



Economic Policy Uncertainty Could Be Turning a Corner: Vol Next?

DB's weekly snapshot of volatility and option strategy pricing

Might US elections signal the end of the high policy uncertainty regime?

A key byproduct of the financial crisis has been protracted and high-profile debate over key economic policies. An interesting new index, the US Economic Policy Uncertainty Index, gives us the ability to track economic policy uncertainty and then connect it with option market metrics. Over a several-year horizon there does seem to be a strong relationship between this index and 2Y SPX variance. If economic policy uncertainty does break out of its high uncertainty regime – including clarity about plans for the fiscal cliff, health care reform, and taxes - we believe that there could be considerable downside to medium-dated implied vol over a several-month time horizon. **We suggest selling Dec-14 SPX variance at ~26%.**

Buy SPX 09-Nov weekly straddles and unwind before elections

We suggest investors buy the 09-Nov 1415-strike weekly straddles for ~\$42 (3% of spot and ~17 implied vol) and unwinding before Election Day. These "Election straddles" are trading at higher vol than the straddles expiring a week before and after and imply a ~2% move on the outcome of the elections. The straddles should continue to maintain a bid to vol due to the uncertainty surrounding the event and give investors a way to get cheap gamma over the next two weeks.

Dashboard observations

- European indices have been realizing more than their current implied vols. SX5E 3M ATM implied vols are higher than both 3M and 1M realized vols. Also, the SX5E is carrying well against other indices – the 3M realized vol spreads are higher than the corresponding implied spreads for all long SX5E pairs. **We suggest buying the SX5E-NDX 3M vol spread for ~2 vol points.**
- The Nikkei now has a negative (-0.3) 6M, 100-110% skew, which even in the context of exceptionally flat Nikkei skew is remarkable – in effect the Nikkei curve has turned much more into a smile in recent weeks.

Risks

The short forward variance position will lose money on a mark-to-market basis if implied volatilities increase. The Nov weekly straddles will lose money if spot is near strike on unwind date. If delta-hedged, the straddles will lose money if the underlying trades with very little volatility.

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Might US elections signal the end of the high economic policy uncertainty regime?

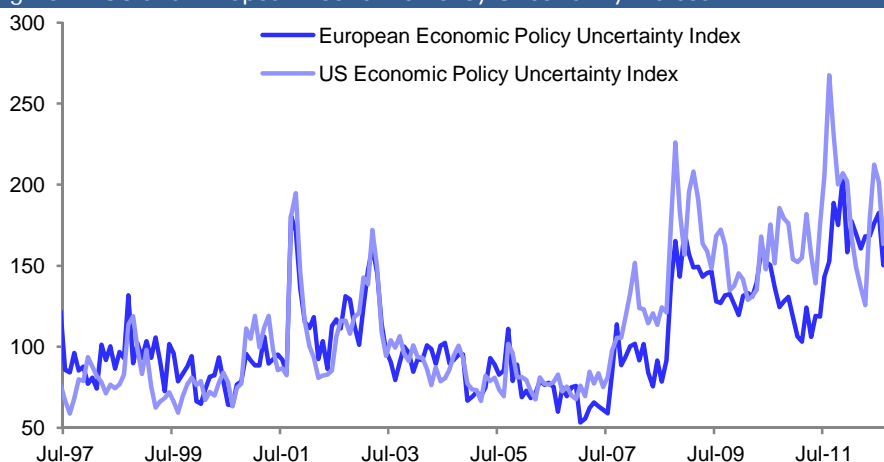
A key byproduct of the financial crisis has been protracted and high-profile debate over key economic policies. Recently, this has primarily surrounded the European debt crisis and the US fiscal cliff and debt ceiling concerns, but also includes debate over such other policies as healthcare and financial services regulation. The recent increase in focus on this economic policy uncertainty leaves us with little doubt that it plays a role in economic growth - and more relevantly for us, the equity volatility market.

We may now be past the peak in economic policy uncertainty

In his recent "Policy Uncertainty - The Financial World's Dominator,"¹ DB's head of Asia Equity Strategy Ajay Kapur argues that we have probably now seen the peak in policy uncertainty. He explains that as we progress through this period of deleveraging, regulators start seeing evidence of what works, and as a result "the menu of successful policy options will likely shrink - there should be less uncertainty about the 'right' policy course." He also notes that, while locally in Europe there remain clear disagreements, the ECB itself has now made its ongoing policy clear. Specifically in the US, he shows that political polarization in the US congress (proxied by how often Democrats and Republicans vote on party lines) is at a 130-year peak, and suggests that there may be some mean reversion. A new index of economic policy uncertainty, which we describe below, shows that we are definitively in a high policy uncertainty regime - but we wonder if we may be ready to break out of it:

Regulators may be facing a shrinking set of viable policy options - which ultimately reduces uncertainty

Figure 1: US and European Economic Policy Uncertainty Indices



Source: Deutsche Bank, policyuncertainty.com

Policy uncertainty matters - to business, to the Fed, and to markets

From a market perspective, policy uncertainty around the European debt situation, and the US debt ceiling clearly contributed to the mid-year sell-offs each of the last three years. We have also seen a couple of Fed leaders mention economic policy uncertainty in recent speeches. Bernanke's high-profile Jackson Hole speech noted that "uncertainties about fiscal policy, notably about the resolution of the so-called fiscal cliff and the lifting of the debt ceiling, are probably also restraining activity, although the magnitudes of these effects are hard to judge," and cited the Baker, Bloom, and Davis (2012) paper we mention below.² Dallas Fed president Richard Fisher also gave

¹ The Investigator: Policy Uncertainty - The Financial World's Dominator, 17-Oct-2012, contact: ajay.kapur@db.com

² Monetary Policy since the Onset of the Crisis, speech given by Ben Bernanke on 31-Aug-2012



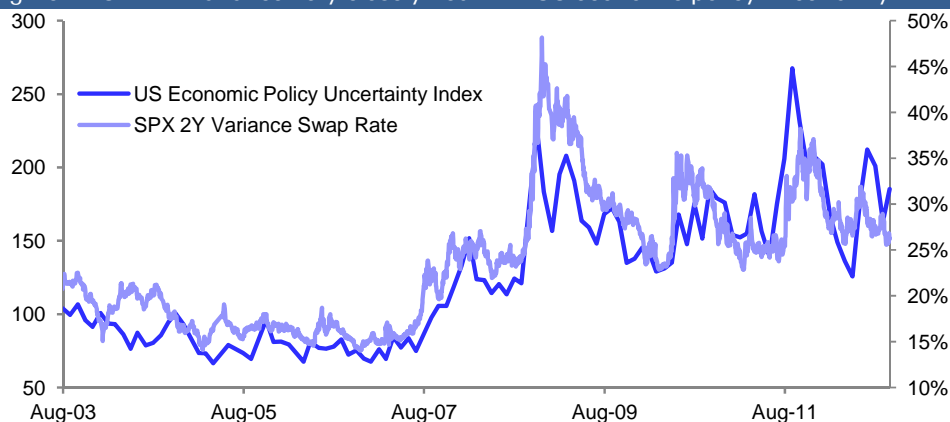
considerable attention to economic policy uncertainty and its impact on business in his recent speech at the Harvard Club of New York City:³

The responses of those I surveyed are best summarized by the comments of one of the most highly respected CEOs in the country: "We are in 'stall mode,' stuck like Velcro, until the fog of uncertainty surrounding fiscal policy and the debacle in Europe lifts. In the meantime, anything further monetary accommodation induces in the form of cheaper capital will go to buying back our stock." This is not an insignificant sounding, coming as it did from the CEO of a company that has the capacity to spend upward of \$15 billion on capex.

US economic policy uncertainty is very closely tied to SPX implied volatility

That policy uncertainty can drive equity volatility is no surprise: the European debt crisis and the US debt ceiling have been key catalysts for equity markets over the past two years. An interesting new index, the US Economic Policy Uncertainty Index, gives us the ability to track economic policy uncertainty and then connect it with option market metrics. The index, as described by Baker, Bloom, and Davis in a thorough paper,⁴ gauges the level of economic policy uncertainty in the US using measures of news coverage of policy-related economic uncertainty, the quantity of upcoming tax code provision expirations, and disagreement among economic forecasters. As we show in Figure 2, over a several year horizon there does seem to be a strong relationship between economic policy uncertainty and SPX implied volatility – which we measure using 2Y variance swap levels, reflecting the long duration of policy changes:

Figure 2: SPX 2Y variance very closely tied with US economic policy uncertainty



Source: Deutsche Bank, policyuncertainty.com

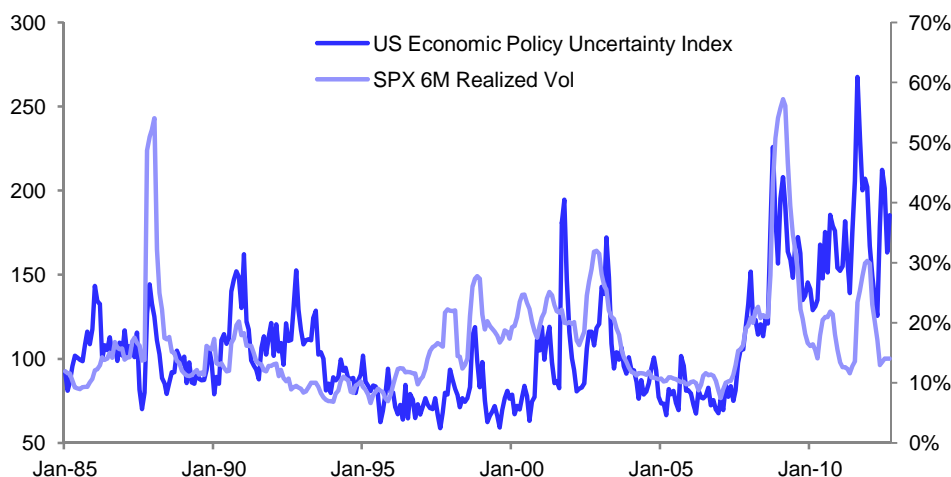
Going back even farther, we can see a strong relationship between SPX realized volatility and US economic policy uncertainty over the index's full 27-year history:

³ Comments to the Harvard Club of New York City on Monetary Policy (With Reference to Tommy Tune, Nicole Parent, the FOMC, Velcro, Drunken Sailors and Congress), speech given by Richard W. Fisher on 19-Sep-2012

⁴ Measuring Economic Policy Uncertainty; Scott R. Baker, Nicholas Bloom, and Steven J. Davis, 4-Jun-2012



Figure 3: SPX RV has a strong relationship with policy uncertainty for decades



Source: Deutsche Bank

We note two periods that break this pattern:

- The dot com bubble, in which realized vol was high despite a lack of economic policy uncertainty
- The current period, in which realized vol has been underperforming what the economic policy uncertainty level would imply that it should – perhaps furthering the case for economic policy uncertainty to drop.

Falling economic policy uncertainty could mean 2Y IV breaking through its prior floor

It is very tempting to call a bottom in medium-dated SPX implied volatility, especially as ATM vols have already broken through the post-crisis low that withstood tests in early 2010, early 2011, and early 2012. However, if economic policy uncertainty does break out of its high uncertainty regime – including clarity about plans for the fiscal cliff, health care reform, and taxes - we believe that there could be considerable downside to medium-dated implied vol over a several-month time horizon. We believe that the risk-reward tradeoff to 2Y variance swaps is becoming increasingly shifted toward selling vol. As a result, we suggest selling Dec-14 SPX variance at ~26%. As our IV vs Realized Vol History graph (page 9) shows, ATM 24-month implied vol on the SPX is already well above the median realized vol level of the not-so-quiet last three years, and variance is even higher than that. To reduce potential mark-to-market risk over the next couple of months, we would also consider adding some short-dated protection to the position (e.g. deep OTM Mar-13 VIX calls or SPX puts).

Policy uncertainty ≠ economic uncertainty

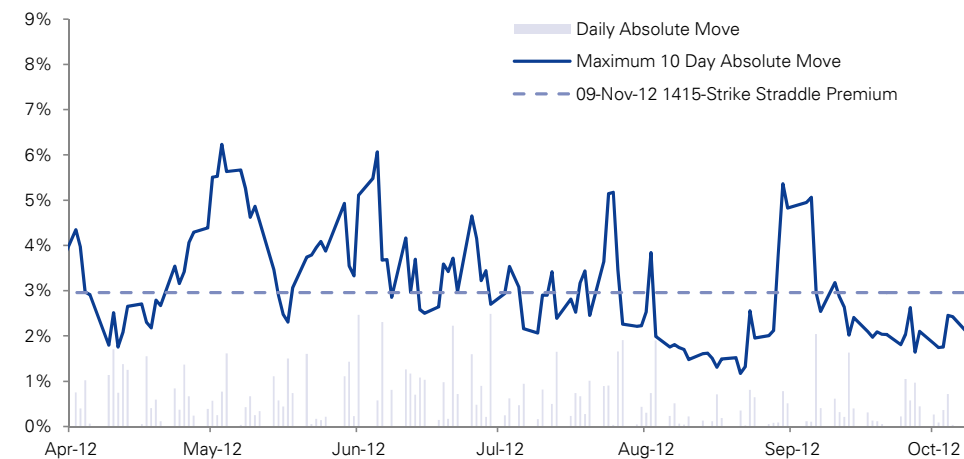
A decline in policy uncertainty does not need to correspond with a decline in economic uncertainty. In the coming years, we will see whether or not, for example, Europe has succeeded in keeping its various states solvent. However, we believe that tail risk-like concerns about what would happen if, for example, a state were to need to exit the Eurozone, are becoming increasingly muted, as the "rules of the game" (including failure resolution) are becoming more firmly established. At the same time, in the US, we hope and believe that the coming months' focus on the fiscal cliff will bring us closer to a long-term plan to tame the US debt level, regardless of November 6's outcome.



Buy SPX 09-Nov weekly straddles and unwind before elections

We suggest investors consider buying the 09-Nov 1415-strike weekly straddles for ~\$42 (3% of spot and ~17 implied vol) and unwinding before Election Day. These "Election straddles", as can be expected, are trading at higher vol than the straddles expiring a week before and after and imply a ~2% move on the outcome of the elections. The straddles should continue to maintain a bid to vol due to the uncertainty surrounding the event and give investors a way to get cheap gamma over the next two weeks. If these straddles continue to price at a 2% implied move, the downside to the straddles, if we happen to fall exactly at the straddle strike during the unwind date, is small (~ 1%). The upside on the other hand is attractive. A strong drift away from the strike will benefit the trade. If we look back over rolling 10 trading day periods over the past six months (the number of days from trade initiation to unwind), the SPX has moved away from spot by the straddle premium more than half the time (see Figure 4). Although a move away from strike equal to the straddle premium won't translate 1-for-1 to extra profit (the net delta isn't 1) and your gamma risk starts to drop off away from strike with 3 days remaining, the remaining vol ahead of the election catalyst should nonetheless leave you with an attractive p/l profile. Investors can choose to trade these either delta-hedged or outright.

Figure 4: Maximum 10-day move in SPX vs straddle premium



Source: Deutsche Bank

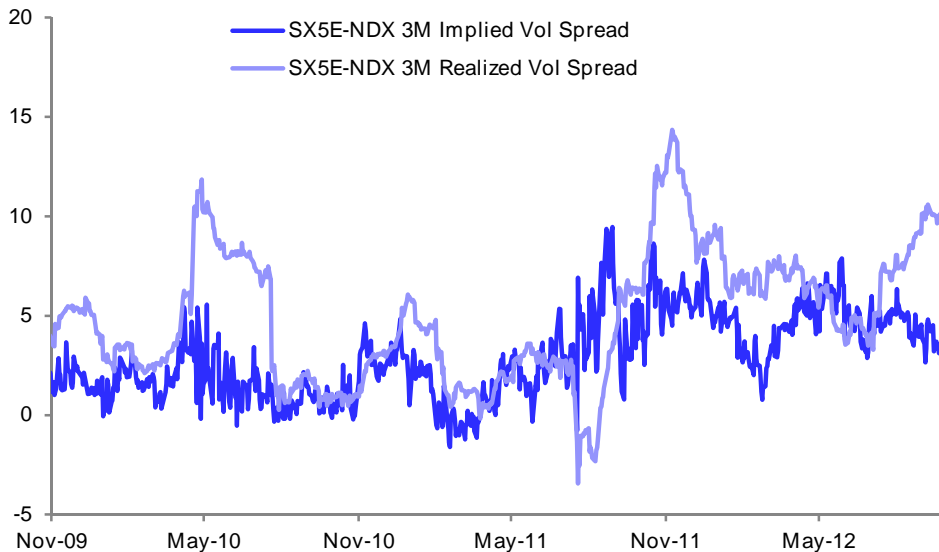


Dashboard observations

SX5E long vol appears attractive either outright or as a spread

European indices have been realizing more than their current implied vols (see Volatility Heat Map on page 10). SX5E 3M ATM implied vols are higher than both 3M and 1M realized vols. Also, the SX5E is carrying well against other indices – the 3M realized vol spreads are higher than the corresponding implied spreads for all long SX5E pairs (see Volatility Spreads Heat Map on page 14). In particular, we single out the NDX (or XLK) where the implied 3M spread at ~2 vol points has declined significantly from ~6 over the past two months. However the 3M realized spread at 9+ is higher than the 90-percentile of observations over the past three years (see Figure 5). Even the 1M realized spread at 5+ is higher than the 3M implied spread by a good margin. In the event of deterioration in the European situation, we expect the cash rich US technology to hold up better.

Figure 5: SX5E – NDX 3M implied volatility spread has been carrying well



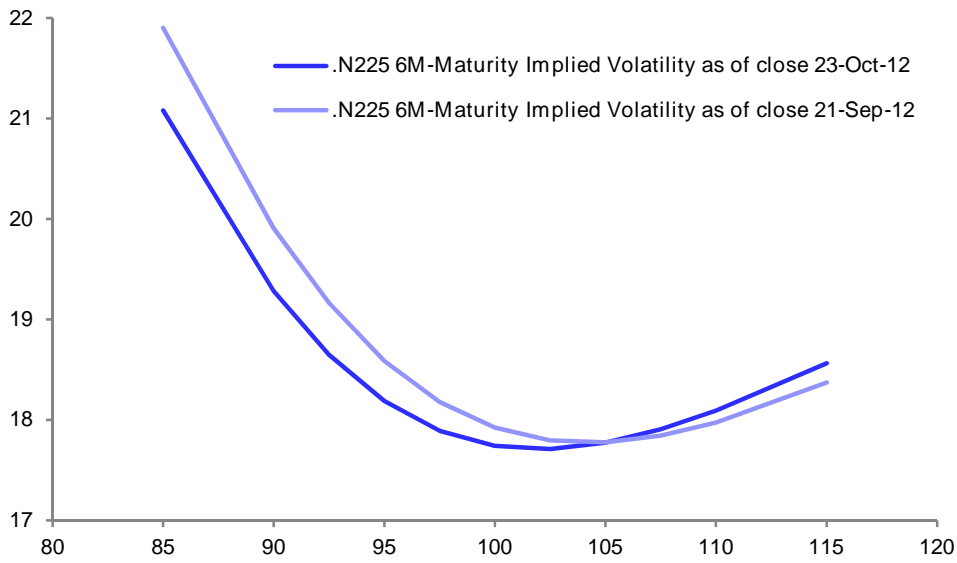
Source: Deutsche Bank

The Nikkei is smiling at us

Our Volatility Heat Map (page 10) shows a negative (-0.3) 6M, 100-110% skew for the Nikkei, which even in the context of exceptionally flat Nikkei skew is remarkable – in effect the Nikkei curve has turned much more into a smile in recent weeks:



Figure 6: NKY curve has turned into more of a smile in recent weeks as upside vols rise



Source: Deutsche Bank



At extremes, and on the move

The following tables show Volatility Heat Map (page 4) items that either are at extremes or have moved quickly across their 3Y historical ranges. To avoid duplication, no underlying (e.g. SPX) or "metric" (e.g. 6M ATM IV) will appear more than once in a given table. All Z-scores and percentiles refer to a 3Y history. Pricing in the following sections is indicative and as of the close on 22-Oct-2012.

Figure 7: At Extremes, and Becoming More Extreme

Name	Metric	Level	1M Ch.	Z-Score	%ile
NKY	12M 90-110% Skew	0.77	-0.7	(3.3)	0%
EWZ	6M 100-110% Skew	1.56	-0.4	(2.8)	0%
KOSPI	6M 90-100% Skew	2.00	-0.3	(2.3)	0%
HSCE	6M 90-110% Skew	1.41	-1.5	(2.0)	0%
DAX	6M/3M Term Structure	1.11	+0.0	1.9	100%

Source: Deutsche Bank

Figure 8: At Extremes, and Moving In

Name	Metric	Level	1M Ch.	Z-Score	%ile
ASX	12M/6M Term Structure	1.13	-0.0	1.7	97%
XLE	6M/3M Term Structure	1.10	-0.0	1.7	96%
SPX	24M/12M Term Structure	1.09	-0.0	1.5	93%
XLV	6M 90% Impl Vol	18.63	+3.2	(1.2)	7%
XLU	6M Impl Corr	0.73	+0.1	(1.1)	8%

Source: Deutsche Bank

Figure 9: At Extremes, and Staying There

Name	Metric	Level	1M Ch.	Z-Score	%ile
NKY	6M 100-110% Skew	-0.30	-0.2	(2.7)	1%
FXE	12M 100% Impl Vol	9.67	-0.3	(2.6)	0%
FXV	3M 95-105% Skew	1.26	+0.2	2.3	99%
XLK	6M Impl Corr	0.43	-0.0	(2.2)	2%
FTSE	6M/3M Term Structure	1.15	+0.0	2.2	99%

Source: Deutsche Bank

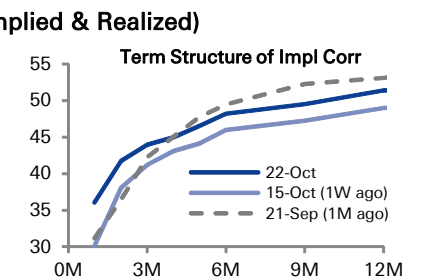
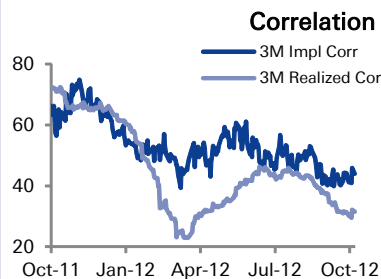
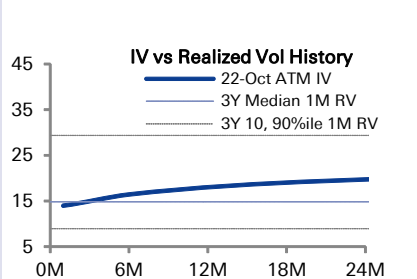
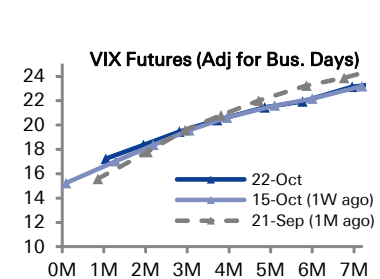
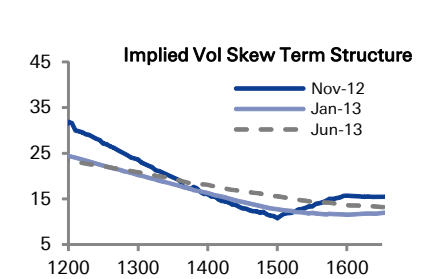
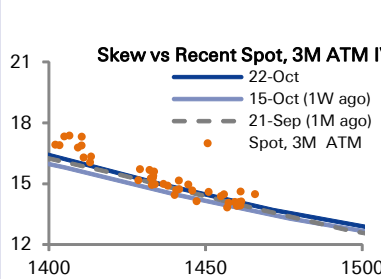
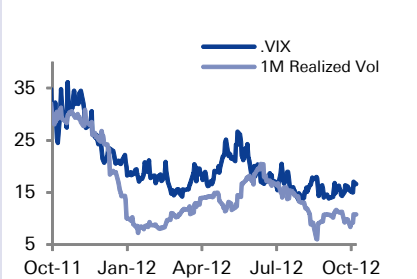
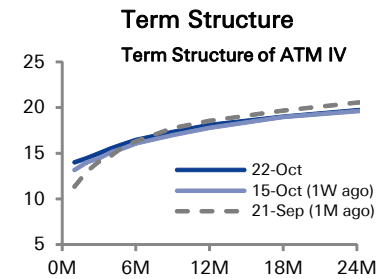
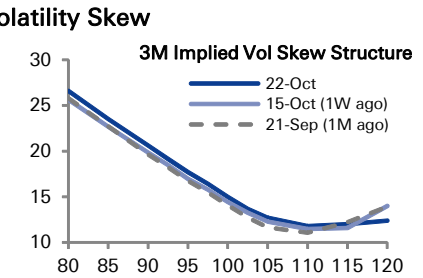
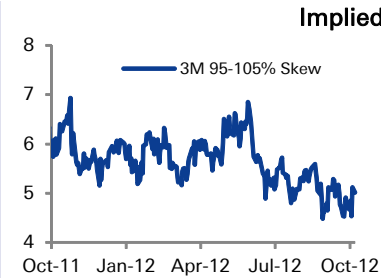
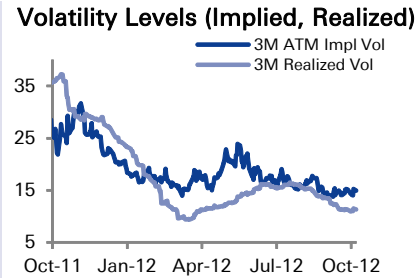
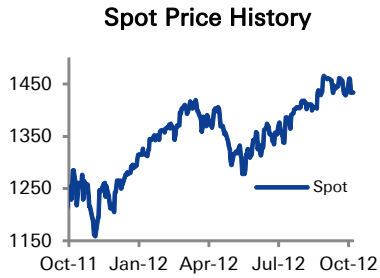
Figure 10: Biggest Moves

Name	Metric	Level	1M Ch.	Z-Score	%ile
NDX	3M/1M Term Structure	1.04	-0.2	(0.7)	22%
XLI	6M Impl Corr	0.72	-0.2	(0.7)	21%
XLK	12M/6M Term Structure	1.09	-0.1	0.9	85%
XLY	6M/3M Term Structure	1.11	+0.1	1.0	92%
XRT	3M 95-105% Skew	3.80	+1.2	(1.1)	15%

Source: Deutsche Bank



SPX & VIX Volatility Overview



Source: Deutsche Bank



Volatility Heat Map

Implied volatility and volatility carry ¹											Volatility skew					Term structure				Correlation ²																																								
3M ATM IV		6M 90% IV		6M ATM IV		6M 110% IV		12M ATM IV		3M RV		3M carry ¹		3M 95-105%		6M 90-100%		6M 90-110%		6M 100-110%		12M 90-110%		3M/1M ATM		6M/3M ATM		12M/6M ATM		24M/12M ATM		3M IC		6M IC		3M RC																								
<i>United States</i>																																																												
SPX	16	15.0	27	22	20.9	32	17	16.5	27	14	13.3	23	19	18.1	27	11	11.4	29	0.9	1.3	1.5	SPX	5	5.0	6	4	4.4	5	7	7.5	9	3	3.1	4	5	6.1	7	SPX	1.0	1.1	1.2	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	SPX	0.5	0.50	0.8	0.6	0.55	0.8	0.4	0.37	0.8
NDX	18	17.8	28	23	22.8	33	19	19.3	28	16	16.4	25	21	21.1	29	14	14.1	28	0.9	1.3	1.5	NDX	4	4.2	6	4	3.5	5	7	6.4	8	3	2.8	4	5	4.7	7	NDX	1.0	1.0	1.2	1.0	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	NDX	0.4	0.35	0.6	0.4	0.39	0.6	0.3	0.30	0.7
RTY	22	19.2	36	28	25.2	40	24	21.2	35	20	17.6	31	25	23.2	35	17	14.7	42	0.8	1.3	1.4	RTY	4	4.5	6	4	4.1	5	7	7.6	9	3	3.5	4	6	6.7	7	RTY	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	RTY									
<i>Europe</i>																																																												
SX5E	20	19.8	33	25	24.1	36	21	21.0	31	18	18.9	27	22	22.2	29	17	23.4	36	0.8	0.8	1.3	SX5E	4	3.3	6	3	3.0	5	6	5.2	9	3	2.1	4	5	4.0	7	SX5E	0.9	1.0	1.1	0.9	1.1	1.1	0.9	1.1	1.1	0.9	1.0	1.0	SX5E	0.6	0.61	0.7	0.6	0.65	0.7	0.5	0.59	0.8
FTSE	16	13.3	25	21	19.4	30	17	15.2	25	14	12.8	21	18	16.9	25	14	13.1	26	0.9	1.0	1.3	FTSE	4	4.2	6	4	4.2	5	7	6.6	9	3	2.5	4	5	5.5	7	FTSE	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	FTSE	0.4	0.41	0.7	0.5	0.48	0.7	0.3	0.35	0.6
DAX	18	17.0	32	23	22.2	34	19	18.9	30	16	16.5	26	20	20.5	29	14	18.6	35	0.8	0.9	1.3	DAX	4	3.6	5	3	3.2	5	6	5.7	9	3	2.5	4	5	4.6	7	DAX	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	DAX	0.5	0.55	0.7	0.6	0.62	0.7	0.4	0.55	0.7
<i>Asia/Pacific</i>																																																												
ASX	14	11.3	25	19	16.5	28	16	12.8	25	14	11.9	22	17	14.5	25	11	9.6	23	0.9	1.2	1.4	ASX	3	3.0	5	3	3.7	4	5	4.5	7	2	0.9	3	4	3.9	5	ASX	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	ASX	0.5	0.48	0.8	0.5	0.50	0.7	0.3	0.23	0.7
NKY	17	16.9	26	21	19.1	29	19	17.7	25	18	18.0	23	19	18.4	25	15	16.4	26	0.9	1.0	1.3	NKY	2	0.6	5	3	1.5	4	4	1.2	7	1	-0.3	3	3	0.8	5	NKY	1.0	1.0	1.1	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	NKY	0.4	0.39	0.7	0.5	0.44	0.7	0.4	0.33	0.8
KOSPI	17	16.7	27	21	20.0	30	18	18.0	26	17	17.6	24	19	19.4	25	14	17.4	32	0.8	1.0	1.3	KOSPI	2	1.4	4	3	2.0	4	3	2.4	6	1	0.4	3	3	1.9	5	KOSPI	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	KOSPI	0.2	0.14	0.5	0.2	0.22	0.5	0.1	0.07	0.5
HSI	18	16.2	29	22	20.0	31	19	18.2	28	18	17.9	26	20	20.1	28	15	15.6	30	0.9	1.0	1.4	HSI	2	1.2	4	2	1.8	4	3	2.2	6	1	0.3	3	3	1.8	5	HSI	1.0	1.1	1.1	0.9	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	HSI	0.5	0.49	0.7	0.5	0.56	0.7	0.4	0.48	0.7
HSCE	22	21.0	34	25	24.2	36	23	22.7	33	22	22.8	31	24	24.4	33	18	19.8	38	0.8	1.1	1.3	HSCE	1	0.7	4	2	1.5	4	3	1.4	6	1	0.0	2	2	1.1	5	HSCE	0.9	1.1	1.1	0.9	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1	HSCE	0.6	0.67	0.8	0.7	0.71	0.8	0.6	0.68	0.8
<i>Emerging Markets</i>																																																												
FXI	23	21.7	35	27	26.0	38	24	23.2	35	22	21.3	33	26	25.0	36	19	19.0	39	0.9	1.1	1.3	FXI	2	1.9	4	2	2.7	4	3	4.6	7	1	1.9	3	1	4.8	6	FXI	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.1	1.1				FXI									
EEM	24	21.0	37	28	26.2	41	25	23.0	36	21	20.4	32	26	23.4	35	20	17.8	38	0.9	1.2	1.4	EEM	4	3.8	6	3	3.3	6	6	5.9	10	3	2.6	5	EEM	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.0				EEM												
EWZ	26	23.2	39	30	27.2	42	27	24.6	39	24	23.0	36	27	25.8	39	21	21.7	40	0.9	1.1	1.3	EWZ	3	3.2	5	3	2.6	4	5	4.2	8	2	1.6	4	4	3.9	6	EWZ	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.0				EWZ									
<i>US Sectors</i>																																																												
XLY	18	16.6	30	23	21.8	35	19	18.4	30	16	15.5	26	21	20.4	29	13	12.9	31	0.9	1.3	1.6	XLY	4	4.1	6				6	6.3	9			4	4.8	7	XLY	1.0	1.1	1.2	1.0	1.1	1.1	1.0	1.1	1.1				XLY	0.5	0.52	0.8	0.5	0.58	0.8	0.3	0.40	0.8	
XLP	12	11.7	19	17	16.2	24	13	12.7	19				14	14.2	19	8	10.4	18	1.0	1.1	1.7	XLP	3	3.1	6				6	4.9	9					XLP	1.0	1.0	1.2	1.0	1.1	1.1	1.0	1.1	1.1				XLP	0.5	0.55	0.7	0.5	0.56	0.7	0.2	0.43	0.7		
XLE	22	19.8	35	26	24.9	38	23	21.8	35	20	19.6	31	25	23.7	34	16	16.2	38	0.9	1.2	1.5	XLE	3	3.3	5	3	3.0	4	5	5.2	8	2	2.2	4	3	3.4	5	XLE	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1				XLE	0.8	0.92	1.0	0.8	0.97	1.0	0.6	0.76	1.0
XLF	21	19.2	39	25	23.5	43	22	20.5	38	20	18.8	34	23	22.0	37	16	13.4	42	0.9	1.4	1.4	XLF	3	2.8	6	3	2.9	5	5	4.7	9	2	1.8	4	4	3.9	7	XLF	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.1	1.1				XLF	0.6	0.60	0.8	0.6	0.62	0.8	0.4	0.38	0.7
XLV	14	14.0	23	19	18.6	28	15	14.7	23	12	11.5	19	16	16.1	23	10	10.9	24	0.9	1.3	1.5	XLV	4	3.6	6	3	3.9	5	6	7.1	10	3	3.2	5	XLV	1.0	1.0	1.1	1.0	1.0	1.1	1.0	1.1	1.1				XLV	0.5	0.61	0.8	0.5	0.60	0.8	0.3	0.33	0.9			
XLI	19	17.4	32	24	22.4	36	20	19.0	31	17	16.7	28	22	21.1	31	14	13.0	34	0.9	1.3	1.5	XLI	4	3.6	6	3	3.3	5	6	5.6	9	2	2.3	4	4	4.3	7	XLI	1.0	1.1	1.2	1.0	1.1	1.1	1.0	1.1	1.1				XLI	0.6	0.65	0.9	0.7	0.72	0.9	0.5	0.48	0.9
XLB	22	20.0	34	26	24.6	38	23	21.6	34	20	19.6	31	24	23.7	33	17	16.7	37	0.8	1.2	1.4	XLB	3	3.2	5	2	3.0	4	4	5.1	8	2	2.1	4	1	4.5	6	XLB	1.0	1.1	1.1	1.0	1.1	1.1	1.0	1.1	1.1				XLB	0.6	0.64	0.8	0.6	0.68	0.8	0.5	0.49	0.9
XLK	18	17.8	27	23	22.9	32	19	19.2	28	16	16.4	23	21	20.9	28	13	13.6	27	0.9	1.3	1.5	XLK	4	4.1	6	4	3.7	5	6	6.5	9	3	2.9	4	5	4.9	7	XLK	1.0	1.0	1.2	1.0	1.1	1.1	1.0	1.1	1.1				XLK	0.5	0.38	0.8	0.5	0.43	0.8	0.3	0.29	0.8
XLU	12	11.2	21	18	16.0	25	13	12.0	21				14	13.6	21	9	9.7	21	0.9	1.2	1.6	XLU	3	3.7	6				5	5.6	9					XLU	1.0	1.1	1.2	1.0	1.1	1.1	1.0	1.1	1.1				XLU	0.7	0.75	1.0	0.7	0.73	1.0	0.5	0.56	1.0		
XRT	22	19.6	36	27	25.2	40	23	21.5	35	19	18.4	30	24	23.3	33	15	14.5	35	1.0	1.3	1.5	XRT	4	3.8	6	3	3.7	5	6	6.8	9	3	3.1	4	4	6.3	7	XRT	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.1	1.1				XRT									
XHB	26	26.6	41	30	30.8	44	28	27.6	41	25	25.1	38	29	28.6	41	20	22.2	41	0.9	1.2	1.4	XHB	3	3.3	5	2	3.2	4	4	5.7	7	2	2.5	3	1	3.8	6	XHB	1.0	1.0	1.1	1.0	1.0	1.1	1.0	1.0	1.1				XHB									
<i>FX/Rates/Commodity</i>																																																												
FXE	10	8.6	15	14	11.5	19	11	9.1	15	10	8.7	13	12	9.7	15	8	8.2	13	1.0	1.1	1.4	FXE	1	0.9	3	2	2.4	4	3	2.7	6	0	0.3	2	3	2.9	5	FXE	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.1	1.1				FXE									
FXF	8	7.5	13	11	10.5	13	9	8.2	14	10	8.7	15	10	9.0	14	7	6.1	12	1.0																																									



Volatility/Skew Strategies: Straddles & Bullish Risk Reversals

ATM Straddle Breakevens (%up/down)						Risk reversals: premium (credit), % spot					
	1M	2M	3M	6M	12M	1M 95-105	2M 95-105	3M 95-105	6M 90-110	12M 90-110	
<i>United States</i>											
SPX	3.3%	4.8%	6.1%	9.5%	14.7%	-0.3%	-0.6%	-0.7%	-1.2%	-1.4%	SPX
NDX	4.0%	5.7%	7.2%	10.9%	16.9%	-0.4%	-0.5%	-0.6%	-0.9%	-0.9%	NDX
RTY	4.2%	6.1%	7.7%	12.0%	18.6%	-0.4%	-0.6%	-0.6%	-1.2%	-1.5%	RTY
<i>Europe</i>											
SX5E	4.5%	6.5%	8.0%	12.0%	18.2%	-0.3%	-0.4%	-0.4%	-0.7%	-0.7%	SX5E
FTSE	2.9%	4.2%	5.4%	8.8%	14.2%	-0.2%	-0.4%	-0.5%	-1.0%	-1.3%	FTSE
DAX	3.8%	5.5%	6.8%	10.6%	16.3%	-0.2%	-0.4%	-0.5%	-0.8%	-0.9%	DAX
<i>Asia/Pacific</i>											
ASX	2.5%	3.6%	4.5%	7.2%	11.3%	-0.1%	-0.3%	-0.3%	-0.5%	-0.8%	ASX
NKY	3.8%	5.4%	6.8%	10.0%	14.7%	0.0%	0.0%	0.0%	0.1%	0.2%	NKY
KOSPI	3.7%	5.3%	6.7%	10.0%	15.1%	-0.1%	-0.1%	-0.1%	-0.1%	0.1%	KOSPI
HSI	3.3%	5.0%	6.5%	10.2%	16.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	HSI
HSCE	4.6%	6.7%	8.4%	12.7%	19.3%	0.1%	0.1%	0.1%	0.2%	0.4%	HSCE
<i>Emerging Markets</i>											
FXI	4.9%	7.1%	8.8%	13.1%	20.2%	0.0%	0.0%	-0.1%	-0.5%	-0.7%	FXI
EEM	4.5%	7.0%	8.7%	13.0%	19.9%	-0.4%	-0.3%	-0.4%	-0.8%	(0.7%)	EEM
EWZ	5.1%	7.9%	9.7%	14.0%	21.1%	-0.4%	-0.1%	-0.3%	-0.4%	-0.3%	EWZ
<i>US Sectors</i>											
XLY	3.7%	5.5%	6.8%	10.7%	16.7%	-0.3%	-0.4%	-0.5%	-0.9%	-0.8%	XLY
XLP	2.7%	4.2%	5.0%	7.7%	12.4%	-0.2%	-0.2%	-0.4%	-0.6%	-0.9%	XLP
XLE	4.3%	6.5%	8.1%	12.5%	19.4%	-0.4%	-0.3%	-0.4%	-0.7%	-0.3%	XLE
XLF	4.3%	6.3%	7.9%	11.8%	18.0%	-0.1%	-0.2%	-0.3%	-0.6%	-0.5%	XLF
XLV	3.2%	4.7%	5.7%	8.6%	13.5%	-0.2%	-0.3%	-0.4%	-1.0%	-1.3%	XLV
XLI	3.8%	5.7%	7.1%	11.0%	17.3%	-0.4%	-0.4%	-0.4%	-0.8%	-0.7%	XLI
XLB	4.4%	6.7%	8.2%	12.5%	19.5%	-0.3%	-0.3%	-0.4%	-0.6%	-0.4%	XLB
XLK	4.1%	6.0%	7.3%	11.1%	17.2%	-0.4%	-0.4%	-0.6%	-1.0%	-0.9%	XLK
XLU	2.4%	4.1%	5.0%	7.6%	12.5%	-0.2%	-0.2%	-0.4%	-0.8%	-1.1%	XLU
XRT	4.4%	6.4%	7.9%	12.2%	18.8%	-0.3%	-0.3%	-0.5%	-1.0%	-1.4%	XRT
XHB	6.0%	8.7%	10.7%	15.6%	22.8%	-0.4%	-0.4%	-0.4%	-0.7%	-0.3%	XHB
<i>FX/Rates/Commodity</i>											
FXE	2.0%	2.8%	3.4%	5.1%	7.7%	0.0%	0.0%	0.0%	-0.2%	-0.5%	FXE
FXF	1.8%	2.5%	3.0%	4.6%	7.1%	0.0%	-0.1%	-0.1%	-0.1%	-0.2%	FXF
TLT	3.8%	5.4%	6.5%	9.5%	13.8%	0.0%	0.0%	0.1%	0.1%	0.2%	TLT
GLD	3.2%	4.6%	5.9%	9.4%	15.2%	0.0%	0.1%	0.2%	0.5%	1.0%	GLD
SLV	6.1%	8.6%	10.6%	15.9%	24.2%	-0.1%	0.0%	0.1%	0.3%	0.5%	SLV
UNG	8.4%	12.1%	14.9%	20.0%	30.1%	0.1%	0.0%	0.0%	0.4%	0.9%	UNG
USO	7.1%	10.1%	12.8%	18.5%	25.9%	-0.2%	-0.2%	-0.2%	-0.2%	0.0%	USO

Source: Deutsche Bank, Bloomberg Finance LP, FAME, Reuters

Note: Where pricing history is insufficient in a strategy it is omitted from the table

How to read this table -2.0%
 ↑
 Current (coloured according to z-score: 2.5 is red, -2.5 is green)



Protection Trades Heat Map

Puts (premium, % of spot)								5%-wide put spreads (max payoff ratio)								10%-wide put spreads (max payoff ratio)								Various put flies (max payoff ratio)							
1M	3M	3M	6M	6M	12M	12M		1M	2M	2M	3M	3M	6M	6M	1M	3M	3M	6M	6M	12M	12M	1M	1M	2M	2M	3M	3M				
97.5	97.5	95	95	90	90	80		97.5	97.5	95	95	90	95	90	ATM	95	90	95	90	95	90	ATM	97.5	2M	2M	3M	3M				
								92.5	92.5	90	90	85	90	85	90	85	80	85	80	85	80	95	95	90	85	90	95				
United States																															
SPX	0.9%	2.2%	1.6%	3.1%	2.0%	4.2%	2.3%	SPX	8.4x	5.8x	8.7x	6.7x	13.1x	4.7x	6.9x	SPX	6.7x	8.9x	17.4x	5.6x	8.5x	4.0x	5.2x	SPX	5.5x	10.4x	6.4x	14.8x	6.7x	13.8x	
NDX	1.2%	2.7%	1.9%	3.6%	2.4%	4.9%	2.7%	NDX	6.6x	4.7x	7.0x	5.5x	10.5x	4.0x	6.0x	NDX	5.6x	7.2x	14.0x	4.8x	7.2x	3.5x	4.5x	NDX	5.3x	10.6x	6.0x	12.8x	6.6x	11.6x	
RTY	1.3%	2.9%	2.2%	4.3%	2.9%	5.9%	3.4%	RTY	6.0x	4.5x	6.4x	5.1x	9.0x	3.7x	5.2x	RTY	5.5x	6.5x	11.6x	4.3x	6.1x	3.2x	4.0x	RTY	5.5x	10.2x	6.3x	12.2x	7.4x	11.8x	
Europe																															
SX5E	1.3%	3.0%	2.2%	4.1%	2.7%	5.4%	3.0%	SX5E	5.7x	4.1x	6.0x	4.9x	9.0x	3.6x	5.3x	SX5E	5.1x	6.4x	11.9x	4.3x	6.5x	3.3x	4.3x	SX5E	5.0x	10.2x	5.9x	11.2x	6.5x	10.9x	
FTSE	0.6%	1.8%	1.2%	2.8%	1.8%	3.9%	2.1%	FTSE	10.7x	6.5x	11.2x	7.9x	16.5x	4.9x	7.8x	FTSE		10.7x	22.8x	6.0x	9.5x	4.2x	5.6x	FTSE		12.4x	5.6x	18.3x	6.1x	15.2x	
DAX	1.0%	2.4%	1.7%	3.5%	2.2%	4.5%	2.4%	DAX	7.0x	4.8x	7.3x	5.8x	11.7x	4.0x	6.1x	DAX		7.7x	15.7x	4.8x	7.5x	3.6x	4.7x	DAX	5.0x	10.3x	5.7x	12.2x	6.2x	11.4x	
Asia/Pacific																															
ASX	0.5%	1.4%	0.9%	2.0%	1.1%	2.7%	1.3%	ASX	13.0x	7.7x	14.4x	10.0x		5.8x	10.5x	ASX		14.3x		7.5x	13.4x	4.9x	7.1x	ASX		15.1x	5.5x		5.6x	16.6x	
NKY	0.9%	2.3%	1.5%	2.9%	1.7%	3.5%	1.7%	NKY	6.9x	4.6x	8.1x	5.9x	15.1x	4.0x	7.4x	NKY		8.5x	21.2x	5.2x	9.6x	3.7x	5.6x	NKY	4.3x	8.8x	4.4x	11.7x	4.8x	9.7x	
KOSPI	0.9%	2.3%	1.5%	3.0%	1.7%	3.7%	1.8%	KOSPI	7.0x	4.8x	8.1x	5.9x	13.5x	4.0x	6.8x	KOSPI		8.2x	18.5x	5.0x	8.7x	3.6x	5.1x	KOSPI	4.6x	9.6x	4.8x	12.3x	5.2x	10.5x	
HSI	0.7%	2.2%	1.4%	3.1%	1.8%	4.1%	2.1%	HSI	8.3x	5.0x	8.8x	6.0x	14.9x	3.9x	6.7x	HSI		8.6x	21.1x	4.9x	8.5x	3.5x	4.8x	HSI		9.7x	4.6x	12.6x	5.1x	10.1x	
HSCE	1.3%	3.1%	2.2%	4.2%	2.6%	5.5%	2.9%	HSCE	5.4x	3.8x	5.8x	4.5x	9.0x	3.3x	5.0x	HSCE		6.0x	12.0x	4.0x	6.2x	3.0x	3.9x	HSCE	4.2x	8.5x	4.8x	9.9x	5.5x	9.1x	
Emerging Markets																															
FXI	1.4%	3.2%	2.4%	4.5%	3.1%	6.2%	3.5%	FXI	5.3x	4.0x	5.6x	4.6x	8.0x	3.5x	4.7x	FXI	4.6x	5.8x	10.8x	4.0x	5.6x	3.0x	3.7x	FXI							
EEM	1.4%	3.3%	2.5%	4.6%	3.2%	6.2%	3.7%	EEM	5.7x	4.1x	5.9x	4.7x	8.2x	3.5x	5.0x	EEM	5.2x	6.0x	10.6x	4.1x	5.9x	3.2x	4.0x	EEM							
EWZ	1.3%	3.7%	2.8%	5.0%	3.4%	6.5%	3.8%	EWZ	5.1x	3.7x	5.2x	4.3x	7.3x	3.2x	4.7x	EWZ	4.7x	5.4x	9.3x	3.8x	5.3x	3.1x	3.7x	EWZ	5.4x	11.3x	6.1x	10.5x	7.1x	10.3x	
US Sectors																															
XLY	1.0%	2.4%	1.8%	3.4%	2.2%	4.7%	2.2%	XLY	7.5x	5.2x	8.4x	6.1x	12.2x	4.1x	6.6x	XLY	6.2x	8.1x	15.6x	5.1x	7.7x	3.2x	4.1x	XLY							
XLP	0.6%	1.5%	0.9%	2.0%	1.1%	2.9%	1.4%	XLP	11.1x	6.6x	13.5x	9.7x		5.8x	11.2x	XLP		15.6x		7.6x	14.6x	4.8x	6.7x	XLP							
XLE	1.3%	3.0%	2.2%	4.2%	2.9%	5.7%	3.3%	XLE	5.9x	4.3x	6.3x	4.9x	9.5x	3.7x	5.2x	XLE	5.3x	6.4x	12.5x	4.3x	6.4x	3.3x	4.3x	XLE							
XLF	1.2%	2.9%	2.1%	3.9%	2.6%	5.2%	2.8%	XLF	6.0x	4.5x	7.0x	5.1x	9.8x	3.8x	5.7x	XLF	5.3x	6.7x	13.0x	4.5x	7.0x	3.4x	4.2x	XLF							
XLV	0.8%	1.9%	1.3%	2.6%	1.6%	3.5%	1.7%	XLV	8.6x	5.8x	9.9x	7.2x	18.5x	4.9x	8.6x	XLV		10.4x		6.3x	11.1x	4.3x	5.5x	XLV							
XLJ	1.1%	2.5%	1.8%	3.6%	2.3%	5.0%	2.6%	XLJ	6.8x	4.8x	7.3x	5.9x	12.4x	4.0x	6.2x	XLJ	6.0x	8.0x	16.0x	4.8x	7.5x	3.5x	4.2x	XLJ							
XLB	1.3%	3.0%	2.2%	4.2%	2.8%	5.7%	3.2%	XLB	5.9x	4.2x	6.1x	5.0x	9.0x	3.6x	5.2x	XLB	5.2x	6.4x	11.8x	4.2x	6.3x	3.0x	4.0x	XLB							
XLK	1.2%	2.7%	2.0%	3.7%	2.4%	5.0%	2.8%	XLK	6.4x	4.8x	7.2x	5.6x	10.7x	4.1x	6.1x	XLK	5.6x	7.4x	14.7x	4.9x	7.5x	3.6x	4.6x	XLK							
XLU	0.5%	1.5%	0.9%	2.0%	1.2%	2.9%	1.5%	XLU	13.4x	7.5x	16.1x	9.7x		6.0x	10.8x	XLU		14.7x		7.7x	14.2x	4.9x	7.3x	XLU							
XRT	1.3%	2.9%	2.3%	4.3%	2.9%	5.9%	3.5%	XRT	6.2x	4.5x	6.1x	4.8x	9.1x	3.6x	5.1x	XRT	5.2x	6.3x	11.9x	4.2x	6.1x	3.4x	4.2x	XRT							
XHB	2.0%	4.3%	3.4%	5.8%	4.2%	7.3%	4.4%	XHB	4.5x	3.5x	4.6x	3.9x	6.1x	3.2x	4.2x	XHB	4.3x	4.8x	7.6x	3.6x	4.8x	3.0x	3.5x	XHB							
FX/Rates/Commodity																															
FXE	0.2%	0.8%	0.4%	1.0%	0.3%	1.1%	0.2%	FXE		11.4x		17.4x		7.9x	21.6x	FXE				11.6x		6.7x	11.6x	FXE		19.9x				4.7x	
FXF	0.2%	0.7%	0.3%	0.7%	0.2%	0.9%	0.3%	FXF		13.5x		23.5x		10.4x		FXF				15.4x		7.5x	16.5x	FXF							
TLT	0.9%	2.1%	1.4%	2.6%	1.3%	2.9%	0.9%	TLT	6.5x	4.5x	7.7x	5.7x	14.8x	3.9x	6.8x	TLT		8.2x		4.9x	9.2x	3.4x	5.2x	TLT	4.3x	9.0x	4.5x	10.6x	5.0x	9.3x	
GLD	0.7%	1.8%	1.1%	2.5%	1.2%	3.3%	1.3%	GLD	8.9x	5.2x	10.7x	7.0x	22.8x	3.9x	8.0x	GLD		10.7x		5.3x	10.8x	3.3x	4.9x	GLD		9.3x	4.1x	14.0x	4.3x	10.2x	
SLV	2.0%	4.1%	3.2%	5.7%	3.9%	7.6%	4.5%	SLV	4.2x	3.2x	4.3x	3.6x	6.3x	2.8x	4.0x	SLV	3.9x	4.6x	8.2x	3.3x	4.7x	2.7x	3.2x	SLV	5.0x	10.1x	6.0x	8.3x	6.8x	8.5x	
UNG	3.1%	6.3%	5.3%	7.9%	5.8%	10.2%	5.7%	UNG	3.1x	2.7x	3.0x	2.6x	3.7x	2.3x	2.8x	UNG	3.0x	3.1x	4.4x	2.5x	3.1x	2.0x	2.2x	UNG	7.0x		13.3x	9.0x	19.1x	8.8x	
USO	2.5%	5.3%	4.3%	7.0%	5.3%	8.6%	5.3%	USO	3.8x	3.1x	3.9x	3.3x	4.6x	2.8x	3.3x	USO	3.6x	3.8x	5.6x	3.0x	3.7x	2.6x	2.9x	USO	5.8x	11.0x	7.1x	10.1x	9.3x	11.2x	

Source: Deutsche Bank, Bloomberg Finance LP, FAME, Reuters

Note: Where pricing history is insufficient in a strategy it is omitted from the table

How to read this table
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 Current (coloured according to z-score: 2.5 is red, -2.5 is green)



Upside Trades Heat Map

Calls (premium, % of spot)								5%-wide call spreads (max payoff ratio)								10%-wide call spreads (max payoff ratio)								Various call flies (max payoff ratio)										
1M	3M	3M	6M	6M	12M	12M		1M	2M	2M	3M	3M	6M	6M				1M	3M	3M	6M	6M	12M	12M				1M	1M	2M	2M	3M	3M	
102.5	102.5	105	105	110	110	120		102.5	102.5	105	102.5	110	105	110				ATM	ATM	110	105	110	105	110				ATM	102.5	ATM	105	110	ATM	105
								107.5	107.5	110	107.5	115	110	110				110	110	120	115	120	115	120				110	107.5	110	115	110	115	
United States																																		
SPX	0.6%	1.8%	0.9%	2.3%	0.8%	2.8%	0.7%	SPX		4.9x		3.6x		3.5x	8.6x	SPX			4.9x		3.0x	4.7x	SPX		7.2x	3.2x		3.4x						
NDX	0.9%	2.3%	1.4%	3.0%	1.4%	4.0%	1.4%	NDX		3.8x	7.2x	3.1x	17.0x	3.1x	5.6x	NDX			4.0x	7.8x	2.9x	3.9x	NDX		6.7x	3.7x		4.1x	6.9x					
RTY	0.9%	2.6%	1.6%	3.5%	1.7%	4.4%	1.8%	RTY		3.6x	6.4x	2.9x	13.8x	2.8x	5.1x	RTY		2.9x		3.6x	7.0x	2.6x	3.8x	RTY		6.1x	3.7x		4.4x	6.3x				
Europe																																		
SX5E	1.1%	2.7%	1.8%	3.6%	2.0%	4.7%	2.1%	SX5E	5.3x	3.5x	5.7x	3.0x	11.2x	3.0x	5.0x	SX5E		3.0x		3.8x	6.6x	2.9x	3.8x	SX5E	3.7x	7.1x	4.2x	7.9x	4.8x	7.0x				
FTSE	0.5%	1.5%	0.7%	2.0%	0.7%	2.6%	0.6%	FTSE		5.8x		4.2x		3.9x	9.8x	FTSE			5.5x		3.2x	5.1x	FTSE		9.1x			3.5x						
DAX	0.8%	2.2%	1.3%	2.9%	1.4%	3.7%	1.3%	DAX	7.0x	4.1x	7.6x	3.3x	18.4x	3.3x	6.0x	DAX			4.1x	8.3x	3.0x	4.2x	DAX		7.5x	3.8x		4.2x	7.5x					
Asia/Pacific																																		
ASX	0.3%	1.1%	0.5%	1.5%	0.6%	1.9%	0.6%	ASX		7.8x	21.5x	5.6x		5.3x	14.6x	ASX				7.8x	21.3x	4.3x	7.7x	ASX		13.0x			3.8x	15.3x				
NKY	0.9%	2.3%	1.5%	3.0%	1.7%	3.7%	1.9%	NKY	6.5x	4.5x	7.5x	3.8x	13.0x	4.0x	6.8x	NKY		3.7x	18.4x	5.0x	8.6x	3.8x	5.4x	NKY	4.4x	9.2x	4.8x	11.1x	5.3x	9.9x				
KOSPI	0.9%	2.2%	1.4%	2.9%	1.6%	3.8%	1.8%	KOSPI	6.7x	4.5x	7.8x	3.7x	14.3x	3.8x	6.6x	KOSPI		3.6x	21.2x	4.9x	8.5x	3.6x	5.1x	KOSPI	4.2x	8.6x	4.5x	10.8x	4.9x	9.2x				
HSI	0.7%	2.1%	1.4%	3.0%	1.7%	4.1%	2.1%	HSI	8.2x	4.8x	8.7x	3.8x	15.4x	3.8x	6.6x	HSI		3.7x	22.6x	4.8x	8.5x	3.5x	4.8x	HSI		9.2x	4.4x	11.9x	4.9x	9.5x				
HSCE	1.3%	3.1%	2.3%	4.3%	2.9%	5.9%	3.5%	HSCE	5.2x	3.9x	5.6x	3.4x	8.7x	3.5x	5.2x	HSCE		3.3x	11.5x	4.2x	6.2x	3.3x	4.3x	HSCE	4.8x	9.7x	5.4x	10.0x	6.0x	9.6x				
Emerging Markets																																		
FXI	1.4%	3.3%	2.3%	4.3%	2.5%	5.5%	2.8%	FXI	4.6x	3.2x	4.6x	2.9x	8.8x	2.8x	4.7x	FXI		2.9x	12.3x	3.5x	5.8x	2.6x	3.7x	FXI										
EEM	1.1%	3.1%	2.0%	4.2%	2.3%	5.6%	2.5%	EEM	5.4x	3.1x	5.1x	2.7x	9.2x	2.7x	4.4x	EEM		2.7x		3.3x	5.6x	2.5x	3.2x	EEM										
EWZ	1.4%	3.6%	2.6%	4.7%	3.0%	6.2%	3.1%	EWZ	4.5x	2.8x	4.1x	2.7x	7.0x	2.9x	3.9x	EWZ		2.6x	10.0x	3.3x	4.8x	2.7x	3.2x	EWZ	3.7x	7.2x	4.4x	6.5x	5.2x	7.0x				
US Sectors																																		
XLY	0.7%	2.2%	1.2%	2.9%	1.3%	3.9%	1.3%	XLY		3.9x	8.4x	3.2x	23.1x	3.0x	6.5x	XLY				4.1x	9.2x	2.8x	3.9x	XLY										
XLP	0.4%	1.3%	0.6%	1.6%	0.5%	1.9%		XLP				4.7x		4.7x		XLP								XLP										
XLE	1.0%	2.8%	1.8%	3.9%	2.2%	5.4%	2.5%	XLE	5.7x	3.4x	5.7x	3.0x	10.7x	3.0x	4.6x	XLE		2.9x		3.6x	5.9x	2.8x	3.5x	XLE										
XLF	1.1%	2.7%	1.8%	3.6%	2.0%	4.7%	2.1%	XLF	5.5x	3.6x	6.1x	3.1x	11.0x	3.1x	5.0x	XLF		3.0x		3.8x	6.5x	2.9x	3.9x	XLF										
XLV	0.6%	1.7%	0.8%	1.9%	0.6%	2.2%	0.5%	XLV		4.8x	11.7x	3.8x		3.8x	12.5x	XLV						3.2x	5.7x	XLV										
XLI	0.7%	2.3%	1.4%	3.2%	1.5%	4.3%	1.7%	XLI		3.8x	7.1x	3.2x	17.5x	3.1x	5.6x	XLI		3.1x		4.0x	7.7x	2.8x	3.9x	XLI										
XLB	1.0%	2.9%	1.9%	3.8%	2.2%	5.2%	2.2%	XLB	5.6x	3.3x	5.3x	2.9x	11.2x	3.0x	4.4x	XLB		2.9x		3.6x	5.8x	2.6x	3.3x	XLB										
XLK	0.9%	2.4%	1.4%	3.1%	1.5%	4.1%	1.4%	XLK	6.3x	3.6x	6.7x	3.1x	18.5x	3.0x	5.9x	XLK		3.0x	29.2x	4.0x	8.0x	2.7x	3.7x	XLK										
XLU	0.3%	1.3%	0.5%	1.5%	0.4%	1.8%		XLU				4.8x		4.5x		XLU								XLU										
XRT	1.1%	2.8%	1.8%	3.7%	1.9%	4.6%	1.9%	XRT	5.3x	3.3x	5.4x	2.8x	12.6x	2.7x	4.9x	XRT		2.9x		3.5x	6.6x	2.5x	3.8x	XRT										
XHB	1.8%	4.1%	3.1%	5.4%	3.5%	7.0%	3.8%	XHB	3.8x	2.8x	3.9x	2.6x	5.8x	2.6x	3.6x	XHB		2.6x	8.0x	3.1x	4.4x	2.6x	3.2x	XHB										
FX/Rates/Commodity																																		
FXE	0.2%	0.8%	0.3%	0.8%	0.2%	0.6%		FXE				7.4x		7.6x		FXE								FXE		18.0x								
FXF	0.1%	0.6%	0.2%	0.7%	0.2%	0.7%		FXF				9.6x		9.9x		FXF								FXF										
TLT	0.9%	2.2%	1.4%	2.8%	1.4%	3.1%	1.2%	TLT	6.5x	4.4x	7.3x	3.7x	15.5x	3.7x	7.4x	TLT		3.6x	22.9x	4.9x	9.8x	3.3x	5.4x	TLT	4.3x	8.6x	4.7x	10.0x	5.2x	8.5x				
GLD	0.7%	1.9%	1.3%	2.9%	1.7%	4.3%	2.4%	GLD	9.2x	5.5x	9.6x	4.5x	16.9x	4.4x	7.4x	GLD		4.2x	23.8x	5.5x	9.4x	3.9x	5.4x	GLD		10.4x	4.8x	13.3x	5.3x	11.4x				
SLV	2.0%	4.2%	3.3%	5.8%	4.2%	8.1%	5.3%	SLV	4.1x	3.3x	4.4x	3.0x	6.3x	3.0x	4.1x	SLV	3.9x	3.0x	8.1x	3.5x	4.9x	3.0x	3.6x	SLV	4.7x	9.9x	6.0x	8.7x	7.5x	9.0x				
UNG	3.2%	6.3%	5.3%	8.0%	6.1%	11.1%	7.9%	UNG	3.0x	2.6x	3.1x	2.5x	4.5x	2.7x	3.3x	UNG	3.2x	2.6x	5.3x	2.9x	3.8x	2.7x	3.1x	UNG	7.4x	18.3x	10.6x	7.0x	11.6x	8.0x				
USO	2.4%	5.2%	4.1%	7.0%	5.1%	8.7%	5.7%	USO	3.4x	2.8x	3.6x	2.6x	5.0x	2.6x	3.6x	USO	3.4x	2.6x	6.3x	3.0x	4.2x	2.8x	3.4x	USO	4.7x	10.0x	6.4x	7.7x	7.7x	8.2x				

Source: Deutsche Bank, Bloomberg Finance LP, FAME, Reuters

Note: Where pricing history is insufficient in a strategy it is omitted from the table

How to read this table
 4.0x
 ↑
 Current (coloured according to z-score: 2.5 is red, -2.5 is green)



Volatility Spreads Heat Map

The table below shows spreads between 3M ATM implied volatilities and 3M realized volatilities of various underlyings. Each spread is represented as the row minus the column—so each spread appears twice, once with each underlying “on top.” Cells are shaded according to how low or high the “row minus column” spread is historically (using a 3Y history)—green means the spread is historically low, and red means the spread is historically high.

		Short Volatility															
		SPX	NDX	RTY	SX5E	FTSE	DAX	ASX	NKY	KOSPI	HSI	FXI	EEM	XLE	XLF	XLK	
3M Implied	SPX		-3 -2.8 -1	-9 -4.3 -5	-7 -4.8 -2	-1 1.7 2	-6 -2.1 1	0 3.6 4	-4 -2.0 3	-3 -1.7 4	-5 -1.2 2	-12 -6.7 -4	-11 -6.0 -7	-9 -4.8 -5	-13 -4.3 -5	-2 -2.9 0	
	3M Realized		-3 -2.8 0	-11 -3.4 -4	-11 -12.1 -2	-3 -1.7 3	-9 -7.3 1	-1 1.8 5	-6 -5.0 8	-6 -6.0 5	-7 -4.3 5	-14 -7.6 -3	-12 -6.5 -6	-9 -4.8 -4	-14 -2.1 -3	-3 -2.2 2	
3M Implied	NDX	1 2.8 3		-8 -1.4 -3	-6 -2.0 0	1 4.6 4	-5 0.8 3	1 6.5 6	-2 0.9 4	-2 1.1 5	-4 1.6 3	-10 -3.9 -3	-10 -3.2 -4	-7 -2.0 -3	-11 -1.4 -2	0 0.0 1	
	3M Realized	0 2.8 3		-11 -0.6 -2	-9 -9.3 -1	-1 1.1 3	-8 -4.5 3	-1 4.6 6	-5 -2.2 7	-5 -3.2 6	-7 -1.5 6	-13 -4.8 -2	-12 -3.7 -4	-9 -2.1 -2	-14 0.7 -1	0 0.5 2	
3M Implied	RTY	5 4.3 9	3 1.4 8		-1 -0.5 6	5 6.0 11	1 2.2 9	6 7.9 13	2 2.3 12	3 2.6 12	1 3.0 10	-5 -2.5 4	-5 -1.8 1	-2 -0.5 3	-4 0.0 2	3 1.4 9	
	3M Realized	4 3.4 11	2 0.6 11		-4 -8.7 8	3 1.7 15	-2 -3.9 11	4 5.1 18	-2 -1.6 21	-1 -2.7 15	-2 -0.9 15	-7 -4.3 6	-5 -3.1 4	-3 -1.5 4	-4 1.3 3	2 1.1 13	
3M Implied	SX5E	2 4.8 7	0 2.0 6	-6 0.5 1		3 6.5 8	0 2.7 4	3 8.4 10	-1 2.8 9	1 3.1 7	-2 3.6 6	-9 -2.0 0	-8 -1.2 -1	-5 0.0 1	-8 0.5 1	1 1.9 6	
	3M Realized	2 12.1 11	1 9.3 9	-8 8.7 4		3 10.4 11	-1 4.8 5	3 13.9 14	-3 7.1 15	0 6.1 9	-2 7.8 9	-8 4.4 3	-6 5.6 1	-4 7.2 4	-8 10.0 4	2 9.8 11	
3M Implied	FTSE	-2 -1.7 1	-4 -4.6 -1	-11 -6.0 -5	-8 -6.5 -3		-7 -3.8 0	-1 1.9 3	-4 -3.7 2	-4 -3.4 2	-6 -3.0 0	-12 -8.5 -5	-12 -7.8 -7	-10 -6.5 -5	-14 -6.0 -5	-3 -4.6 0	
	3M Realized	-3 1.7 3	-3 -1.1 1	-15 -1.7 -3	-11 -10.4 -3		-10 -5.6 0	-1 3.5 4	-7 -3.3 5	-8 -4.3 4	-7 -2.6 3	-14 -5.9 -5	-14 -4.8 -5	-13 -3.1 -2	-16 -0.4 -2	-3 -0.5 2	
3M Implied	DAX	-1 2.1 6	-3 -0.8 5	-9 -2.2 -1	-4 -2.7 0	0 3.8 7		1 5.7 9	-3 0.1 8	0 0.4 5	-3 0.8 4	-10 -4.7 -2	-9 -4.0 -3	-6 -2.8 -1	-10 -2.2 -1	-2 -0.8 5	
	3M Realized	-1 7.3 9	-3 4.5 8	-11 3.9 2	-5 -4.8 1	0 5.6 10		1 9.1 12	-7 2.3 14	-1 1.3 6	-3 3.0 5	-9 -0.4 -1	-8 0.8 -1	-7 2.4 3	-10 5.2 3	-1 5.0 9	
3M Implied	ASX	-4 -3.6 0	-6 -6.5 -1	-13 -7.9 -6	-10 -8.4 -3	-3 -1.9 1	-9 -5.7 -1		-5 -5.6 1	-5 -5.3 1	-6 -4.9 -1	-12 -10.4 -7	-13 -9.7 -8	-11 -8.4 -6	-15 -7.9 -6	-5 -6.5 -1	
	3M Realized	-5 -1.8 1	-6 -4.6 1	-18 -5.1 -4	-14 -13.9 -3	-4 -3.5 1	-12 -9.1 -1		-7 -6.8 3	-9 -7.8 2	-7 -6.1 1	-16 -9.4 -5	-16 -8.3 -6	-14 -6.6 -4	-18 -3.9 -4	-4 -4.0 1	
3M Implied	NKY	-3 2.0 4	-4 -0.9 2	-12 -2.3 -2	-9 -2.8 1	-2 3.7 4	-8 -0.1 3	-1 5.6 5		-5 0.3 5	-5 0.7 3	-11 -4.8 -3	-13 -4.1 -4	-11 -2.8 -2	-15 -2.3 -2	-3 -0.9 2	
	3M Realized	-8 5.0 6	-7 2.2 5	-21 1.6 2	-15 -7.1 3	-5 3.3 7	-14 -2.3 7	-3 6.8 7		-12 -1.0 10	-9 0.7 10	-19 -2.6 2	-19 -1.5 2	-18 0.2 2	-22 2.9 2	-6 2.8 5	
3M Implied	KOSPI	-4 1.7 3	-5 -1.1 2	-12 -2.6 -3	-7 -3.1 -1	-2 3.4 4	-5 -0.4 0	-1 5.3 5	-5 -0.3 5		-4 0.5 1	-11 -5.1 -4	-12 -4.3 -5	-9 -3.1 -3	-13 -2.6 -2	-5 -1.2 2	
	3M Realized	-5 6.0 6	-6 3.2 5	-15 2.7 1	-9 -6.1 0	-4 4.3 8	-6 -1.3 1	-2 7.8 9	-10 1.0 12		-4 1.7 4	-12 -1.6 -2	-11 -0.5 -2	-9 1.2 0	-13 3.9 2	-5 3.8 7	
3M Implied	HSI	-2 1.2 5	-3 -1.6 4	-10 -3.0 -1	-6 -3.6 2	0 3.0 6	-4 -0.8 3	1 4.9 6	-3 -0.7 5	-1 -0.5 4		-8 -5.5 -4	-10 -4.8 -4	-8 -3.6 -1	-11 -3.0 -2	-3 -1.6 4	
	3M Realized	-5 4.3 7	-6 1.5 7	-15 0.9 2	-9 -7.8 2	-3 2.6 7	-5 -3.0 3	-1 6.1 7	-10 -0.7 9	-4 -1.7 4		-10 -3.3 -3	-12 -2.2 -2	-12 -0.6 1	-15 2.2 0	-4 -2.0 7	
3M Implied	FXI	4 6.7 12	3 3.9 10	-4 2.5 5	0 2.0 9	5 8.5 12	2 4.7 10	7 10.4 12	3 4.8 11	4 5.1 11	4 5.5 8		-3 0.7 1	-2 1.9 5	-4 2.5 4	3 3.9 11	
	3M Realized	3 7.6 14	2 4.8 13	-6 4.3 7	-3 -4.4 8	5 5.9 14	1 0.4 9	5 9.4 16	-2 2.6 19	2 1.6 12	3 3.3 10		-3 1.1 3	-3 2.8 8	-5 5.6 6	3 5.4 14	
3M Implied	EEM	7 6.0 11	4 3.2 10	-1 1.8 5	1 1.2 8	7 7.8 12	3 4.0 9	8 9.7 13	4 4.1 13	5 4.3 12	4 4.8 10	-1 -0.7 3		0 1.2 4	-2 1.8 4	5 3.2 11	
	3M Realized	6 6.5 12	4 3.7 12	-4 3.1 5	-1 -5.6 6	5 4.8 14	1 -0.8 8	6 8.3 16	-2 1.5 19	2 0.5 11	2 2.2 12	-3 -1.1 3		-1 1.7 5	-4 4.4 5	5 4.3 13	
3M Implied	XLE	5 4.8 9	3 2.0 7	-3 0.5 2	-1 0.0 5	5 6.5 10	1 2.8 6	6 8.4 11	2 2.8 11	3 3.1 9	1 3.6 8	-5 -1.9 2	-4 -1.2 0		-5 0.5 1	3 1.9 8	
	3M Realized	4 4.8 9	2 2.1 9	-4 1.5 3	-4 -7.2 4	2 3.1 13	-3 -2.4 7	4 6.6 14	-2 -0.2 18	0 -1.2 9	-1 0.6 12	-8 -2.8 3	-5 -1.7 1		-6 2.8 4	3 2.6 10	
3M Implied	XLF	5 4.3 13	2 1.4 11	-2 0.0 4	-1 -0.5 8	5 6.0 14	1 2.2 10	6 7.9 15	2 2.3 15	2 2.6 13	2 3.0 11	-4 -2.5 4	-4 -1.8 2	-1 -0.5 5		3 1.4 12	
	3M Realized	3 2.1 14	1 -0.7 14	-3 -1.3 4	-4 -10.0 8	2 0.4 16	-3 -5.2 10	4 3.9 18	-2 -2.9 22	-2 -3.9 13	0 -2.2 15	-6 -5.6 5	-5 -4.4 4	-4 -2.8 6		1 -0.2 15	
3M Implied	XLK	0 2.9 2	-1 0.0 0	-9 -1.4 -3	-6 -1.9 -1	0 4.6 3	-5 0.8 2	1 6.5 5	-2 0.9 3	-2 1.2 5	-4 1.6 3	-11 -3.9 -3	-11 -3.2 -5	-8 -1.9 -3	-12 -1.4 -3		
	3M Realized	-2 2.2 3	-2 -0.5 0	-13 -1.1 -2	-11 -9.8 -2	-2 0.5 3	-9 -5.0 1	-1 4.0 4	-5 -2.8 6	-7 -3.8 5	-7 -2.0 4	-14 -5.4 -3	-13 -4.3 -5	-10 -2.6 -3	-15 0.2 -1		

Source: Deutsche Bank, Bloomberg Finance LP, FAME, Reuters

How to read this table
 10th percentile ↗ ↑ ↘ 90th percentile
 Current (coloured according to z-score: 2.5 is red, -2.5 is green)



Appendix 1

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