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Managing Tail Risks – A Manager’s Views

CBOE Risk Management Conference Europe, Geneva

30 September 2015

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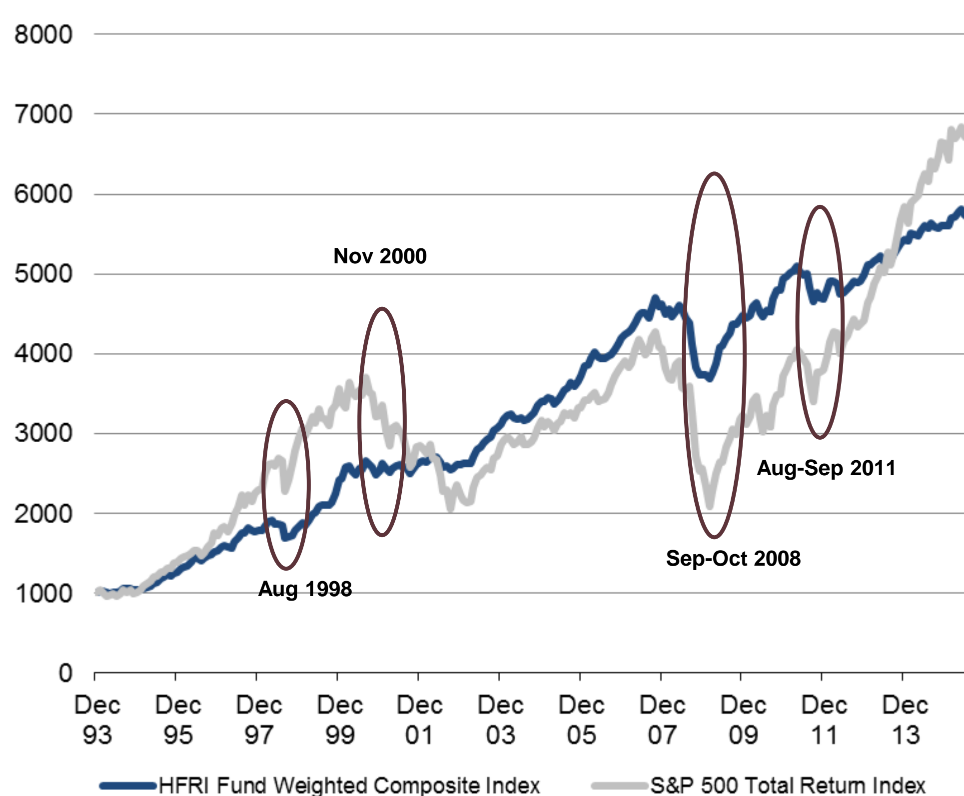
What is your tail risk?

1 January 1994 to 31 August 2015



Large variety of tail events

- Specific to portfolio and objective of the investment
- Example around hedge funds and equity markets

Hedge funds and equity markets are affected by tail events

- Rapid equity market correction
- Decline of liquidity, making consensus positions difficult to sell
- Flight to quality

Such tail events are characterised by a significant increase in volatility

- Variable length and depth of the crisis
- Large market crashes as in September-October 2008

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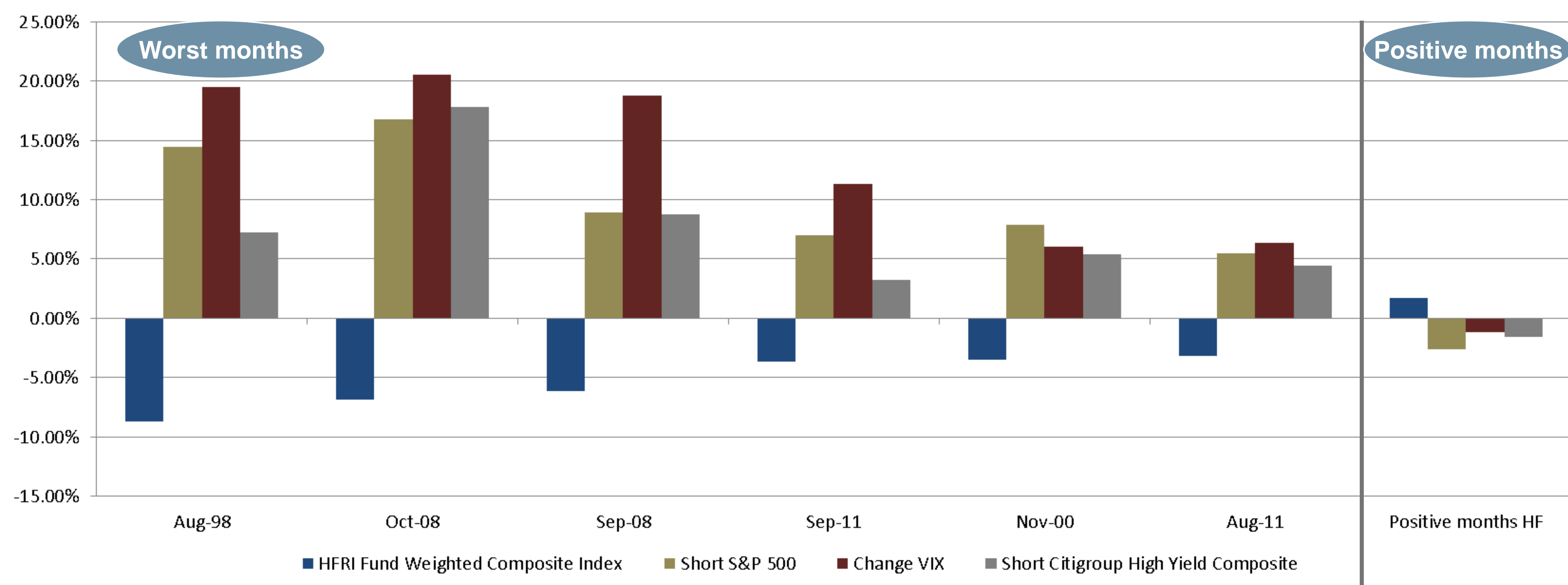
Note that HFRI data are subject to change within the last 4 months. Past performance is not a reliable indicator of future results.
Source: Man Group database and Bloomberg. Time period: January 1994 – August 2015.

Which instrument?



Volatility offers the best hedging ability

- Significant increase of VIX when hedge funds experience biggest losses
- Credit could also be suitable for hedging fat tail risk in hedge fund performance
- Equity protection costly in normal periods

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Time period: January 1994 – August 2015. Note that HFRI data are subject to change within the last 4 months. Past performance is not a reliable indicator of future results.
Source: Man Group database and Bloomberg.

Key principles when designing a tail risk solution

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Tail events are hard to predict:

- Strategies that are always 'long tail protection' should protect the portfolio
- Tail events often provide signs in short-term market movements ***before*** they occur

Long-only volatility strategy:

- Ad-hoc 'net-long ' positions may not be long during market crises!
- Shorting volatility is re-introducing tail risk through the back door!

Active versus passive:

- Volatility is mean-reverting
- Need to control and manage the 'carry' inherent in tail-risk protection strategies

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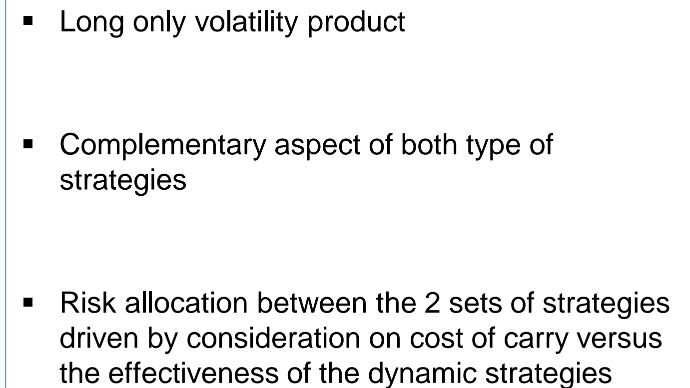
Designing a tail risk solution

1. Dynamic strategies

- Indicators to detect potential short term market instabilities
- No cost of carry
- May miss a volatility spike (analysing probability of missing versus false positive)

2. Cost oriented strategies

- Objective: systematic investment in volatility instrument resulting in cost of carry
- Exposure determined based on cost analysis of the position
- Need an active profit taking in volatility spikes reducing exposure to the minimum



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How can I trade volatility?

A quick overview of some volatility instruments

	Volatility type	Complexity	Markets	Key advantage	Main Drawback
Index Options	Implied vs realised	Higher than one might think	Large choice	Liquid, transparent	View on strike/ delta hedging process
VIX Futures	Implied vs Implied	Low - pure vol instrument	Limited markets and maturities	Liquid, transparent	No convexity
VIX Options	Implied vs Implied	High - need a view on vol of vol	Limited markets and maturities	Liquid, transparent	No convexity, cost of vol of vol
Variance swaps	Implied vs realised	Low - pure vol instrument	Medium choice	Self monetisation, convexity	OTC trading
Forward Starting Variance Swaps	Implied vs Implied	Low - pure vol instrument	Medium choice	Choice of maturities, convexity	OTC trading, wider bid-offer in crisis periods

Besides advantage and disavantage, the choice of the instrument is linked with the design of the strategy

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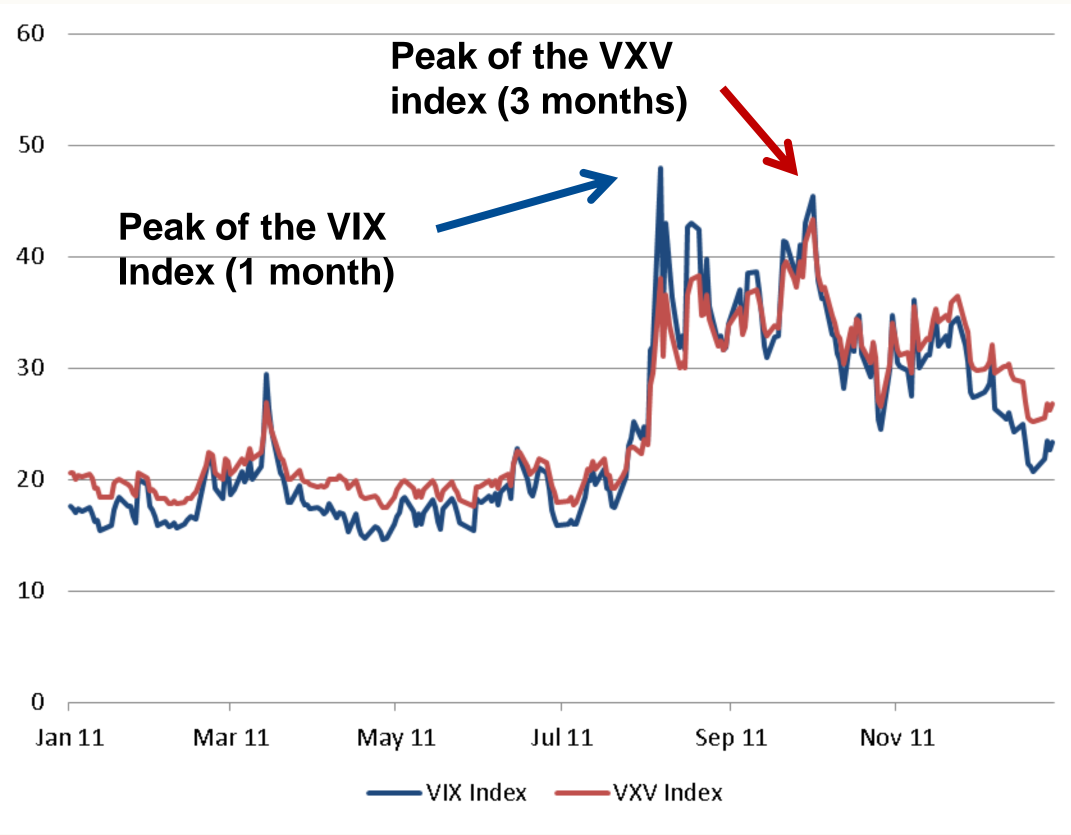
Too much focus on the VIX index --- what about longer term volatility?

1 month volatility versus 3 month volatility



During crisis periods, longer term volatility usually takes more time to reach peak

- Happens across volatility spikes
- And across markets

Diversifying contract maturities is helpful to produce returns at various points of the volatility spike

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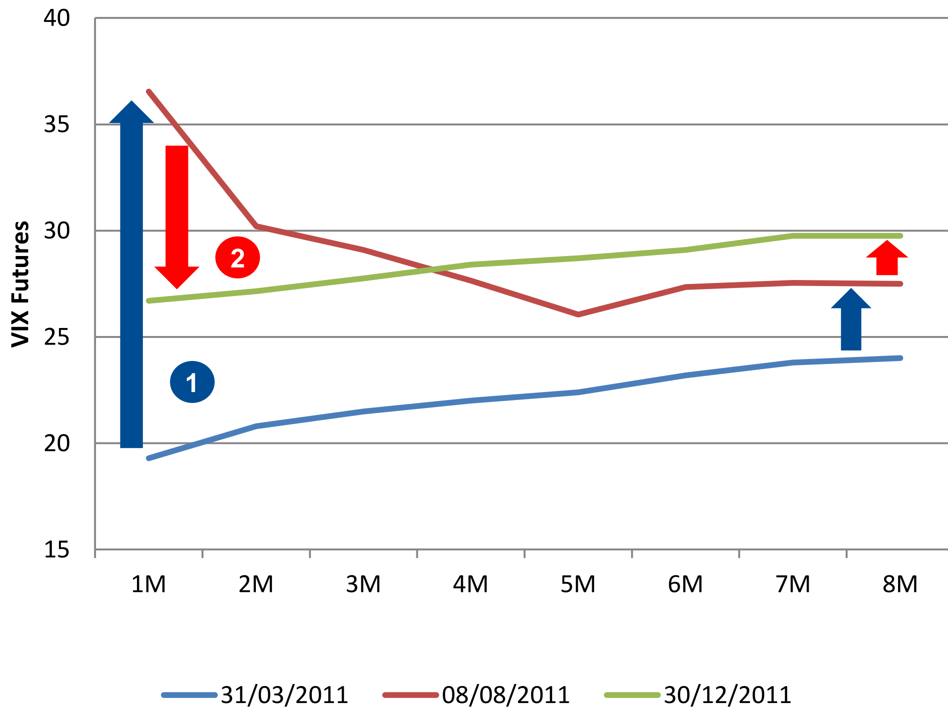
Date range: 1 Jan 2011 to 31 December 2011.

Source: Man Group database and Bloomberg.

Too much focus on the VIX index --- what about longer term volatility?

Effect on VIX futures



Dynamic of the VIX futures term structure in 2011

- In crisis periods, increase of levels and inversion of the curve (stronger on the front end) --- 1
- In the relaxation phase the curve moves back in contango but the levels on the longer end may continue to increase --- 2

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Date range: 1 Jan 2011 to 31 December 2011.

Source: Man Group database and Bloomberg.

Active versus passive solution

Jan 2006 -Aug 2015	Active tail risk solution	Passive VIX futures	
		Short term	Medium term
Cost efficiency	1.34	0.72	0.87
Hedge effectiveness	0.81	0.69	0.66

Evaluation of solution through

- Their cost efficiency (sum of the positive months divided by the sum of the negative months)
- Their hedge effectiveness (correlation with the portfolio to protect when it produces negative returns)

Passive solution are too costly

- Hedge effectiveness related to HFRI FoF index is good but not as good as for the active tail risk solution

Objective of the tail risk solution

- Maximise the cost efficiency without reducing the hedge effectiveness

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Time period: January 2006 – August 2015.
Passive VIX Futures short term is represented by the S&P VIX Futures Short Term index (SPVXSTR); Passive VIX Futures medium term by the S&P VIX Futures Mid Term index (SPVXMTR)
There is no guarantee of trading performance and past performance is no indication of current or future performance/results.
Source: Man Group database and Bloomberg.