

# The Buzz: Election protection?

## Risk metrics across the options market have fallen dramatically

The first week of November brings a heavy dose of news flow with an ISM release, mid-term elections, an FOMC meeting, and non-farm payrolls. However, risk metrics in the S&P 500 options market are down dramatically, pointing to a less anxious investor community: (1) we estimate the probability of a “tail event” has been cut in half since late August; (2) skew metrics are down; and (3) the term structure of implied volatility remains upward-sloping.

## Buy puts to hedge a potential sharp move during a data heavy week

Expectations for QE2 and the election are high and fear as measured in options has been cut in half. We analyze the “optimal put” to buy for those who are fully invested, have participated in the recent market rally, and are concerned that the Fed or the election may disappoint. In a scenario where the market pulls back -2.5% by market close Wednesday, the optimal hedge is buying SPX November 1125 puts for \$6.6, in our view.

## S&P 500 realized volatility has averaged 12 post midterm elections

Our analysis of the six Congressional change of control elections since 1950 shows S&P 500 realized vol averaged 12 in the month after the election, and 11 three-months after the election. Extending that analysis to all midterm elections back to 1950 shows that 1 month after the election, realized vol averaged 15 and continued to remain low. Three-month realized vol post the election averaged 14.

## Sell volatility to capitalize on post election relief

December VIX Futures are at 24.3, a hefty 12 points above or 2x the average realized vol level of 12 post midterm elections. If the FOMC and election results meet expectations, we see a scenario where implied vol could fall notably. We like using VIX options to position in a limited loss fashion:

**Trade1: Sell Dec-10 20-22.5 VIX call spreads for a credit of \$1.2 (sell 20 calls/buy 22.5 VIX calls).**

**Trade 2: Buy Dec-10 VIX 21 puts for \$1.1.**

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## Our preferred trades ahead of a data heavy week

**The first week of November brings a heavy dose of news flow with an ISM release, mid-term elections, the FOMC meeting, and non-farm payrolls, yet many of the risk metrics we track across the US options market have fallen dramatically.**

- **The S&P 500 option market's probability of a "tail event" has been cut in half since late August.** Market expectations for QE2 have had a large impact on S&P 500 implied volatility metrics. Since talk of QE2 began to filter through the market in late August, S&P 500 variance levels have seen a parallel shift down 5-6 points across the entire term structure (1m-10y). In a sense, with the Fed potentially back in play, the US options market has dropped its "tail-risk" probability dramatically. The S&P 500 option market's probability of a 10% down-move over the next month has been almost cut in half since late August to 5.7% versus 9.5% in late August, 12.5% in mid-May, and a long run average of 5.9% (2003-present)<sup>1</sup>. In short, the option market's current assessment for tail risk is currently below its average level over the last eight years. The decline in risk aversion is also being reflected in skew metrics.
- **Skew metrics are down, pointing to a less anxious investor community ahead of this week's catalyst stream.** Put/call skew measures the implied volatility differential between out-of-the-money puts and calls. Skew metrics tend to increase as the level of market anxiety rises. In anxious markets, investors buy OTM puts to hedge portfolio risk, driving up the vol level for OTM puts, and skew widens. Consistent with our tail risk probabilities above, one-month put/call skew has dropped back near late April levels, when the S&P 500 hit its year-to-date high of 1217.
- **The term structure of S&P 500 implied volatility remains upward-sloping** with 3.6 points separating 12m and 1m vol levels. We see risks as being more front-loaded and see an opportunity to position with shorter-dated November or December options ahead of this week's news flow.

### Positioning ahead of the data

The current volatility environment makes short-dated hedging appealing for those who are fully invested, have participated in the recent market rally, and are concerned that the Fed or the election may disappoint. On the flip side, if expectations are met, which is probably the most likely scenario in our view and the views of our economists, we see a scenario where implied volatility expectations for terms beyond November could fall notably. For investors looking to position for this scenario, we prefer short vol trades rather than simple long delta trades, as the market has already rallied significantly and there appears to be greater dislocations in future volatility expectations.

### **The "optimal" downside hedge: Buy Nov-10 1125 SPX puts for \$6.6 to position for a potential decline (112 SPY puts).**

A downside scenario could occur if the FOMC underwhelms the market in terms of the amount of QE2 and election results disappoint, in our view. Given lower vol and skew levels and an upward sloping term structure, we prefer owning OTM November put options to hedge. Assuming a conservative no shift in by strike vol, our results indicate the "optimal" put to own assuming a 2.5% down-move in the SPX by close of market Wednesday November 3 would be the 1125 S&P 500 put strike (corresponding strike on SPY: 112 ). Assuming a -5% move by Friday's close (November 5) would suggest owning an 1100 strike put (corresponding strike on SPY: 110). Details of our analysis are provided on page 8. Option buyers risk losing the entire premium paid.

<sup>1</sup> We estimate the option market's probability of a 10% down move in the S&P 500 over the next month through the price of a one-month 10% OTM binary put option.

**Positioning for upside: We prefer to play a decline in vol rather than positioning for upside via vanilla call options.**

If the FOMC meets market expectations in terms of its language and the amount of QE2, we would expect the market to react positively. However the question remains, after a 12.8% rise in the SPX since late August, how much more upside is left? Our US Portfolio Strategy team has a year-end price target of 1200, a meager 1.4% rise from current levels. While the market can clearly surpass fundamentals, a much stronger dislocation exists in the vol market, in our view.

- **The VIX futures market is still pricing in a 2x increase in realized vol over the coming months.** The VIX is at 21 versus 1m realized vol at 11, and Dec and Jan VIX futures are trading at 24.3 and 26.4, respectively. Our results indicate that realized volatility in the month following a midterm election has averaged 15. If we subset that analysis to the six Congressional change of control elections since 1950, the average realized vol 1m post election was 11.7 (median 10.8, max 18.2). If history is any guide, realized vol should remain low and the VIX could track realized lower and drop below 20. (See pages 10-12 for detailed analysis)
- **Two limited loss VIX trades to play a decline in volatility:** While our preference would be to sell December variance to capitalize on a decline in volatility, we would be reluctant to be short convexity through a data heavy week. Therefore, we like using VIX options to position for a potential decline in implied volatility in a limited loss fashion. Two of our favorite trades have been to sell ITM call spreads or buy VIX puts to take advantage of a decline in VIX futures levels.
  1. **Sell Dec-10 20-22.5 VIX call spreads for a credit of \$1.2 (sell Dec-10 20 calls/buy Dec-10 22.5 VIX calls).** We rank order all potential call spreads based on the ratio of max gain to max loss. Based on that analysis, selling the Dec-10 20-22.5 call spread looks attractive. The investor collects \$1.2 upfront. If the VIX drifts below 20 by Dec-10 expiration, the call spread will expire worthless and investors will earn the max potential gain of \$1.2. The max loss is \$2.5 if the VIX closes above 22.5 at expiration. This trade allows investors to take advantage of the elevated VIX futures in a “positive carry” fashion.
  2. **Buy Dec-10 VIX 21 puts for \$1.1.** Alternatively, investors can position for a decline in the VIX futures by buying VIX puts. Compared to selling call spreads, the put trade is more profitable under a substantial VIX decline. The put breaks even at 19.9 and in order to make more money than the call spread, the VIX would have to drop below 18.7. On the flip side, should the VIX rise substantially by December expiration, the max loss on the put is \$1.1 compared to the max loss of \$2.5 for the call spread.

## Key macro data points have important implications for volatility and for the market

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A potential second round of quantitative easing, election results, and macro data releases such as the ISM and non-farm payrolls which hint at the future growth path of the US economy could all be primary drivers for equity returns and realized volatility for the remainder of the year. While the impact of QE2 on realized volatility is hard to quantify, we perform historical analyses of SPX moves on ISM release dates and analyze market performance and realized volatility post mid-term elections over the last 60 years.

S&P 500 1m realized volatility currently stands at 11.3, its lowest level since late April, and right in-line with our historical results surrounding change of control elections. If history is any guide, realized volatility could remain low post the election, barring no surprises from the Fed. S&P 500 realized volatility averaged 11.7 and 11.4, one and three months following the six Congressional change of control elections since 1950. S&P 500 one-month variance levels are 21 and three-month levels are 23, which implies option market expectations are currently a hefty 9-11 points above the average level of realized volatility post elections. This dislocation is one reason we'd prefer to implement a positive view on this week's data via a decline in volatility rather than positioning with upside calls.

### US ISM will be an important assessment of where we are in the business cycle

Consensus expects 54 for the ISM, in-line with the current level of 54.4 (versus GS at 53). Our US Economics team expects the ISM will fall below 50 by early 2011 and last month's negative New Orders less Inventories spread implies potentially larger declines in the headline index over the next few months. Any clear disappointments in ISM could be damaging to the recent rally, in our view. While the November ISM may have less impact as investors await the outcome of the Election and FOMC meeting, ISM releases have historically been impactful for the market. We look at daily S&P 500 returns on ISM release dates and find:

- 71% of ISM releases (17/24) over the last 2-years have been accompanied by a market move of 100 bps or more.
- Four out of the last six SPX moves on ISM release dates have been in excess of 125 bps, with August and September at +2.2%, and +2.95% respectively.
- In terms of market direction, the market has been up by an average of 114 bps in 10 out of the last 12 releases. The two negatives occurred in June and July of this year at -1.72% and -0.32% respectively.

### SPX realized vol has averaged 12 one-month following Congressional change of control elections

The upcoming midterm election is likely to produce a significant shift in the composition of Congress. Public opinion polls indicate that Republicans have a good chance of winning the majority in the House while a takeover of the Senate is less likely but possible. Although most of the election results won't take effect until January 2011, knowledge of the results will factor heavily in the debate over extension of \$325 billion in expiring tax and benefit provisions awaiting congressional action before year end. Our US economists emphasize that the tax breaks are potentially more important to the economic recovery than additional QE. We look at S&P 500 returns and market volatility after all midterm elections over the last 60 years as well as after a change in control in the House and or Senate.

**The market has had strong positive returns post midterm elections over the last 60 years.** As our US economics team highlighted in the October 8 edition of the US Economics Analyst, over the last 60 years US equity prices, as measured by the S&P

500, have consistently increased following midterm elections, with an average gain of 18% nine months after the election, and more interestingly, not a single instance in which the return was less than 5%. If we take a closer look:

- On election day, the average S&P 500 return was 0.3% (median of 0.3%), up 10 out of 15 times. One-week after the election the S&P 500 was up 11 out of 15 times, rallying by 0.9% on average (median of 1.2%).
- Over the past 60 years, the impact of midterm elections on S&P 500 realized vol has been largely muted. Heading into the elections, SPX 1m realized vol averaged 17.4 (median 14.2) with a range of 7.3 in 2006 and 31.4 in 2002. One month after, the election realized volatility stood at an average level of 15 (median: 14.3; max 24.8) and was down in 10 out of 15 cases, with an average decline of 2.4 vol points. Three-month realized volatility post the election averaged 13.7 (median: 13).

**Change of control Elections have typically been associated with positive returns and low volatility.** The average gain in the S&P 500 during the 12 months following the six Congressional change of control elections since 1950 (including two Presidential election years) has been 11% with minimum and maximum returns of -4% and 33%, respectively. With respect to shorter-term market returns and realized volatility post midterm elections, our results indicate:

- On Election Day, S&P 500 returns were positive in all six cases by an average of 0.5% (median of 0.3%). One-week after the election the S&P 500 was up 5 out of 6 times with an average gain of 1.2% (median of 0.6%). The SPX was up 1.9% on average two weeks post the election (median 2.2%).
- Market volatility has historically been low heading into change of control elections and has remained low afterwards. S&P 500 realized vol averaged 10.6 in the month prior to elections and averaged a very slight rise post elections to 11.7. Realized volatility in the three-month window post midterm elections has averaged 11.4.

One caveat: while equities have tended to do well post midterm elections, our economists warn there is reason to be cautious in drawing comparisons this year. Large gains are already widely expected, and fiscal policy is tightening rather than loosening as it normally does following midterms.

### **Our US Economics team expects the FOMC to announce \$500 billion of QE2 over a 6 month period**

Our US Economics team expects the FOMC to announce a program of about \$500 billion (bn) in Treasury purchases, to be accomplished over a period of about six months, however, they think it is quite possible that a program of similar implied size might instead be specified in terms of a monthly purchase rate. In either case, they expect a clear indication that the program could extend beyond the initial commitment. Our team estimates that each \$1 trillion (trn) of large-scale asset purchases may provide a boost to real GDP growth that is roughly equivalent to a cut in the federal funds rate by 75 basis points (bp). Their analysis also suggests that Fed officials may end up having to purchase roughly \$2trn over the next 18-24 months in order to reach their dual mandate of low inflation and maximum sustainable employment.

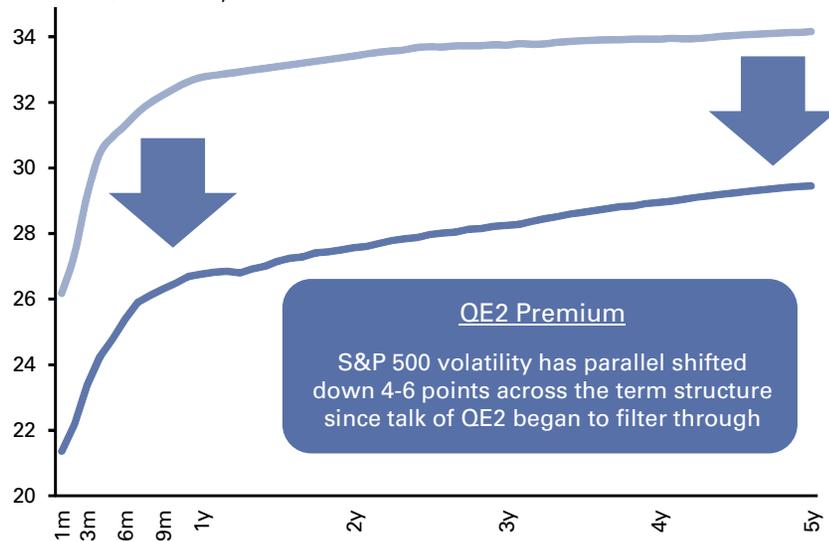
Our US Portfolio Strategy team expects QE2 to be positive for equity markets and other risk assets but estimates the market has already priced in \$500 billion to \$1 trillion of easing. As they wrote in the October 29 edition of the US Weekly Kickstart, QE2 is unlikely to change their sales or margin forecasts, so return prospects become a valuation debate. Bulls cite 20% upside to Fed models and a lower ERP. Our Strategy team's targets imply less upside, given 13.5x P/E is consistent with prior 1-2% real rate regimes, which is one reason we prefer trading a potential positive market response to QE2 via a direct decline in vol rather than through upside calls.

# The option market's probability of a "tail event" has been cut in half since late August.

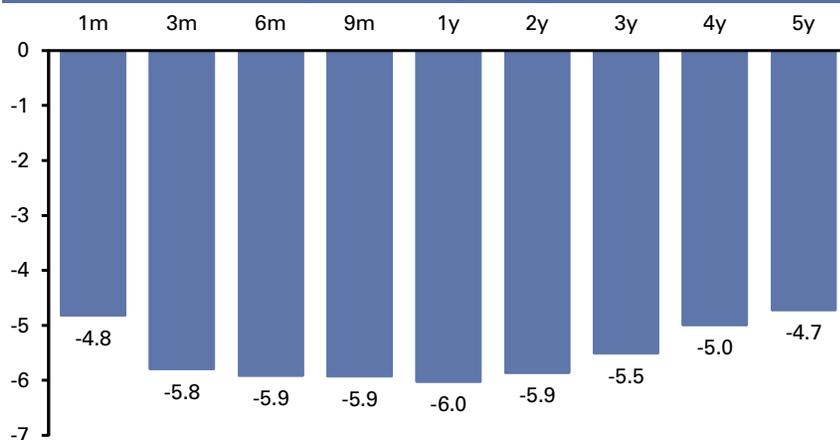
Skew metrics are down, pointing to a less anxious investor community ahead of the catalyst stream this week.

**Exhibit 1: Shifts in S&P 500 variance levels since August 31, 2010.**

Data as of October 29, 2010.



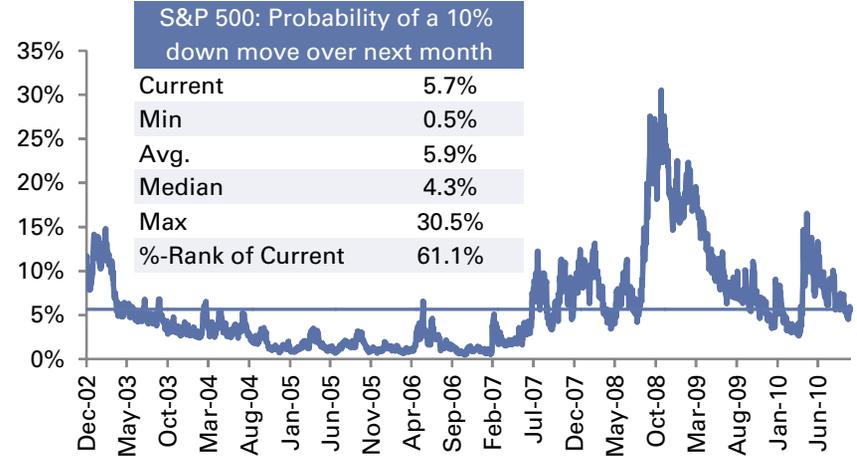
**S&P 500 variance swap level change : August 31 - October 29, 2010**



Source: Goldman Sachs Research estimates.

**Exhibit 2: Probability of a 10% SPX move has halved to 5.7% from late August.**

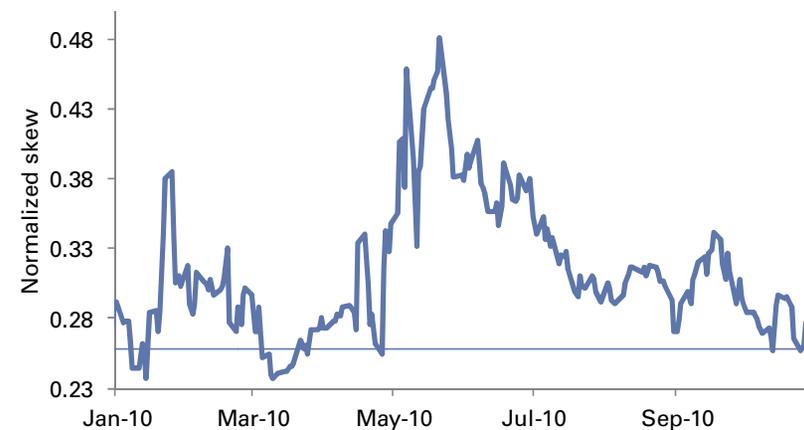
Data as of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 3: SPX 1m normalized skew has declined back to April-10 levels.**

(25-delta put – 25-delta call)/50-delta call implied vol. Data as of October 29, 2010.



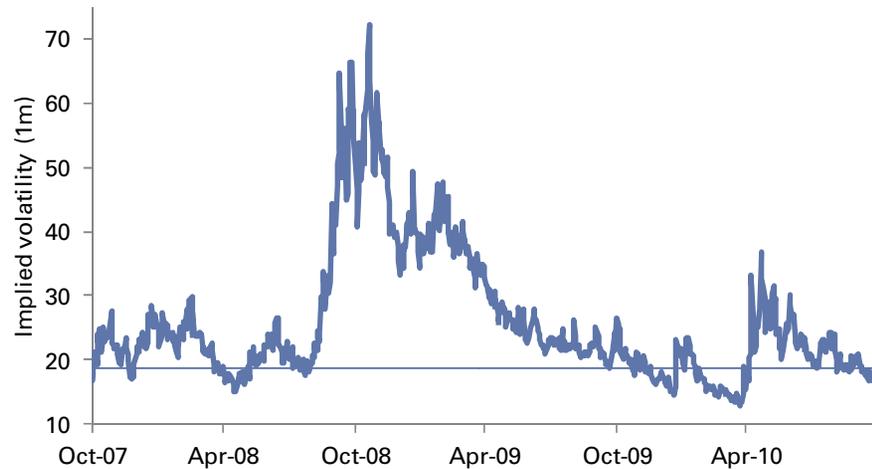
Source: Goldman Sachs Research estimates.

# S&P 500 shorter-dated implied volatility is down dramatically.

## SPX term structure of implied volatility remains upward-sloping.

**Exhibit 4: SPX 1m implied volatility is back near pre-EU crisis levels.**

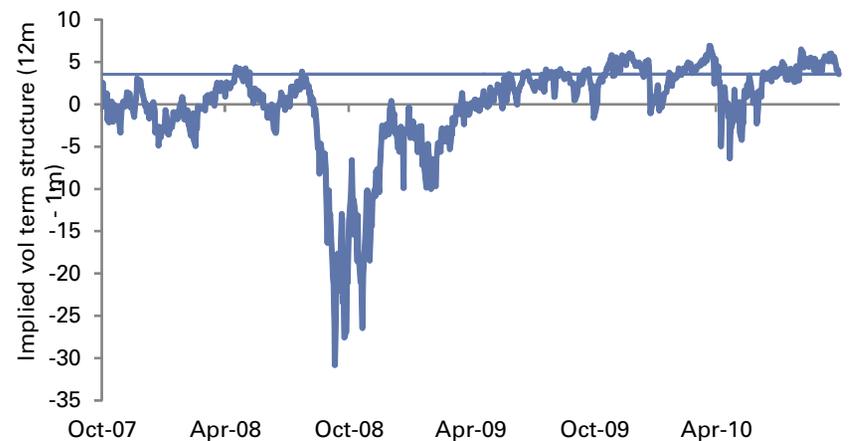
Data as of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 5: SPX 12m-1m implied vol term structure is at 3.6.**

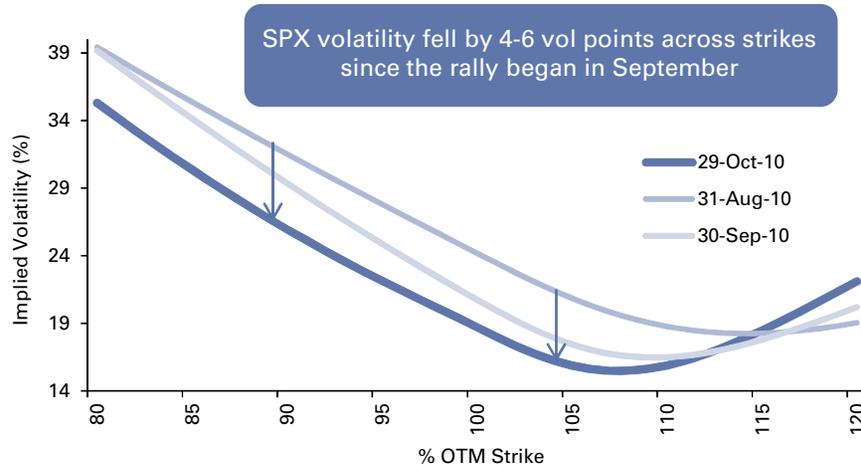
Data as of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 6: The SPX put wing has been knocked down by 4-6 vol points.**

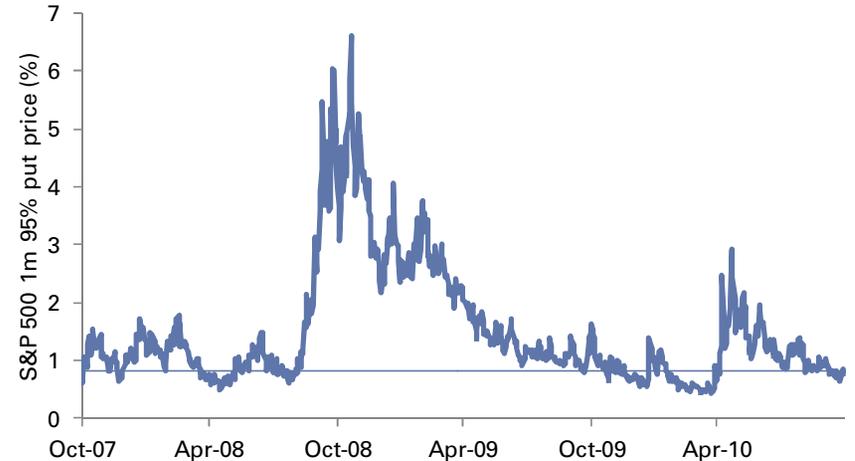
Data as of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 7: S&P 500 5% OTM 1m put option prices are near multi-year lows.**

Data as of October 29, 2010.



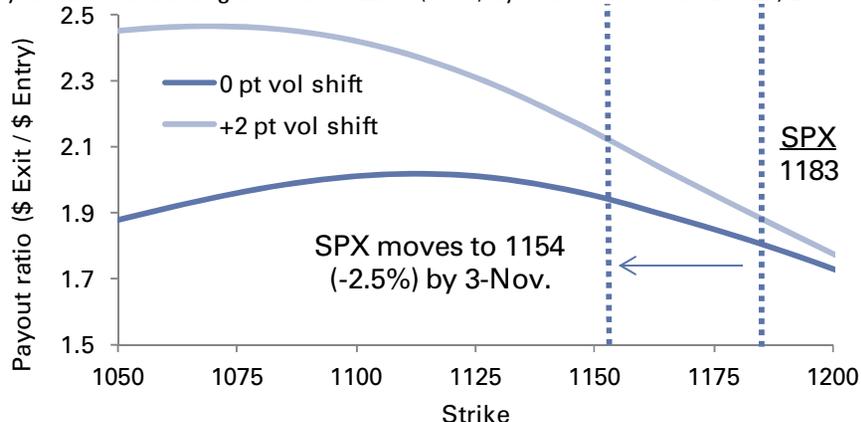
Source: Goldman Sachs Research estimates.

# The "optimal" downside hedge: Finding optimal strikes for S&P 500 Nov-10 OTM puts.

**Deep OTM puts outperform in case of a large decline in SPX.**

**Exhibit 8: Assuming a conservative no shift in vol and a market decline of 2.5% by Wednesday, the optimal hedge is buying SPX Nov-10 1125 puts.**

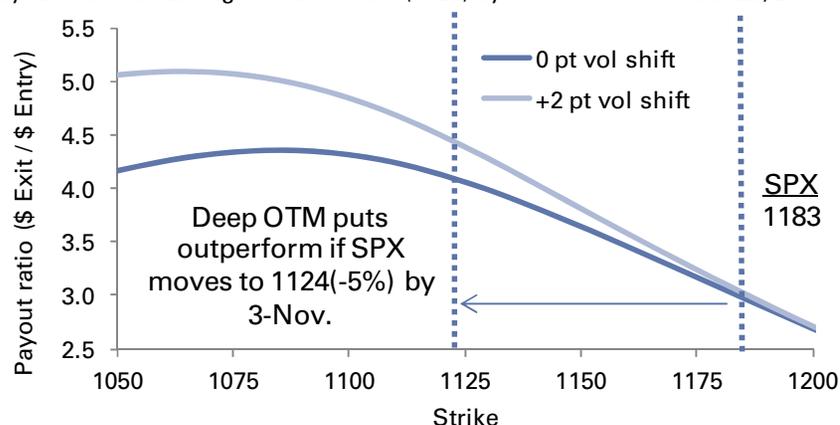
Payout ratios assuming SPX down -2.5% (1154) by 3-Nov. As of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 9: Assuming a conservative no shift in vol and a market decline of -5% by Wednesday, the optimal hedge is buying SPX Nov-10 1090 puts.**

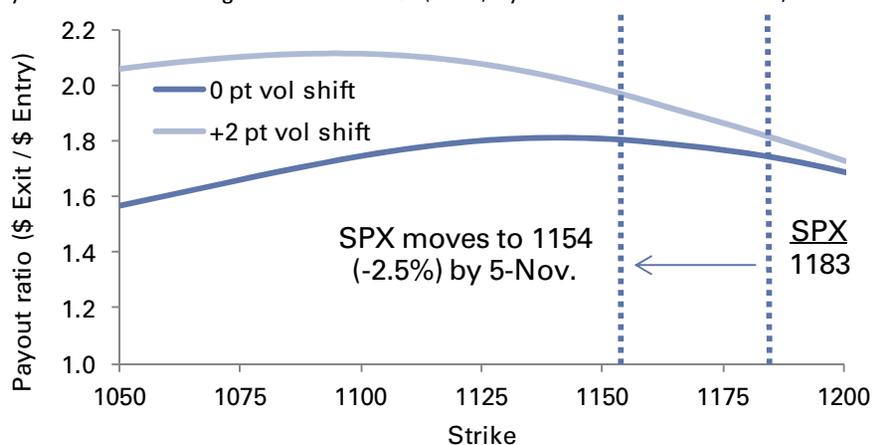
Payout ratios assuming SPX down -5% (1124) by 3-Nov. As of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 10: Assuming a conservative no shift in vol and a market decline of -2.5% by Friday, the optimal hedge is buying SPX Nov-10 1140 puts.**

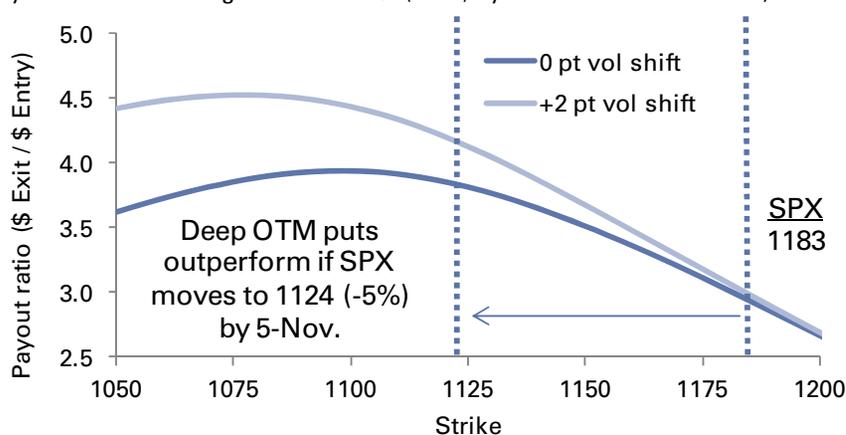
Payout ratios assuming SPX down -2.5% (1154) by 5-Nov. As of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 11: Assuming a conservative no shift in vol and a market decline of -5% by Friday, the optimal hedge is buying SPX Nov-10 1100 puts.**

Payout ratios assuming SPX down -5% (1124) by 5-Nov. As of October 29, 2010.



Source: Goldman Sachs Research estimates.

# Upside: Use VIX options to position for a decline in volatility in a limited loss fashion.

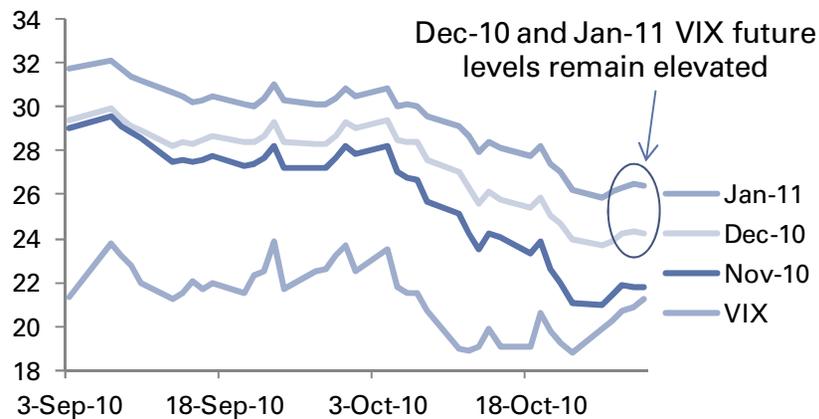
The VIX futures market is still pricing in a 2x increase in realized vol over the coming months.

**Two limited loss VIX trades to play a decline in volatility.** We like using VIX options to position for a potential decline in implied volatility in a limited loss fashion. Two of our favorite trades have been to sell ITM call spreads or buy VIX puts to take advantage of a decline in VIX futures levels.

**Trade 1: Sell Dec-10 20-22.5 VIX call spreads for a credit of \$1.2 (sell Dec-10 20 calls/buy Dec-10 22.5 VIX calls).** The investor collects \$1.2 upfront. If the VIX drifts below 20 by Dec-10 expiration, the call spread will expire worthless and investors will earn a max potential gain of \$1.2. The max loss is \$2.5 if the VIX closes above 22.5 at expiration. This trade allows investors to take advantage of the elevated VIX futures in a "positive carry" fashion.

**Trade 2: Buy Dec-10 VIX 21 puts for \$1.1.** Alternatively, investors can position for a decline in the VIX futures by buying VIX puts. Compared to selling call spreads, the put trade is more profitable under a substantial VIX decline. The put breaks even at 19.9 and in order to make more money than the call spread, the VIX would have to drop below 18.7. On the flip side, should the VIX rise substantially by December expiration, the max loss on the put is \$1.1 compared to the max loss of \$2.5 for the call spread.

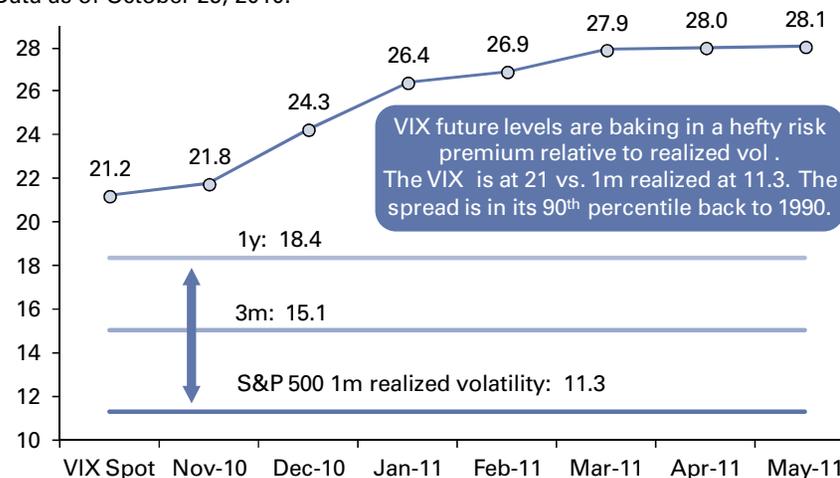
**Exhibit 13: Dec-10 and Jan-11 VIX futures are 3-5 points above VIX (21.2).**  
Data as of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 12: The VIX futures term structure is currently pricing in a 2x increase in SPX realized vol over the coming months.**

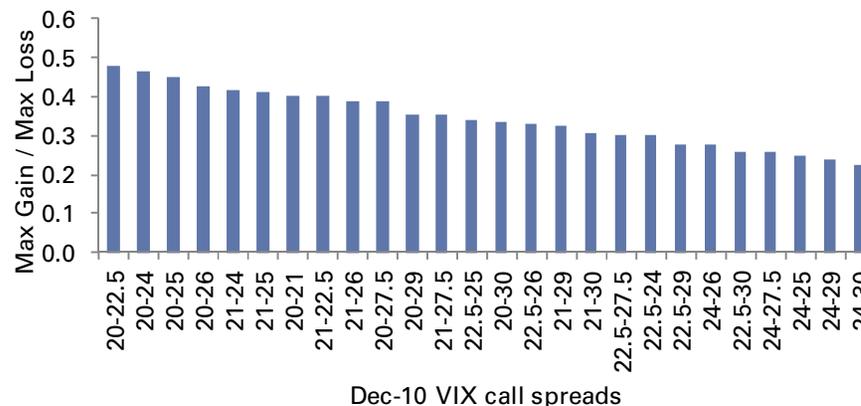
Data as of October 29, 2010.



Source: Goldman Sachs Research estimates.

**Exhibit 14: Rank order of Dec-10 VIX call spreads by ratio of max gain/max loss. 20-22.5 VIX call spreads screen as the most attractive sell.**

Max gain = premium collected, Max loss = distance between strikes. As of 29-Oct.

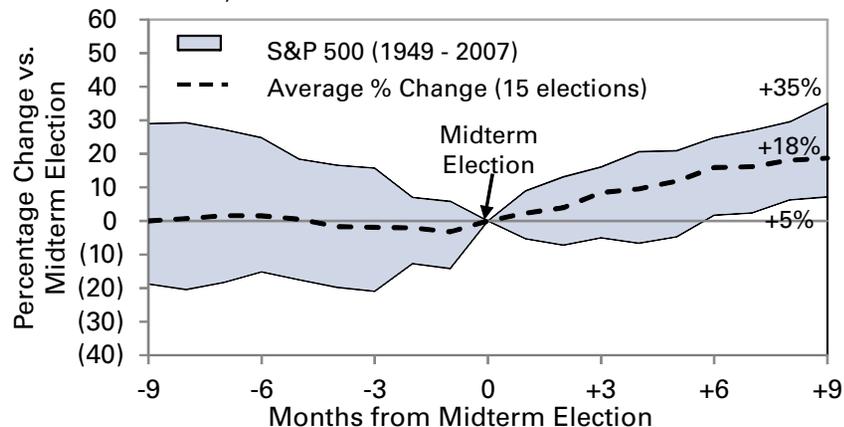


Source: Goldman Sachs Research estimates.

# S&P 500 has had strong positive returns post midterm elections over the last 60 years

**Exhibit 15: S&P 500 rose by an average of 18% nine months post midterm elections with a minimum return of 5% in all 15 cases.**

Data as of October 29, 2010.

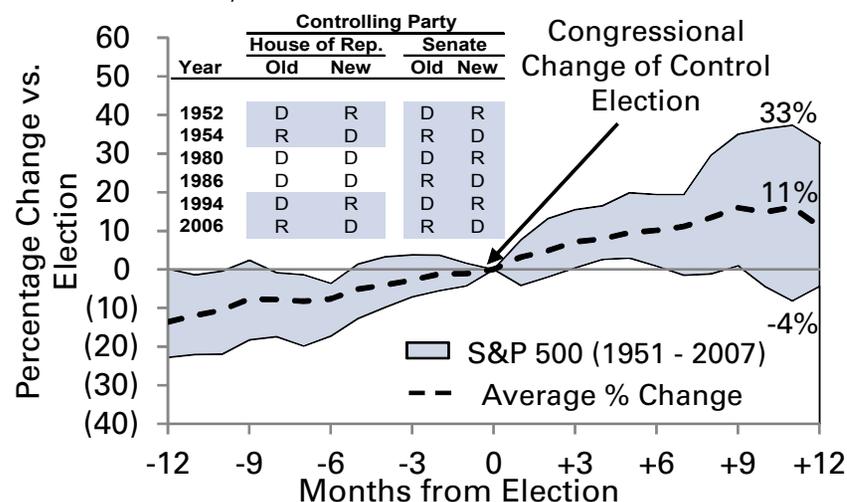


Election Date	Election Day	S&P 500 Returns after midterm election				
		1d	1wk	3m	6m	9m
Nov-50	-1.4	-0.1	1.5	13.0	16.4	17.6
Nov-54	0.3	2.0	4.3	15.5	19.7	35.0
Nov-58	0.4	0.9	2.8	7.2	11.8	17.7
Nov-62	1.0	0.6	1.9	13.3	19.2	19.5
Nov-66	-0.1	0.8	1.2	7.7	17.2	18.4
Nov-70	0.8	0.2	0.7	14.7	22.6	12.2
Nov-74	2.7	-0.5	-1.9	5.1	19.9	14.8
Nov-78	-1.4	0.6	-1.4	3.5	5.5	12.6
Nov-82	1.5	3.8	4.0	4.3	17.9	17.8
Nov-86	0.2	0.2	0.4	13.6	17.5	28.4
Nov-90	-0.9	-1.8	1.9	14.9	22.0	25.4
Nov-94	0.6	-0.1	-0.1	3.3	12.5	20.3
Nov-98	-0.1	0.7	1.6	14.5	21.9	19.0
Nov-02	0.8	0.9	-3.5	-7.8	1.2	5.5
Nov-06	0.2	0.2	0.8	4.9	9.2	6.8
Min	-1.4	-1.8	-3.5	-7.8	1.2	5.5
Median	0.3	0.6	1.2	7.7	17.5	17.8
Average	0.3	0.6	0.9	8.5	15.6	18.1
Max	2.7	3.8	4.3	15.5	22.6	35.0

Source: Goldman Sachs Research estimates.

**Exhibit 16: S&P 500 returns were positive in all instances of the six change of control elections with an average gain of 0.5% on election day.**

Data as of October 29, 2010.



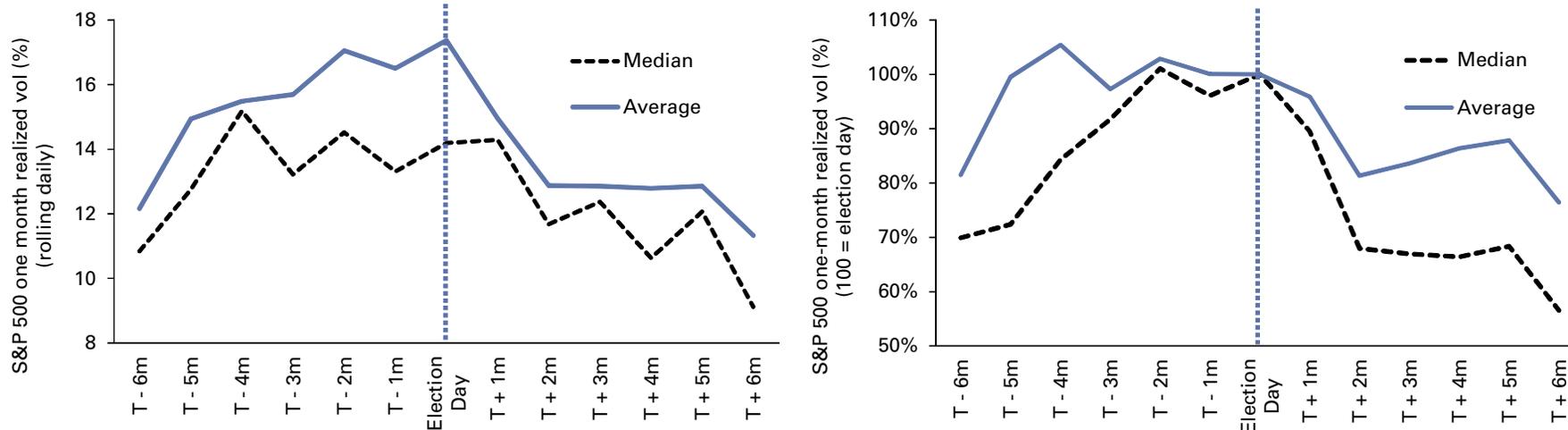
Election Day	Election Day	S&P 500 Returns Post Change of Control Election					
		1d	1wk	3m	6m	9m	12m
Nov-52	0.3	0.3	0.2	7.9	1.6	1.0	0.1
Nov-54	0.3	2.0	4.3	15.5	19.7	35.0	33.0
Nov-80	1.2	1.8	1.7	-0.4	1.3	1.1	-4.4
Nov-86	0.2	0.2	0.4	13.6	17.5	28.4	3.2
Nov-94	0.6	-0.1	-0.1	3.3	12.5	20.3	24.7
Nov-06	0.2	0.2	0.8	4.9	9.2	6.8	10.3
Min	0.2	-0.1	-0.1	-0.4	1.3	1.0	-4.4
Median	0.3	0.2	0.6	6.4	10.8	13.6	6.8
Average	0.5	0.7	1.2	7.5	10.3	15.5	11.2
Max	1.2	2.0	4.3	15.5	19.7	35.0	33.0

Source: Goldman Sachs Research estimates.

# S&P 500 realized volatility has been muted around midterm elections since 1950.

**Exhibit 17: The S&P 500 one-month realized volatility declined by 2.4 vol pts after midterm elections on average over the past 15 cycles. Current SPX one-month realized vol stands at 11.3, well below historical average levels heading into the upcoming election in November, 2010.**

S&P 500 one-month daily rolling realized volatility around midterm elections from 1950- 2006. Data as of October 29, 2010.



		Absolute level of S&P 500 one month rolling realized volatility								
	Election	6m before election	3m before election	2m before election	1m before election	1m rldz vol on election day	1m after election	2m after election	3m after election	6m after election
1	Nov-50	9.4	20.5	11.2	13.1	13.6	17.8	13.4	12.4	7.8
2	Nov-54	8.5	7.5	11.8	7.1	7.9	11.0	10.9	17.4	9.0
3	Nov-58	8.2	8.8	7.6	7.1	9.6	13.8	9.8	8.4	8.1
4	Nov-62	11.4	12.4	10.0	13.3	20.0	10.2	9.7	6.2	5.6
5	Nov-66	10.1	11.1	17.4	15.8	14.2	10.4	9.2	7.4	7.6
6	Nov-70	15.2	14.6	14.5	11.7	11.1	10.2	7.5	6.0	6.3
7	Nov-74	15.1	23.3	26.8	29.6	32.5	22.7	20.3	19.7	15.9
8	Nov-78	14.0	10.4	9.2	11.4	21.3	14.3	13.4	10.9	9.1
9	Nov-82	9.9	13.2	26.9	16.1	27.7	24.8	17.9	18.6	13.1
10	Nov-86	15.0	13.3	14.6	20.8	9.9	15.7	14.3	12.8	22.2
11	Nov-90	10.3	17.1	23.6	18.5	21.9	16.0	11.7	17.2	13.4
12	Nov-94	10.8	6.5	8.6	11.3	11.5	10.5	7.6	6.9	6.3
13	Nov-98	14.1	19.8	33.8	34.2	20.7	16.2	19.5	21.4	18.9
14	Nov-02	22.0	44.0	31.8	30.4	31.4	23.1	21.9	20.3	17.4
15	Nov-06	8.4	12.8	8.0	7.3	7.3	7.8	6.0	7.6	9.2
	<b>Average</b>	12.2	15.7	17.1	16.5	17.4	15.0	12.9	12.9	11.3
	<b>Median</b>	10.8	13.2	14.5	13.3	14.2	14.3	11.7	12.4	9.1
	<b>Max</b>	22.0	44.0	33.8	34.2	32.5	24.8	21.9	21.4	22.2
	<b>Min</b>	8.2	6.5	7.6	7.1	7.3	7.8	6.0	6.0	5.6
	<b>Current*</b>	17.2	20.2	19.3	13.0	11.3				

\*One-month realized vol on election day is S&P 500 1m realized vol as of October 29, 2010.

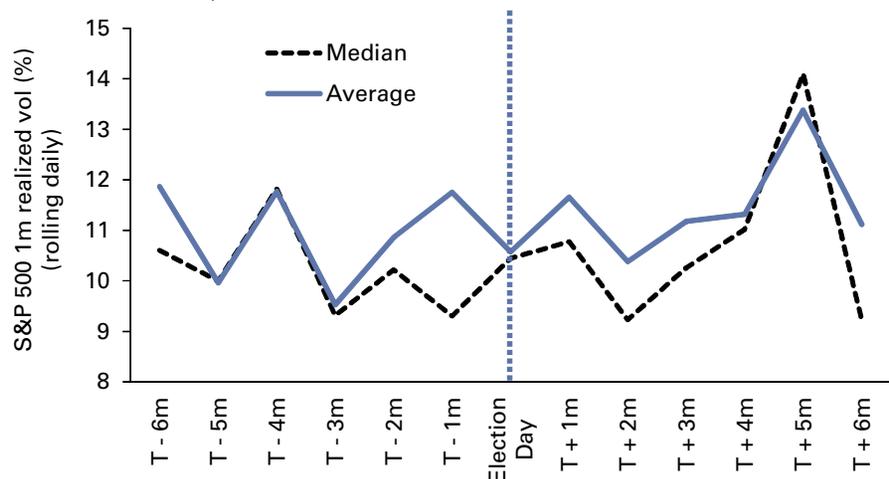
Source: Goldman Sachs Research estimates.

# S&P 500 realized volatility around change of control elections has also been subdued.

One-month realized vol heading into change of control elections was 10.6 on average and saw a slight increase in vol (1 vol pt) post election.

**Exhibit 18: The average one-month realized vol heading into change of control elections was 10.6, in-line with current levels of 11.3.**

Data as of October 29, 2010.



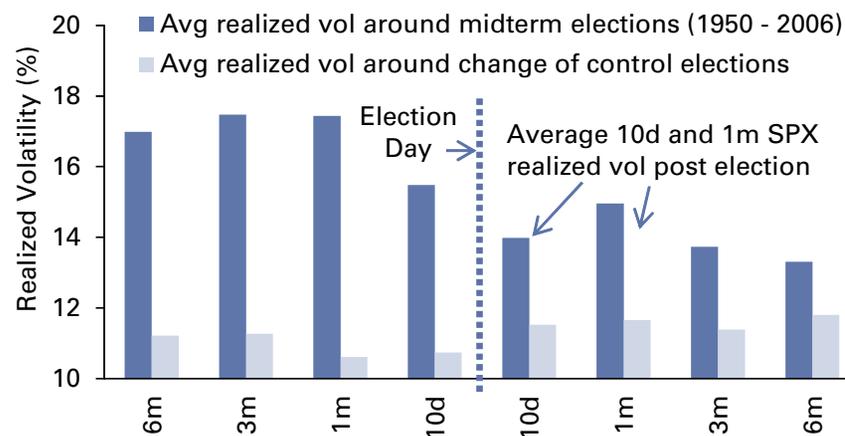
Absolute level of S&P 500 one month rolling realized volatility										
Election	before				1m rldz on election day	after				Current*
	6m	3m	2m	1m	1m	2m	3m	6m		
1 Nov-52	10.4	5.9	6.0	6.8	11.0	6.7	5.9	7.7	9.2	
2 Nov-54	8.5	7.5	11.8	7.1	7.9	11.0	10.9	17.4	9.0	
3 Nov-80	18.0	11.1	16.0	17.2	15.9	18.2	17.5	14.7	10.9	
4 Nov-86	15.0	13.3	14.6	20.8	9.9	15.7	14.3	12.8	22.2	
5 Nov-94	10.8	6.5	8.6	11.3	11.5	10.5	7.6	6.9	6.3	
6 Nov-06	8.4	12.8	8.0	7.3	7.3	7.8	6.0	7.6	9.2	
<b>Average</b>	11.9	9.5	10.9	11.8	10.6	11.7	10.4	11.2	11.1	
<b>Median</b>	10.6	9.3	10.2	9.3	10.4	10.8	9.2	10.3	9.2	
<b>Max</b>	18.0	13.3	16.0	20.8	15.9	18.2	17.5	17.4	22.2	
<b>Min</b>	8.4	5.9	6.0	6.8	7.3	6.7	5.9	6.9	6.3	
<b>Current*</b>	17.2	20.2	19.3	13.0	11.3					

\*One-month realized vol on election day is S&P 500 1m realized vol as of October 29, 2010.

Source: Goldman Sachs Research estimates.

**Exhibit 19: S&P 500 realized volatility averaged 11.7 one-month post the change of control elections, and 15 for all midterm elections since 1950.**

Data as of October 29, 2010.



S&P 500 Realized Vol Around Change of Control Election								
Date	6m	3m	1m	10d	10d	1m	3m	6m
Nov-52	7.5	8.1	11.0	10.6	8.0	6.7	7.4	8.7
Nov-54	9.3	9.7	7.9	7.1	11.3	11.0	13.0	12.7
Nov-80	14.3	16.1	15.9	16.2	19.0	18.2	17.4	15.4
Nov-86	15.6	16.0	10.0	8.5	15.7	15.7	14.5	16.0
Nov-94	9.4	10.2	11.6	12.9	10.5	10.5	8.7	7.8
Nov-06	11.2	7.6	7.4	9.1	4.7	7.8	7.3	10.2
<b>Avg</b>	11.2	11.3	10.6	10.7	11.5	11.7	11.4	11.8
<b>Median</b>	10.3	9.9	10.5	9.8	10.9	10.8	10.8	11.5

S&P 500 Realized Vol Around Midterm Elections (1950-2006)								
	6m	3m	1m	10d	10d	1m	3m	6m
<b>Avg</b>	17.0	17.5	17.4	15.5	14.0	15.0	13.7	13.3
<b>Median</b>	16.4	14.8	14.2	12.9	11.9	14.3	13.0	12.7

Source: Goldman Sachs Research estimates.

## Risks

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Pricing: Options prices and volatility levels in this report are indicative only.

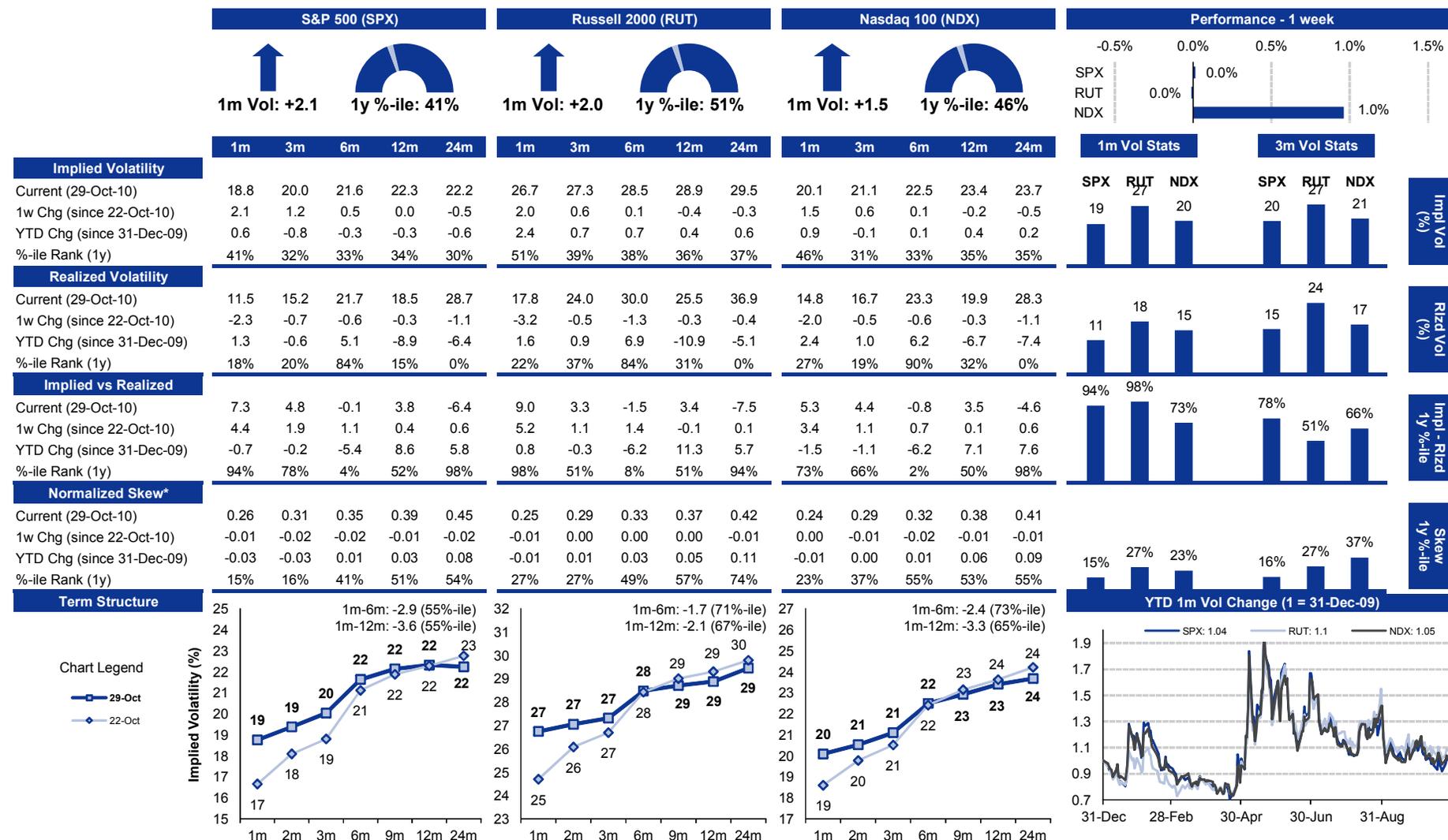
Investors who sell a variance swap risk unlimited losses if the realized volatility of the security exceeds the reference strike of the swap at expiration.

Investors who buy a variance swap risk a maximum loss equal to the square of the variance strike times the variance notional, (variance units \* variance strike<sup>2</sup>), if realized volatility goes to zero.

# US Volatility Landscape

## Exhibit 20: ATM implied volatility comparison across US indices

Data: as of October 29, 2010 market close.



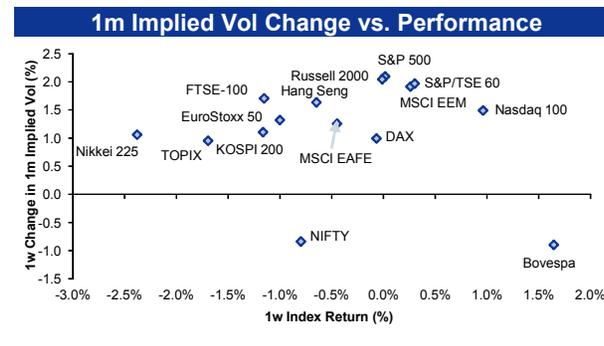
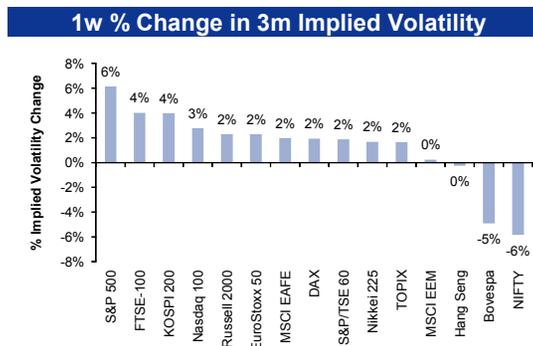
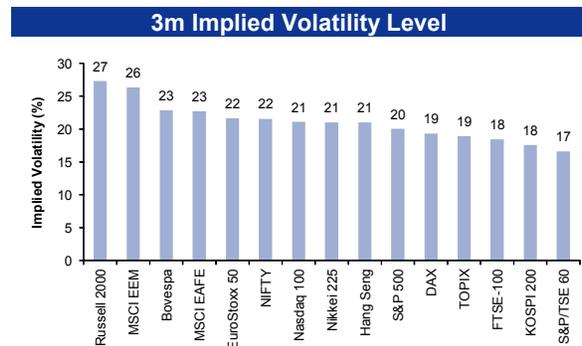
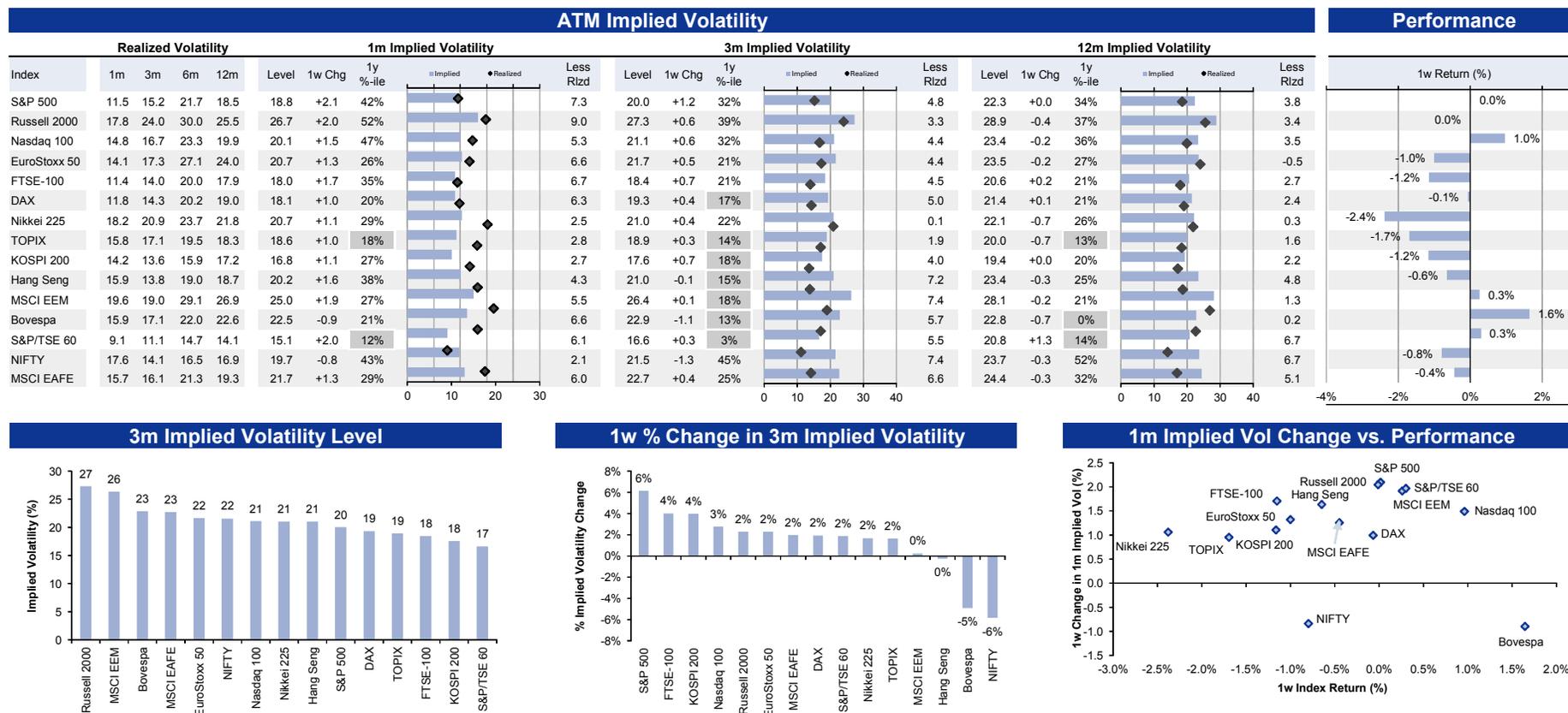
\* Normalized skew: (25 delta put - 25 delta call) / 50 delta

Source: Goldman Sachs Research estimates.

# Global Volatility Landscape

**Exhibit 21: ATM implied volatility comparison across global indices.**

Data: as of October 29, 2010 market close.

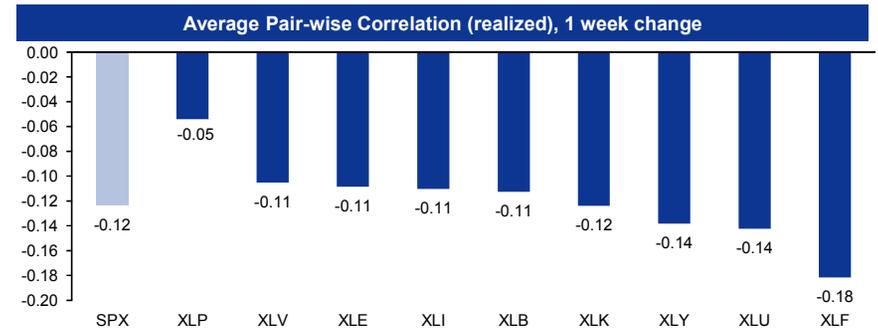
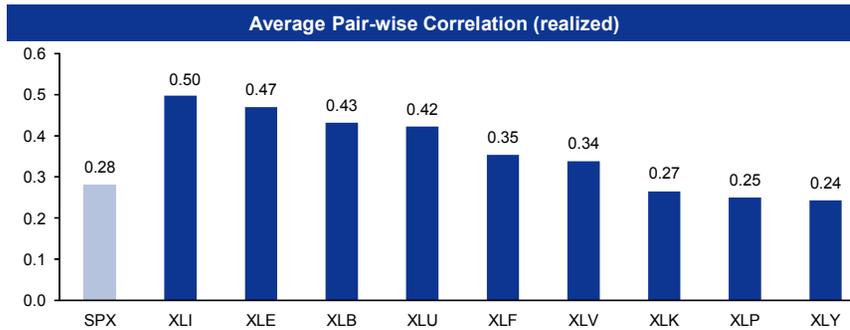


Source: Goldman Sachs Research estimates.

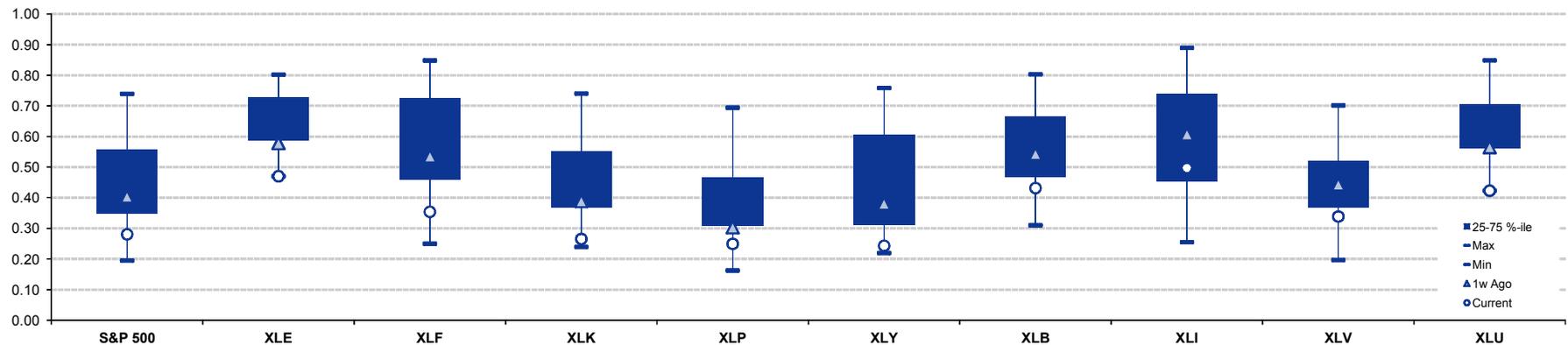
# Correlation Connection

**Exhibit 22: Average pair-wise stock correlation (1m) for S&P 500 and sector ETF's over the last year**

Data: as of October 29, 2010 market close



	S&P 500	XLE	XLF	XLK	XLP	XLY	XLB	XLI	XLV	XLU
<b>Current</b>	0.28	0.47	0.35	0.27	0.25	0.24	0.43	0.50	0.34	0.42
<b>1w Change</b>	-0.12	-0.11	-0.18	-0.12	-0.05	-0.14	-0.11	-0.11	-0.11	-0.14
<b>YTD Change</b>	0.00	-0.02	-0.10	-0.02	-0.12	-0.04	0.00	0.10	-0.01	-0.15
<b>%-ile (1y)</b>	16%	0%	8%	2%	8%	3%	13%	29%	18%	0%
<b>High (1y)</b>	0.74	0.80	0.85	0.74	0.69	0.76	0.80	0.89	0.70	0.85
<b>Low (1y)</b>	0.19	0.47	0.25	0.24	0.16	0.22	0.31	0.25	0.20	0.42
<b>Median (1y)</b>	0.47	0.67	0.62	0.47	0.38	0.48	0.58	0.59	0.44	0.64
<b>Mean (1y)</b>	0.46	0.66	0.59	0.48	0.40	0.47	0.57	0.59	0.44	0.64

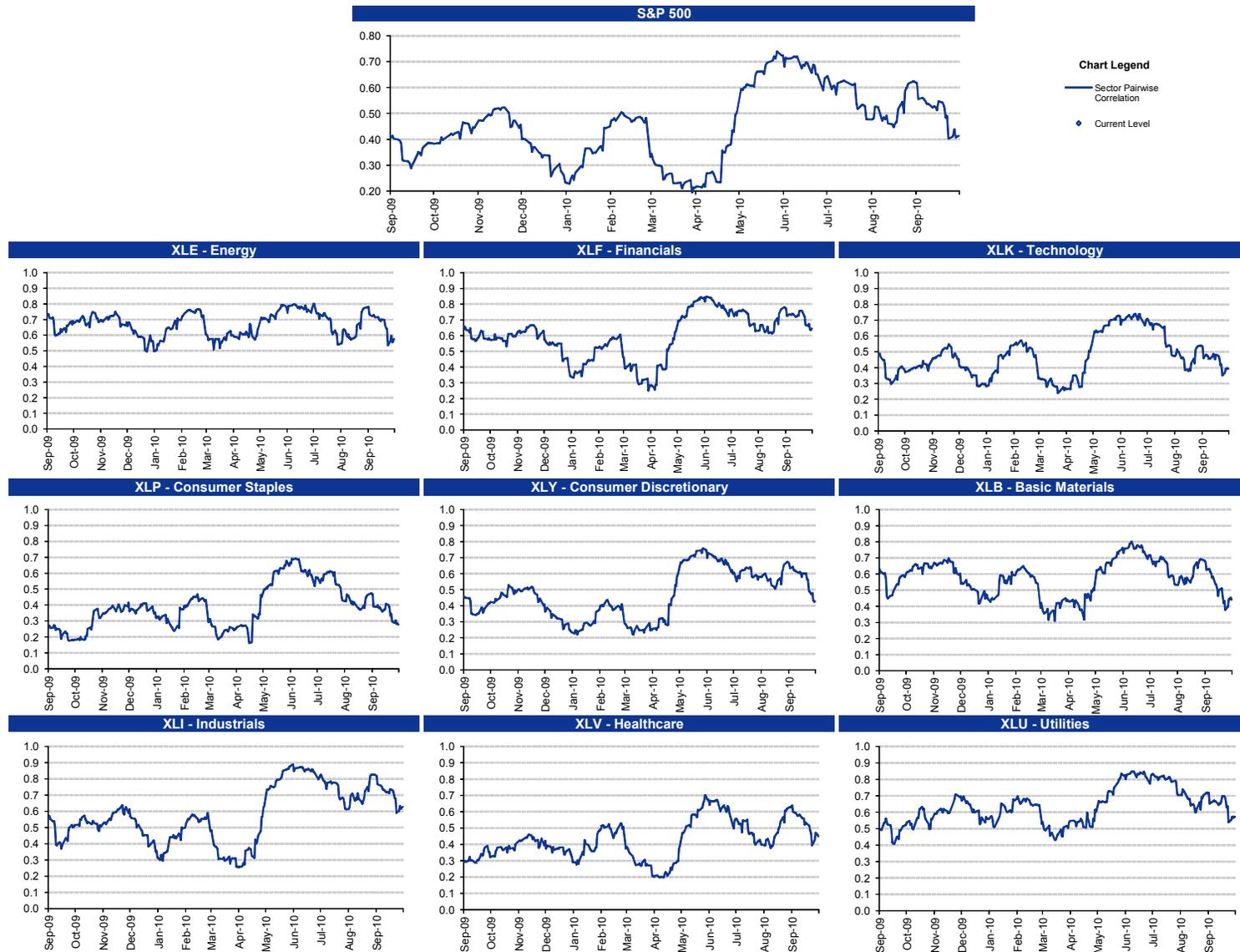


Source: Goldman Sachs Research estimates.

# Correlation Connection

**Exhibit 23: Average pair-wise stock correlation (1m) for S&P 500 and sector ETF's over the last year**

Data: as of October 29, 2010 market close



Source: Goldman Sachs Research estimates.

## Reg AC

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