

# Trading Volatility with VIX Futures and Options



**CBOE**<sup>®</sup>  
CHICAGO BOARD OPTIONS EXCHANGE

Peter Lusk

Instructor

The Options Institute at CBOE

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- The VIX Index – What is it?
- VIX Futures & Mini-VIX Futures
  - What You Need to Know
  - A Market-Timing Tool?
- VIX Options
  - Unique Pricing Aspects
  - Trading Case Study

VIX - The CBOE Volatility Index

A measure of 30-day implied volatility

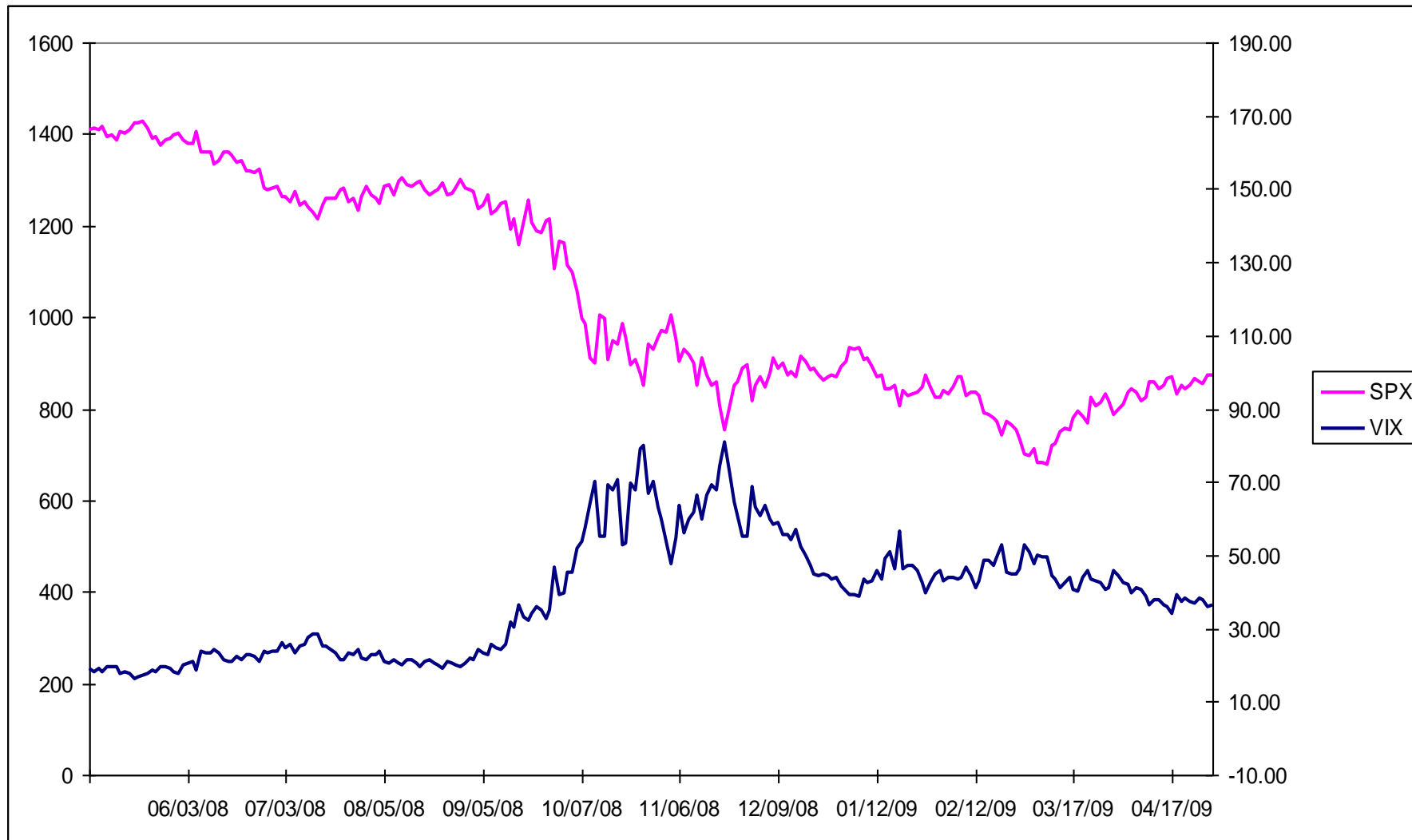
Created in 1993 by CBOE & Duke University

Goal: to trade and hedge against changing implied volatility

Originally based on OEX options (S&P 100)

2003 – New formula with SPX options (S&P 500)

# VIX & SPX 5/1/08 to 4/30/09



Also known as the “**Fear Index**,” VIX gives an indication of options market anxiety.

VIX tends to rise as the S&P 500 falls

A “low” VIX indicates complacency.

A “high” VIX indicates anxiety.

VIX readings are very difficult to interpret as an indicator of market direction.

Launched March, 2004

Mini-VIX futures added March, 2009

Unique pricing and price behavior

# VIX Futures – Contract Specs

Ticker Symbol	VX
Underlying	VIX Index
Last Trading Day	Tuesday, 31 days before next SPX expiration
Expiration	Wednesday <u>morning</u> 30 days before next SPX expiration
Settlement	\$1,000 × VIX calculation based on opening SPX option prices

# Mini-VIX Futures – Contract Specs **CBOE**<sup>®</sup>

Ticker Symbol	VM
Underlying	VIX Index
Last Trading Day	Tuesday, 31 days before next SPX expiration
Expiration	Wednesday <u>morning</u> 30 days before next SPX expiration
Settlement	\$100 × VIX calculation based on opening SPX option prices

Cash Settlement

Quotes in Nickels

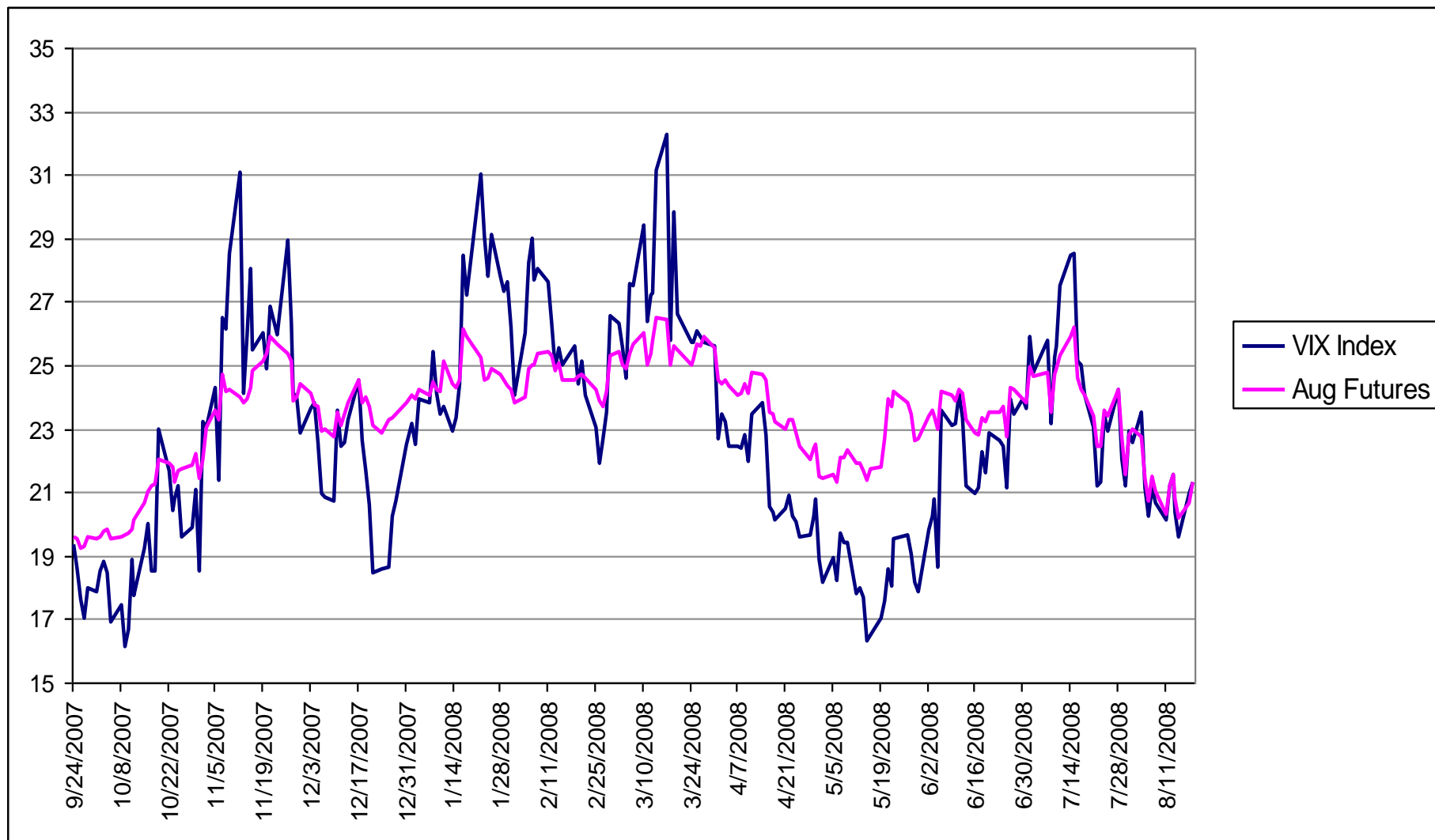
VIX Futures – 7 contract months

Mini-VIX Futures – 3 contract months

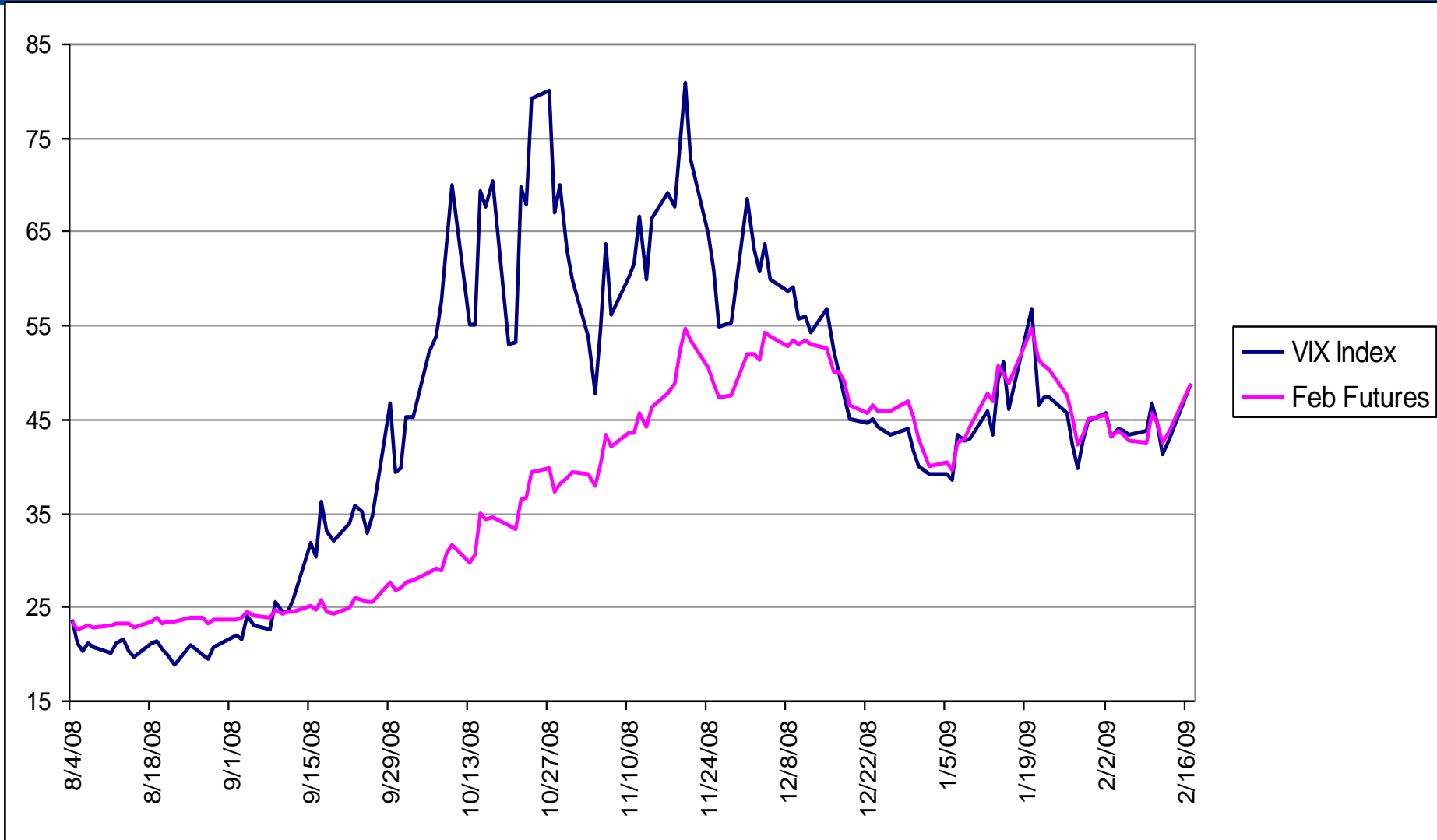
	<u>VIX Futures</u>	<u>Mini-VIX Futures</u>
Long / Short	\$8,000	\$800
Spreads	\$500	\$50

Note: margin requirements may change.

# VIX compared to Aug 08 VIX Futures



# VIX compared to Feb '09 VIX Futures



No traditional futures-to-cash relationship!

No cost-of-carry relationship.

The current VIX futures price is the market's estimate of what the VIX Index will be at settlement.

**VIX Futures prices based on expectations.**

VIX futures trade independently of the VIX Index prior to expiration.

VIX futures can trade above or below the VIX Index.

Convergence at expiration.

# VIX Futures vs. Index Sample Dates

<u>Date</u>	<u>Mar Fut</u>	<u>VIX Index</u>
03/05/09	47.35	50.17
03/12/09	41.10	41.18
03/20/09	47.05	45.89

Last trading day, 3/24; Final settlement, 3/25

The price of a VIX futures is based on expectations.

Therefore, the spread between one futures contract and the next contract can change.

Trading VIX futures spreads may be an opportunity (with the attendant risks).

# VIX Futures Spreads

<u>Date</u>	<u>Mar Fut</u>	<u>Apr Fut</u>	<u>Apr - Mar Spread</u>
2/17/09	48.00	44.05	-3.95
2/20/09	46.70	44.75	-2.95
2/24/09	44.50	43.90	-1.60
2/25/09	43.45	43.25	-0.20

VIX Index	40.79	-2.94
April VIX Futures	43.05	+1.45
May VIX Futures	40.10	+0.95
June VIX Futures	38.80	+0.60

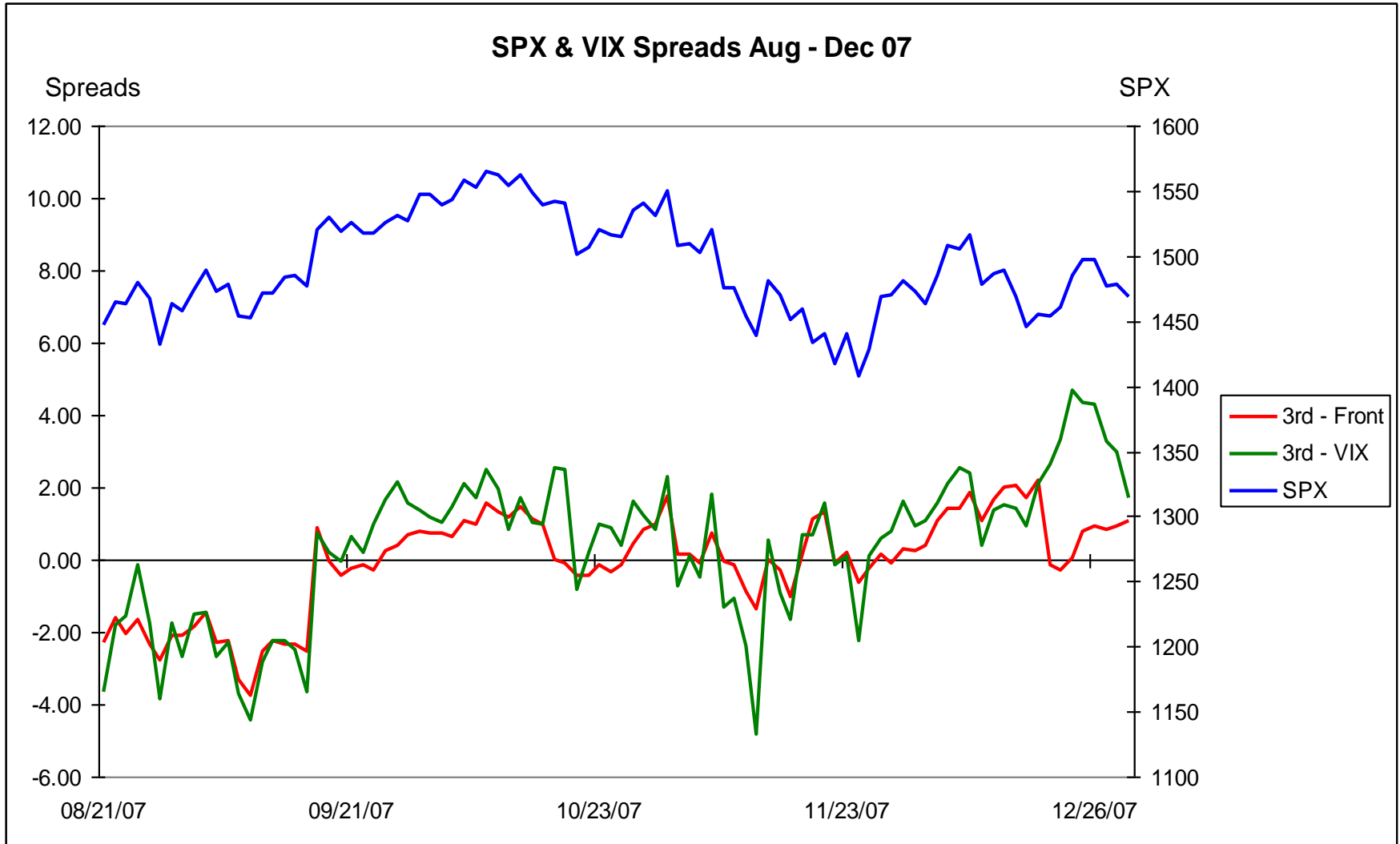
What does that tell us?

Lawrence McMillan cited in Barron's, 4/6/09:

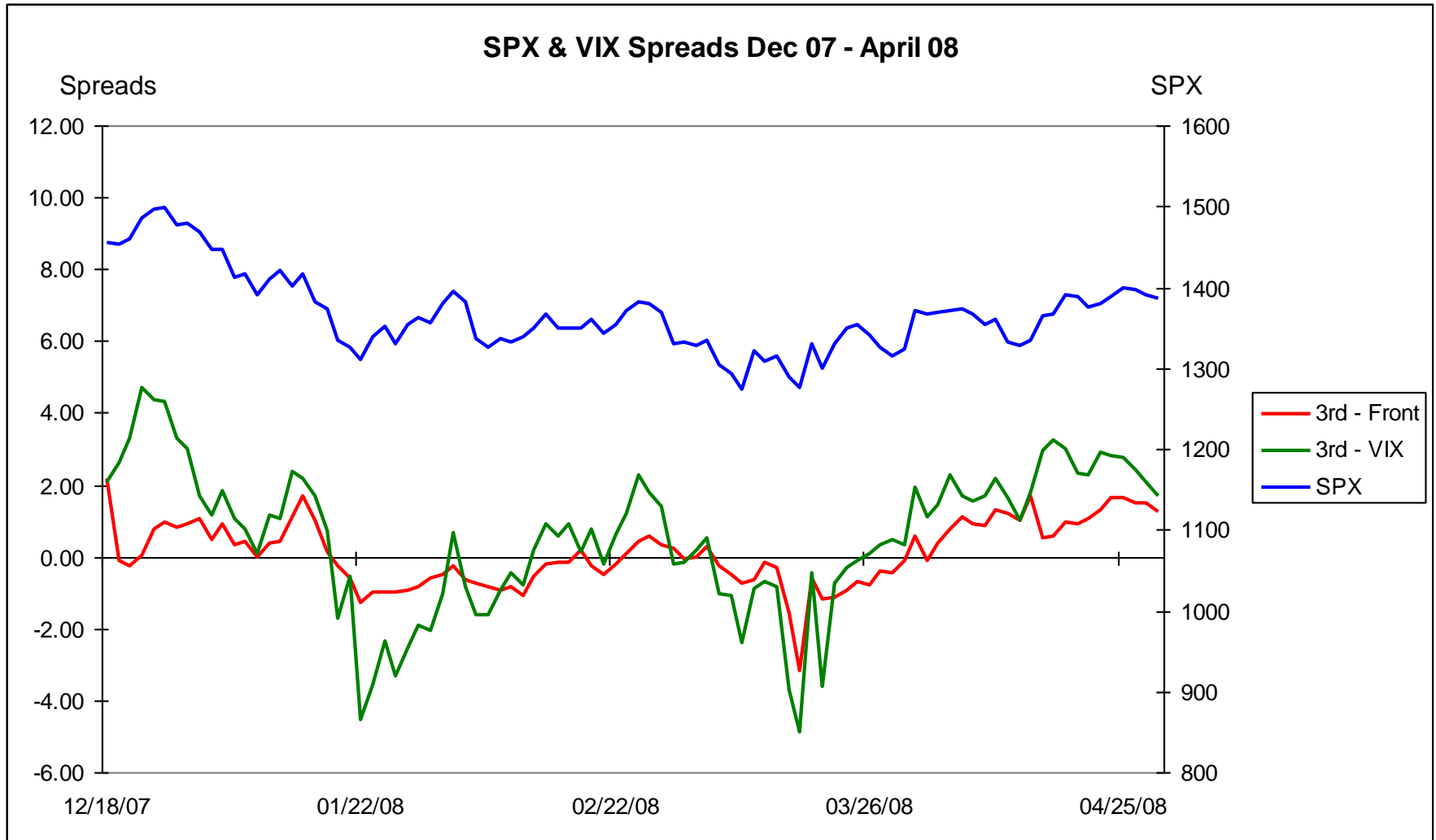
“The relationships are fluid....., but the upshot is that when longer-term VIX futures are priced at a substantial and/or persistent premium to shorter-term VIX futures and VIX itself, it portends a volatile and usually weaker phase ahead for stocks.”

Page 15, “Today's Indexes Look Familiar” by Michael Santoli

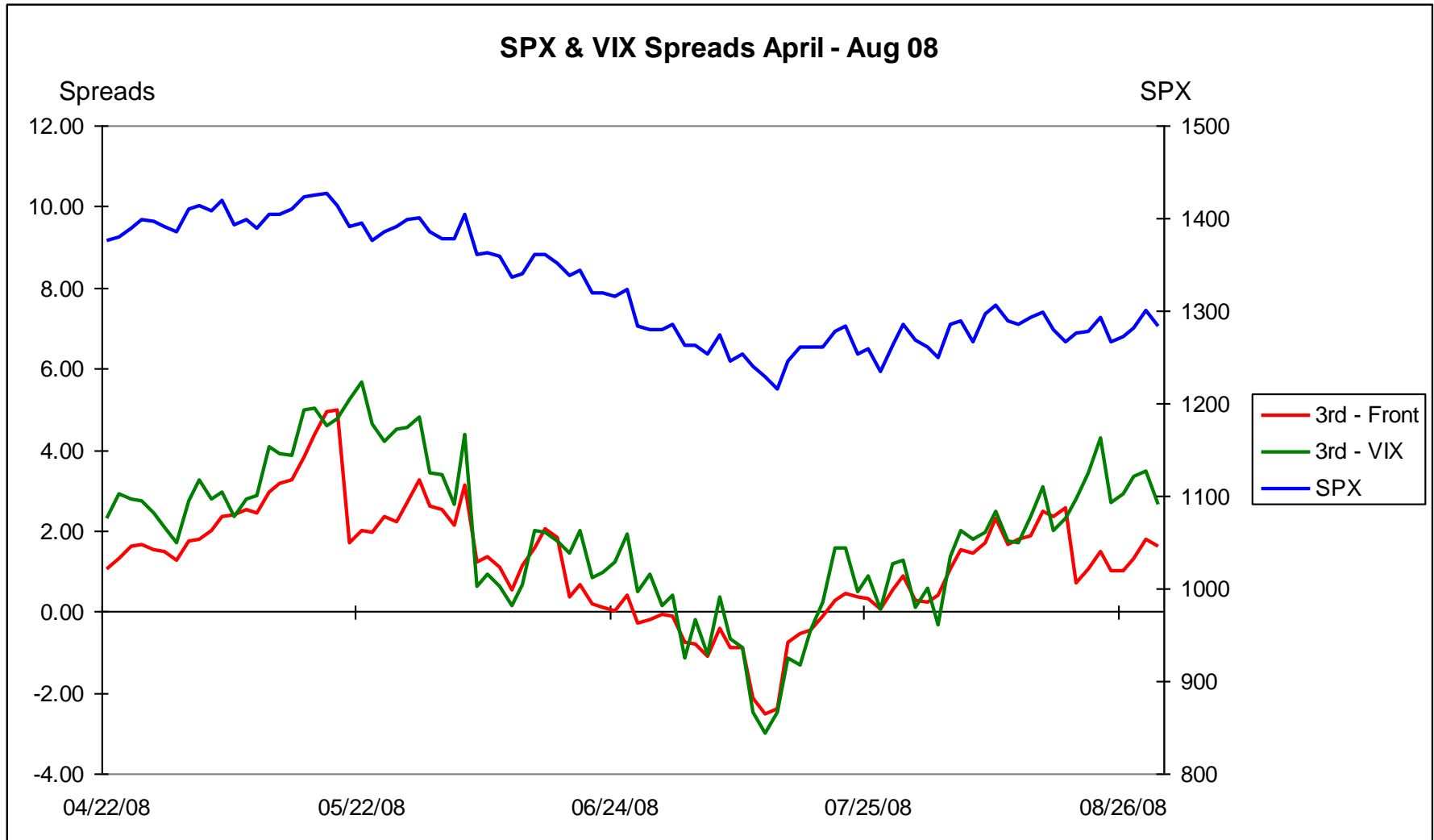
# VIX Futures Spreads



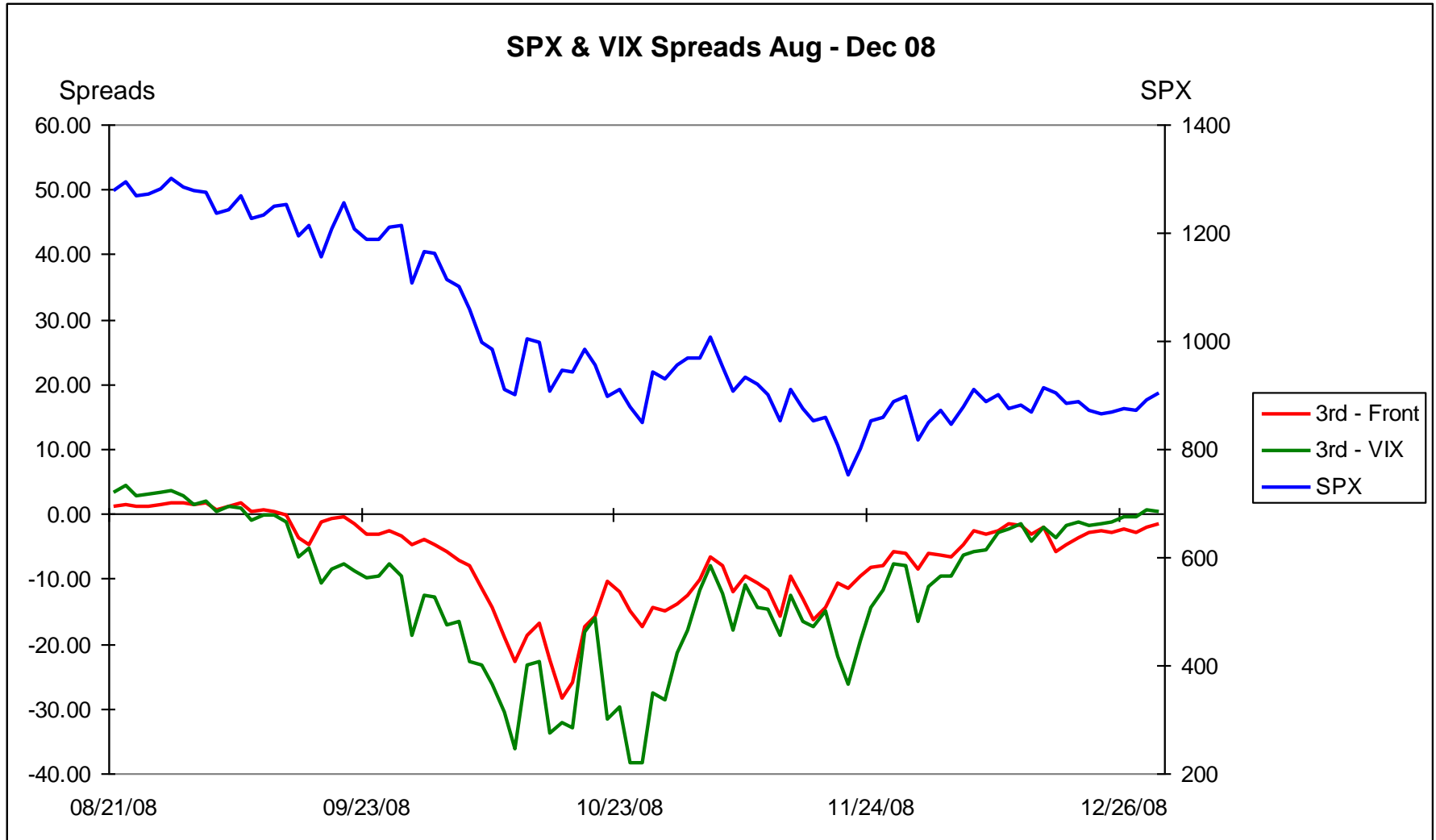
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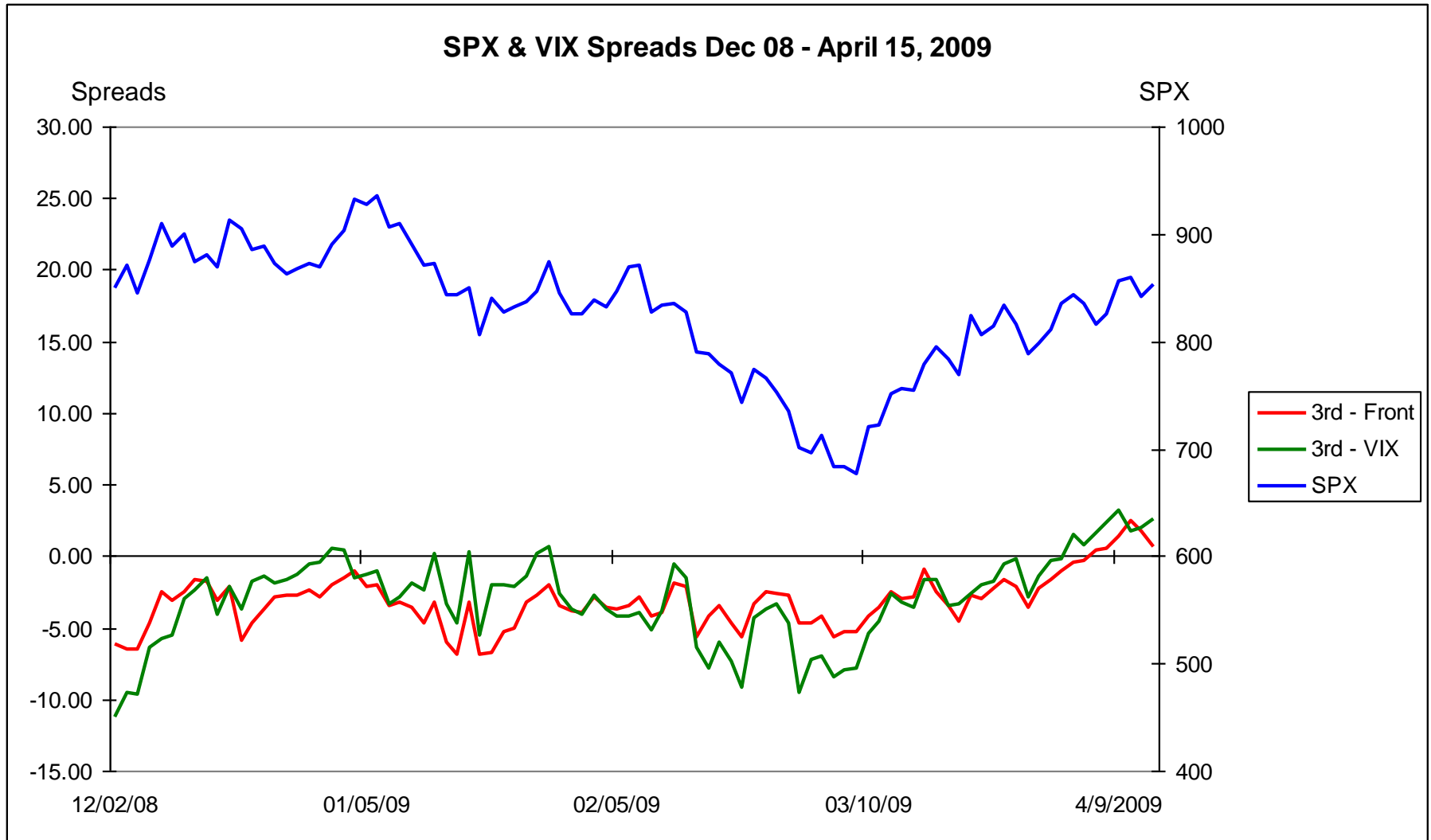
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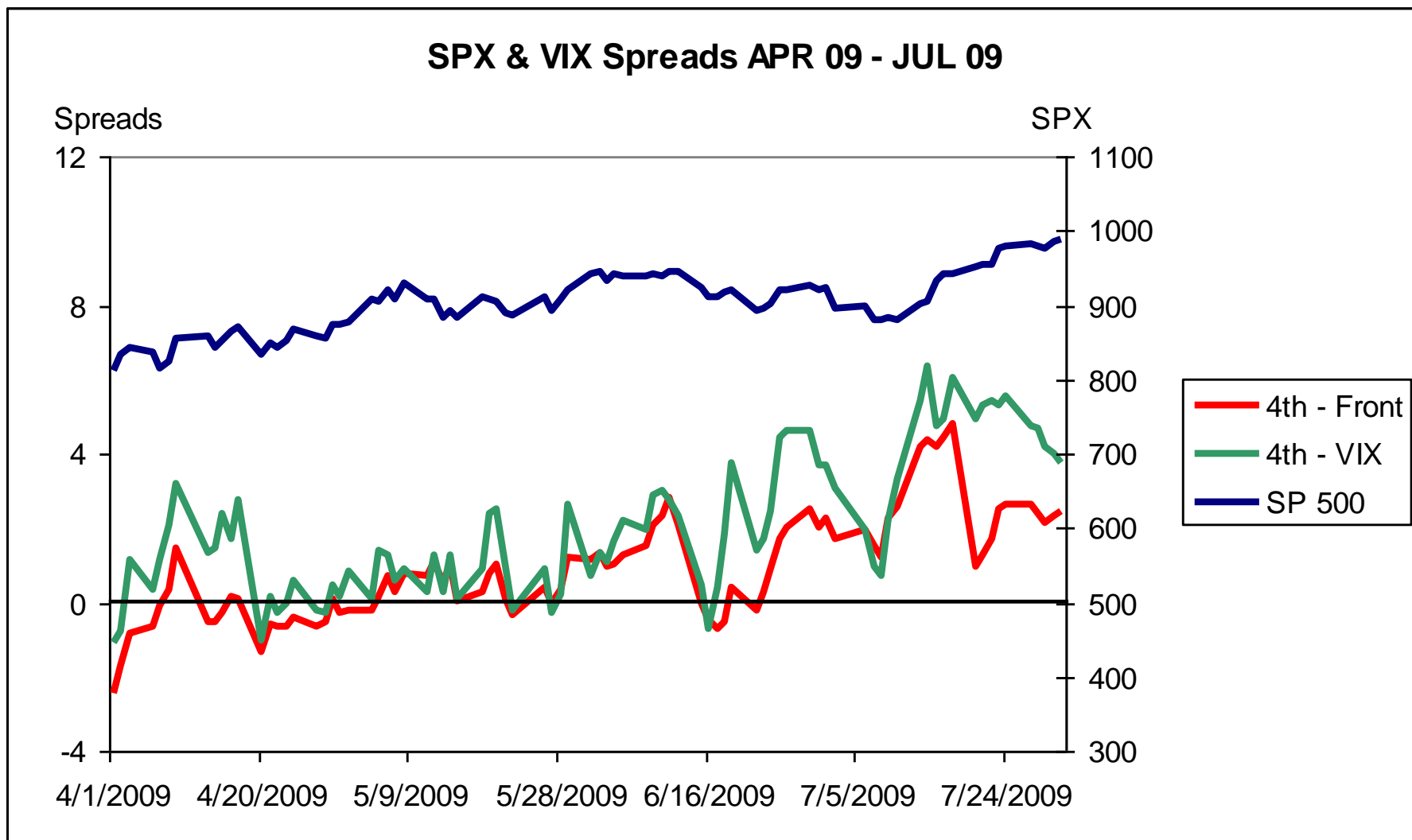
# VIX Futures Spreads



# VIX Futures Spreads



# VIX Futures Spreads



VIX Index 36.50 +0.42

May VIX Futures 37.00 +0.55

June VIX Futures 36.90 +0.95

July VIX Futures 36.83 +0.13

Has the market changed from 3/18 to 4/30?

VIX Index	25.98	+0.12
Sep VIX Futures	28.60	+0.55
Oct VIX Futures	29.55	+0.40
Nov VIX Futures	29.20	+0.35

Is the market different on 8/12?

# VIX & Mini-VIX Futures – Summary **CBOE**<sup>®</sup>

Prices of VIX futures are based on expectations.

VIX futures prices can trade above or below the VIX Index.

	<u>Ticker</u>	<u>Margin</u>
VIX futures	VX	\$8,000
Mini-VIX futures	VM	\$800
VIX futures spreads		\$200

The relationship of back-month futures to the VIX index might give a clue to market direction.

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 Tuesday before the Wednesday VIX option/futures expiration.

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

Date: 3/10/08

Current VIX Index	25.46
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May 30 Call	2.70
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May 30 Put	3.40
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Is there anything unusual about these prices?

Date: 8/12/09

Current VIX Index	25.55
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Sep 30 Call	1.90
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Sep 30 Put	3.70
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Is there anything unusual about these prices?

Underlying Price

Strike Price

Time to Expiration

Interest Rates

Volatility

# VIX Case Study

Date	2/27/08	(90 days to May exp.)
VIX Index	22.69	
VIX MAY Futures	22.58	
VIX MAY 22.50 Call	3.40	

# VIX Case Study – the Forecast - 1 **CBOE**<sup>®</sup>

Date	2/27	→	3/10
VIX Index	22.69	→	29.38
May Futures	22.58	→	???
May 22.50 Call	3.40	→	???

# VIX Case Study – the Forecast - 2 **CBOE**<sup>®</sup>

Date	2/27	→	3/10
VIX Index	22.69	→	29.38
May Futures	22.58	→	<b>25.46</b>
May 22.50 Call	3.40	→	<b>5.40</b>

**NOTE: The 22.50 Call appears to be trading below parity to the VIX index!**

With approximately 90 days to expiration, the VIX futures changed less than the VIX Index.

Traders of VIX options must pay attention to the price of the VIX futures contract.

VIX is an index of implied volatility of SPX options.

VIX has been negatively correlated to the market.

Futures and options contracts have unique specifications.

The “underlying” for VIX options is the same expiration VIX futures contract.

THANK YOU FOR ATTENDING.

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**[lusk@cboe.com](mailto:lusk@cboe.com)**