Using Options to Manage Volatility

CBOE European Risk Management Conference

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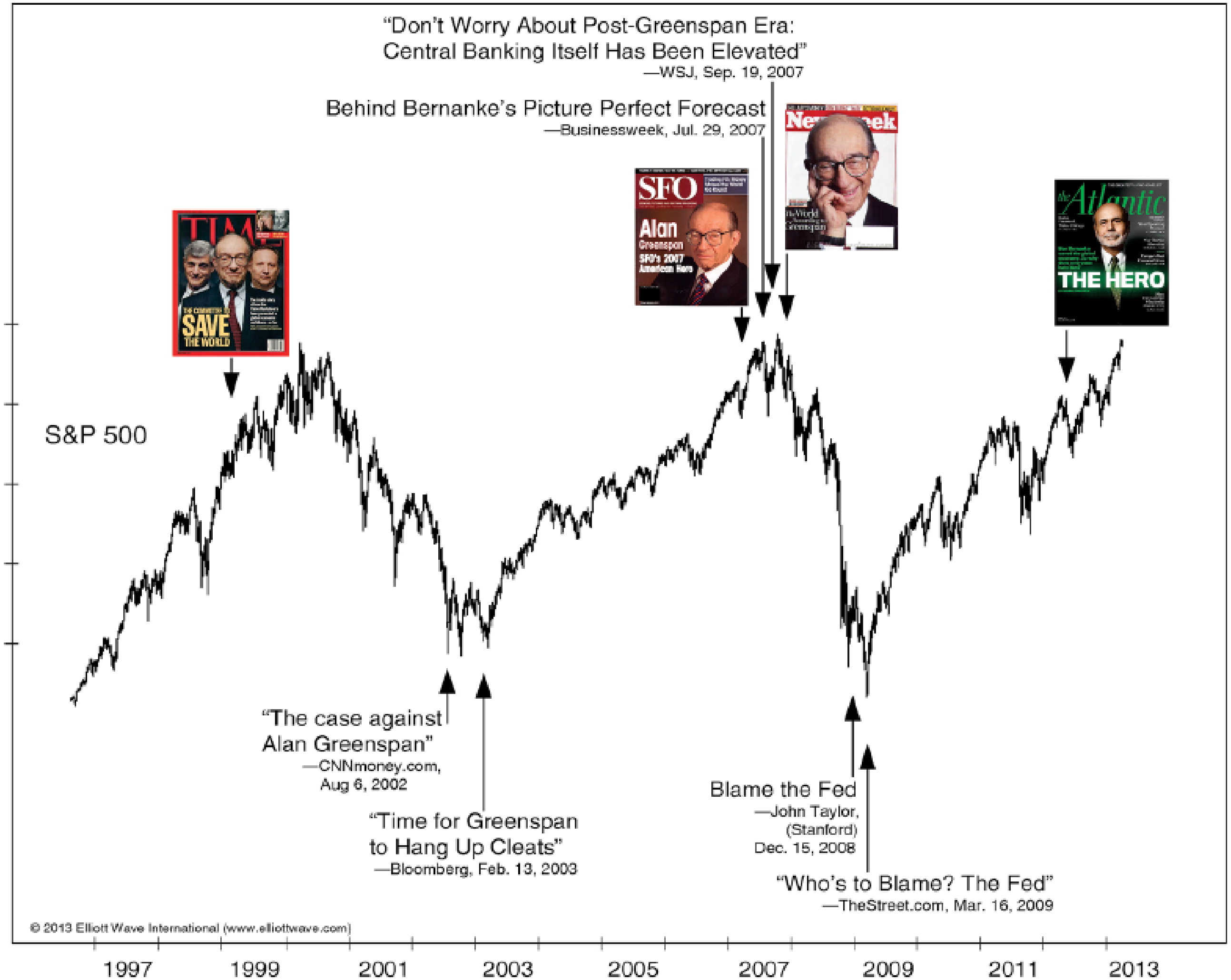
Date of first use: September 2013

RIS RC:

Defining volatility

The opportunity: The demand for downside protection and alternative risk premia strategies ebbs and flows



Market Environment

›Low growth concern
›Artificially low yields
›High asset correlation
›Weak hedge fund returns
›Income seeking
›Lowering volatility

Investor Response

›Exploring other asset classes
›Rethinking portfolio construction
›Reducing costs
›Utilizing alternative betas

The solution = finding downside protection one can live with!

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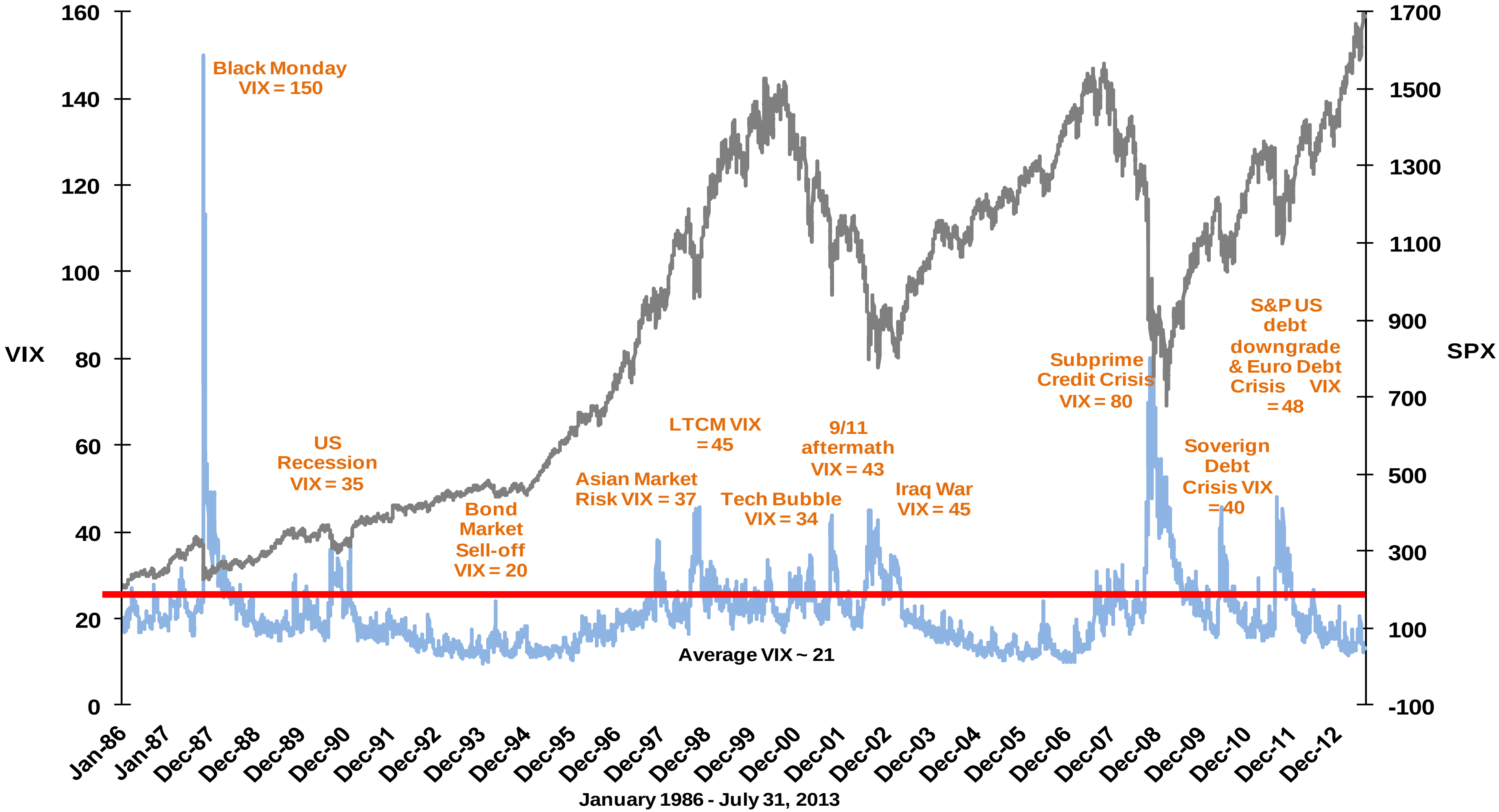
Correlation: Relationship of VIX Index versus S&P 500 Index Spot Price



Source: Bloomberg, Russell Investments. January 2, 1986 to July 31, 2013.
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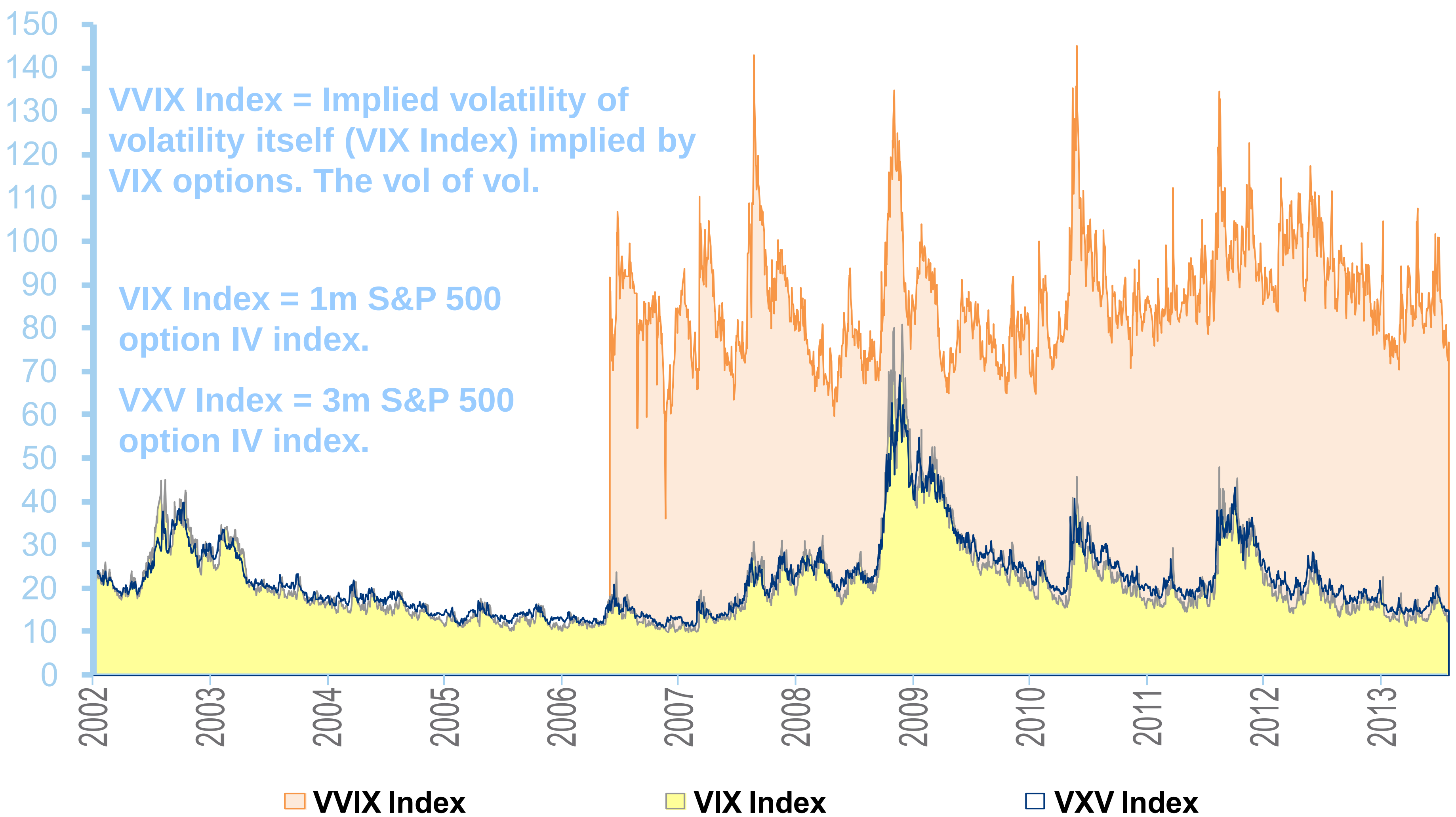
Russell Investments

Implied volatility: VIX, VXV, VVIX Indices



Source: Bloomberg, Russell Investments. January 2, 2002 to July 31, 2013.
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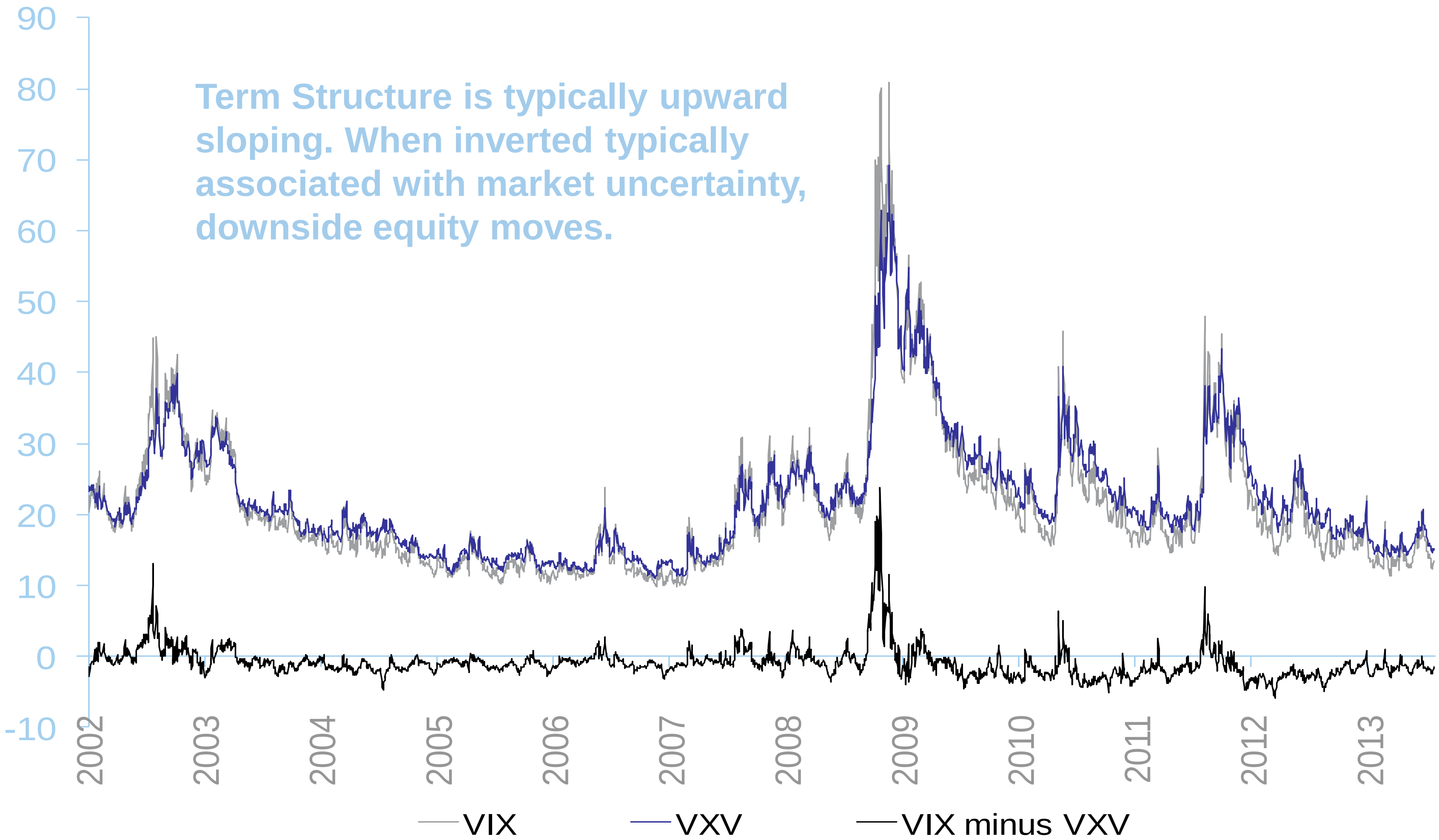
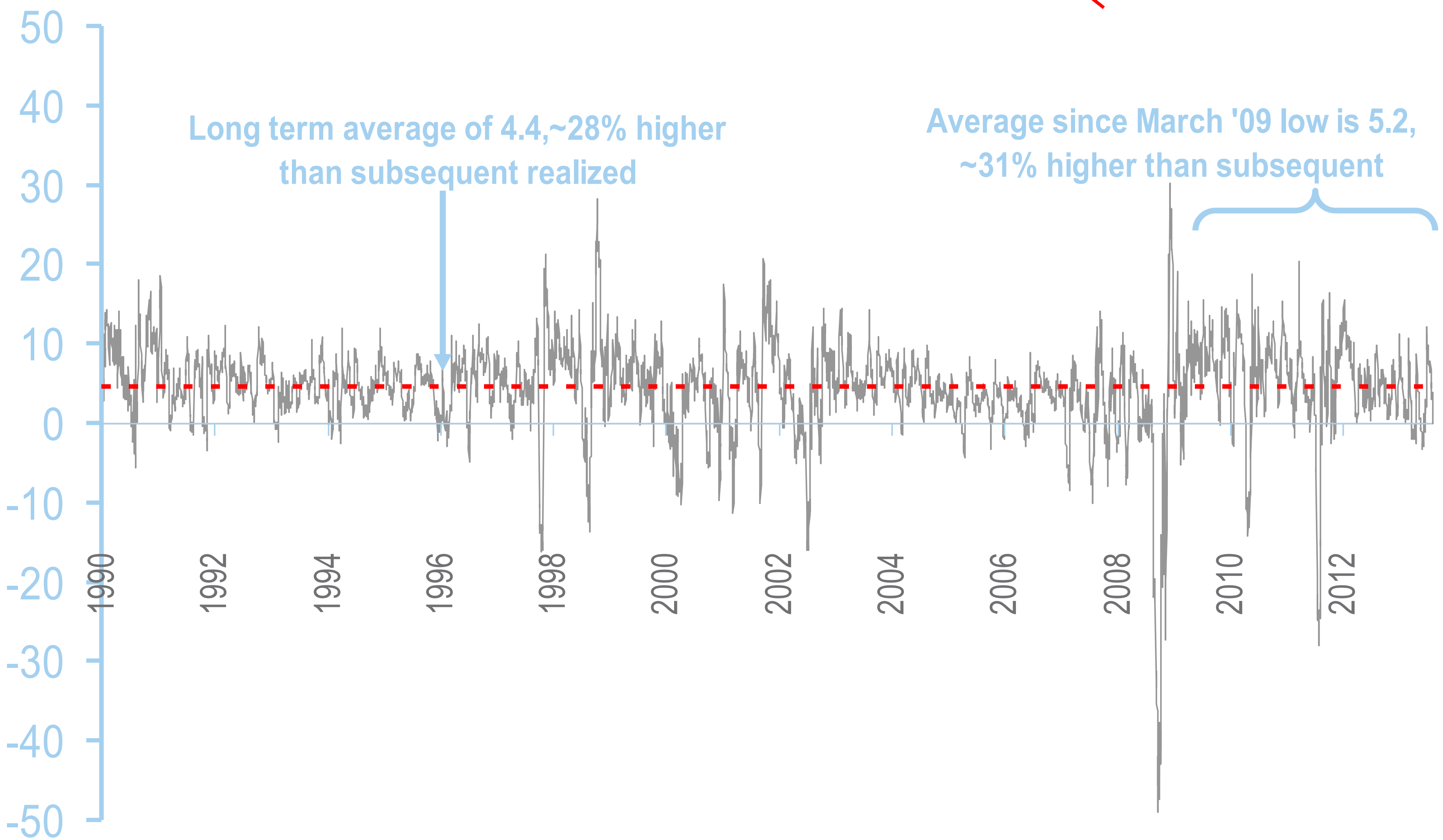
Implied volatility term structure: VIX versus VXV



Source: Bloomberg, Russell Investments. Indexes are unmanaged and cannot be invested in directly.
Data is historical and is not indicative of future results. January 2, 2002 to July 31, 2013.
Example shown for illustrative purposes only.

Implied to realized volatility: The crux



Source: Implied volatility represented by VIX = Chicago Board Options Exchange Market Volatility Index, Data as of July 31, 2013
Data is historical and is not indicative of future results.
Example shown for illustrative purposes only.

Volatility management framework

The landscape: Strategies for managing volatility

	Strategy	Primary Cost
Past	**Strategically de-risk** i.e. Hold less of the risky asset	Lower expected return
Past	**Diversify** e.g. Additional asset classes	Residual tail risk
Future	**Change the drivers of return sources** e.g. Defensive Equity, Low Volatility	Basis risk or tracking error
Future	**Change the shape of return distributions** e.g. Buy/Sell puts & calls, equity replacement	Premium paid or Forgone upside
Future	**Change the exposure based on risk regime** e.g. Volatility Responsive Asset Allocation	Timing allocation shifts

Although steps can be taken to reduce risk, it cannot be completely removed.

The framework: Strategic versus tactical

Evolution from passive to tactical overlays

"The approach to investing's fundamental problem, asset allocation, has to change. The thrust of my argument is that we are going to have to learn to live without the crutch of things like policy portfolios – because the conditions that justified their existence for so long have been shattered"
– Peter Bernstein

Strategy	Description
Tactical Hedging	Use derivatives to adjust portfolio risk › Futures overlay to de-risk › Option overlay strategies › Equity replacement strategies › Interest rate swaptions
Strategic Allocation	Change the equity & fixed income exposures › Alternative risk premiums › Volatility strategies › Call overwriting strategy › Unconstrained bond strategies

Strategy construction & techniques

CBOE Indices: Call & Put Write

- A powerful starting point for investors to turn idea into action
  - BXM-BXY-PUT Indices:
    - Long term published index histories
      - Necessary for those who desire to <u>model</u> transparent, published returns
    - <u>Benchmarking</u> commonly desired by institutional accounts, especially when adopting new strategies
    - Outside the scope of benchmarked strategies, a historical return stream can help model absolute return seeking, target return seeking strategies

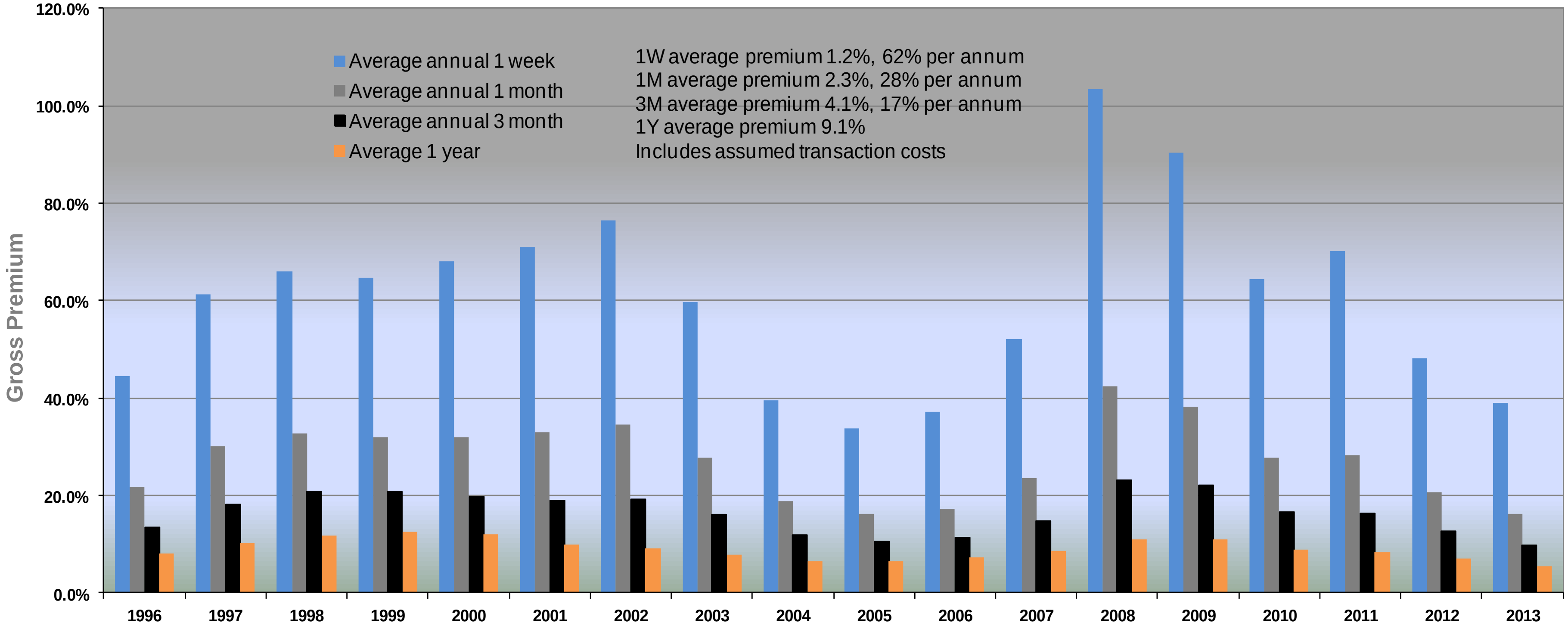
Strategy construction

- Efficient implementation
  - Tenor selection
    - Weekly, biweekly, monthly options
  - Strike selection
    - Efficient range of strikes for each tenor
  - Roll diversification
    - Overlapping maturity cycle

- Operational considerations
  - OTC versus Listed options
  - Frequency of trading

Tenor selection: Effect of IV on gross premiums

- All else equal, at-the-money options contain the most theta, time decay
- Short dated options receive more gross premium over time versus longer
- Short dated options create a discipline for adjusting to market and volatility environment. If held to expiration, must be rolled upon expiration.



Source: Russell Investments. Historical data provided by JP Morgan Research, daily data Jan 1996 to July 31, 2013 data annualized.
For illustrative purposes only. Data is historical and is not indicative of future results.

Strike selection

- Fixed moneyness strike selection vs. Fixed delta strike selection
  - Fixed “strike” = Defined by moneyness, variable delta
  - Fixed “delta” = Defined by delta, variable strike

- Dynamic strategies seek to adjust the strike methodology of the call based on a variety of measures including technical analysis, volatility environment and overall portfolio risk measures

	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	ITD
Annual Returns (%)																										**Cumulative**
SPTR	**6.3**	**31.7**	**-3.1**	**30.5**	**7.6**	**10.1**	**1.3**	**37.6**	**23.0**	**33.4**	**28.6**	**21.0**	**-9.1**	**-11.9**	**-22.1**	**28.7**	**10.9**	**4.9**	**15.8**	**5.5**	**-37.0**	**26.5**	**15.1**	**2.1**	**16.0**	769.25%
BXM	8.1	25.0	4.0	24.4	11.5	14.1	4.5	21.0	15.5	26.6	19.0	21.2	7.4	-10.9	-7.6	19.4	8.3	4.2	13.3	6.6	-28.7	25.9	5.9	5.7	5.2	734.26%
BXY	9.8	32.6	1.9	22.9	11.0	11.0	4.6	33.2	19.8	29.8	21.2	19.7	2.0	-11.4	-12.3	24.9	9.7	4.4	17.1	6.1	-31.2	32.1	9.8	7.2	10.2	969.95%
Outperformance (%)																										
BXM-SPTR	1.8	-6.7	**7.1**	**-6.1**	**3.9**	**4.0**	3.2	-16.6	-7.5	-6.7	-9.6	**0.2**	**16.5**	**1.0**	**14.5**	-9.3	-2.6	-0.7	-2.5	**1.1**	**8.3**	-0.6	-9.2	3.6	-10.8	-35%
BXY-SPTR	**3.5**	**0.9**	5.0	-7.5	3.4	0.9	**3.3**	**-4.4**	**-3.1**	**-3.6**	**-7.3**	-1.3	11.1	0.5	9.8	**-3.8**	**-1.2**	**-0.5**	**1.3**	0.6	5.8	**5.6**	**-5.2**	**5.1**	**-5.8**	201%

Source: Russell Investments, Bloomberg. Annual data January 1988 to December 2012.
Returns represent past performance, are not a guarantee of future performance,

Roll diversification

Non-overlapping option positions

Trade 100% of desired target notional every other period and roll upon expiration

Overlapping option positions

Overall smoothing effect to option greek profile
Operationally more complex
Reduces path dependency

Trade 50% of desired target notional each period and roll upon expiration

Strategy & operational considerations

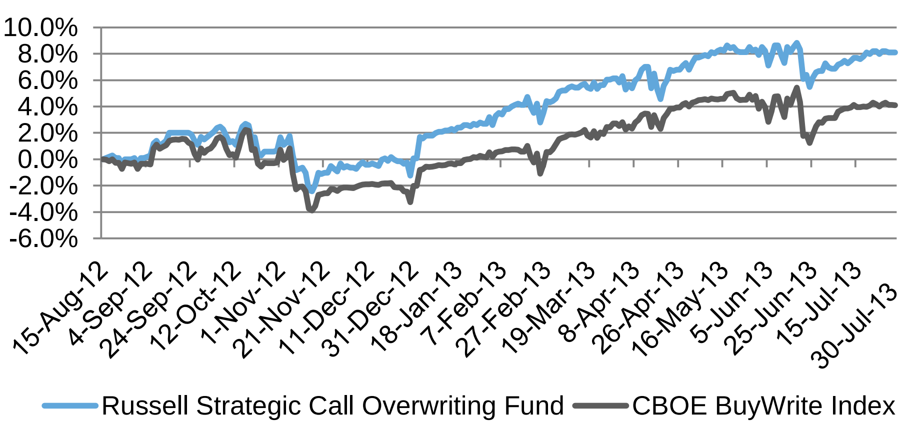
- Frequency of portfolio management and trading
- Availability of listed strikes and tenors versus OTC options
- Margin requirements for listed versus OTC
- Frequency of settlement
- Reporting requirements

Application: Overview ROWSX

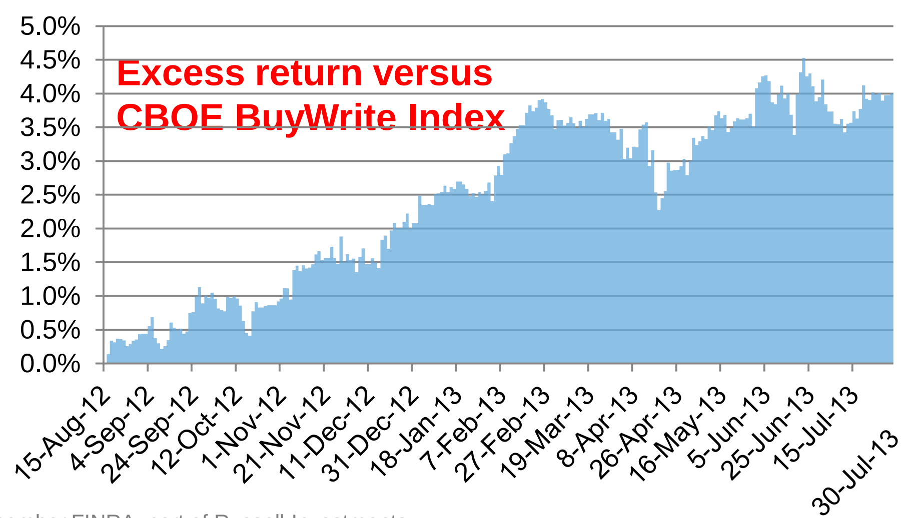
Performance	JULY 2013	YTD	ITD
Russell Strategic Call Overwriting Fund	1.30%	8.02%	8.09%
CBOE BuyWrite Index	1.30%	6.23%	4.09%
Difference	**+0.00%**	**+1.80%**	**+4.00%**

Inception-to-date (ITD)	Return	Risk	Return/Risk
Russell Strategic Call Overwriting Fund	8.09%	7.20%	1.1230
CBOE BuyWrite Index	*4.09%*	*7.37%*	*0.5549*
S&P 500 Index	*22.43%*	*11.44%*	*1.9607*

Performance (ITD)



Excess Return (ITD)



Inception date: 15-August 12. Data through 2013 to July 31, 2013.
Fund performance data is net of fees, 98bps S share class.
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