

Index Options

Unique Features & Strategies



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Index Options – What are They?

Tax Advantaged Index Options

Mechanics

Unique Index Options

 Weeklies, VIX, Binaries

Strategies

 Protecting a Diversified Portfolio

 Cross-Index Spreads

1. Index Options vs. ETF Options
2. Cash Settlement vs. Delivery
3. \$100 Multiplier vs. 100 Shares
4. Exercise Style: American vs. European
5. Settlement Method (PM vs. AM)

ETF Options are like stock options

- The underlying is 100 shares
- Exercise/Assignment: Buy/Sell Shares

Index Options are different

- The underlying is a cash value
- Exercise/Assignment: Receive/Pay Cash

Many underlying indexes are the same

<u>Index</u>	<u>ETF</u>	<u>Index Options</u>
DJIA	DIA	DJX
S&P 500	SPY	SPX & XSP
S&P 100	OEF	OEX & XEO
NASDAQ 100	QQQQ	NDX & MNX
Russell 2000	IWM	RUT

Index options, ETFs and Indexes often have different relationships.

- $QQQQ = 1/40 \times \text{NASDAQ 100}$
(NASDAQ 100 = 2,000; QQQQ = 50)
- $\text{MNX Index} = 1/10 \times \text{NASDAQ 100}$
(NASDAQ 100 = 2,000; MNX = 200)

Index Options vs ETF Options 4

SPX Index	=	S&P 500 Index
XSP Index	=	1/10 x S&P 500 Index
OEX Index	=	1/2 S&P 100 Index
XEO Index	=	1/2 S&P 100 Index
DJX Index	=	1/100 x DJIA
NDX Index	=	NASDAQ 100 Index
MNX Index	=	1/10 x NASDAQ 100 Index
RUT Index	=	Russell 2000 Index

The dollar cost of an index option is \$100 times the stated option price.

“OEX 700 Call @ 8.00”

Price of Option = $8 \times \$100 = \800

Example: OEX Index is 463.53 at expiration
Value of a 450 Call?

Index Value	463.53
Less Strike Price	450.00
Difference	13.53
x Multiplier	<u>x \$100</u>
Cash from Seller to Buyer	\$1,353.00

American-Style Exercise:

can be exercised on any business day before the deadline*

European-Style Exercise:

can be exercised only on the last day before expiration.

*Brokerage firms have different cut-off times.

American-Style Exercise

- Stock and ETF options, OEX Index options

European-Style Exercise

- SPX, XSP, DJX, NDX, MNX, RUT, XEO
- Do not confuse “exercise” with “buy and sell.”
- Positions can be closed on any business day.

PM Settlement – based on closing prices.

- The index is calculated after the market close (typically on Friday) when closing prices are available. Examples: OEX and XEO

AM Settlement – based on opening prices.

- The last trading day is typically a Thursday.
- Settlement is calculated from Friday opening prices. Examples: SPX, XSP, DJX, NDX, MNX, RUT

ETF's and ETF options are treated like stock
and stock options*

Broad-Based Index Options
receive “60-40” treatment*

* According to Taxes and Investing, published by The Options Industry Council,
available from <http://www.cboe.com/LearnCenter/RCGeneral.asp>

Note: IRS regulations may change. Seek professional tax advice.

“60-40” Tax Treatment

Section 1256 Contracts: regardless of holding period, profits and losses are treated as 60% long-term and 40% short-term.

Reported on Form 6781 and Schedule D

Positions are “marked to market” at year end and taxed as if closed. Year-end prices become basis for next year.

Some Broad-Based Index Options

(Tax-Advantaged)

DJX – Dow Jones Industrial Average

OEX – S&P 100 Index Options – American

XEO – S&P 100 Index Options – European

SPX – S&P 500 Index Options

XSP – Mini-S&P 500 Index Options

MNX – CBOE Mini-NDX Index Options

RUT – Russell 2000 Index Options

Exercise means **Invoke the right**
contained in the
option contract

Assigned means **Be chosen to fulfill**
the obligation of a
short option

Exercise / Assignment Problems 1

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Long 5 SPX 880 Call	none	910		

Exercise / Assignment Problems 2

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Long 5 XSP 95 Put	none	89.00		

Exercise / Assignment Problems 3

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Short 5 SPX 950 Put	none	990		

Exercise / Assignment Problems 4

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Short 10 XEO 460 Put	none	440		



Unique Index Options



Weekly Index Options
VIX Options (and Futures)
Binary Index Options

Listed every Friday and expire the next week just like a regular expiration. European-style options stop trading on Thursday afternoon and settle Friday morning. American options stop trading and settle on Friday afternoon.

Available on:

- SPX – S&P 500 Index (European)
- XSP – Mini-S&P 500 Index (European)
- OEX – S&P 100 Index (American)
- XEO – S&P 100 Index (European)

- Trade events with low-priced options
- Time Spreads and Diagonal Spreads
 - Buy longer-term option and sell short option
 - With weekly expirations, it is possible to buy a one-month option and sell a one-week option, then sell another one-week option, and then another.
- Short-term hedge for existing positions

Launched February 24, 2006

Symbol – VIX

Cash-settled, European, \$100 multiplier

1-point strikes below 20; 2½ above

6 expirations available (3 near term plus 3 in February quarterly cycle)

VIX expiration is the Wednesday 30 days prior to the next month's option expiration.

Last trading day is the day before (Tues) the Wednesday VIX option/futures expiration.

Settlement based on VIX calculation using next-month options (e.g., May VIX settlement uses June SPX options)

What are Binaries?

“Yes or No” options

At Expiration: Payout = \$100 or \$0

Prices reflect the perceived probability that the underlying will reach or exceed the strike price at expiration.

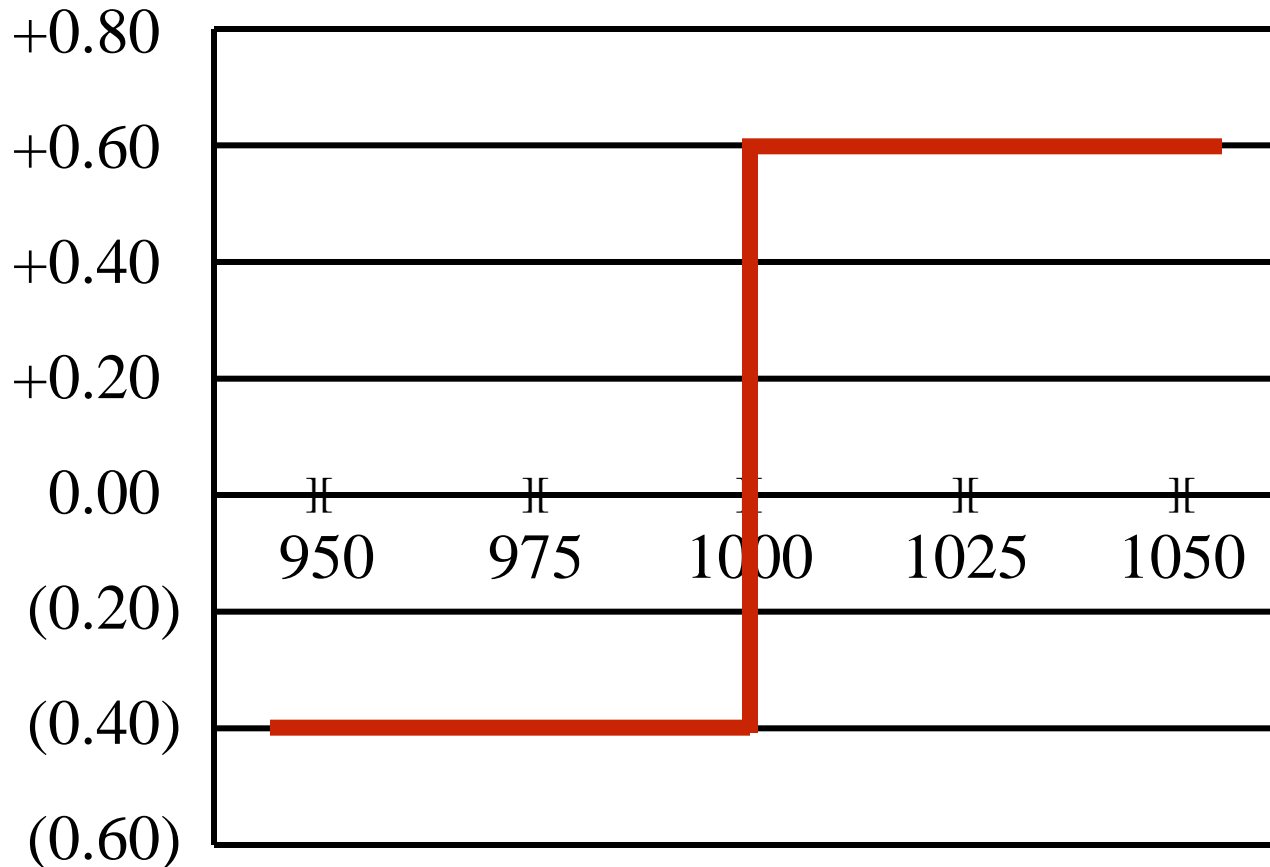
Pay \$100 if settlement value is
at or above the strike price.

European-style exercise (automatic)

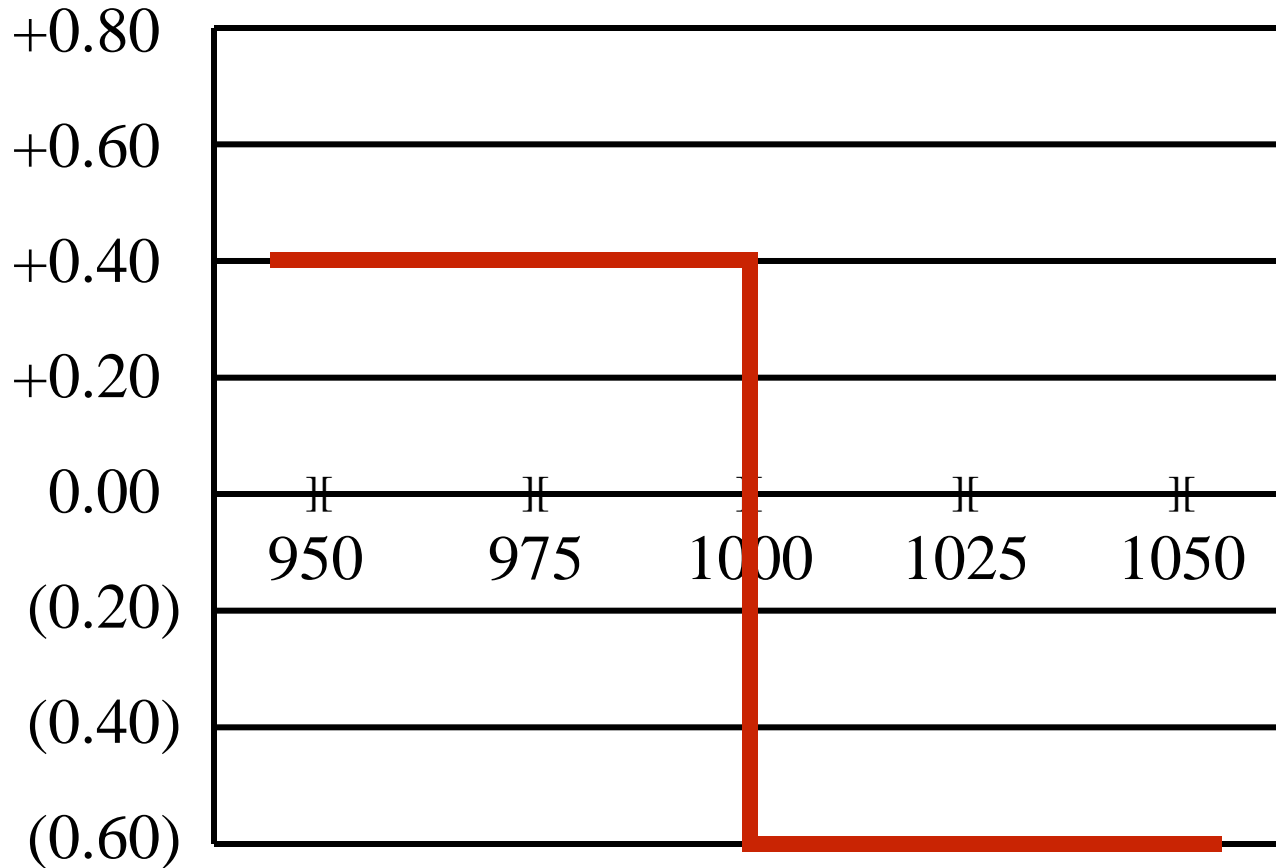
- Can only be exercised at expiration
- Can be traded on any business day

Expire and settle same as underlying

Long SPX Binary 1000 Call at \$0.40



Short SPX Binary 1000 Call at \$0.40



Binary Options on SPX

Ticker Symbol	BSZ
Underlying	SPX
Strike Intervals	5 Points
Last Trading Day	Same as SPX
Settlement	Same as SPX
Expiration	Same as SPX

Binary Options on VIX

Ticker Symbol	BVZ
Underlying	VIX
Strike Intervals	1 Point
Last Trading Day	Same as VIX
Settlement	Same as VIX
Expiration	Same as VIX

Binaries – More Facts

European Exercise (Automatic)

Cash Settlement

Settlement Amount \$100

3 Expirations Available

Quotes in Pennies

Long Binaries:
Pay Premium

Short Binaries:
Margin equals max risk
(\$100 – premium)

Example:

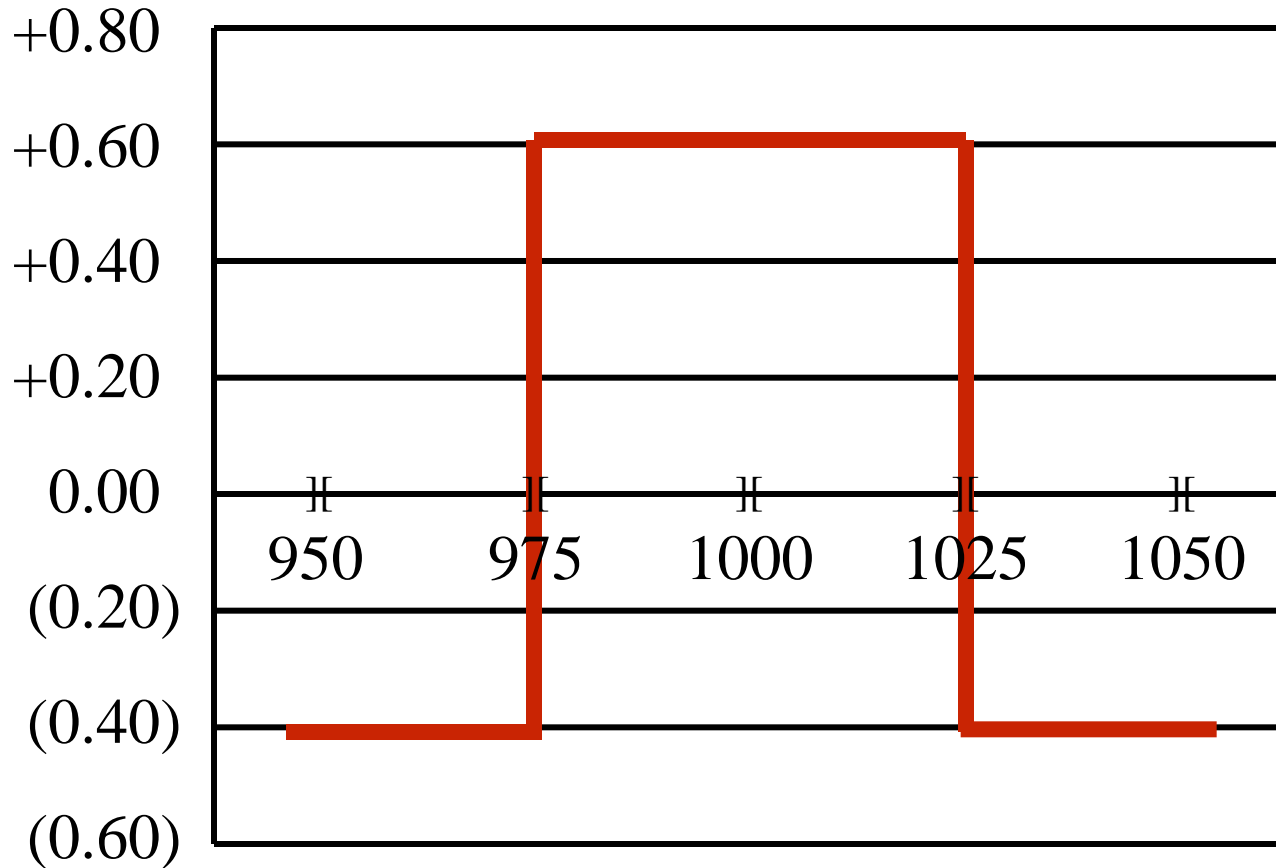
Buy SPX	Binary	975 Call @	0.70
Sell SPX	Binary	1025 Call @	<u>0.30</u>
		Net Cost	0.40

Constructed similar to a Bull Call Spread

Payout at expiration within a range.

Note: spreads involve extra commissions.

975-1025 Binary Call Spread at \$0.40



Binary Calls on SPX & VIX

- Payout at expiration if index at/above strike
- Price behavior similar to vertical spreads
- Time and volatility affect prices differently
- Binary vertical spreads payout within a range



Strategies



Protection a Portfolio ▲

You own a \$500,000 portfolio that closely follows the DJIA (now at 9,300)

You are worried about a 10-15% market decline in the next 6 months.

You want to limit downside risk to 5% and keep the upside.

Portfolio Protection with Index Puts

DJIA @ 9,300 DJX @ _____

Buy _____ DJX _____ Puts @ _____

Cost = _____

How the Protection Works

Assume DJIA at 7,900 at December expiration.

Market is down 15%, so portfolio is down 15%.

\$470,000 stock portfolio on 8/14, now \$400,000

With DJX @ 79, 93 Puts @ _____

Value of puts = _____

Total Portfolio = _____

Create a put spread

Buy Dec 93 Put 5.30 (5.8% of portfolio)

Sell Dec 82 Put 1.90

Net Cost 3.40 (3.7% of portfolio)

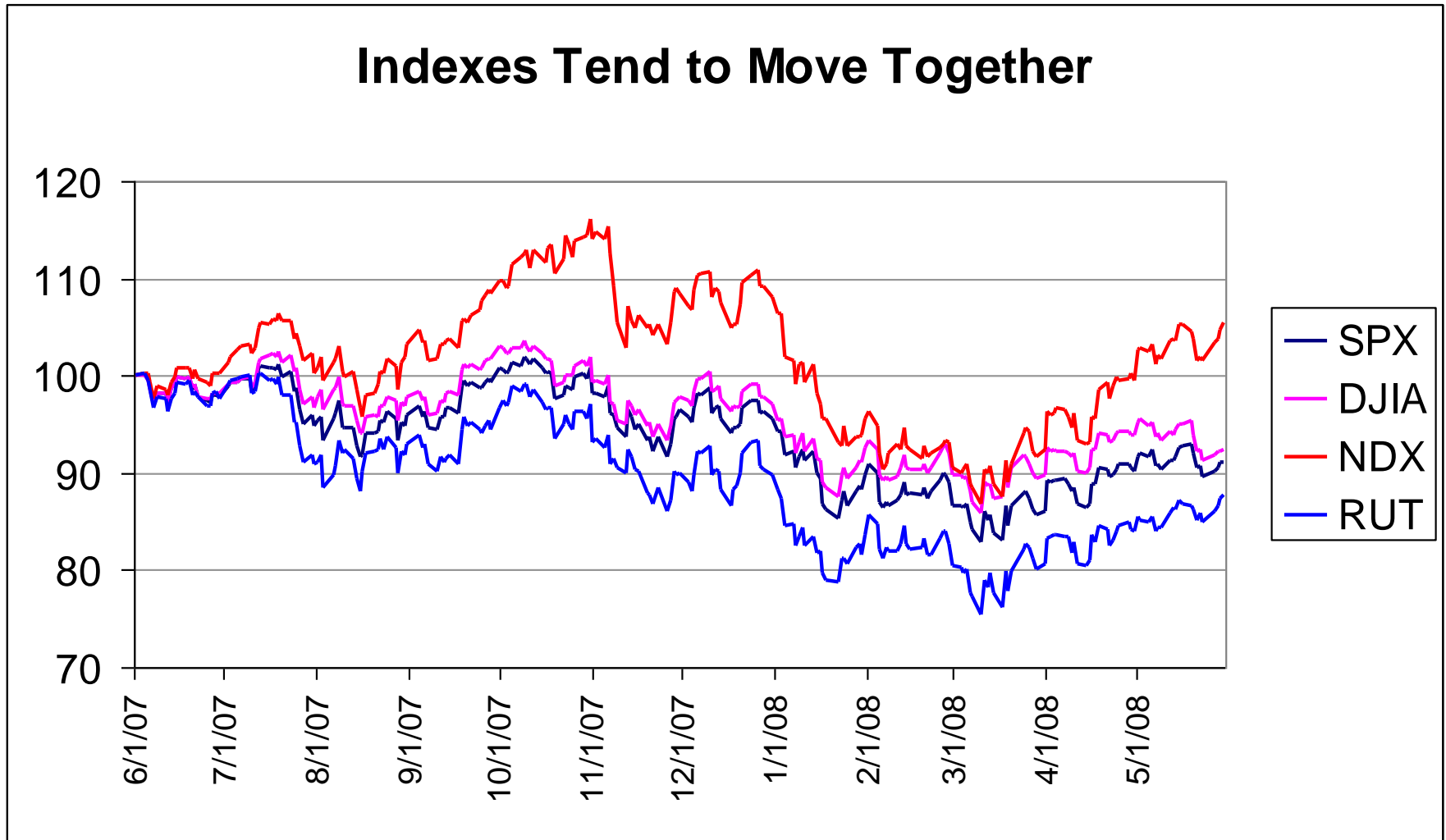
Tradeoff: no protection below index level of 82

Sell equity calls to pay for index puts

- Sell near-the-money calls on stocks that you are willing to sell now.
- Sell out-of-the-money calls on stocks that you are willing to sell if price rises.
- Sell calls on part of a stock position if you want to “lighten up” or diversify.

Cross-Index Spreads

Indexes Tend to Move Together



Indexes Tend to Move Together 1

7/19 – 8/17

SPX -6.9%

DJIA -6.6%

RUT -7.7%

NDX -8.0%

12/10 – 1/8

SPX -8.3%

DJIA -8.3%

RUT -10.5%

NDX -10.9%

Indexes Tend to Move Together 2

3/13 – 4/19

SPX + 6.7%

DJIA + 6.1%

RUT + 5.2%

NDX + 6.4%

3/20 – 4/18

SPX + 4.5%

DJIA + 3.9%

RUT + 8.8%

NDX + 5.8%

But NOT Always!

4/24 – 5/18

SPX + 2.9%

DJIA + 4.6%

RUT – 0.2%

NDX + 2.0%

Using correlated indexes, buy a call spread (debit call spread) on one index and sell a call spread (credit call spread) on the other index where the dollar risk is nearly the same and the potential percentage profit is higher.

Forecast: Both the SPX and RUT will rise more than 5% by option expiration (9/18).

8/14

9/18

SPX @ 1,004 → 1,054 (+5.0%)

RUT @ 564 → 592 (+5.0%)

The RUT A-T-M Bull Call Spread

35 days to expiration

8/14

A-T-M Bull Call Spread on RUT

$$564 + 5\% = 592$$

Buy Sep 560 Call 21.00

Sell Sep 590 Call (9.00)

Net Cost: 12.00

35 days to expiration

8/14

O-O-M Bear Call Spread on SPX

$$1,004 + 5\% = 1,054$$

Sell Sep 1,050 Call	11.00
Buy Sep 1,080 Call	<u>(4.00)</u>
Net Credit:	7.00

Two Margin Requirements

Buy the RUT bull call spread A-T-M	(12.00)
Sell the SPX bear call spread O-O-M	<u>7.00</u>
Net Cost:	(5.00)

Note: Both spreads must be margined.

(1) The cost of the long spread.

(2) Margin for the short spread.

The risk can exceed the “net cost.”

Cross-Index Spread – Market Down

<u>At Exp</u>	RUT < 560	SPX < 1,050	
	<u>Initial</u>	<u>Value</u>	<u>P / (L)</u>
RUT Bull Spd	(12.00)	0.00	-12.00
SPX Bear Spd	<u>7.00</u>	<u>0.00</u>	<u>+ 7.00</u>
Net	(5.00)	0.00	- 5.00

Cross-Index Spread – Market Up $\approx 5\%$

<u>At Exp</u>	RUT > 590	SPX < 1,050	
	<u>Initial</u>	<u>Value</u>	<u>P / (L)</u>
RUT Bull Spd	(12.00)	30.00	+18.00
SPX Bear Spd	<u>7.00</u>	<u>0.00</u>	<u>+ 7.00</u>
Net	(5.00)	30.00	+25.00

<u>At Exp</u>	RUT > 560	SPX > 1,080	
	<u>Initial</u>	<u>Value</u>	<u>P / (L)</u>
RUT Bull Spd	(12.00)	30.00	+18.00
SPX Bear Spd	<u>7.00</u>	<u>(30.00)</u>	<u>-23.00</u>
Net	(5.00)	0.00	- 5.00

Cross-Index Spread – Similar to??

RUT

Buy Sep 560 Call 21.00

Buy Sep 590 Call (9.00)

SPX

Sell Sep 1,050 Call 11.00

Buy Sep 1,080 Call (4.00)

RUT

Buy 1 Sep 560 Call	21.00	(21.00)
Sell 2 Sep 590 Call	(9.00)	18.00
Buy 1 Sep 620 Call	(3.00)	<u>(3.00)</u>
		(6.00)

SPX

Buy 1 Sep 1,020 Call	27.00	(27.00)
Sell 2 Sep 1,050 Call	(11.00)	22.00
Buy 1 Sep 1,080 Call	(4.00)	<u>(4.00)</u>
		(9.00)

Compare the Three

	<u>Cost</u>	<u>Max Risk</u>	<u>Max Profit</u>
RUT	6.00	(6.00)	+24.00
SPX	9.00	(9.00)	+21.00
Cross Index	5.00	> 5.00*	+25.00

* If indexes do not move in the same direction, the risk can exceed the initial cash outlay.

If indexes do not move together the risk can be greater than the net debit paid.

If the market moves sideways, time decay can affect the spreads differently.

Extra Commissions & 2 margins.

Not a short-term trading strategy.

Many interesting and unique index options are available to trade

Weeklies, VIX Options (and Futures), Binaries

You must know the contract specifications

Just a few strategies

Protect a portfolio

Trade a view on volatility

Cross-Index Spreads

THANK YOU FOR ATTENDING.

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ANSWERS

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Unique Features & Strategies

Exercise / Assignment Problems 1

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Long 5 SPX 880 Call	none	910	I-T-M Long Exercise	Receive $5 \times \\$3,000$ $= \\$15,000$

Exercise / Assignment Problems 2

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Long 5 XSP 95 Put	none	89.00	I-T-M Long Exercise	Receive 5 × \$600 = \$3,000

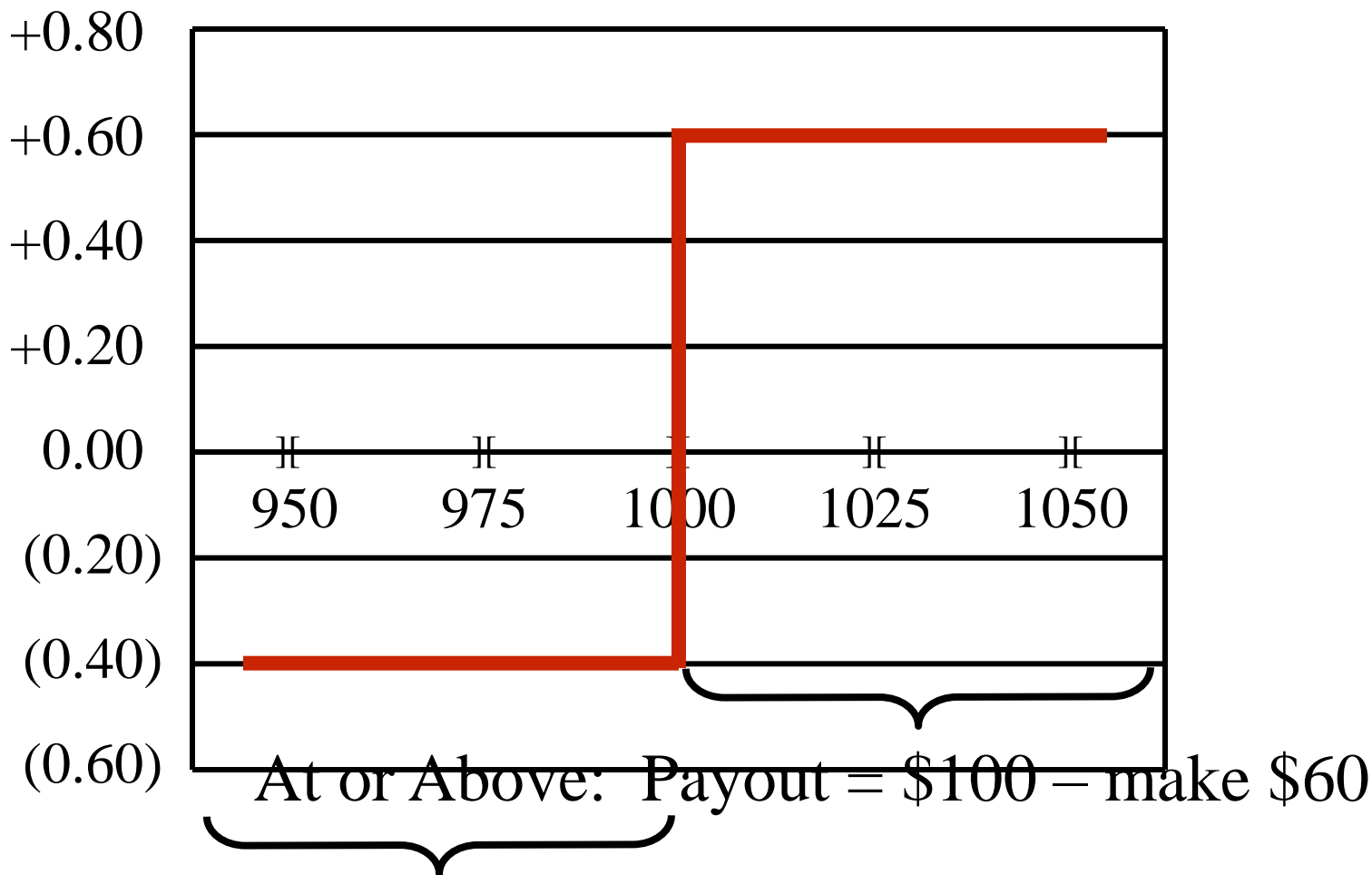
Exercise / Assignment Problems 3

Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Short 5 SPX 950 Put	none	990	O-O-M Expire	None

Exercise / Assignment Problems 4

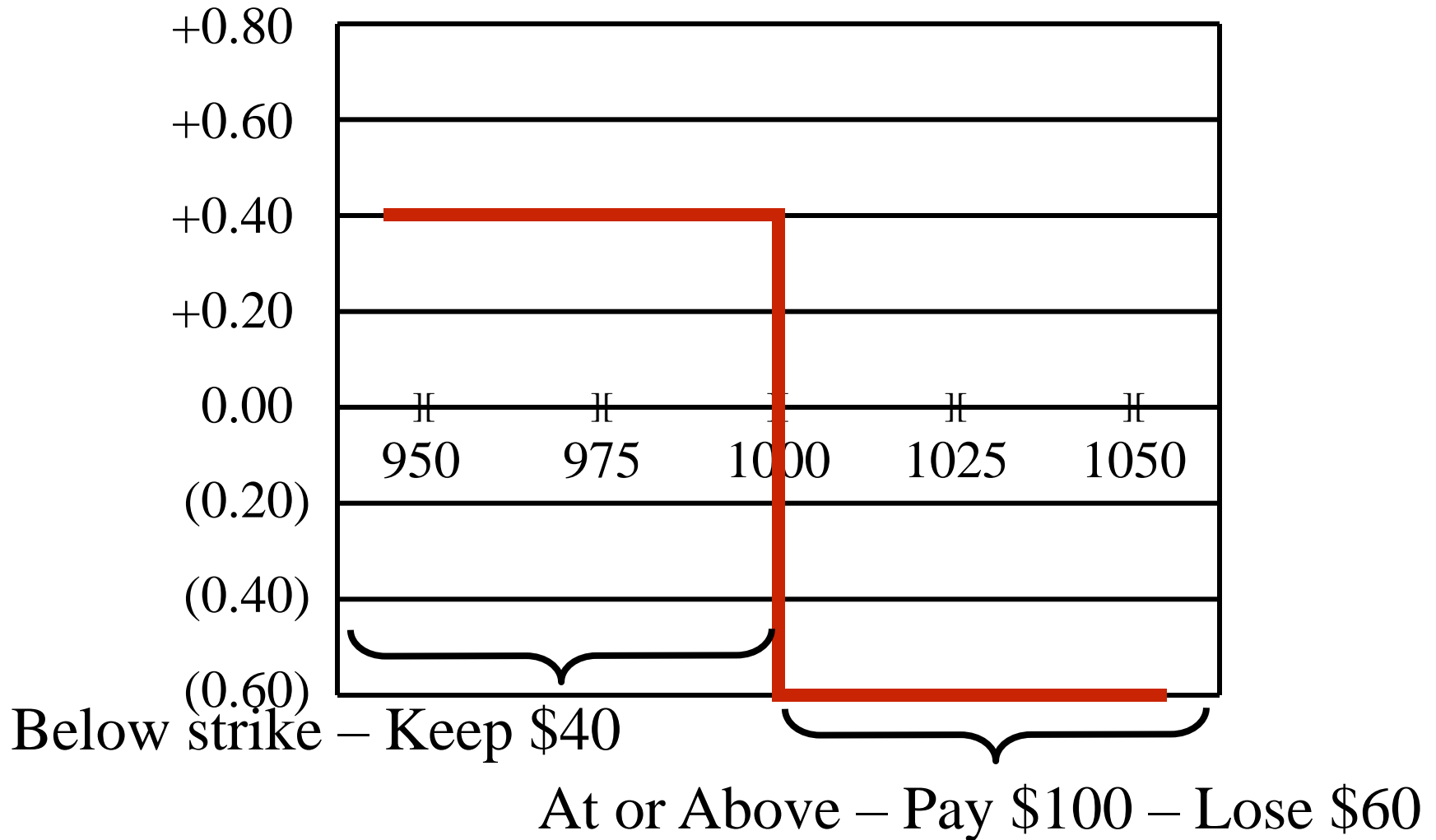
Option Position	Initial Stock Position	Index Level at Exp	Expire Exercise Assigned	Ending Position
Short 10 XEO 460 Put	none	440	I-T-M Short Assigned	Pay $10 \times$ \$2,000 = (\$20,000)

Long SPX Binary 1000 Call at \$0.40

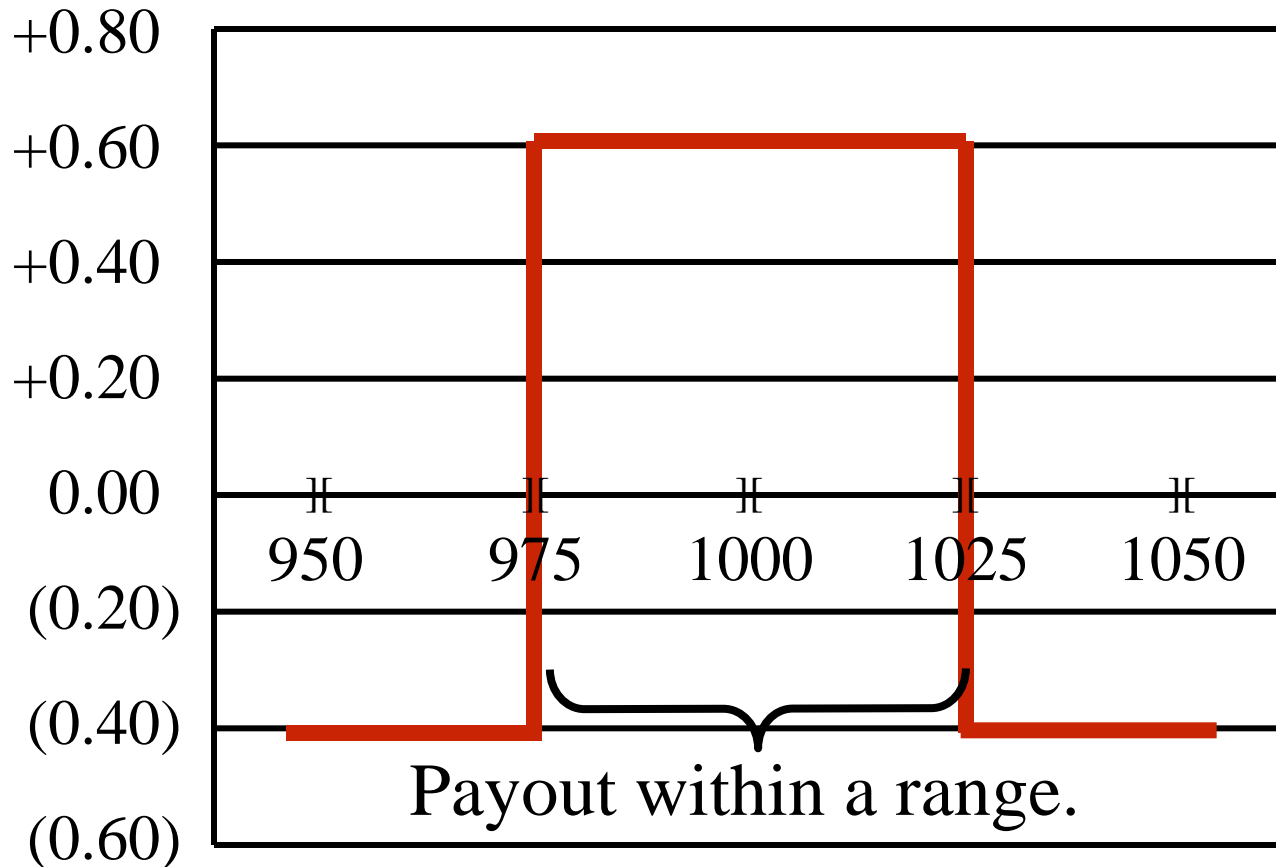


Below strike: Binary Expires – Lose \$40

Short SPX Binary 1000 Call at \$0.40



975-1025 Binary Call Spread at \$0.40



975 Binary Pays \$100 – 1025 Binary Expires – profit = \$60

\$500,000 Portfolio

Today is 8/14

DJIA @ 9,300 DJX @ **93.00**

Buy **55** DJX **DEC 93** Puts @ **5.30**

Cost = **55 x 5.30 x \$100 = \$29,150**

≈ 5.8% of portfolio value

1 DJX Put protects \$9,300

of options = \$500,000 ÷ \$9,300 = 55

Strike price is at the money

How the Protection Works

Assume DJIA at 7,900 at December expiration.

Market is down 15%, so portfolio is down 15%.

\$470,000 stock portfolio on 8/14, now \$400,000

With DJX @ 79, 93 Puts @ 14.00

Value of puts = 14.00 x 55 x \$100 = 77,000

Total Portfolio = 400,000 + 77,000 = 477,000

Market down 15%. You are down 5%.

The RUT A-T-M Bull Call Spread

35 days to expiration

8/14

A-T-M Bull Call Spread on RUT

$$564 + 5\% = 592$$

Buy Sep 560 Call 21.00

Sell Sep 590 Call (9.00)

Net Cost: 12.00

Buy a 30-point spread for 12.00

Risk 12.00. Max Profit 18.00

35 days to expiration

8/14

O-O-M Bear Call Spread on SPX

$$1,004 + 5\% = 1,054$$

Sell Sep 1,050 Call 11.00

Buy Sep 1,080 Call (4.00)

Net Credit: 7.00

Sell a 30-point spread for 7.00

Risk 23.00. Max Profit 7.00

Cross-Index Spread – Market Down

<u>At Exp</u>	<u>RUT < 560</u>	<u>SPX < 1,050</u>	
	<u>Initial</u>	<u>Value</u>	<u>P / (L)</u>
RUT Bull Spd	(12.00)	0.00	-12.00
SPX Bear Spd	<u>7.00</u>	<u>0.00</u>	<u>+ 7.00</u>
Net	(5.00)	0.00	- 5.00

Downside risk = 5.00

Cross-Index Spread – Market Up $\approx 5\%$

<u>At Exp</u>	<u>RUT > 590</u>	<u>SPX < 1,050</u>	
	<u>Initial</u>	<u>Value</u>	<u>P / (L)</u>
RUT Bull Spd	(12.00)	30.00	+18.00
SPX Bear Spd	<u>7.00</u>	<u>0.00</u>	<u>+ 7.00</u>
Net	(5.00)	30.00	<u>+25.00</u>

Cost 5.00 Max Profit 25.00

Cross-Index Spread – Market Up Big

<u>At Exp</u>	<u>RUT > 560</u>	<u>SPX > 1,080</u>	
	<u>Initial</u>	<u>Value</u>	<u>P / (L)</u>
RUT Bull Spd	(12.00)	30.00	+18.00
SPX Bear Spd	<u>7.00</u>	<u>(30.00)</u>	<u>-23.00</u>
Net	(5.00)	0.00	- 5.00

Cross-Index Spread – Similar to??

RUT

Buy Sep 560 Call 21.00

Buy Sep 590 Call (9.00)

SPX

Sell Sep 1,050 Call 11.00

Buy Sep 1,080 Call (4.00)

A-T-M

Bull Call Spd

+

O-O-M

Bear Call Spd

= Butterfly Spd