



**FIA and VA Hedging –
Comparing OTC and
Exchange Traded Products**

Overview

OTC and Exchange Traded Product Comparison

- **Point-to-Point with Cap – Call Spread**
- **Digital – Binary**
- **Long Dated Puts**

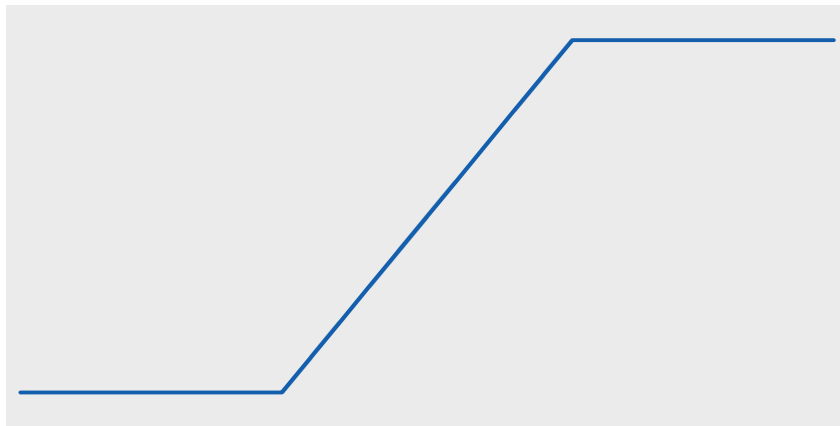
Overview

Aspects of Products

- OTC vs. CBOE Terminology
- Notional vs. Contract size
- OTC vs. CBOE Trading Processes
- Execution Costs
- Collateral – Margin
- Valuations
- Role of The Options Clearing Corporation

Point-to-Point vs. Call Spread

Payoff Diagram



Point-to-Point vs. Call Spread



Overview

- Option industry term for a point-to-point trade is a call spread
- At CBOE options are available on all major US stock market indices, exchange traded funds, and individual stocks
- For both OTC and at CBOE –
 - Strikes may be expressed as either a percentage of the underlying or as a fixed dollar amount
 - Both European and American style options are available
 - Strike prices going out two decimal points may be traded
 - Expiration dates up to 15 years in the future may be traded

Point-to-Point vs. Call Spread



Size

OTC

Size: Expressed in notional amount

Example: \$25 million SPX

CBOE

Size: Expressed in contracts

Example: \$25 million SPX ≈
129.9 SPX contracts

Point-to-Point vs. Call Spread

Determining Size

CBOE –

$$C = N \div I \div M$$

C = Number of Contracts

N = Notional Amount = \$25 million

I = Index Level = 1925.00

M = Contract Multiplier = 100

$$C = \$25,000,000 \div 1925.00 \div 100$$

$$C \approx 129.9 \text{ or } 130$$

Point-to-Point vs. Call Spread

Liquidity

First five months of 2014 –

- S&P 500 average close 1852
- Daily average SPX average contracts traded 831,000

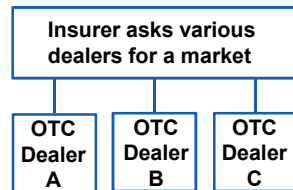
$$1852 \times 831,000 \times \$100 \approx \$154 \text{ billion}$$

Over \$150 billion notional equity market value
traded per day at CBOE.

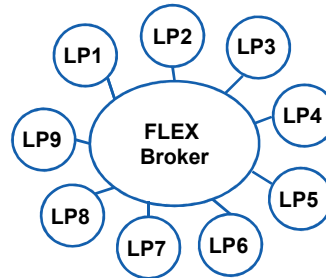
Point-to-Point vs. Call Spread

Trading Process

OTC



CBOE



CBOE has conducted several OTC vs. FLEX price tests. FLEX has consistently shown significantly better markets.

Point-to-Point vs. Call Spread

Trading Costs

OTC

Broker commissions embedded in dealer's offer

Ticket charges may accompany smaller trades

Example \$25 million notional one-year call spread

Dealer commission ~ 2 bps

Result – \$5000 execution cost

CBOE

Broker commissions are explicit

No ticket charge

Example \$25 million notional one-year call spread 130 contracts

Broker commission = $190 \times 2 \times \$2.00 = \760

Result – \$760 execution cost

Point-to-Point vs. Call Spread



Trading Costs

OTC

Broker commissions embedded in dealer's offer

Ticket charges may accompany smaller trades

Example \$25 million notional one-year call spread

Dealer commission ~ 2 bps

Result – \$5000 execution cost

CBOE

Broker commissions are explicit

No ticket charge

Example \$25 million notional one-year call spread 130 contracts

Broker commission = $190 \times 2 \times \$2.00 = \760

Result – \$760 execution cost

Point-to-Point vs. Call Spread



Collateral / Margin

OTC

Traded with ISDA Agreements

Collateral Terms Vary

CBOE

Trading in options-approved securities account

Account margin determined with portfolio margin rules

Point-to-Point vs. Call Spread



Collateral / Margin

OTC

Traded with ISDA Agreements

Collateral Terms Vary

CBOE

Trading in options-approved securities account

Account margin determined with portfolio margin rules

Point-to-Point vs. Call Spread



Valuations

OTC

Daily marks generally provided by the executing dealer

CBOE

Daily marks provided by the Options Clearing Corporation

OCC marks -
www.theocc.com/webapps.flex-reports

OCC Valuation Methodology –
www.cboe.com/institutional/pdf/OCCFLEXvolatilitymethodology.pdf

Point-to-Point vs. Call Spread

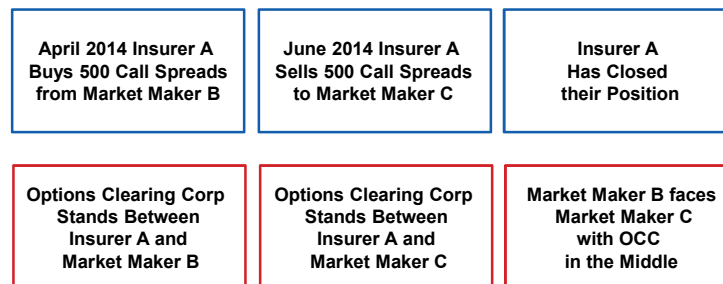
The Options Clearing Corporation

- The OCC is AAA-rated
- OCC acts as the buyer to every seller and the seller to every buyer
- They manage the cash flows from trade date to expiration
- Netting effect allows market participants to exit trades with any willing counterparty

Point-to-Point vs. Call Spread

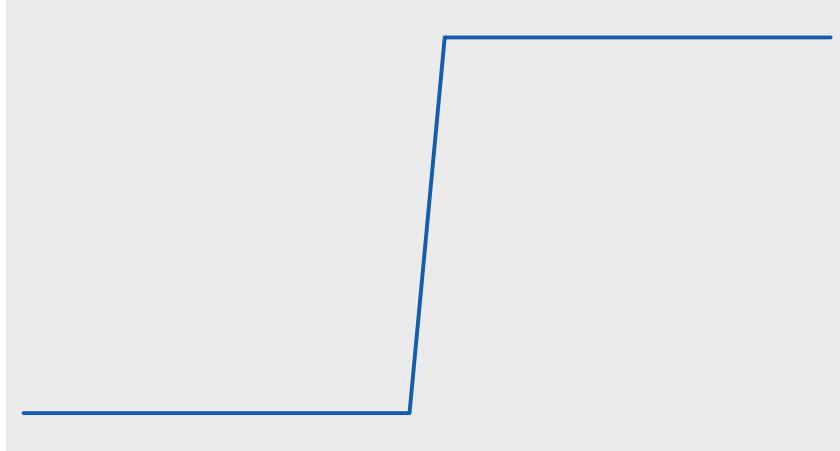
The Options Clearing Corporation

Trading Example –



Digital vs. Binary Option

Payoff Diagram



Digital vs. Binary Option

Terminology

OTC

OTC market participants refer to an option with a fixed payout as "Digital"

CBOE

CBOE refers to an option with a fixed payout as "Binary"

CBOE lists binary options on SPX and VIX

Both are eligible for FLEX trading

www.cboe.com/binaries

Digital vs. Binary Option



Size

OTC

Insurer guarantees to pay 3% if SPX settles 3% or higher one year from today's close.

Exposure = \$10 million
SPX = 1925 – strike = 1982.75

CBOE

Defined in contracts – size equals OTC – pay 3% if over 1982.75

Buy 3,000 Binary Call Options with 1982.75 strike price

CBOE Binaries pay \$100 if ITM at expiration

Digital vs. Binary Option



Execution Costs

OTC

Broker commissions embedded in dealer's offer

Ticket charges may apply with smaller trades

SPX at 1925 / Strike is 1982.75

Notional = \$10 million

Dealer offers digital at 1.58% of notional + 5 bps

Equivalent listed price = \$0.5266

CBOE

Explicit commissions and no ticket charges

Trade details the same as OTC

CBOE Flex offer price is 0.50

Buy 3,000 contracts pay \$150,000

Position will pay \$300,000 if SPX over 1982.75

Broker commission = \$2.00 contract

Effect execution cost = \$0.5200

Digital vs. Binary Option

Collateral / Margin

OTC

Traded with ISDA agreements

Collateral terms will vary

Not uncommon for insurers to pay entire premium up front (\$158k)

CBOE

Traded in options approved securities account

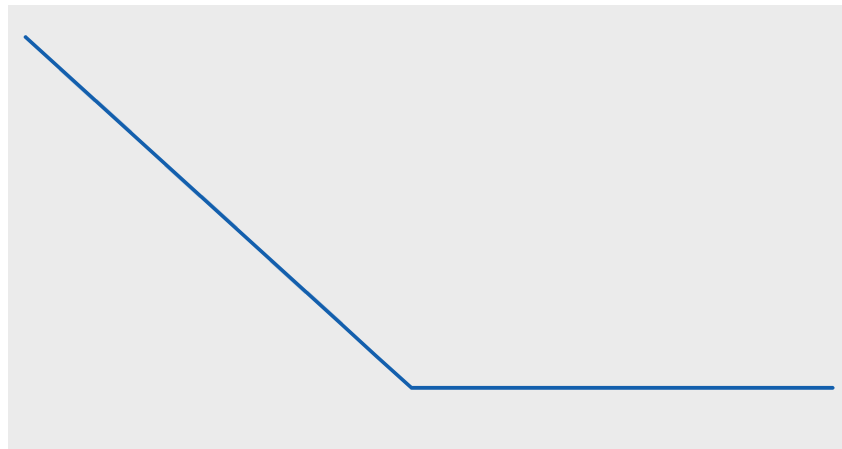
Transacted in portfolio margin account

Portfolio margin requirement about \$105k

OCC handles all cash flows over life of trade.

Long Dated Put

Payoff Diagram



Long Dated Put

Size

OTC

Size: Expressed in notional amount

Example: \$25 million SPX

CBOE

Size: Expressed in contracts

Example: \$25 million SPX ≈ 129.9 SPX contracts

Long Dated Put

Determining Size

CBOE –

$$C = N \div I \div M$$

C = Number of Contracts

N = Notional Amount = \$25 million

I = Index Level = 1925.00

M = Contract Multiplier = 100

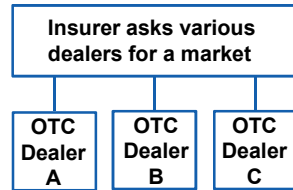
$$C = \$25,000,000 \div 1925.00 \div 100$$

$$C \approx 129.9 \text{ or } 130$$

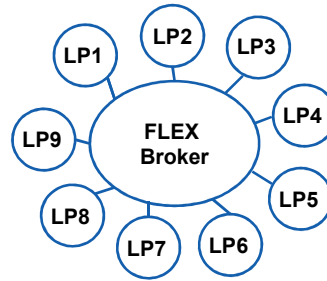
Long Dated Put

Trading Process

OTC



CBOE



CBOE has conducted several OTC vs. FLEX price tests. FLEX has consistently shown significantly better markets.

Long Dated Put

Trading Costs

OTC

Broker commissions embedded in dealer's offer

Ticket charges may accompany smaller trades

Example \$10 million notional one-year call spread offered at 18.0%

Dealer commission ~ 2 bps or \$2000 execution cost

\$384 per contract

CBOE

Broker commissions are explicit ~ \$2.00 contract

No ticket charge

Example \$10 million notional one-year call spread at 17.8%

52 contracts - broker commission = 52 x \$2.00 = \$104

\$344 per contract

Long Dated Put



Collateral / Margin

OTC

Traded with ISDA agreement

Collateral terms vary

CBOE

Traded in an option approved securities account

Portfolio margin – example 5 year SPX put margin requirement is \$3850 or 2% of notional value

Long Dated Put



Valuations

OTC

Daily marks generally provided by the executing dealer

CBOE

Daily marks provided by the Options Clearing Corporation

OCC marks -

www.theocc.com/webapps.flex-reports

OCC Valuation Methodology –

www.cboe.com/institutional/pdf/OCCFLEXvolatilitymethodology.pdf