Portfolio Hedging Strategies

Alessandro Esposito

BlueBay Asset Management

RBC Global Asset Management

CBOE

Optimising Portfolio Hedging Strategies

- The case for Consistent Hedging
- Optimizing Hedging Strategies
- Sizing initial trades and managing positions over time
- Cross Asset Hedging
- Conclusions

The Case for Consistent Hedging

Hedging adds convexity to your portfolio

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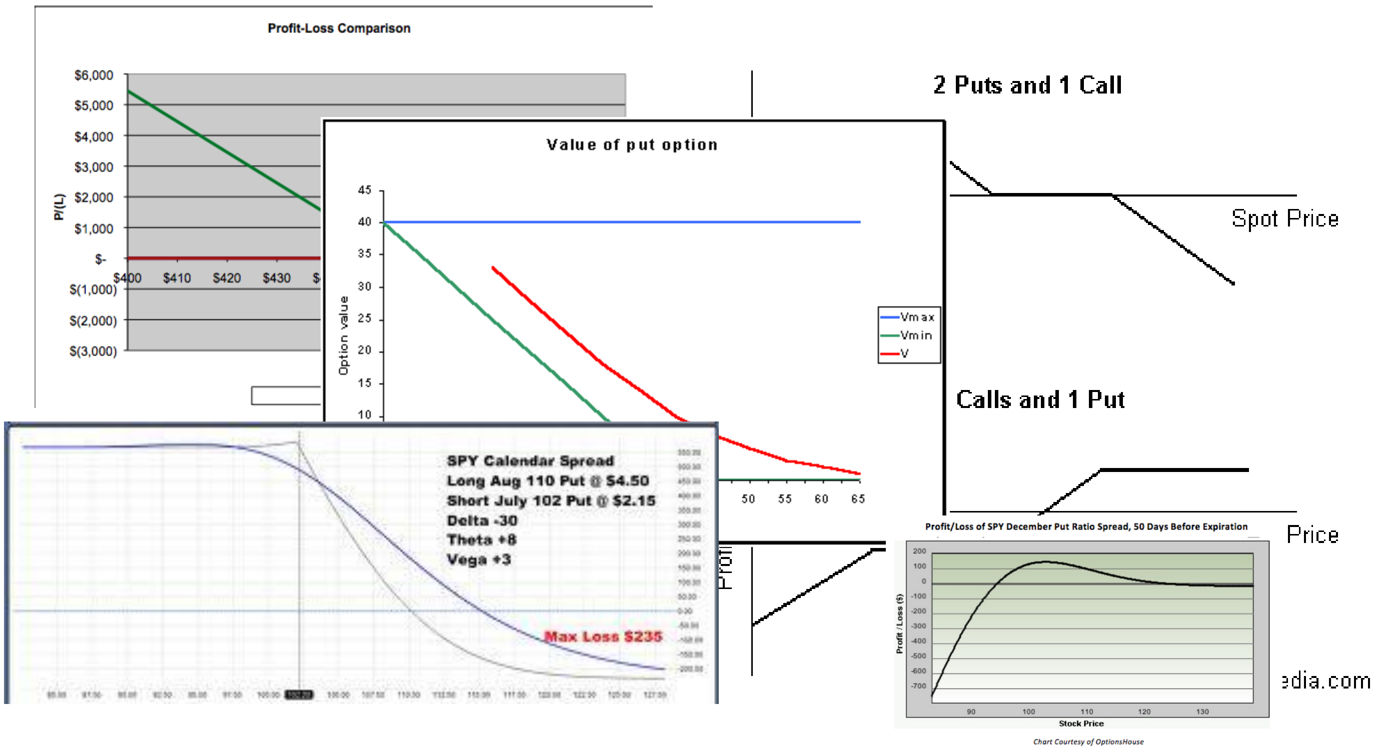
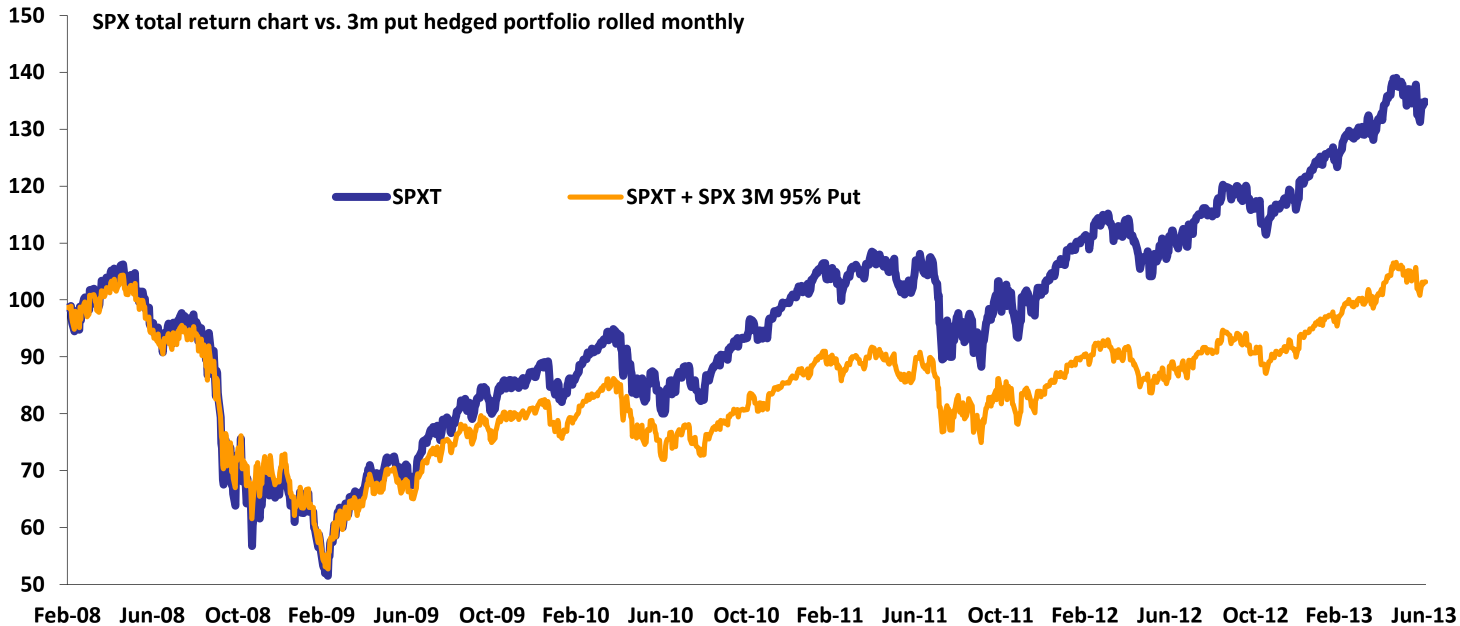


Mitigating the effect of adverse market moves justifies hedging across strategies

The Case for Consistent Hedging

Buying puts simply won't do the trick



Source: Bloomberg, Bank of America Merrill Lynch

Buying puts simply won't do the trick

Consistent hedging requires a more structured approach

The Case for Consistent Hedging

Hedging issues are multi-dimensional

- **The Term** the **period** over which one wishes to be protected
- **The Strike** the **level** from which one wishes to be protected
- **Ranges** the **structure** with which one wishes to be protected
- **The Premium** the optimal **size** of the hedge(s) versus the size of the portfolio
- **The Frequency** how **often** do you re-strike?

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Optimising Hedging Strategies

The avoidance of market timing risk

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COMPLEXITY

Straight Puts | **Put Spreads** | **Calendars** | **Collars**

PREDICTABILITY

The complexity of the payout increases the predictability of the hedged strategy

Optimising Portfolio Hedging Strategies

In order to optimise portfolio hedging strategies, we need to be able to compare them :

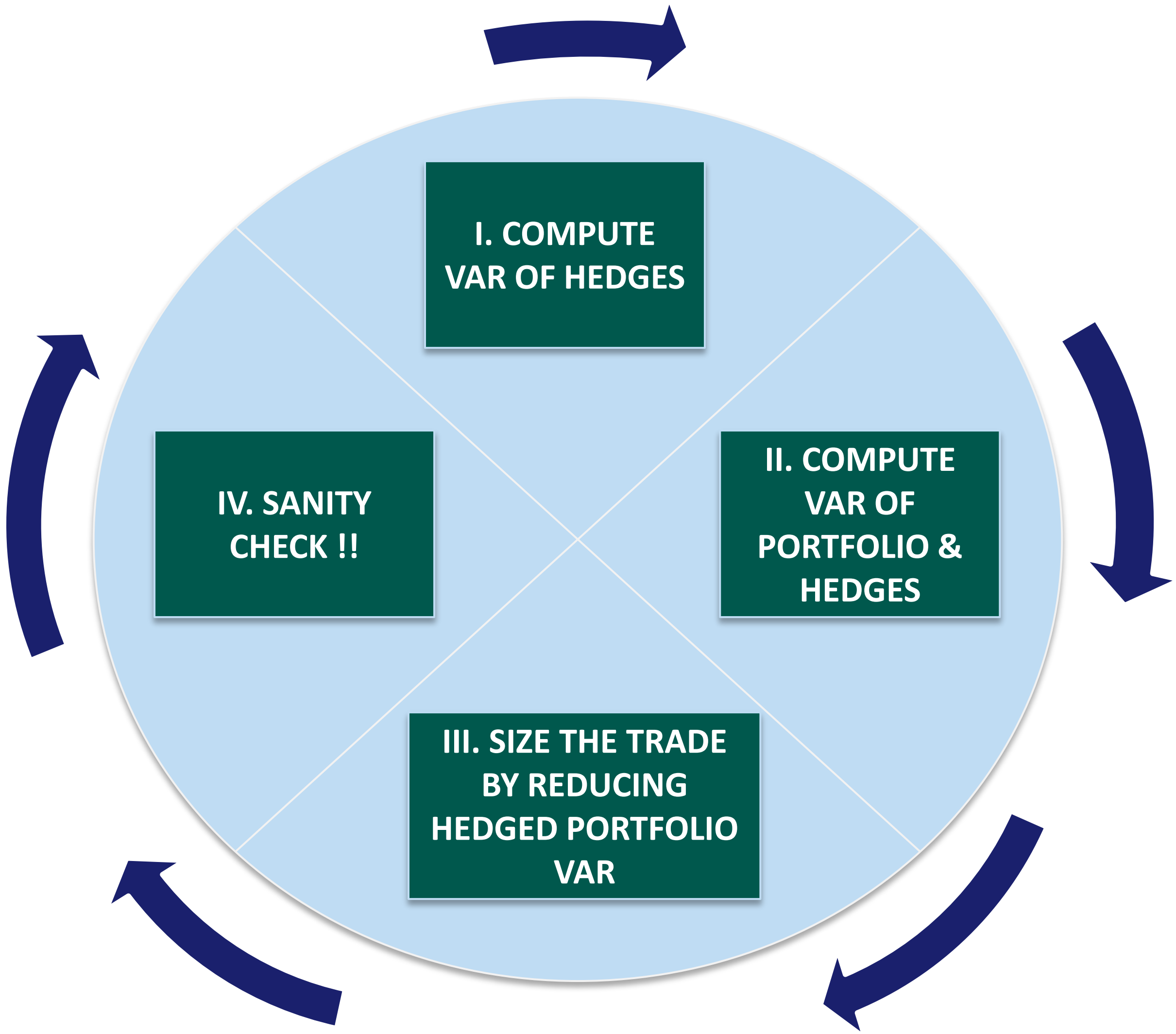
Q : How do you compare different strategies ?

A : Look at their volatility

By evaluating the VaR of the hedged portfolio we are able to size different strategies by evaluating their impact on the risk of the portfolio

Optimising Portfolio Hedging Strategies

Sizing initial trades requires a four step process



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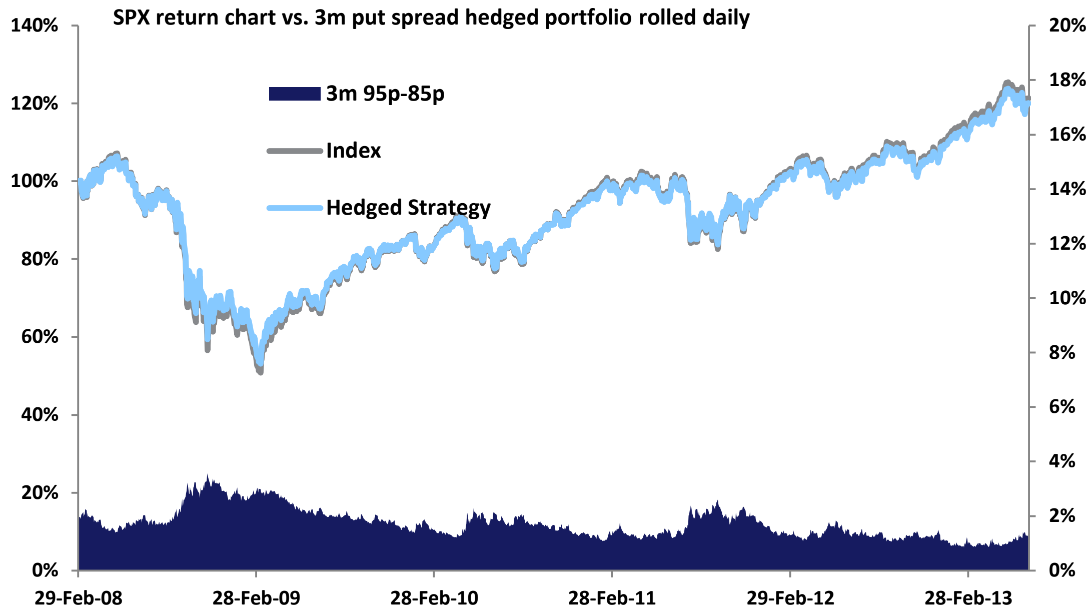
Sizing Initial Trades and Managing Positions Over Time

Using the S&P 500 as our proxy portfolio we target a 10% risk reduction via a 3m 95%/85% put spread



Source: Bloomberg, Bank of America Merrill Lynch, Bluebay

- **Sizing the put spread to 118% of its notional VaR goes from 0.42 to 0.38.**
- **The Sharpe ratio improves from 0.13 to 0.15**
- **The high correlation between the portfolio and the hedged strategy indicates the ability to include hedging as part of portfolio management**

Sizing Initial Trades and Managing Positions Over Time

VaR Equivalent Hedging Strategies

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Sharpe Ratio and Notional Hedge Ratio of SPX portfolio hedged with different strategies

	SPX	1m95p	3m95p	12m90p	1m95-85ps	3m 95-85ps	1m95p-12m90p
Sharpe Ratio	0.134	0.16	0.16	0.15	0.15	0.15	
Multiplier		0.55	0.40	0.33	1.14	1.18	VaR can't be improved

Source: Bloomberg, Bank of America Merrill Lynch, Bluebay

- **Hedge ratios diminish with longer time horizons for single put trades**
- **Long Calendar put spreads additive to risk**

Sizing Initial Trades and Managing Positions Over Time

Impact of Re-Hedging over time

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Readily available data demonstrate the impracticality of rolling hedges daily
We compare daily vs. monthly rolls

Notional Hedge Ratio of SPX portfolio hedged with different strategies, Daily vs. Monthly Roll

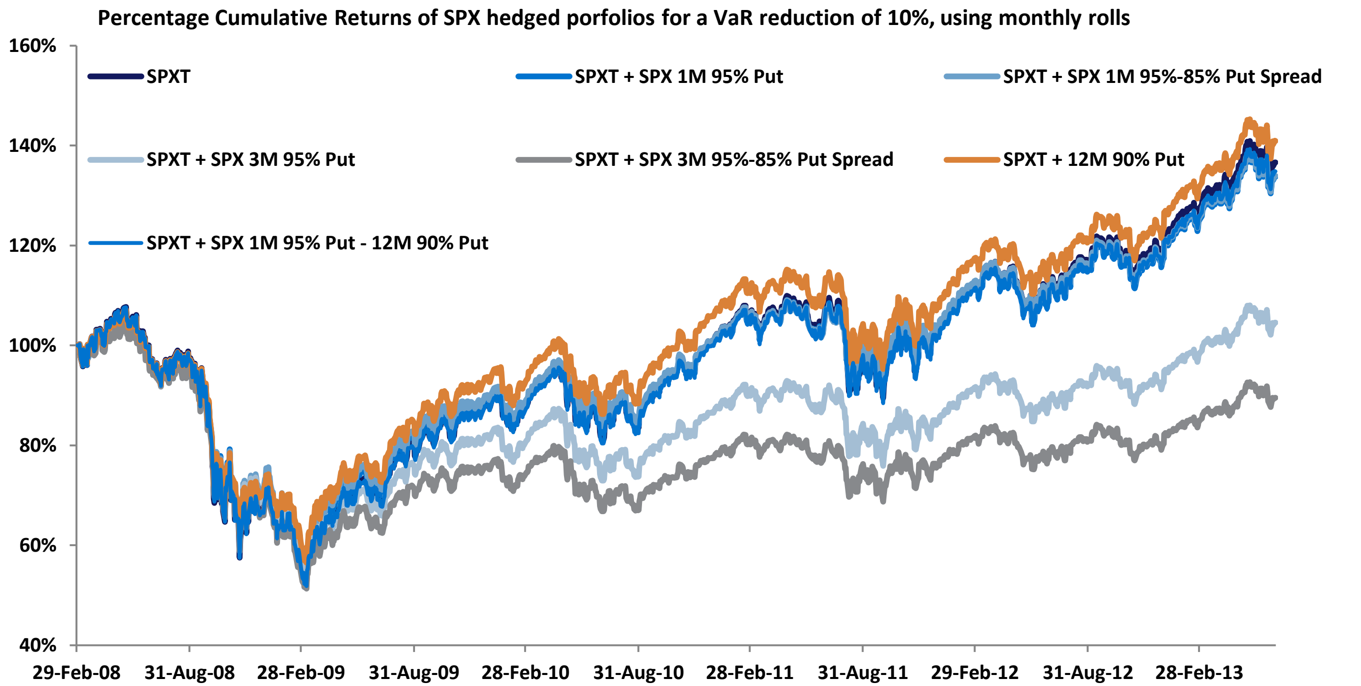
	1m95p	3m95p	12m90p	1m95-85ps	3m 95-85ps
Hedge Ratio Monthly Rolls	0.20	0.20	0.15	0.40	0.50
Hedge Ratio Daily Rolls	0.55	0.40	0.33	1.14	1.18

Source: Bloomberg, Bank of America Merrill Lynch, Bluebay

- **Lower frequency dramatically reduces the hedge ratios**
- **For shorter maturities, option strategies can be additive to VaR**

Sizing Initial Trades and Managing Positions Over Time

Re-hedging frequency and the impact on returns



Source: Bloomberg, Bank of America Merrill Lynch

- **Lower frequency dramatically differentiates returns among strategies**

Sizing Initial Trades and Managing Positions Over Time

Can hedging become an integral part of your investment process ?

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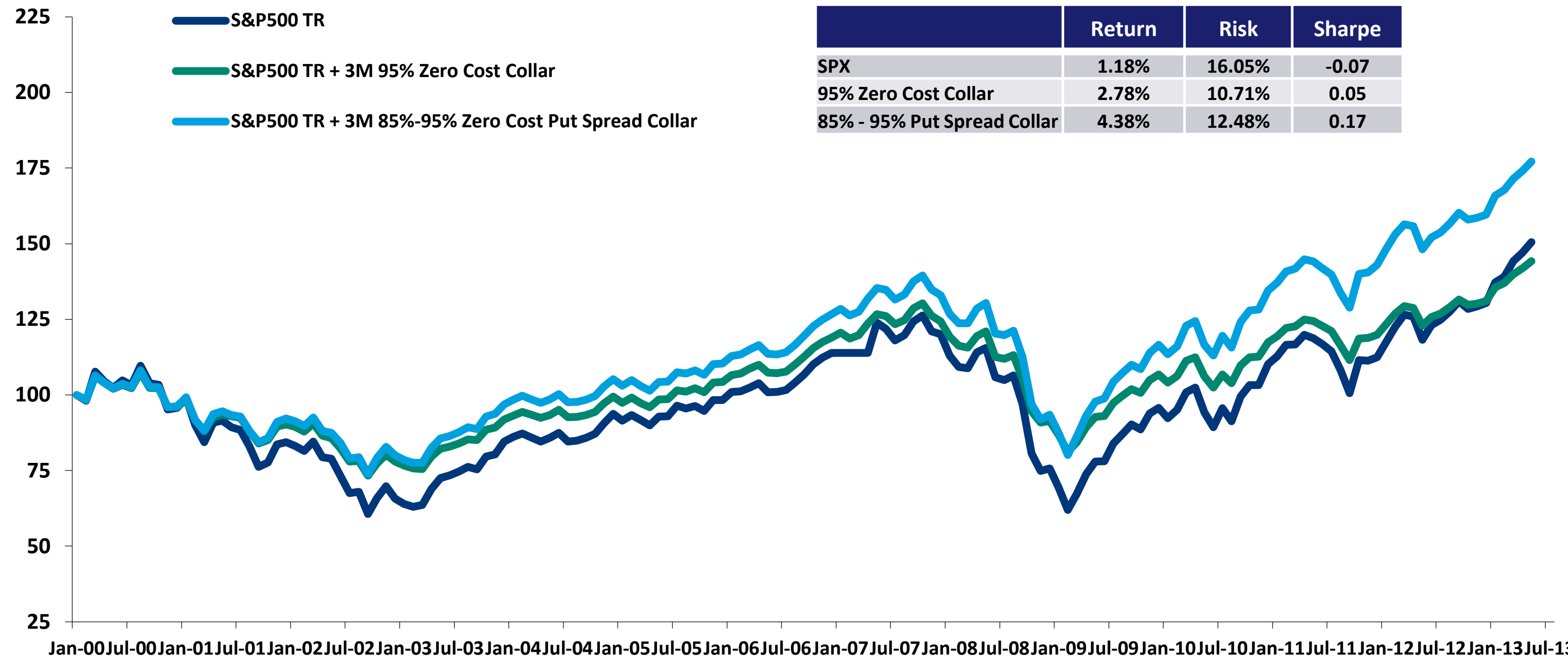
Percentage Cumulative Returns of SPX hedged portfolio using zero cost risk reversals



	Return	Risk	Sharpe
SPX	1.18%	16.05%	-0.07
95% Zero Cost Collar	2.78%	10.71%	0.05
85% - 95% Put Spread Collar	4.38%	12.48%	0.17

Source: Bloomberg, Bank of America Merrill Lynch

Zero Cost Collars can be used to improve Sharpe ratios and returns
Hedging becomes part of the investment process

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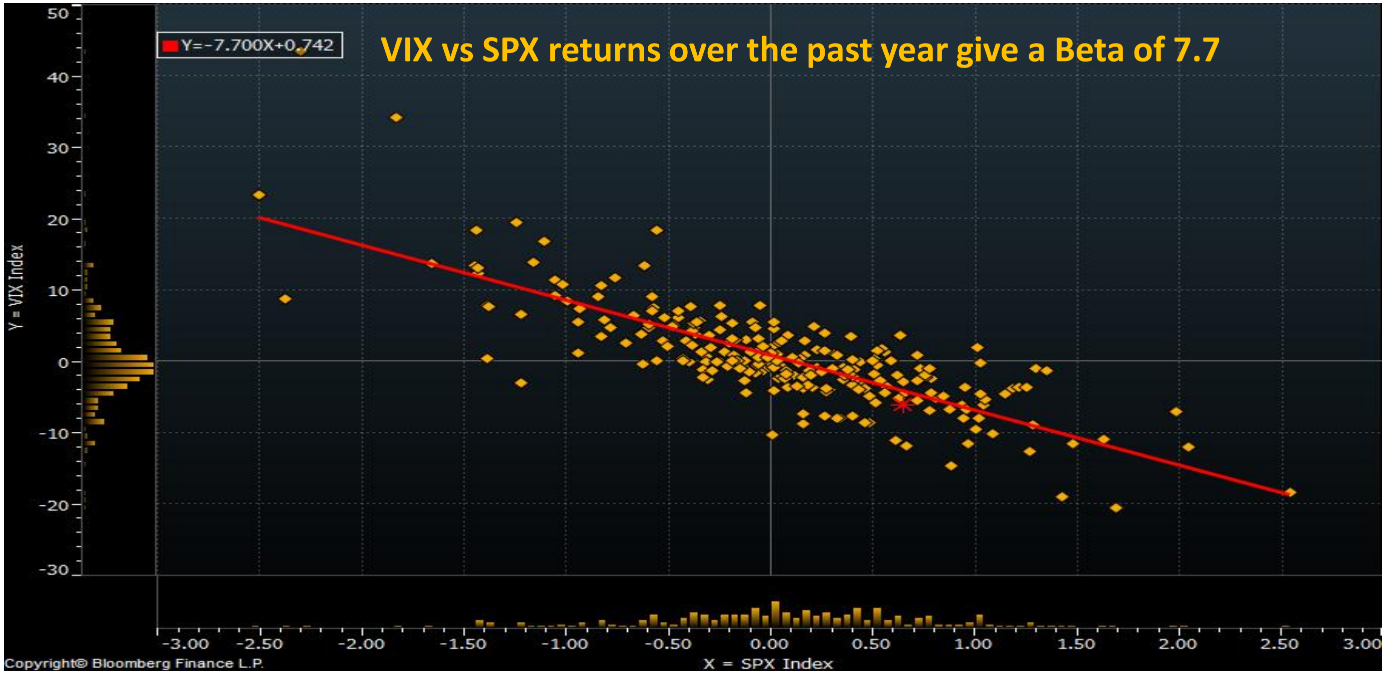
Cross Asset Hedging

For cross asset hedging regression analysis is used to compare the variables

Vix Linear regression regression on SPX returns

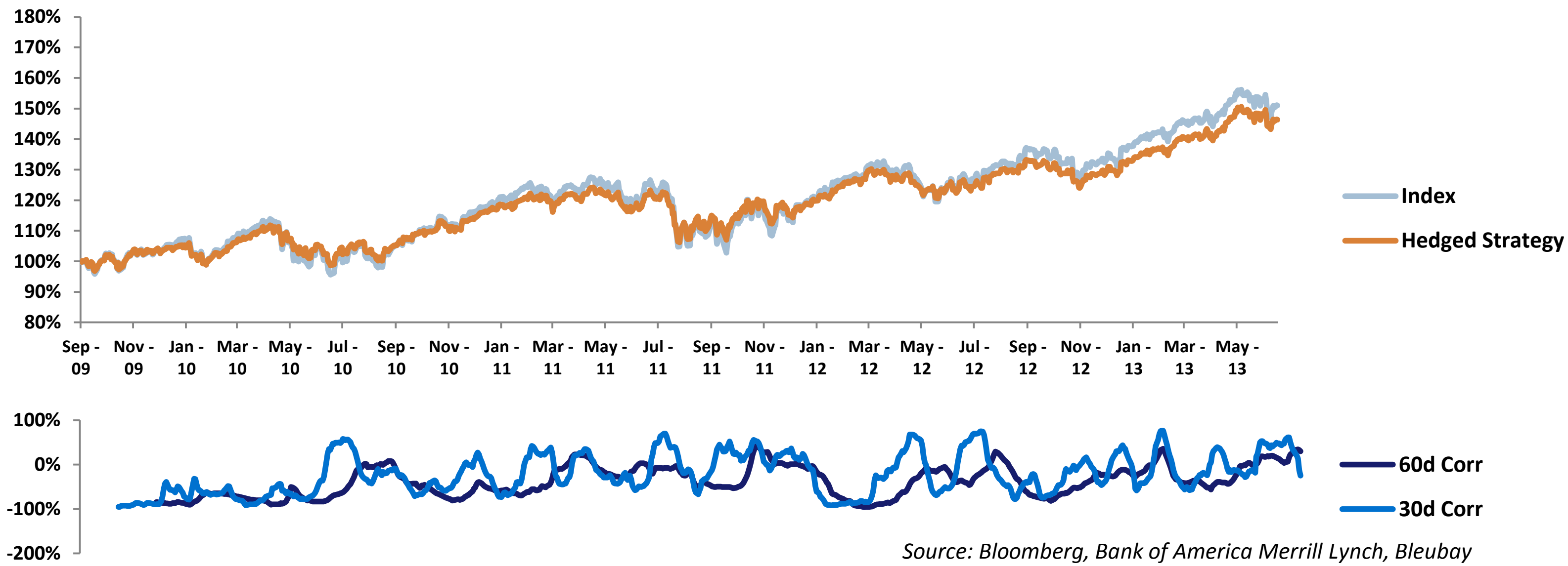


Source: Bloomberg

This is not a stable relationship over time
Rolling correlations need to be monitored

Cross Asset Hedging

Using a 2m 100/150% call spread on the VIX we obtain a hedge ratio of 51% using a Beta of 7.7
The Sharpe ratio moves from 0.65 to 0.78



Source: Bloomberg, Bank of America Merrill Lynch, Bleubay

- **Cross asset hedging can be used in a systematic manner to improve the Sharpe ratio**
- **Changes in correlation across variables make comparisons across hedging strategies more complex**

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CONCLUSIONS

- **Hedging can become an integral part of the investment process**
- **VaR methodologies can be used to compare hedges, including cross asset hedges**
- **Frequency of re-hedging is a key factor sizing and comparing trades**
- **Systematic hedging requires more complex payoff**
- **Correlation changes affect cross asset hedges**

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