A background image of a server room with rows of server racks. The racks are illuminated with various colored lights, including blue, green, and red, creating a grid-like pattern of light points. The perspective is from a low angle, looking down the length of the server aisle.

Interactive Brokers Webcast

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# Volatility Market Review / Preview

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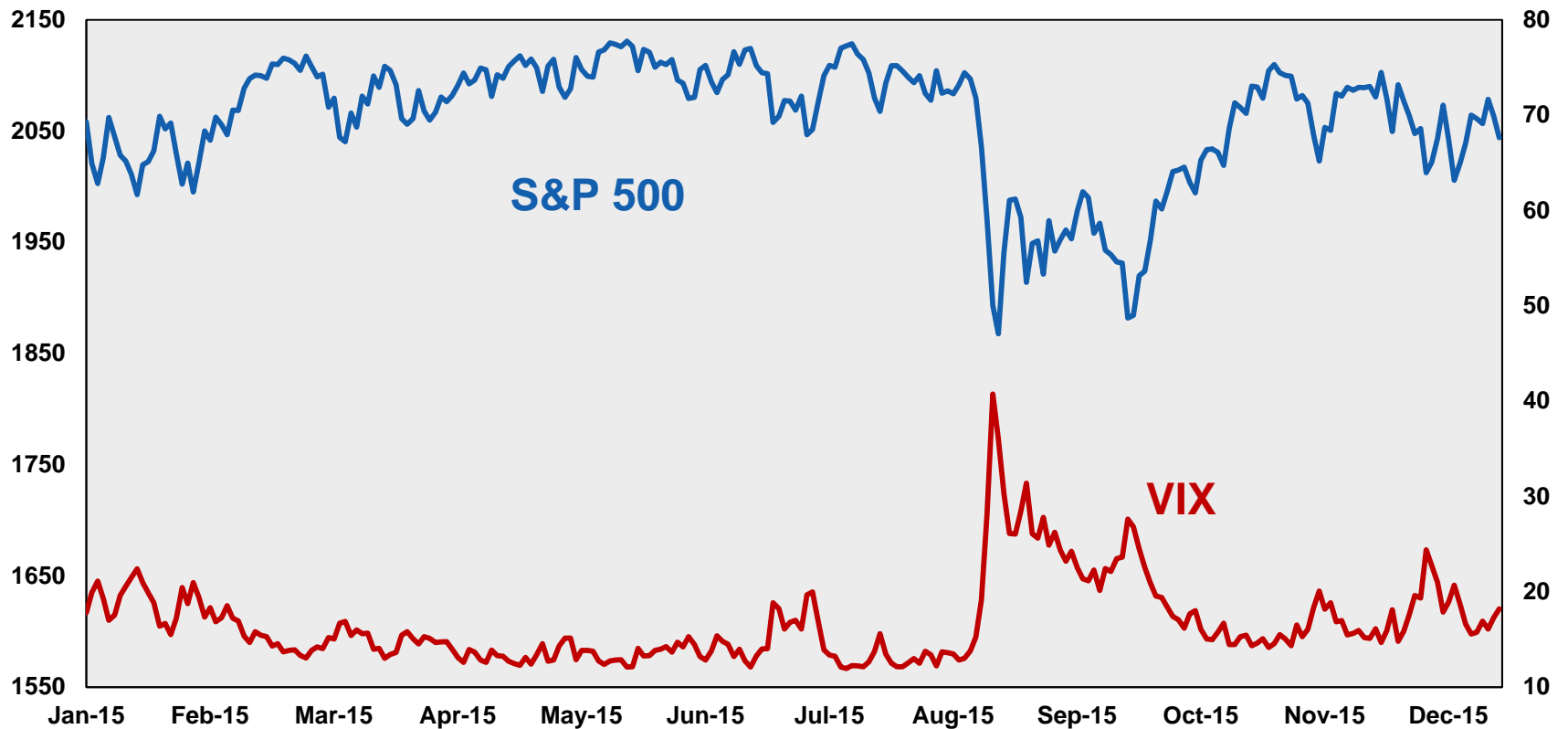
# Volatility Market Review / Preview

## Outline

- **VIX® Index in 2015**
- **Russell 2000® Volatility**
- **VIX Weeklys<sup>SM</sup>**
- **VIX Related ETPs**
- **Summary / Links**

## 2015 Price Action

### VIX vs. S&P 500<sup>®</sup>



Data Sources: CBOE & Bloomberg

# CBOE Volatility Index

## 2015 in Context

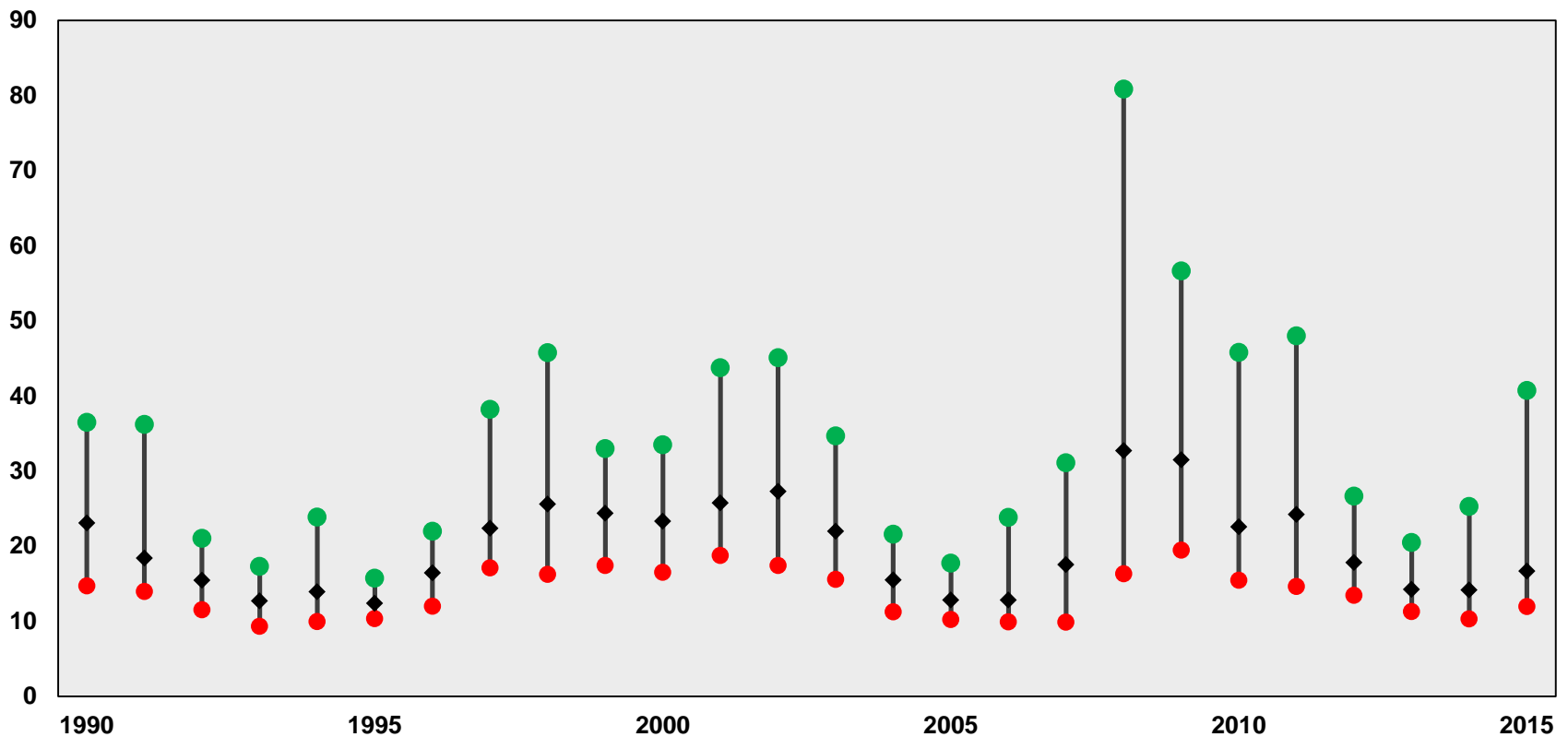
### VIX Statistics – 2004 – 2015

	Average	High	Low	H / L Range	H/L Percent Range	S&P 500
2004	15.48	21.58	11.23	10.35	92.16%	8.99%
2005	12.81	17.74	10.23	7.51	73.41%	3.00%
2006	12.81	23.81	9.90	13.91	140.51%	13.62%
2007	17.54	31.09	9.89	21.20	214.36%	3.53%
2008	32.69	80.86	16.30	64.56	396.07%	-38.49%
2009	31.48	56.65	19.47	37.18	190.96%	23.45%
2010	22.55	45.79	15.45	30.34	196.38%	12.78%
2011	24.20	48.00	14.62	33.38	228.32%	0.00%
2012	17.80	26.66	13.45	13.21	98.22%	13.41%
2013	14.23	20.49	11.30	9.19	81.33%	29.60%
2014	14.17	25.27	10.32	14.95	144.86%	11.39%
2015	16.67	40.74	11.95	28.79	240.92%	-0.73%

Data Sources: CBOE & Bloomberg

## VIX 2015 in Context

### 26 Years of VIX

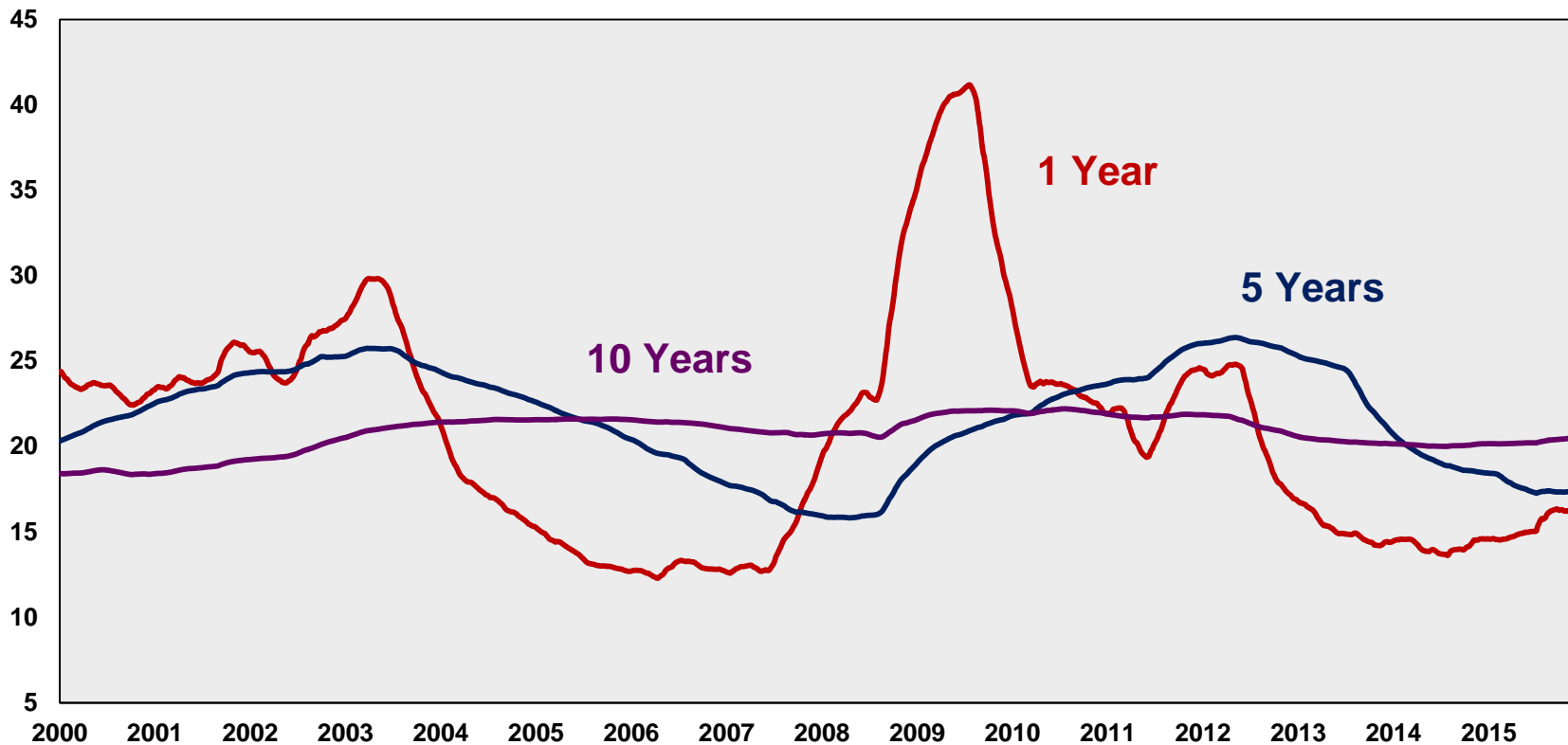


Data Source: CBOE

# CBOE Volatility Index

## Long-Term Moving Averages

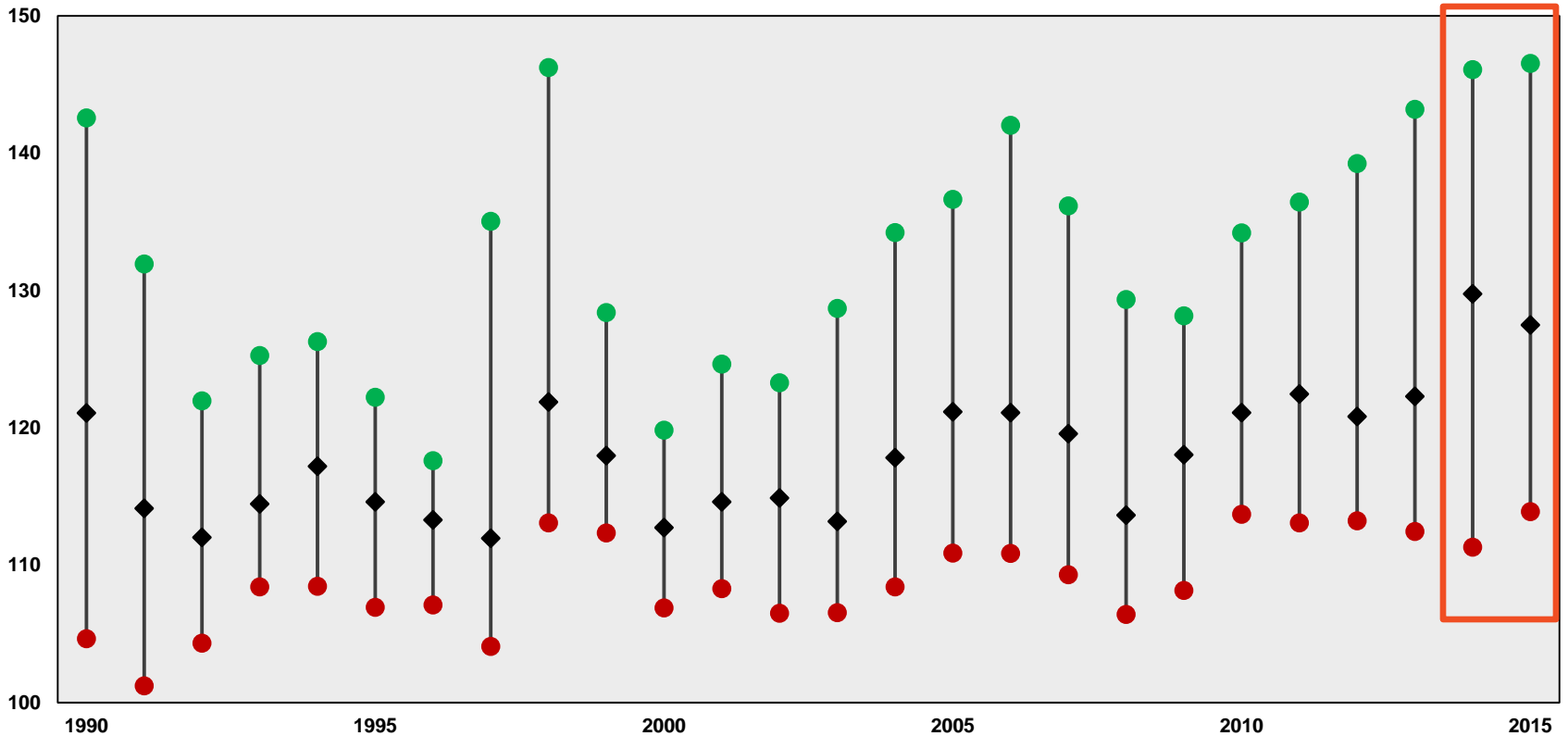
2000 – 2015



Data Source: CBOE

## 2015 in Context

### 26 Years of SKEW

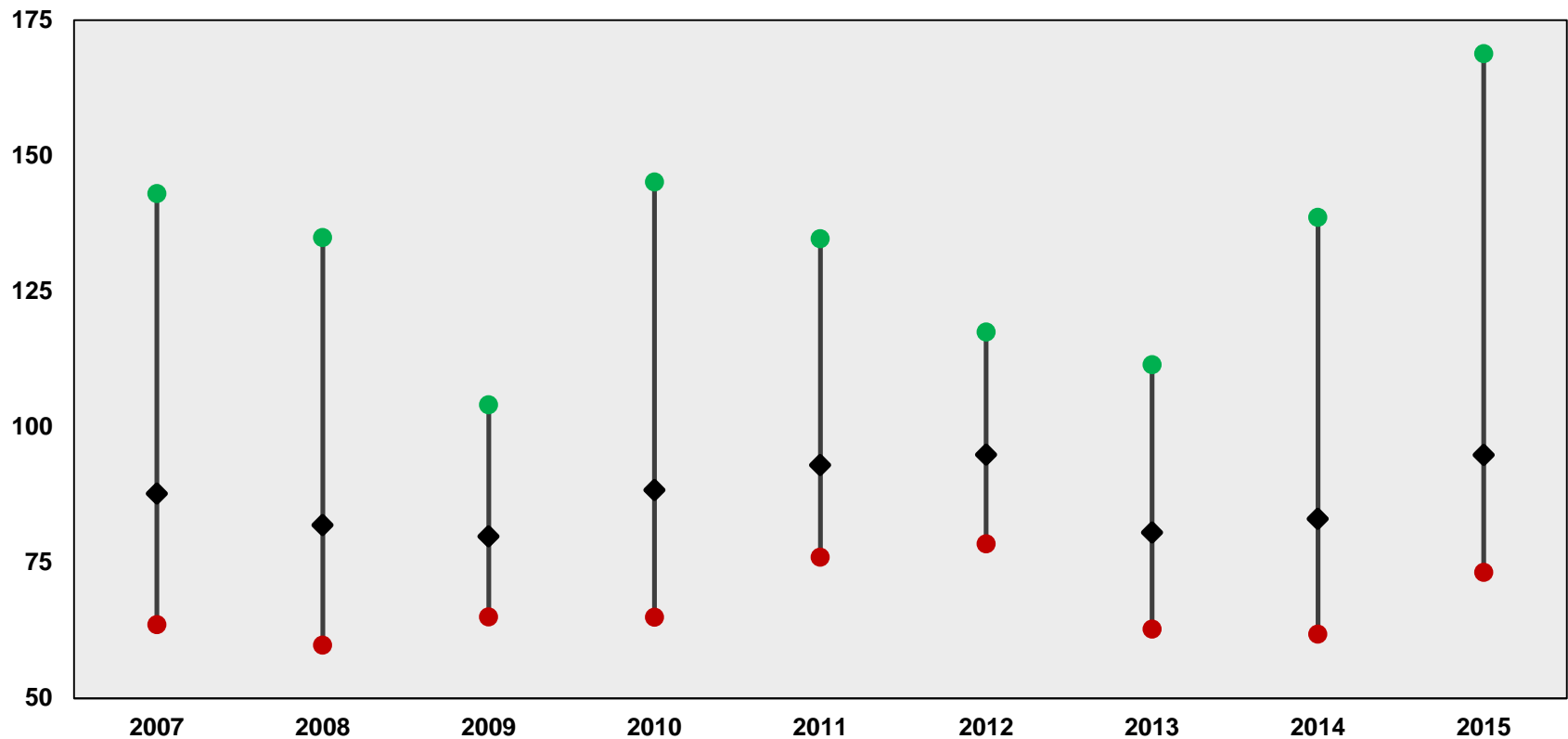


Data Source: CBOE



## 2015 in Context

### 9 Years of VVIX

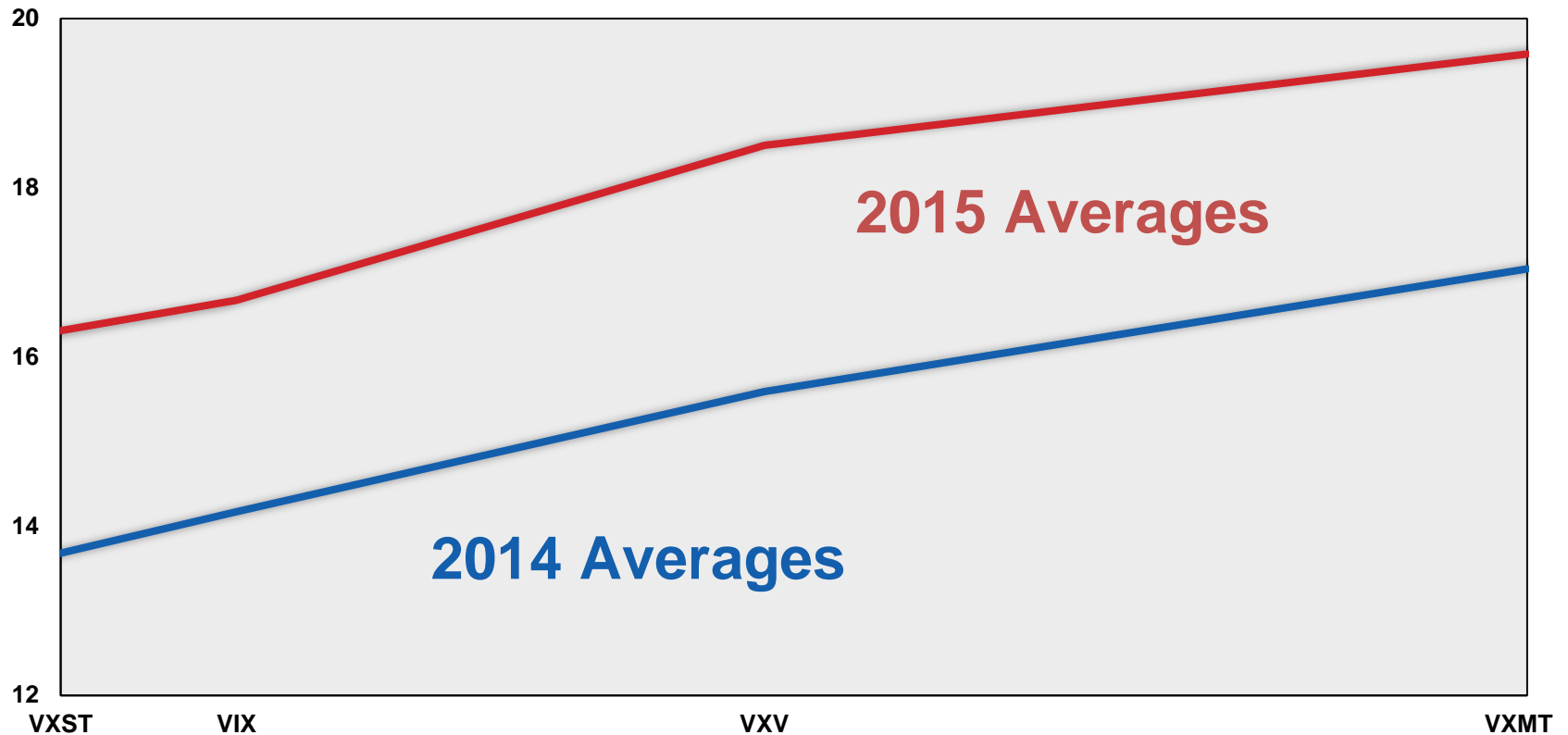


Data Source: CBOE

# CBOE Volatility Index

## 2015 in Context

### VXST – VIX – VXV – VXMT Term Structure

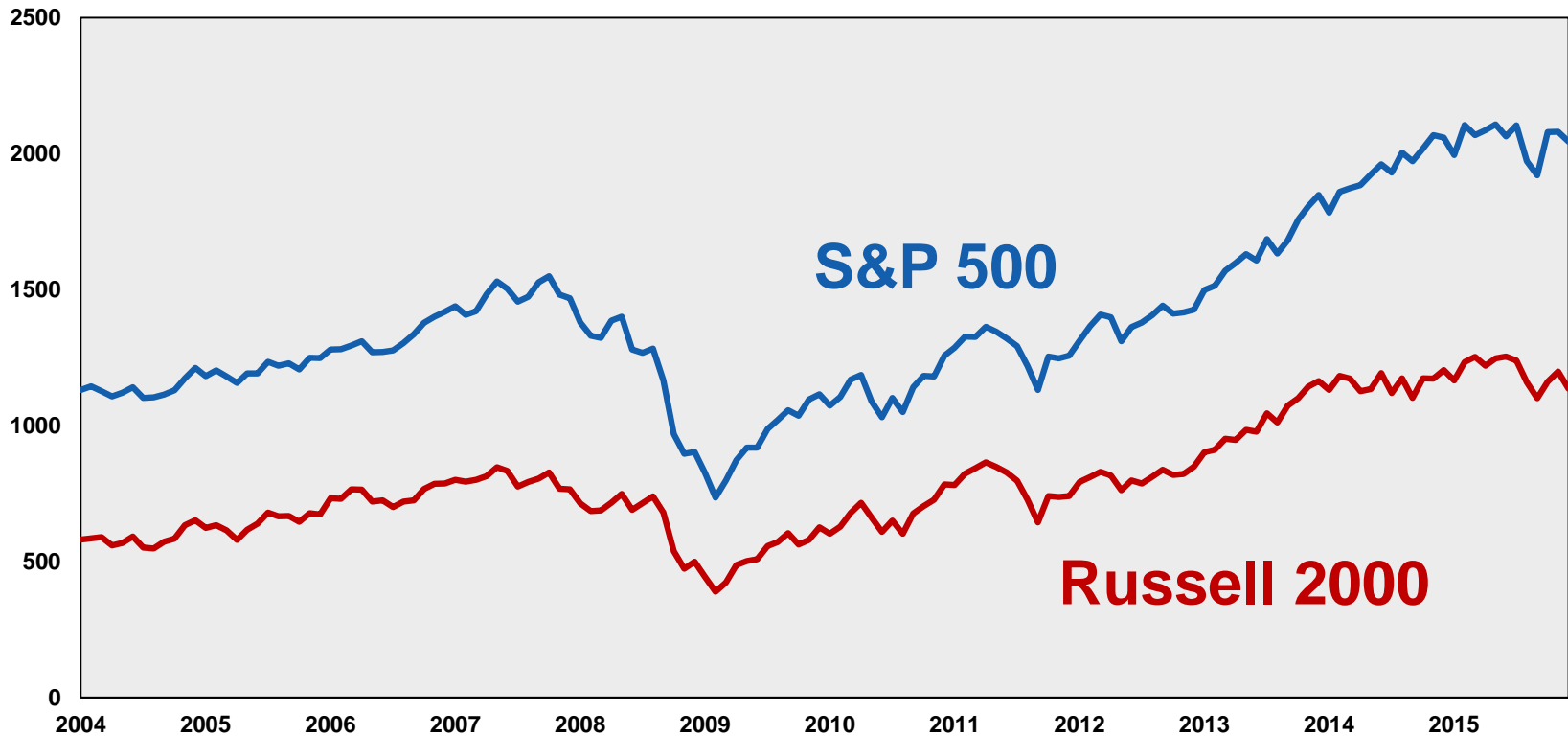


Data Source: CBOE

# Russell 2000 Index

## RUT vs. SPX Price Performance

### Monthly 2000 – 2015

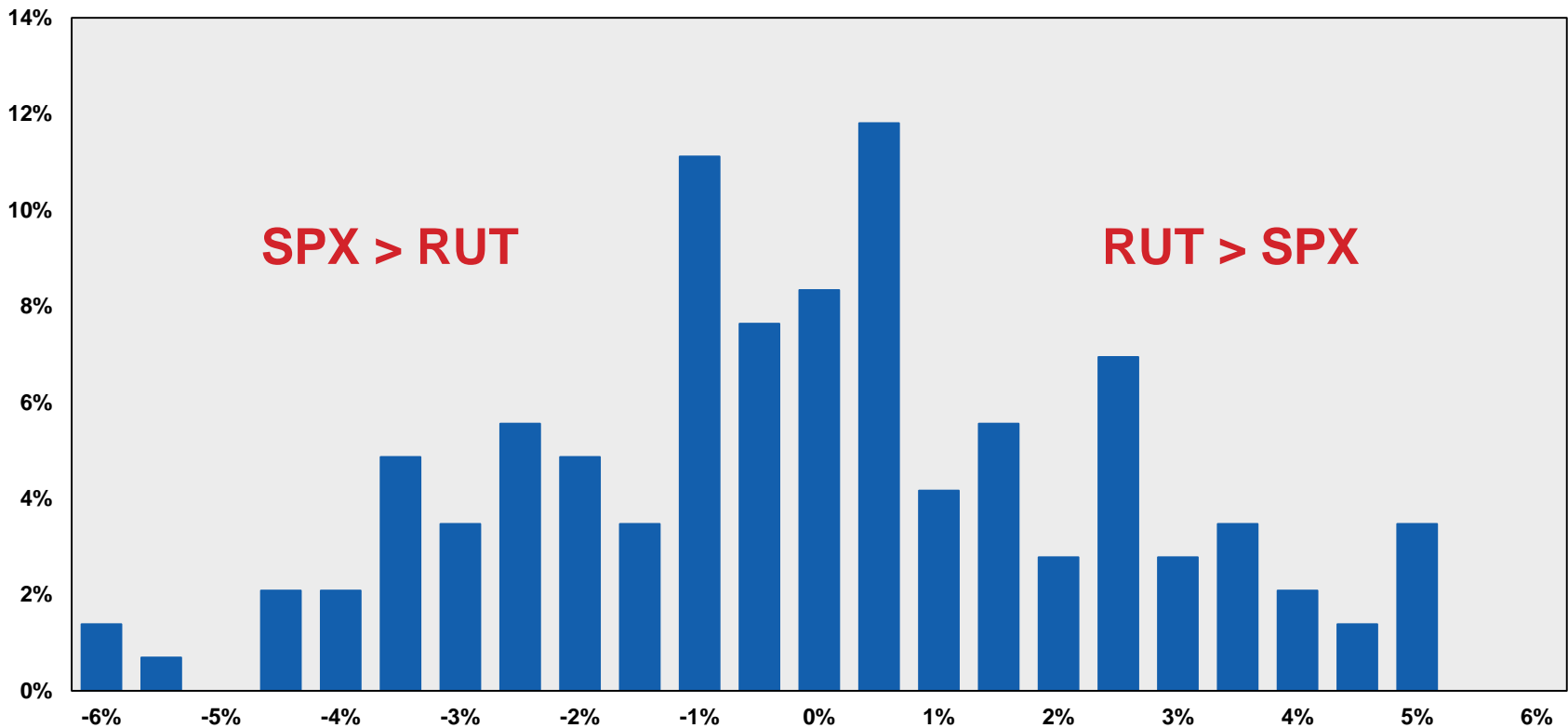


Data Source: Bloomberg

# Russell 2000 Index

## RUT vs. SPX Monthly Relative Performance

### Russell 2000 vs. S&P 500 2000 – 2015

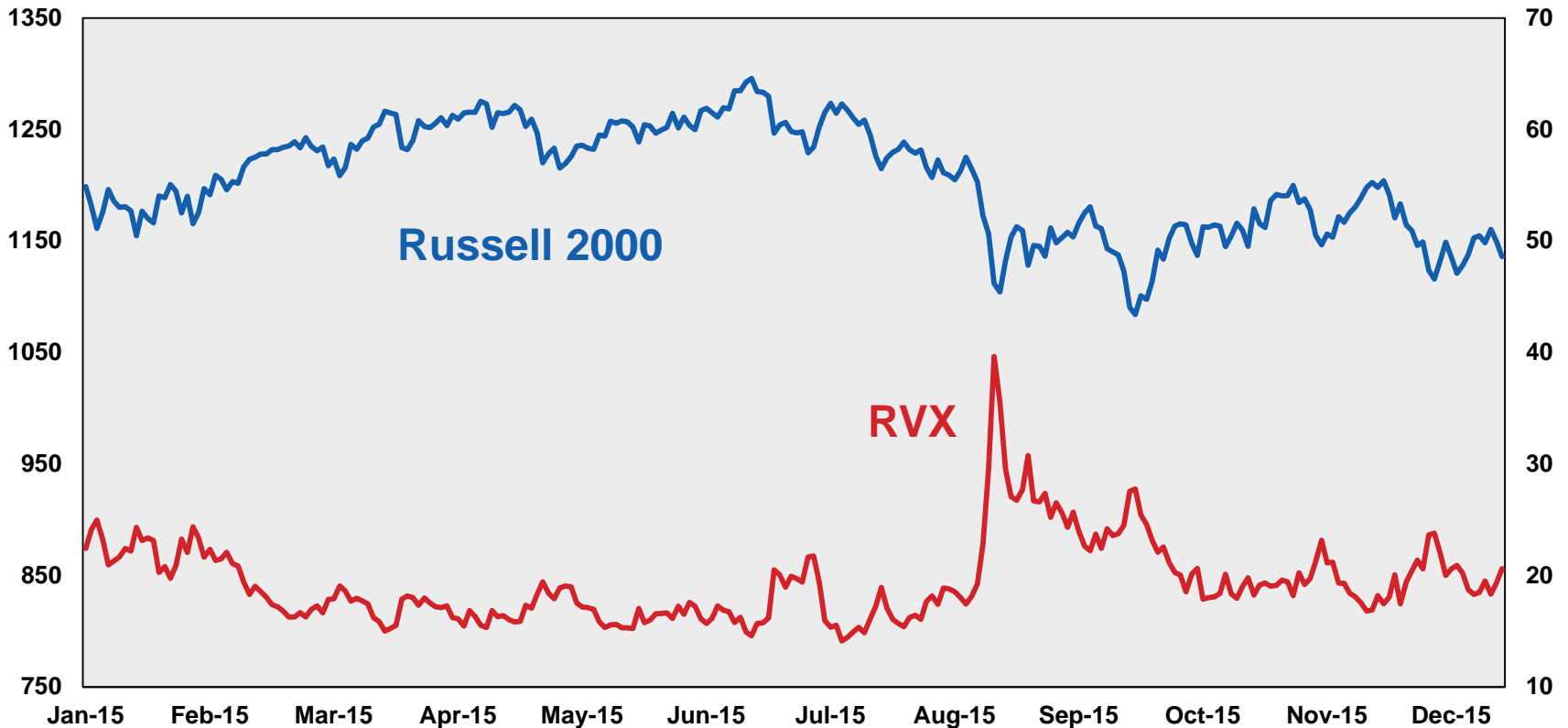


Data Source: Bloomberg

# CBOE Russell 2000 Volatility Index

## 2015 Price Action

### RVX vs. Russell 2000



Data Sources: CBOE & Bloomberg

# CBOE Russell 2000 Volatility Index

## 2015 in Context

### RVX Statistics – 2004 – 2015

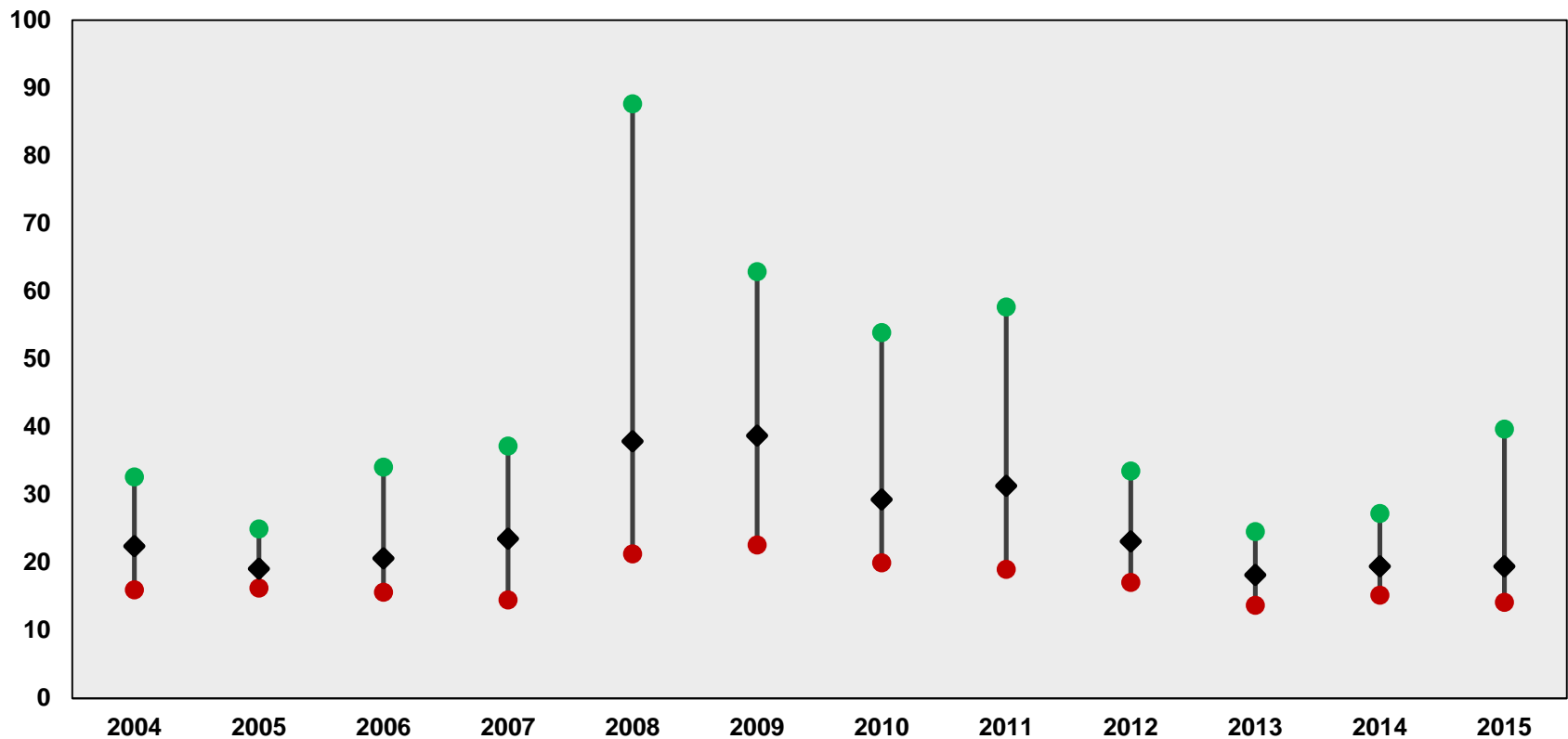
	Average	High	Low	H / L Range	H/L Percent Range	Russell 2000
2004	22.39	32.61	15.95	16.66	104.45%	17.00%
2005	19.06	24.94	16.20	8.74	53.95%	3.32%
2006	20.60	34.02	15.58	18.44	118.36%	17.00%
2007	23.47	37.14	14.44	22.70	157.20%	-2.75%
2008	37.84	87.62	21.24	66.38	312.52%	-34.80%
2009	38.68	62.84	22.56	40.28	178.55%	25.22%
2010	29.26	53.88	19.95	33.93	170.08%	25.31%
2011	31.28	57.66	18.97	38.69	203.95%	-5.45%
2012	23.10	33.45	17.02	16.43	96.53%	14.63%
2013	18.12	24.52	13.65	10.87	79.63%	37.00%
2014	19.42	27.19	15.17	12.02	79.24%	3.53%
2015	17.53	40.74	11.95	28.79	240.92%	-5.71%

Data Sources: CBOE & Bloomberg

# CBOE Russell 2000 Volatility Index

## RVX 2015 in Context

### 12 Years of RVX

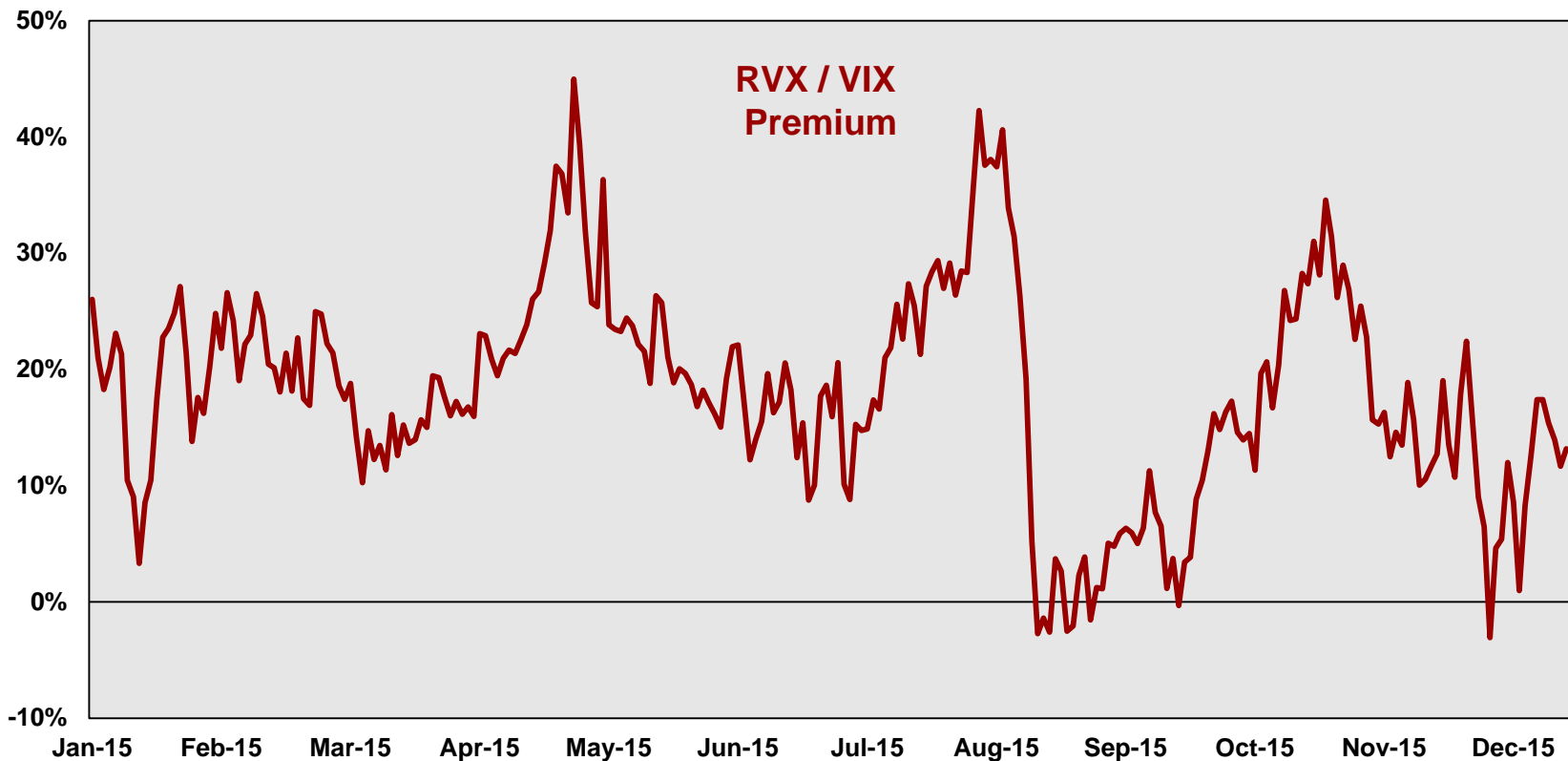


Data Source: CBOE

# Russell 2000 Volatility Index

## RVX 2015 in Context

### 2015 RVX vs. VIX



Data Source: CBOE



# VIX Weeklys

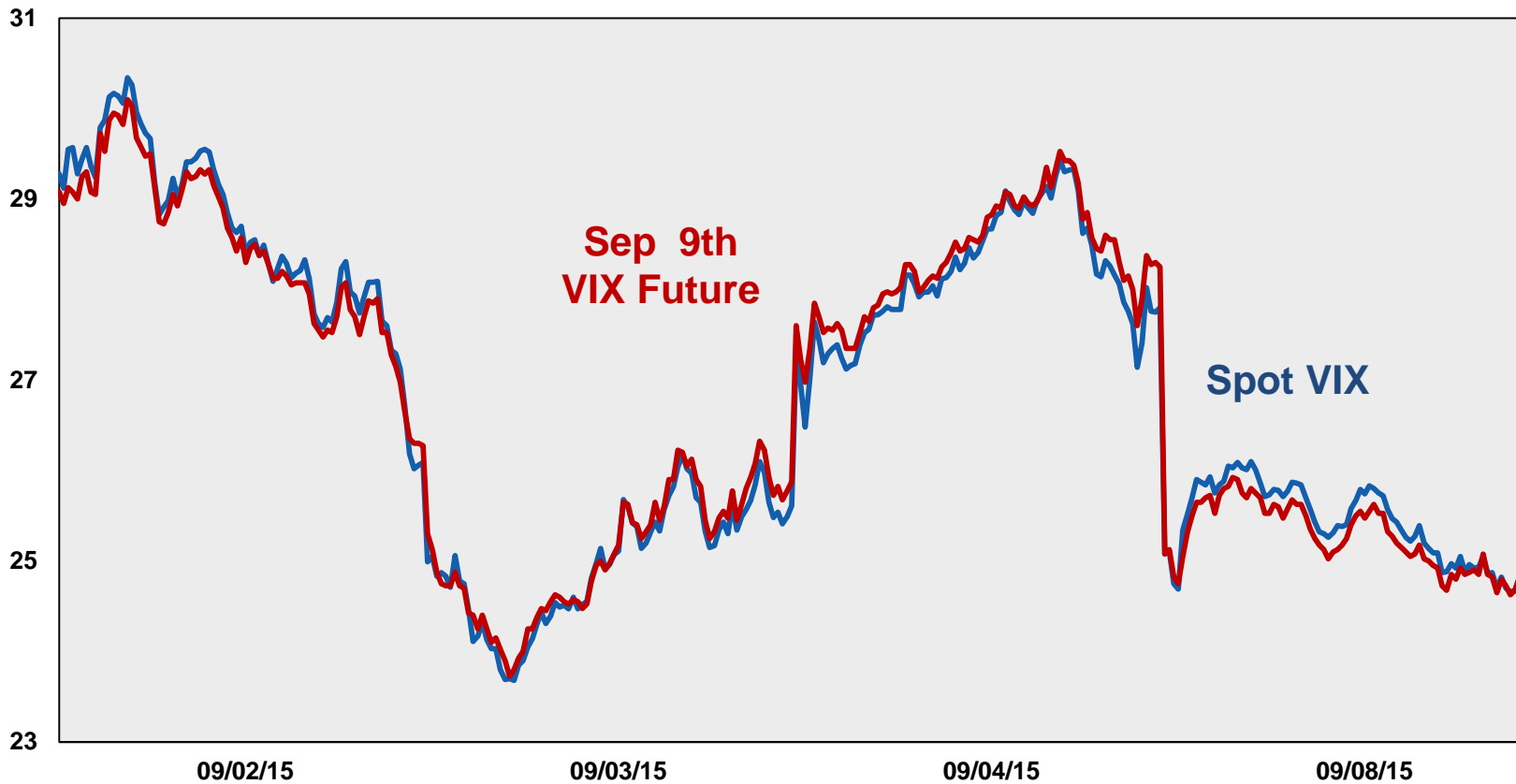
## Introduction

- **VIX Weeklys futures were introduced in late July**
- **Short dated VIX options were launched in early October**
- **Historically (before Weeklys) VIX futures were not as responsive to spot VIX price changes when there were several weeks remaining to expiration**
- **VIX futures have historically tracked VIX very closely as expiration approaches – we are consistently seeing this with the new VIX Weeklys**

# VIX Weeklys

## Price Chart

### 5 Minute Prices – VIX vs. Sep 9<sup>th</sup> VIX



Data Sources: CBOE & Bloomberg

# VIX Related Exchange Traded Products

## 2015 Performance

### Selected ETP Performance

<b>Long Short Term ETPs</b>		<b>12/31/2014</b>	<b>12/31/2015</b>	<b>Change</b>	<b>Percent</b>
iPath S&P 500 VIX ST Futures ETN	VXX	31.51	23.32	<b>-8.19</b>	<b>-25.99%</b>
ProShares VIX Short-Term Futures ETF	VIXY	20.99	15.49	<b>-5.50</b>	<b>-26.20%</b>
VelocityShares Long VIX ST ETN	VIIX	42.70	31.48	<b>-11.22</b>	<b>-26.28%</b>
<b>Long Mid Term ETP</b>					
iPath S&P 500 VIX MT Futures ETN	VXZ	13.12	12.21	<b>-0.91</b>	<b>-6.94%</b>
<b>Leveraged Long Short Term ETPs</b>					
VelocityShares Daily 2x VIX ST ETN	TVIX	27.60	8.73	<b>-18.87</b>	<b>-68.37%</b>
ProShares Ultra VIX Short Term Fut ETF	UVXY	125.75	39.81	<b>-85.94</b>	<b>-68.34%</b>
<b>Inverse Short Term ETPs</b>					
VelocityShares Daily Inverse VIX ST ETN	XIV	31.14	23.11	<b>-8.03</b>	<b>-25.79%</b>
ProShares Short VIX Short Term Fut ETF	SVXY	61.16	45.14	<b>-16.02</b>	<b>-26.19%</b>
<b>Inverse Mid Term Futures ETP</b>					
VelocityShares Daily Inverse VIX MT ETN	ZIV	41.77	38.38	<b>-3.39</b>	<b>-8.12%</b>

Data Source: Bloomberg

# Volatility Market Review / Preview

## Summary

- ▶ **VIX averaged highest level since 2012 as the S&P 500 was lower on the year**
- ▶ **RVX average for 2015 was in line with 2014 despite small cap stocks having a rough year**
- ▶ **SKEW, VVIX, and the RVX – VIX relationship may be going through a structural change due to market conditions**
- ▶ **VIX Weeklys futures and options have attracted interest despite only available to trade for a few months**
- ▶ **Both long and short volatility oriented ETPs had a tough year in 2015**

# Volatility Market Review / Preview

## Links / Contact

### Links

[www.cboe.com/volatility](http://www.cboe.com/volatility)

[www.cboe.com/vix](http://www.cboe.com/vix)

[www.cboe.com/rvx](http://www.cboe.com/rvx)

[www.cboeoptionshub.com](http://www.cboeoptionshub.com)

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