

CBOE FUTURES
EXCHANGE

The OPTIONS
INSTITUTESM



Trading VIX Futures – Part II

Russell Rhoads, CFA
Instructor – The Options Institute

CBOE Disclaimer



Options and futures involve risks and are not suitable for all investors. Prior to buying or selling options, an investor must receive a copy of *Characteristics and Risks of Standardized Options*. Copies may be obtained by contacting your broker by calling 1-888-OPTIONS, or at www.theocc.com. In order to simplify the computations, commissions, fees, margin interest and taxes have not been included in the examples used in these materials. These costs will impact the outcome of all securities and futures transactions and must be considered prior to entering into any transactions. Investors should consult their tax advisor about any potential tax consequences. The information in this presentation, including any strategies discussed, is strictly for illustrative and educational purposes only and is not to be construed as an endorsement, recommendation, or solicitation to buy or sell securities or futures. Supporting documentation for any claims, comparisons, recommendations, statistics, or other technical data, will be supplied upon request. Past performance is not a guarantee of future results. CBOE®, Chicago Board Options Exchange®, CBOE Volatility Index®, VIX® and The Options Institute Logo are registered trademarks and SPX is a servicemark of CBOE. S&P®, and S&P 500® are registered trademarks of the McGraw-Hill Companies, Inc. and are licensed for use by CBOE. Standard & Poor's does not promote, market, sell or endorse any product based upon its indices.

Copyright © 2011 Chicago Board Options Exchange, Incorporated. All rights reserved.

- VIX Index / Futures Review
- The VIX Futures Pricing Curve
 - Calendar Spread
- VIX vs. SPX Review
 - VIX as an Indicator
 - Trade S&P or VIX Futures?
- Summary / Q&A

The VIX[®] –

CBOE Volatility Index[®].

Measures S&P 500[®] implied volatility.

Based on S&P 500 Option bid/ask quotes.

Uses the nearby options with at least 8 days until expiration.

Has been promoted as a ‘fear index’ by the business media.

VIX Futures

- Value is \$1000 x the level of the VIX Index.
- Trade the next 7 months of expiration.
- Expire on Wednesday 30 days before corresponding S&P 500 option expiration.
- Have very unique characteristics relative to other financial futures.

Pricing –

VIX Future

Dec VIX – VXZ0 @ 22.65 = \$22,650

Minimum price move = .05 or \$50.

+/- 1.00 price change = +/- \$1000.

Expiration Months –

VIX Futures

Next 8 Months

Currently – Dec, Jan, Feb, Mar, Apr, May,
Jun, Jul

Wednesday Settlement 30 Days Before the Next Option Settlement Date

	VIX Option Expiration	Next Standard Option Expiration
December 2010	Dec 22	Jan 21
January 2011	Jan 19	Feb 18
February 2011	Feb 16	Mar 18
March 2011	Mar 16	Apr 15
April 2011	Apr 20	May 20
May 2011	May 18	Jun 17
Jun 2011	Jun 15	Jul 15

Settlement Pricing –

VIX futures are AM settled contracts.

AM settlement involves a special calculation of the VIX Index taking place the morning after the end of trading for a futures contract.

This is known as the Special Opening Quotation.

Special Opening Quotation (SOQ) –

This is a unique VIX index quote that involves only actual S&P 500 option trades.

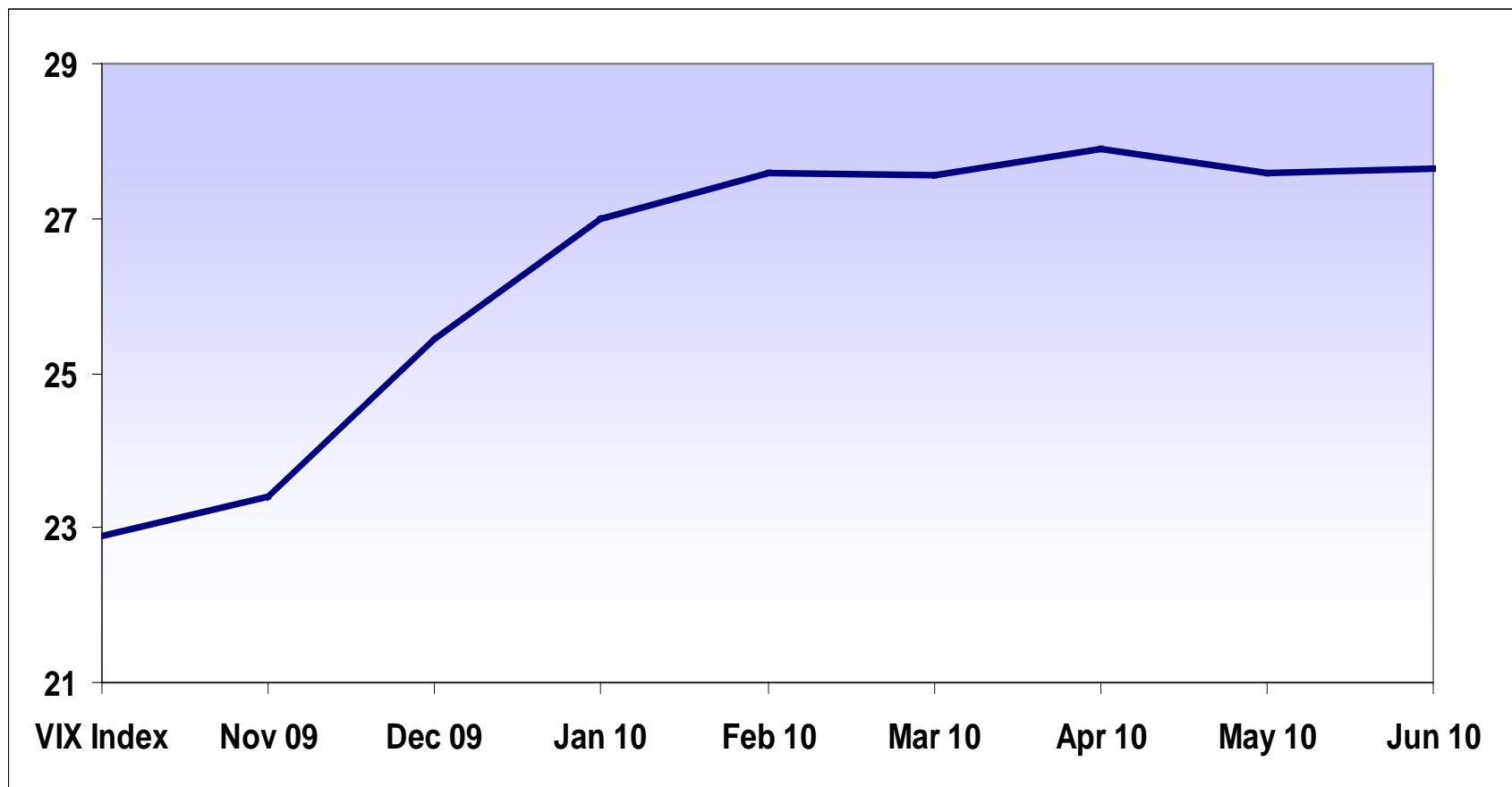
The regular VIX Index calculation uses the mid-point between bids and offers.

The symbol for the SOQ is VRO.

Introduction –

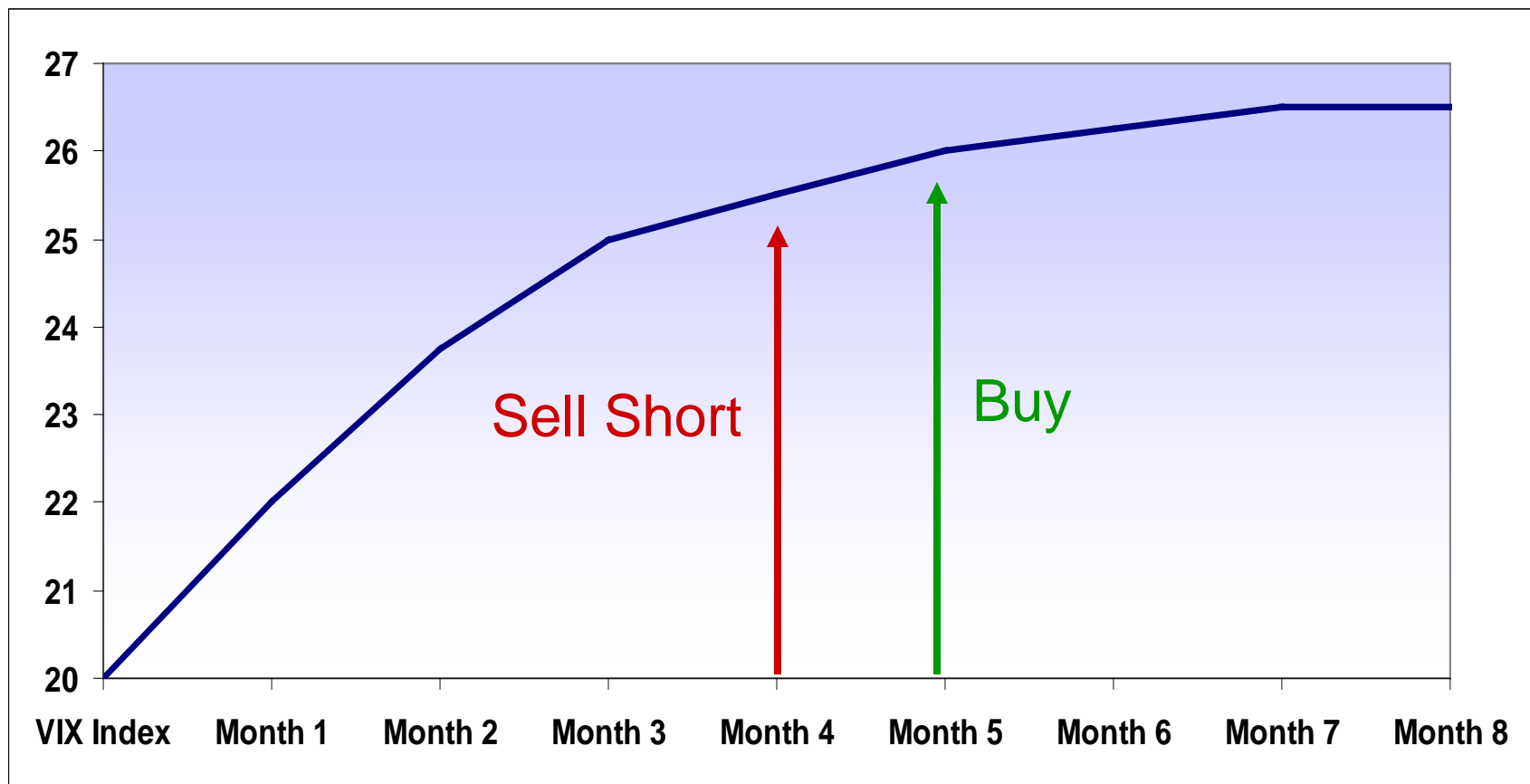
- The VIX index and active futures may be plotted as a curve
- Due to the anticipatory nature of VIX futures the shape may vary
- There is a ‘typical’ shape to these VIX prices

VIX Index & Futures 11/16/2010



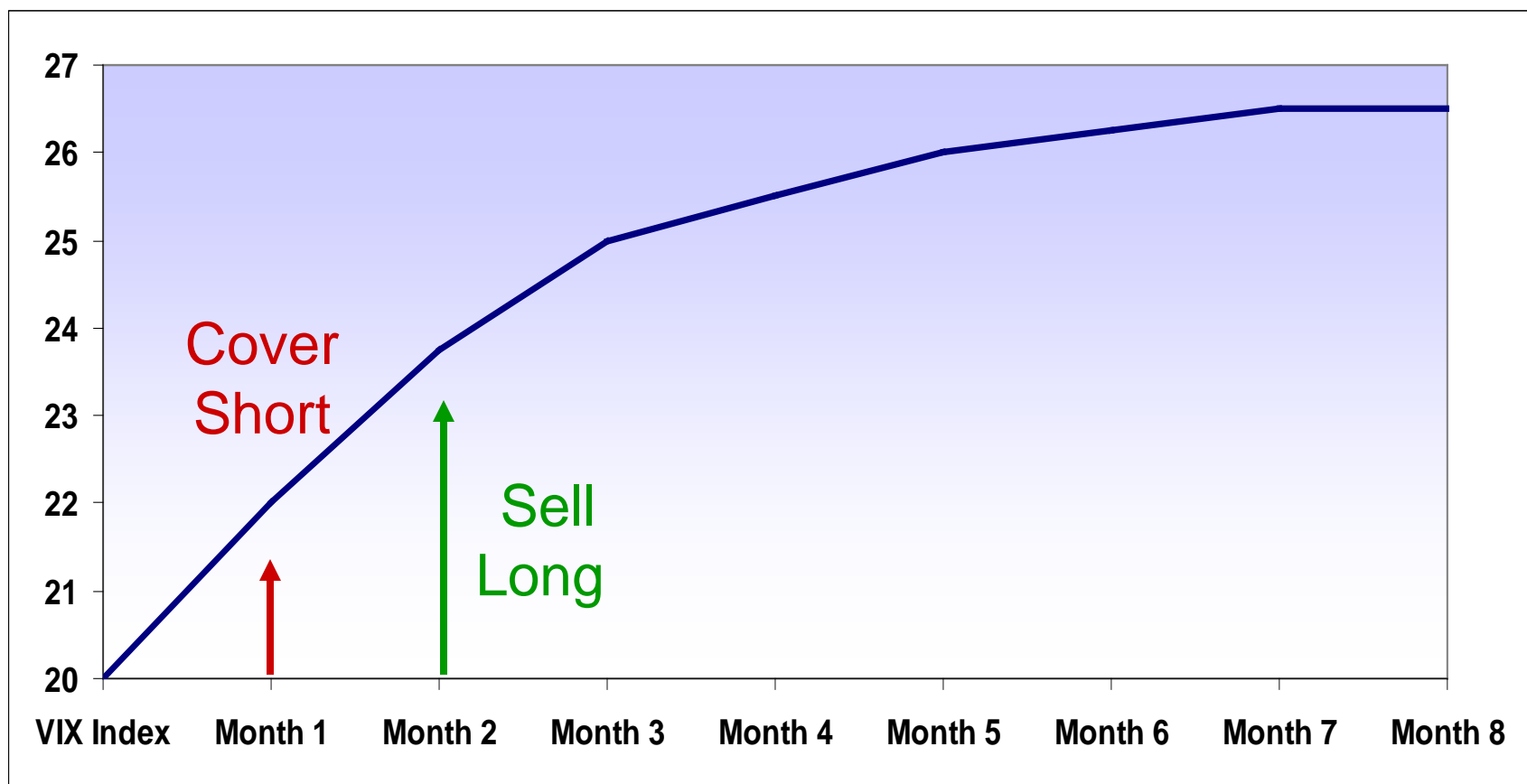
VIX Futures Curve

Typical Curve –



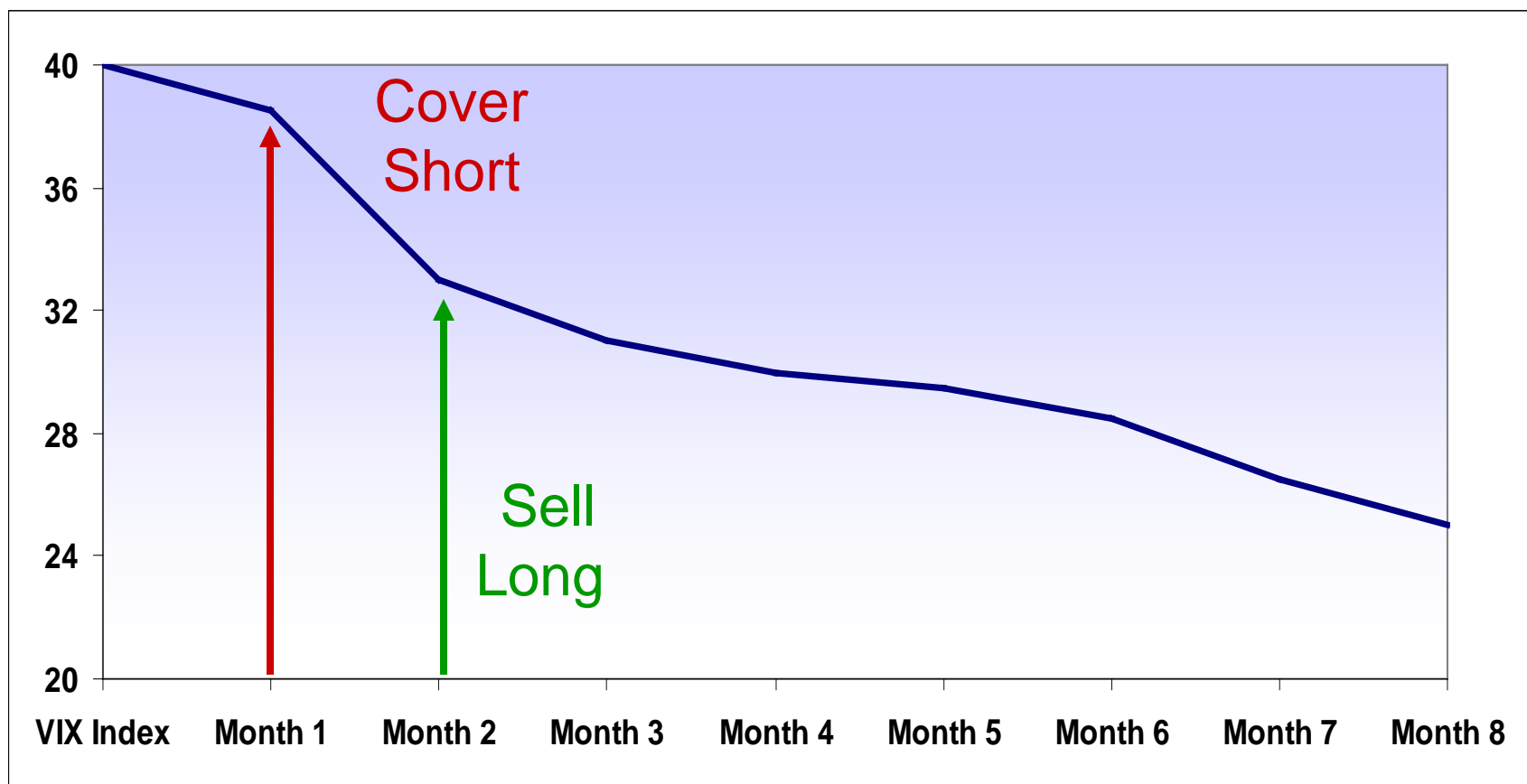
VIX Futures Curve

Four Months Later – Normal Curve



VIX Futures Curve

Four Months Later – Volatility Spike



VIX Price Behavior Study –

- Based on futures moving along the curve
- Used 46 pairs of contracts from Feb 07 – Mar 07 to Nov 10 – Dec 10
- Studied price behavior of pairs over three month period
- Used the Friday prior to expiration as the ‘roll date’

Example of roll date –

November 17 was Nov VIX Expiration

Friday November 12 was day December
became ‘front month’

November 12 –

Nov 10 VIX / Dec 10 VIX
Results Analyzed

Feb 11 VIX / Mar 11 VIX
Monitoring Starts

VIX Price Behavior Study –

- Eliminated pairs where closer month was at a discount to VIX Index
- There were 33 of 46 pairs that remained after the first screen
- Analyzed price data over next three months until Friday before expiration

VIX Calendar Spread



Example of Data Analysis – January 15, 2010

Month 1 – Feb 10

Month 2 – Mar 10

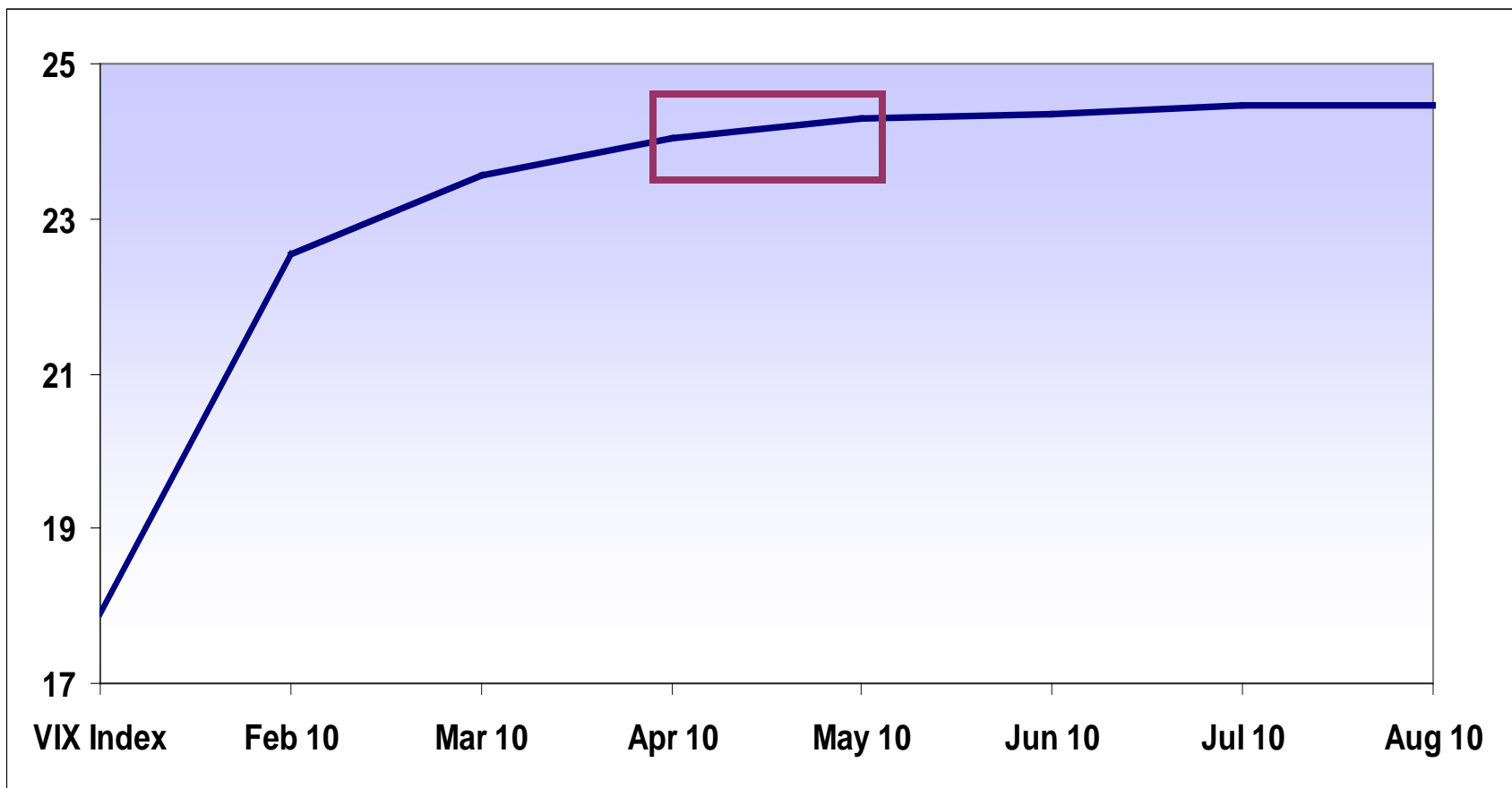
Month 3 – Apr 10

Month 4 – May 10

Potential
Pair

VIX Calendar Spread

VIX Futures Curve 1/15/2010



VIX Calendar Spread



Example of Data Analysis – January 15, 2010

VIX Index – 17.91

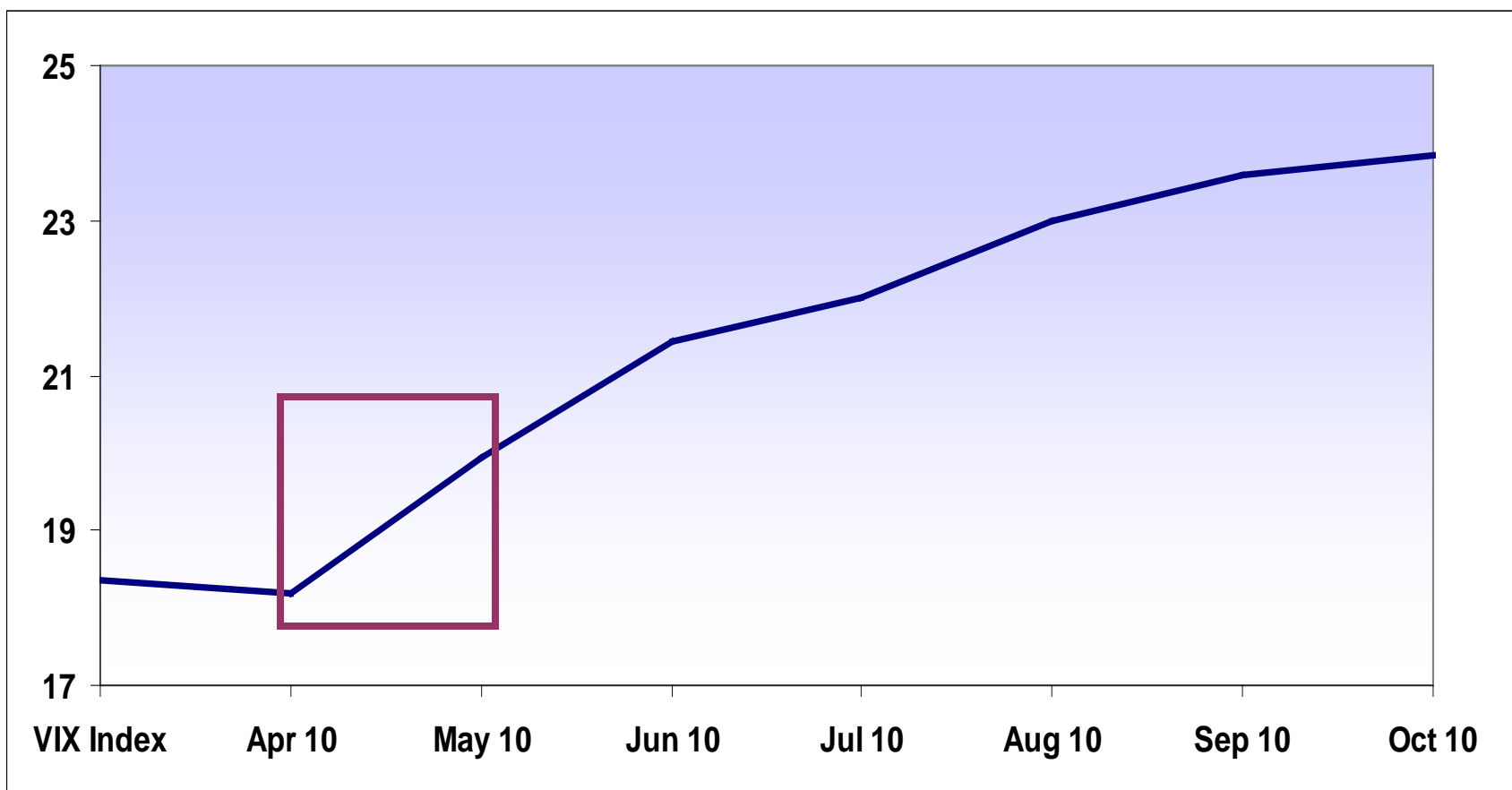
VIX Apr 10 – 24.05

VIX May 10 – 24.30

Passed
Screen

VIX Calendar Spread

VIX Futures Curve 4/16/2010



Example of Data Analysis – April 16, 2010

VIX Index – 18.36 (up 0.45)

VIX Apr 10 – 18.20 (down 5.85)

VIX May 10 – 19.95 (down 4.35)

May VIX lost less value than Apr VIX

VIX Calendar Spread



Example of Data Analysis – March 18, 2008

Month 1 – Apr 08

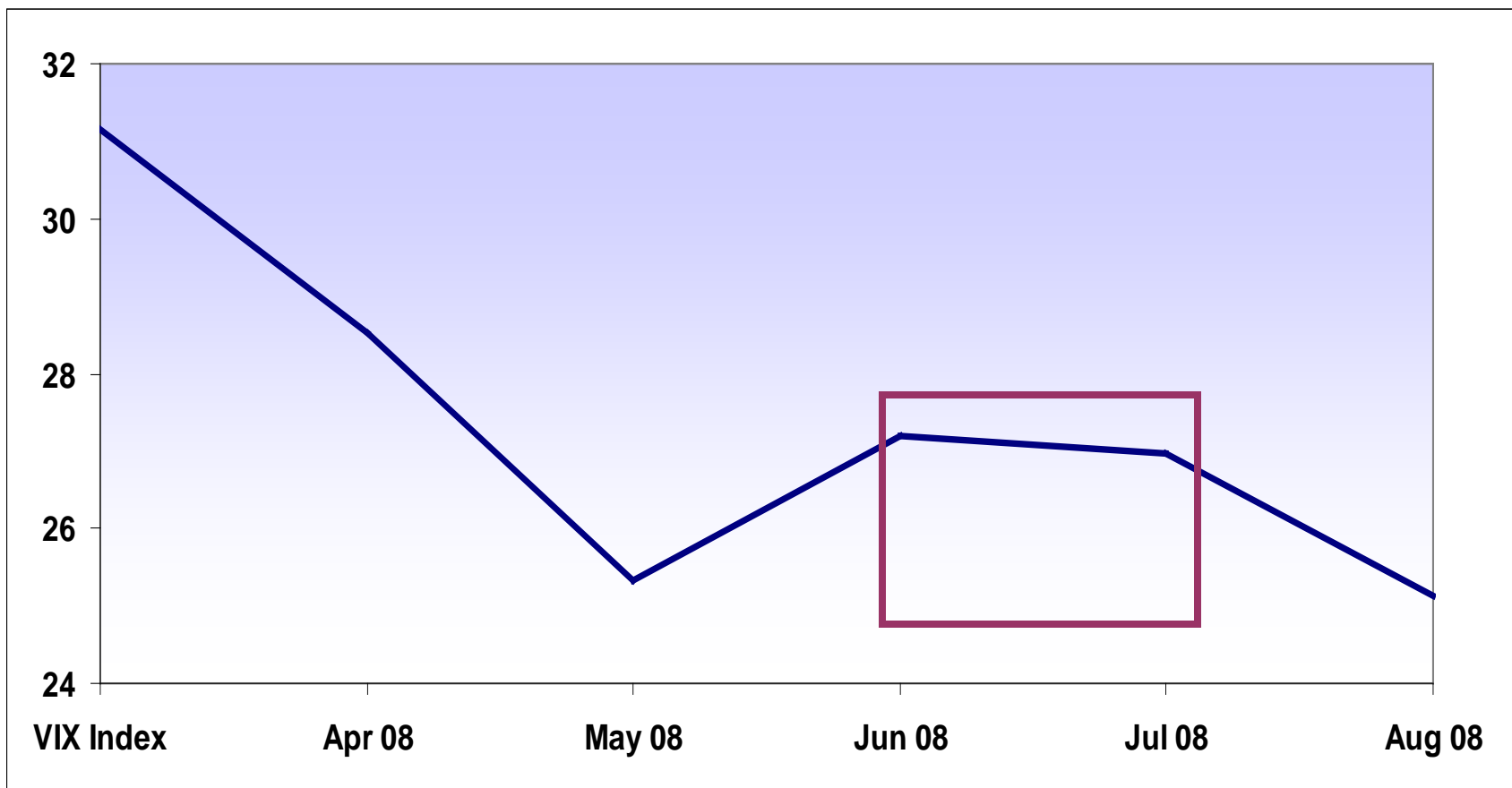
Month 2 – May 08

Month 3 – Jun 08

Month 4 – Jul 08

Potential
Pair

VIX Futures Curve 3/18/2008



VIX Calendar Spread



Example of Data Analysis – March 18, 2008

VIX Index – 31.16
VIX Jun 08 – 27.24
VIX Jul 08 – 26.96

Failed
Screen

Example of Data Analysis – August 15, 2008

Month 1 – Sep 08

Month 2 – Oct 08

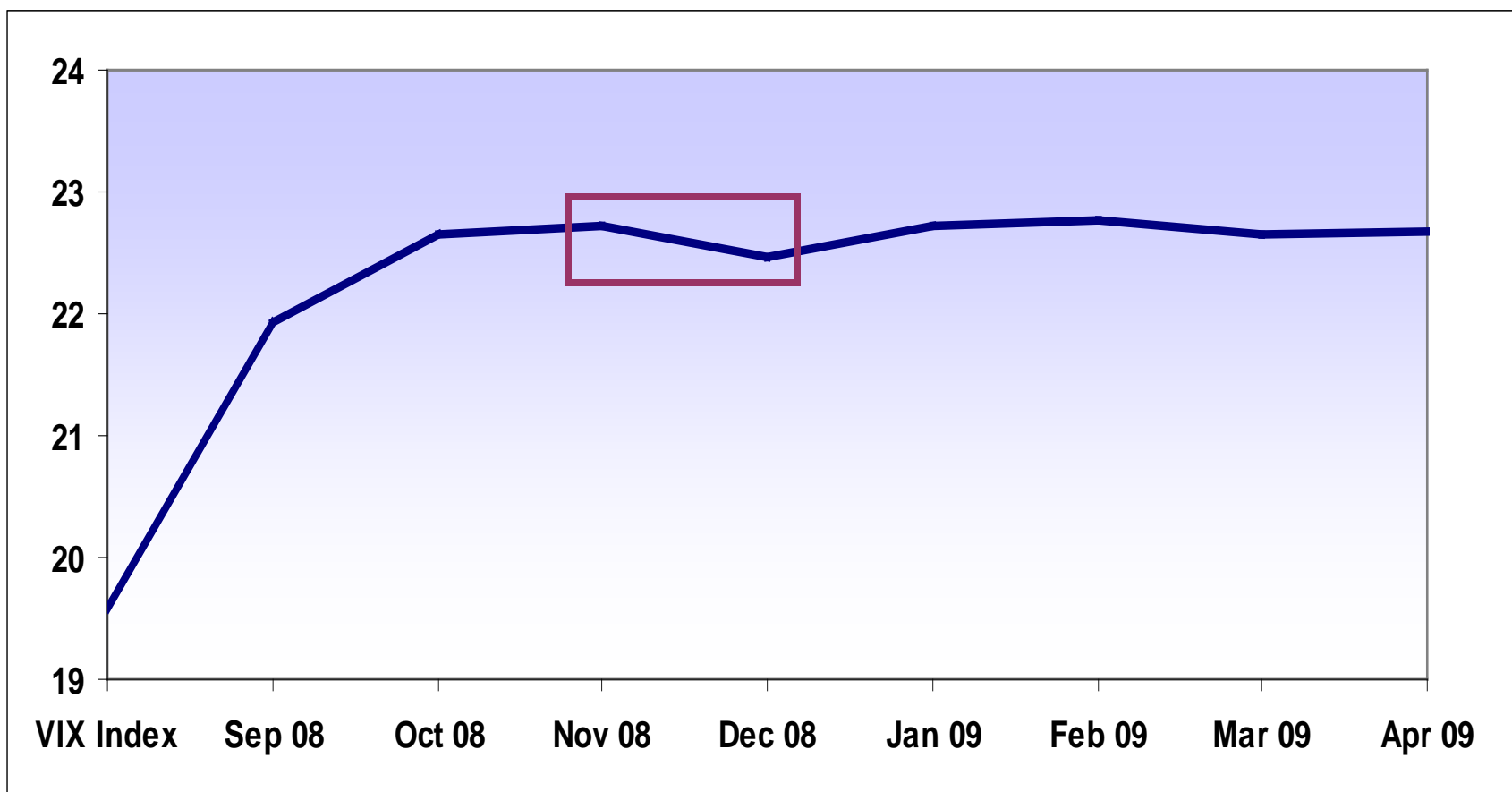
Month 3 – Nov 08

Month 4 – Dec 08

Potential
Pair

VIX Calendar Spread

VIX Futures Curve 8/15/2008



VIX Calendar Spread



Example of Data Analysis – August 15, 2008

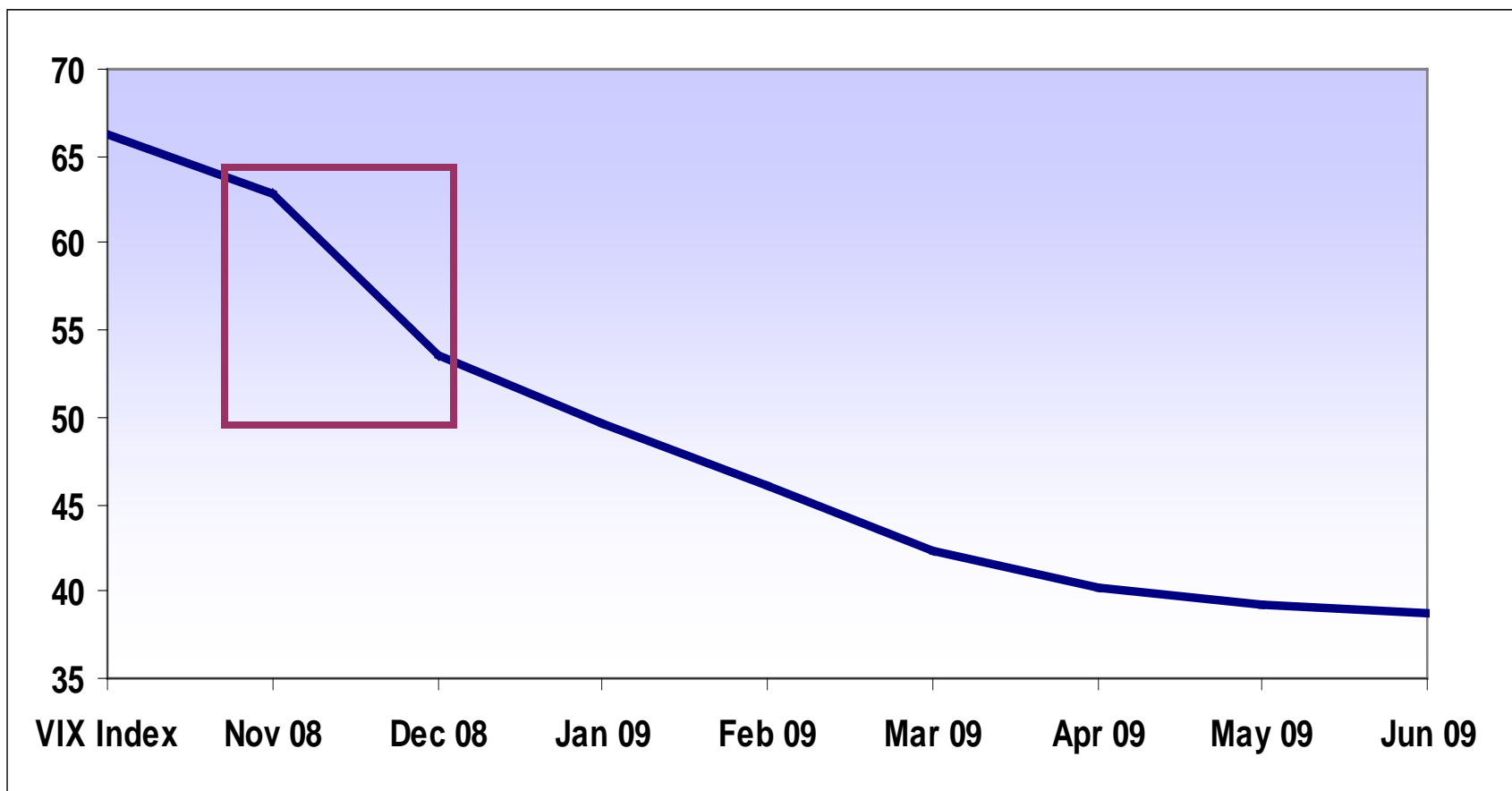
VIX Index – 19.58

VIX Nov 08 – 22.71

VIX Dec 08 – 22.47

Passed
Screen

VIX Futures Curve 11/14/2008



Example of Data Analysis – November 14, 2008

VIX Index – 66.31 (up 46.73)

VIX Nov 08 – 62.90 (up 40.19)

VIX Dec 08 – 53.51 (up 31.04)

Nov VIX gained more than the Dec VIX

Summary –

- 33 pairs passed initial screen
- 25 of the 33 instances where the screen was passed resulted in the 3rd month being at a discount to 4th month on 'roll date'
- Warning - when curve inverts result can be front month at steep premium to back months

VIX as SPX Signal



- VIX Futures are 100% anticipatory
- There is an inverse relationship between the S&P 500 Index and the VIX
- Futures prices are based on the direction the market expects the VIX Index to settle at expiration
- Since futures anticipate the VIX, they also indicate the market's S&P 500 expectations

The most basic of rules –

- Long the S&P 500 Index if Close > 200 Day Moving Average
- 1/1/2007 – 10/29/2010 results in about a 2 point S&P 500 Index gain
- 1/1/2007 – 10/29/2010 S&P 500 Index down about 234 points

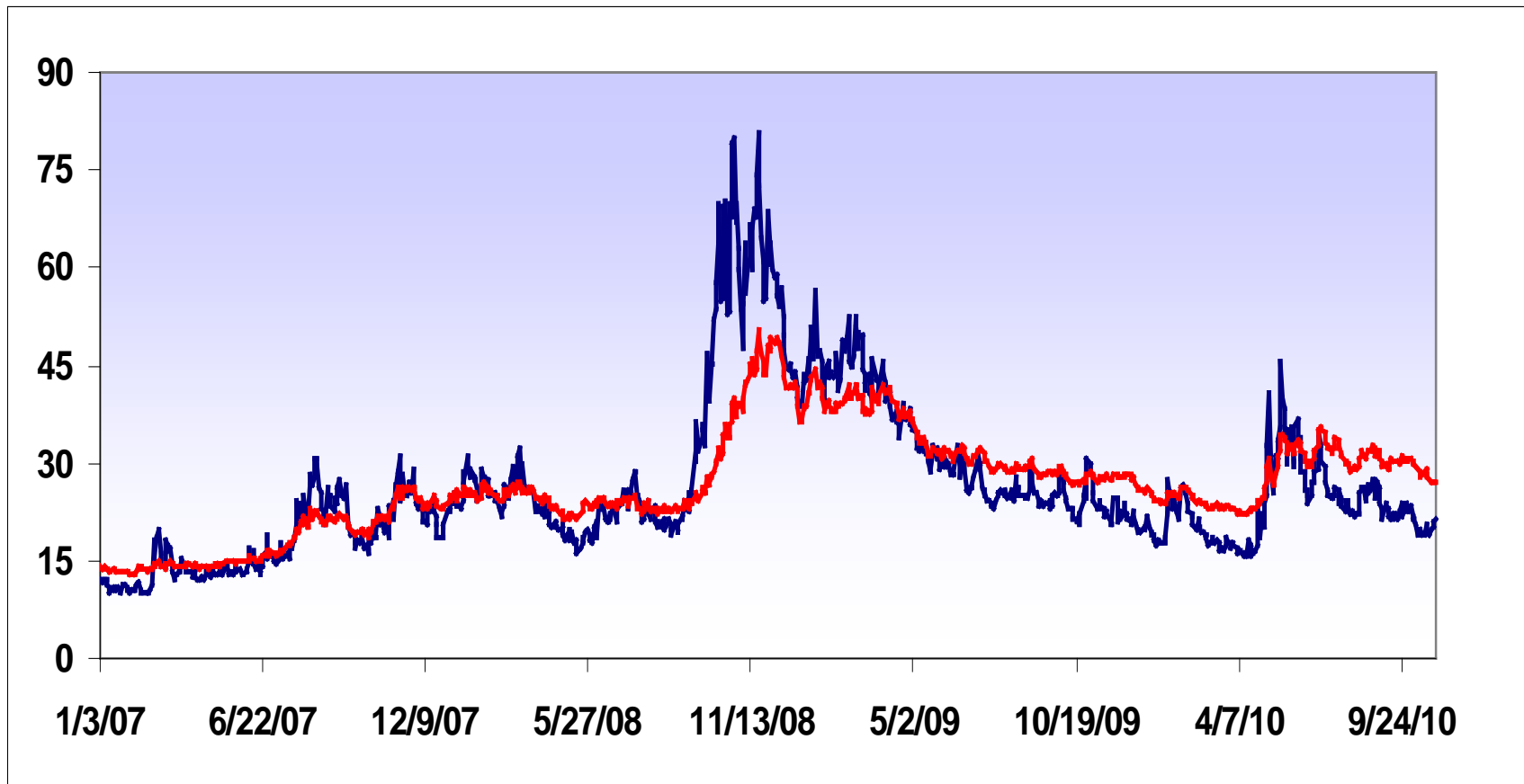
Adding in a VIX Screen –
Long S&P 500 Index if...

- S&P 500 Close $>$ 200 Day Moving Average
- VIX Index Close $<$ 200 Day Moving Average

1/1/2007 – 10/29/2010 Result
Up 185 S&P 500 Points
vs.
2 Points with No VIX Screen

VIX as SPX Signal

VIX Index vs. 4th Month VIX Future



VIX Index vs. 4th Month VIX –

- VIX Futures anticipate the direction of the spot index over time
- This results in the futures also anticipating the overall market
- When the VIX futures are at a discount to the index, the anticipation is for lower volatility in the future

VIX Index vs. 4th Month VIX –

Checked the result of being long the S&P 500 when the index is at a premium to the future expiring four months out

VIX as a SPX Signal



Long S&P 500 if $VIX > 4^{\text{th}}$ Month VIX Future

- Tested 1/1/2007 to 10/29/2010
- Based on closing prices only
- Result was a gain of 252 S&P 500 points
- Again index was flat over same period

- There is an inverse relationship between the VIX and the S&P 500
- Generally when the S&P 500 is under pressure the VIX moves higher
- This inverse relationship creates a wide variety of trading opportunities

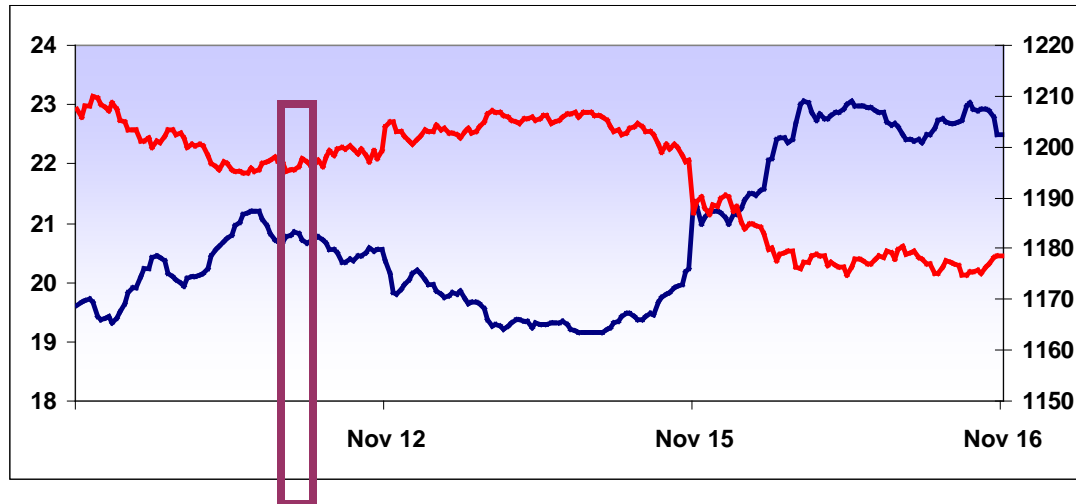
What about trading VIX futures based on an S&P 500 opinion?

VIX trading based on an S&P 500 opinion –

- Tough to quantify (no VIX ‘fair value’)
- However, closer to expiration, front month trades in line with index

What if you were bearish 11/15 & 11/16?

S&P 500 vs. VIX – 11/12 through 11/16



Bearish on SPX -

VIX Futures –

11/12 Buy Nov VIX @ 20.35

11/16 Sell Nov VIX @ 22.25

SPX Futures –

11/12 Sell Dec S&P @ 1194.75

11/16 Buy Dec S&P @ 1175.00

- VIX futures gravitate toward the index as settlement approaches
- A stock market outlook may also result in an opinion for the direction of volatility
- A VIX futures position in place of an S&P 500 futures position may be a viable method of trading around your opinion

- VIX futures may be traded as a calendar spread based on the outlook for the curve of VIX prices
- The VIX index and VIX futures may be used as an indicator for the overall market
- Also, VIX futures positions may be a viable alternative to trading market index futures

CBOE Volatility Index

www.cboe.com/vix

CBOE Futures Exchange

www.cfe.cboe.com

Russell Rhoads

rhoads@cboe.com