

Interactive Brokers Webcast

VXSTSM and VIX[®] Trading Strategies

August 20, 2014
Presented by Russell Rhoads, CFA

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VXST and VIX Trading Strategies

Outline

- **CBOE Short-Term Volatility IndexSM Review**
- **CBOE Volatility Index[®] Review**
- **VXST and VIX Price Behavior**
- **VXST Futures and Options**
- **VIX Futures and Options**

VXST – VIX Review

CBOE Short-Term Volatility Index

- **The CBOE Short-Term Volatility Index is quoted using the ticker VXST**
- **VXST uses the same established methodology to determine a consistent 9-day measure of expected volatility as VIX**
- **This is the first measure of implied volatility utilizing shorter dated options listed on the S&P 500[®] Index**

VXST – VIX Review

CBOE Volatility Index

- ▶ **VIX is the most commonly quoted measure of expected volatility in the world**
- ▶ **The VIX Index is a consistent measure of 30-day expected volatility as indicated by S&P 500 index options prices**
- ▶ **The calculation uses pricing from more than one hundred out of the money SPXSM calls and puts over two standard option expiration dates**
- ▶ **Due to market changes and the passage of time, the actual options and weighting of those options is consistently changing**

VXST and VIX Price Behavior

Overview

- Historically both VXST and VIX have displayed inverse relationships with the S&P 500
- VIX price changes have historically had a ‘more inverse’ relationship with the S&P 500 than VXST

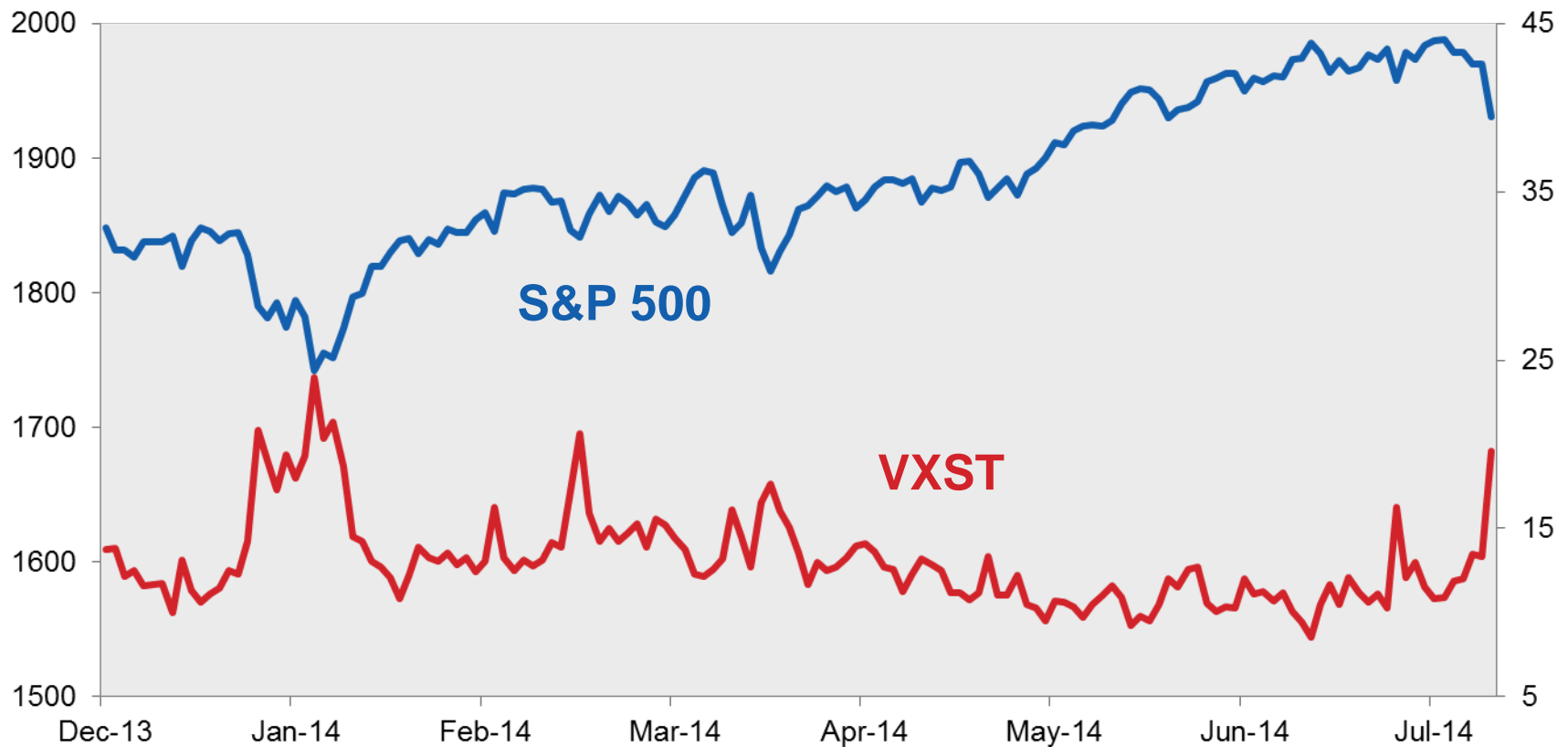
	VXST vs S&P 500	VIX vs. S&P 500	VIX vs. VXST
2011	-0.7833	-0.8592	+0.9522
2012	-0.6309	-0.7629	+0.8796
2013	-0.7514	-0.8232	+0.9345
2014*	-0.8047	-0.8488	+0.9491

**2014 through July 31, 2014*

VXST and VIX Price Behavior

VXST – S&P 500

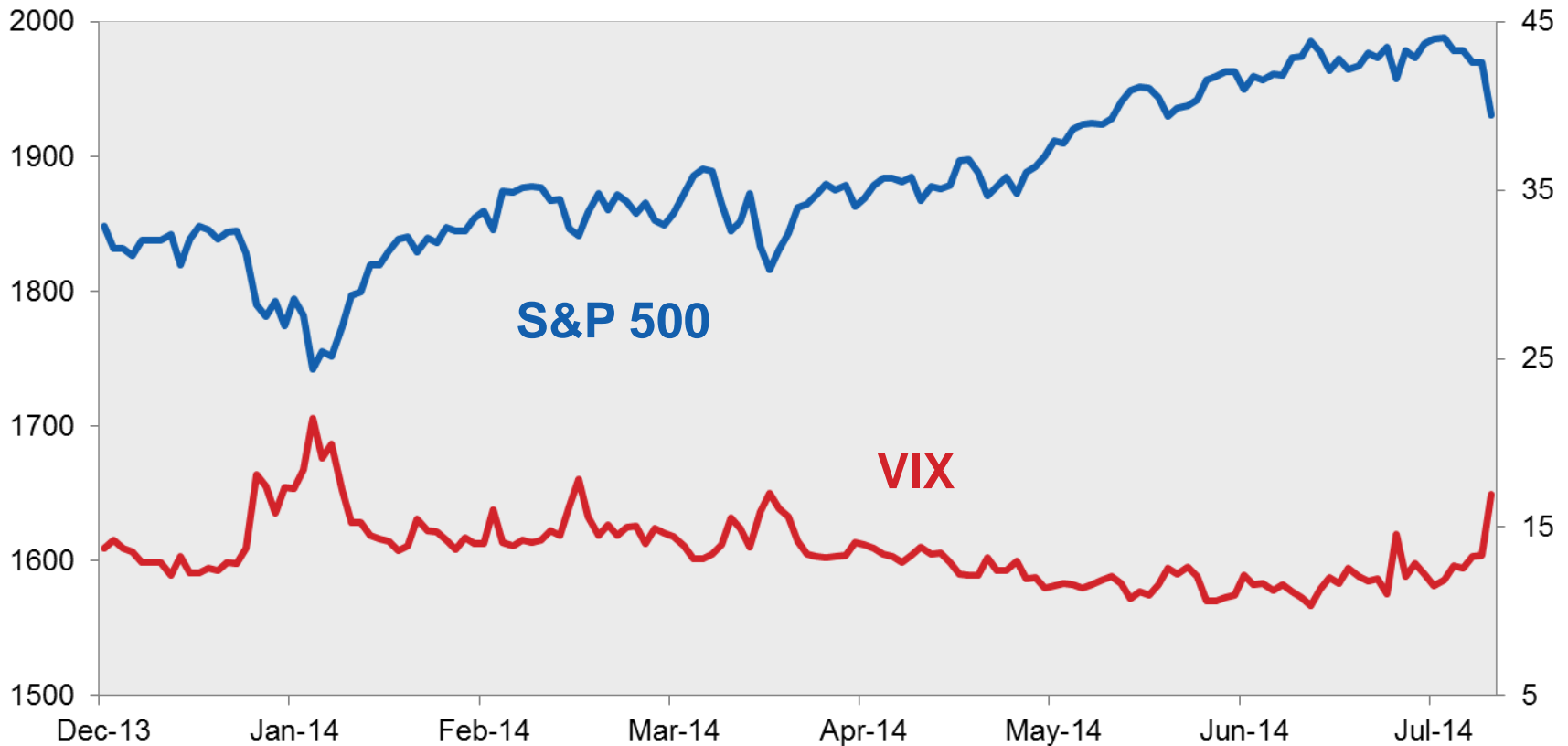
January 1, 2014 – July 31, 2014



VXST and VIX Price Behavior

VIX – S&P 500

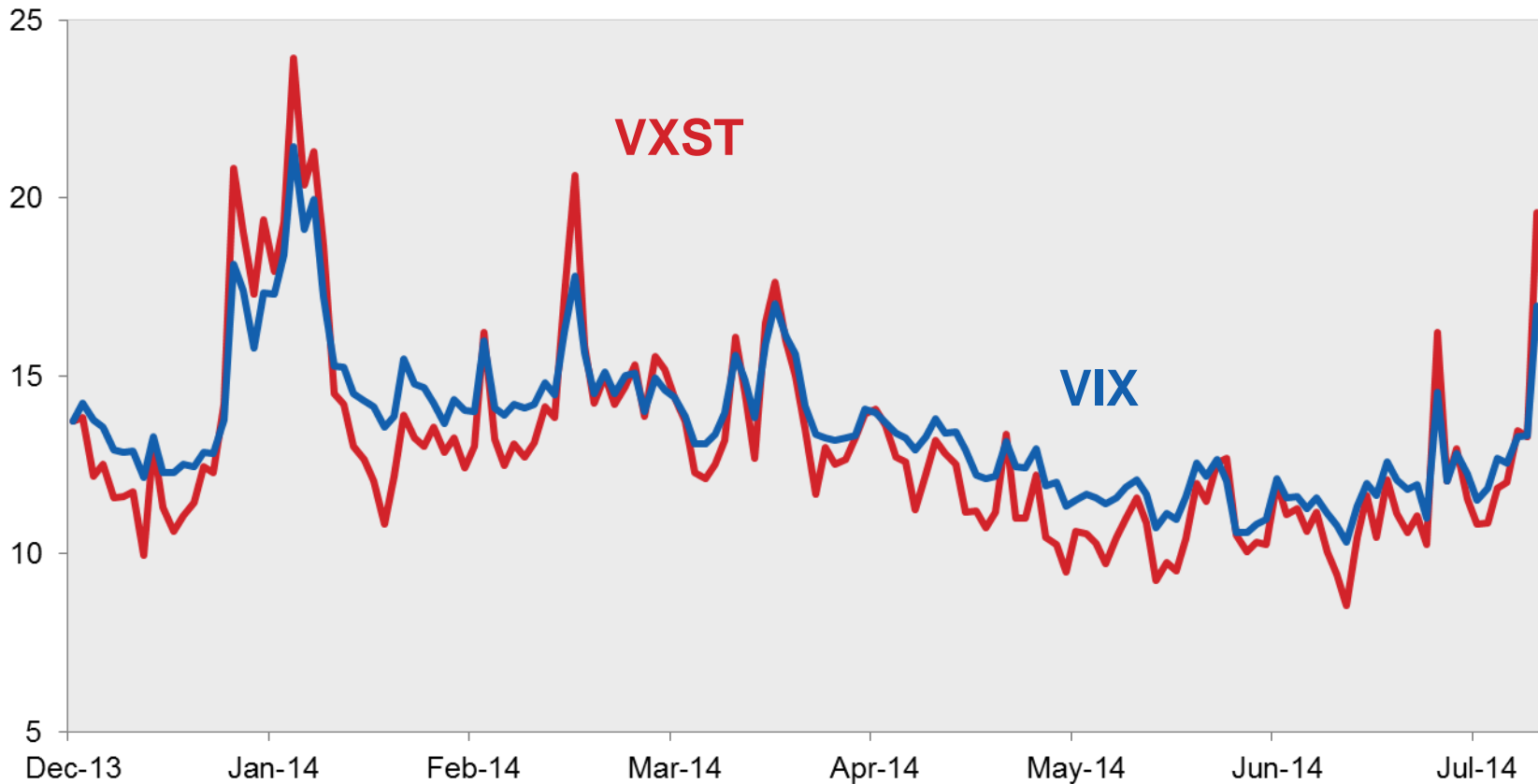
January 1, 2014 – July 31, 2014



VXST and VIX Price Behavior

VIX – VXST

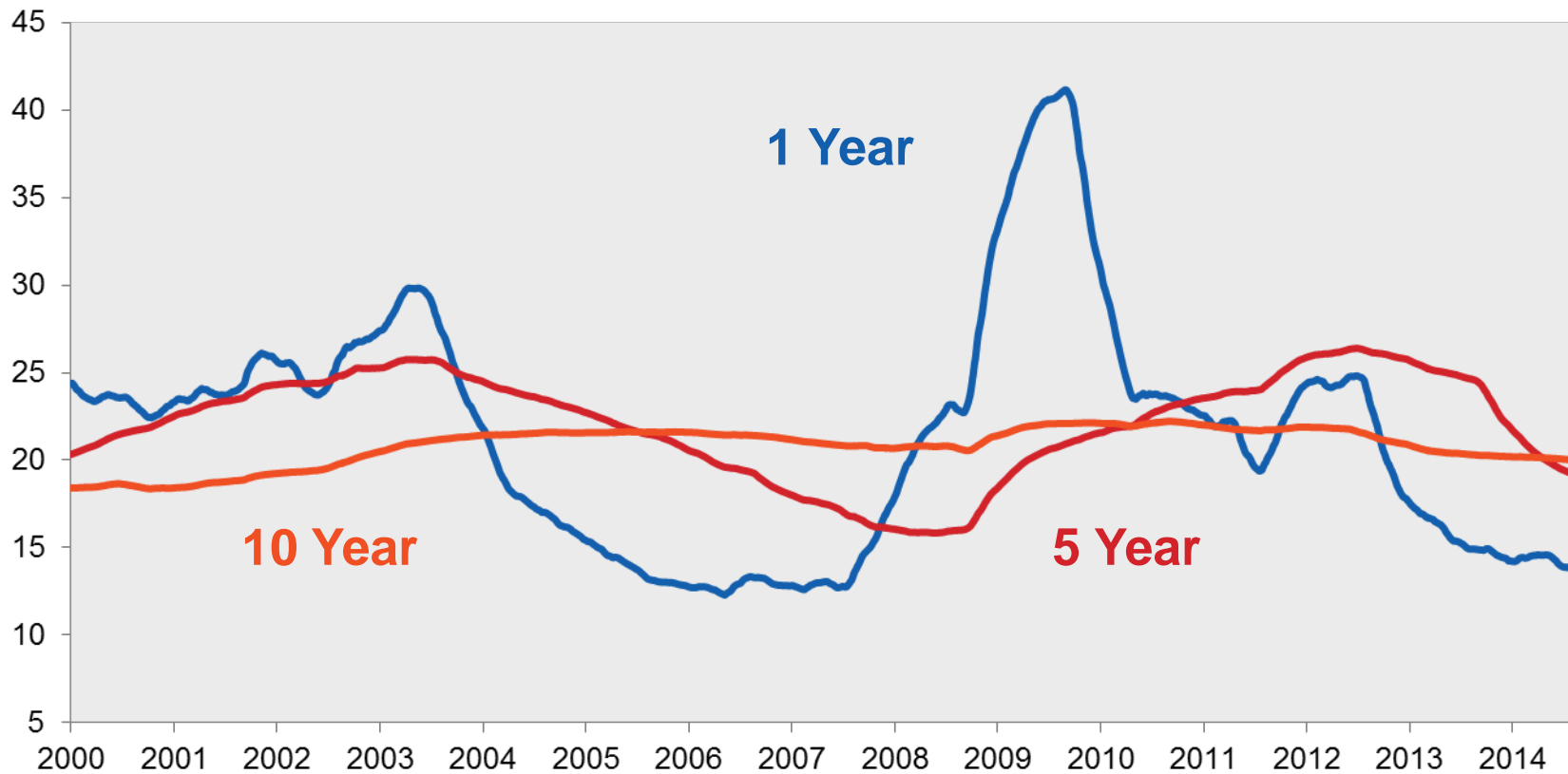
January 1, 2014 – July 31, 2014



VXST and VIX Price Behavior

Is VIX Low?

Historical Perspective on Average VIX –



VXST Futures and Options

VXST Futures

- **Depending on the day of the week, three or four VXST futures will be available for trading**
- **VXST futures expire on a weekly basis – usually on a Wednesday**
- **These contracts are AM settled which means they cease trading at 3:15 pm Chicago time the day before settlement**
- **VXST settlement is based on opening trades for the relevant S&P 500 options**
- **The notional value of a VXST futures contract is \$1000 times the price of the index**

VXST Futures and Options

VXST Options

- **Options based on VXST have been trading at CBOE for about six months**
- **They have the same listing and expiration dates as the corresponding futures contracts**
- **The notional value of a VXST option is \$100 times the strike price (1/10th the size of the futures)**

VXST Futures and Options

VXST Futures Pricing

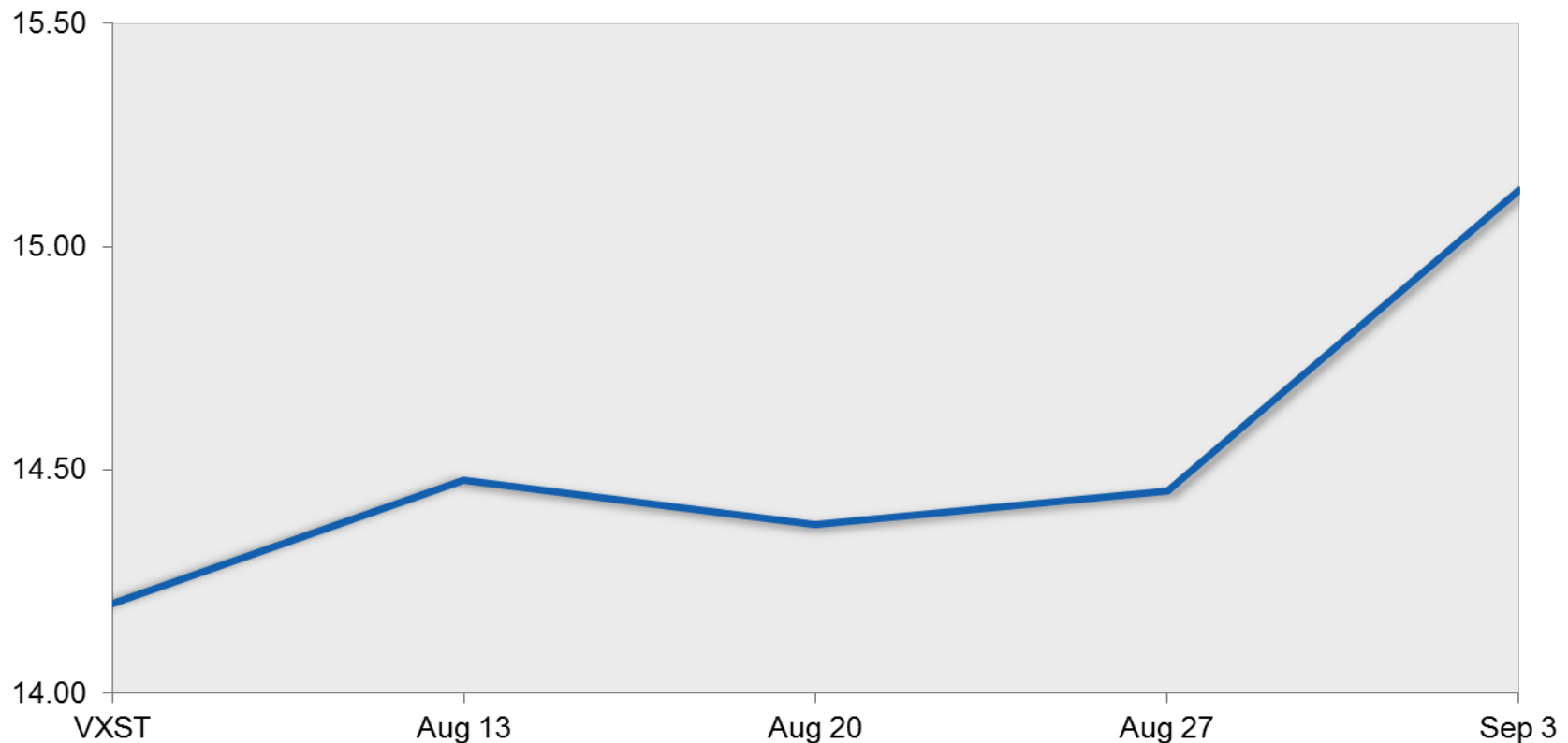
Quotes (8/11/2014) –

	Bid	Ask	Last
VXST	N/A	N/A	14.20
Aug 13	14.45	14.55	14.45
Aug 20	14.25	14.50	14.30
Aug 27	14.35	14.55	14.55
Sep 3	15.00	15.25	15.05

VXST Futures and Options

VXST Futures Pricing

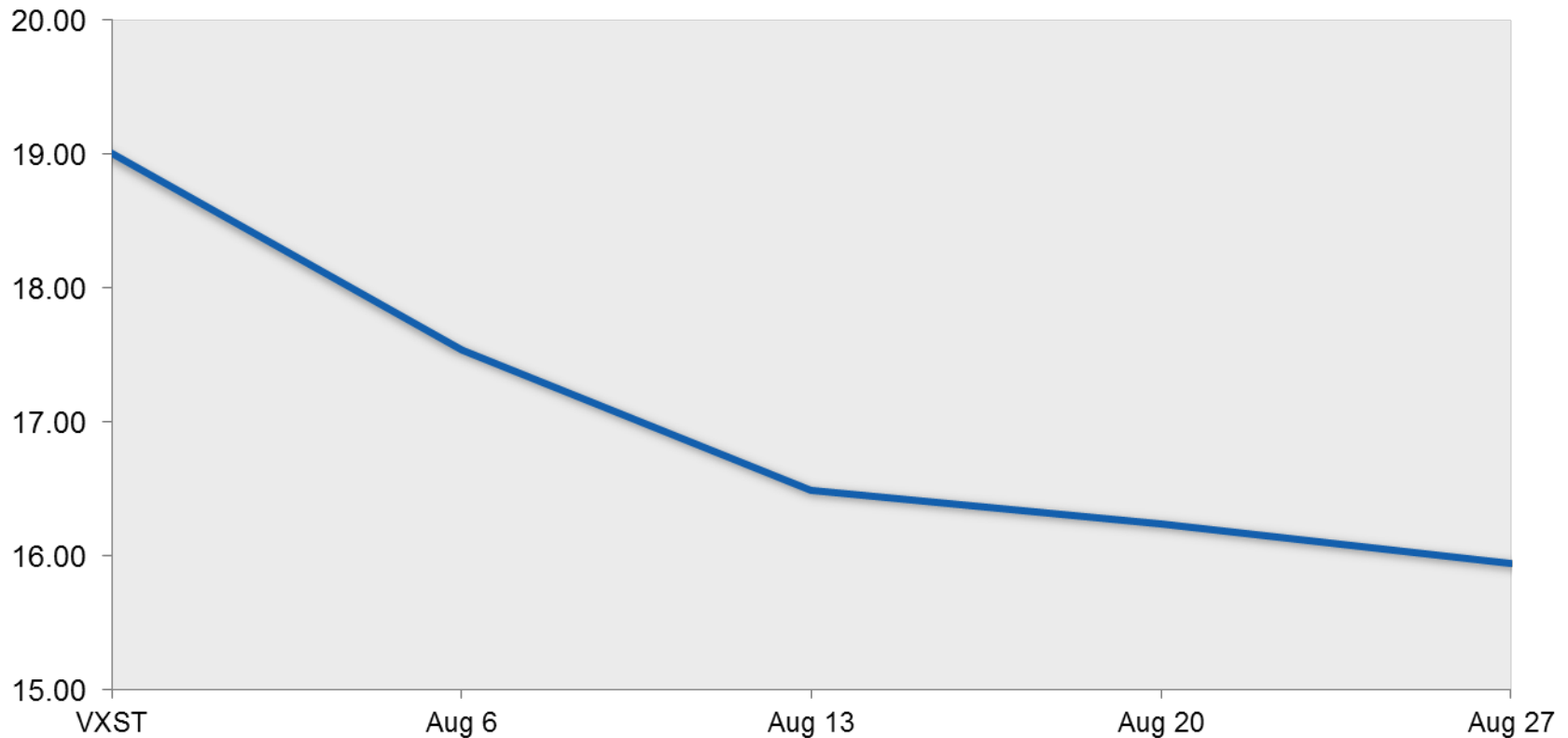
VXST Term Structure (8/11/2014) –



VXST Futures and Options

VXST Futures Pricing

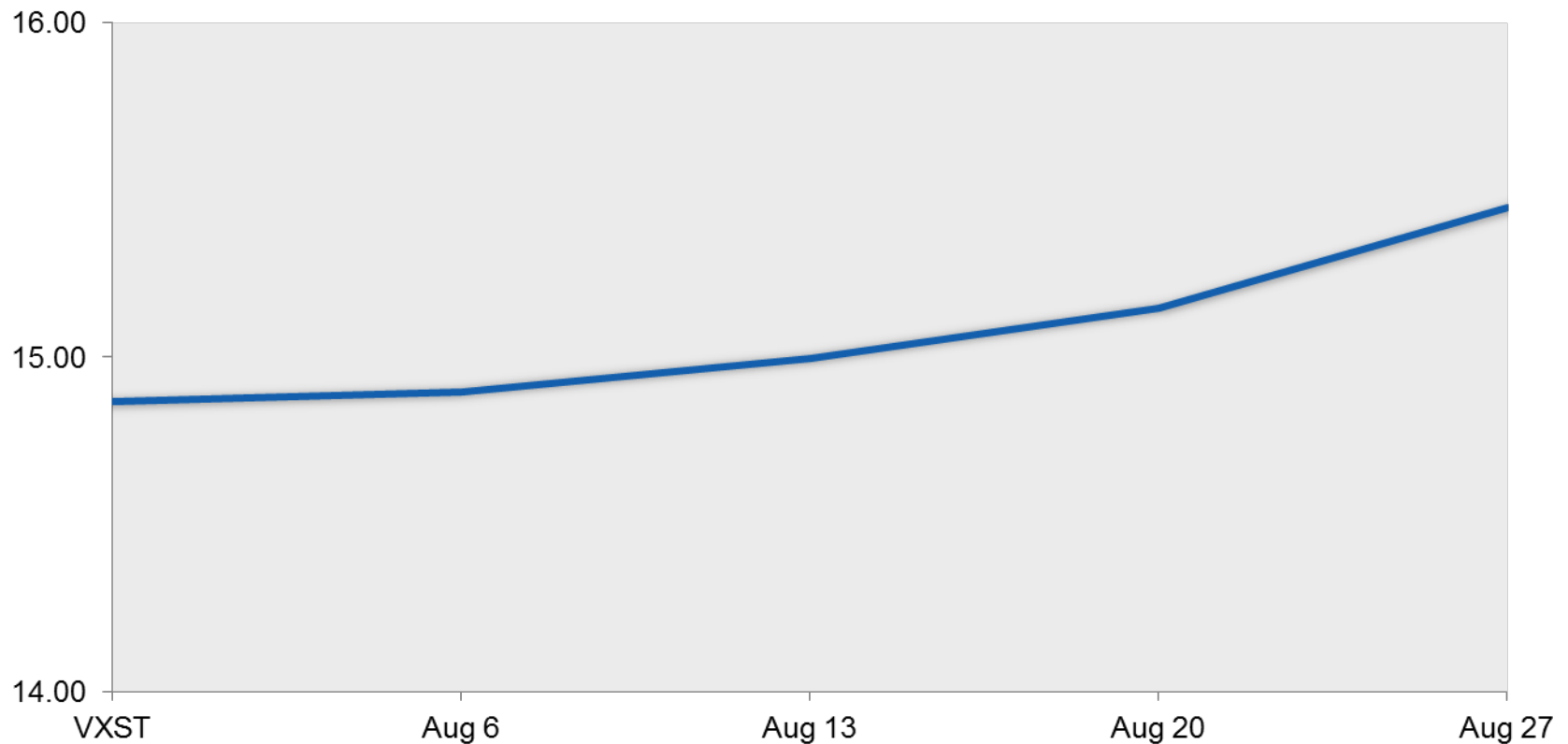
VXST Term Structure (8/1/2014) –



VXST Futures and Options

VXST Futures Pricing

VXST Term Structure (8/4/2014) –



VXST Futures and Options

Futures Price Changes

VXST Price Changes – 8/1/2014 to 8/4/2014

	8/1 Close	8/4 Close	Change
VXST	19.01	14.87	-4.14
Aug 6	17.55	14.90	-2.65
Aug 13	16.50	15.00	-1.50
Aug 20	16.25	15.15	-1.10
Aug 27	15.95	15.45	-0.50

VXST Futures and Options

Option Chain

VXST Aug 6th Option Prices (8/1/2014) –

Call Bid	Call Ask	Strike	Put Bid	Put Ask
7.00	7.90	10	0.00	0.10
6.00	6.90	11	0.00	0.10
5.00	5.90	12	0.00	0.10
4.00	4.90	13	0.00	0.15
3.10	4.00	14	0.05	0.20
2.60	3.10	15	0.20	0.40
1.95	2.40	16	0.55	0.75
1.45	1.80	17	0.95	1.25
1.10	1.40	18	1.55	1.90
0.80	1.10	19	2.25	2.60
0.60	0.90	20	3.00	3.40
0.45	0.70	21	3.80	4.30
0.35	0.55	22	4.70	5.20
0.25	0.45	23	5.60	6.10
0.20	0.40	24	6.50	7.00
0.15	0.35	25	9.60	10.50

VXST Futures and Options

Trading Alternatives

Outlook that VXST and the Futures are going to drop in price –

1. Sell Short Aug 6th VXST future at 17.55 – cover at 14.90

2. Sell Short Aug 6th VXST future at 17.55 – cover at 14.90

Buy Aug 13th VXST future at 16.50 – sell at 15.00

3. Sell Short Aug 6th VXST future at 17.55 – cover at 14.90

Buy 10 VXST Aug 6th 20 Calls at 0.90 – no bid on 8/4/2014

VIX Futures and Options

Overview

- **The CBOE Futures Exchange lists up to nine monthly VIX futures**
- **CBOE lists up to six monthly VIX option series for trading**
- **Both share the same settlement process and value**
- **The futures multiplier is \$1000 and option multiplier is \$100**

VIX Futures and Options

VIX Futures Pricing

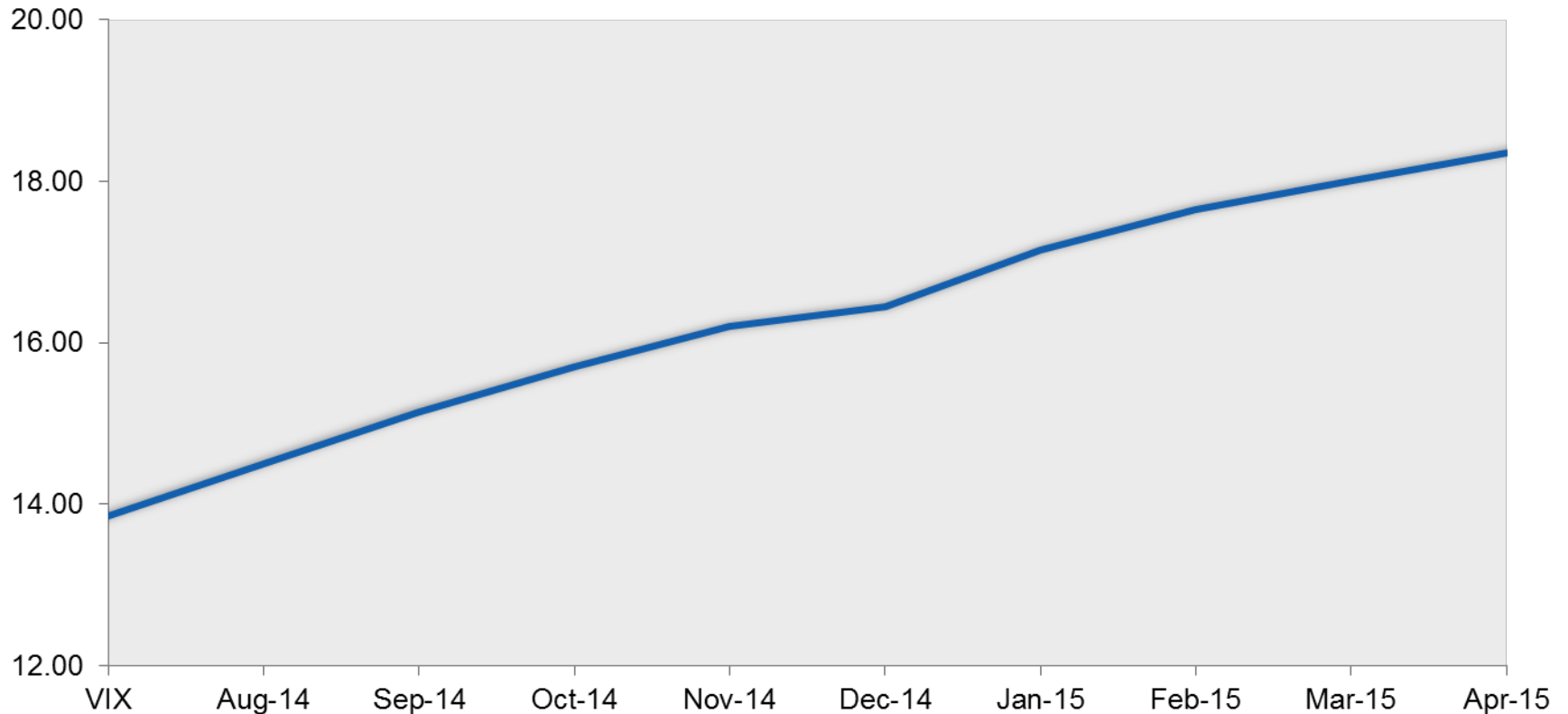
Quotes (8/11/2014) –

	Bid	Ask	Last
VIX			13.85
Aug 14	14.45	14.50	14.50
Sep 14	15.10	15.15	15.15
Oct 14	15.65	15.70	15.69
Nov 14	16.15	16.20	16.20
Dec 14	16.45	16.50	16.47
Jan 15	17.10	17.15	17.13
Feb 15	17.60	17.70	17.65
Mar 15	17.95	18.05	18.00
Apr 15	18.35	18.45	18.37

VIX Futures and Options

VIX Futures Pricing

VIX Term Structure (8/11/2014) –



VIX Futures and Options

Trading Alternatives

Outlook that VIX will be at or below 13.85 at August expiration –

1. Sell Short August VIX future at 14.45

2. Consider buying an August VIX Put option

VIX Futures and Options

VIX Option Pricing

August VIX Options (8/11/2014) –

Call Bid	Call Ask	Strike	Put Bid	Put Ask
4.40	4.60	10	0.00	0.05
3.40	3.60	11	0.00	0.05
2.45	2.55	12	0.00	0.05
1.60	1.70	13	0.15	0.20
1.05	1.10	14	0.50	0.60
0.65	0.75	15	1.15	1.25
0.45	0.50	16	1.90	2.00
0.30	0.35	17	2.75	2.85
0.20	0.25	18	3.60	3.80
0.15	0.20	19	4.60	4.70
0.10	0.15	20	5.50	5.70

VIX Futures and Options

VIX Option Pricing

VIX August Put Prices and Values at 13.85 –

Put Strike	Ask Price	Strike - Option Price	Value at 13.85	P/L at 13.85
10	0.05	9.95	0.00	-0.05
11	0.05	10.95	0.00	-0.05
12	0.05	11.95	0.00	-0.05
13	0.20	12.80	0.00	-0.20
14	0.60	13.40	0.15	-0.45
15	1.25	13.75	1.15	-0.10
16	2.00	14.00	2.15	0.15
17	2.85	14.15	3.15	0.30
18	3.80	14.20	4.15	0.35
19	4.70	14.30	5.15	0.45
20	5.70	14.30	6.15	0.45

VIX Futures and Options

Trading Alternatives

Outlook that VIX will be at or below 13.85 at December expiration

1. Sell Short December VIX future at 16.45

2. Consider buying a December VIX Put option

VIX Futures and Options

VIX Option Pricing

December VIX Options (8/11/2014) –

Call Bid	Call Ask	Strike	Put Bid	Put Ask
6.30	6.60	10	0.00	0.10
5.40	5.70	11	0.05	0.15
4.60	4.80	12	0.20	0.30
3.90	4.00	13	0.50	0.55
3.30	3.50	14	0.90	1.00
2.95	3.10	15	1.45	1.55
2.55	2.65	16	2.10	2.20
2.20	2.35	17	2.75	2.90
1.95	2.10	18	3.50	3.60
1.75	1.85	19	4.20	4.40
1.55	1.65	20	5.00	5.20

VIX Futures and Options

VIX Option Pricing

VIX December Put Prices and Values at 13.85 –

Put Strike	Ask Price	Strike - Option Price	Value at 13.85	P/L at 13.85
10	0.10	9.90	0.00	-0.10
11	0.15	10.85	0.00	-0.15
12	0.30	11.70	0.00	-0.30
13	0.55	12.45	0.00	-0.55
14	1.00	13.00	0.15	-0.85
15	1.55	13.45	1.15	-0.40
16	2.20	13.80	2.15	-0.05
17	2.90	14.10	3.15	0.25
18	3.60	14.40	4.15	0.55
19	4.40	14.60	5.15	0.75
20	5.20	14.80	6.15	0.95

VIX Futures and Options

VIX Futures Pricing

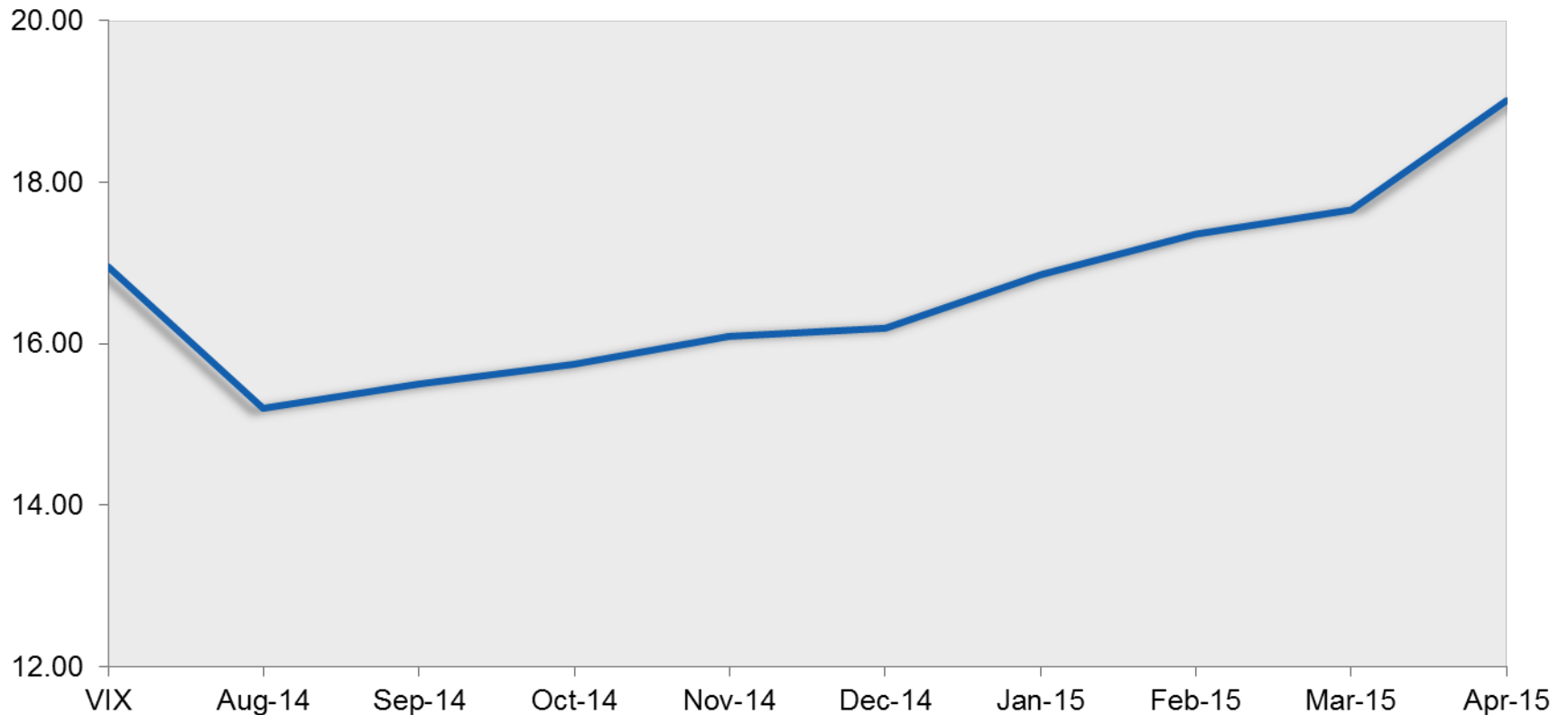
Quotes (7/31/2014) –

	Bid	Ask	Last
VIX			16.95
Aug 14	15.15	15.20	15.20
Sep 14	15.45	15.50	15.50
Oct 14	15.70	15.75	15.75
Nov 14	16.05	16.10	16.10
Dec 14	16.15	16.25	16.20
Jan 15	16.80	16.85	16.85
Feb 15	17.30	17.35	17.35
Mar 15	17.60	17.65	17.65
Apr 15	17.95	18.05	18.00

VIX Futures and Options

VIX Futures Pricing

VIX Term Structure (7/31/2014) –



VIX Futures and Options

Trading Alternatives

Outlook that August VIX futures will 'catch up' to VIX

1. Buy August VIX future at 15.20

2. Consider buying an August VIX Call option

VIX Futures and Options

VIX Option Pricing

August VIX Options (7/31/2014) –

Call Bid	Call Ask	Strike	Put Bid	Put Ask
5.10	5.30	10	0.00	0.05
5.10	4.20	11	0.00	0.05
3.20	3.30	12	0.10	0.15
2.45	2.60	13	0.35	0.40
1.90	1.95	14	0.80	0.85
1.50	1.60	15	1.40	1.45
1.20	1.30	16	2.05	2.10
1.00	1.10	17	2.80	2.95
0.80	0.90	18	3.60	3.80
0.65	0.75	19	4.40	4.70
0.55	0.60	20	5.30	5.50

VIX Futures and Options

VIX Option Pricing

Call Ask Relative to VIX Closing Price (16.95 on 7/31/2014)

Strike	Call Ask	Strike + Call Ask	VIX – (Call + Strike)
10	5.30	15.30	1.65
11	4.20	15.20	1.75
12	3.30	15.30	1.65
13	2.60	15.60	1.35
14	1.95	15.95	1.00
15	1.60	16.60	0.35
16	1.30	17.30	-0.35
17	1.10	18.10	-1.15
18	0.90	18.90	-1.95
19	0.75	19.75	-2.80
20	0.60	20.60	-3.65

VIXX Futures and Options

VIX Markets

August 7, 2014 –

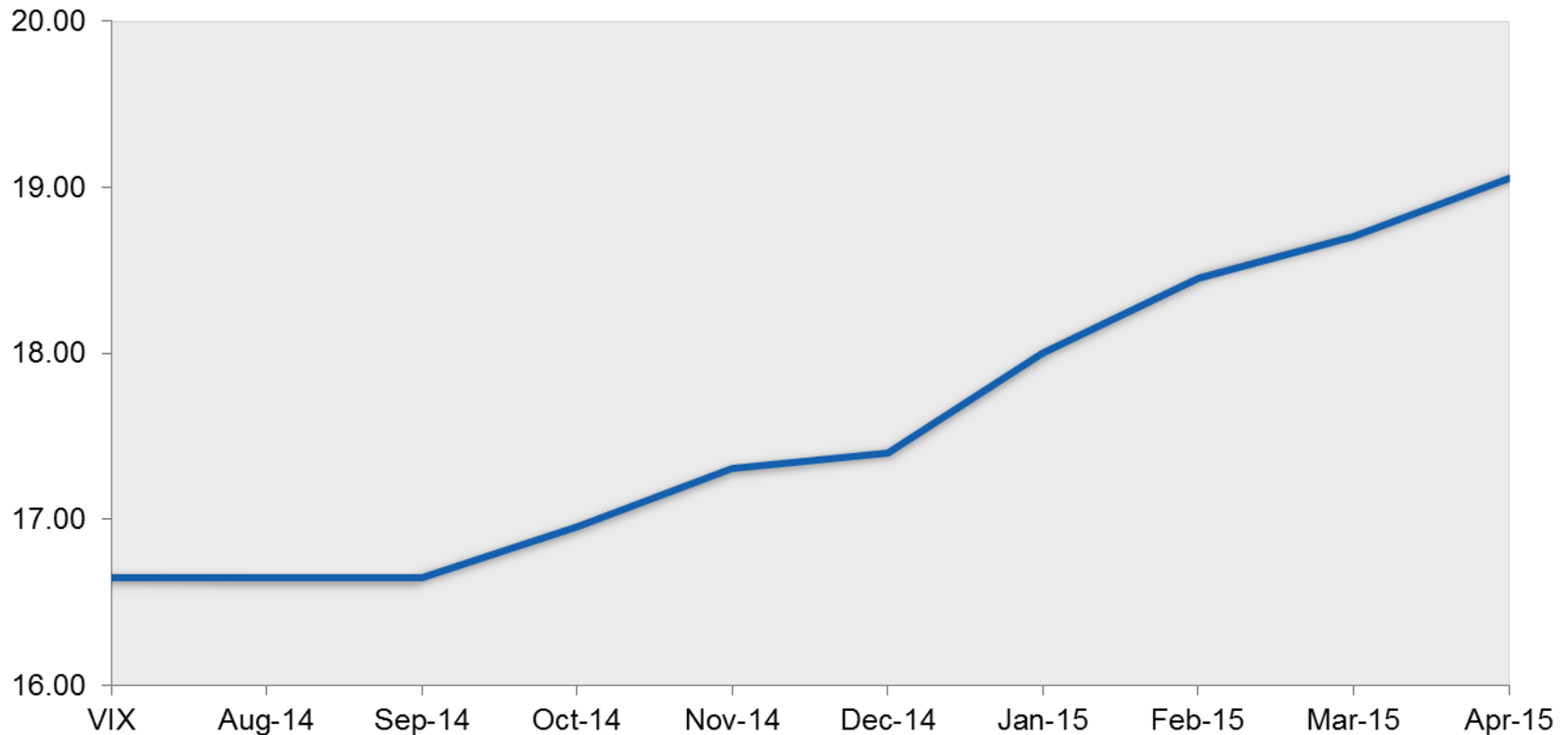
VIX Index at 16.66 – down 0.29 from July 31

August VIX future at 16.65 – up 1.45 from July 31

VIX Futures and Options

VIX Futures Pricing

VIX Term Structure (8/7/2014) –



VIX Futures and Options

VIX Option Pricing

August VIX Options (8/7/2014) –

Call Bid	Call Ask	Strike	Put Bid	Put Ask
6.50	6.80	10	0.00	0.05
5.50	5.80	11	0.00	0.05
4.50	4.70	12	0.00	0.05
3.60	3.80	13	0.05	0.10
2.80	2.95	14	0.20	0.25
2.15	2.20	15	0.50	0.60
1.60	1.65	16	1.00	1.10
1.20	1.25	17	1.60	1.65
0.95	1.00	18	2.25	2.45
0.75	0.85	19	3.00	3.20
0.55	0.65	20	3.80	4.10

VIX Futures and Options

VIX Option Pricing

7/31 Call Ask – 8/7 Call Bid –

Strike	7/31 Call Ask	8/7 Call Bid	7/31 Ask - 8/7 Bid
10	5.30	6.50	1.20
11	4.20	5.50	1.30
12	3.30	4.50	1.20
13	2.60	3.60	1.00
14	1.95	2.80	0.85
15	1.60	2.15	0.55
16	1.30	1.60	0.30
17	1.10	1.25	0.15
18	0.90	1.00	0.10
19	0.75	0.85	0.10
20	0.60	0.65	0.05

VXST and VIX Trading Strategies

Summary

- **VXST and VIX have historically had inverse relationships with the S&P 500**
- **A VIX or VXST trade should take into account an outlook for the overall stock market as well as the respective volatility index**
- **Another key component to any VXST or VIX trade is where the futures are compared to the index**
- **This is true for both option and futures trades**

VXST and VIX Trading Strategies

Questions / Contact

**Follow up questions?
Ideas for webcasts?
Other options / VIX questions?**

rhoads@cboe.com

**Twitter –
[@russellrhoads](https://twitter.com/russellrhoads)**

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