50%. For it to go from 50 back up to its old price of 100 means the stock has to go up 100%.
- Also, a stock can't go below zero. A stock can go up 200%, but it can't go down 200%.
- Logarithms take care of these issues.
- We'll use the properties of a normal distribution -- which is nothing more than the bell curve -- to come up with the probability.
- To illustrate this, we're going to first look at another game of chance.



- Here is the probability distribution of a game that involves throwing 2 6-sided dice.
- As you can see, there is only one way to come up with snake eyes, or a total of two.
- There is also only one way to come up with box cars, or a total of twelve.
- But there are six ways to come up with 7.
- There are 36 possible combinations. So the odds or rolling a 7 are 6 out of 36, or 1/6th, or 16.67%.
- Also notice these nice straight lines.
- Now let’s add another dice to the game and see what changes occur.



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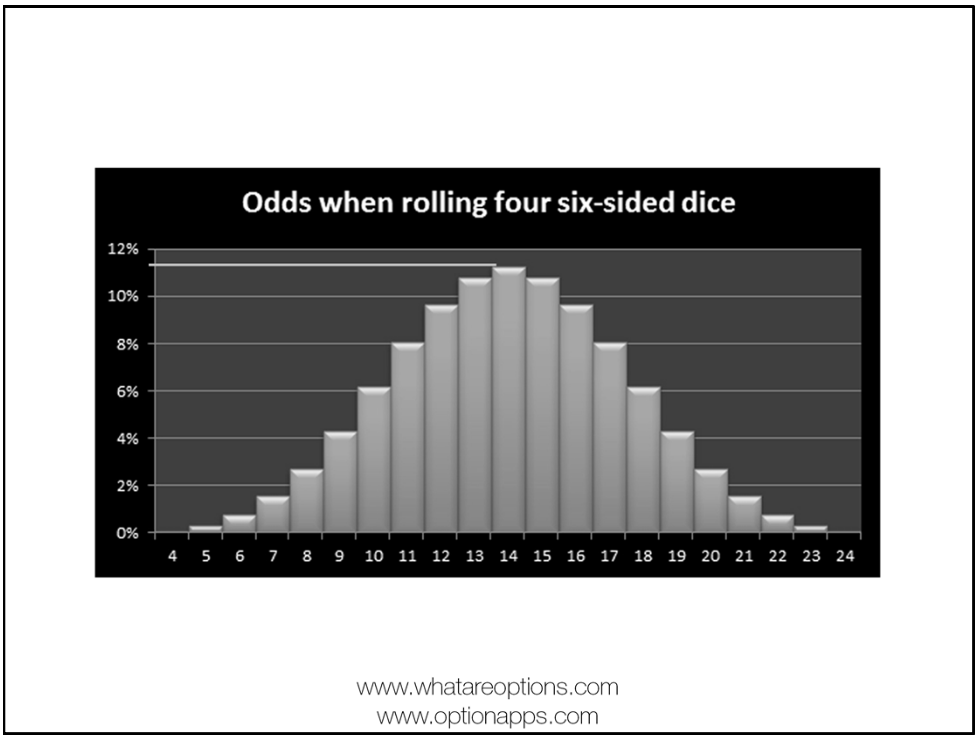
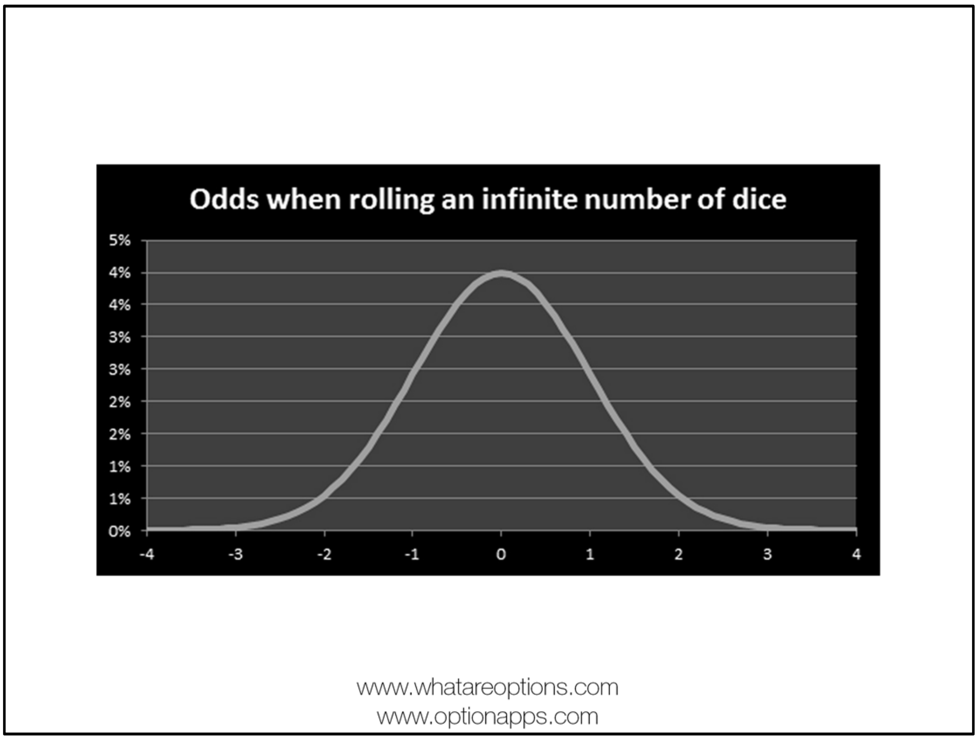
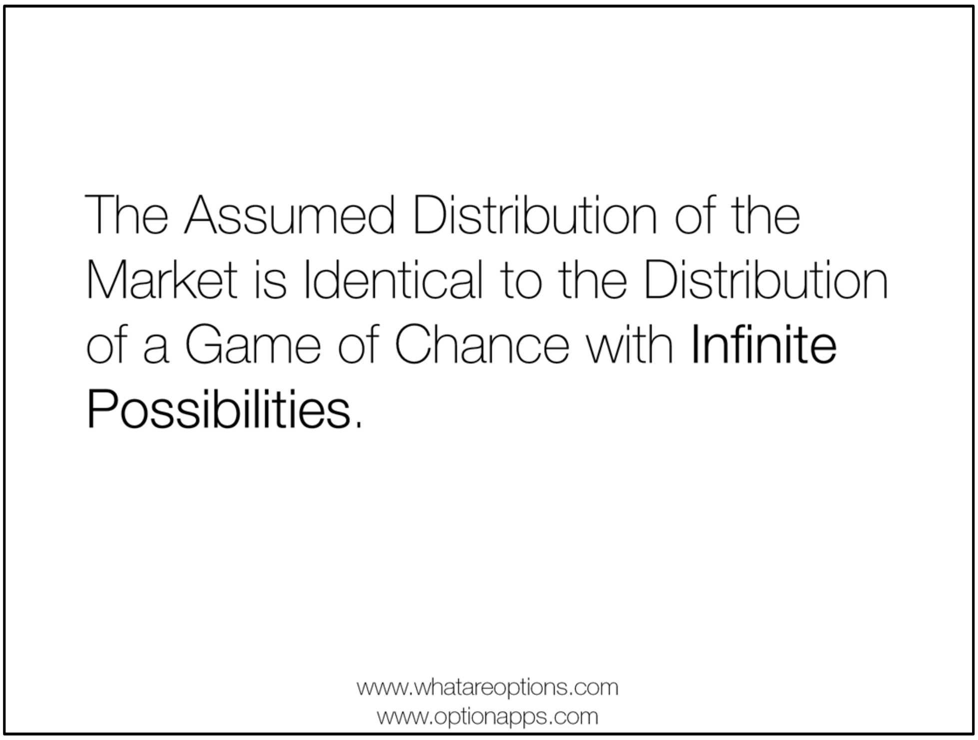
- Here's what it looks like when you have three dice.
- Notice that the maximum probability is less than 16.67%.
- Also notice that the line is not as straight.
- Let's add another dice to the game.



- Notice that the max probability shrinks even further, and the graph is curving even more.
- Now, let's imagine that we added an <u>infinite</u> number of dice to the game.



- This is what you get.
- This is what the probability graph looks like if the dice game has an infinite number of dice …
- When you have an infinite number of possibilities.
- It’s a truly fascinating concept, don’t you think?



- Because that means …
- The Assumed Distribution of the Market is ***Identical*** to the Distribution of a Game of Chance with Infinite Possibilities.
- That's a really neat concept I think.

No fluff here!

For those who want to do this manually, I hope you remember your higher-level math.

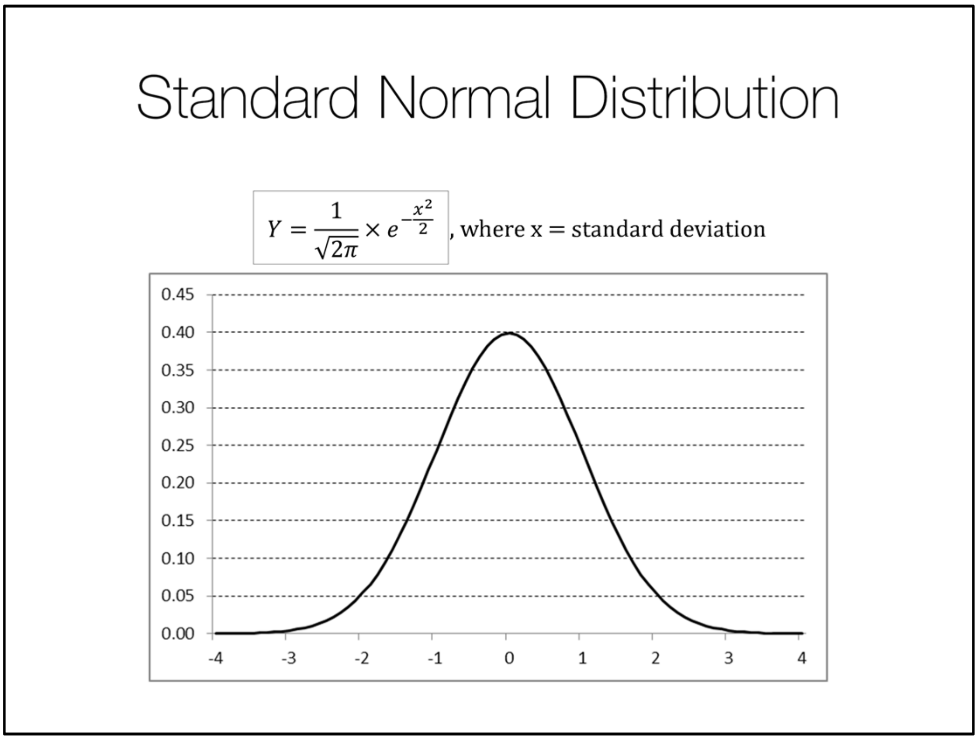
Fortunately, those who don't want to get into the math, there is software that can perform most of these equations, providing you with a simple solution.

You do NOT need to do this at home.

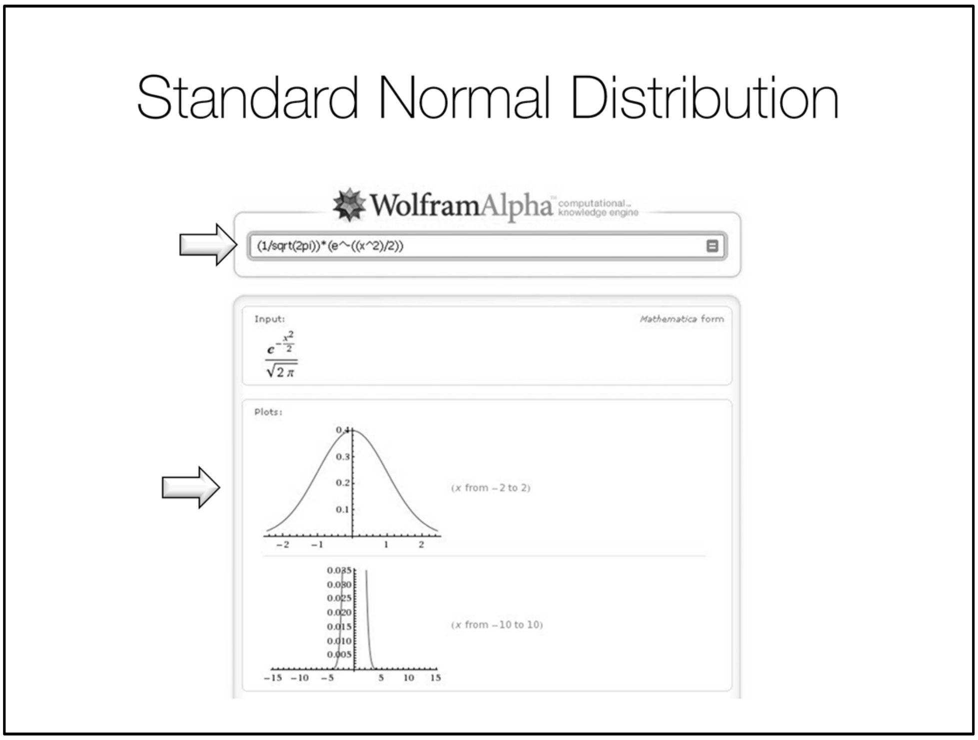
We're showing you this so you're not flying blind.

THE FORMULAS

- Okay, we've arrived at the point where it's time to start discussing the formulas …
- This video hasn't had a bit of fluff in it so far, and it's not about to now. In fact, it's going to get even more intense.
- For those who want to do this manually, I hope you remember your higher-level math.
- As I said before, however...
- Fortunately, those who don't want to get into the math, there is software that can perform most of these equations, providing you with a simple solution.
- You do NOT need to do this at home.
- We're showing you this so you're not flying blind.
- There is software out there that can perform these calculations for you.
- Ours is one.
- But you do not need to get it.
- Nearly everything you'll see is done in Excel or WolframAlpha, which is a <u>free</u> web site.



- This is a standard normal distribution, otherwise known as the probability density function.
- Here's the equation.
- Simply plug in x, and it will give you the y value. For instance, if you plug in 1, you'll get approximately 0.25. Plug in 0, and you'll get approximately 0.4.
- By the way, this chart – like the charts before it and the charts you'll see later – was generated in Excel.

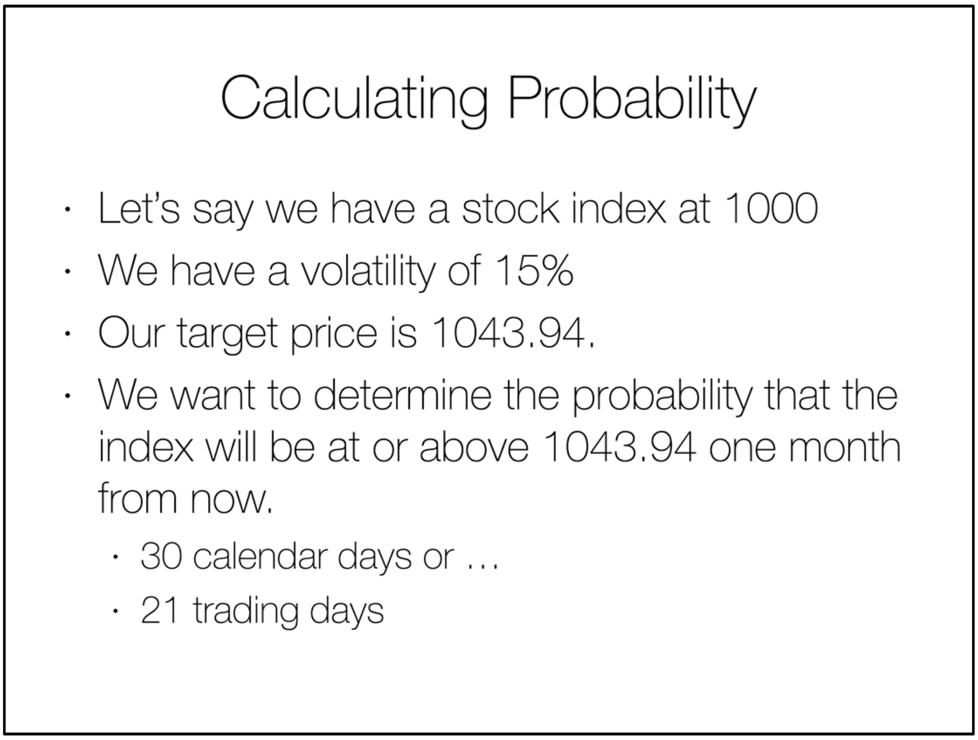


- This is that same formula, except instead of using Excel, I used a free web site called Wolfram Alpha.
- You input the formula here.
- It generates the graph down here.
- It's important to realize that Wolfram Alpha is NOT necessary.
- I am only using it to show you that there are free ways to do this yourself!

Calculating Probability

- Determine a target in terms of price.
- Convert the price into standard deviations.
- Calculate the area under the bell curve.

- To calculate probability is a three step process:
- Determine a target in terms of price.
- Convert the price into standard deviations.
- Calculate the area under the bell curve.



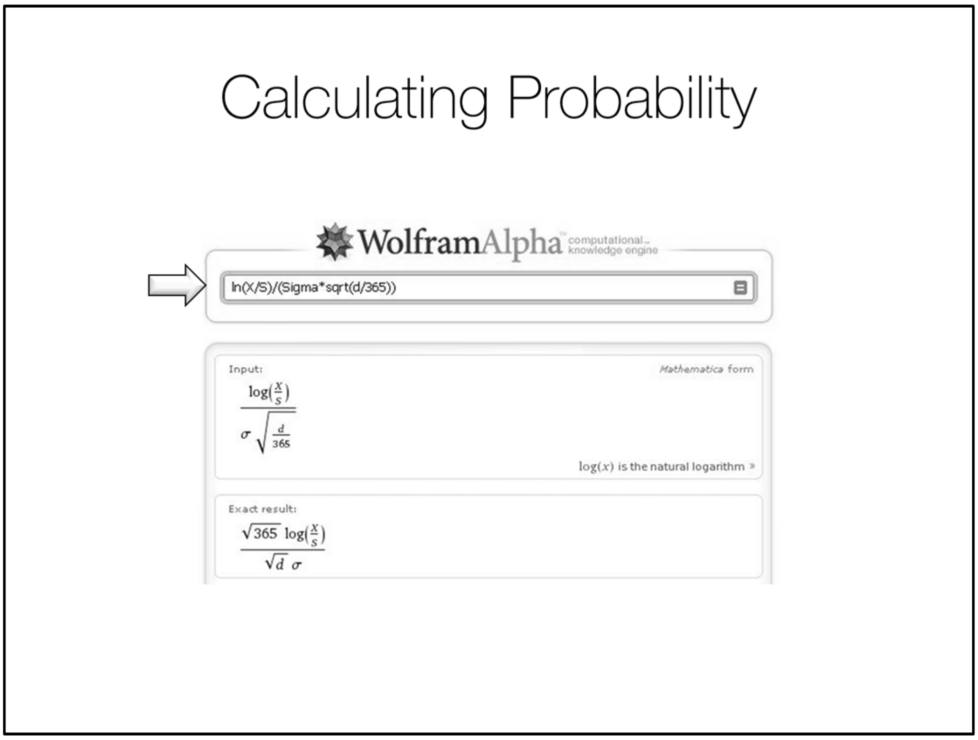
- Let's look at an example.
- Let's say we have a stock index at 1000
- We have a volatility of 15%
- I came up with a random target. In this case, our target price is 1043.94.
- We want to determine the probability that the index will be at or above 1043.94 one month from now.
- 30 calendar days or …
- 21 trading days

Calculating Probability

$$x = \frac{\log\left(\frac{X}{S}\right)}{\sigma \times \sqrt{\frac{d}{365}}}$$

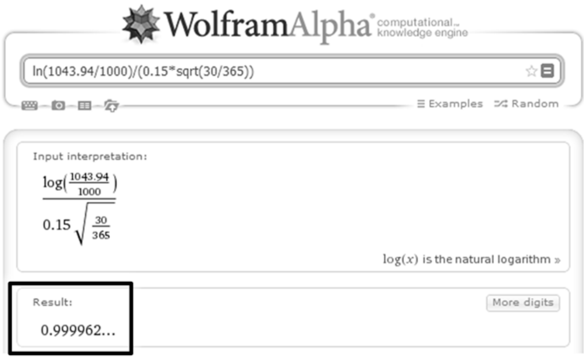
where
X = target price
S = current price
σ = volatility
d = days
and
x = standard deviation

- We're going to plug that information into this equation to convert the price target into a standard deviation.

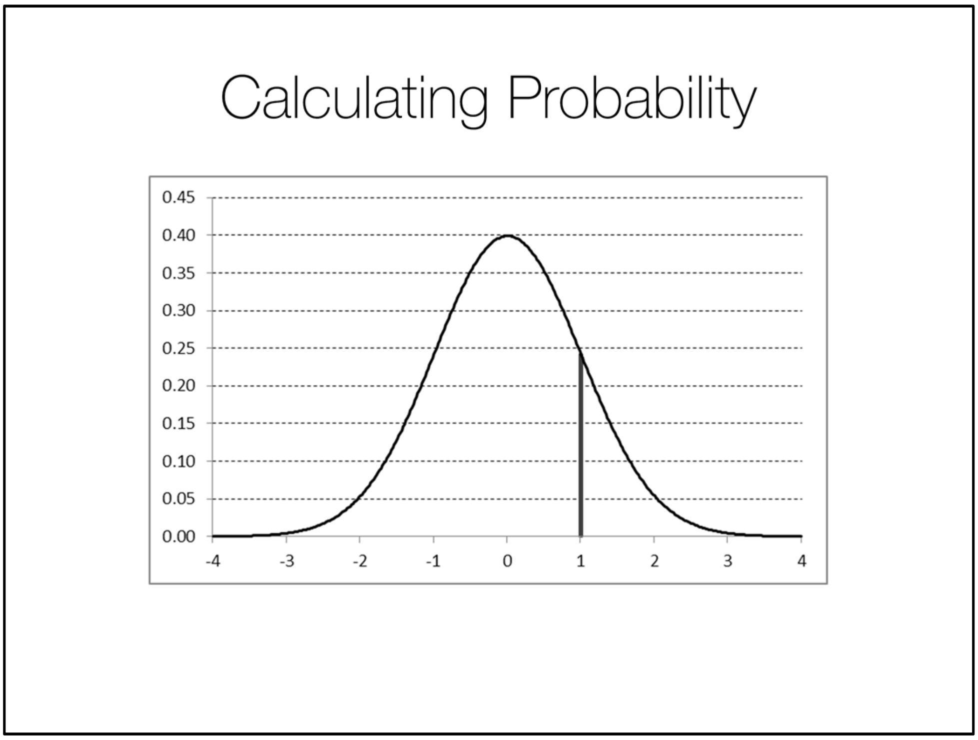


- Again, for those of you who want to do this yourself, and you don’t have a spreadsheet or you don’t want to spend any money, here is Wolfram Alpha.
- The formula goes here.

Calculating Probability



- If you plug in the values in the appropriate spot …
- You get this result. We're going to round it to one.



- Here we have that standard deviation marked.
- The blue bar indicates the point on the bell curve. So we’ve done step 1 and step 2.
- Now we have to figure out the probability by calculating the area under the curve.
- To find the area under the curve, you get the integral.
- But integrating the bell curve function is impossible, so we have to use an approximation.
- The formula for that is on the next page.

Calculating Probability

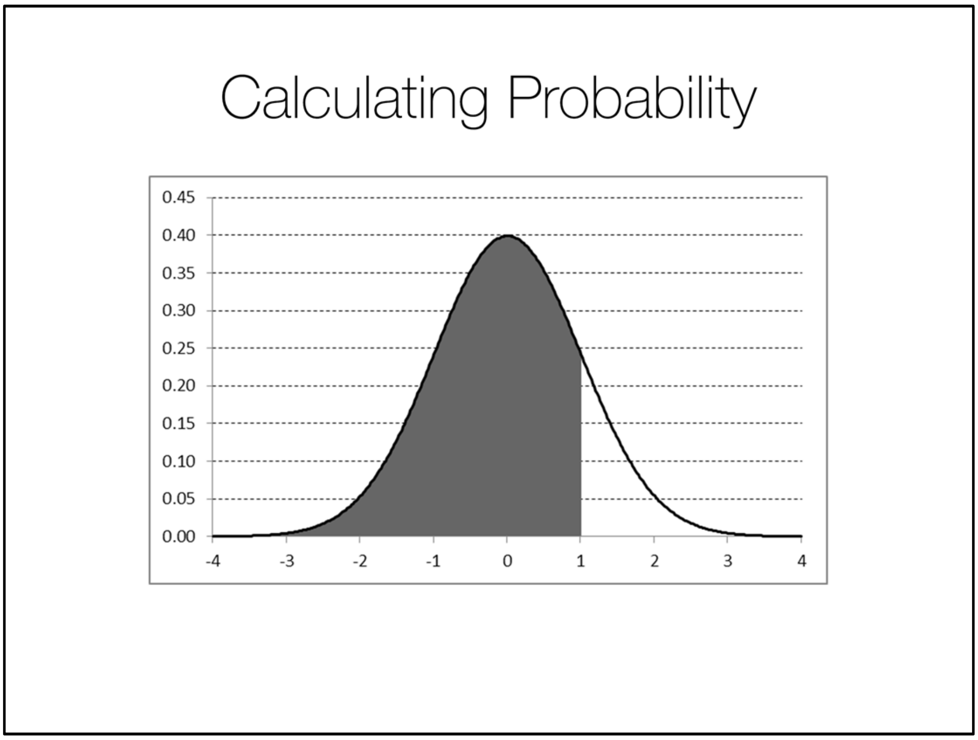
$$N(x) = 1 - \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} (b_1 t + b_2 t^2 + b_3 t^3 + b_4 t^4 + b_5 t^5)$$

$$t = \frac{1}{1 + px}$$

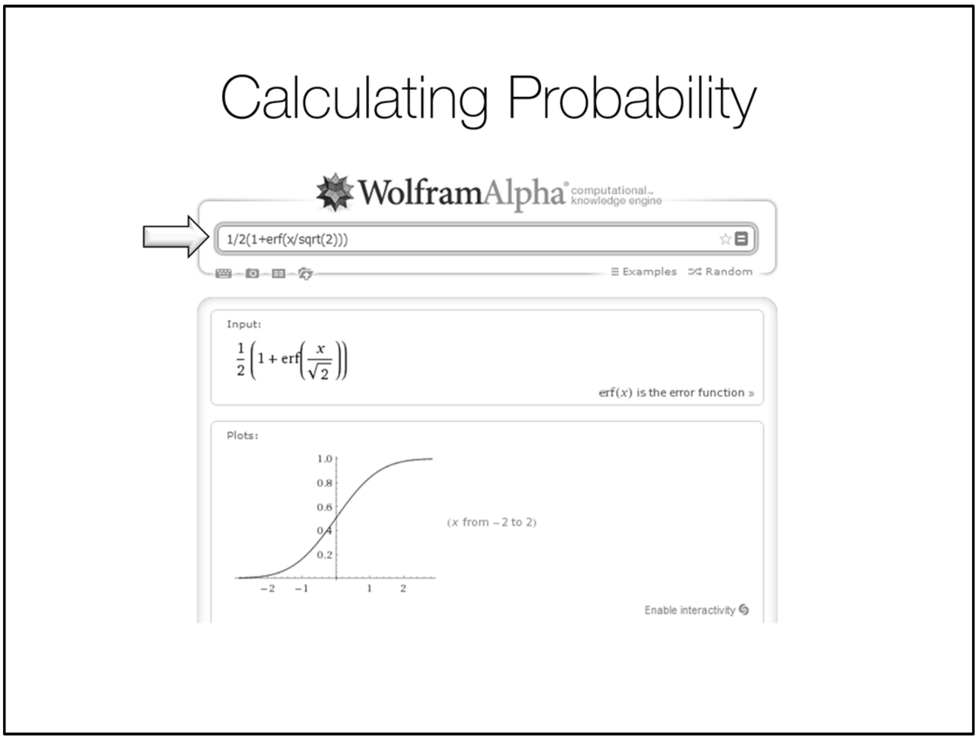
$b_1 = 0.31938153$
$b_2 = -0.3565638$
$b_3 = 1.78147794$
$b_4 = -1.821256$
$b_5 = 1.33027443$
$p = 0.2316419$

where $x =$ any **positive** standard deviation

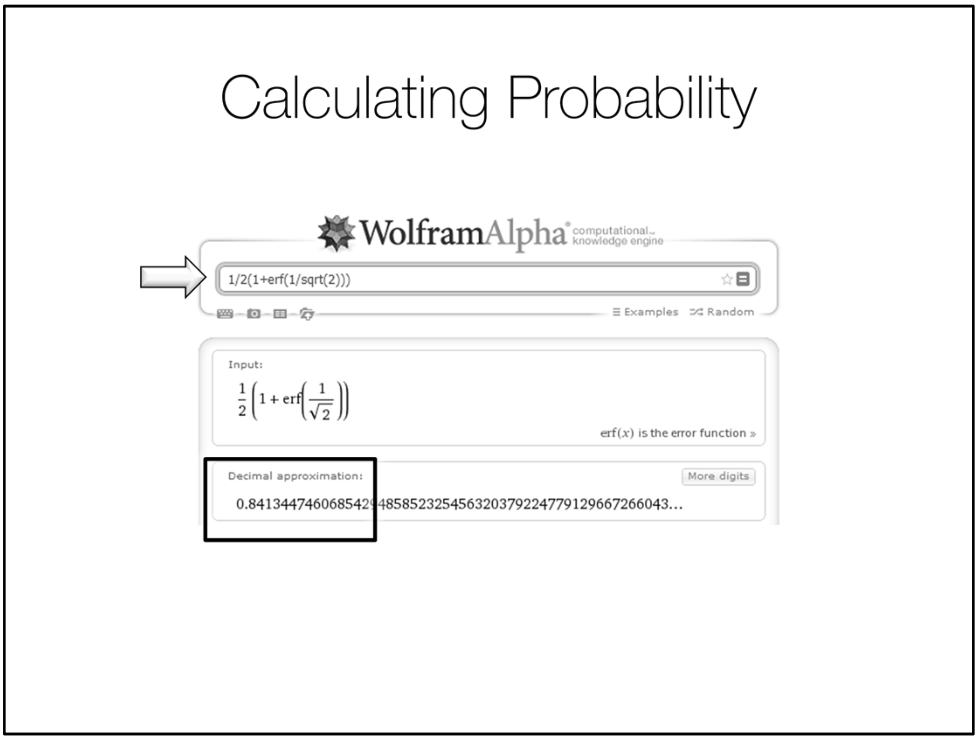
- Here it is.
- Please don't get overwhelmed. I know it looks like a monstrosity. Fortunately, software makes it easy.
- In Excel, it's normsdist.
- All probability software, including ours, has this function built into it.



- This is what that equation is going to provide to us.
- If we plug in our standard deviation, which was 1, into the equation we just observed, the result will be the area under the curve to the left of 1, which is shaded in blue.
- Again, I can’t emphasize enough. The important thing is that you understand the concept.
- Options valuation models use the bell curve.
- The bell curve can be used to calculate volatility.
- The exact equations are not that important if you have software that can do this for you.

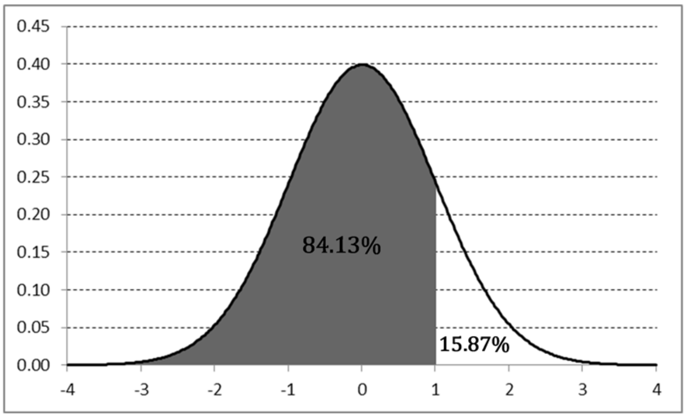


- So you don't have to do this if you don't want.
- There is software that performs these probability calculations for you.
- But if you want to do this yourself, here is the formula in Wolfram Alpha



- And here is what it looks like when we input our standard deviation of 1 into the formula.
- We input the formula here.
- And here is the result.

Calculating Probability



This gives us the theoretical probability!

- So that's the answer we're looking for. We now have the theoretical probability.
- The probability of being less than 1043.94 is 84%. The probability of being greater than 1043.94 is 16%.

Perk!

In order to make life easier for those of you who use Microsoft Excel, we’ve created a spreadsheet devoted to calculating volatility and probability.

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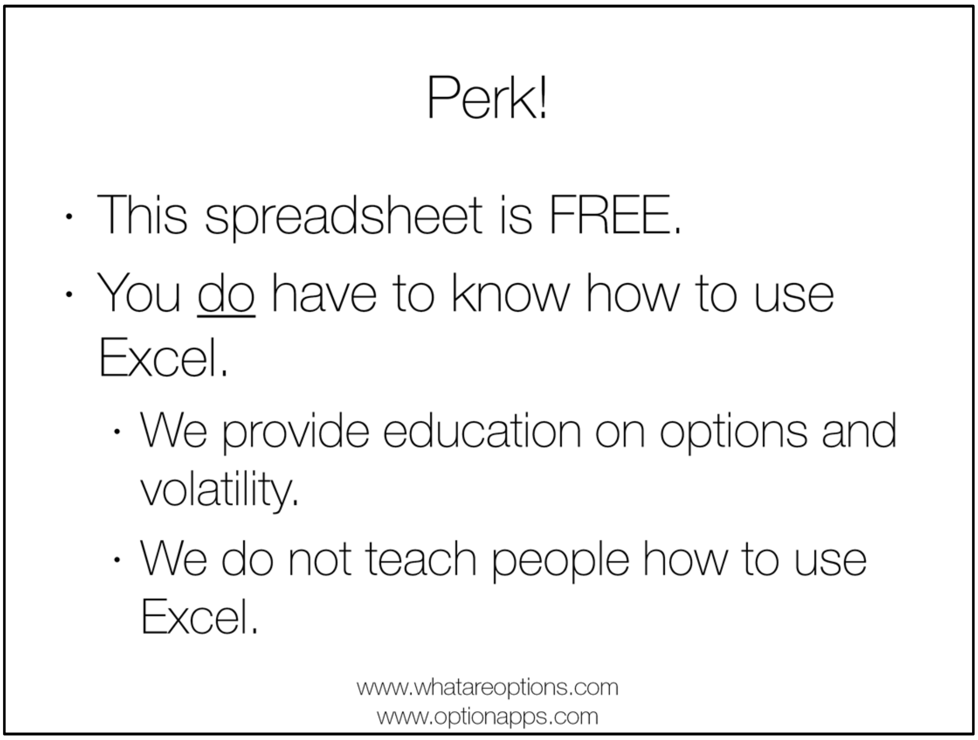
- In order to make life easier for those of you who use Microsoft Excel, we’ve created a spreadsheet devoted to calculating volatility and probability.



- This spreadsheet is FREE.
- You do have to know how to use Excel.
- We provide education on options and volatility.
- We do not teach people how to use Excel.
- Now, although this Excel solution does make probability and volatility easier, if you want to cover all of the thousands of stocks and all of the hundreds of thousands of options, a spreadsheet isn’t going to cut it.
- You’ll need something more robust.
- There are several options analysis software vendors out there.
- One of those vendors just so happens to be our firm.

Methods To Calculate Probability

- Wolfram Alpha
- Excel Spreadsheet
- OptionApps

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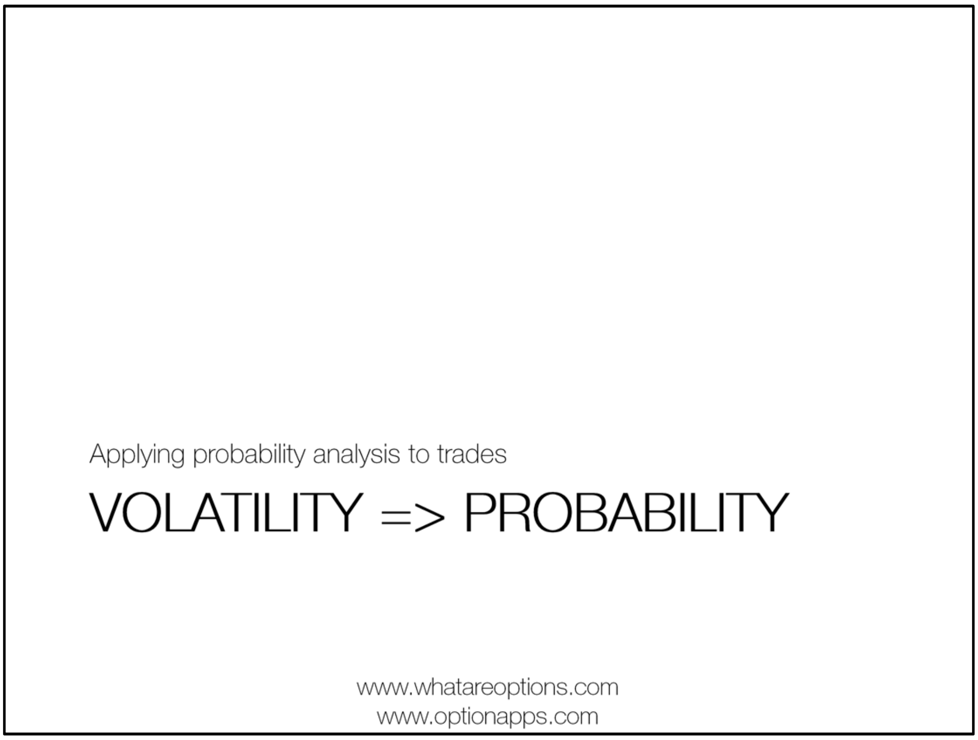
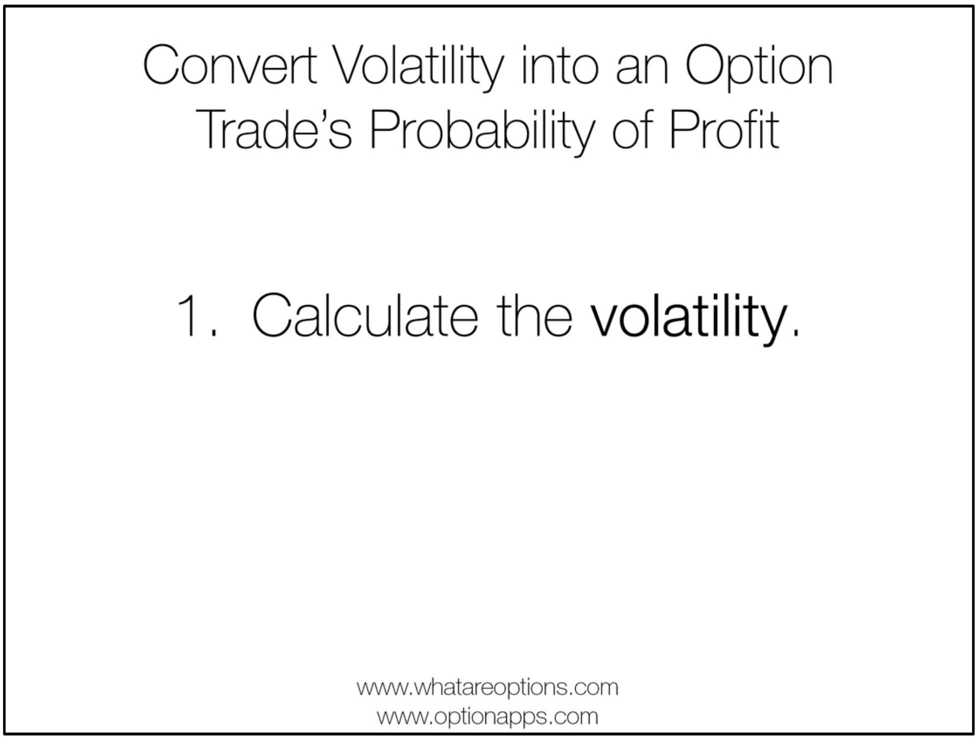
- Again, we have provided you with the formulas ...
- We've provided you with a free web source for calculating those formulas ...
- And, we've provided you with a free spreadsheet that performs volatility and probability calculations ...
- The software I mentioned is not necessary, but it does make things less tedious.



- [Chapter 9]
- Welcome back to What Are Options?, my name is Don Fishback, and we have arrived at Chapter 9.
- In our last chapter, we learned how to calculate probability based on the current price and a target price using volatility.
- In this chapter, we're going to learn how to apply that to the options strategies we've covered in this course.
- Let's begin



- We’re going to convert volatility into an option trade’s probability of profit.
- To do that, the first thing we need is the volatility.

Convert Volatility into an Option Trade's Probability of Profit

2. Convert the **breakeven** price of the option trade to a standard deviation using volatility.

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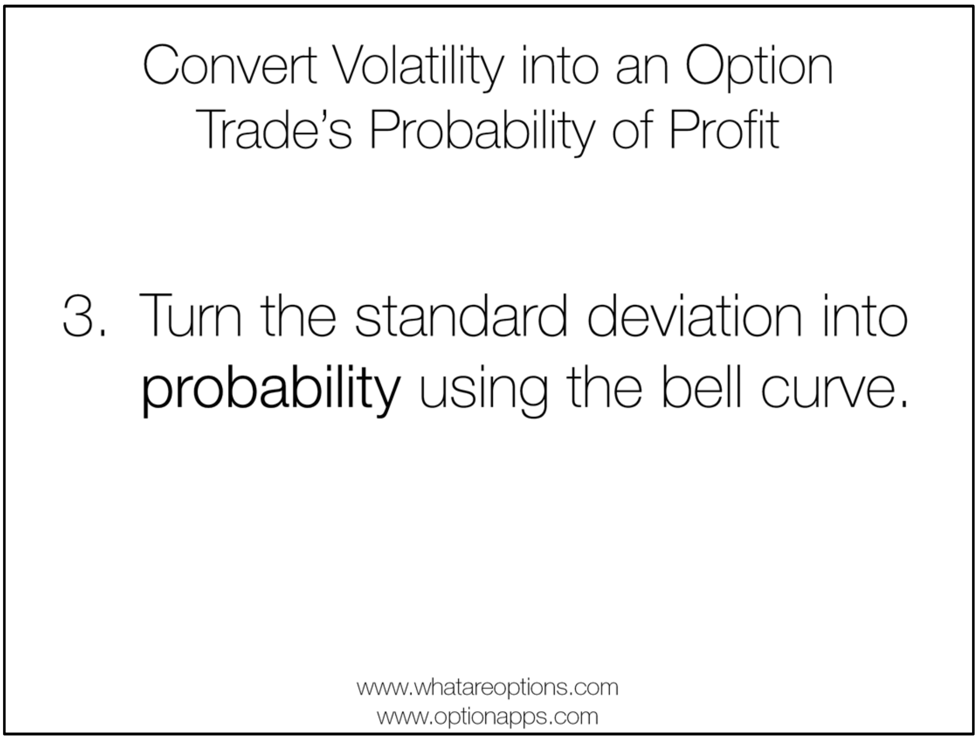
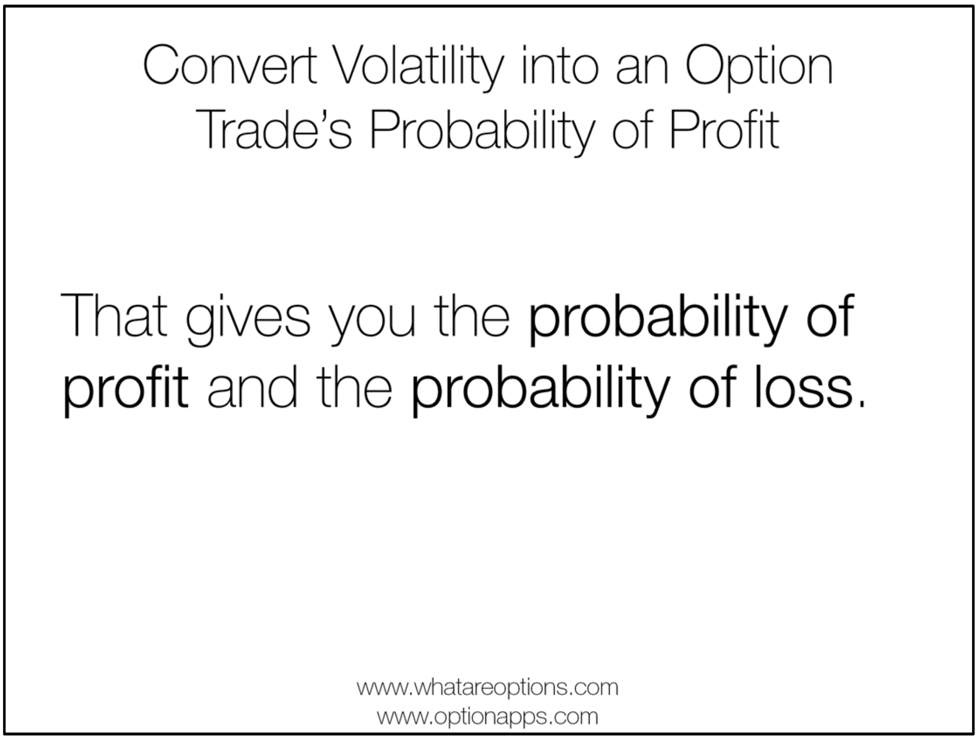
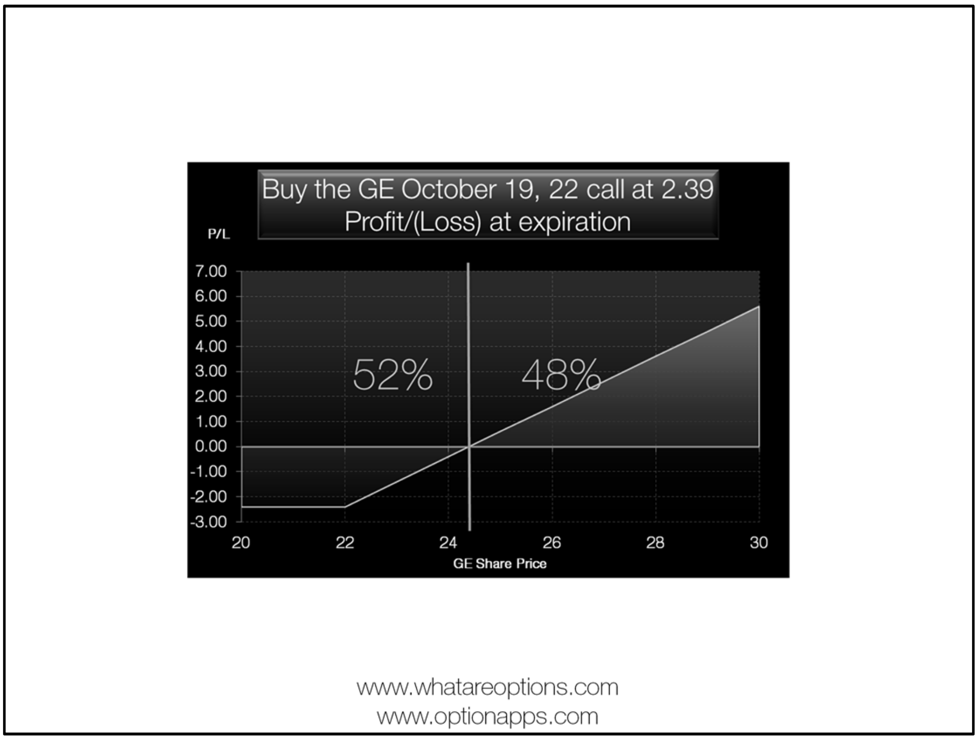
- Next, we need a target price.
- In this instance, our target price is the breakeven price.
- In prior chapters, we learned how to calculate the breakeven of eigth different option trades:
- Long Call, which is a call purchase
- Long Put, which is a put purchase
- Protective Put
- Short Call, which is a call sale
- Covered call
- Short Put, which is a put sale
- Collar
- Straddle
- We're going to convert that breakeven into a standard deviation



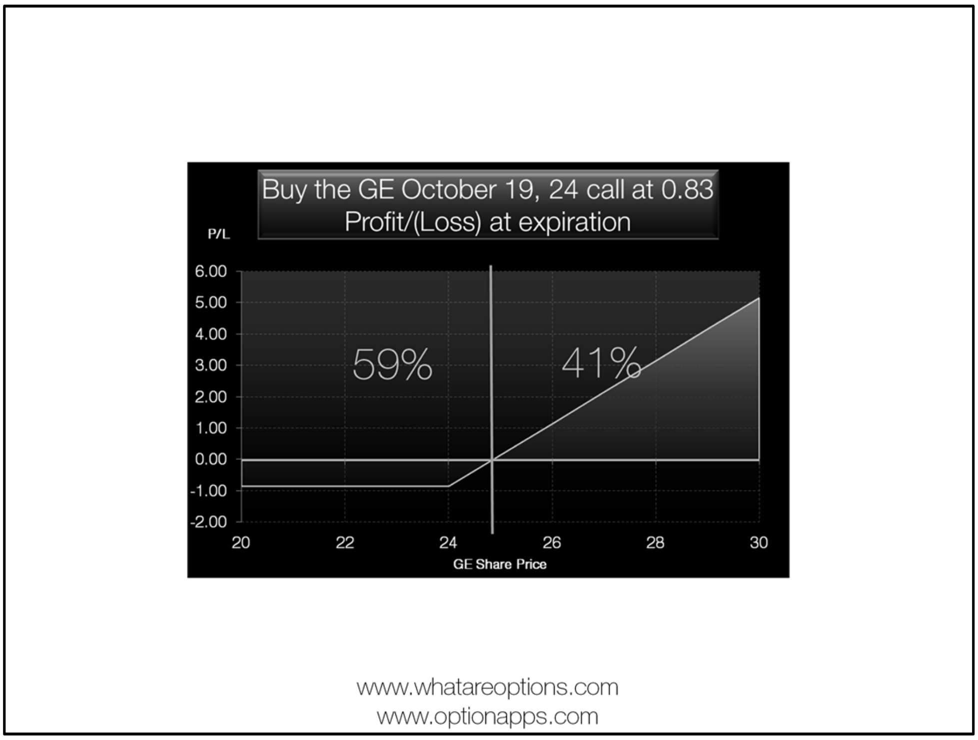
- Once we have the standard deviation, we use the properties of the bell curve to turn that standard deviation into probability.



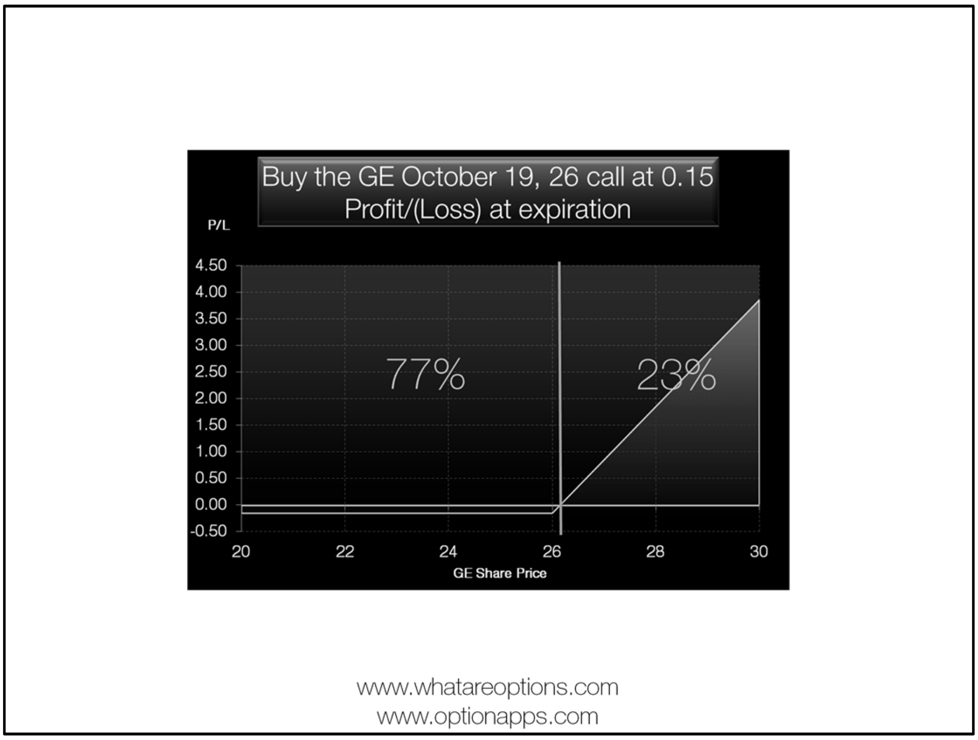
- That gives us the probability of profit and the probability of loss.
- Now one thing I want to reiterate, all of these calculations can be done in many options analysis programs.
- Also, for you do-it-yourselfers, don't forget that we provide you with a FREE Excel spreadsheet you can use to do this.
- And of course, there is our software that perform this probability analysis for you.
- With that said, when you follow that process, that step-by-step process...
- Of getting the volatility
- Getting the target price
- And then converting the target price into a standard deviation and then into probabilities, you get results like this ...



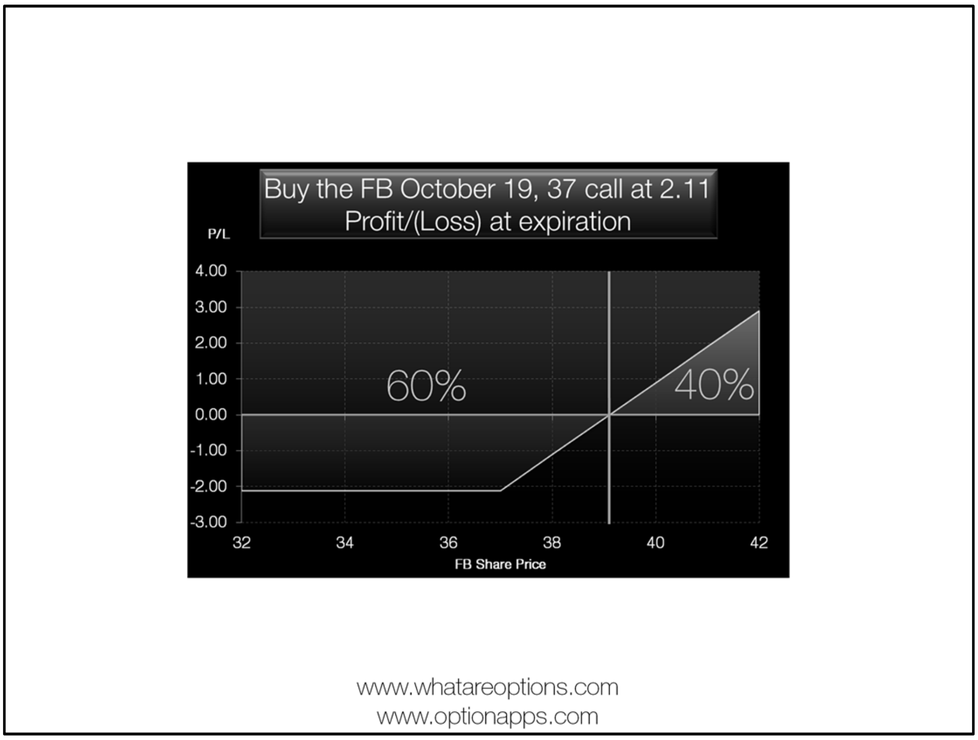
- This is the first call purchase we looked at all the way back in Chapter 3.
- The strike price is 22 and the option ask is 2.39.
- That means the breakeven is 24.39.
- We got that by adding the option price to the strike price.
- When we apply the probability formula, we come up with the following results.
- The probability of the stock being below 24.39 at expiration is 52%.
- The probability of the stock being above 24.39 at expiration is 48%.
- The probability of profit is 48%, the probability of loss is 52%.



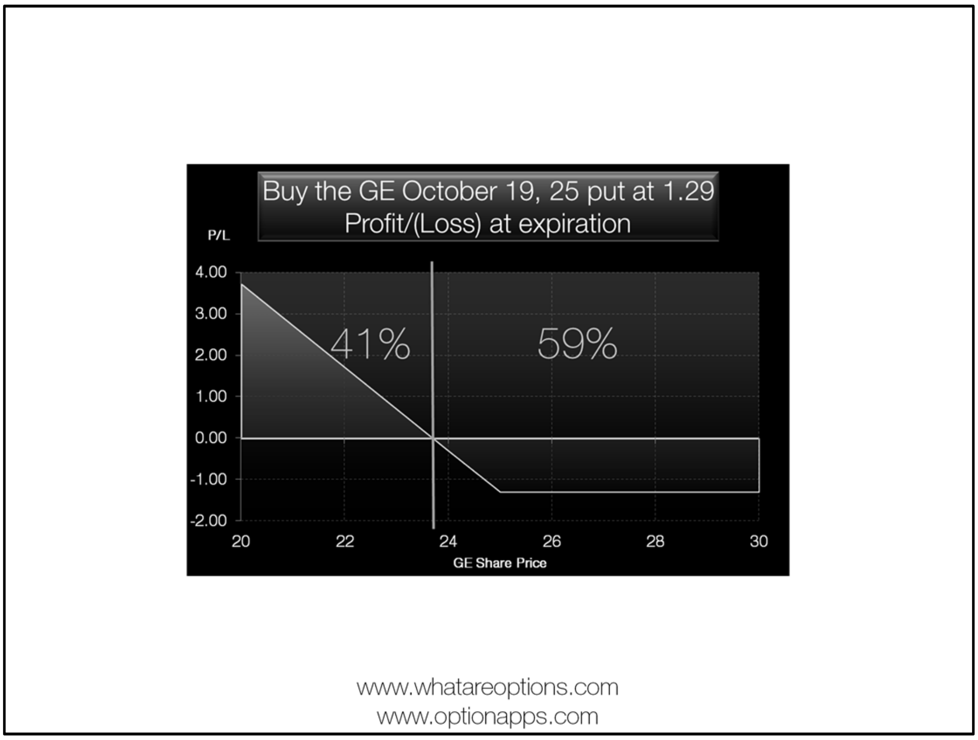
- Here’s another call purchase.
- It’s the same stock, but this time the strike price is 24 and the option ask is 0.83.
- Again, the breakeven for a call purchase is calculated by adding the option price to the strike price.
- That means the breakeven is 24.83.
- When we applied the probability formula, we come up with the following results.
- The probability of the stock being below 24.83 at expiration is 59%.
- The probability of the stock being above 24.83 at expiration is 41%.
- You can see that the probability of profit has gotten worse.
- But what has gotten better – the risk has gotten smaller.
- So that’s the balance of probability, risk and reward.



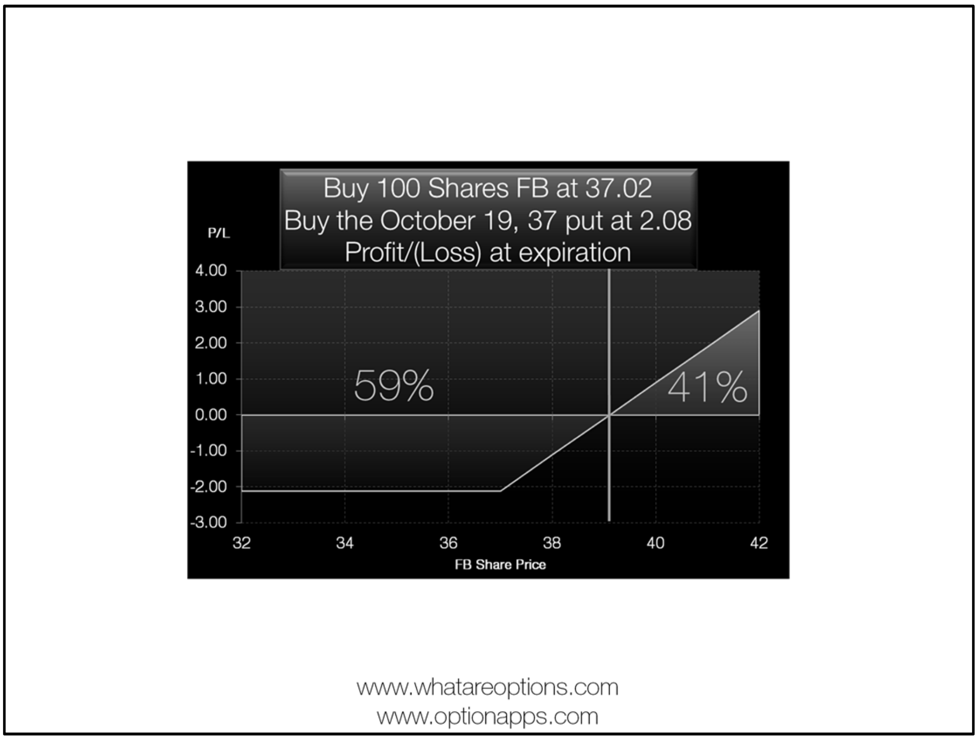
- With this call purchase, the strike price is 26 and the option ask is just 0.15.
- So the risk is much smaller.
- That means the breakeven is 26.15.
- We get that by adding the 26 strike price to the 0.15 option price.
- The probability of the stock being below 26.15 at expiration is 77%, a very high number.
- The probability of the stock being above 26.15, which is where the trade is profitable, at expiration is 23%.
- So the probability of profit on this trade is a very small 23%.
- And that’s why buying out-of-the-money options is so difficult.



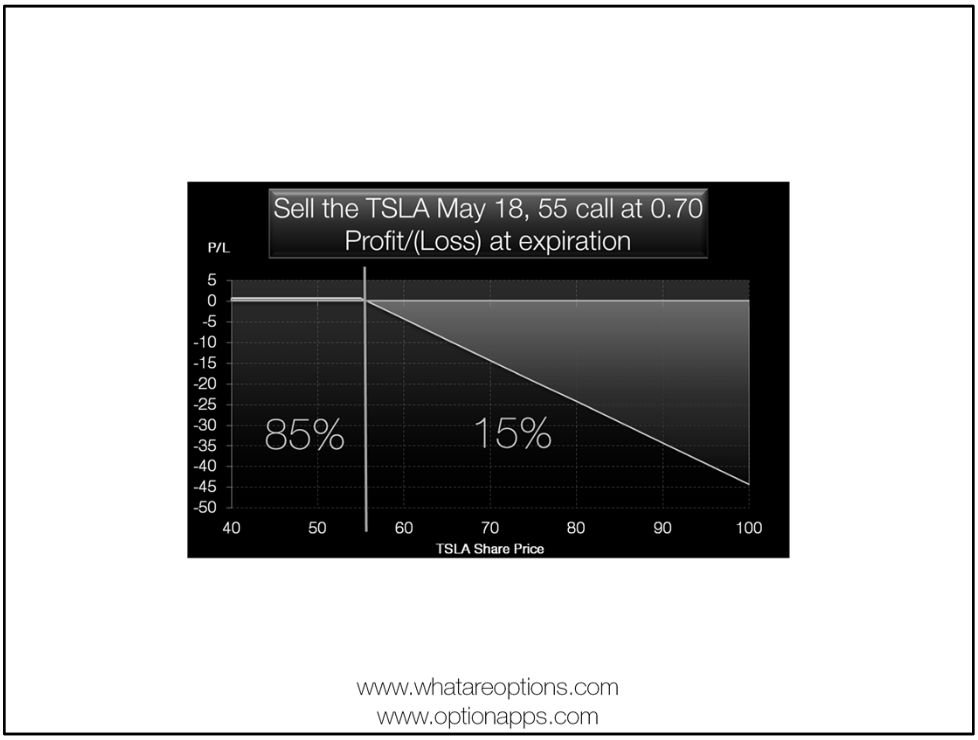
- This is a Facebook call purchase.
- The strike price is 37 and the option ask is 2.11.
- That means the breakeven is 39.11.
- When we applied the probability formula, we come up with the following results.
- The probability of the stock being below 39.11 at expiration is 60%.
- The probability of the stock being above 39.11 at expiration is 40%.
- So the probability of profit is 40%, the probability of loss is 60%.



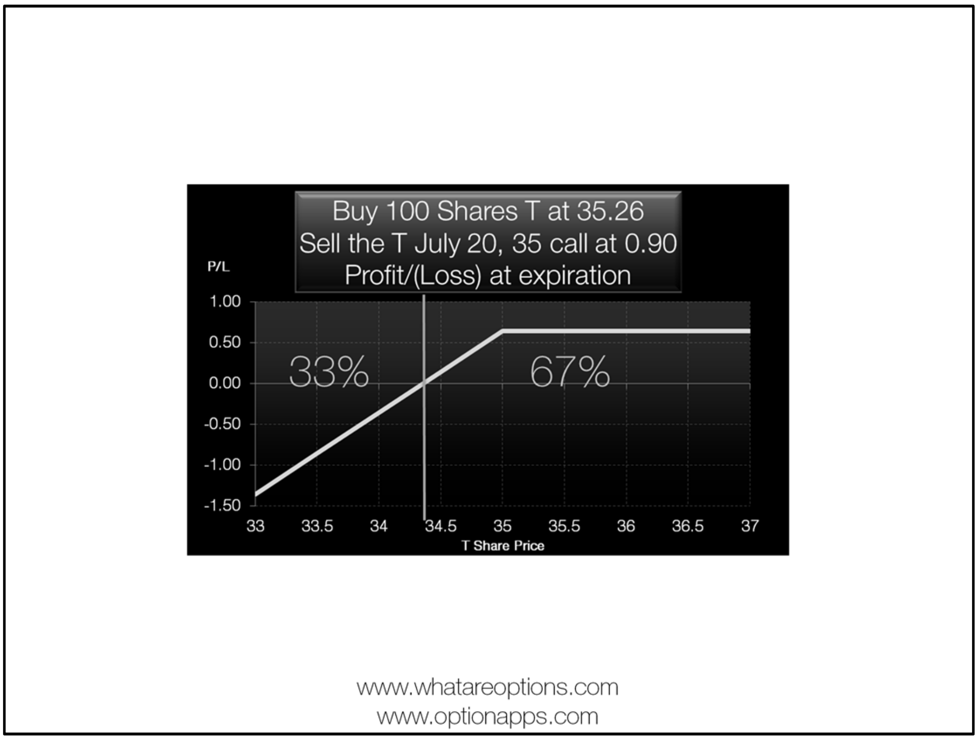
- This is a General Electric put purchase from an earlier chapter.
- The strike price is 25 and the option ask is 1.29.
- The breakeven on a put purchase is calculated by subtracting the option price from the strike price.
- That means the breakeven is 23.71.
- The probability of the stock being below that breakeven at expiration is 41%, so the probability of profit is 41%.
- The probability of the stock being above the breakeven, which is bad for a put purchase, is 59%.
- So our probability of profit is only 41%.
- But the reward potential is quite substantial.
- But the reward potential is huge.



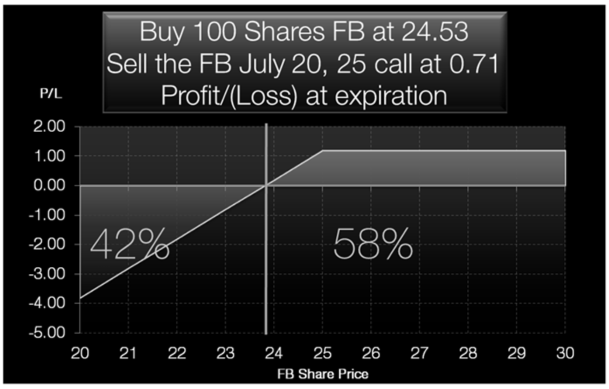
- Here we have another Facebook trade. This is a protective put.
- The strike price is 37, the stock price is 37.02 and the option ask is 2.08.
- The breakeven for a protective put is calculated by adding the option price to the stock price.
- That means the breakeven is 39.10.
- When we applied the probability formula, we come up with the following results.
- The probability of the stock being below 39.10 at expiration is 59%.
- The probability of the stock being above 39.10 at expiration is 41%.
- So the probability of profit is 41%.
- But notice the profit potential; it is headed in the unlimited direction.
- So in all of these call purchases, the probability of profit peaks somewhere around 40%; same with the put purchases.
- The more in the money you go, the higher the probability. But it never crosses into the 50% threshold.
- So if you are buying a call or buying a put, the odds will always be against you.



- Let's look at a call sale. This is that TSLA call sale we had in an earlier chapter.
- The breakeven for a call sale is the strike price plus the option price.
- The strike price is 55 and the option bid was 0.70.
- That means the breakeven is 55.70.
- The probability of the stock being below 55.70 at expiration is 85%.
- So there's an 85% probability of profit.
- The probability of the stock being above 55.70 at expiration is only 15%.
- The probability of profit is 85%.
- So you've got a much better probability of profit than probability of loss.
- But look at the risk.
- The risk is unlimited.



- This is the covered call on AT&T.
- In a covered call, the breakeven is the stock price minus the call price.
- The strike price is 35, the stock price is 35.26 and the option ask is 0.90.
- That means the breakeven is the 35.26 minus 0.90, which is 34.36.
- The probability of the stock being below 34.36 at expiration is 33%.
- The probability of the stock being above 34.36 at expiration is 67%.
- So in this covered call, now we are starting to see something where there is a reasonable profit potential and a reasonable probability of profit.
- We're going to get into this deeper when we start to review the performance figures of different strategies.
- Covered calls tend to have very good performance over the long-term.



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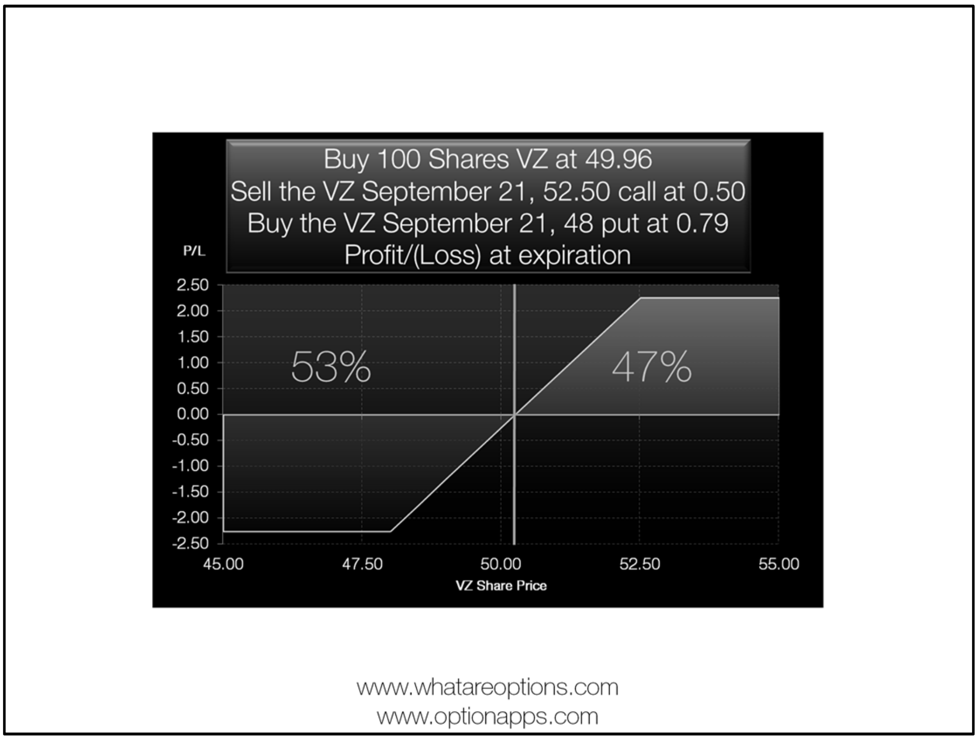
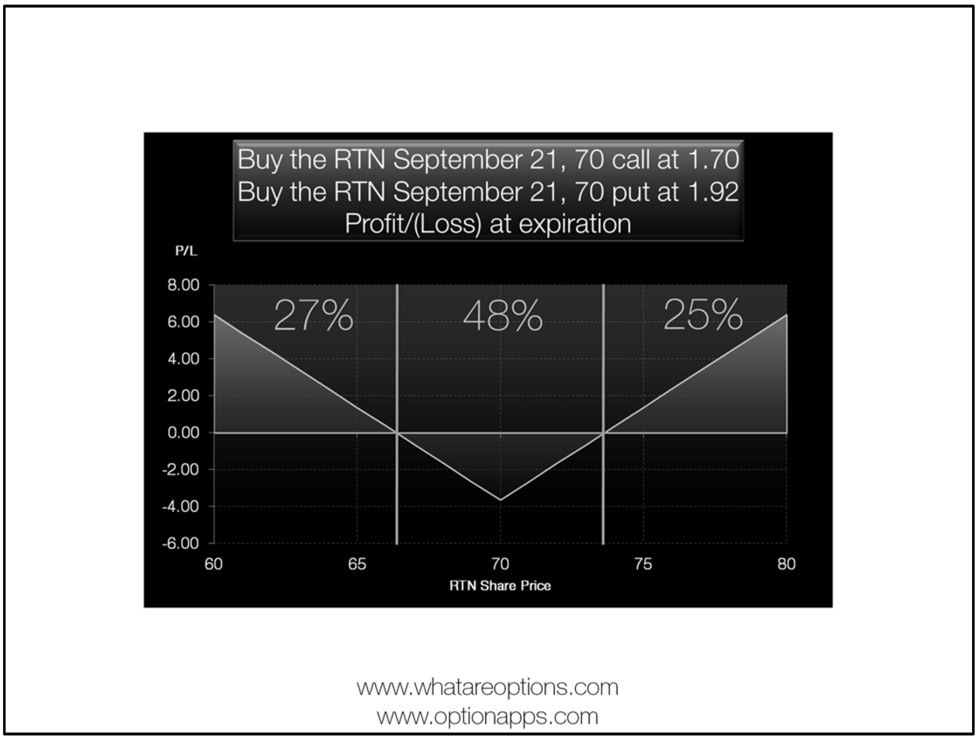
- Here's another covered call. This one is on Facebook.
- The strike price is 25, the stock price is 24.53 and the option ask is 0.71.
- That means the breakeven is 23.82.
- When we applied the probability formula, we come up with the results of 42% and 58%.
- That is, the probability of the stock being below 23.82 at expiration is 42%.
- The probability of the stock being above 23.82 at expiration is 58%.
- So our probability of profit is 58%.

- Here is a put sale.
- It's a short put.
- We will be talking about this type of strategy at length, especially when you see the performance figures for this simple strategy.
- In a put sale, the breakeven is the strike price minus the put price, very simple.
- The strike price is 25, and the option bid is 1.20.
- That means the breakeven is 23.80.
- The probability of the stock being below 23.80 at expiration is 41%.
- The probability of the stock being above 23.80 at expiration is 59%.
- That means our probability of profit is 59%.
- Notice that in these option selling strategies, the probability of profit is always above 50%.
- Whether it's a put sale or a covered call, the odds are always in your favor.
- But your profit is limited; that's the offset.



- This trade is a collar.
- It's buying stock, selling a covered call and buying a put
- In a collar, the breakeven is equal to the Stock Price - Call Price + Put Price
- The stock price is 49.96, the call strike is 52.50 and the put strike is 48.
- The call price is 0.50 and the put price is 0.79.
- So when we add all that together, it means the breakeven is 50.25.
- When we applied the probability formula, we come up with the following results.
- The probability of the stock being below 50.25 at expiration is 53%.
- The probability of the stock being above 50.25 at expiration is 47%.



- Our last strategy is a straddle.
- It’s buying a call and put with the same strike price and the same expiration date.
- In a straddle, we have two breakevens, not just one.
- The upper breakeven is the strike price plus the net cost of the straddle.
- The lower breakeven is the strike price minus the net cost of the straddle.
- The strike price is 70, the net debit is is the 1.70 plus the 1.92 = 3.62.
- The upper breakeven is 73.62.
- The lower breakeven is 66.38.
- The probability of the stock being below 66.38 at expiration is 27%.
- The probability of the stock being above 73.62 at expiration is 25%.
- That means, the probability of being in between the two breakeven prices is 48%.
- So our probability of profit is the sum of the two outer regions, which is 25% plus 27%, which is 52%.
- That means the probability of profit is 52% while the probability of loss is 48%.

Remember the Process

- Calculate the **volatility**.
- Convert the **breakeven** price of the option trade to a standard deviation using volatility.
- Turn the standard deviation into **probability** using the bell curve.

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- Finally,
- Let’s review what we’ve discussed.
- It’s important to remember the process.
- The first thing you do is calculate the volatility or get the volatility from a source.
- The next thing is to convert the breakeven price of the option trade to a standard deviation using that volatility.
- Turn the standard deviation into probability using the bell curve.
- Now again, many options analysis software programs – including ours – make these calculations for you.
- So it’s not important for you to be able to perform the calculations.
- But it is important that you understand how those numbers are being calculated.
- And why certain strategies , the odds are against you.
- And with certain other strategies, the odds are always in your favor.

We now know key details about basic options strategies, we know about risk, reward and probability. What do we do with that knowledge?

SO WHAT?

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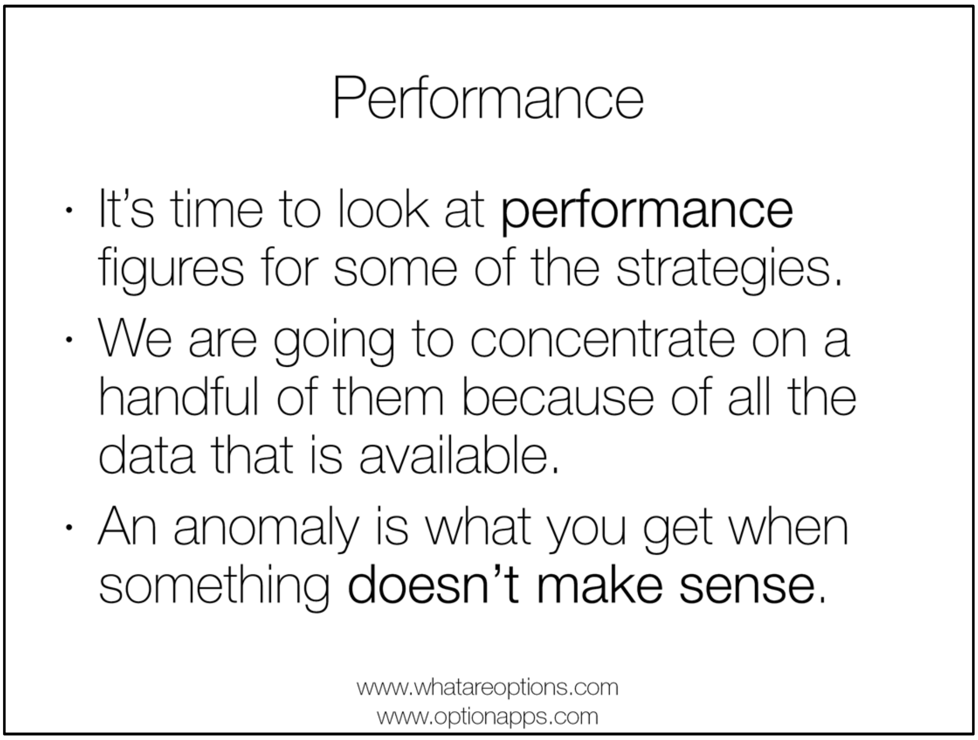
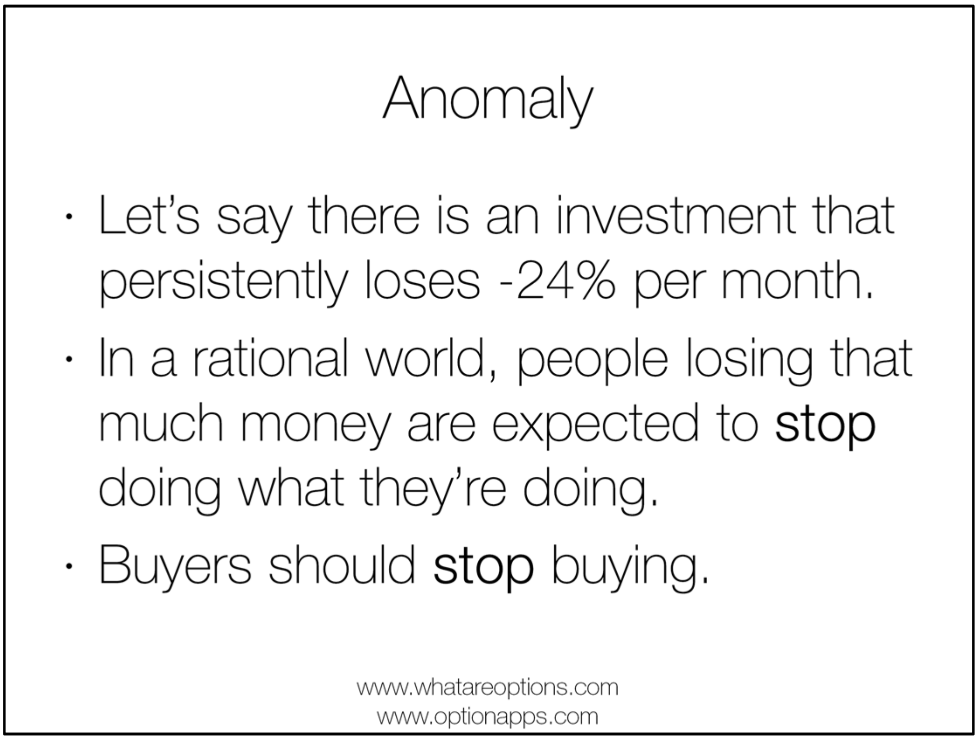
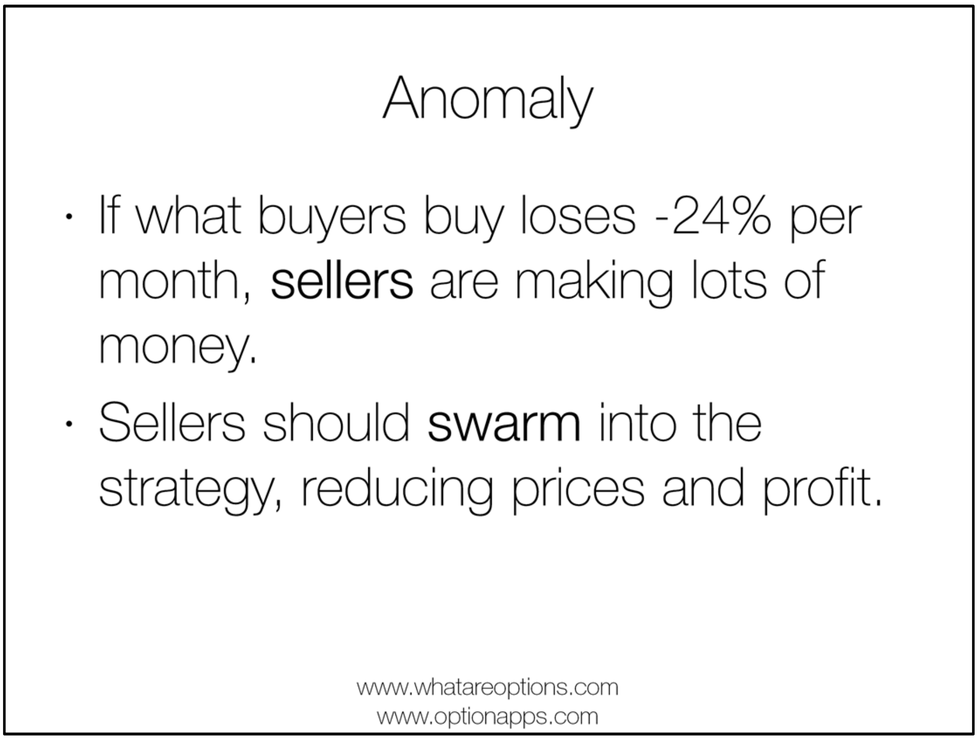
- [Chapter 10]
- Welcome to What Are Options? I'm Don Fishback and we have arrived at Chapter 10.
- Let's think about what we've covered so far.
- We've learned what an option is.
- We've learned several option strategies that allow us to target all sorts of different objectives.
- We've learned about risk and reward, and most recently, probability.
- We've learned how options trading is similar to other probability-based businesses, most specifically, insurance.
- The question I have is, SO WHAT?
- Having that knowledge means nothing if it doesn't provide a benefit.
- Unless we can prove that there is a benefit, we've basically wasted a bunch of time and effort gaining knowledge for no reason.



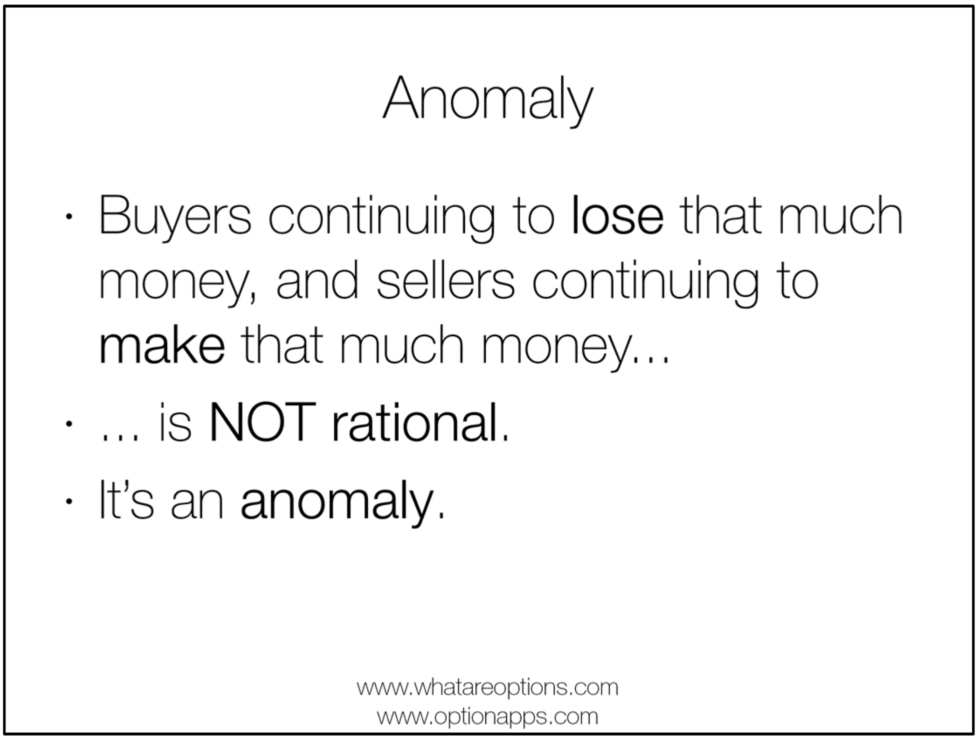
- So it's to do some digging.
- It's time to look at performance figures for some of the major strategies.
- We're going to investigate these options strategies to see how they performed over long periods of time.
- We're going to concentrate on a handful of these strategies because of all the data that is available.
- Also, the data will show that in some cases, the performance is unusual
- In the academic world, they call it an anomaly.
- In the investment world, an anomaly is what you get when something that doesn't make sense continues to happen.



- Here's what we mean by that.
- Let's say there is an investment that persistently loses an average of -24% per month.
- In a rational world, people losing that much money would be expected to stop doing what they're doing.
- Buyers should stop buying this investment.



- At the other end of the spectrum, if what buyers buy loses -24% per month on average, sellers are making lots of money.
- Sellers should swarm into the strategy, reducing prices and profit.



- Buyers continuing to lose that much money, and sellers continuing to make that much money, is not rational.
- It’s an anomaly.
- Let’s look at an example.

Option Returns

Strategy	ATM Call Return	ATM Put Return	ATM Straddle Return	SPX Return
Weekly Return (1990-1995)	+1.85 to +2.00%	-9.50 to -7.71%	-3.15%	0.17%

Joshua D. Coval, and Tyler Shumway, *Expected option returns* (June 2001).
The Journal of Finance, Vol. 56, Issue 3, pp. 983–1009.

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- Take a look at this table.
- The data is from the research paper “Expected option returns”
- It measures the average returns each WEEK one would have received if he or she blindly purchased options.
- In this case, the researchers considered buying at-the-money S&P 500 index calls, at-the-money index S&P index puts, and at-the-money S&P 500 index straddles.
- The measuring period was over a five year period from 1990 to 1995.
- Note how much money is made buying calls.
- But especially notice how much money is lost buying puts.
- That’s a loss of nearly 10% per WEEK.
- For those of you interested in verifying this information, we’ve provided the citation to the research paper so you can check it out yourself.

Option Returns

Strategy	ATM Call Return	ATM Put Return	ATM Straddle Return	SPX Return
Monthly Average (1987-2000)	-	-39.0%	-	+0.97%

Oleg Bondarenko, *Why are Put Options So Expensive?* (April 2003). AFA 2004 San Diego Meetings; University of Illinois at Chicago Working Paper.

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- This next research paper expanded on the time frame from the prior paper.
- But it concentrated on only one strategy: index put buying.
- The author demonstrates what would have happened had you invested in at-the-money S&P 500 puts.
- Now, this was a bullish time for the market, averaging nearly +1% per month.
- So it’s no surprise that puts lost.
- But they didn’t just lose.
- Look at the monthly returns here.
- -39% per month.
- The put buying strategy got crushed.

Option Returns

Strategy	ATM Call Return	ATM Put Return	ATM Straddle Return	SPX Return
Cross-Sectional Average (1996-2005)	+1.98%%	-	-	+0.77%

Sophie X. Ni, *Stock Option Returns: A Puzzle* (2008).

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- In this research paper, the author expanded the coverage of options.
- She performed what's called cross-sectional analysis.
- Cross-sectional means individual stocks in a market, as opposed to the market itself.
- Apple, Johnson and Johnson, Ford, Pfizer, DuPont, JPMorgan are all constituent securities in an index.
- The author looked at the performance one would achieve if an investor bought calls on each of the constituent stocks.
- Then she calculated a weighted average return of those calls for each and every month.
- That performance represents the cross-section.
- That is different than the performance of the index itself.
- For comparison purposes, I am only including her results that focused on the at-the-money options.
- Her research did show that out-of-the-money calls were poor performers.
- Buying at-the-money calls on individual stocks were profitable during the 1996 to 2005 time frame.
- Now, 2% may not sound like much. But when you do that 12 times a year, that adds up to a lot of money quickly.

Option Returns

Strategy	ATM Call Return	ATM Put Return	ATM Straddle Return	SPX Return
Monthly Average (1985-2001)	+24.8%%	-31.7%	-14.0%	+1.13%

Pedro Santa-Clara and Alessio Saretto, Option strategies: Good deals and margin calls (August 2009). Journal of Financial Markets, Volume 12, Issue 3, August 2009, pp. 391–417.

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- In this paper, the researchers went back to analyzing index options and the period was expanded further, and call option purchases and straddle purchases are considered.
- This analysis focused on a very bullish time frame, so it's no surprise that puts were so terrible.
- At-the-money calls do surprisingly well.
- But they don't do well enough to overcome the severe losses suffered by the puts.
- So the straddles do terrible.

Option Returns

Strategy	ATM Call Return	ATM Put Return	ATM Straddle Return	SPX Return
Monthly Average (1987-2005)	-	-29.92%	-15.74%	+0.70%

Mark Broadie and Mikhail Chernov, Understanding Index Option Returns (November 2009). The Review of Financial Studies, Vol. 22, Issue 11, pp. 4493-4529.

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- This investigation expanded the time frame even further.
- Puts remain terrible.
- Note that buying straddles also continue to perform poorly.
- But they’re not as bad as buying puts.

Option Returns

Strategy	ATM Call Return	ATM Put Return	ATM Straddle Return	SPX Return
Monthly Average (2003-2013)	+6.51%	-26.59%	-10.25%	+0.59%

Fishback, Donald, What Are Options? (2013)

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- Finally, I wanted to get in on the action.
- We've got an amazingly good options database.
- In fact, it's one of the most advanced on the planet.
- I decided to do a little programming to bring the previous research up to date.
- Here is what I found:
- First, the index return is the lowest of any of the prior time periods.
- That probably explains why call options didn't do as well they did in other studies that looked at call buying.
- But the fact remains, put buyers continue to get hammered.

Option Strategy Indexes

- **Expand** coverage to daily performance.
- **Expand** coverage to 25 years.

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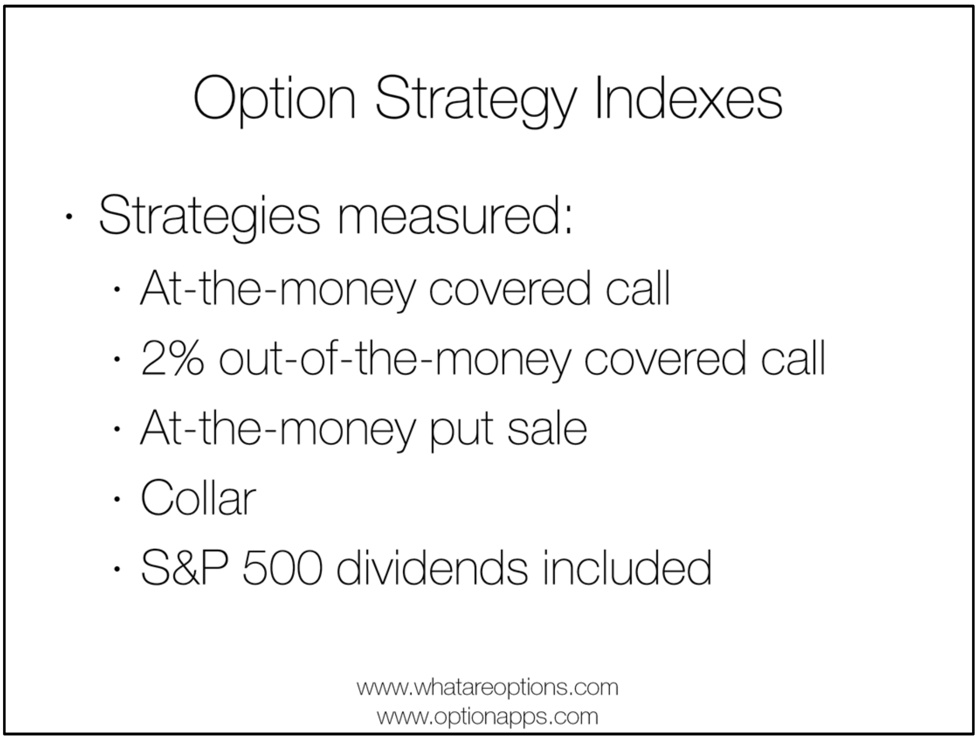
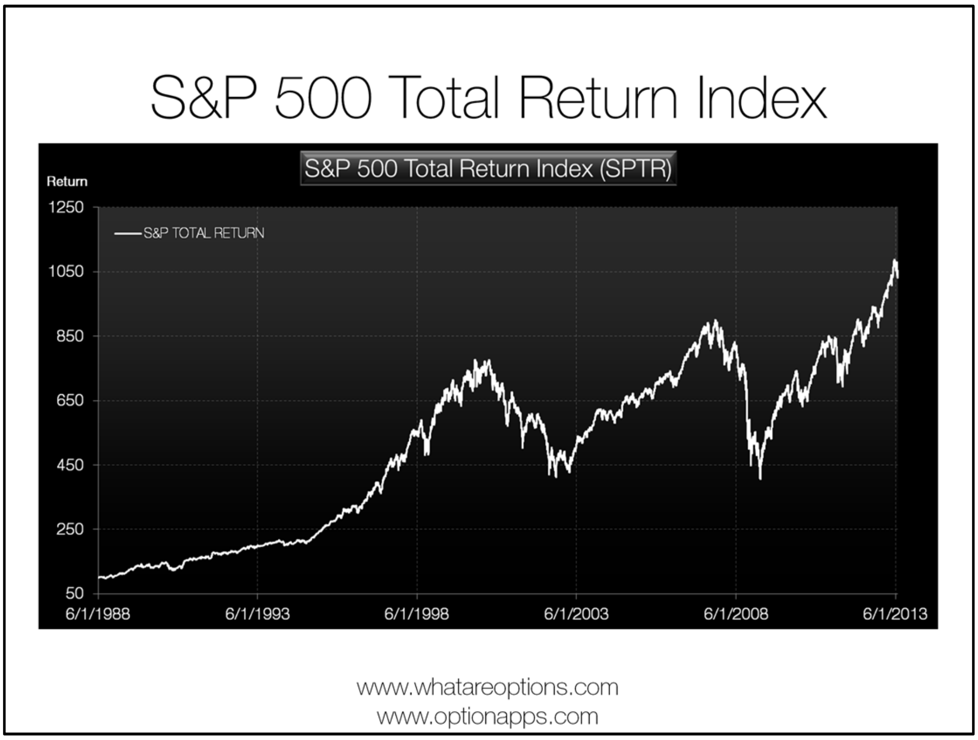
- Here's the thing.
- Those studies track the performance of different strategies once a month, or once a week.
- And the time covered is limited, although my research did cover a full 10 years.
- What we want to do now is expand the analysis from monthly or weekly to daily.
- We're going to look at a once-a-month strategy, but we're going to look at it's performance every day.
- And we want to expand the period covered to 25 years.

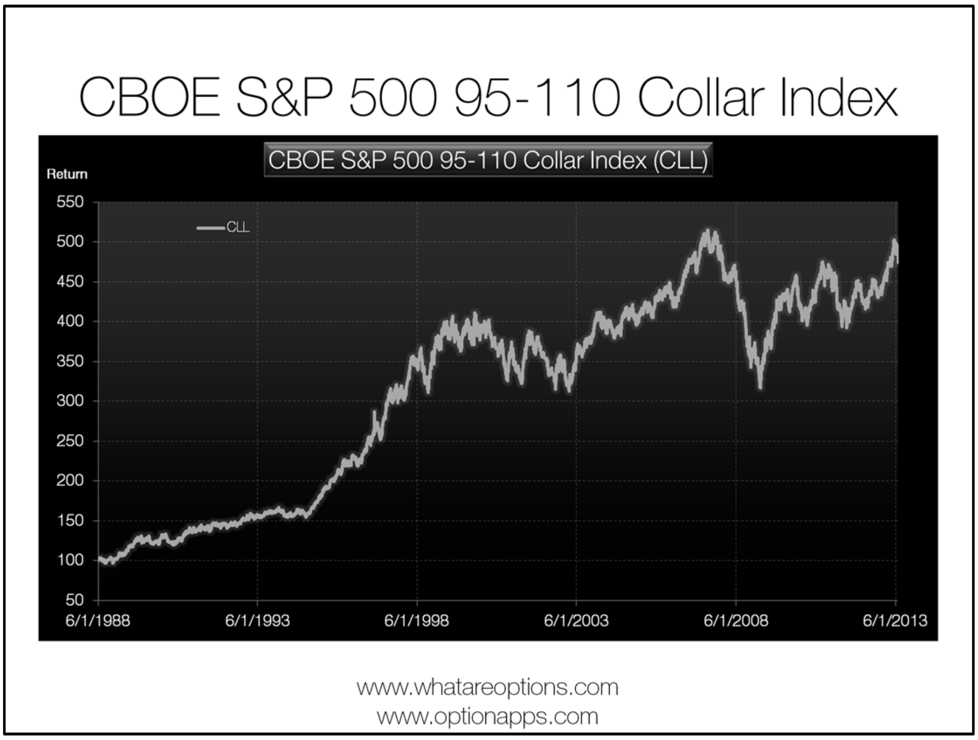
- So, for a select group of strategies, we’re going to measure the performance every single day.
- Then we’re going to look at an index based on that daily performance.
- Having an index will allow us to compare the performance numbers for different option strategies.
- We can also compare options strategy performance to other investment benchmarks.
- The really good news is that the Chicago Board Options Exchange – CBOE – calculates these indexes for everyone.



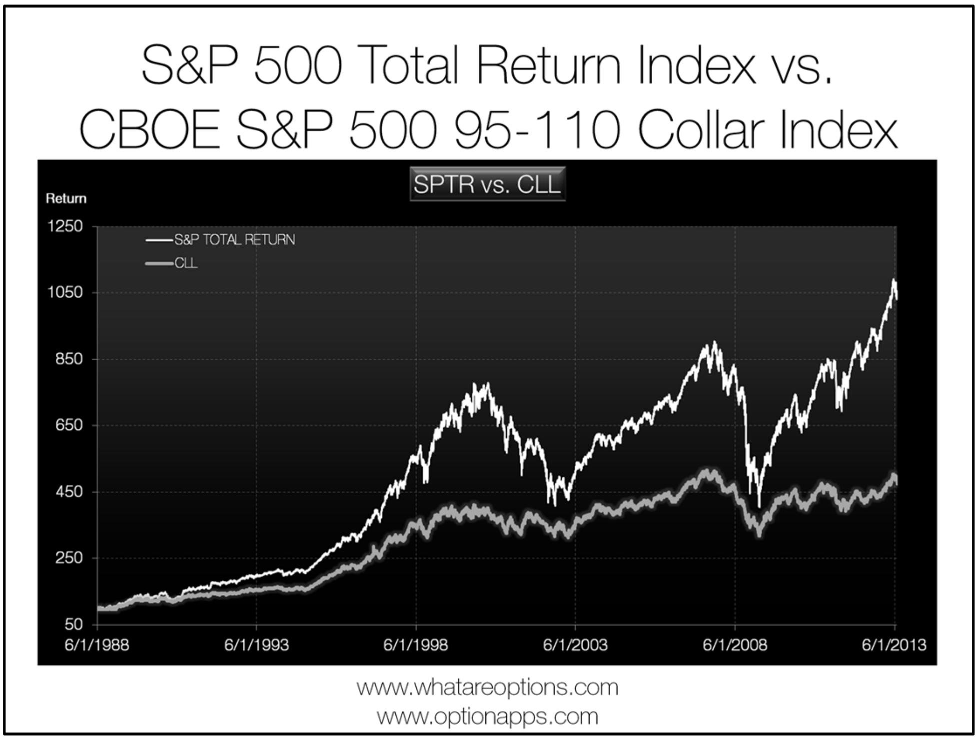
- Here are the strategies whose performance these indexes measure:
- At-the-money covered call
- 2% out-of-the-money covered call. That's a covered call where the strike price of the call sold is 2% above the stock price.
- At-the-money put sale
- And a Collar
- For some perspective, we're going to look at a stock-only strategy. We're going to measure the S&P 500, dividends included.



- We're going to begin with the performance of the S&P 500 Total Return.
- The difference between this total-return index and the regular S&P 500 is that this index includes dividends.
- The total return index has gained much more than the S&P 500 has during the same time frame.
- The S&P 500 is up 528% over the past 25 years.
- The S&P 500 with dividends included gained almost double that: up 1,014% during the same time period.
- Omitting stock dividends is a failure when comparing strategies.
- It gives a completely false picture.
- That's why it's critical that you always consider the impact of dividends in any benchmark study.



- The first options index we are going to look at is the Collar Index. Ticker is CLL.
- I want to get it out of the way.
- Because what you're going to find is that collars are good investments some of the time, but they are lousy other times.



- Now let's look at the two strategies together: investing in the overall stock market, and investing in nothing but collars.
- The white line is the stock market's total return performance.
- The purple line is the collar.
- The collar strategy badly lags during bull markets.
- In bear markets it helps, but just a little bit.
- In severe bear markets like 2008, it still gets hit pretty hard.
- The 2008 decline in this collar portfolio was 39%, which is awful considering a collar is designed to protect you from falling stock prices.
- The only period in which the collar was a good relative performer was the bear market of 2000-2002.
- Now part of the reason the performance is so bad may be due to the strike prices chosen for the index.
- This index sells a deep-out-of-the-money call – that's the 110 which stands for 10% above the index price – and buys a relatively expensive put – that 95 represents 5% below the index price.
- So the index is a net put buyer, which we've seen is not a good idea.

S&P 500 Total Return Index vs. CBOE S&P 500 95-110 Collar Index

SPTR vs. CLL (25-year analysis)

	SPTR	CLL
Standard Deviation of Daily Returns	1.15%	0.74%
Percentage of Up Days	54%	52%
Annualized Return	9.4%	5.5%

- Risk is **better**
- Probability is **lower**
- Return is **lower**

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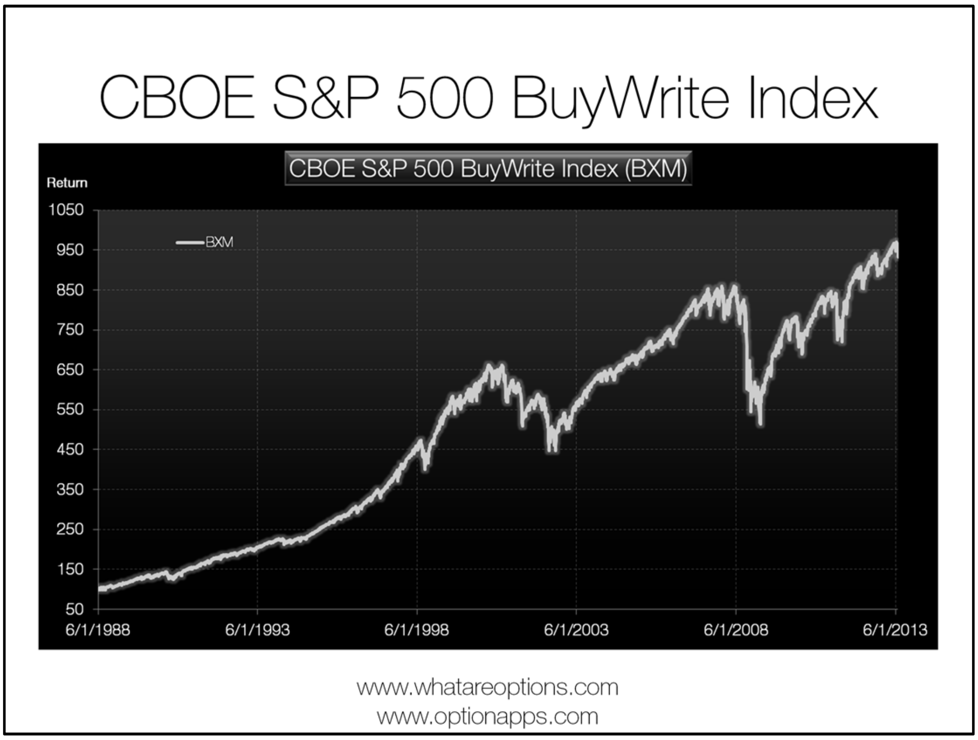
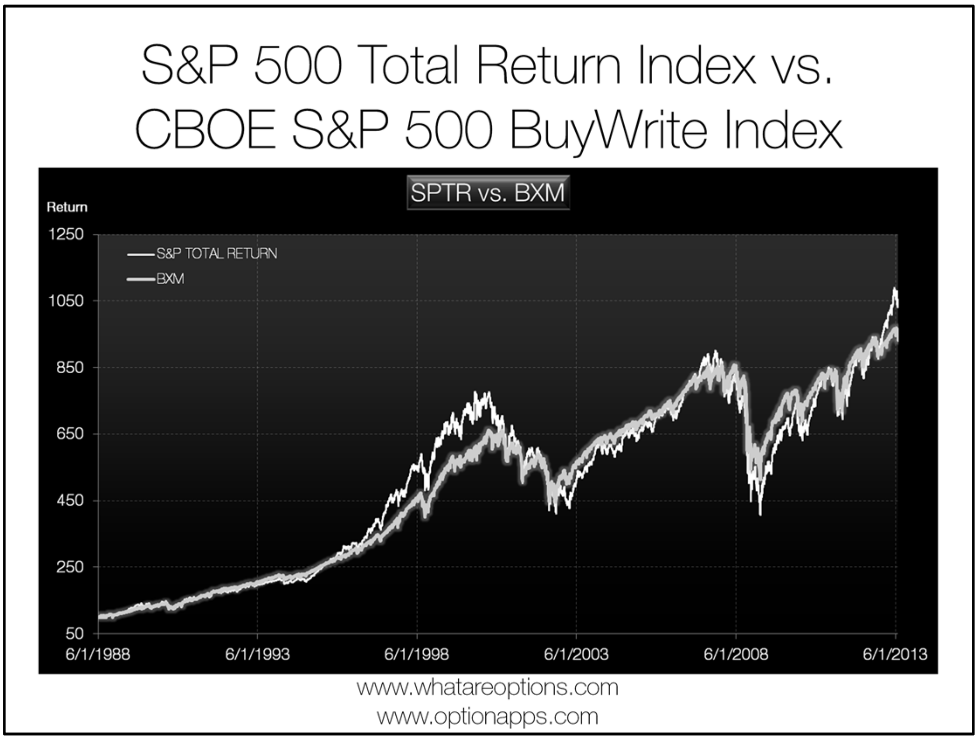
- The numbers tell us pretty much the same thing that the chart did.
- Risk is lower. That’s what that much lower standard deviation means.
- Probability is worse though.
- Return is lower by a significant amount.
- Basically this is a risk reduction strategy that should only be employed at certain times.
- A collar strategy is not a strategy that you want to use all the time.



- Let’s look at another options strategy: the at-the-money covered call.
- This is a chart of the CBOE S&P 500 BuyWrite Index; it’s a covered call. Ticker is BXM.
- This measures the daily performance of a strategy that implements a one-month, at-the-money covered call on the S&P 500 on the third Friday of each and every month.
- The covered call is held from one month’s third Friday till the options expire on the third Friday of the following month.
- So the strategy is extremely easy. You put it on once a month, then walk away till the following month.
- Then you exit that month’s covered call and establish a new position for the next month.
- Then walk away for amonth.
- It’s automatic and easy.
- With this index, we can track how the strategy performs in between the once-a-month entry and exit.



- Now let's look at the covered call strategy and compare it to buy and hold.
- We're going to compare a strategy that invests in the overall stock market to one that invests in at-the-money front-month covered calls.
- The green line is the covered call performance.
- The white line is the stock market's total return.
- You can see, they move together relatively closely.
- It's only during extreme runups in 1998 and 1999, and in the first part of 2013 that the covered calls lag.
- You can also see that in the decline of 2002 and 2008, covered calls did not fall as much.

S&P 500 Total Return Index vs. CBOE S&P 500 BuyWrite Index

SPTR vs. BXM (25-year analysis)

	SPTR	BXM
Standard Deviation of Daily Returns	1.15%	0.80%
Percentage of Up Days	54%	60%
Annualized Return	9.4%	8.9%

- Risk is **better**
- Probability is **better**
- Return is **lower**

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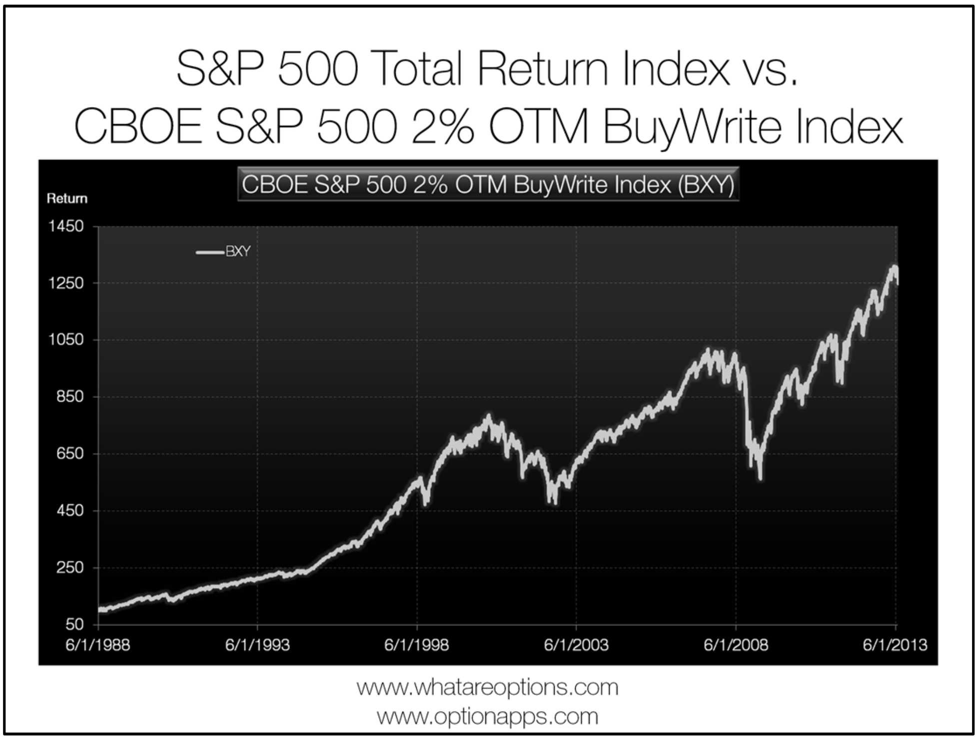
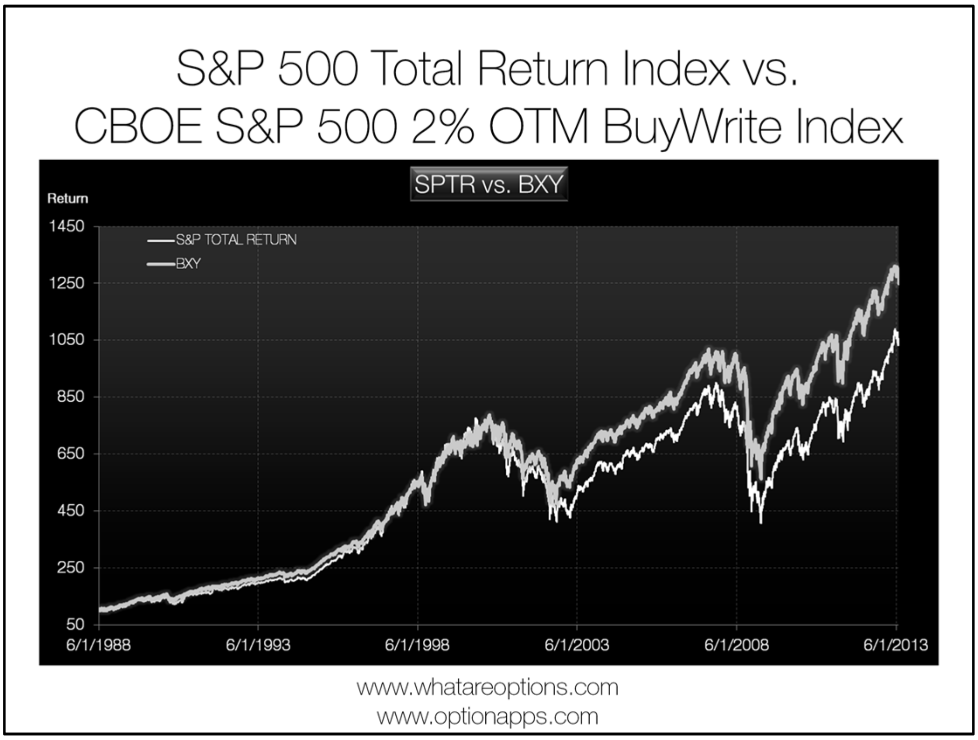
- The numbers tell us pretty much the same thing that the chart does.
- Risk is lower. That's what that much lower standard deviation means.
- Probability is higher, covered calls trades have many more up days than the market itself.
- Return is lower, although not by a large amount.
- The limiting factor causing the slightly lower returns is the capped profit of a covered call.
- What we're going to do next is look at a strategy that modifies the strategy just a little bit and instead of selling at-the-money calls, we will look at the performance of selling slightly out-of-the-money calls.
- Will we get a higher return without losing the benefits of lower risk and higher probability?



- That's what this next index shows.
- It's the CBOE S&P 500 2% OTM BuyWrite Index. Ticker BXY.
- In this index, the strategy is to sell a one-month covered call.
- The only thing is, instead of selling a call that is at-the-money, the strategy sells one that is 2% out-of-the-money.
- The strike sold is the one that is closest to 2% out-of-the-money
- Let's see how this covered call index stacks up against an investment in the stock market.



- Here’s the answer.
- The covered call is the blue line; the stock market – the S&P 500 with dividends – is the white line.
- The covered call makes more money when the market is steady.
- You can see that in the mid-1990s.
- The strategy does not lag too badly, even when the market goes straight up.
- And you do get some enhanced protection in a market downdraft.

S&P 500 Total Return Index vs. CBOE S&P 500 2% OTM BuyWrite Index

SPTR vs. BXY (25-year analysis)

	SPTR	BXY
Standard Deviation of Daily Returns	1.15%	0.92%
Percentage of Up Days	54%	58%
Annualized Return	9.4%	10.3%

- Risk is **better**
- Probability is **better**
- Return is **better**

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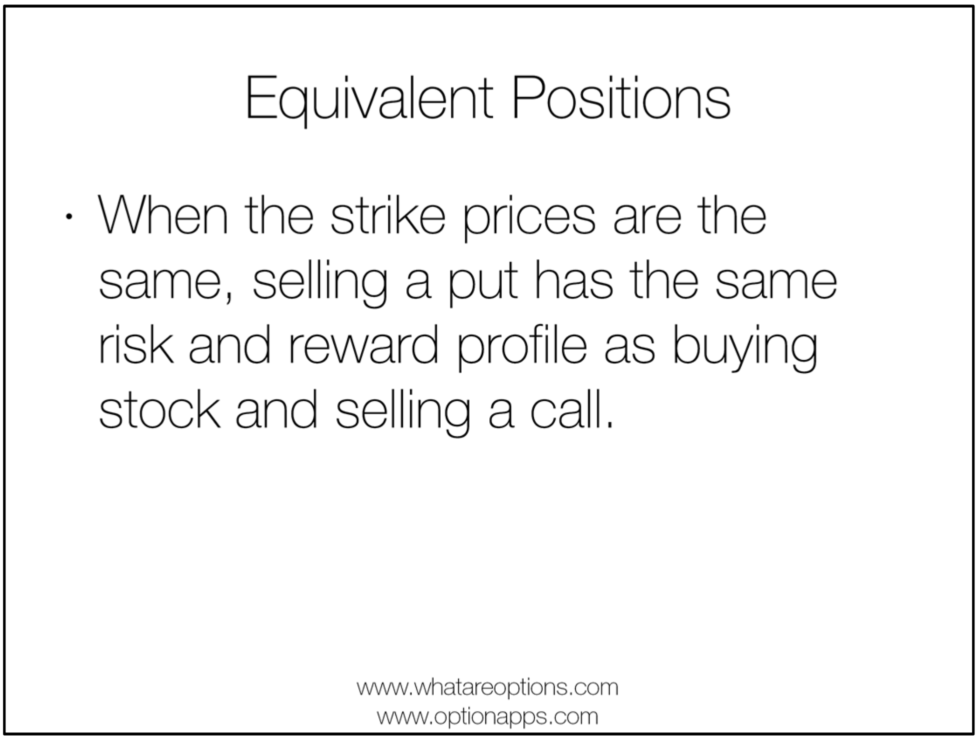
- Suddenly, everything is better.
- Risk is lower than the stock market itself; the volatility of the portfolio is 0.92% instead of 1.15%
- Although volatility is not as low as the at-the-money covered calls, but you get other benefits.
- Compared to the stock market alone, probability is better.
- Your percentage of up days is 58% vs. 54%.
- And, the return ... that is, your profit ... your profit is higher.
- And remember, this is just a simple index that does nothing but blindly sell an out-of-the-money covered call on the S&P 500 once a month.
- It is not hard at all.

- By doing nothing more than making one “mechanical” option trade per month, selling at slightly out-of-the-money covered call on an index, we:
- Improve our probability
- Lower our risk
- Increase our profits
- By the way, this strategy has a name: it’s called options overwriting.
- That is, you are “writing” a covered call option whose strike price is “over” the stock price.



- Now, I want you to think back to an earlier chapter when we talked about equivalent positions.
- The covered call strategy has an equivalent position.
- It’s the put sale.
- Buying the stock at 100 and selling the 100 call is the same thing as selling the 100 put.
- While the positions may be equivalent in the textbook, in the real world, transaction costs and bid/ask spreads may alter the performance.
- So we can’t just assume that put sales perform identically to covered calls.

Sell Put vs. Buy Stock

- Measure over an extended period, over a basket of stocks, just how well or poorly a very simple put selling strategy performed compared to the stock market.

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- We need to do the same thing for put sales as we do for covered calls.
- We need to measure over an extended period just how well or poorly a very simple put selling strategy performed compared to the stock market.

PutWrite

- CBOE PutWrite Index measures the performance of a portfolio that sells a one-month at-the-money put on the S&P 500.
- Cash required to buy the index in case of exercise is held in an interest-bearing account.

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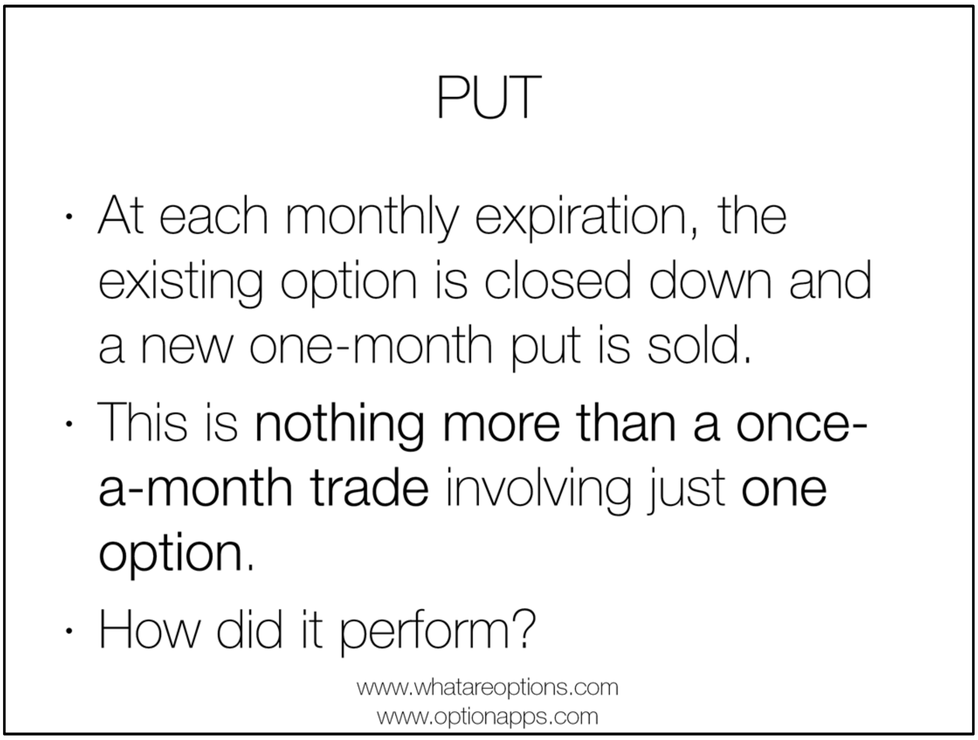
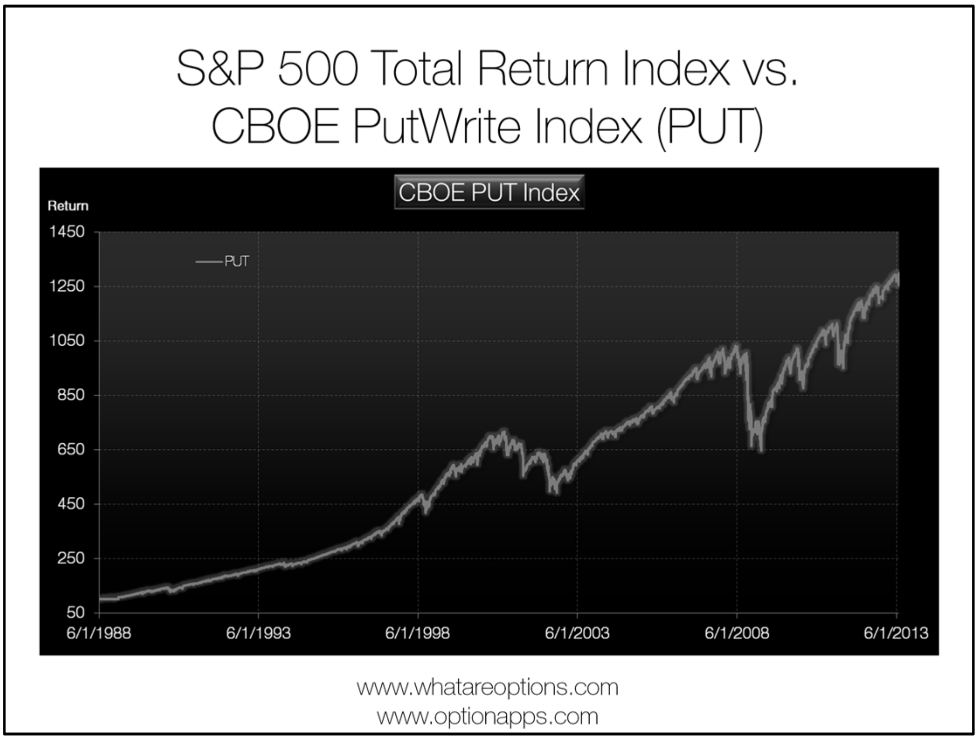
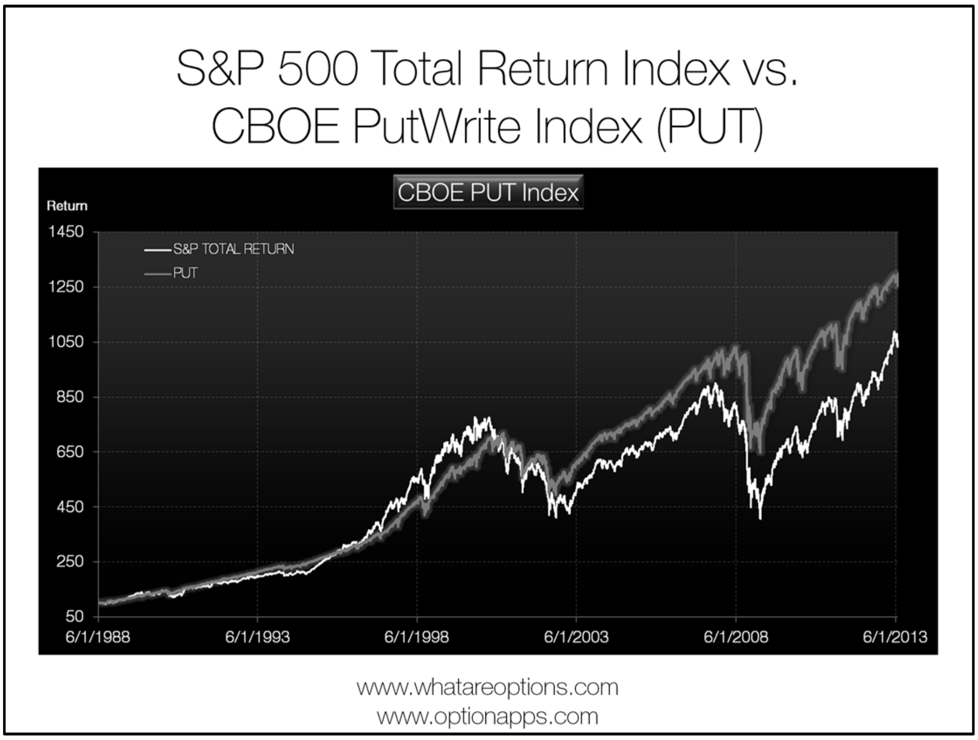
- Fortunately, as it did with the other strategies, the CBOE has created an index that measures the performance of put selling.
- The index is the CBOE PutWrite Index. Ticker PUT.
- It measures the performance of a portfolio that sells a one-month, at-the-money put on the S&P 500.
- It does not assume the use of margin.
- It assumes you have enough cash in your account so that you could buy the index in case of exercise.
- That cash is assumed to be held in an interest-bearing account.



- At each monthly expiration, the existing option is closed down and a new one-month at-the-money put is sold.
- This is nothing more than a once-a-month trade involving just one option.
- It really cannot get any simpler than this.
- The question is, how did it perform?



- Take a look at this chart.
- One thing should stand out right away.
- Take a look at how smooth the lines are on the left side of the chart.
- The same thing happens in 2003 to 2008.
- Let’s compare this performance to the stock market’s total return.



- You can see that, except during the tech bubble in the 1998 and 1999, this strategy shines big time.
- It has a huge edge.
- But did that edge come from taking on too much risk?
- It’s one thing to make money, but if the risk is too high, we’re not interested.
- Let’s look at the numbers.

S&P 500 Total Return Index vs. CBOE PUT Index

SPTR vs. PUT (25-year analysis)

	SPTR	PUT
Standard Deviation of Daily Returns	1.15%	0.75%
Percentage of Profitable Days	54%	65%
Annualized Return	9.4%	10.4%

- Risk is **BEST**
- Probability is **BEST**
- Return is **BEST**

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- Everything is even better.
- Risk is the lowest of all; it's the best.
- In fact the standard deviation of daily returns is just 0.75%.
- Probability – it's the highest of all; the percentage of profitable days is 65%.
- And return is the highest of all; the annualized return is 10.4%.
- This simple strategy is easy, and as you now know, the performance is better than an investment in the stock market.
- How much better is this simple index that does nothing but blindly sell an at-the money put on the S&P 500 once a month?

Reduce Risk 35%

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- Maybe you’ll remember this from the very beginning of this course.
- Portfolio volatility is reduced 35%

- Total return over 25 years is 24% higher.

Increase Probability 20%

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- Percentage of days in which the portfolio makes money increases by 20%, or 11 percentage points.

"Over long horizons, selling options has provided attractive returns compared with the S&P 500."

-- BlackRock

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- It's performance like this that prompted BlackRock, the world's largest money manager, to write ...
- "Over long horizons, selling options has provided attractive returns compared with the S&P 500."

- Using options gives investors the ability to maximize risk-adjusted returns.

To do that, however, investors must **think differently**.

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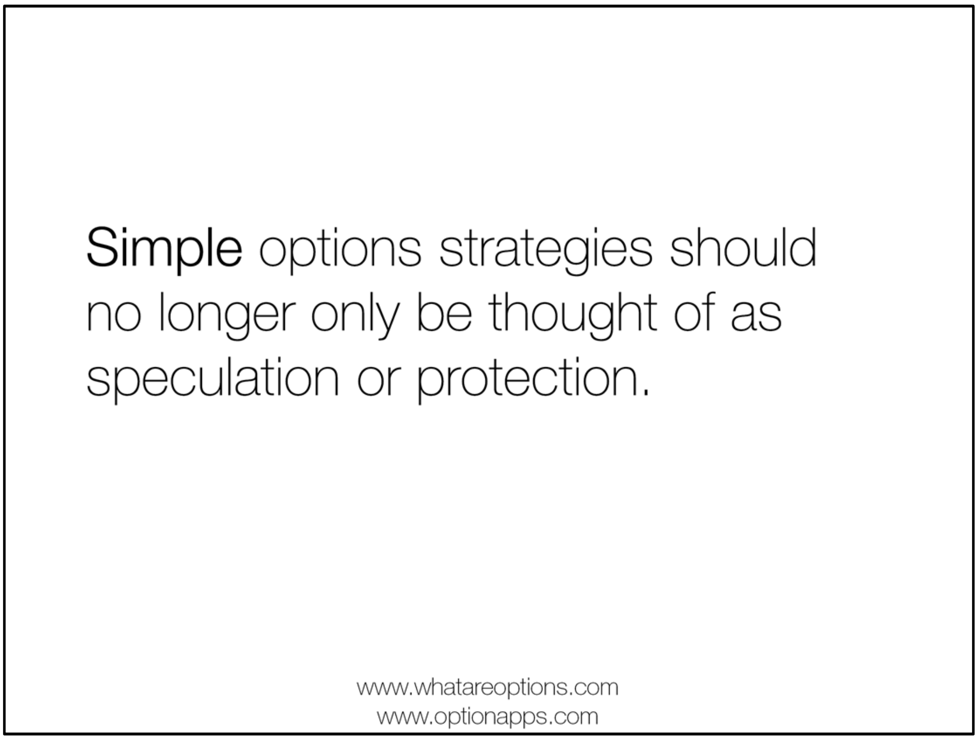
- To do that, however, investors must think differently.



- Simple options strategies should no longer only be thought of as pure speculation or protection.

Options strategies can **create powerful** investment opportunities.

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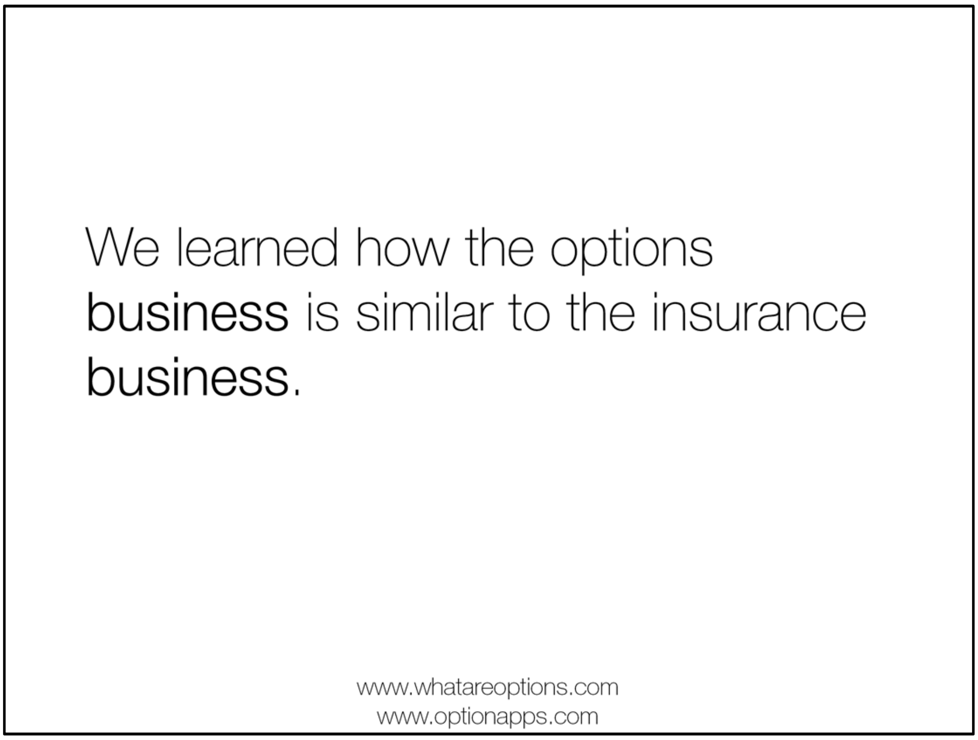
• Options strategies can create powerful investment opportunities.

- And with that, we've reached the end of a long journey.
- Even though this is a basic course, we've covered an immense amount of material.
- Let's review.

- We answered the question, *What Are Options?*



- We learned how the options business is similar to the insurance business.

We learned about **risk** and **reward**.

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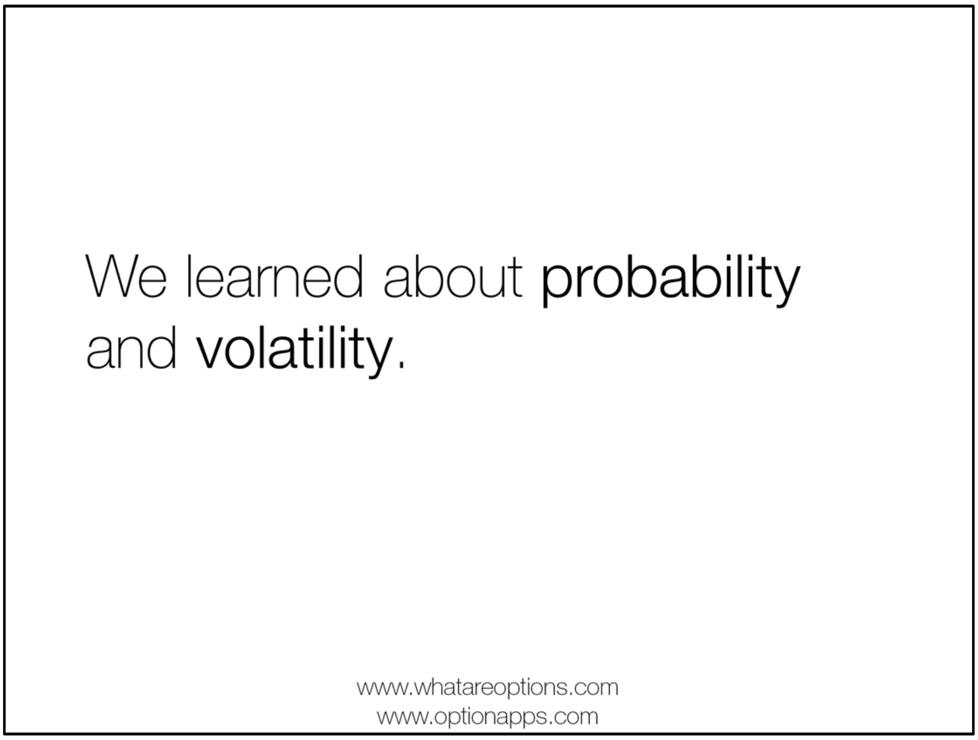
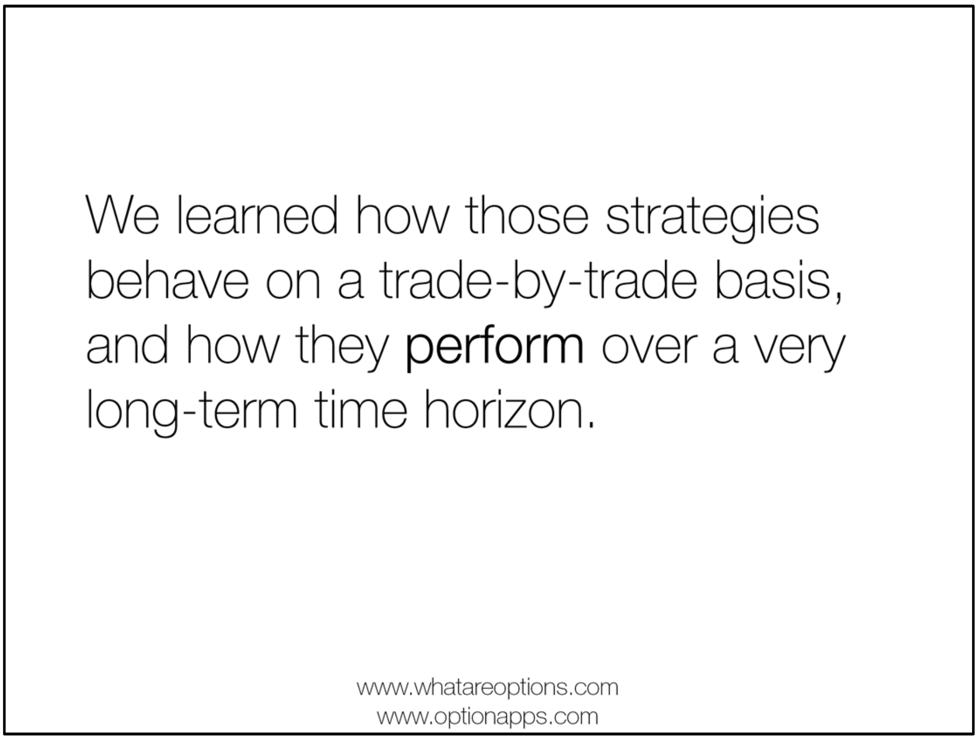
- We learned about risk and reward.



- We learned about probability and volatility.

- We learned basic options strategies.
- Most are suitable for nearly every investor to implement.



- We learned how those strategies behave on a trade-by-trade basis, and how they perform over a very long-term time horizon.

We learned how options can provide a way to **maximize** risk-adjusted returns.

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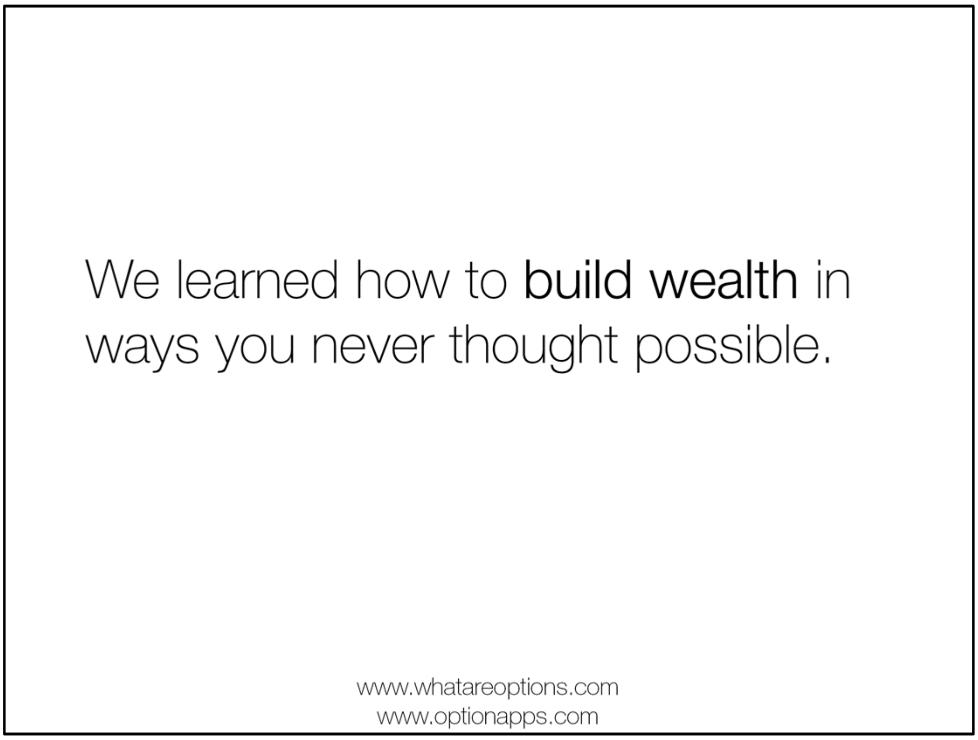
- We learned how options can provide a way to maximize risk-adjusted returns.



- We learned how to build wealth in ways many of you never thought possible.

- Which was our objective: To get you to Change the way you think about building wealth.
- Hopefully, we taught you how to THINK DIFFERENTLY

STRATEGY GUIDE

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[Appendix]

Buy Call Checklist

- Direction: Positive.
  - Bullish moves are preferred.
- Magnitude: Positive.
  - Large moves are preferred.
- Time: Negative.
  - The passage of time works against you.
- Assignment Risk:
  - Early Assignment Risk: No
  - Exercise Risk: Exercise by exception

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Buy Call Motivation

"The investor buys calls as a way to profit from growth in the underlying stock's price, without the risk and up-front capital outlay of outright stock ownership. The smaller initial outlay also gives the buyer a chance to achieve greater percentage gains (i.e., greater leverage)."

-- Options Industry Council
www.optionseducation.org

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Buy Put Checklist

- Direction: Negative.
  - Bearish moves are preferred.
- Magnitude: Positive.
  - Large moves are preferred.
- Time: Negative.
  - The passage of time works against you.
- Assignment Risk:
  - Early Assignment Risk: No
  - Exercise Risk: Exercise by exception

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Buy Put Motivation

"A put buyer has the opportunity to profit from a fall in the stock's price, without risking an unlimited amount of capital, as a short stock seller does. What's more, the leverage involved in a long put strategy can generate attractive percentage returns if the forecast is right."

-- Options Industry Council
www.optionseducation.org

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Buy Protective Put Checklist

- Direction: Positive.
  - Bullish moves are preferred.
- Magnitude: Positive.
  - Large moves are preferred.
- Time: Negative.
  - The passage of time works against you.
- Assignment Risk:
  - Early Assignment Risk: No
  - Exercise Risk: Exercise by exception

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Buy Protective Put Motivation

"This strategy is a hedge against a temporary dip in the stock's value. The protective put buyer retains the upside potential of the stock, while limiting the downside risk."

-- Options Industry Council
www.optionseducation.org

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Buy Protective Put Equivalent Position

- A protective put has the same risk/reward profile as a call purchase.
  - Buy stock, buy put at strike price X
  - Buy call at strike price X

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Sell Call Checklist

- Direction: Mostly Negative.
  - Bullish moves are not preferred.
- Magnitude: Negative.
  - Small moves are preferred.
- Time: Positive.
  - The passage of time works for you.
- Assignment Risk:
  - Early Assignment Risk: Yes
  - Exercise Risk: Yes

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Sell Call Motivation

"The only motive for writing an uncovered call option is to earn income from selling premium."

-- Options Industry Council
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Covered Call Checklist

- Direction: Mostly Positive.
  - Bullish moves are preferred.
- Magnitude: Negative.
  - Small moves are preferred.
- Time: Positive.
  - The passage of time works for you.
- Assignment/Exercise Risk:
  - None, as long as you are willing to sell your shares.

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Covered Call Motivation

"The primary motive is to earn premium income, which has the effect of boosting overall returns on the stock and providing a measure of downside protection."

-- *Options Industry Council*
www.optionseducation.org

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Covered Call Equivalent Position

- A covered call has the same risk/reward profile as a short put sale.
  - Buy stock, sell call at strike price X
  - Sell put at strike price X

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Sell Put Checklist

- Direction: Mostly Positive.
  - Bullish moves are preferred.
- Magnitude: Negative.
  - Small moves are preferred.
- Time: Positive.
  - The passage of time works for you.
- Assignment Risk:
  - Early Assignment Risk: Yes
  - Exercise Risk: Yes

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Sell Put Motivation

"The primary motive for selling a put is to earn premium income, with an understanding that the option seller could be forced to buy the stock if the option is exercised. This has the effect of boosting overall returns and providing a measure of downside protection when compared to just buying the stock."

-- Don Fishback

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Sell Put Equivalent Position

- A short put sale has the same risk/reward profile as a covered call.
  - Sell put at strike price X
  - Buy stock, sell call at strike price X

Collar Checklist

- Direction: Mostly Positive.
  - Bullish moves are preferred.
- Magnitude: Negative.
  - Small moves are preferred.
- Time: Neutral.
  - Passage of time doesn't work for you or against you.
- Assignment/Exercise Risk:
  - None, as long as you are willing to sell your shares.

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Collar Motivation

"This strategy is for holders or buyers of a stock who are concerned about a correction and wish to hedge the long stock position."

-- Options Industry Council
www.optionseducation.org

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Buy Straddle Checklist

- Direction: Neutral.
  - Direction is not a factor.
- Magnitude: Positive.
  - Large moves are preferred.
- Time: Negative.
  - Passage of time works against you.
- Assignment Risk:
  - Early Assignment Risk: No
  - Exercise Risk: Exercise by exception

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Buy Straddle Motivation

"The long straddle is a way to profit from increased volatility in the underlying stock's price."

-- Options Industry Council
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Buy Straddle Equivalent Position

- Buy straddle
- Buy 100 shares of stock, buy 2 puts

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