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OCC

Weekly Options, Monthly Options, and LEAPS

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Weekly Options, Monthly Options, and LEAPs

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Instructor / The Options Industry Council (OIC)



Disclaimer

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The Options Clearing Corporation (OCC)

OCC is the world's largest equity derivatives clearing organization. OCC provides financial stability and risk management to the U.S. listed-options marketplace.

Core Functions



Issuance + Guarantee
of U.S. Listed Contracts



Clearing + Settlement



Risk Management

2021 Performance Highlights

9.93B

CONTRACTS CLEARED

\$225B

MARGIN HELD AT YEAR END

39.4M

AVERAGE DAILY VOLUME

\$16.2B

CLEARING FUND HELD AT YEAR END

Products We Clear



Options



Futures



Securities
Lending

Participant Exchanges

16

OPTIONS
EXCHANGES

2

FUTURES
EXCHANGES

1

STOCK LOAN ALT.
TRADING SYSTEM

As December 31, 2021

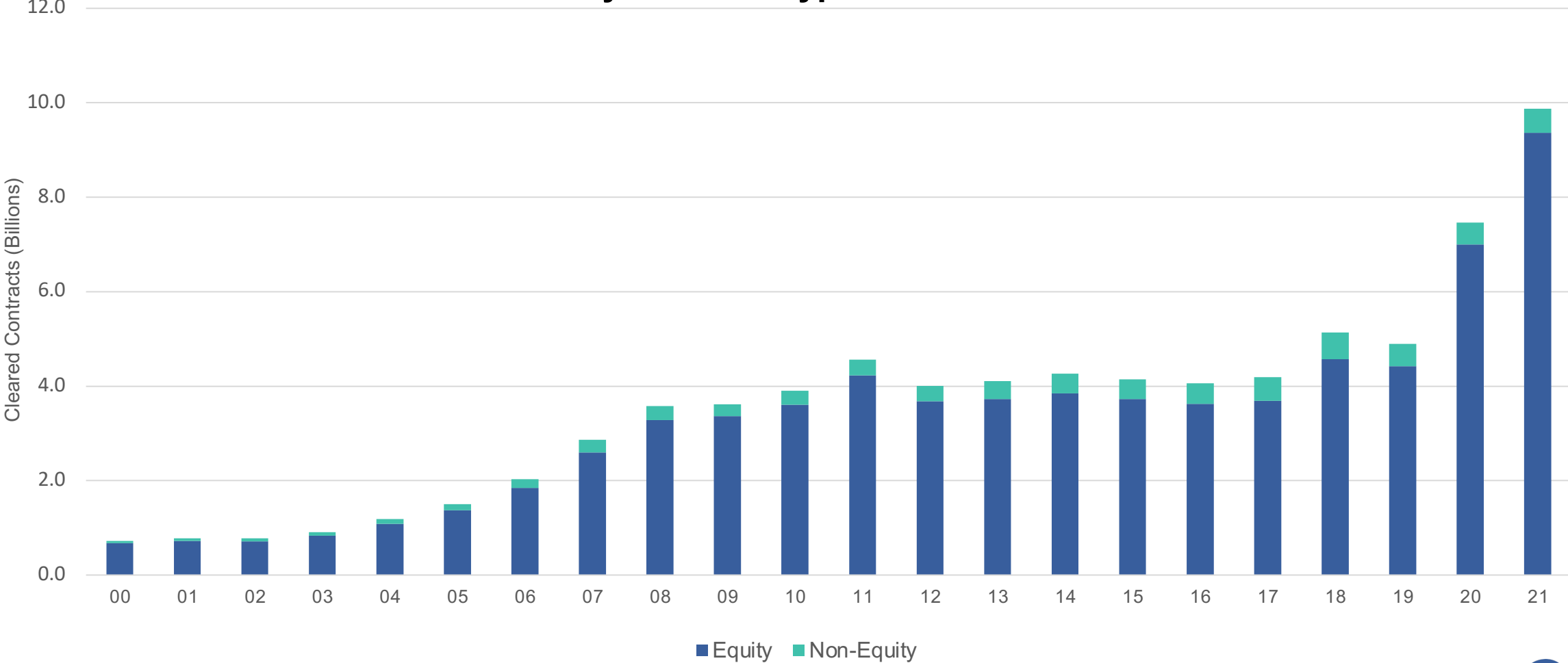
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- **FREE** unbiased and professional options education
- OptionsEducation.org
- Online courses, podcasts, videos, & webinars
- Investor Services desk at *options@theocc.com*



Annual Options Volume 2000-2021

OCC Annual Contract Volume by Contract Type



Presentation Outline

- Pricing
- Weekly'sSM
- Monthly's
- LEAPS[®]
- Q&A



Why Options?

- Options give you more ways to implement your market research
- Options make it possible to target a variety of investment objectives that may lead to:
 - *Risk Reduction*
 - *Income Generation*
 - *Stock Acquisition*
- Options offer **FLEXIBILITY!**



Option Pricing



Delta Expected change in option value with changing underlying stock price



Gamma Expected change in option delta with changing underlying stock price



Theta Expected change in option value with passage of time (time decay)



Vega Expected change in option value with changing implied volatility



Rho Expected change in option value with changing risk-free interest rate (rate without credit risk)

Nature of the Greeks

Meaningful only during option's lifetime

- At expiration they are moot

Impact of any Greek is on an option's value

- An expiring option is worth only intrinsic value (if any)

Greeks may affect each other

- Change in an options theta (time decay) may affect its delta

Impact of Greeks differ for each option contract

- In-the-money vs. at-the-money vs. out-of-the-money
- Near-term vs. far-term

Delta



Delta: Value's sensitivity to stock price

Expected percentage change in option value

- With a short-term \$1.00 change up or down in underlying
- All other pricing factors constant

In either decimal form (.50) or whole number (50)

- Both mean 50%

Deltas always range from 0 to |100| or 0 to 100%

- Each underlying share has a delta of 1.00

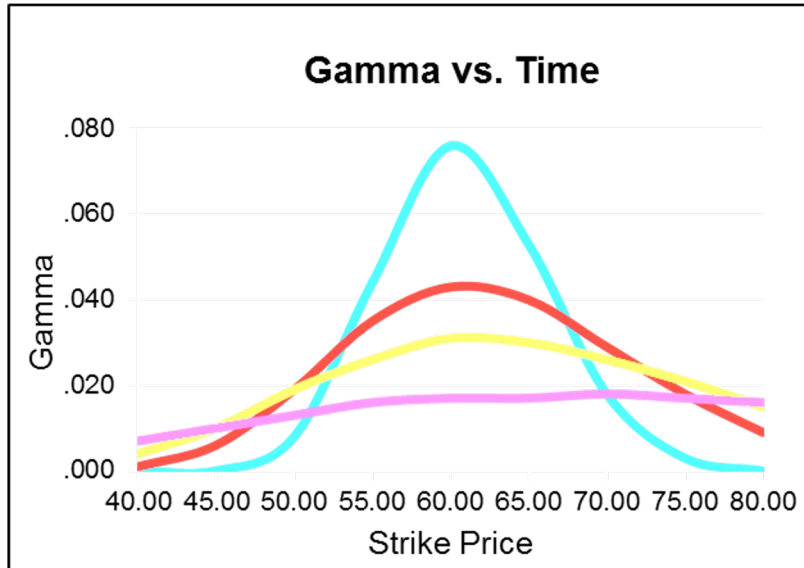
Gamma



Gamma: Delta's sensitivity to stock price

- Expected percentage change in delta's value
 - With a short-term \$1.00 change
 - In underlying stock price up or down
 - All other pricing factors constant
- In decimal form (e.g., .002)
 - Adjustment to delta
- Only options have gamma, stocks do not

Gamma vs. Time



- 1 week
- 1 month
- 3 month
- 6 month

As expiration nears

- gamma of at-the-money calls and puts increases
- gammas of both in-the-money and out-of-the-money calls and puts decrease

XYZ \$60.00 30% vol.
2% int.

Theta



Theta: Option value's sensitivity to time

Expected time decay in option value

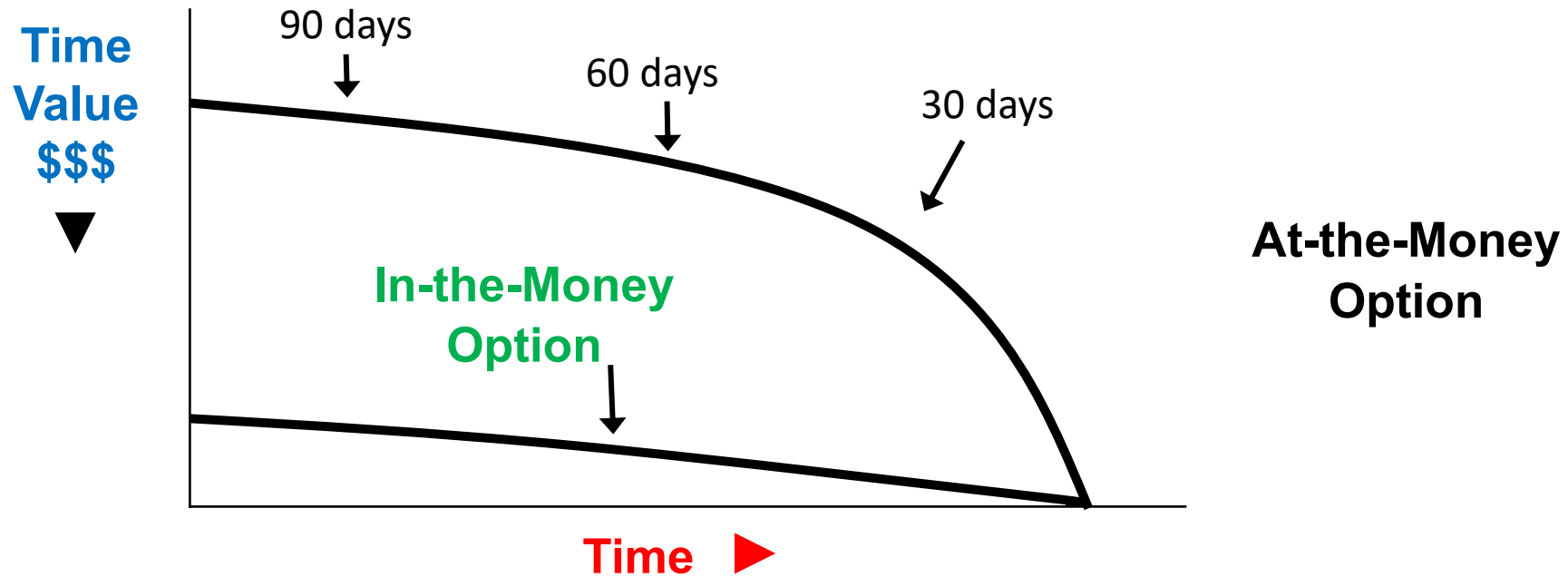
- With the passage of 1 calendar day
- Expressed in decimal form (-.080)
- Represents cash amount per option
- All other pricing factors constant

Calls and puts both have negative theta amounts



Theta

Time Decay Not Constant



Overall rate of time decay is exponential (**accelerates** towards expiry)

ATM = decay exponential = volatility is key decay factor

ITM = decay linear = cost-to-carry is key decay factor

Weekly'sSM - a Misnomer

- Introduced in 2005 to give investors more targeted trading opportunities (earnings, the Fed, etc.)
- Available on approximately 15% of listings
- Most are listed on Thursday's with a Friday expiration **up to five or more weeks away.**
- Not listed if they would expire on a normal Monthly, Quarterly, or EOM expiry that already exists.
- Various expiration days (Mon/Wed/Fri—typically ETF and/or Indexes)
- Weekly options ***can have different contract specifications than their monthly counterparts*** (AM/PM, trade cut-off, etc.—typically ETF and/or Indexes)

WeeklySM Options - Introduction

- Investor interest in WeeklySM and short-term options has grown. By some estimates, WeeklySM volume accounts for 20-30% of daily options volume.
- Please visit the OCC website for a list of available WeeklysSM under series and trading data.
- Weekly'sSM exist for some Index and Equity options. Using Index options can help to avoid early assignment.



WeeklySM Options – Introduction

- WeeklySM options will settle in the same manner as standard options based on the same underlying index or equity. Therefore some Weekly'sSM have a last trading day of Thursday and will be AM settled, others may have a last trading day of Friday and will settle PM

AM and PM settlement have an impact on expiration risks

- AM settlement may add risk of overnight movement of the underlying before the settlement price is known
- Equity and ETF options are PM settled and allow for trading up to the close while some index products have AM settlement with the last trading day occurring a day earlier
- Nevertheless a short option position still has unknown assignment risk until clearing firm provides notification

WeeklySM Options - Some Theoretical Issues

- Buyers seem to be attracted to “low relative cost” for hedging
- Sellers seem to be interested in the rapid time decay which occurs in the last days of an expiring option
- Short duration makes delta, gamma and theta very important in pricing and risk analysis. These terms, known as “Greeks,” respectively measure the sensitivity of the option price to a movement of the underlying and to the passage of time, while gamma is the second derivative of delta measuring the sensitivity of delta

XYZ Stock Call Prices

	Call Strike	Bid	Ask
1 day to expiry	20.0	1.00	1.01
	21.0	0.19	0.20
	22.0	0.01	0.02
7 days to expiry	20.0	1.11	1.14
	21.0	0.43	0.44
	22.0	0.10	0.11
15 days to expiry	20.0	1.24	1.27
	21.0	0.61	0.63
	22.0	0.25	0.26
22 days to expiry	20.0	1.36	1.39
	21.0	0.75	0.77
	22.0	0.36	0.38

← Weeklys trade close to intrinsic

← Longer dated options have more time value

Over Multiple Maturities (**Stock Price = \$21** vol = 50%)

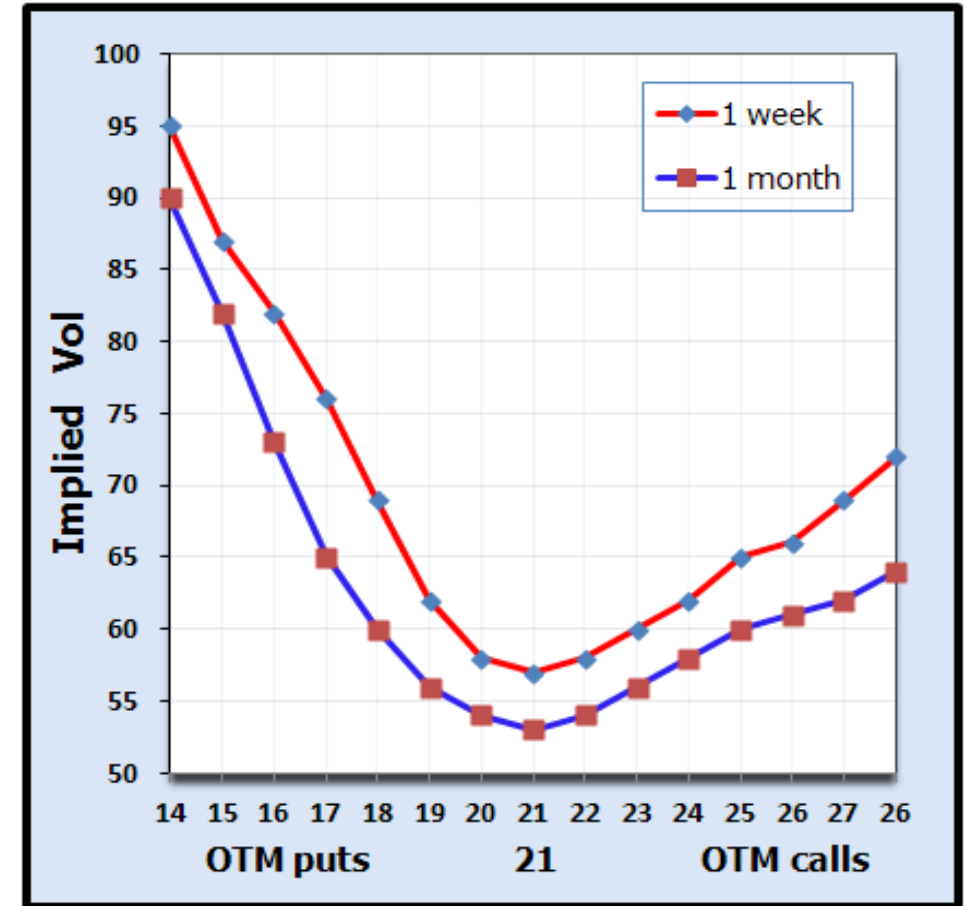
Business Sensitive

Some Guidelines

- WeeklySM options generally see most of the volume in the nearest term expiry, unless there is a corporate action that week. Be aware of dividends and earnings announcements
- As most of the volume is in the 1 week to expiration period, both calls and puts can experience equal amounts of selling from investors trying to capture decay
- WeeklySM options take advantage of faster time decay, but also reduce the time for the investor to adjust to Gamma risk as near strike short calls and puts can quickly turn into short or long stock

WeeklySM Options – Skew

- Skew is the implied volatility for OTM calls vs puts. Frequently downside puts are relatively more expensive than calls
- Skew is defined as the difference in implied volatility (IV) between out-of-the-money, at-the-money and in-the-money options
- Also known as “vertical skew”
- Skew is affected by sentiment and supply/demand relationships



LEAPS® 101

- Long-term **E**quity **A**nticipati**P**ation **S**ecuritiesSM
- Expiration dates up to 2 ½ years away
January 2021 & 2022 (2023 LEAPS® to be added
Sep. 14th, 2020)
- Change to ‘normal options’ when there is < 9
months to expiration
- Newly listed in the 3rd quarter
- All types of strategies



LEAPS[®] 101

- LEAPS[®] options go out as far as about 28 months (January 2022 is nearly 700 days away!)
- Available on ~1/3 of stocks
- Some stocks may have less LEAPS[®] strikes than shorter-term expirations
- Guidelines exist as to which strikes added

LEAPS[®] Pricing

- Stock price
- Strike price
- Time to expiration
- Volatility
- Dividends
- Interest rate

The same inputs, but changes in the inputs have a different impact on the price of a LEAPS[®] option



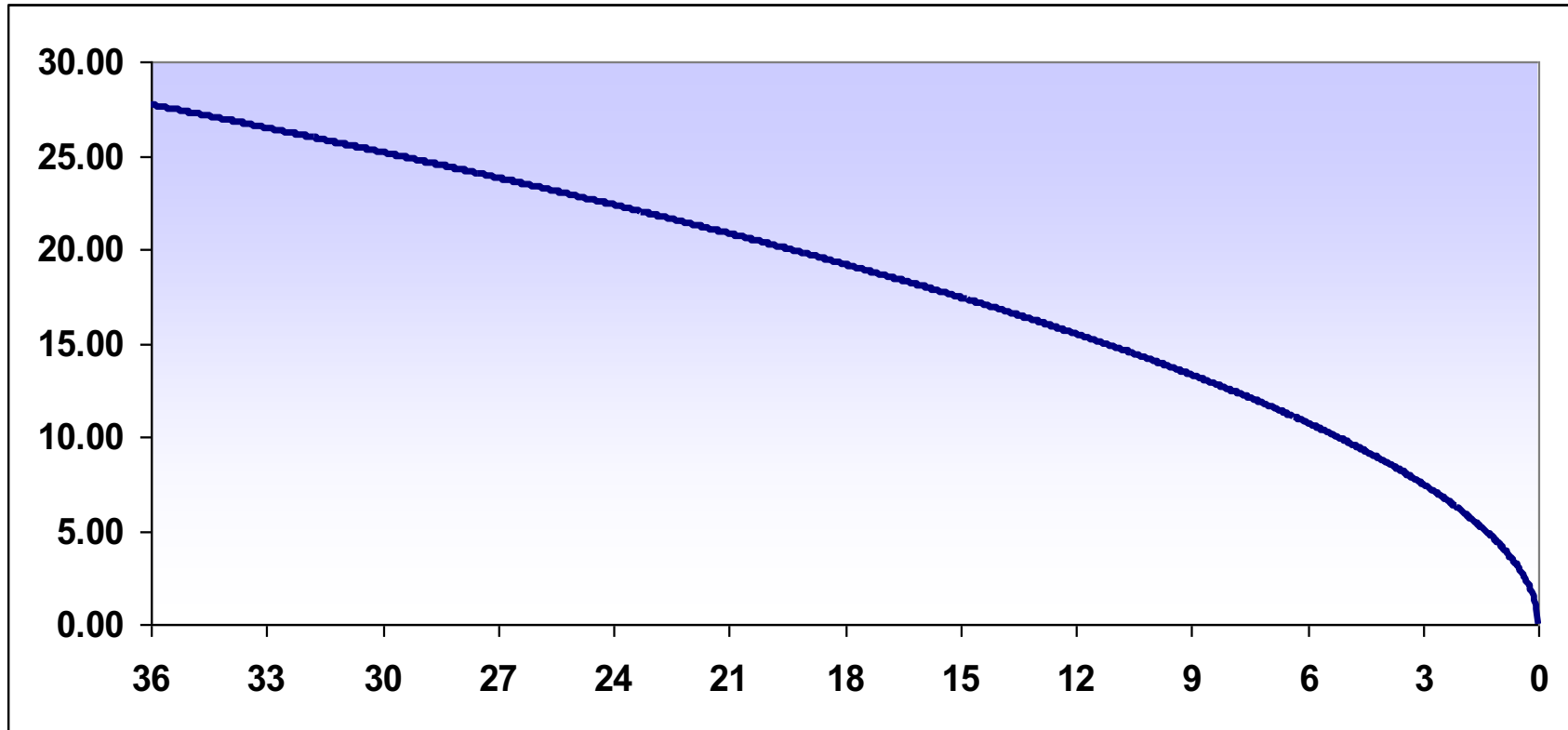
Time Decay

- Option Time Decay is not linear
- Buying a little more time does not necessarily cost that much more
- There are times that buying the front month does make sense, but remember reduced cost comes with accelerated time decay



Time Decay

LEAPS[®] Time Decay



***\$100 stock, 100-strike call, 30% vol., 3% interest rate, no dividends**

What If the Stock Is Unchanged?

Compare prices of at-the-money calls.

50-strike calls with stock price at \$50.

30 Volatility

	Three-month <u>Option</u>		Jan 2022 <u>LEAPS®</u>
Now:	\$3.06		\$8.93
One month later:	\$2.49	(19%) vs. (2%)	\$8.72
Two months later:	\$1.75	(30%) vs. (2%)	\$8.52
Three months later:	\$0.00	(100%) vs. (2.5%)	\$8.31

Note: stock price unchanged at \$50

What If You're Right?

Compare call prices if the stock rises \$3.25

	Three-month <u>Option</u>	Jan 2022 <u>LEAPS</u> [®]
Stock at \$50	\$3.06	\$8.93
Stock at \$53.25		
Today:	\$5.09 66%	\$11.00 23%
One month later:	\$4.55 49%	\$10.79 21%
Two months later:	\$3.90 27%	\$10.58 18%
Three months later:	\$3.25 6%	\$10.37 16%

What If You're Wrong?

Compare call prices if the stock falls \$2.50

	Three-month <u>Option</u>	Jan 2022 <u>LEAPS®</u>
Stock at \$50	\$3.06	\$8.93
Stock at \$47.50		
Today:	\$1.88 (39%)	\$7.45 (17%)
One month later:	\$1.36 (56%)	\$7.25 (19%)
Two months later:	\$0.73 (76%)	\$7.05 (21%)
Three months later:	\$0.00 (100%)	\$6.85 (23%)

LEAPS® Pricing

How will short-term interest rates or dividends change over the next 2 years?

Increase in Interest Rates

Put Premiums



Call Premiums

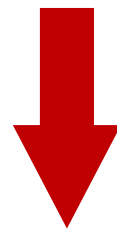


Increase in Dividends

Put Premiums



Call Premiums



LEAPS[®] Pricing

Get to Know the Greeks—at least a little!

Understand Where your Risk is with Each Type of Option:

- WeeklySM
- Monthly
- LEAPS[®]

For More Information

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Investor Services: options@theooc.com

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