



# MSCI Risk Monitor: RiskMetrics® Global

March 2017

## Volatility and Correlation for Key Global Risk Drivers

### About This Report

Under a standard *RiskMetrics* forecasting model, this monthly Risk Monitor reports on the evolution of risk forecasts for 12 key global risk factors. The report examines changes in volatility and correlation behavior, and identifies days on which factor returns were a surprise relative to the risk forecasts.

This Risk Monitor may be used to assess risk forecasts of the key factors specifically, or to provide context for the performance of risk forecasts on more general portfolios.

- Forecast volatility over the past year      page 2
- Short- versus long-term correlations      page 3
- Summary of surprise days      page 4
- Individual risk factor detail      pages 5-10
- Risk factor descriptions      page 11

### Highlights

- In February 2017, we counted eight return surprises for the risk factors covered in this report. Volatility bands for equity, credit spread, implied volatility and oil prices kept narrowing, continuing the trend seen in January. This trend was also reflected by these risk factors reaching their lowest volatility levels for the last twelve months (see pages 2 and 4).
- February's low volatility environment was accompanied by rising equity prices, tightening credit spreads, increasing oil prices and a strengthening of the U.S. dollar relative to the euro. In the government bond markets, rates increased at the short end of the U.S. yield curve (two-year rate) but decreased at the long end (10-year rate). The European two-year yield, on the other hand, decreased during the month (see page 2).
- Short-term estimates of the correlations between VIX and equity and credit spreads both became weaker, moving closer to zero. The correlation between investment and high-yield credit spreads also weakened (see page 3).

# Forecast Volatility

## Volatility Stats for EWMA (decay factor of 0.97)



### 1. Risk Forecast of Daily Absolute Changes in Rates (BPS) over Prior Month, Prior Three Months, and Prior Year (decay = 0.97)

*Volatility stats for EWMA 0.97*

	Prior Month				Prior Three Months				Prior Year			
	Return	Avg. Vol.	Min. Vol.	Max. Vol.	Return	Avg. Vol.	Min. Vol.	Max. Vol.	Return	Avg. Vol.	Min. Vol.	Max. Vol.
US Govt 2y	5.53	2.90	2.81	3.13	14.57	2.99	2.72	3.30	48.35	3.22	2.40	4.33
US Govt 10y	-8.06	4.32	<b>4.09</b>	4.59	0.95	4.67	<b>4.09</b>	5.24	66.33	4.51	3.53	5.72
EUR Govt 2y	-19.96	1.96	1.85	<b>2.09</b>	-14.72	1.84	1.54	<b>2.09</b>	-31.80	1.57	1.00	2.33
US 3m Eurodollar Fut 3m	10.05	1.14	1.05	<b>1.30</b>	22.07	1.14	1.04	<b>1.30</b>	53.27	1.64	1.04	2.56

Prior Month Date Range: February 01, 2017 – February 28, 2017.

Three-Month Date Range: December 01, 2016 – February 28, 2017.

One-Year Date Range: March 01, 2016 – February 28, 2017.

### 2. Risk Forecast of Daily Relative (Log) Changes over Prior Month, Prior Three Months, and Prior Year (decay = 0.97)

	Prior Month				Prior Three Months				Prior Year			
	Return	Avg. Vol.	Min. Vol.	Max. Vol.	Return	Avg. Vol.	Min. Vol.	Max. Vol.	Return	Avg. Vol.	Min. Vol.	Max. Vol.
CDX NAIG OTR	-6.00%	1.55%	<b>1.43%</b>	1.65%	-14.44%	1.71%	<b>1.43%</b>	1.99%	-42.35%	2.43%	<b>1.43%</b>	3.59%
CDX NAHY OTR	-9.47%	1.64%	<b>1.35%</b>	1.80%	-18.42%	1.63%	<b>1.35%</b>	1.90%	-39.53%	2.00%	<b>1.35%</b>	2.59%
EUR/USD	-1.67%	0.62%	0.57%	0.67%	0.17%	0.61%	0.45%	0.72%	-2.20%	0.56%	0.40%	0.73%
MSCI USA	3.69%	0.45%	<b>0.42%</b>	0.47%	7.53%	0.52%	<b>0.42%</b>	0.62%	22.69%	0.73%	<b>0.42%</b>	1.24%
MSCI EM	2.99%	0.65%	<b>0.62%</b>	0.71%	8.52%	0.78%	<b>0.62%</b>	0.94%	26.48%	0.97%	<b>0.62%</b>	1.35%
Eurodollar 3m Vol	4.52%	4.27%	<b>3.96%</b>	4.63%	14.86%	5.27%	<b>3.96%</b>	6.71%	-43.40%	5.56%	<b>3.96%</b>	8.27%
VIX	0.83%	5.37%	<b>4.95%</b>	5.72%	-9.30%	6.19%	<b>4.95%</b>	7.79%	-41.17%	7.29%	<b>4.95%</b>	10.77%
WTI 1m	2.24%	1.75%	<b>1.58%</b>	1.93%	8.70%	2.13%	<b>1.58%</b>	2.76%	57.60%	2.54%	<b>1.58%</b>	3.78%

Prior Month Date Range: February 01, 2017 – February 28, 2017.

Three-Month Date Range: December 01, 2016 – February 28, 2017.

One-Year Date Range: March 01, 2016 – February 28, 2017.

\* Highlighted prior month volatilities indicate that the volatility level reached its minimum/maximum value of the last three months or twelve months. The relevant three-month/ twelve-month minimum/maximum values are highlighted as well.

# Correlation Changes

## Long-term versus Short-term Correlation Structure



**Top Right Matrix:** Correlation of daily returns of the past three years.

**Bottom Left Matrix:** Correlation of daily returns of the past three months.

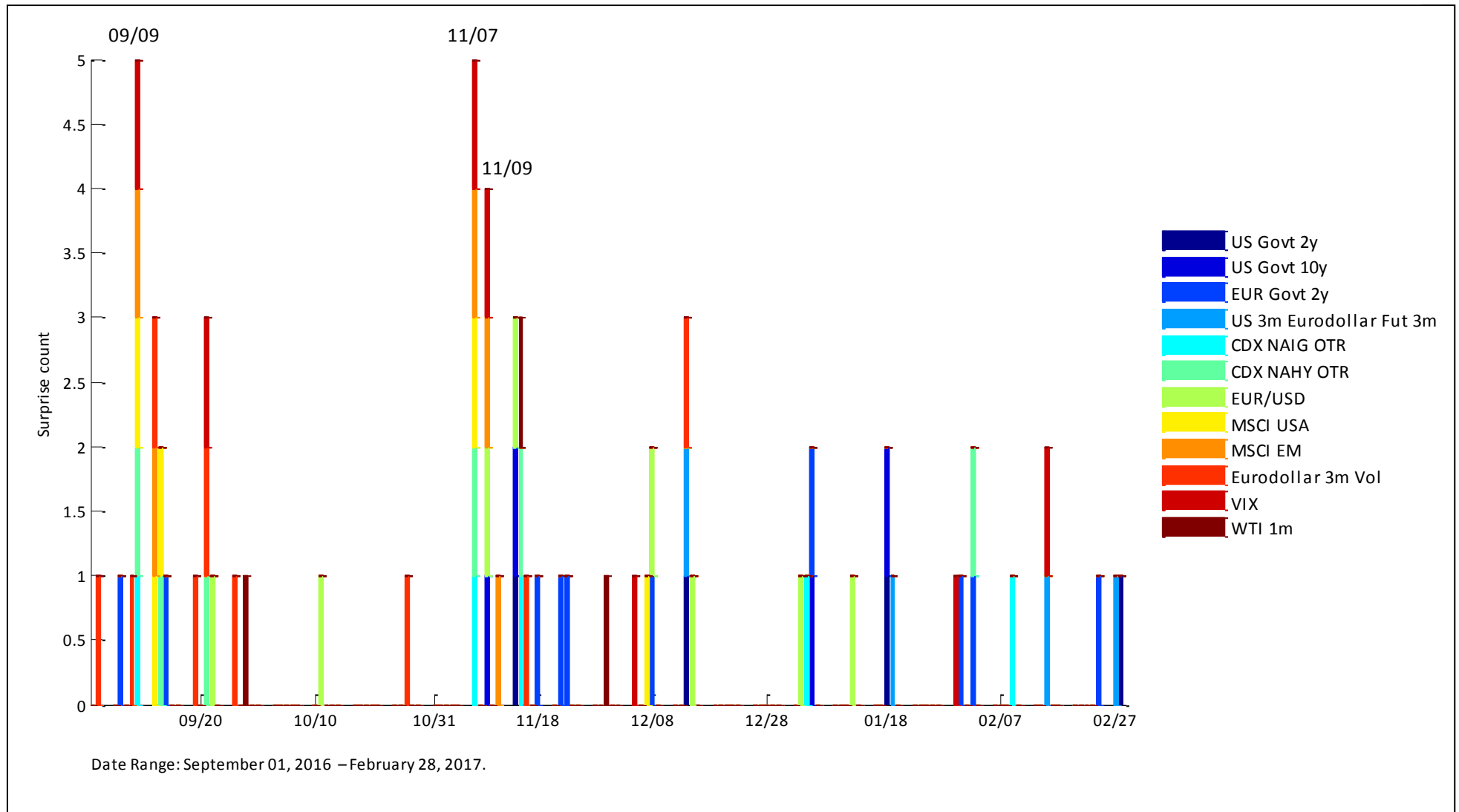
	US Govt 2y	US Govt 10y	EUR Govt 2y	US 3m Eurodollar Fut 3m	CDX NAIG OTR	CDX NAHY OTR	EUR/USD	MSCI USA	MSCI EM	Eurodollar 3m Vol	VIX	WTI 1m
US Govt 2y		79%	25%	72%	-25%	-25%	-19%	29%	16%	-18%	-25%	17%
US Govt 10y	87%		35%	50%	-32%	-32%	-9%	37%	17%	-17%	-31%	26%
EUR Govt 2y	16%	14%		21%	-15%	-11%	20%	13%	8%	-6%	-10%	10%
US 3m Eurodollar Fut 3m	72%	71%	28%		-14%	-14%	-19%	20%	18%	-20%	-19%	16%
CDX NAIG OTR	-17%	-21%	-26%	-28%		91%	4%	-78%	-46%	19%	74%	-34%
CDX NAHY OTR	-8%	-10%	-5%	-12%	73%		5%	-77%	-45%	21%	72%	-36%
EUR/USD	-22%	-35%	24%	-26%	15%	4%		-12%	2%	6%	14%	6%
MSCI USA	19%	19%	12%	23%	-76%	-59%	-21%		45%	-21%	-84%	32%
MSCI EM	-12%	-11%	13%	-14%	-12%	-15%	21%	19%		-23%	-41%	27%
Eurodollar 3m Vol	-9%	1%	-1%	-6%	-5%	2%	-23%	16%	6%		26%	-14%
VIX	-3%	-3%	-15%	-9%	58%	35%	11%	-52%	7%	1%		-26%
WTI 1m	-10%	4%	8%	-7%	-4%	7%	4%	5%	-4%	29%	-13%	

Three-Month Date Range: December 01, 2016 – February 28, 2017.

Three-Year Date Range: March 01, 2014 – February 28, 2017.

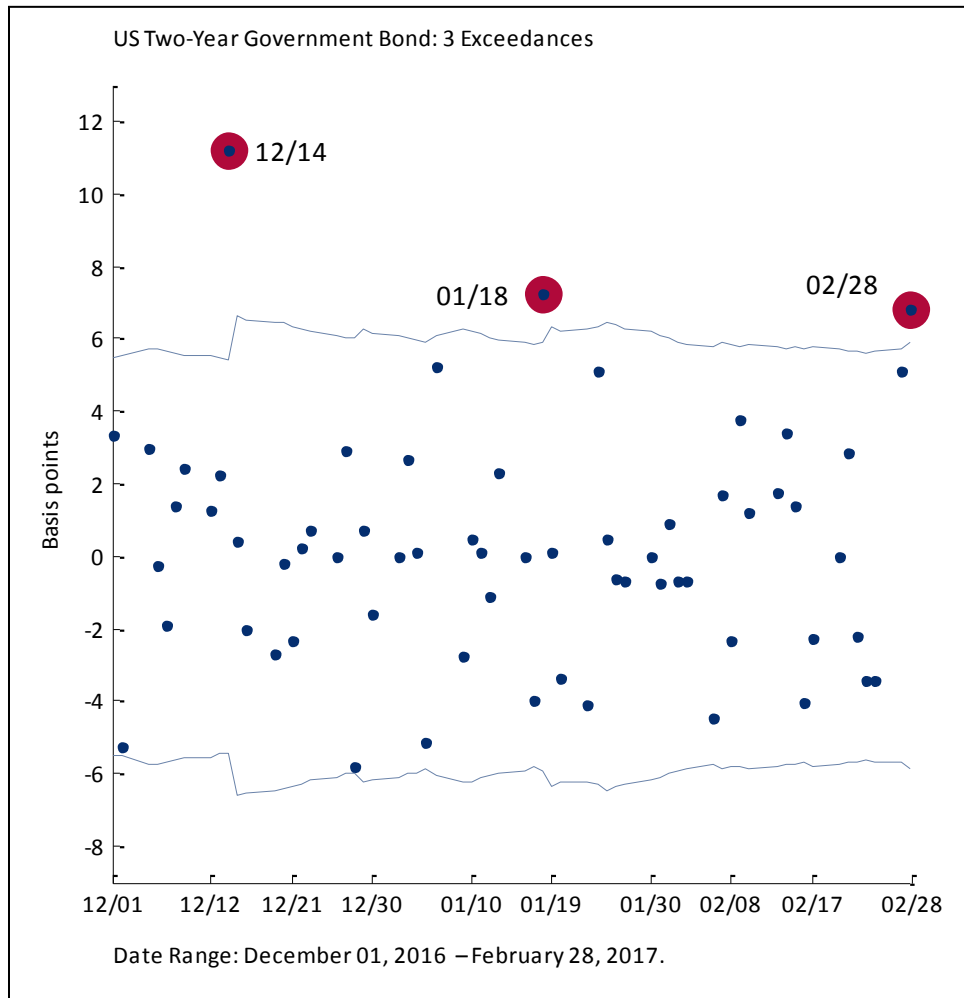
- \* Cells are highlighted according to the difference between the short-term (three-month) and long-term (three-year) correlation, normalized by the standard deviation of the short-term correlation. Light green (red) highlighted cells indicate a recent correlation in excess of one standard deviation higher (lower) than the long-term value. Dark green (red) highlighted cells indicate a recent correlation in excess of two standard deviations higher (lower) than the long-term value.

## Daily Returns Exceeding Two Times Forecast Volatility

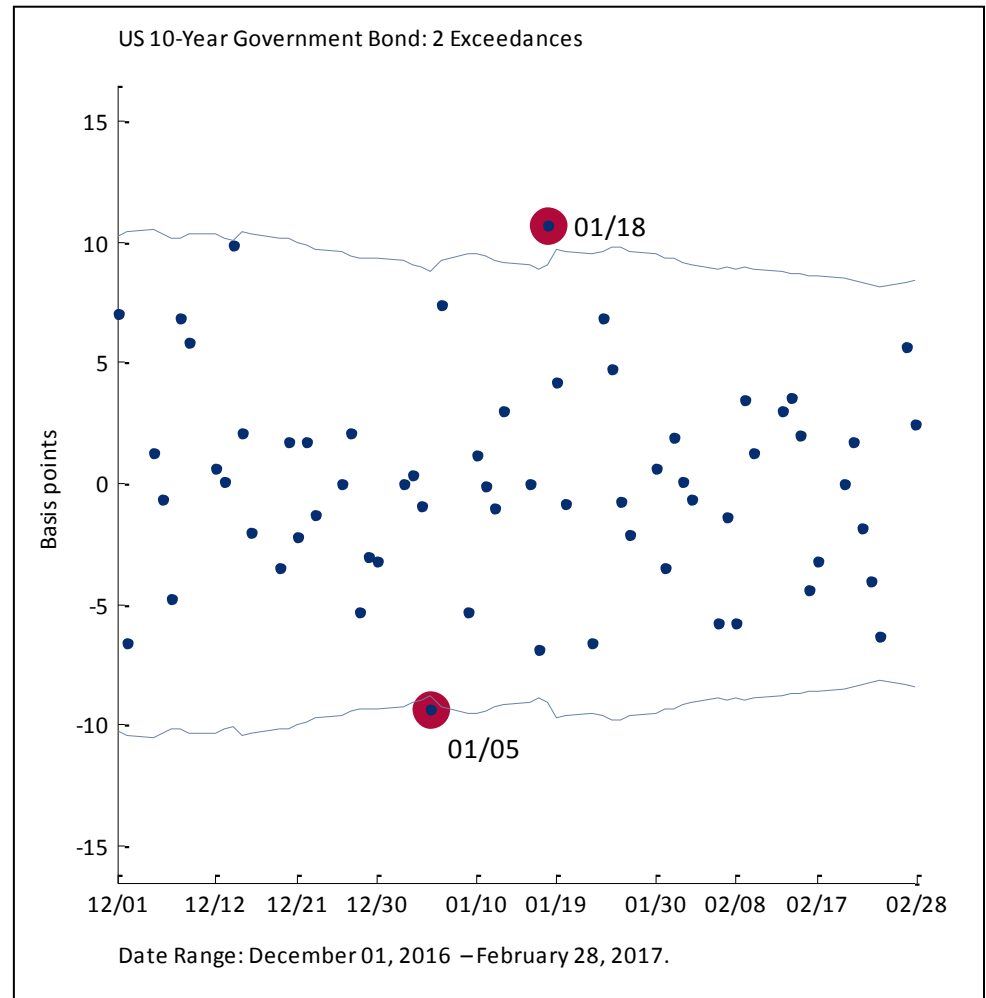


## Daily Returns Exceeding Two Times Forecast Volatility

### 1. US Two-Year Government Bond

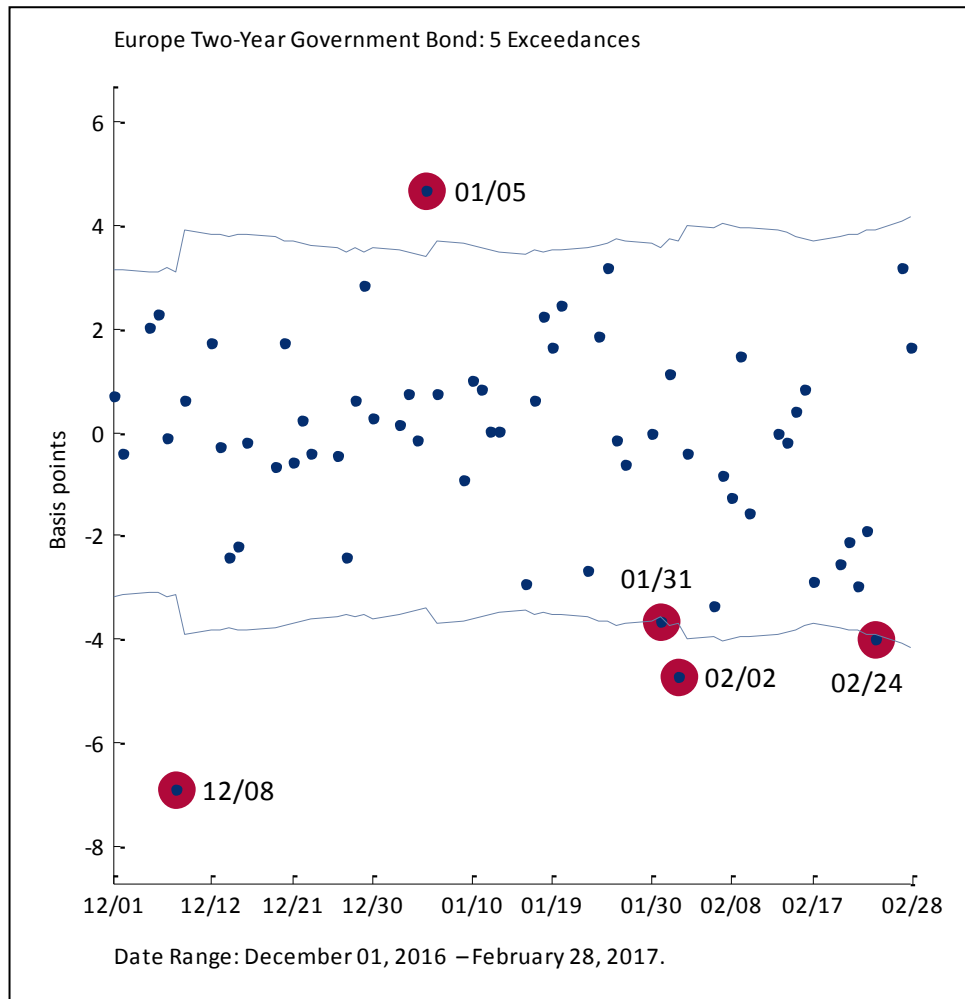


### 2. US 10-Year Government Bond

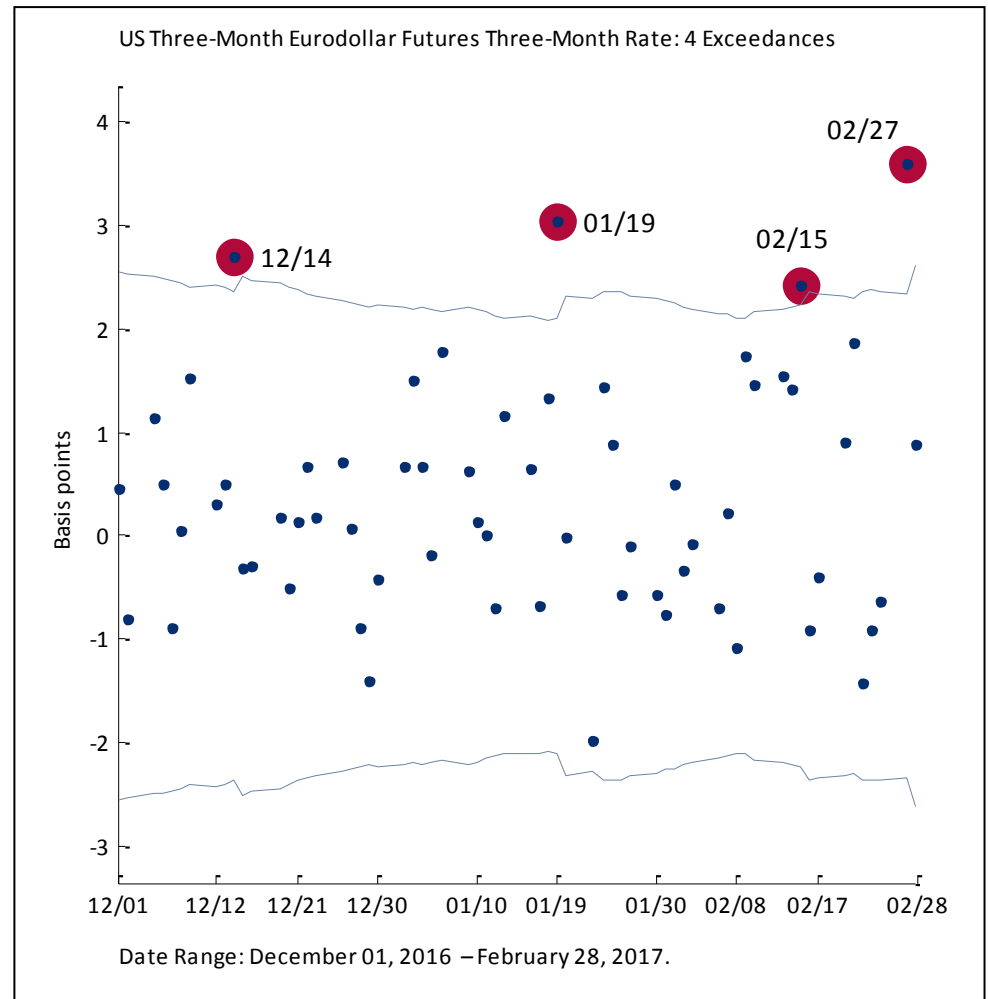


## Daily Returns Exceeding Two Times Forecast Volatility

### 1. Europe Two-Year Government Bond

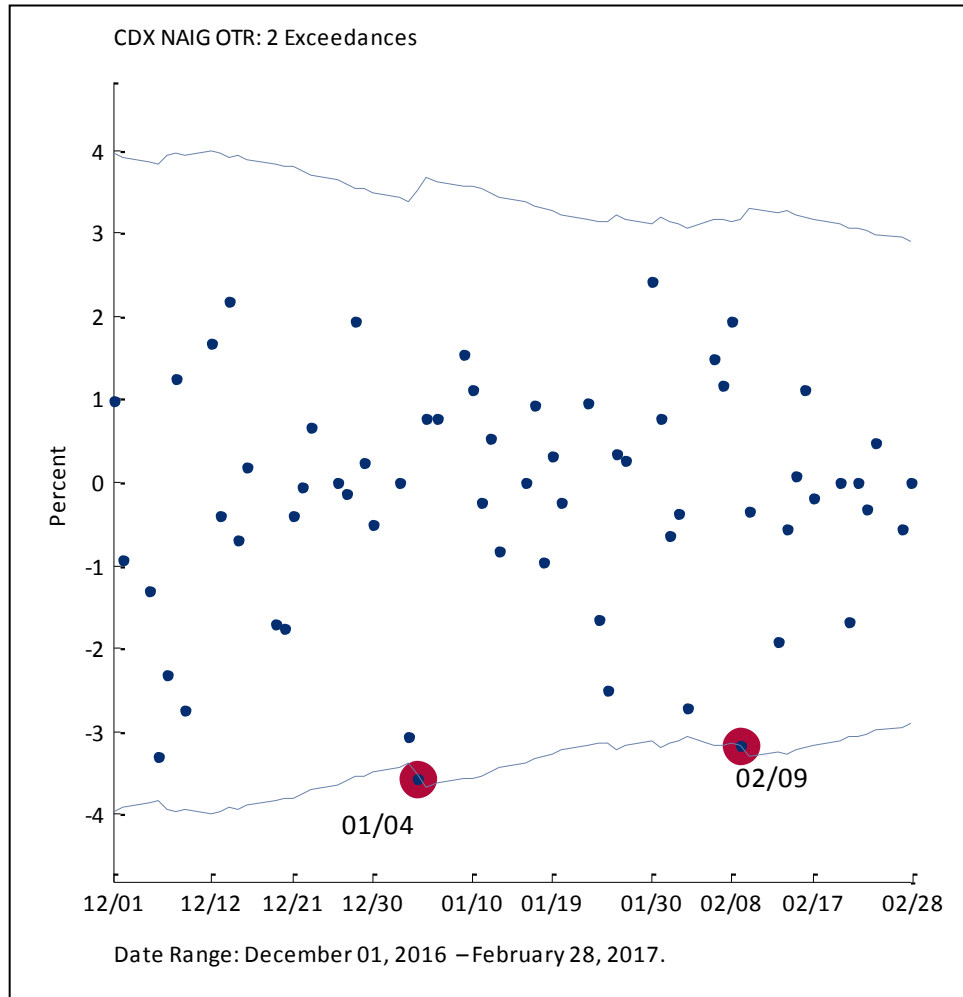


### 2. US Three-Month Eurodollar Futures Three-Month Rate

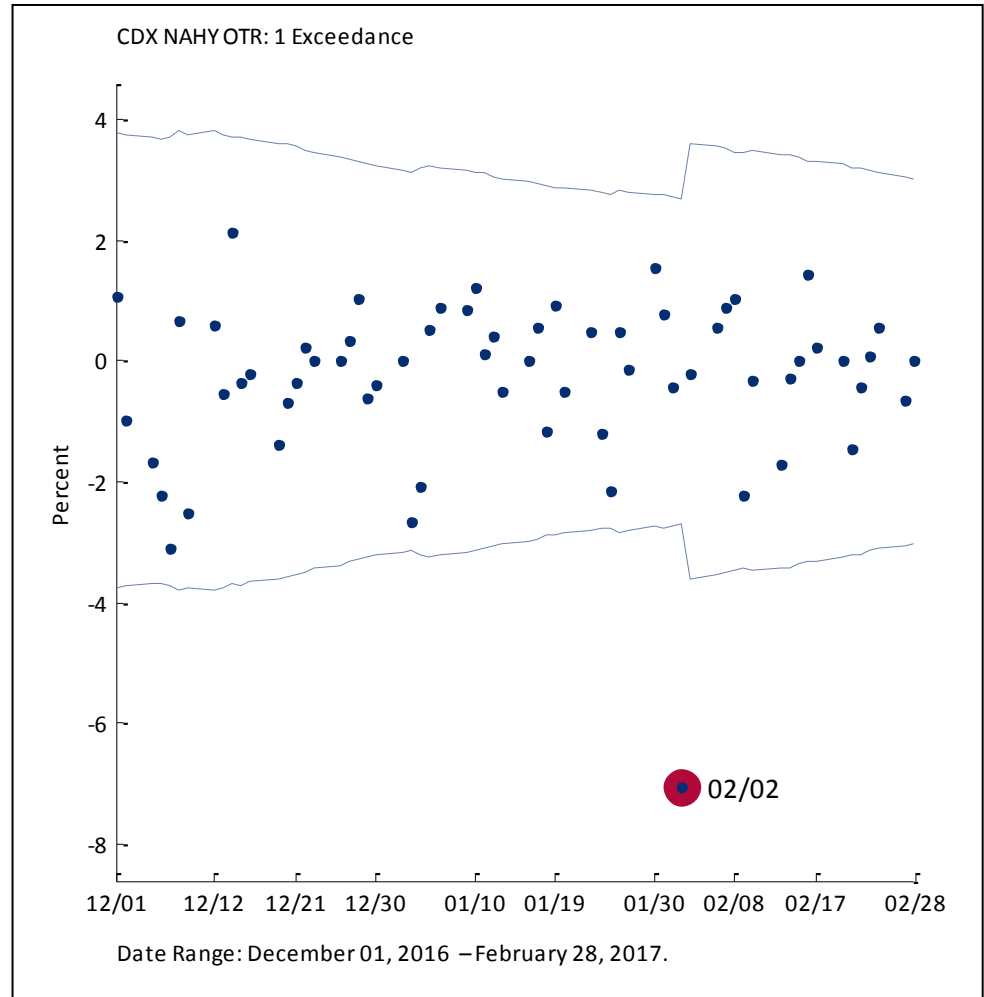


## Daily Returns Exceeding Two Times Forecast Volatility

### 1. CDX NAIG OTR

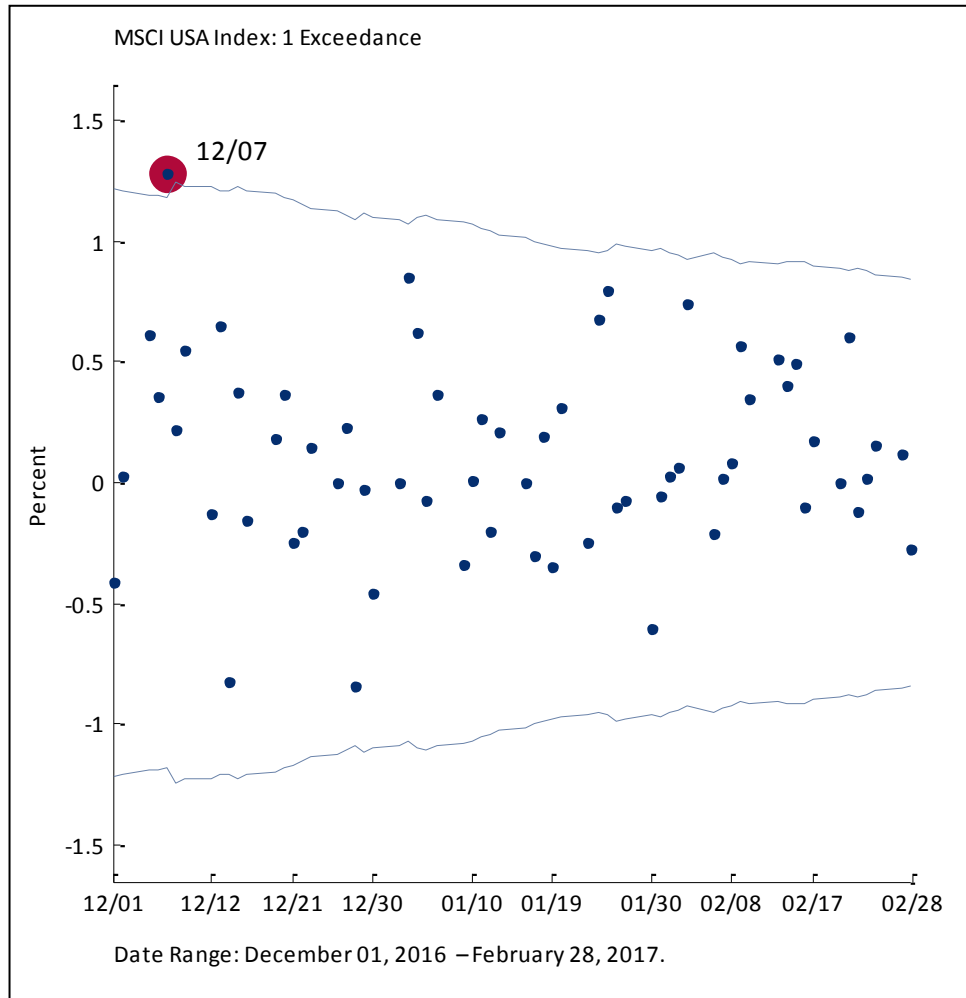


### 2. CDX NAHY OTR

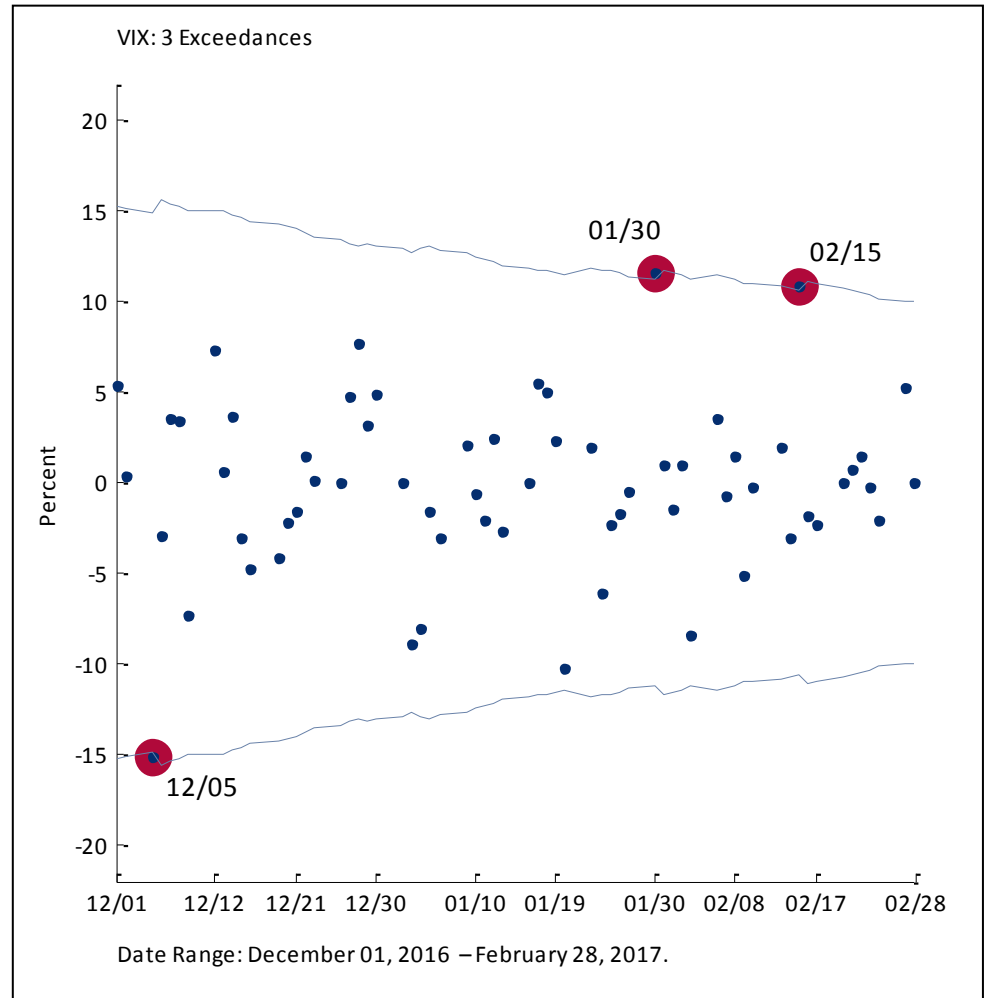


## Daily Returns Exceeding Two Times Forecast Volatility

### 1. MSCI USA Index



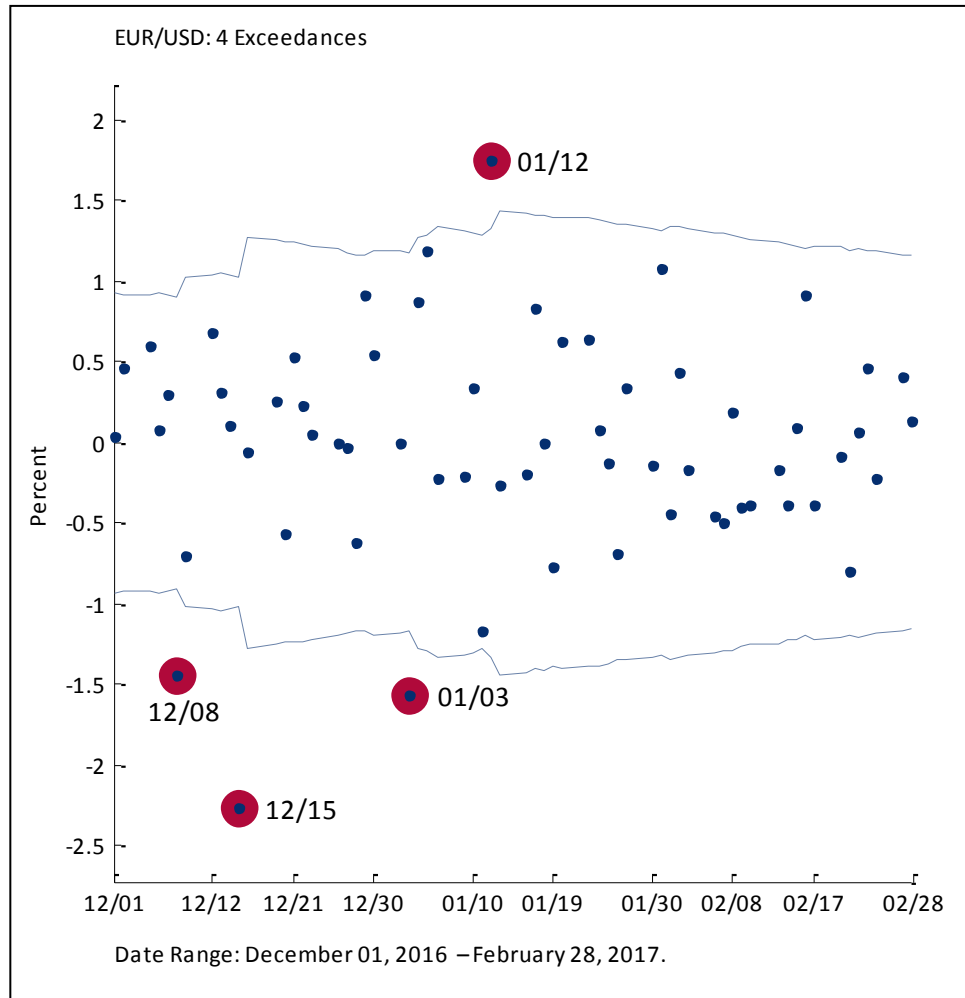
### 2. VIX



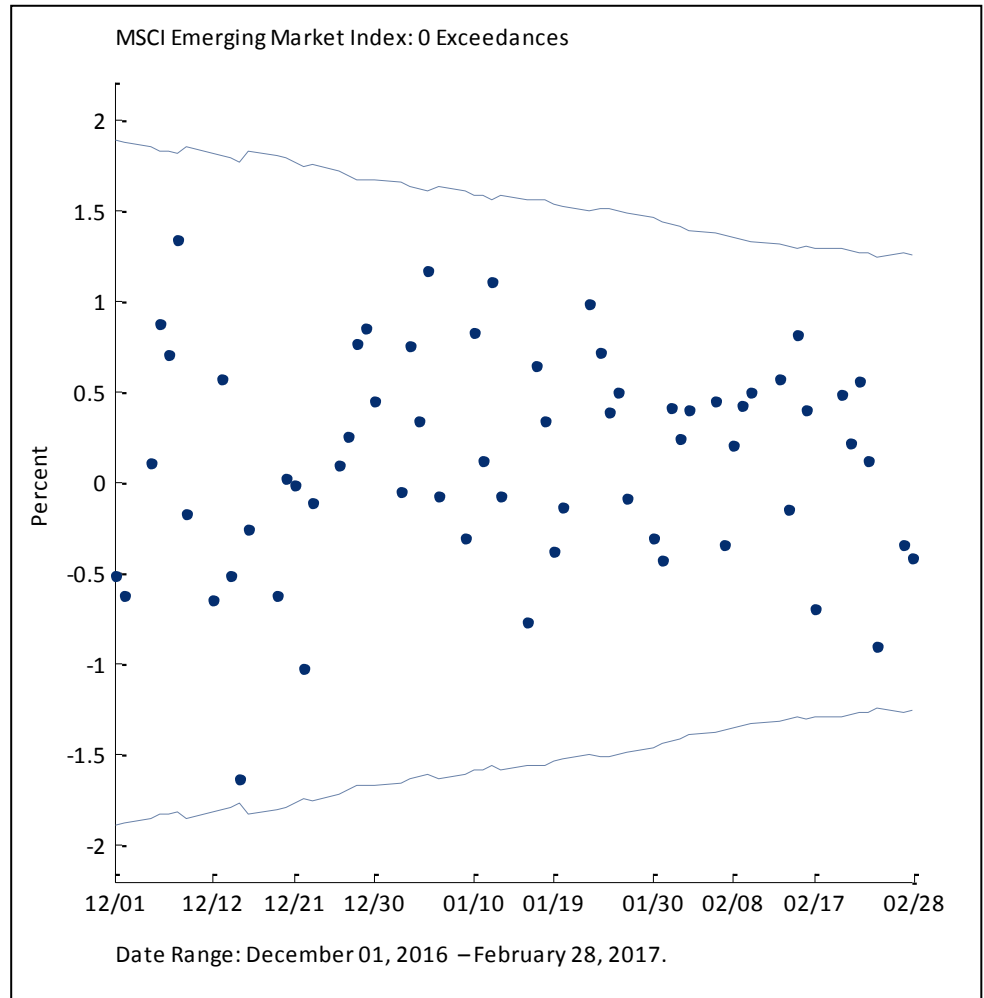


## Daily Returns Exceeding Two Times Forecast Volatility

### 1. EUR/USD

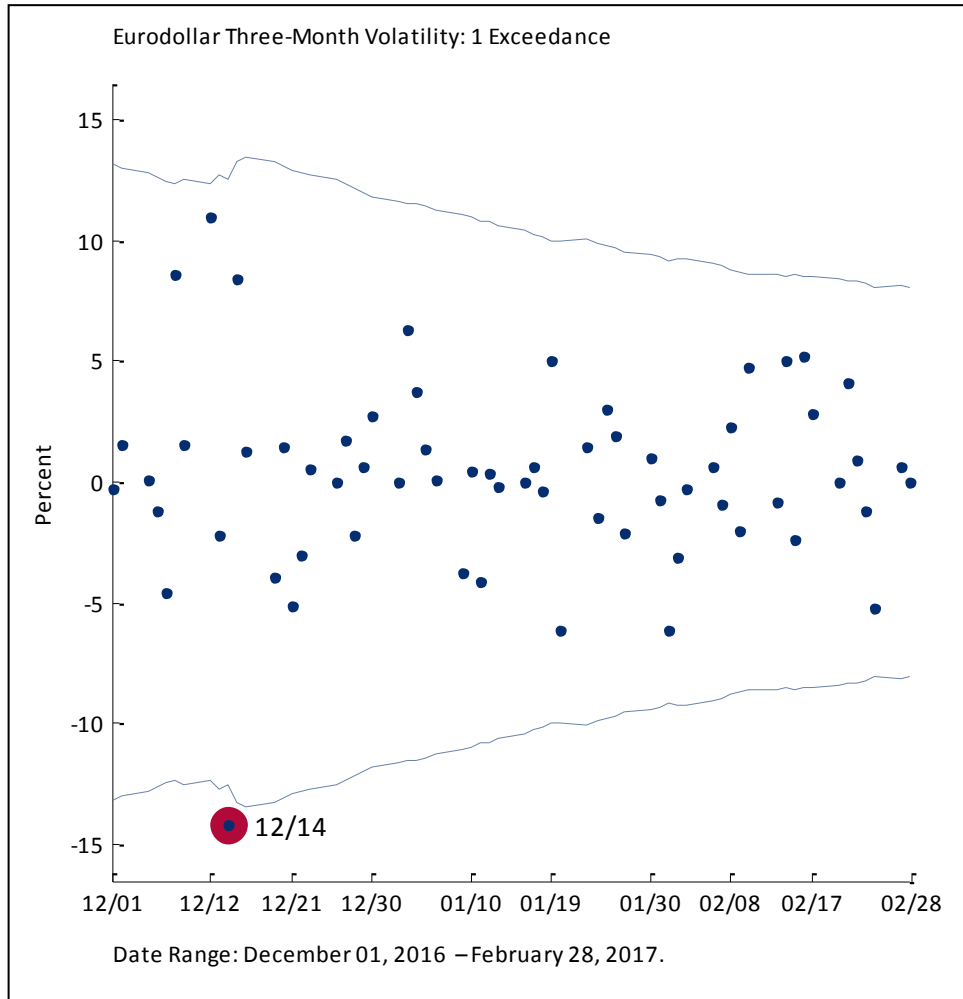


### 2. MSCI Emerging Market Index

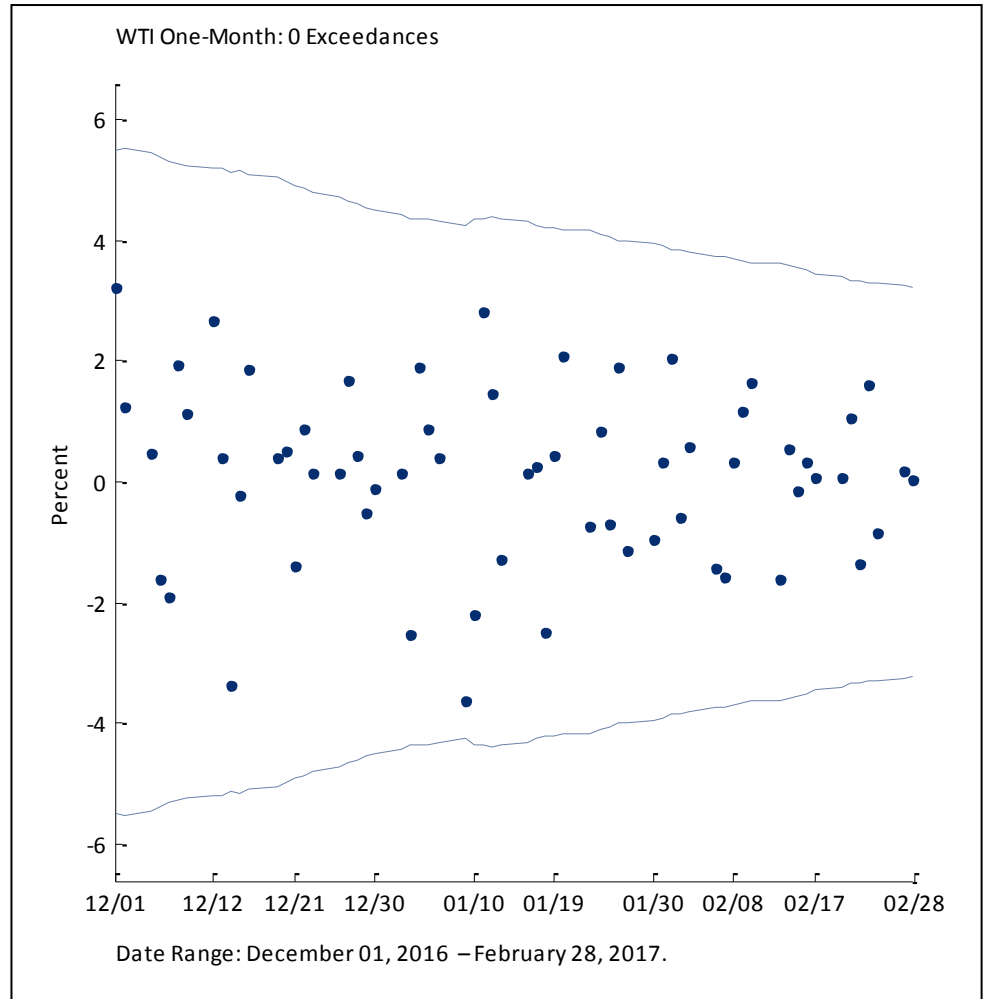


## Daily Returns Exceeding Two Times Forecast Volatility

### 1. Eurodollar Three-Month Volatility



### 2. WTI One-Month



**CDX NAIG OTR:** Five-year North American Investment Grade - CDS Index Spread Level, constructed by MSCI using the most liquid five-year North American Investment Grade CDS Index and smoothed over a period when a new series becomes on-the-run.

**CDX NAHY OTR:** Five-year North American High Yield CDS Index Spread Level, constructed by MSCI using the most liquid five-year North American High Yield CDS Index and smoothed over a period when a new series becomes on-the-run.

**EUR/USD:** EUR/USD Foreign Exchange Rate.

**Eurodollar Three-Month Volatility:** Implied volatility time series of three months at-the-money options on Eurodollar interest rate futures.

**Europe Two-year Government Bond:** Euro Two-Year Zero Rate, constructed by MSCI from on-the-run German Treasury bonds.

**MSCI Emerging Market Index:** Time series of MSCI Emerging Market Equity Index using end-of-day closing prices.

**MSCI USA Index:** Time series of MSCI USA equity index using end-of-day closing prices.

**US 10-year Government Bond:** US Government 10-Year Zero Rate, constructed by MSCI from on-the-run US Treasury bonds.

**US Three-Month Eurodollar Futures Three-Month Rate:** Interest rate of a three-month interest rate futures calculated by MSCI based on CME Eurodollar futures quotes on three-month deposits.

**US Two-year Government Bond:** US Government Two-Year Zero Rate, constructed by MSCI from on-the-run US Treasury bonds.

**VIX:** Time series of the CBOE Market Volatility Index using end-of-day closing prices.

**WTI One-Month Crude Oil:** One-Month CME light sweet crude oil time series. One-Month tenor constructed as a Constant Maturity Future time series by interpolating the first two near-term CL futures contracts.

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