



Trading VIX® Futures and Options

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A Brief History of the VIX –

1993 – VIX introduced in a paper.

2003 – VIX calculation changed.

2004 – futures contracts introduced.

2006 – options on VIX begin trading.

2008 – binary options on the VIX.

2009 – mini-VIX futures introduced.

2009 – ETNs on VIX introduced.

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.

Mini VIX Futures

- Value is \$100 times the VIX Index.
- Trade the next 3 months of expiration.
- Expire on Wednesday 30 days before corresponding SPX option expiration.
- Have very unique characteristics relative to other financial futures.

Pricing –

VIX Future

June VIX – VXM0 @ 26.90 = \$26,900.

Minimum price move = .05 or \$50.

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

Mini-VIX

June VIX – VMM0 @ 26.90 = \$2,690.

Minimum price move = .05 or \$5.

+/- 1.00 price change = +/- \$100.

Expiration Months –

VIX Futures

Next 7 Months

Currently – Jul, Aug, Sep, Oct, Nov, Dec,
Jan

Mini-VIX

Next 3 Months

Currently – Jul, Aug, Sep

Unique Features –

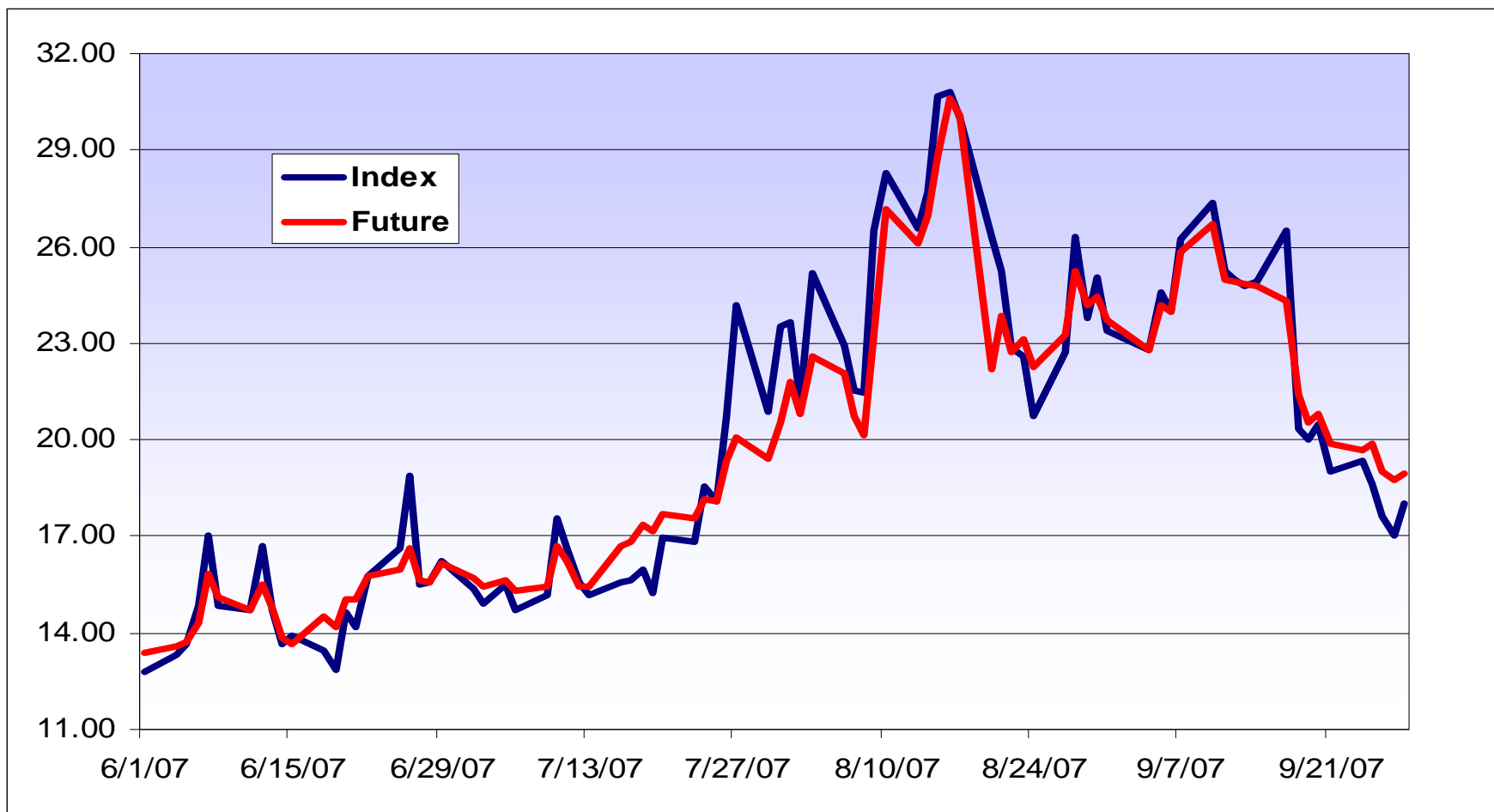
Pricing is anticipatory, no ‘cost of carry’.

Future price reflects market opinion of the future direction of the spot VIX Index.

At times the VIX future price is higher than the index and at times it is lower.

VIX Index vs. Front Month Future

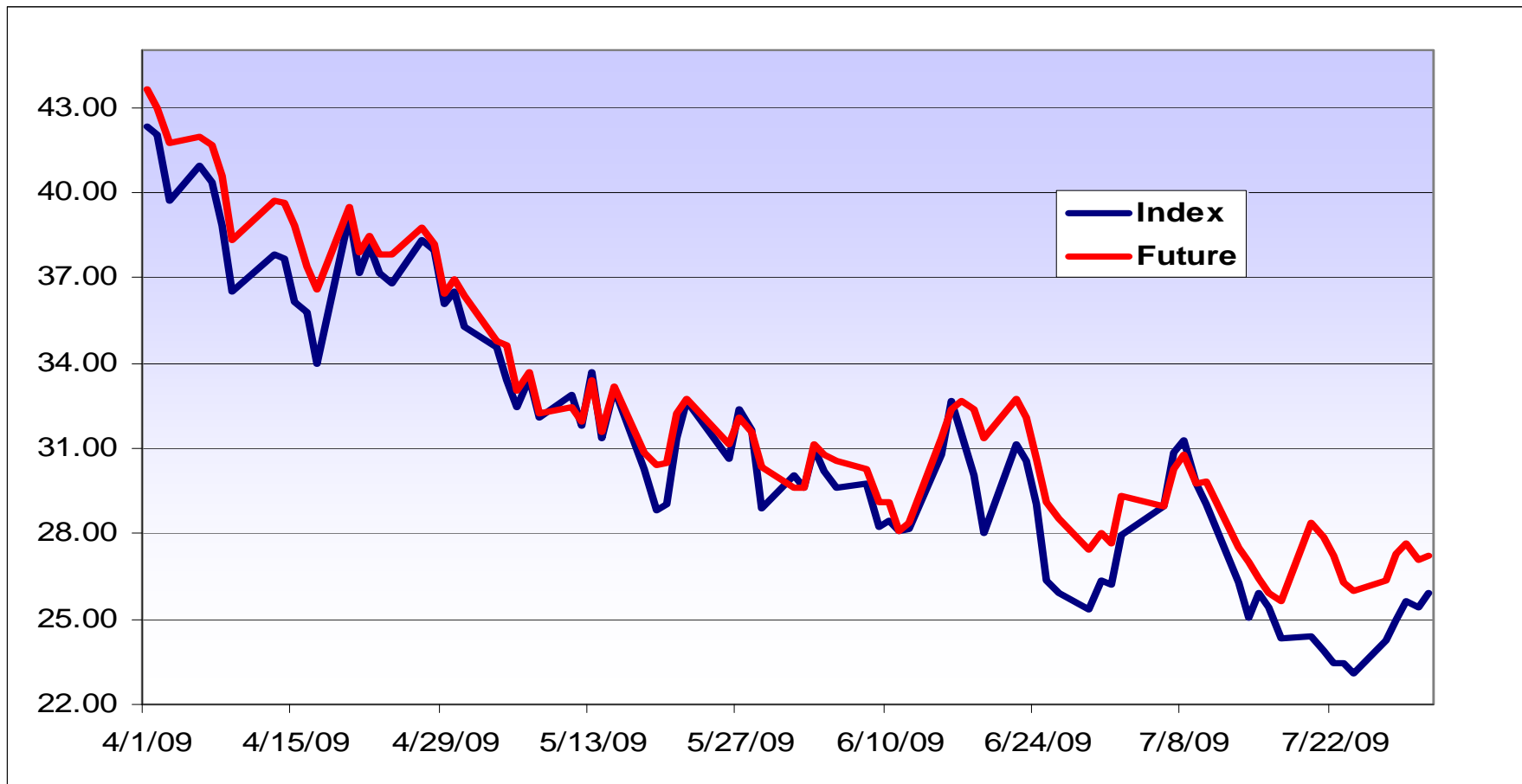
Daily Chart – 6/1/2007 – 9/30/2007



Data Source Bloomberg

VIX Index vs. Front Month Future

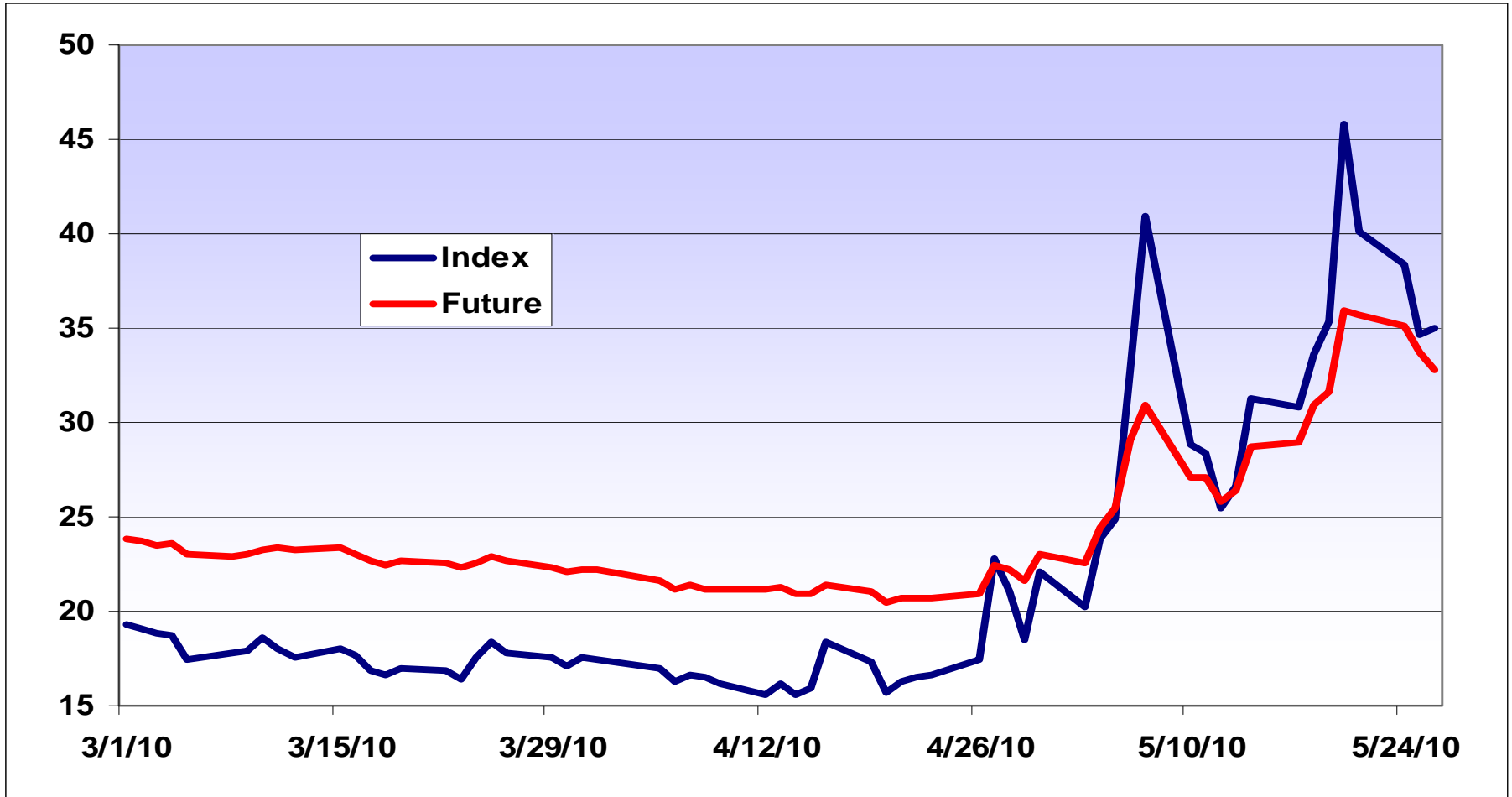
Daily Chart – 4/1/2009 – 7/30/2009



Data Source Bloomberg

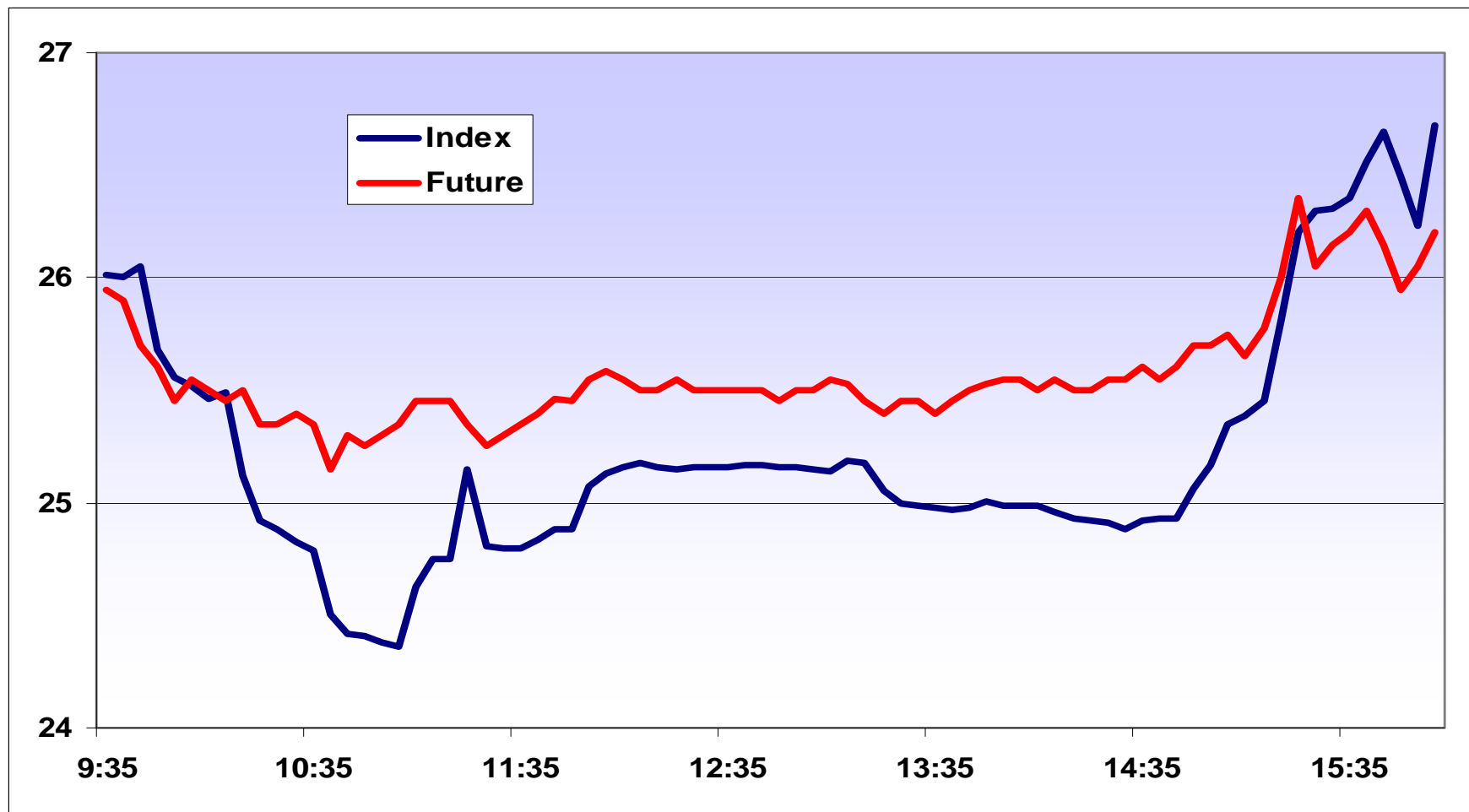
VIX Index vs. June Future

Daily Chart – 3/1/2010 - 5/26/2010



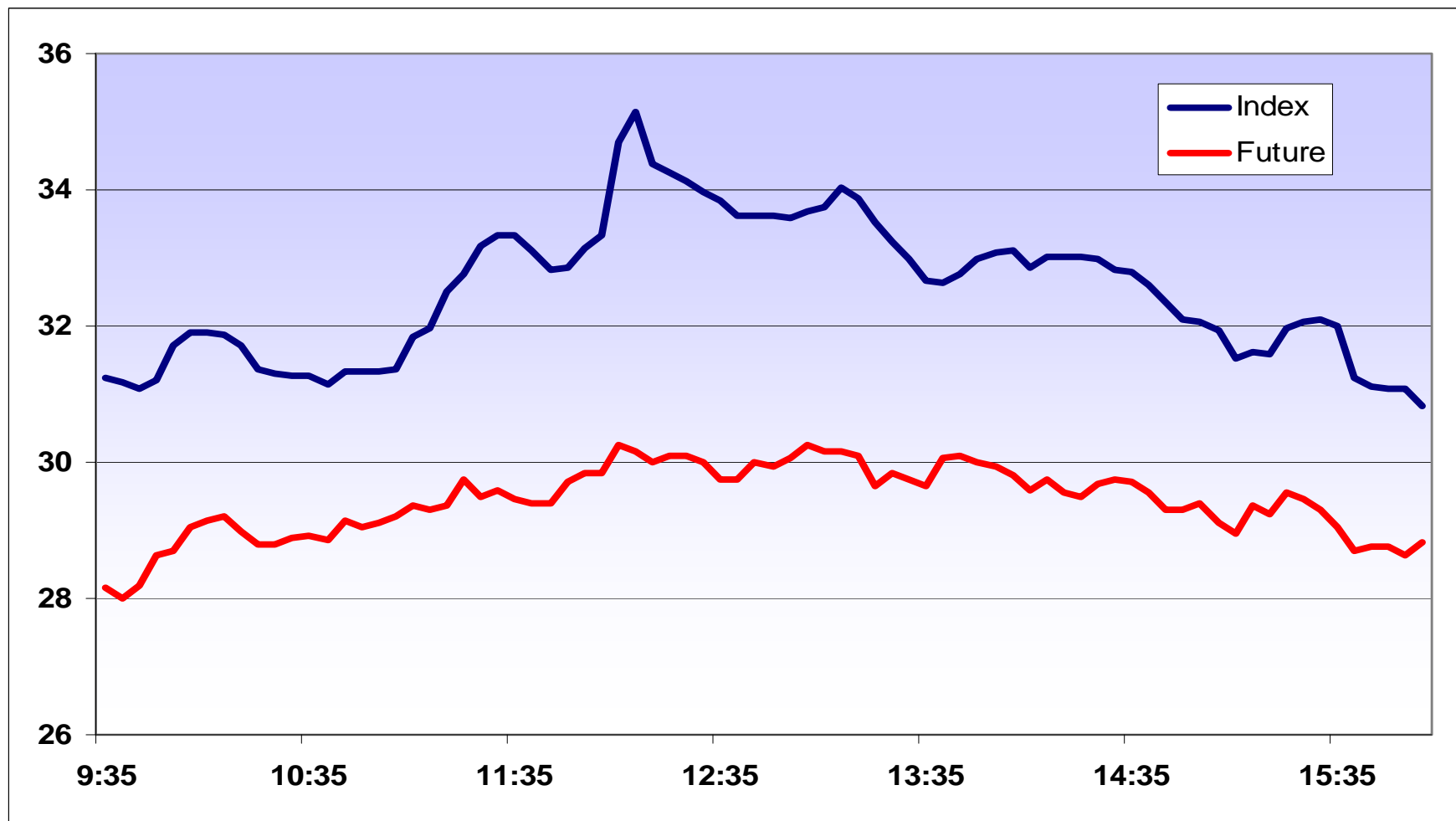
VIX Index vs. June VIX

5 Minute Chart – 5/13/2010



VIX Index vs. June VIX

5 Minute Chart – 5/17/2010



Expiration –

Futures expire 30 days before the next month's normal option expiration.

Example – July 2010 VIX Futures

Expire Wednesday July 21.

Option Expiration is August 20.

Settlement Pricing –

VIX futures are AM settlement with 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.

Settlement History - 2010



	Settle		Index Close	Difference		Future Close	Difference
June 2010	26.11		25.87	0.24		25.85	0.25
May 2010	34.53		33.55	0.98		32.70	1.83
Apr 2010	15.80		15.73	0.07		16.00	(0.20)
Mar 2010	16.68		17.69	(1.01)		17.45	(0.77)
Feb 2010	22.50		22.25	0.25		22.60	(0.10)
Jan 2010	18.87		17.58	1.29		17.85	1.02

Source – www.cfe.cboe.com

Settlement History - 2009



	Settle		Index Close	Difference		Future Close	Difference
Dec 2009	20.84		21.50	(0.66)		21.35	(0.51)
Nov 2009	22.54		22.41	0.13		22.55	(0.01)
Oct 2009	20.82		20.90	(0.08)		21.10	(0.28)
Sep 2009	23.64		23.42	0.22		23.50	0.14
Aug 2009	28.76		26.18	2.58		26.35	2.41
Jul 2009	23.48		23.87	(0.39)		24.05	(0.57)
Jun 2009	31.03		32.68	(1.65)		31.85	(0.82)
May 2009	27.04		28.80	(1.76)		28.50	(1.46)
Apr 2009	38.20		37.67	0.53		37.85	0.35
Mar 2009	40.62		40.80	(0.18)		40.05	0.57
Feb 2009	48.40		48.66	(0.26)		48.00	0.40
Jan 2009	49.88		56.65	(6.77)		57.90	(8.02)

Settlement History - 2008



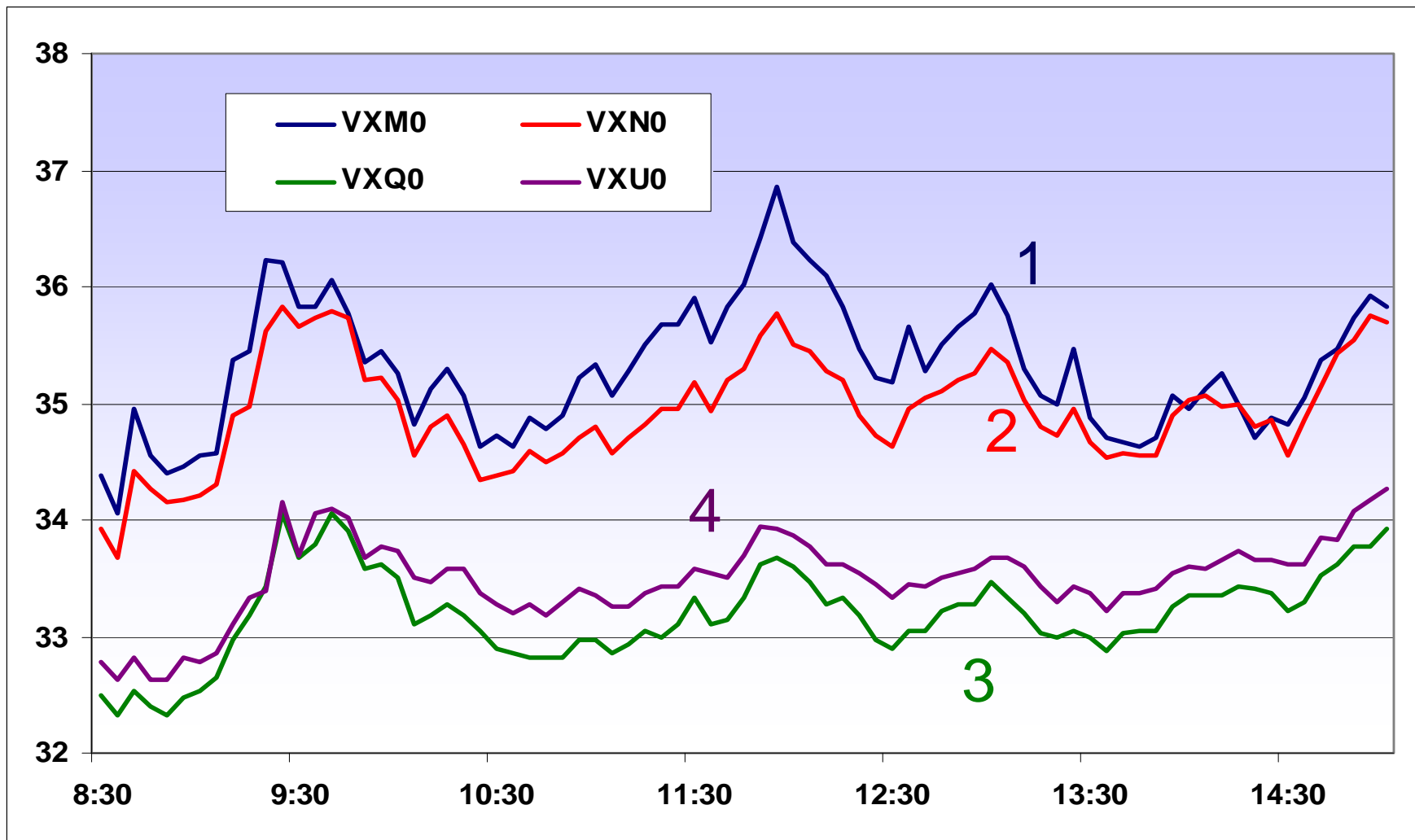
	Settle		Index Close	Difference		Future Close	Difference
Dec 2008	51.29		52.37	(1.08)		52.44	(1.15)
Nov 2008	67.22		67.64	(0.42)		67.04	0.18
Oct 2008	63.04		53.11	9.93		52.80	10.24
Sep 2008	31.54		30.30	1.24		29.68	1.86
Aug 2008	20.83		21.28	(0.45)		21.00	(0.17)
Jul 2008	28.40		28.54	(0.14)		28.43	(0.03)
Jun 2008	21.54		21.13	0.41		21.05	0.49
May 2008	17.16		17.58	(0.42)		17.37	(0.21)
Apr 2008	21.78		22.78	(1.00)		22.87	(1.09)
Mar 2008	25.67		25.79	(0.12)		25.95	(0.28)
Feb 2008	25.51		25.02	0.49		26.07	(0.56)
Jan 2008	24.18		23.34	0.84		24.04	0.14

Settlement History - 2007



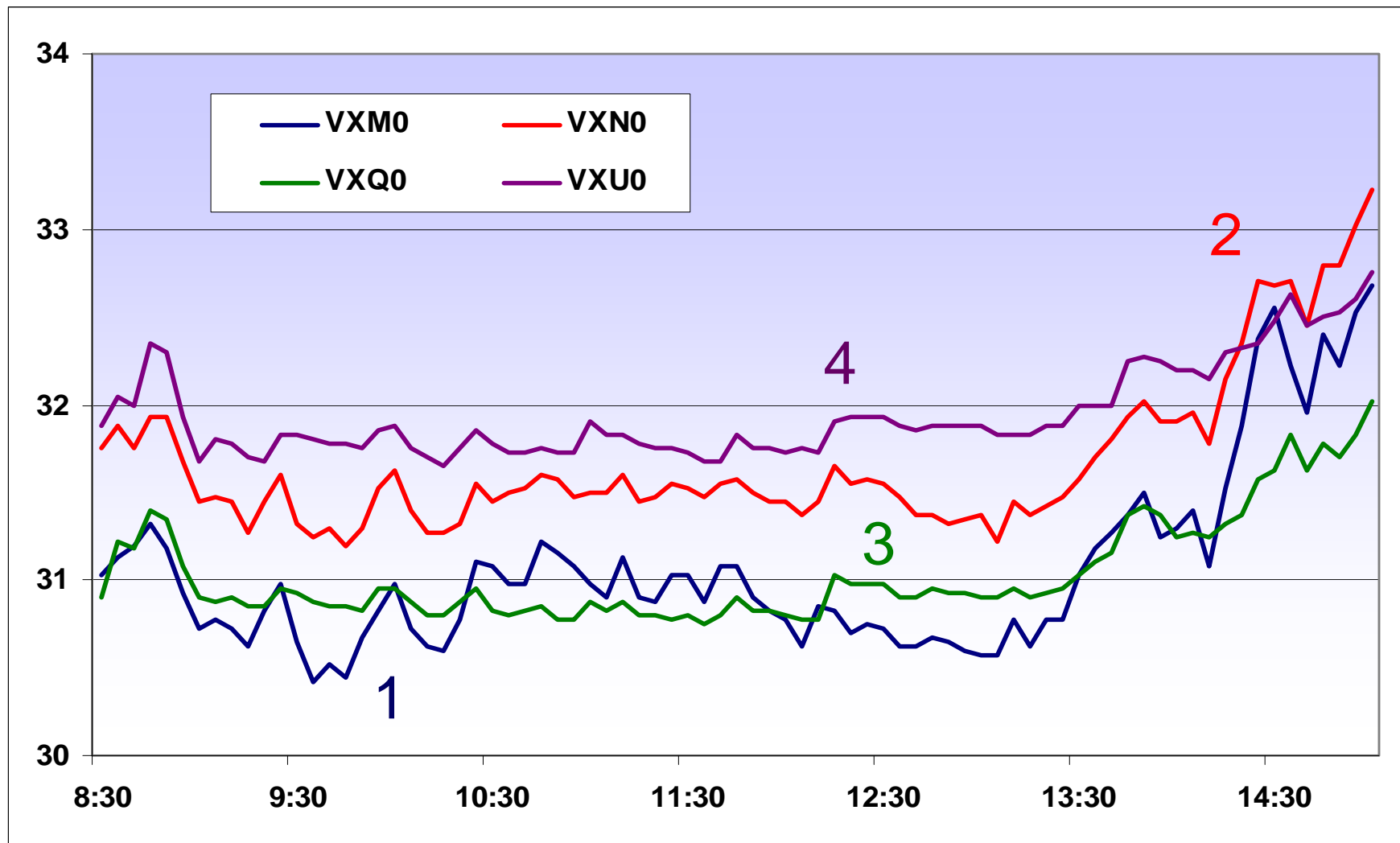
	Settle		Index Close	Difference		Future Close	Difference
Dec 2007	22.08		22.64	(0.56)		22.55	(0.47)
Nov 2007	26.70		24.88	1.82		25.08	1.62
Oct 2007	18.33		20.02	(1.69)		20.03	(1.70)
Sep 2007	20.29		20.35	(0.06)		20.18	0.11
Aug 2007	25.05		25.25	(0.20)		25.24	(0.19)
Jul 2007	16.87		15.63	1.24		15.57	1.30
Jun 2007	13.01		12.85	0.16		12.88	0.13
May 2007	13.63		14.01	(0.38)		13.96	(0.33)
Apr 2007	12.03		12.14	(0.11)		11.87	0.16
Mar 2007	12.98		13.27	(0.29)		13.06	(0.08)
Feb 2007	9.95		10.34	(0.39)		10.43	(0.48)
Jan 2007	10.71		10.74	(0.03)		10.59	0.12

VIX Spreads – 5/20/2010 – 5 Min



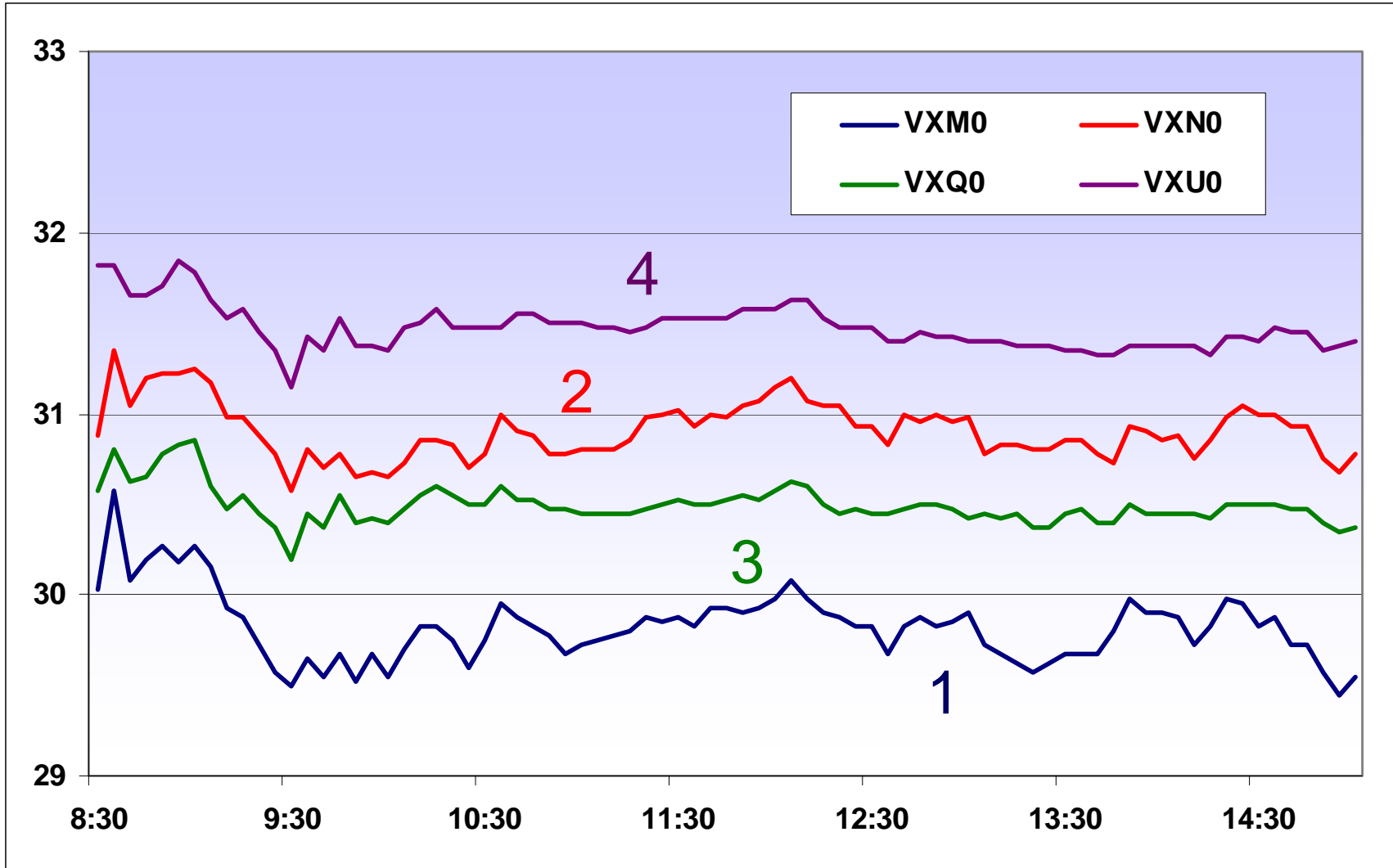
Data Source Bloomberg

VIX Spreads – 5/26/2010 – 5 Min

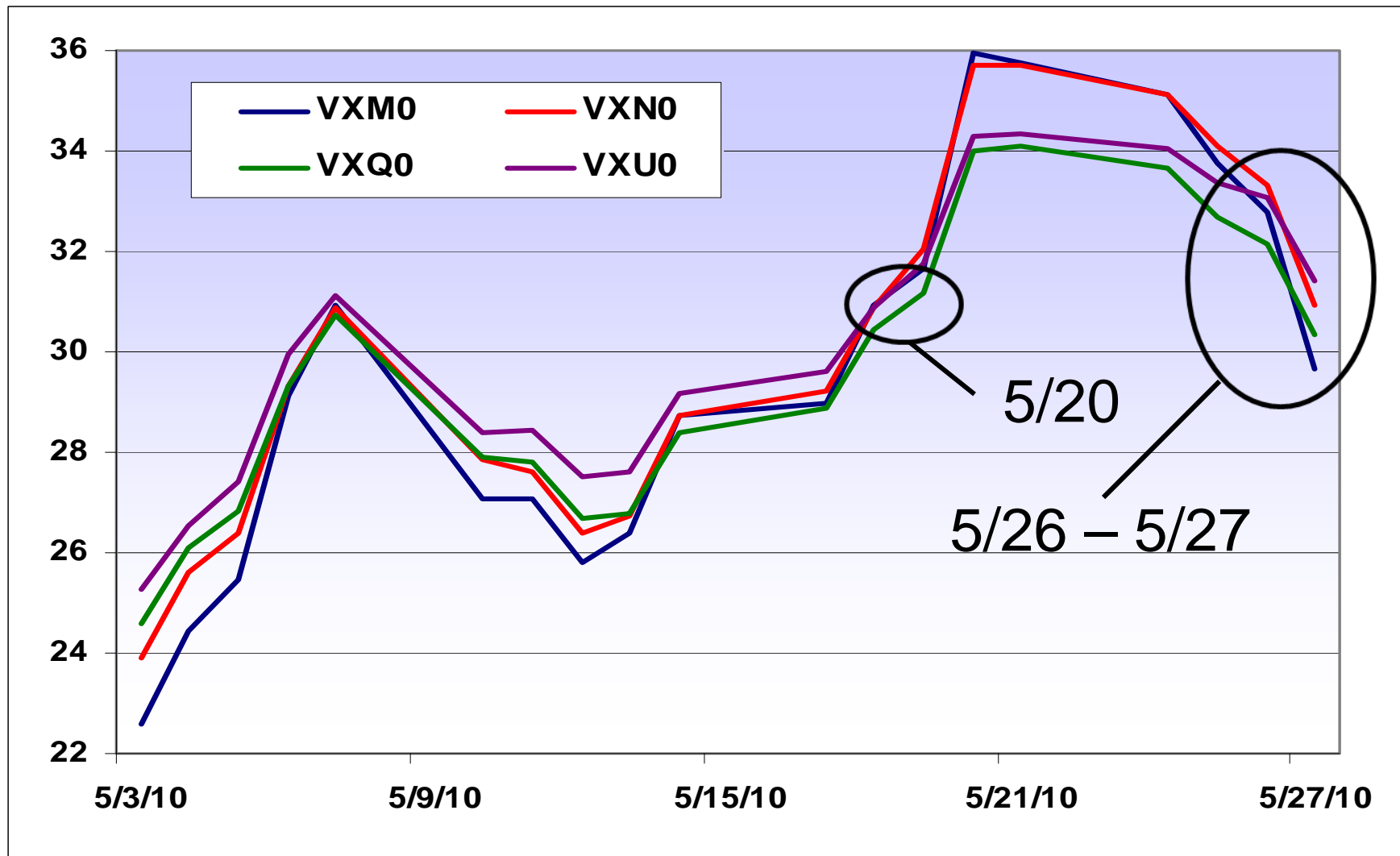


Data Source Bloomberg

Spreads – 5/27/2010 – 5 Min



Spreads – Daily 5/3 – 5/27



- Introduced in 2006
- Caught on very quickly as a method of trading volatility
- Currently second most actively traded index option series at the CBOE
- Have growing institutional following as hedging vehicle

Characteristics

- European Style
- Wednesday Settlement
- Unusual Pricing

- Opening Price Quotation

European Style –

European options are only allowed to be exercised on expiration.

VIX options are cash settled at expiration.

Wednesday Settlement –

Just like the VIX futures contracts, VIX options expire on the Wednesday 30 days before equity option expiration.

Opening Price Quotation –

VIX Options are settled using the Special Opening Quotation on the morning following the last trading day for those options. This is identical to the settlement process for the VIX futures.

Unusual Pricing –

It is not uncommon for VIX options to appear to be cheap or expensive when using the VIX Index as the underlying.

When pricing options, the proper underlying instrument should be the corresponding VIX future price.

Unusual Pricing –

VIX Index @ 32.00

VIX August 30.00 Call @ 1.25

VIX August Future @ 30.50

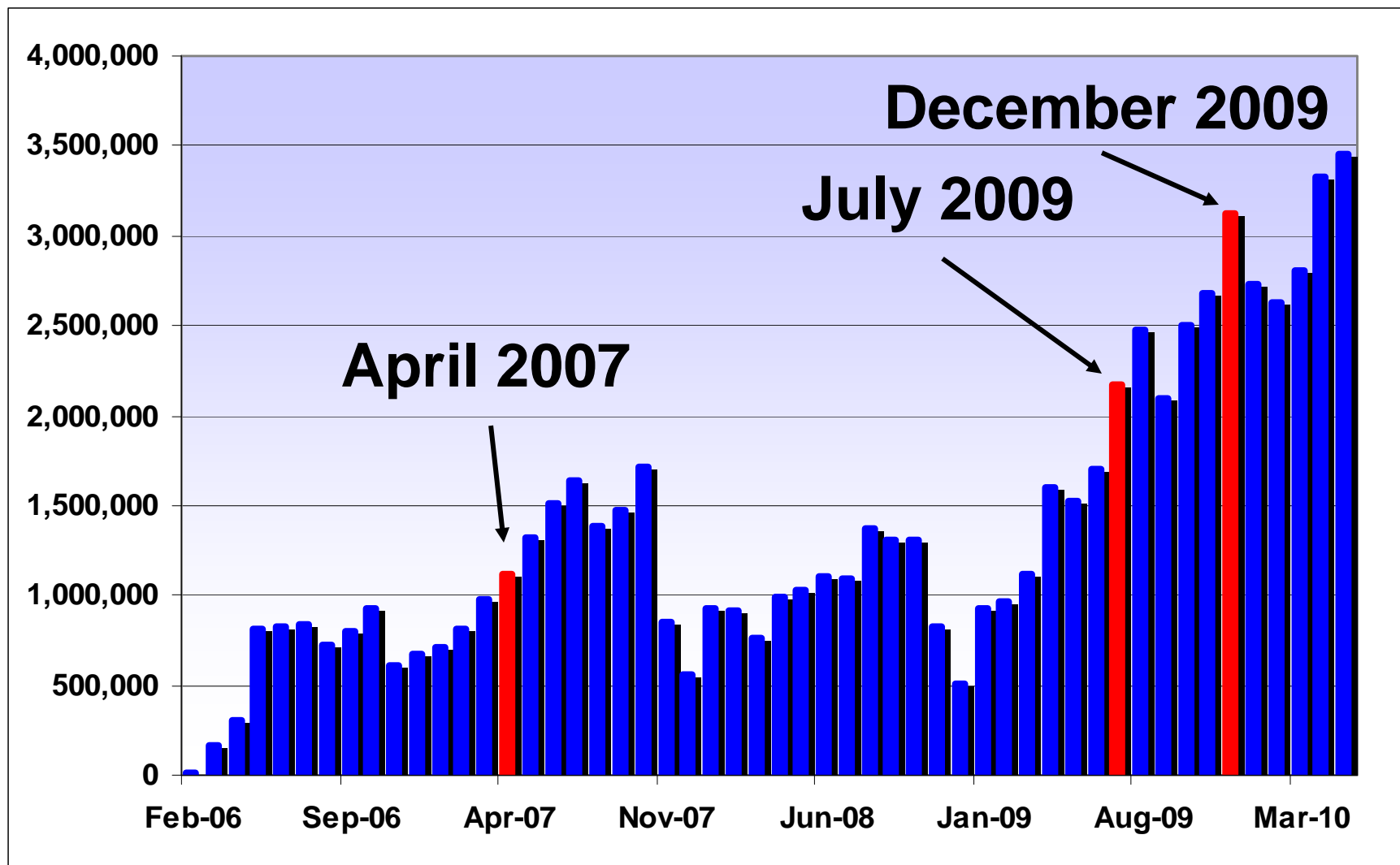
Unusual Pricing –

VIX Index @ 27.50

VIX July 30.00 Put @ 1.50

VIX July Future @ 29.00

VIX Options - Open Interest



VIX Exchange Traded Notes

- What is an ETN?
- Short Term Volatility - VXX
- Intermediate Term Volatility - VXZ
- Characteristics of these ETNs

What is an ETN?

ETN stands for Exchange Traded Note, it is an unsecured, unsubordinated debt security. They are created to replicate returns on an index minus fees. The trading in ETN's is very similar to that in ETF's (Exchange Traded Funds).

iPath[®] S&P 500 VIX Short-Term Futures ETN (VXX) –

Gives investors exposure to a daily rolling long position in the first and second month VIX futures contracts.

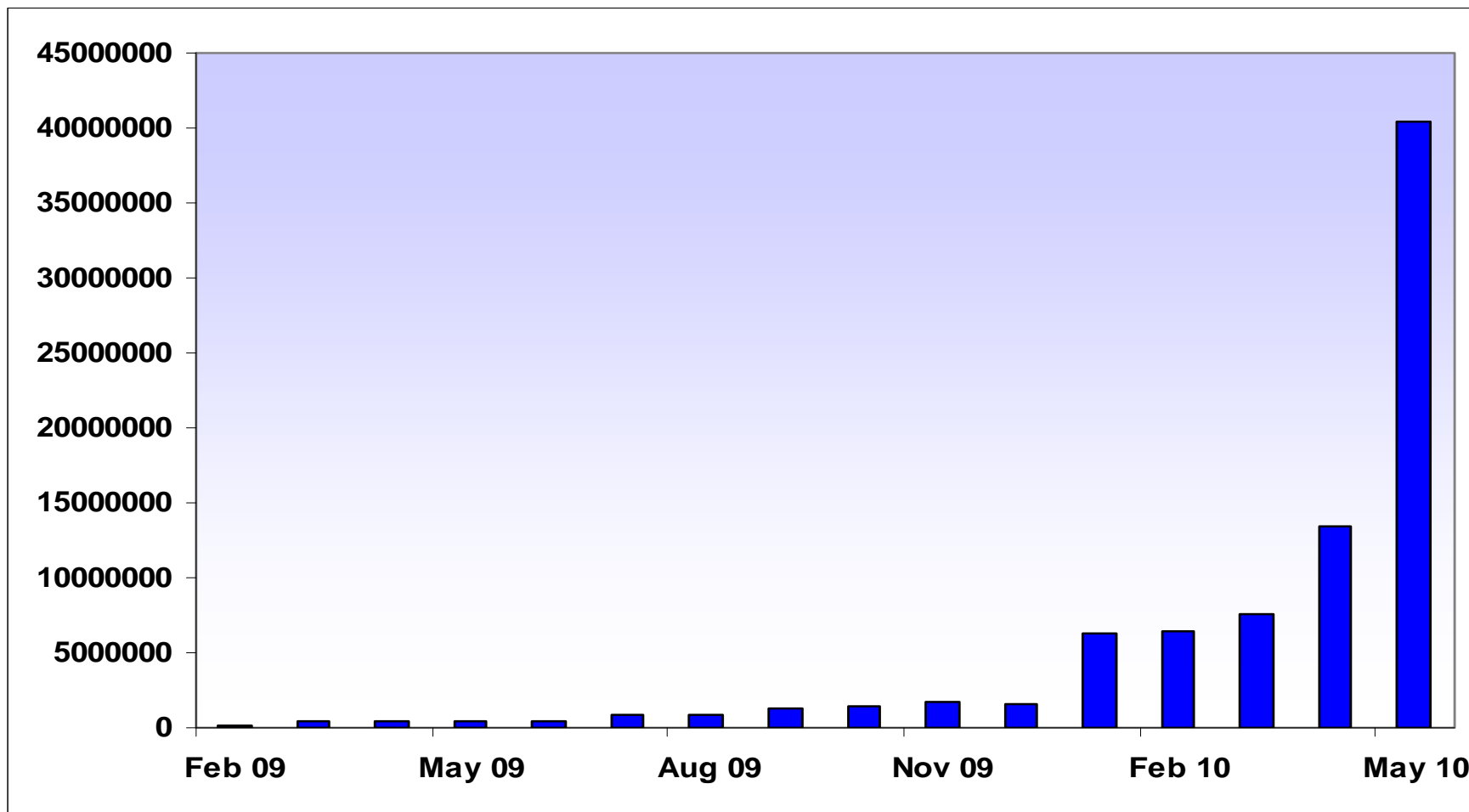
iPath S&P 500 VIX Mid-Term Futures ETN (VXZ) –

Gives investors exposure to a daily rolling long position in the fourth through seventh month VIX futures contracts.

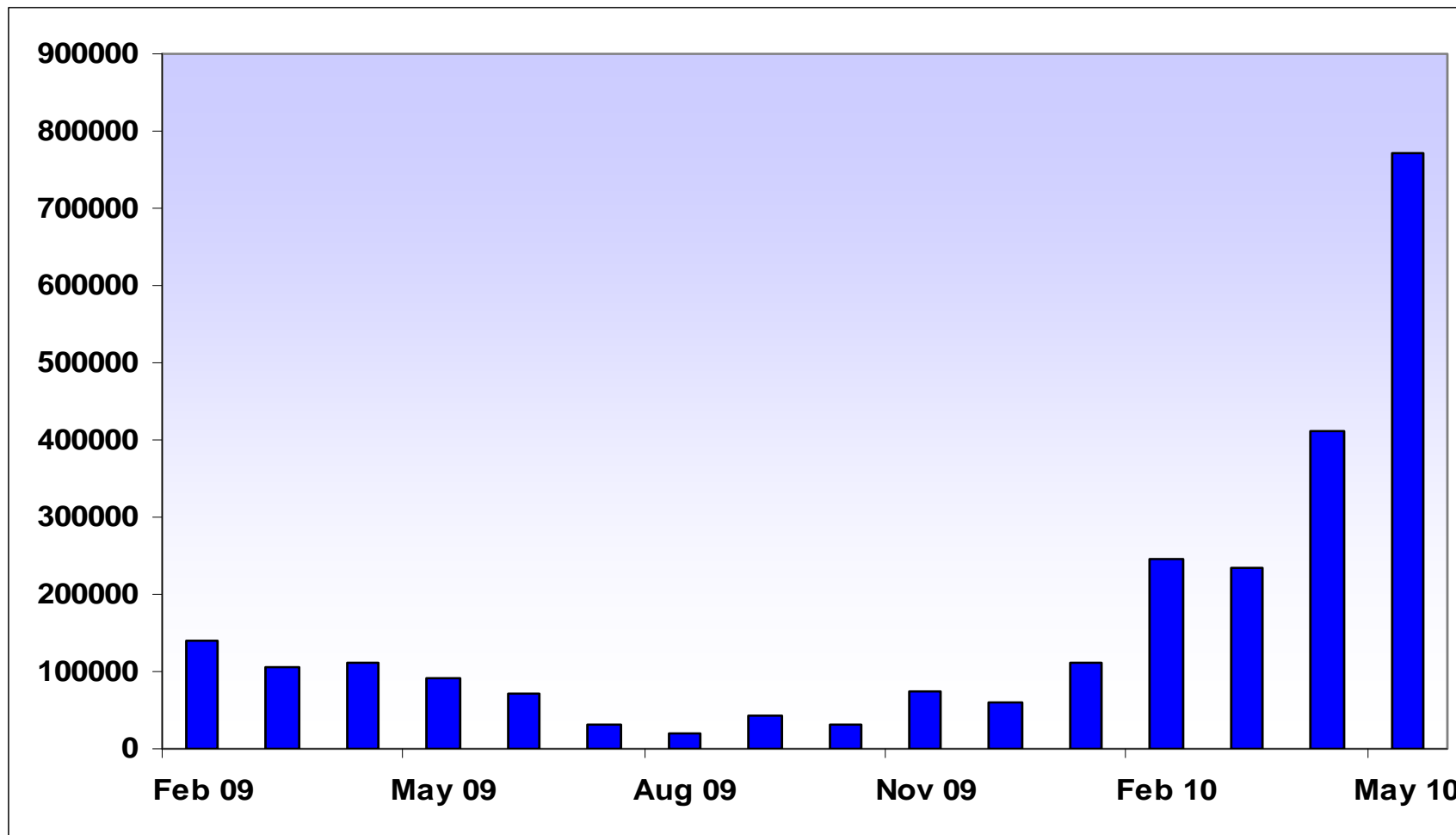
Characteristics –

- Introduced in Q1 2009
- Exchange traded on the NYSE
- Have a negative correlation to S&P 500 index returns
- Backed by Barclays Bank

VXX – Average Daily Volume



VXZ – Average Daily Volume



VXX / VXZ Options –

- May 28 – first day of trading at CBOE
- First Day Volume for VXX Options > 20,000
- First Day Volume for VXZ Options > 1,500
- Options on March Cycle
 - Current months - July, August, September, & December
- Dollar Strikes

University of Massachusetts Paper –

- Studied the 2008 market and the diversification benefits of VIX futures or options.
- Compared a variety of portfolios and combined exposure to the VIX.
- Results showed return and diversification benefits of including the VIX in a portfolio.

University of Massachusetts Paper –

Full study available on the CBOE website.

www.cboe.com/Institutional/reports.aspx

Common Question –

Why does the VIX only seem to go up when the S&P 500 goes down?

or

Why doesn't the VIX spike when the S&P 500 runs up rapidly?

Common Answers –

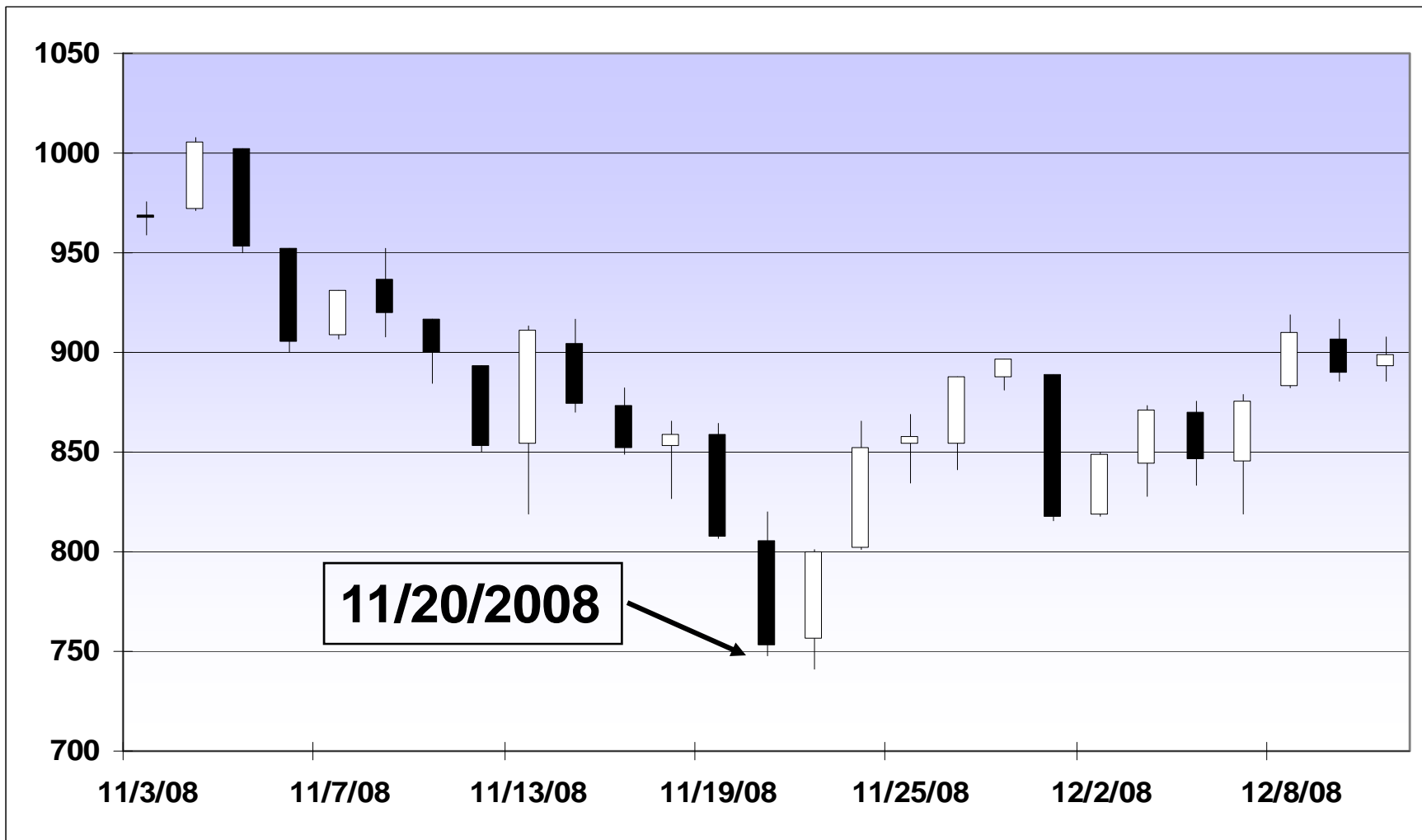
Put Call Parity

People and Panic

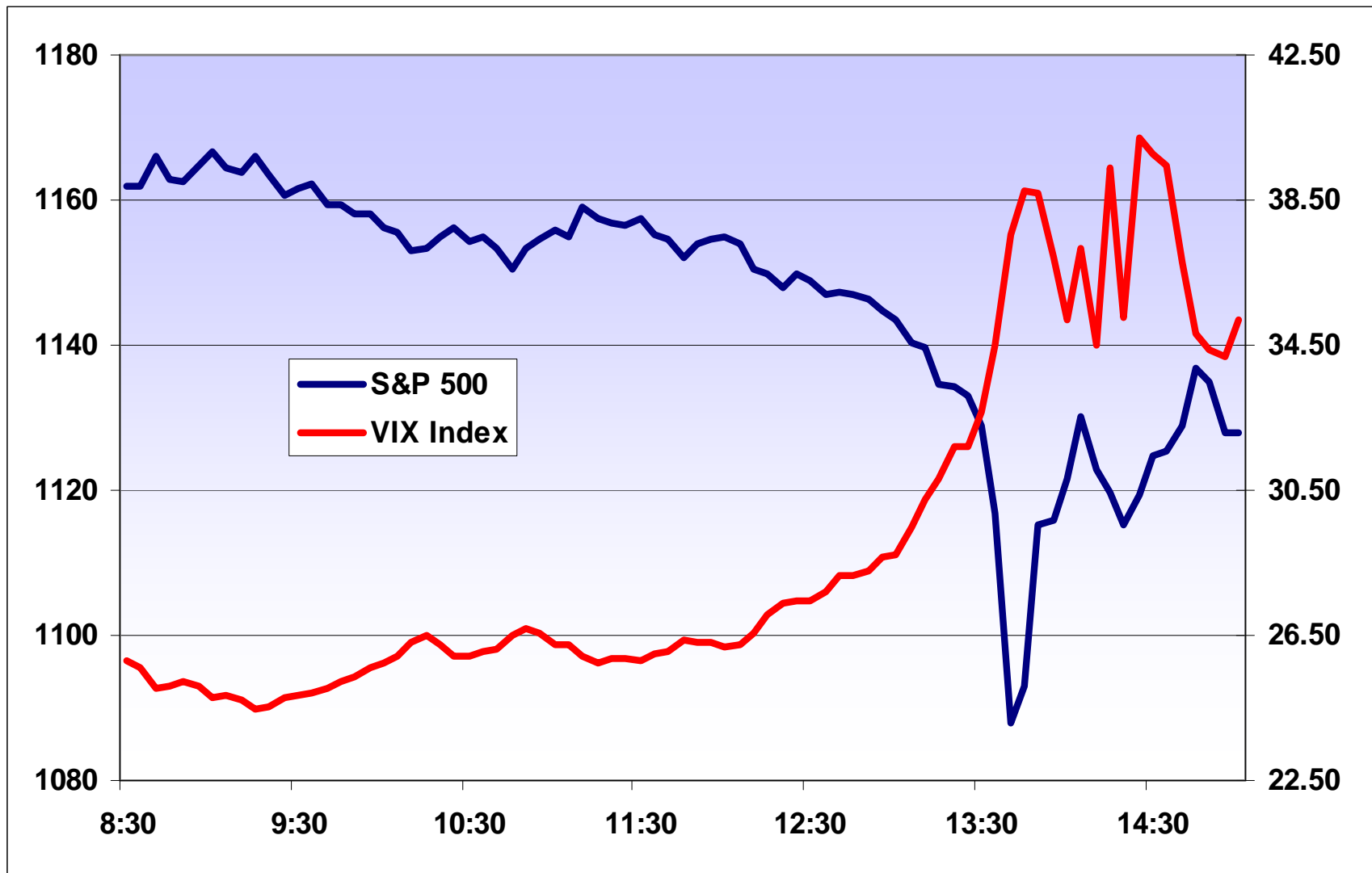
10 Worst S&P 500 Days – 1/1/2007 – 5/14/2010

	SPX	VIX Index	VIX Future
10/15/2008	-9.03%	25.61%	18.61%
12/1/2008	-8.93%	23.93%	13.61%
9/29/2008	-8.83%	34.48%	14.14%
10/9/2008	-7.62%	11.11%	14.79%
11/20/2008	-6.71%	8.89%	5.29%
11/19/2008	-6.12%	9.79%	9.79%
10/22/2008	-6.10%	31.14%	10.34%
10/7/2008	-5.74%	3.13%	11.93%
1/20/2009	-5.28%	22.86%	10.09%
11/5/2008	-5.27%	14.31%	8.12%

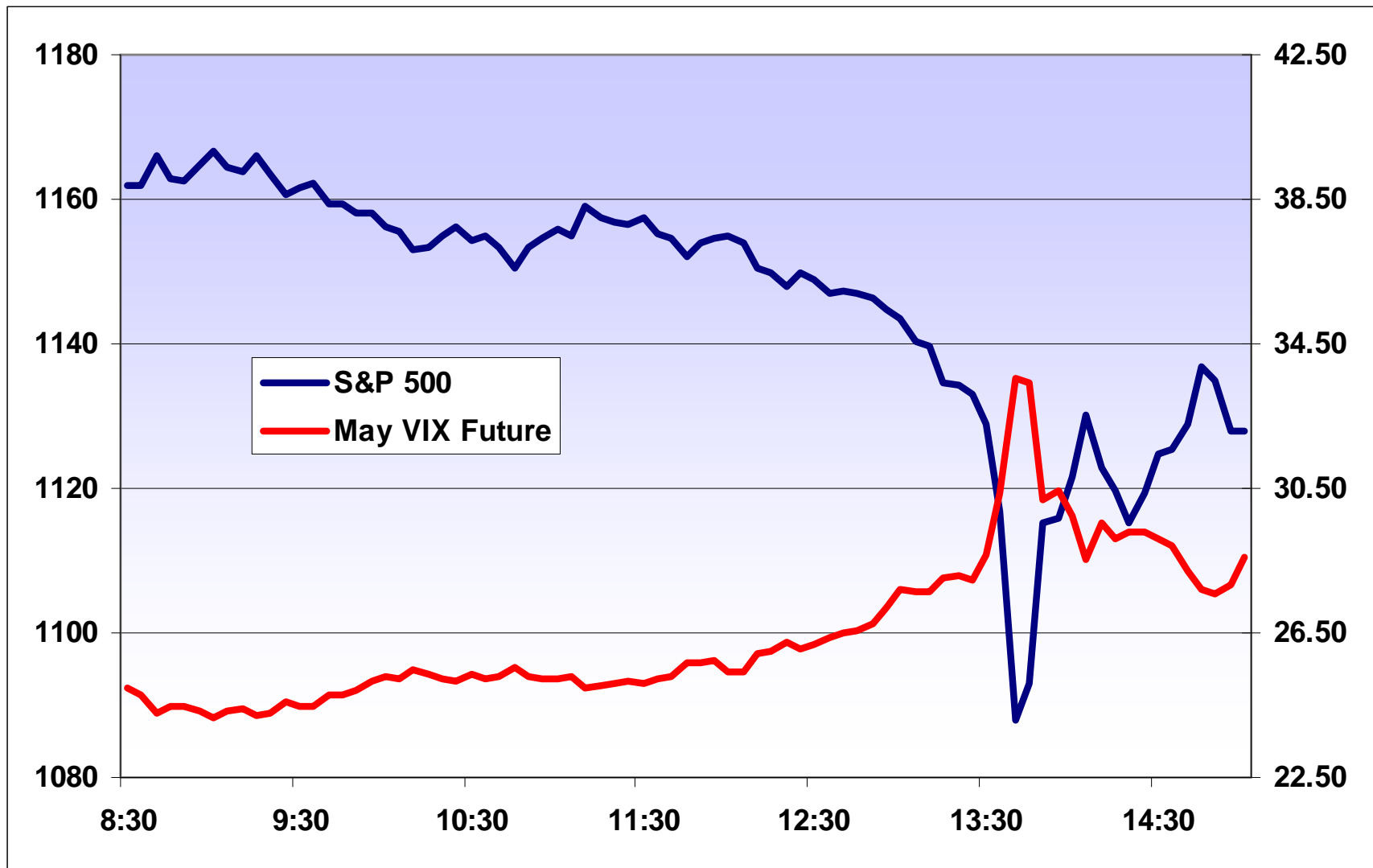
VIX vs. SPX



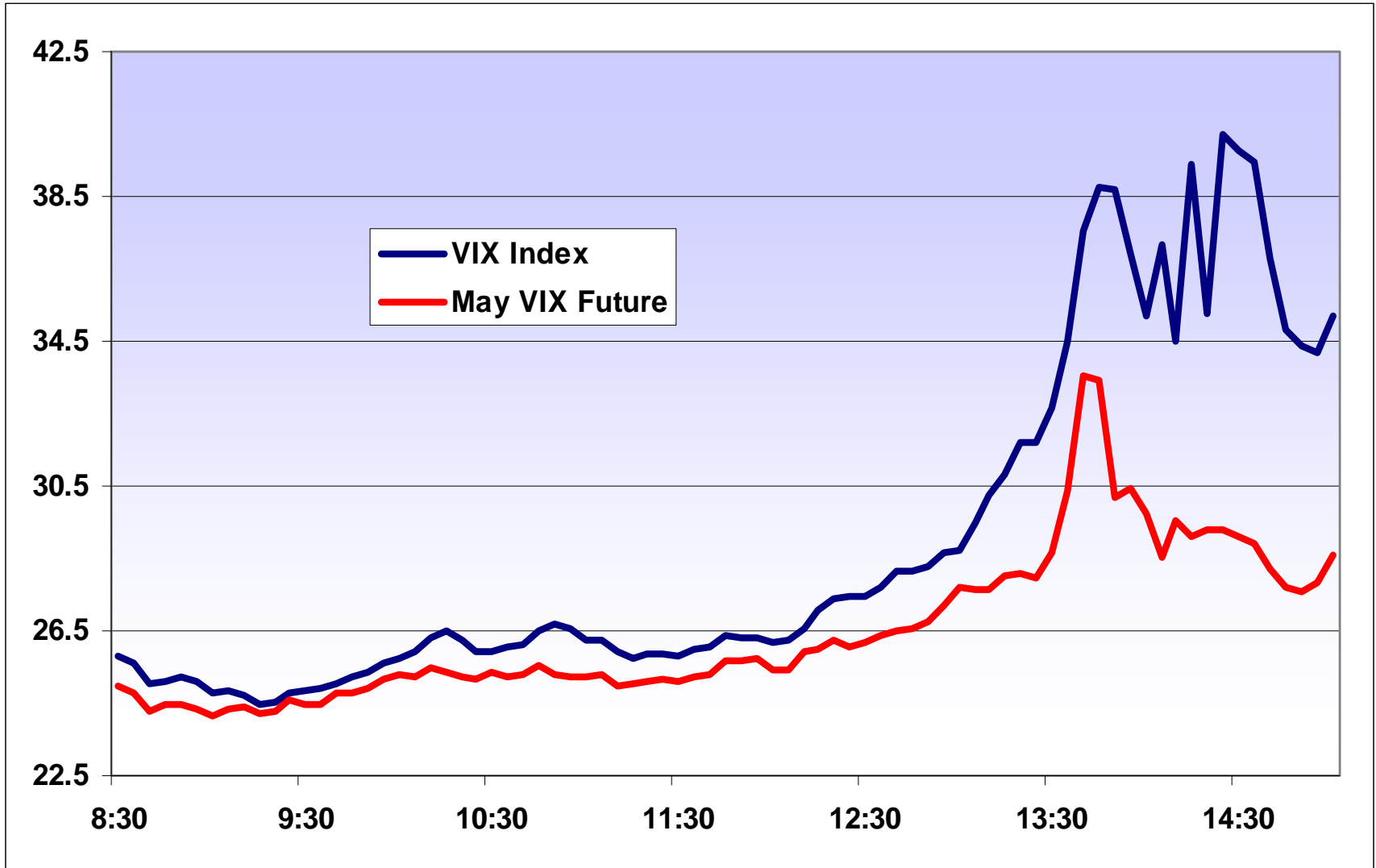
VIX vs. SPX – 5/6/2010 – 5 Min



VIX vs. SPX – 5/6/2010 – 5 Min



VIX vs. SPX – 5/6/2010 – 5 Min



Summary –

- Wide variety of VIX related products available
- Inverse relationship with SPX creates interesting opportunities
- Number of VIX related derivatives will continue to increase

Summary –

- The CBOE Website has more information on these and other products.

Questions / Comments?

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