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The Options Industry Council (OIC)

Option Time Spreads

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As with all investments, your capital is at risk

OIC The Options Industry Council℠

Option Time Spreads: Inherent Risks and Possible Outcomes

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Instructor / The Options Industry Council (OIC)

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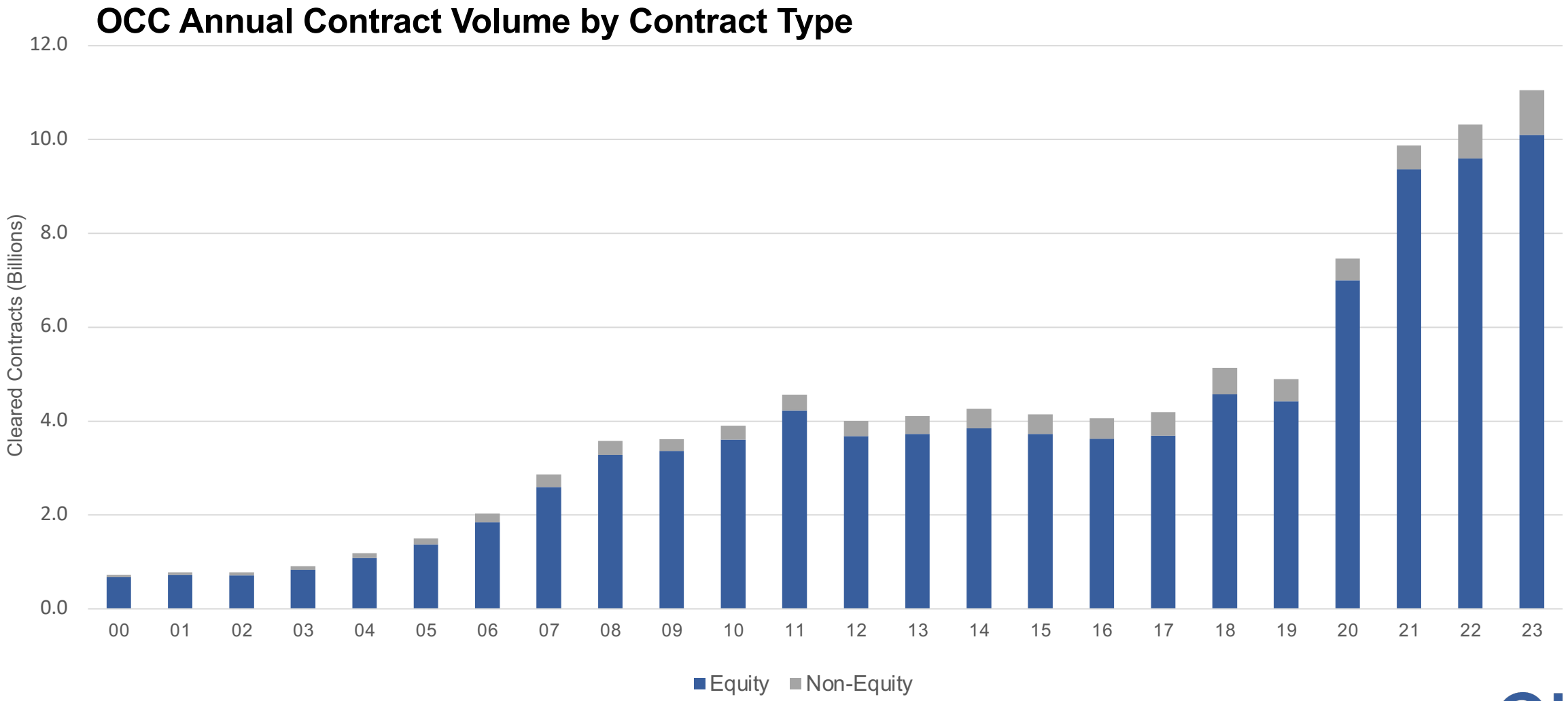
Annual Options Volume 2000-2023



Today's Presentation

- What is a Calendar Spread
- Two Types of Calendar Spreads
  - Horizontal
  - Diagonal
- Understanding Calendar Spreads
- How it works
- Example
- Summary

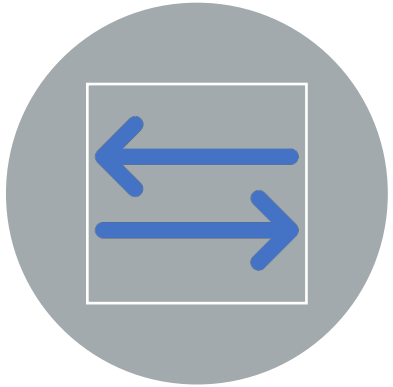
What is a Calendar Spread?

- Calendar Spread
  - Buying an option and selling an option
  - Different expirations (typically far-term and near-term)
  - Same underlying
  - Same strike
  - Same type of options, either calls or puts
- Also known as a time spread
- Calendar spreads can be used in any direction — bullish, bearish, or neutral around the stock

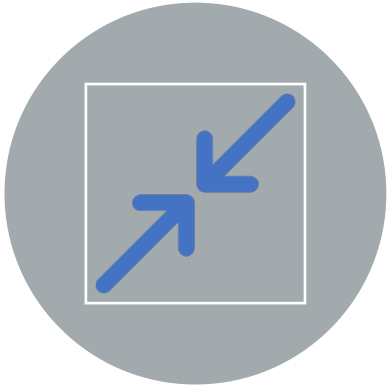
Benefits of Calendar Spreads

- Calendar spreads are a defined risk strategy
- Low-cost debit trade
- A calendar spread is typically a neutral strategy, can also be used when slightly bullish or bearish
- Calendar spreads can be effective for low implied volatility environments
- Potential benefits from the passage of time and/or an increase in implied volatility

Two Types of Calendar Spreads



HORIZONTAL



DIAGONAL

Two Types Calendar Spreads

Horizontal Spreads

Apr Calls	May Calls
$50	$50
$55	$55

All calls or all puts
Same strike
Different expirations

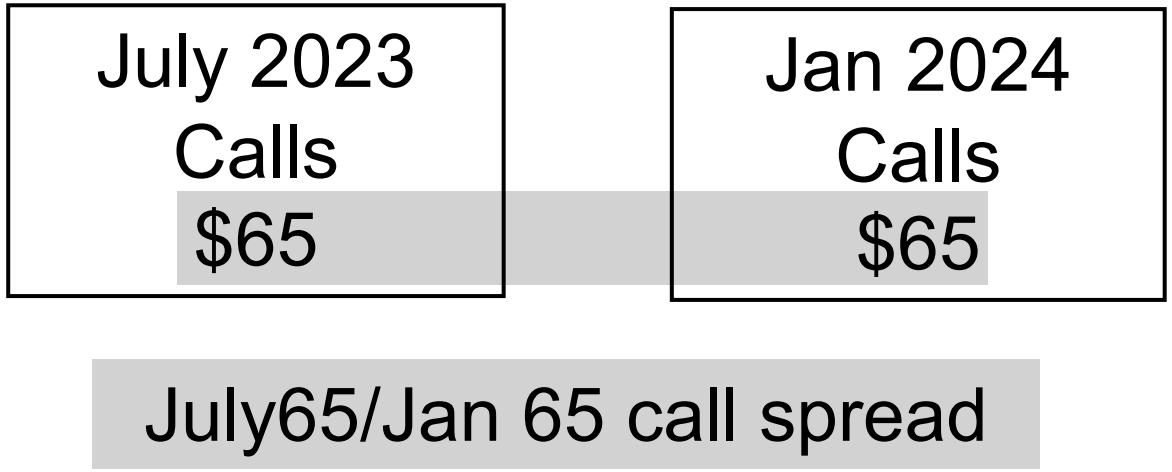
Diagonal Spreads

Apr Calls	May Calls
$50	$50
$55	$55

All calls or all puts
Different strikes
Different expirations

Spread Basics Horizontal

Stock trading $64.45



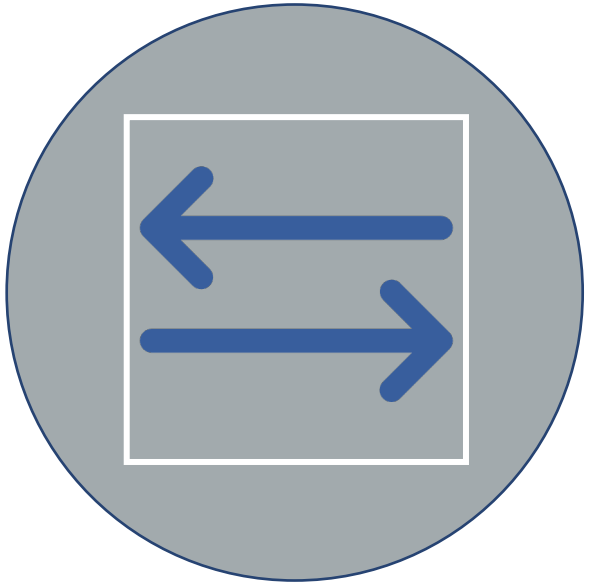
- Long horizontal spread
  - Same underlying
  - Same strike
  - Same type either both calls, or both puts
  - Different expiration dates
  - Buying far-term options and selling near-term options
  - Debit (pay for the spread)
  - Volatility play

Understanding a Horizontal Spread

- Directionally neutral strategy
- Low capital obligation from buying the far-term option and selling the near-term option
- Long spread established at a net debit
- Debit spread: long leg costs more than the money received for the short leg
- Trader that pays a net debit is said to be “long” the spread

How It Works

- The concept behind the horizontal spread, is to capitalize on difference in time decay (Theta) and implied volatility (Vega) for the two options
- Calendar spreads take advantage of near-term options' positive Theta which offsets the far-term negative Theta
- Far-term options have greater Vega than near-term options: an increase in implied volatility has a positive effect on the price of the spread
- If the short option expires worthless, the remaining long option has open-ended potential



Capitalizing on Theta

"Theta" is a measure of the time erosion of options

Theta represents the decrease in the value of an option overtime

Value of the far-term options decay at a slower rate with passing of time

Long options: Negative Theta

Short options: Positive Theta

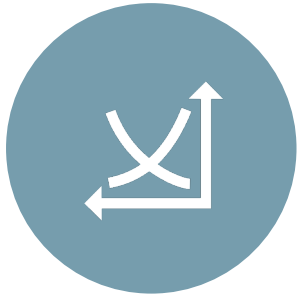
Near-term options have higher Theta values than far-term options

The value of the near-term option decays at an accelerated rate as expiration approaches

Vega

Vega measures the amount the option price changes due to a 1% change in volatility

Longer-term options have a higher Vega sensitivity than a shorter-term option with the same strike price



Long calendar spreads have positive Vega which means they benefit from an increase in IV and vice versa

As expiration approaches, the Vega of the short-term option decreases towards zero, and the net Vega starts to replicate the Vega of the long-term option

Call Spread Example

Slightly Bullish Forecast

Current Stock Price $64.45

Call	2023		2024		2025
Strike	JUL	SEP	JAN	JUN	JAN
$60	$4.90	$5.80	$7.25	$8.60	$10.25
$62.50	$2.70	$3.90	$5.55	$7.10	$8.50
$65	$0.95	$2.35	$4.00	$5.60	$7.25
$67.50	$0.35	$1.25	$2.85	$4.50	$6.10
$70	$0.08	$0.78	$1.90	$3.40	$5.00

Sell 1 XYZ Sep 2023 67.50
Buy 1 XYZ Jan 2024 67.50

Call Spread Example

Stock XYZ currently at $64.45
Forecast: Slightly bullish

Time spread:	Sell 1 XYZ Sep 2023 67.50 call	$1.25 collected
	Buy 1 XYZ Jan 2024 67.50 call	$2.85 paid
	Total Paid :	$1.60 debit

- XYZ 67.50 horizontal call spread purchased for $1.60, or $160
- Maximum risk is amount paid for the spread $160
- Calculating maximum profit accurately in advance is not possible
- The break-even for a horizontal spread cannot be calculated due to the different expiration cycles being used

Impact of Time

Time decay accelerates close to expiration, near-term options will lose value faster than far-term options (assuming no movement in the underlying)

Days till Expiration 80/204	Days till Expiration 40/164	Days till Expiration 20/144
Sept 67.50 $1.25	Sept 67.50 $0.59	Sept 67.50 $0.18
Jan 67.50 $2.85	Jan 67.50 $2.40	Jan 67.50 $2.13
Net total $1.60	Net total $1.81	Net total $1.95
	Increased value $0.21	Increased value $0.35

Implied Volatility Impact

Calendar spreads are long Vega, meaning the far-term option is more sensitive to volatility changes than the near-term option

Implied Volatility 18	Increase IV 30	Decrease IV 7.5
Sept $1.25	Sept $2.64	Sept $0.19
Jan $2.85	Jan $5.25	Jan $0.95
Total $1.60	Total $2.61	Total $0.76
	Increased value $1.01	Decreased value $0.84

*IV calculated with no change in the underlying stock price

Near-term Option Expiration

Spread is most effective when there is no significant underlying price move prior to short-term expiration.

XYZ below $67.50
- Short call worthless
- Long far-term Jan $67.50 call

XYZ at $67.50
- Short Sep $67.50 call worthless
- Long far-term Jan $67.50 call

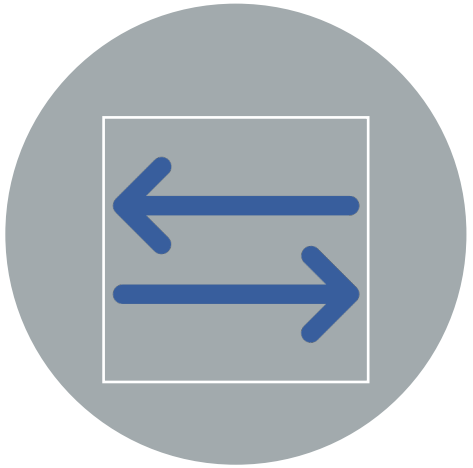
XYZ above $67.50
- Short Sep $67.50 call in-the-money
- Buy back short call or get assigned resulting in a short stock position
- Long far-term Jan $67.50 call

Fast-forward Sept. expiration:
Underlying's price increases to $67.50
Short option expires worthless
Remain long Jan. $67.50 call option
Effective price $1.60
Current Value $3.42
Current Unrealized Profit $1.82

Uncertainties

- A few concerns as near-term option approaches expiration
  - If the short option is in-the-money, there is potential assignment risk
  - If assignment is not a desirable outcome, investor may consider closing the entire spread or closing the short option
- Ex-dividend dates can increase assignment risk as the short near-term options may be exercised prior to the ex-dividend date
- Significant move in the underlying
  - Calendar spread collapses

Summary



- Calendar spreads are a defined risk strategy
- Different expiration dates with the same strikes
- Short near-term option and long far-term option
- Maximum loss = debit paid
- Spread is most effective when there is no significant underlying price move prior to short-term expiration
- Theta has a positive impact on the long calendar spread, as near-term options decay faster than far-term options
- The spread position has positive Vega which means it benefits from an increase in implied volatility

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