



**Montréal
Exchange**

Introduction to Options Trading

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What are Derivatives?

- A financial instrument whose value is derived from another underlying asset.
- Options prices are derived from the price of the stock or ETF.

Trading vs. Investing

- Investors are interested in owning the companies.
- Traders are focused on profiting from stock moves.

Options

- Options are independent contracts.
- Require a buyer and seller.
- Price is a derivative of the underlying security.
- Two types of options:
 - Right to buy – calls
 - Right to sell – puts

Why Options?

- Stocks:
 - Limit you to only a basic buy or sell decision.
- Options:
 - Allow you to leverage with a defined risk.
 - Allow you to generate income off your stocks.
 - Allow you to protect your positions.
 - Allow you to create unique tradeoff opportunities.



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Options Basics

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Call Options



| Call Option Buyer | Call Option Seller |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p data-bbox="359 558 654 629">Pays for:</p> <p data-bbox="173 736 845 808">Right to buy security</p> <ul data-bbox="268 915 744 1072" style="list-style-type: none">• specific price• specific time | <p data-bbox="1170 558 1620 629">Gets paid for:</p> <p data-bbox="982 736 1810 808">Obligation to sell security</p> <ul data-bbox="1157 915 1633 1072" style="list-style-type: none">• specific price• specific time |

Put Options

Put Option Buyer

Pays for:

Right to sell security

- specific price
- specific time

Put Option Seller

Gets paid for:

Obligation to buy security

- specific price
- specific time

Option Contract Basics

- One options contract controls 100 shares.
- Price of the contract listed per share.
- 100 multiplier on quoted price.

Key Variables

- **Strike price**
 - The price at which the option buyer has the right to transact the security.
- **Month**
 - The month in which the option expires.
 - Monthly options expire the 3rd Friday of the expiration month.

Options Expiration

Expiration Friday

- Last trading day for options.

Expiration day

- The day the clearing corporation settles the options.

| Calendar Month | | | | | | |
|----------------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | | | X | X | X |
| X | X | X | X | X | X | X |
| X | X | X | X | X | X | X |
| X | X | X | X | X | X | X |
| X | X | | | | | |

Styles of Options

- **Options exercise**

- The buyer can exercise their right to buy or sell the stock.
- Instructions are given to broker.

- **Options assignment**

- The option seller is assigned an exercise notice.
- The assignment notice is received from the sellers brokerage.

Options Expiration Day

- All options that are \$0.01 in-the-money on the expiration day will be automatically exercised.
- Remember to close all in-the-money options prior to expiration if you do not want the shares to transact.

Styles of Options

- **American style**

- Option can be exercised any time.
- Delivers the security.

- **European style**

- Option can only be exercised on expiration.
- Cash settled for difference.

Components of an Option Price

Option Price

Time Value

- The cost.
- Time decays.

Intrinsic Value

- Realizable equity value based on stock price.
- Does not decay.

Intrinsic Value

Call = (current stock price) – (strike price).

example: Stock is at **\$40.00**

\$36.00 call option

\$40.00 - **\$36.00** = **\$4.00** *intrinsic value*

Put = (strike price) – (current stock price).

example: Stock is at **\$40.00**

\$44.00 put option

\$44.00 - **\$40.00** = **\$4.00** *intrinsic value*

Categories of Options

- Options are categorized to identify their current state.
- This changes as the stock changes.

| Category |
|------------------|
| In-the-money |
| At-the-money |
| Out-of-the-money |

Categories of Options - Calls

TLM – Talisman Energy Inc.

Last update: July 28, 2011, 13:00 Montréal time - (DATA 15 MINUTES DELAYED)

[Refresh](#) | [Print](#)

▼ Last Price: **18.050** Net Change: **-0.700** Bid Price: **18.050** Ask Price: **18.060** 30-Day Historical Volatility: **28.65%**

Calls

| Month / Strike | Bid Price | Ask Price | Last Price | Impl. Vol. | Vol. |
|----------------|-----------|-----------|------------|------------|------|
| + 11 AU 14.000 | 4.000 | 4.150 | 4.900 | 49.88 | 0 |
| + 11 AU 15.000 | 3.000 | 3.150 | 3.900 | 45.76 | 0 |
| + 11 AU 16.000 | 2.070 | 2.180 | 2.910 | 38.01 | 0 |
| + 11 AU 17.000 | 1.190 | 1.290 | 1.970 | 33.40 | 0 |
| + 11 AU 18.000 | 0.520 | 0.600 | 0.400 | 30.16 | 39 |
| + 11 AU 19.000 | 0.160 | 0.220 | 0.160 | 28.98 | 87 |
| + 11 AU 20.000 | 0.030 | 0.080 | 0.210 | 30.18 | 0 |
| + 11 AU 21.000 | 0.000 | 0.050 | 0.070 | N/Av | 2 |
| + 11 AU 22.000 | 0.000 | 0.030 | 0.050 | N/Av | 0 |
| + 11 AU 23.000 | 0.000 | 0.030 | 0.040 | N/Av | 0 |
| + 11 AU 24.000 | 0.000 | 0.030 | 0.040 | N/Av | 0 |

In-the-money

At-the-money

Out-of-the-money

Categories of Options - Puts

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Refresh | Print

Last Price: **18.050** Net Change: **-0.700** Bid Price: **18.050** Ask Price: **18.060** 30-Day Historical Volatility: **28.65%**

Puts

| Month / Strike | Bid Price | Ask Price | Last Price | Impl. Vol. | Vol. |
|----------------|-----------|-----------|------------|------------|------|
| + 11 AU 14.000 | 0.000 | 0.050 | 0.040 | 55.04 | 0 |
| + 11 AU 15.000 | 0.010 | 0.060 | 0.050 | 45.21 | 0 |
| + 11 AU 16.000 | 0.030 | 0.100 | 0.100 | 37.05 | 0 |
| + 11 AU 17.000 | 0.150 | 0.220 | 0.180 | 32.54 | 10 |
| + 11 AU 18.000 | 0.470 | 0.500 | 0.560 | 29.28 | 107 |
| + 11 AU 19.000 | 1.090 | 1.180 | 1.280 | 29.67 | 25 |
| + 11 AU 20.000 | 1.970 | 2.040 | 2.180 | 30.25 | 25 |
| + 11 AU 21.000 | 2.900 | 3.050 | 2.310 | 27.48 | 0 |
| + 11 AU 22.000 | 3.850 | 4.000 | 3.300 | N/Av | 0 |
| + 11 AU 23.000 | 4.850 | 5.000 | 4.300 | N/Av | 0 |
| + 11 AU 24.000 | 5.850 | 6.000 | 5.300 | N/Av | 0 |

Out-of-the-money

At-the-money

In-the-money

Time & Expiration

All options have:

- 1 month expiry – Front month
- 2 month expiry – Next month

When the front month expires, the next month series is created.

Time & Expiration

In addition, all options are assigned a quarterly cycle.

| | | | | |
|---------|----------|-------|-----------|----------|
| Cycle 1 | January | April | July | October |
| Cycle 2 | February | May | August | November |
| Cycle 3 | March | June | September | December |

Long Term Options

- Longer term options - 1 and 2 years out.
- Commonly have a January expiration.
- Not available on all securities.

Long Term Options

Advantages

- Time decay is at a slower rate.
- More time for your forecast to come to fruition.
- Long-term options can be used as stock substitutes.
 - No voting rights or dividends.



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Options Pricing



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Variables in Option Pricing

- The option pricing model considers the following variables:
 1. Price
 2. Strike
 3. Time
 4. Volatility
 5. Dividend
 6. Interest

Variables in Option Pricing

- The option pricing model considers the following variables:

- 1. Price**

2. Strike

3. Time

4. Volatility

5. Dividend

6. Interest

The simplest variable to understand is the price. As the price of the stock increases or decreases, the option will change.

Variables in Option Pricing

- The option pricing model considers the following variables:

1. Price
- 2. Strike**
3. Time
4. Volatility
5. Dividend
6. Interest

The strike price is the price at which option is exercisable. The closer the stock is to the strike, the more premium will be reflected in the option.

Variables in Option Pricing

- The option pricing model considers the following variables:

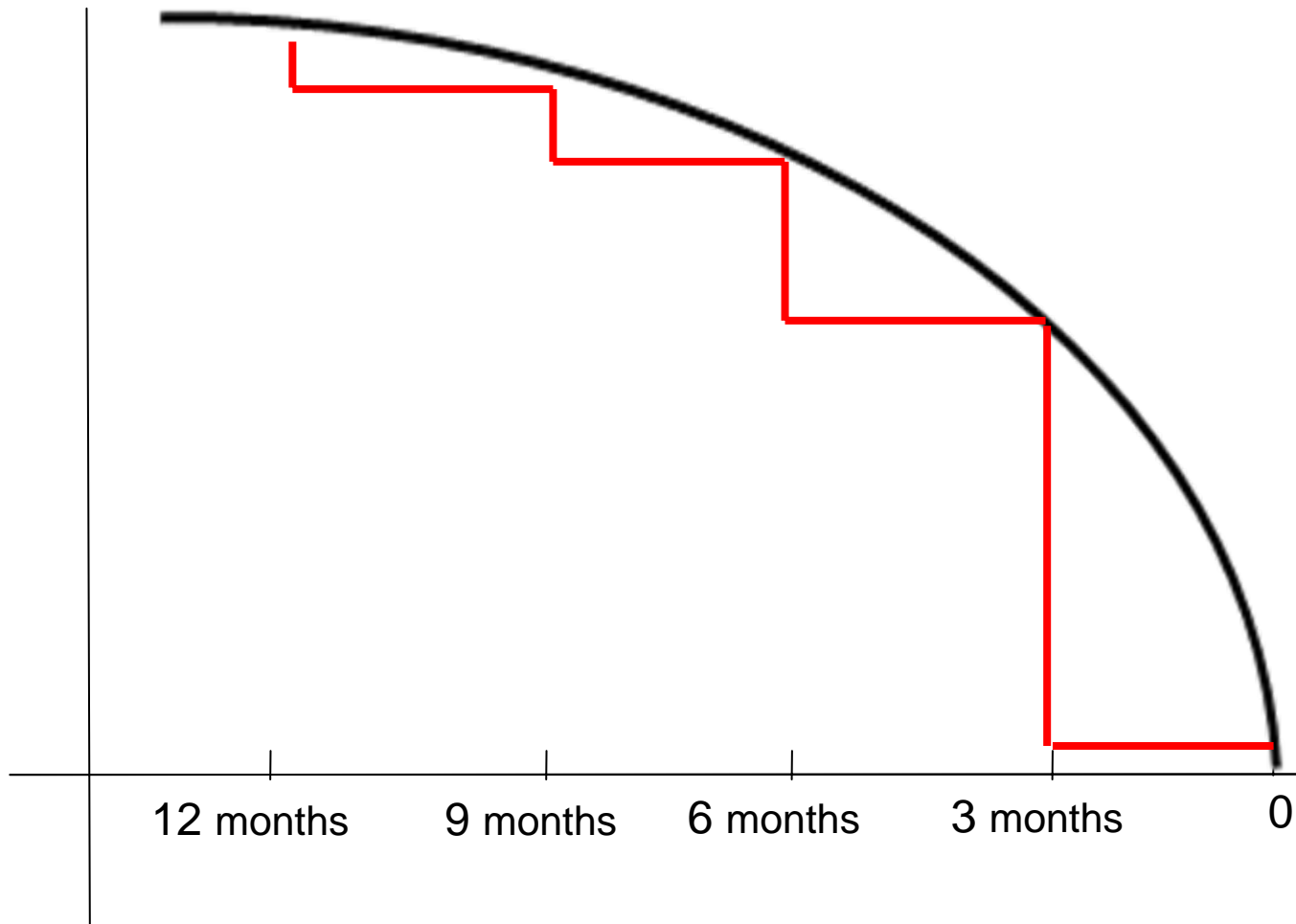
1. Price
2. Strike
- 3. Time**
4. Volatility
5. Dividend
6. Interest

The more time that there is on the option, the more expensive it will be.

Impact of Time

- Time value is a function of unpredictability.
- The more time until expiration, the higher premium.
- Uncertainty decreases as expiration approaches.
- The rate of decay is measured by the Greek theta.

Time Decay is not Linear



Variables in Option Pricing

- The option pricing model considers the following variables:

1. Price
2. Strike
3. Time
- 4. Volatility**
5. Dividend
6. Interest

The more volatile a stock is, the more expensive the premium will be to reflect the risk of sudden rapid price change.

Implied vs. Historical Volatility

- Historical volatility
 - Past realized volatility.
 - Measured by average deviation from the average price.
- Implied volatility
 - Market's expectation for future volatility.

Why Volatility is Important

- Is the adjustment for risk.
- Implied volatility will adjust for risk.
 - Company earnings.
 - Pending announcements or mergers.
 - Economic/market environment.

Variables in Option Pricing

- The option pricing model considers the following variables:

1. Price
2. Strike
3. Time
4. Volatility
- 5. Dividend**
6. Interest

All known dividends are discounted into the price to ensure accurate pricing.

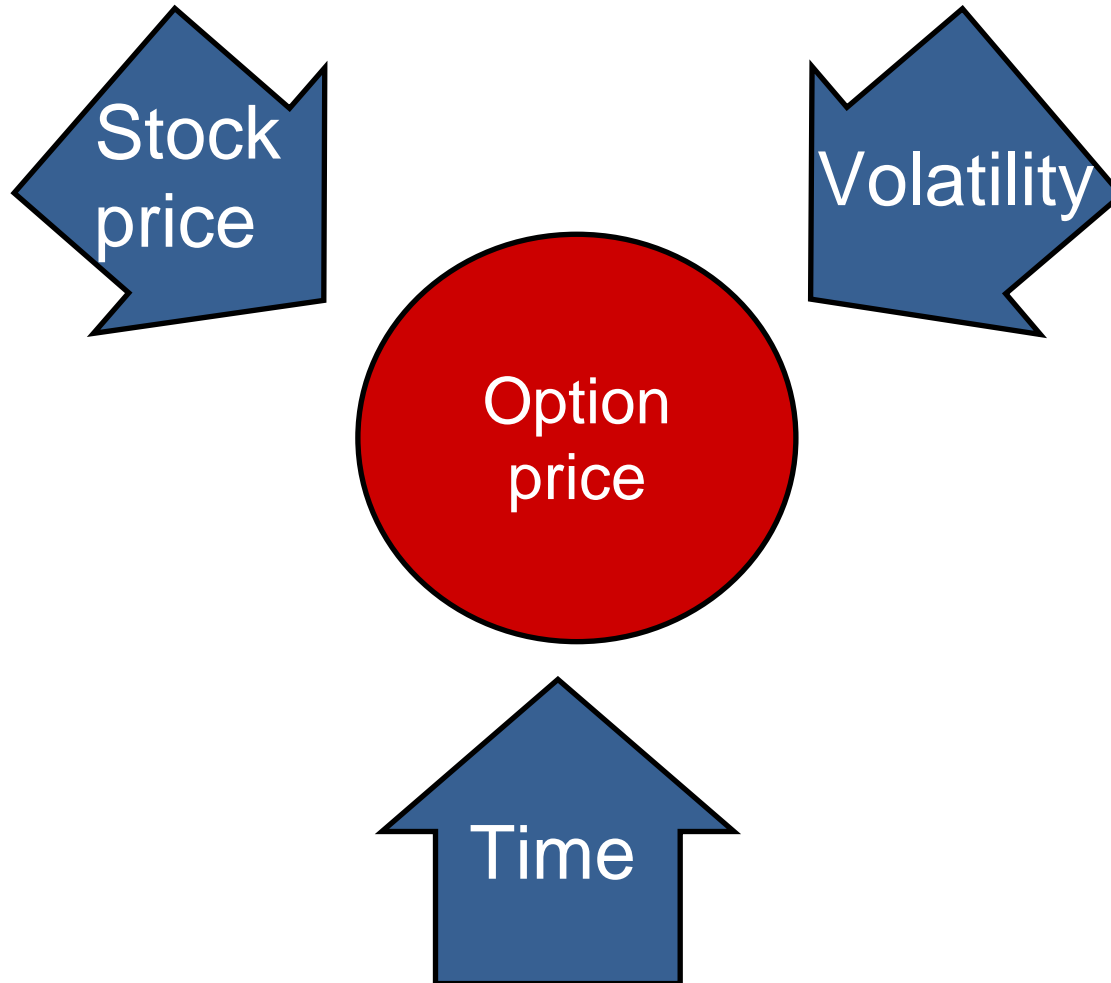
Variables in Option Pricing

- The option pricing model considers the following variables:

1. Price
2. Strike
3. Time
4. Volatility
5. Dividend
- 6. Interest**

The risk free rate of interest is factored into the price of an option.

The Complexities of Option Prices





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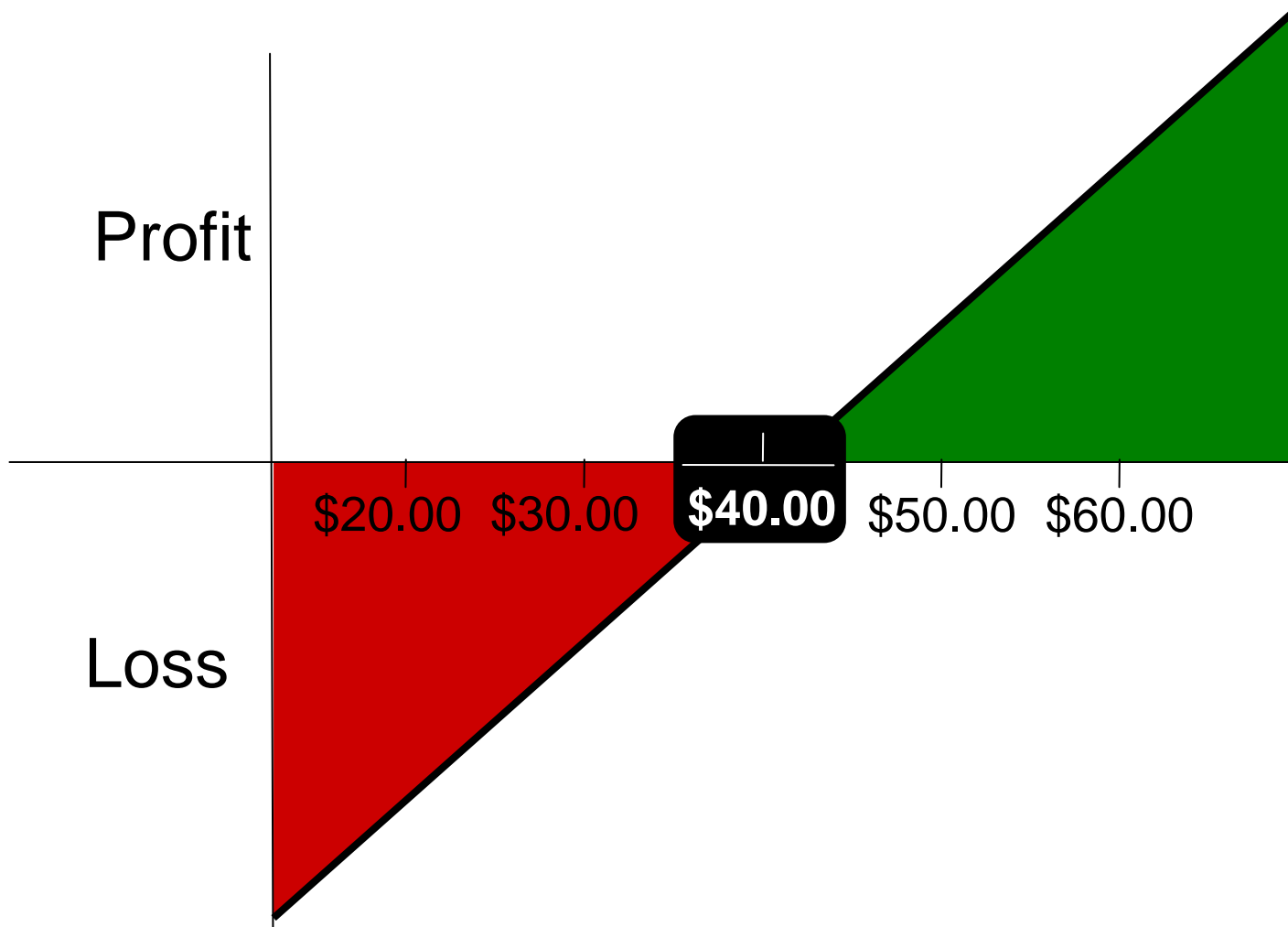
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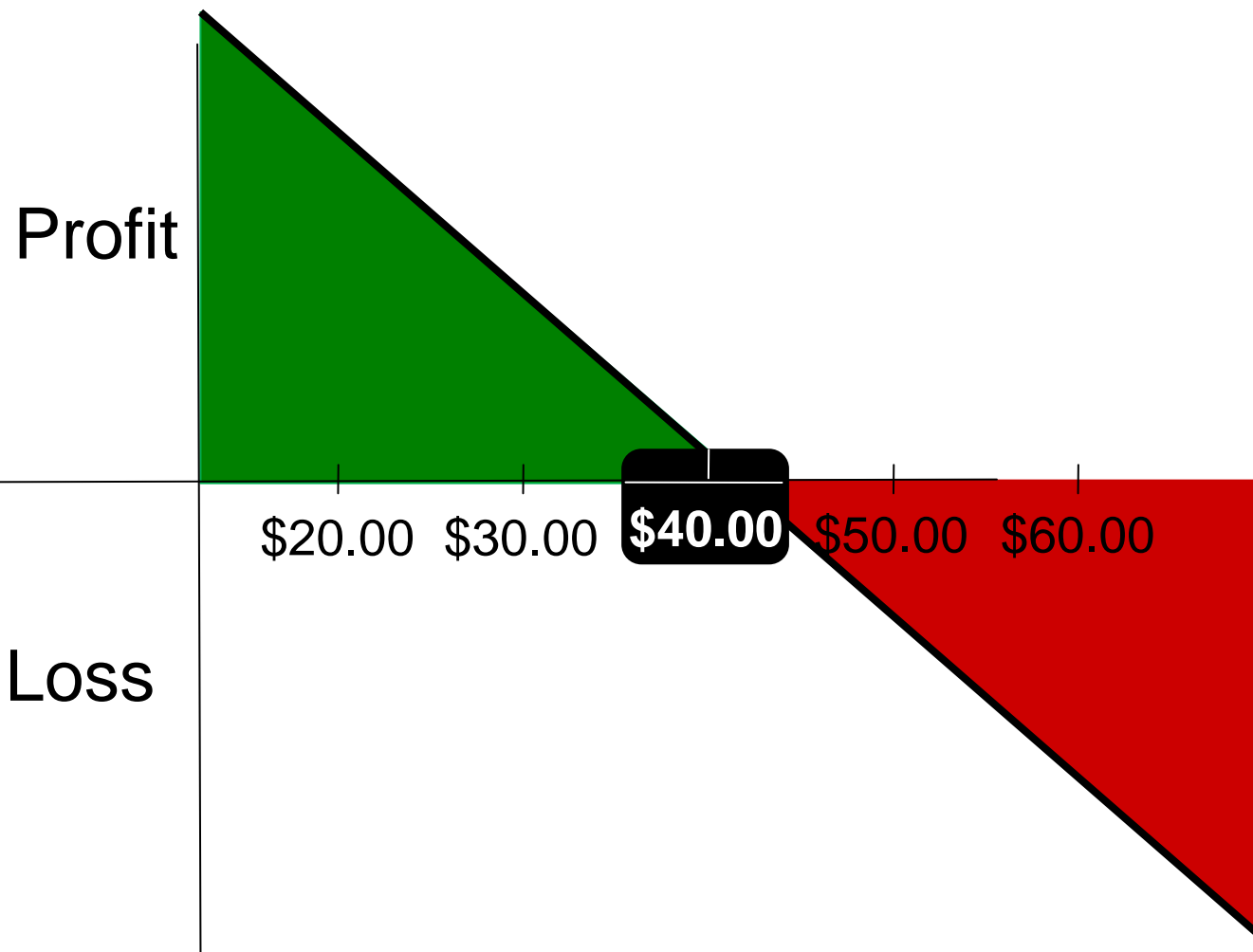
Analyzing Risk Graphs

- Give investors ability to visualize the risk and profit potential.
- Stock price along the x-axis.
- Profit/loss along the y-axis.

Long Stock Risk Graph



Short Sell of Stock Risk Graph

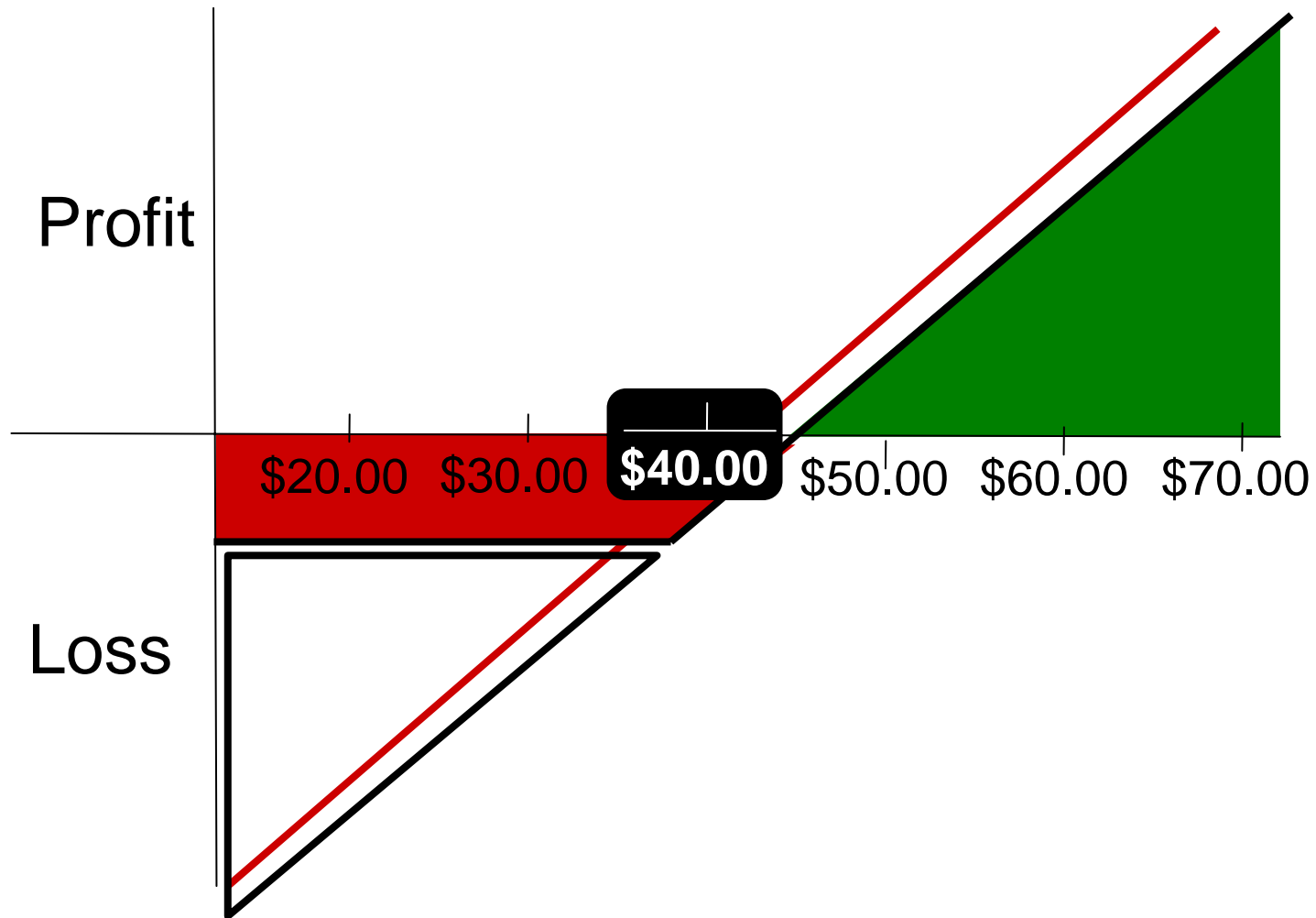


Buying a Call Option

Call buyer has the right to buy the underlying stock.

- Specific price – Strike price
- Specific time – Expiration

Buying a Call Option



Example: Buying a Call Option

- Investor feels Suncor will rally higher over the next few months.
- Rather than outlaying the cash for shares, the investor decides to participate using a call option.
- Suncor (TSX:SU) last traded at \$30.00.

Example: Buying a Call Option

- Suncor 6 month \$30.00 call.
- \$3.00 ask.
- The call option gives the investor the right to buy the shares at \$30.00 anytime over the next 6 months.
- Average cost $\$30.00 + \$3.00 = \$33.00$.
- Investor buys 5 call options for \$1,500.00.

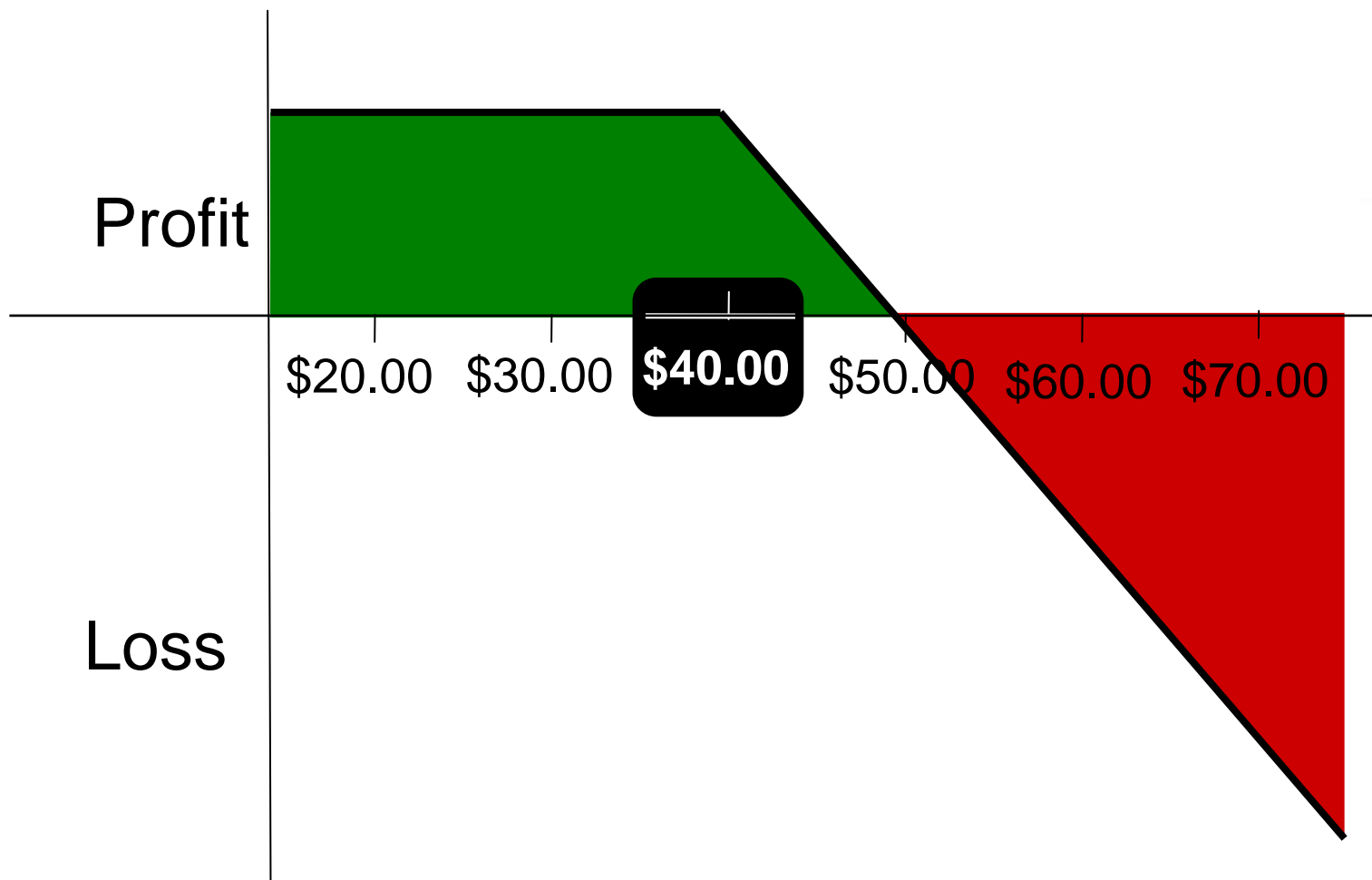
Example: Buying a Call Option

- 6 months later:
- Suncor is trading at \$40.00.
- Investor can sell the calls for \$10.00 and take the profit.
- $\$10.00 - \$3.00 = \$7.00$ profit.
- $\$7.00 \times 500 = \$3,500.00$ profit.

Selling a Call Option - Naked

- Call seller has the obligation to sell the underlying stock.
 - Specific price – Strike price
 - Specific time – Expiration

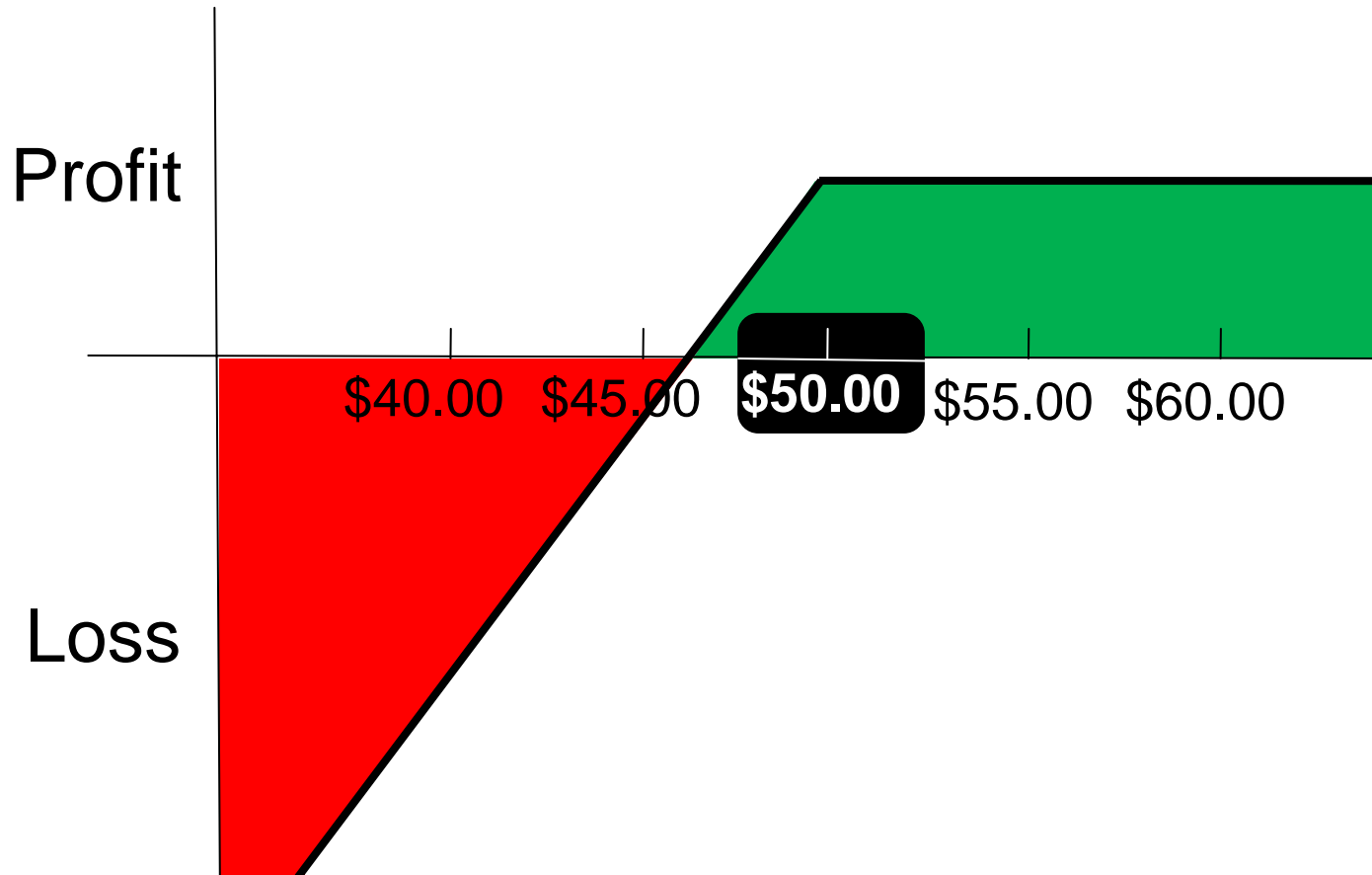
Selling the Call Option - Naked



Selling a Covered Call Option

- Investor physically owns the stock.
- Call seller has the obligation to sell the underlying stock.
 - Specific price – Strike price
 - Specific time – Expiration

Covered Call



Example: Covered Call

- Investor feels that the stock market will have a few months of choppy price action.
- Investor feels that making an upfront return is better than anticipating the market to advance.
- Would like to make a fixed cash flow return.

Example: Covered Call

- TD Bank (TSX:TD).
- Shares trading at \$77.50.
- Investor would like to buy the shares and create an income.

Example: Covered Call

- Investor looks at the TD Bank \$78.00 call for 2 months.
- \$2.10 bid.
- Investor buys 200 shares of TD Bank for \$15,500.00.
- Investor sells 2 x \$78.00 calls for \$2.10 or \$420.00 cash flow income.
- 2.79% cash flow in 2 months.

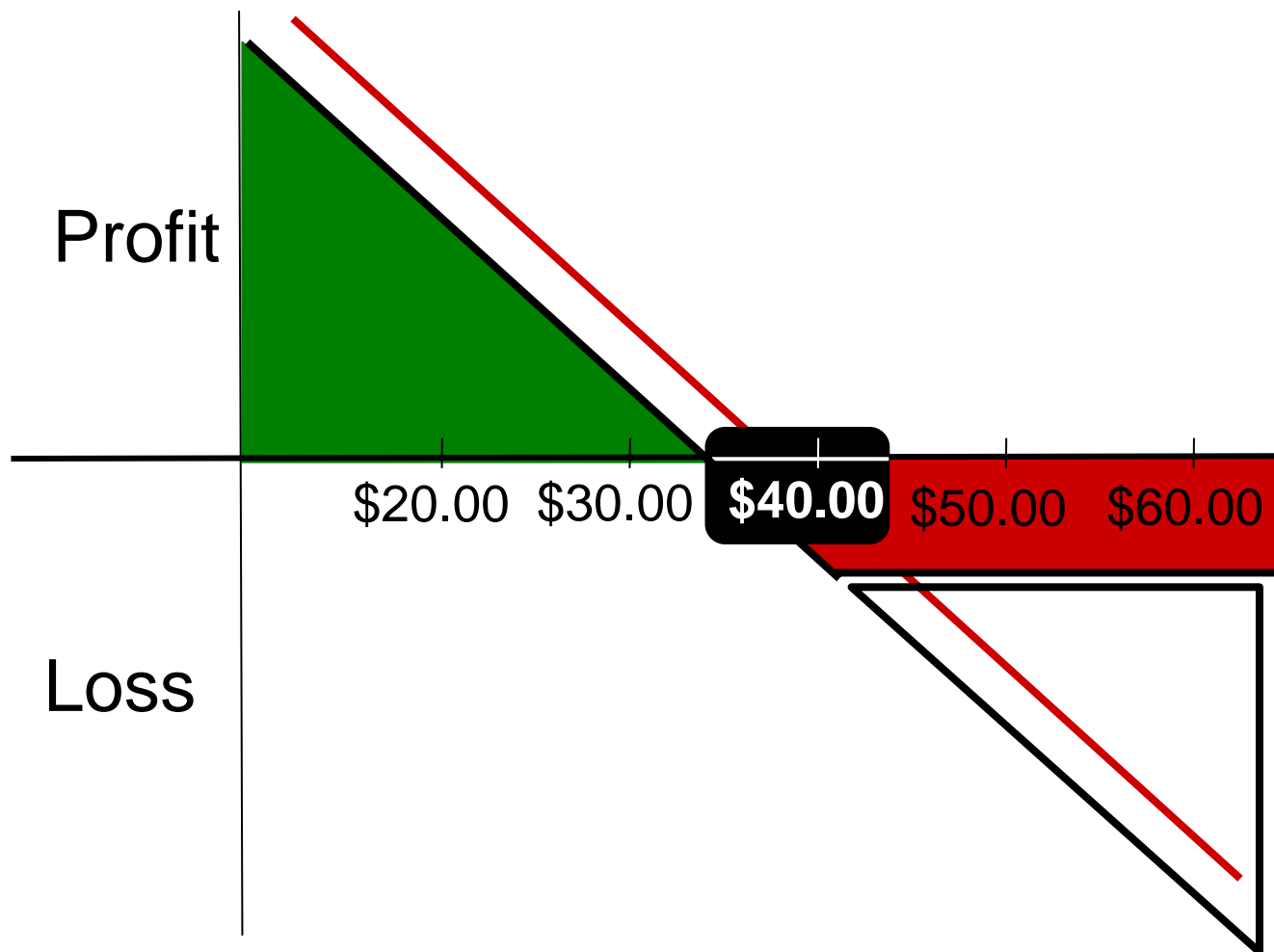
Example: Covered Call

- Investor makes 2.79% (\$410.00).
- Obligated to sell the stock at \$78.00 if the call buyer exercises the call option.
- It is the process of winning with base hits rather than home runs.

Buying a Put Option

- Put buyer has the right to sell the underlying stock.
 - Specific price – Strike price
 - Specific time – Expiration

Buying the Put Option



Example: Buying a Put Option

- Investor believes the stock market will seasonally decline.
- Investor would like to use an option to participate on the downside of the stock rather than short selling the stock.

Example: Buying a Put Option

- iShares S&P/TSX60 Index ETF (TSX:XIU).
- Last traded at \$17.67.
- Investor would like to participate on a downside forecast of the market.

Example: Buying a Put Option

- The XIU \$17.50 put for 2 months.
- \$0.40 Ask.
- The put option gives the investor the right to sell the XIU at \$17.50.
- Investor buys 10 put options for \$400.00

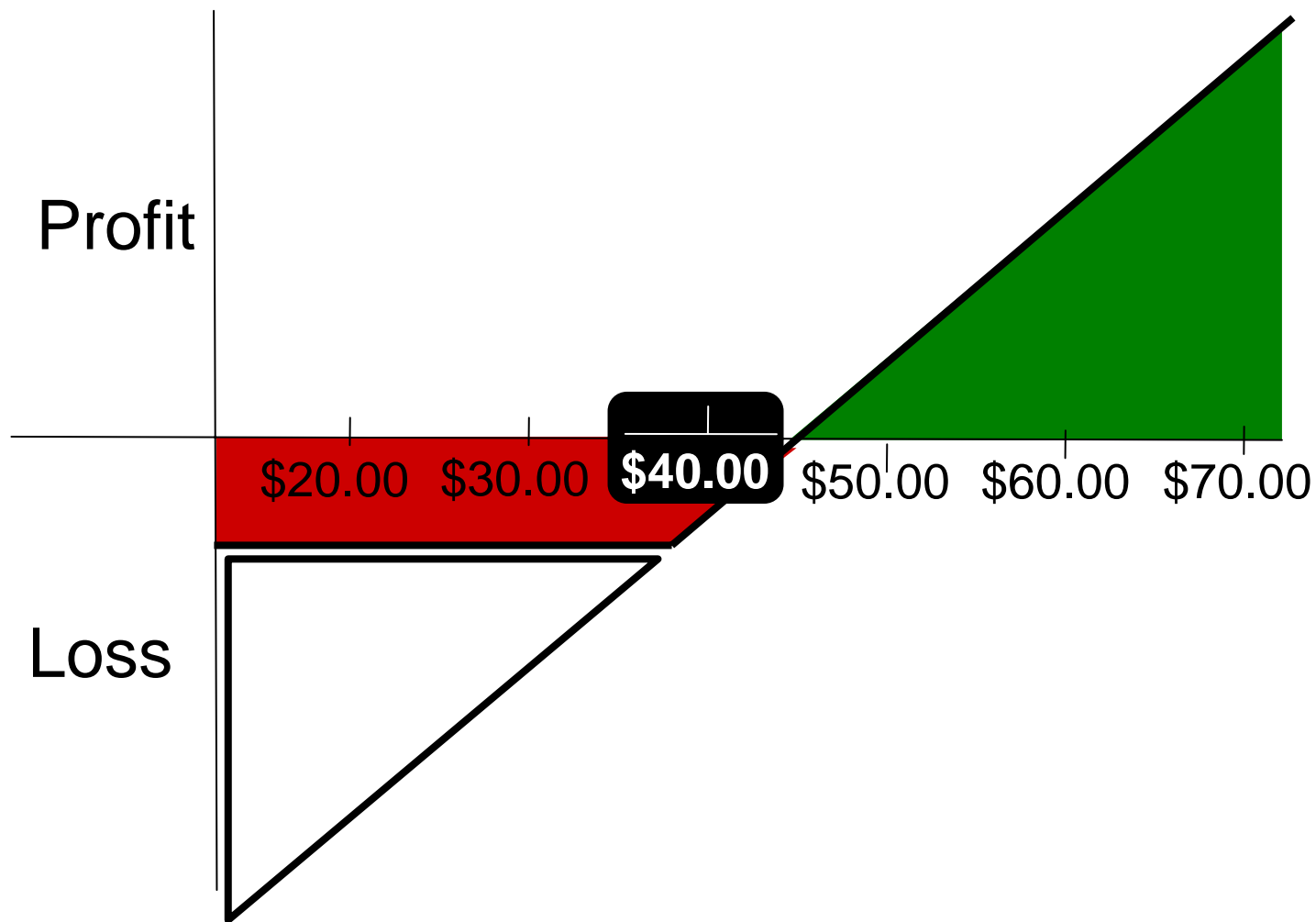
Example: Buying a Put Option

- 2 months later:
- If XIU is trading at \$16.50.
- Investor can sell the put for \$1.00 at a profit.
- $\$1.00 - \$0.40 = \$0.60$ profit.
- $\$0.60 \times 1,000 = \600.00 .

Buying a Protective Put

- Bought or already own the shares.
- Buy a put giving the right to sell the underlying stock at:
 - Specific price – Strike price
 - Specific time – Expiration

Buying a Protective Put



Example: Buying a Put for Protection

- Investor believes that Goldcorp will seasonally increase.
- Investor would like to own the stock, but would like to remove much of the risk of owning the shares.

Example: Buying a Put for Protection

- Owns 100 Goldcorp (TSX:G) shares at \$46.00
- 3 month \$46.00 put is \$3.00 ask.
- The put gives the investor the right to sell the shares at \$46.00 for the next 3 months.
- Investor buys 1 put option for \$300.00.

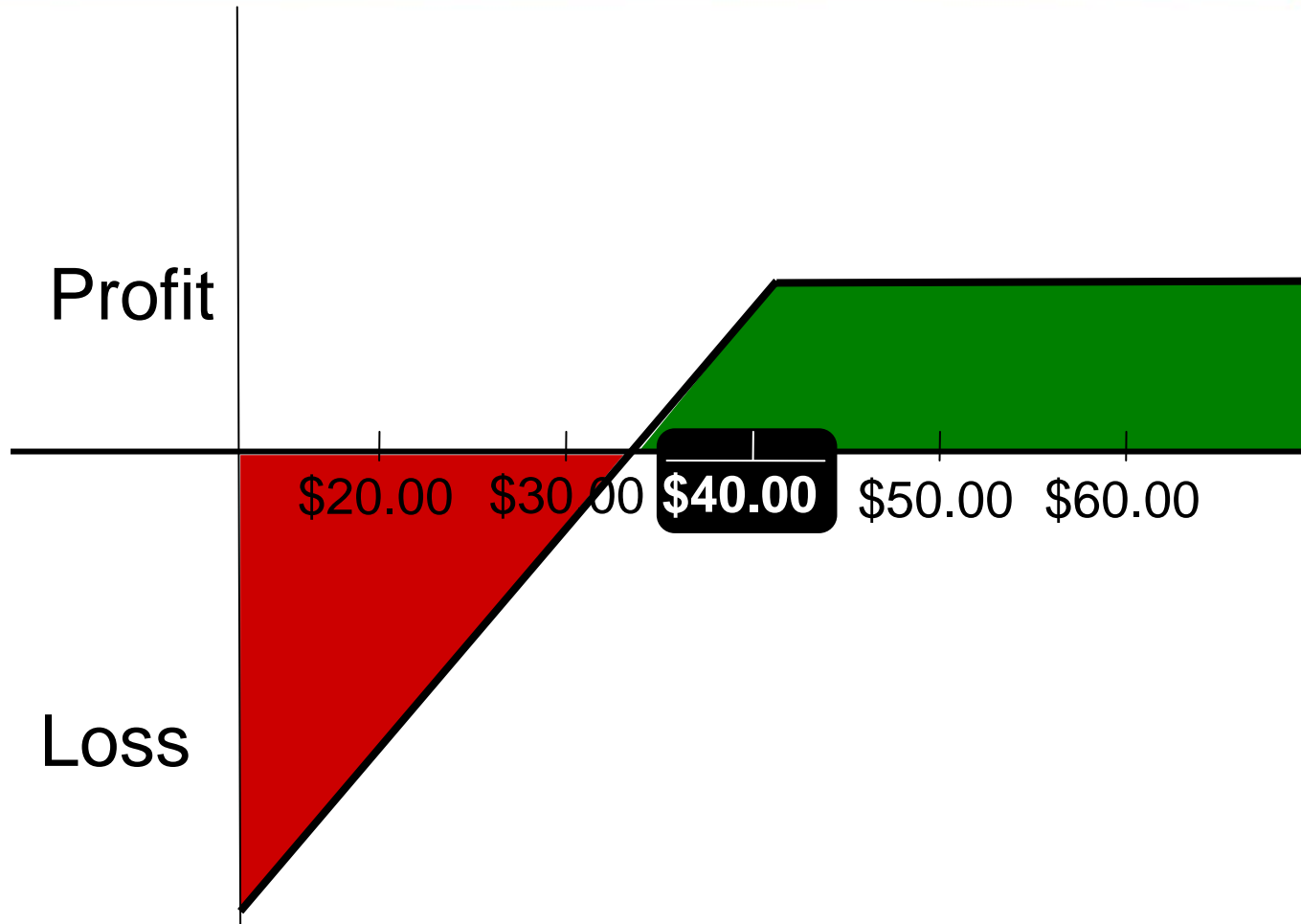
Example: Buying a Put for Protection

- 2 months later:
- Investor is wrong and Goldcorp is trading at \$39.00.
- Investor gives broker the instruction to exercise the put and overnight the stock is sold for \$46.00.
- Alternatively, the investor could keep the shares and just sell the put for \$7.10 or a \$4.10 profit.

Selling a Put Option

- Put seller has the obligation to buy the underlying stock.
 - Specific price – Strike price
 - Specific time – Expiration

Selling a Put Option



Example: Selling a Put Option

- Investor feels that the Tim Horton's has gone too far to the upside to buy now.
- Investor would like to make some money while waiting for the stock to weaken for a buying opportunity.
- Tim Horton's (TSX:THI) last traded at \$47.85.

Example: Selling a Put Option

- Tim Horton's \$46.00 put for 2 months.
- \$0.65 bid.
- By selling the put, the investor obligates themselves to buy Tim Horton's shares at \$46.00 over the next 2 months.
- If assigned, breakeven is:
 - $\$46.00 - \$0.65 = \$45.35$
- Investor sells 5 put options for \$325.00 income (1.48% cash flow).

Example: Selling a Put Option

- 2 months later:
- Tim Horton's declines 10% and is trading at \$44.00.
- Investor is assigned the shares at \$46.00 for a \$23,000 purchase.
- Investor made the \$0.65 income. The average cost of the shares is \$45.35.
- (Alternatively if the stock never declined, the investor made the \$325.00 income.)



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Options Orders and Clearing

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Order Entry

- **New order entry**
 - Buy or sell – The action
 - Open or close – Is it going into your account or is it leaving your account?

Order Entry

- **Long options**

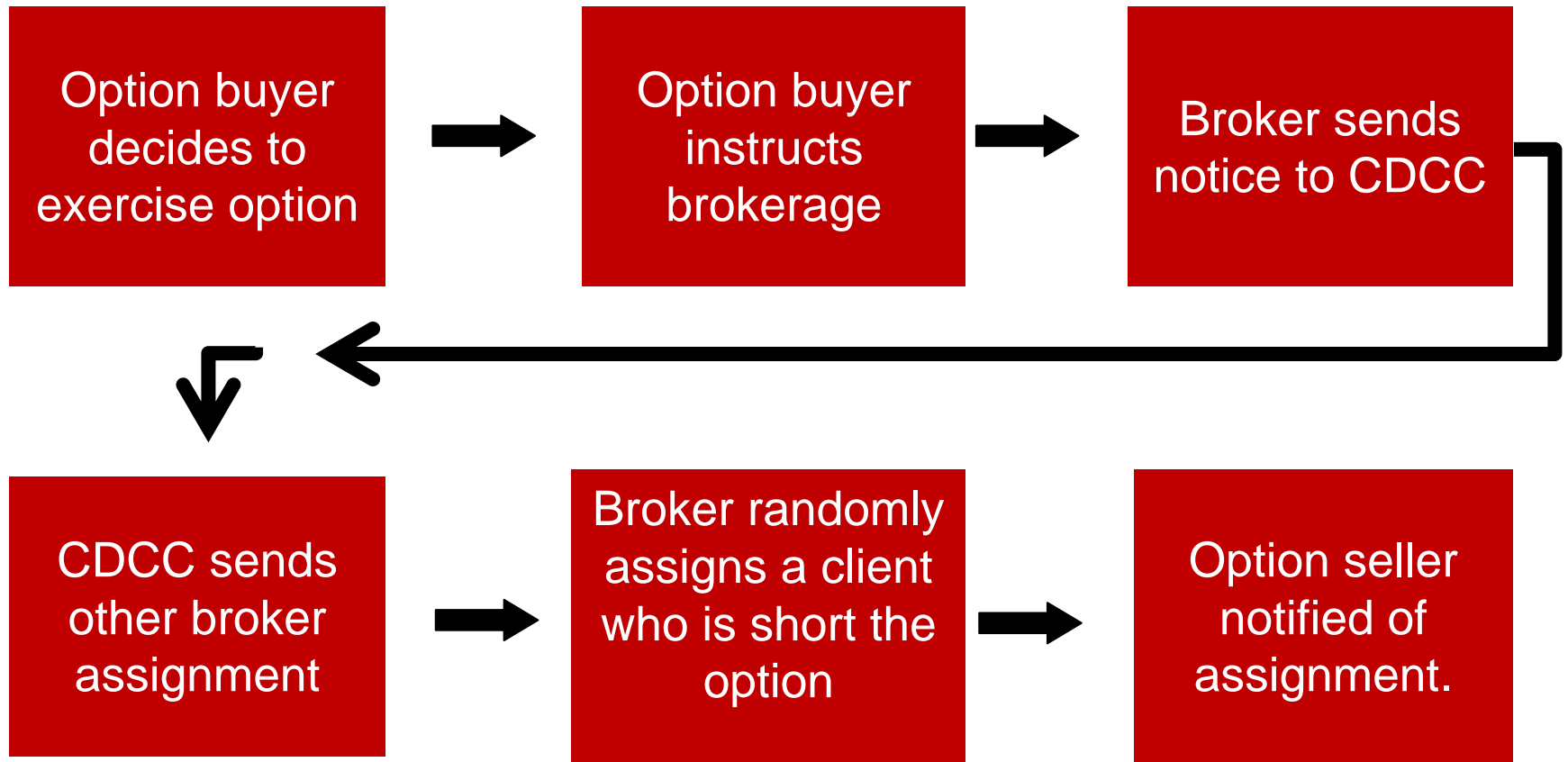
- When you buy an option to open, it will appear as a positive position in your account holdings.

- **Short options**

- When you sell an option to open, it will appear as a negative balance position in your account holdings.

- Canadian Derivatives Clearing Corporation.
- Wholly-owned subsidiary of the Montreal Exchange.
- Acts as the central clearing counterparty for exchange traded derivatives.
- Guarantees every side of the transaction to protect the integrity of the system.

CDCC Assignment Process



Alternatives to Exercise

- Prior to any exercise or auto assignment, investor can:
 - Close position.
 - Roll position.

Rolling a Long Call

- Royal Bank at \$53.77
- Investor has February \$52.00 call option.
- February \$52.00 call is bidding \$2.05.
- March \$52.00 call is asking \$2.50.

Rolling a Long Call

- Investor sells the February \$52.00 call for \$2.05.
- Investor buys the March \$52.00 call for \$2.50.
- Investor pays a \$0.45 (net debit) for extending the option to March.
- Some brokerages allow you to do this as a single net debit trade as a “roll”.
- This is a taxable transaction.



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Options Greeks and VIXC

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Options Greeks

- Pro traders use the options “Greeks” to create hedged positions.
- Average traders use them to understand how a change in one of the variables will influence the option price.

Options Greeks

- The 5 Greeks:

1. Delta
2. Gamma
3. Vega
4. Theta
5. Rho

Options Greeks

- Understanding the Greeks:

1. **Delta**

2. Gamma

3. Vega

4. Theta

5. Rho

Delta is a mathematical measure used to show the rate of change in an option price relative to a change in price in the underlying security.

Options Greeks

- Understanding the Greeks:

1. Delta

- 2. Gamma**

3. Vega

4. Theta

5. Rho

Gamma is the rate of change in the delta.

This is measure plays an important factor for pro traders who are using options to delta hedge their portfolios.

Options Greeks

- Understanding the Greeks:

1. Delta

2. Gamma

3. Vega

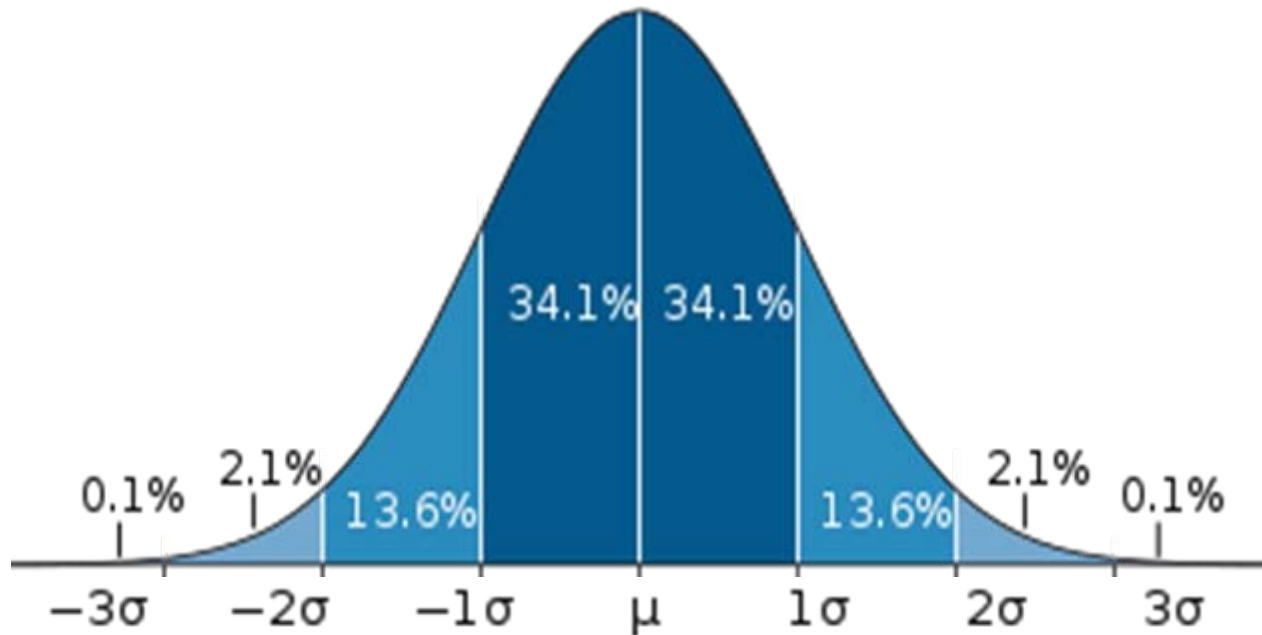
4. Theta

5. Rho

Vega is a measure of change in an option price relative to a percentage change in implied volatility.

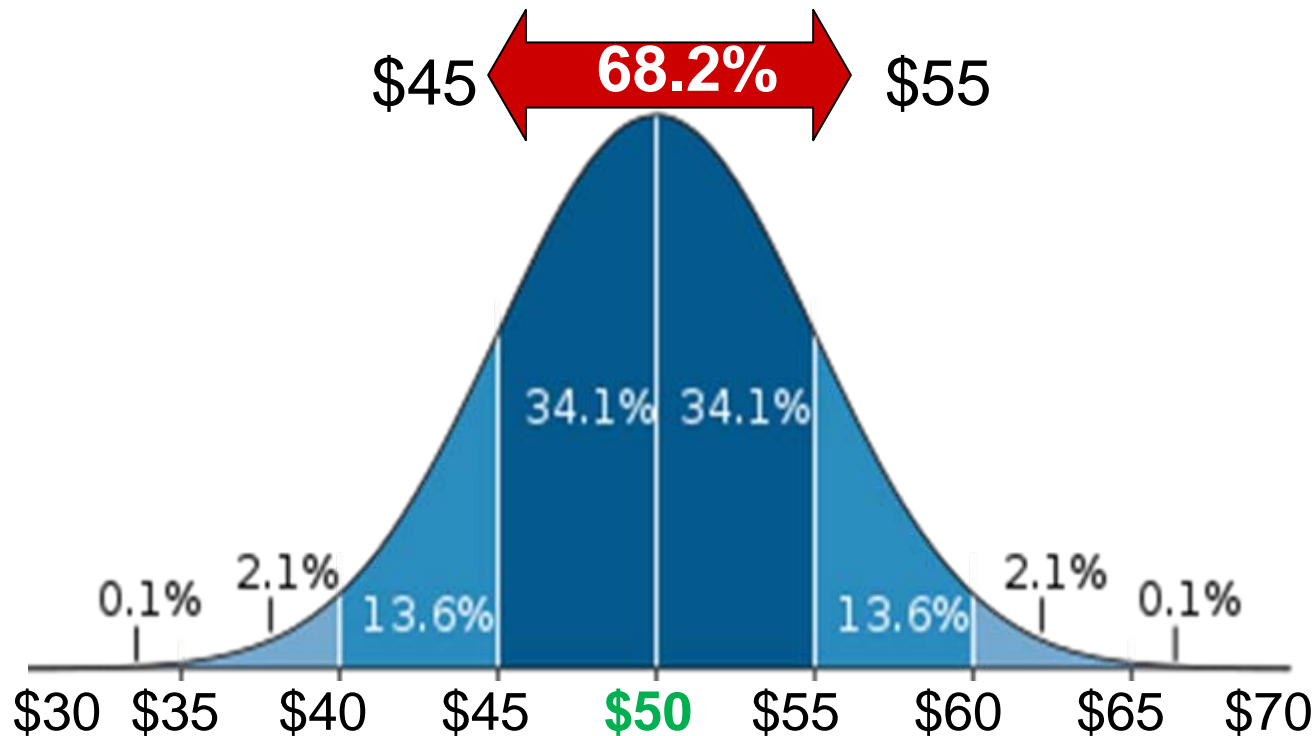
Vega and Implied Volatility

- Creates a probability distribution curve.



Normal Distribution Bell Curve

- 1 standard deviation higher and lower.

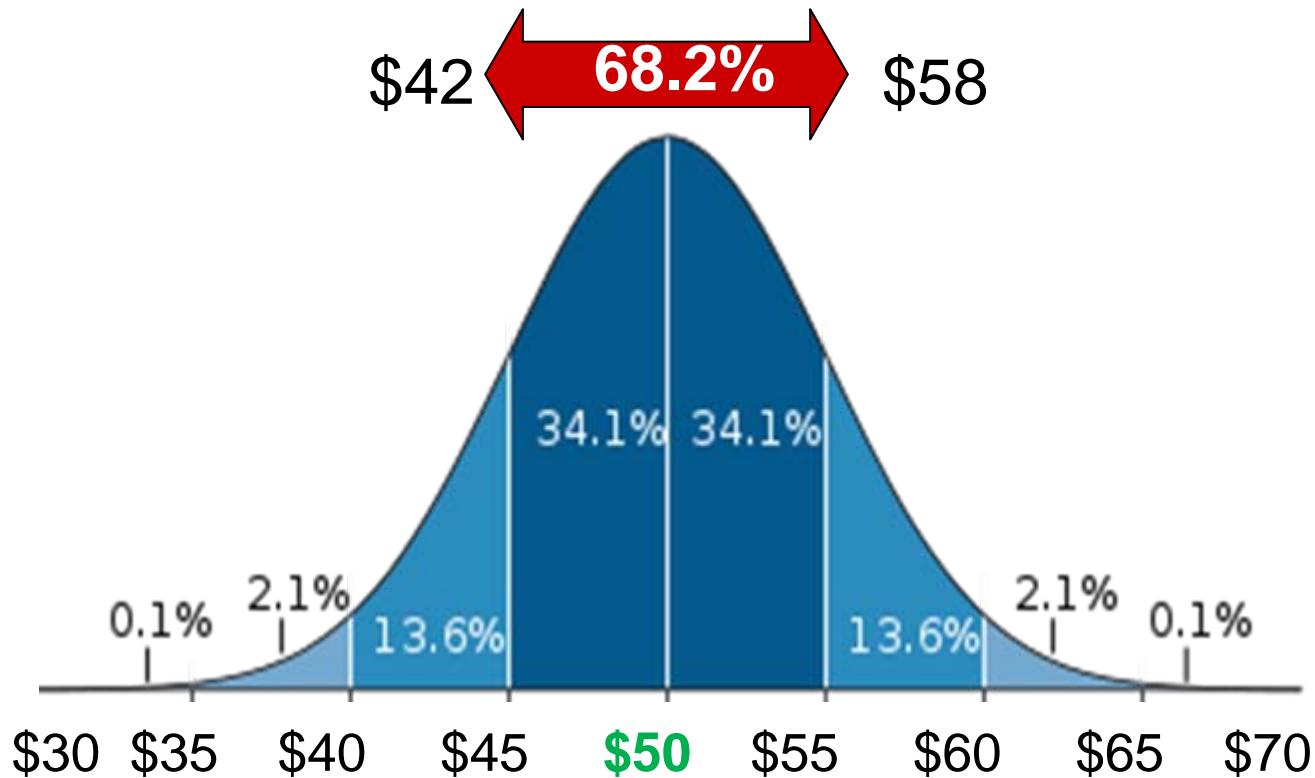


Expanding Implied Volatility

- The environment changes creating a period of high volatility.
- The volatility will expand adjusting the price of options.
- Rate of change measure called the vega.

Expanding Implied Volatility

- 1 standard deviation higher and lower.

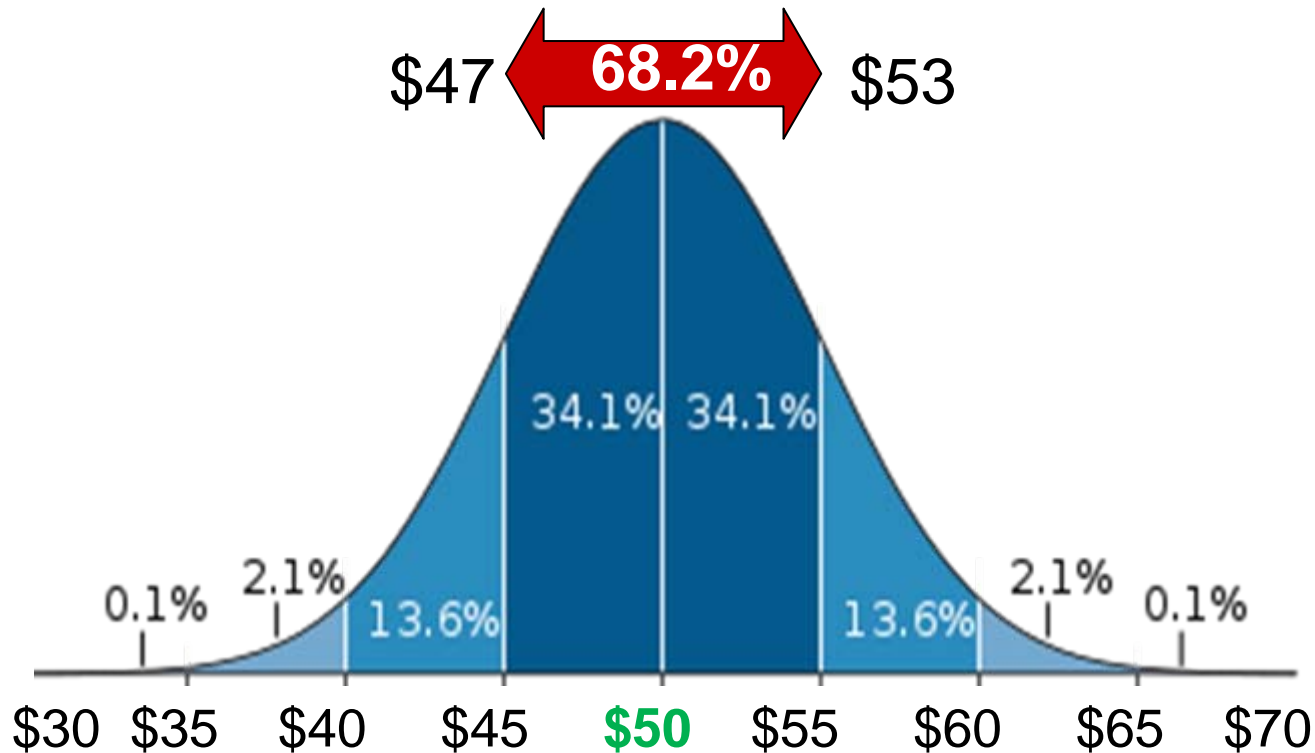


Contracting Implied Volatility

- The environment changes creating a period of less volatility.
- The volatility will contract adjusting the price of options.
- Rate of change measure called the vega.

Contracting Implied Volatility

- 1 standard deviation higher and lower.



Options Greeks

- Understanding the Greeks:

1. Delta
2. Gamma
3. Vega
- 4. Theta**
5. Rho

Theta is the measure of change in an option price relative to a change in the time until expiration.

Every day that passes, an option loses time value.

Theta measures the rate of time decay.

Options Greeks

- Understanding the Greeks:

1. Delta
2. Gamma
3. Vega
4. Theta
- 5. Rho**

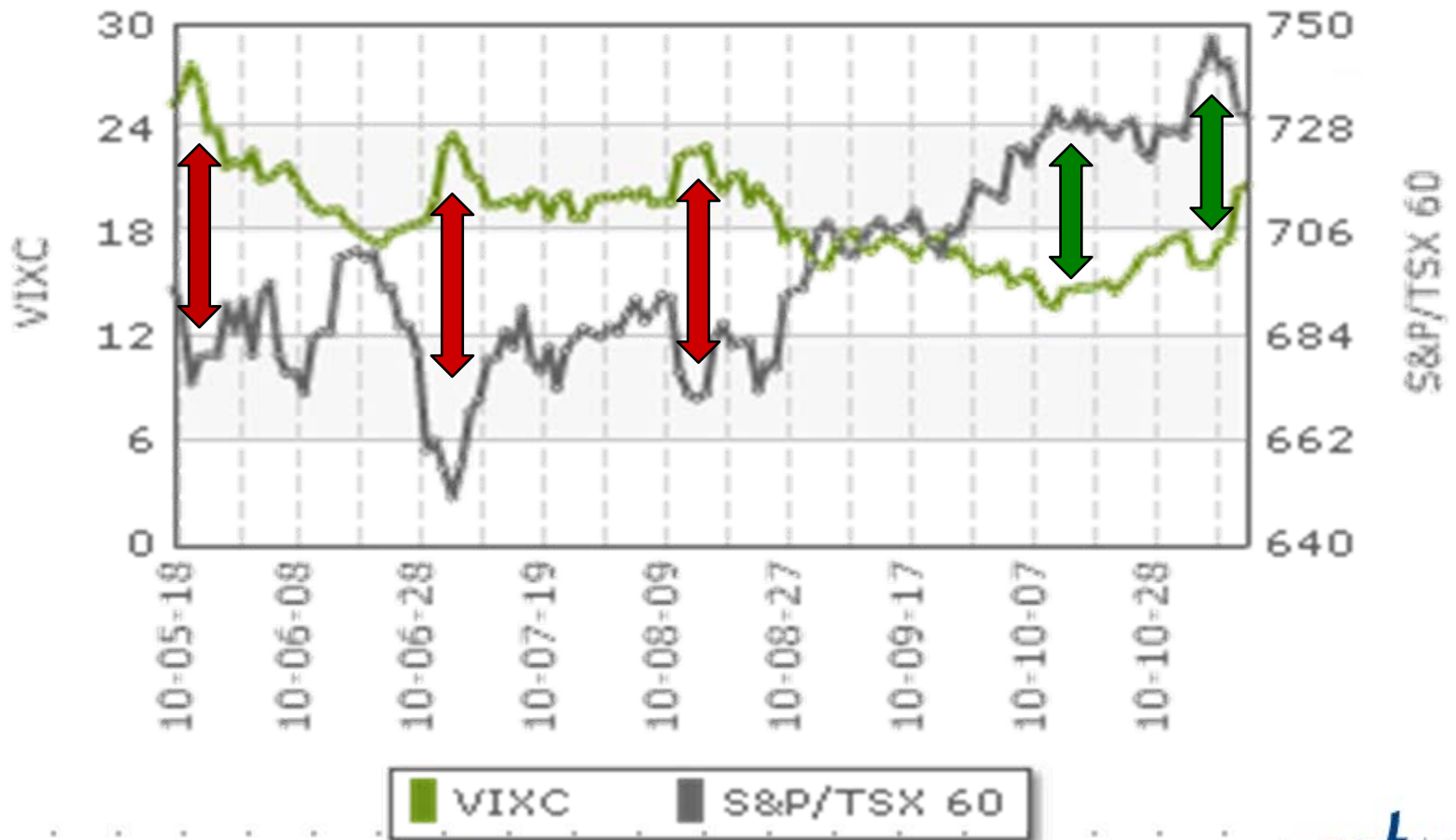
Rho is the measure of change in an option price relative to a change in the risk-free rate of interest.

S&P/TSX 60 VIX Index (VIXC)

- Estimates volatility of the S&P/TSX 60 Index as implied by near term/next term.
- Has a historically inverse correlation to the market.
- Proxy for investor sentiment for the Canadian Market.

VIXC – S&P/TSX 60 VIX Index

VIXC – S&P/TSX 60



Summary

- Options allow you to:
 - Create income.
 - Leverage with a defined loss.
 - Protect stock positions.
 - Create unique tradeoff opportunities.

Afternoon Session

- This afternoon Jason will expand on:
 - Introduction to exchange-traded funds
 - Using a call to secure a future purchase price.
 - Options as an alternative to margining.
 - Protecting your ETF shares at a reduced cost.



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