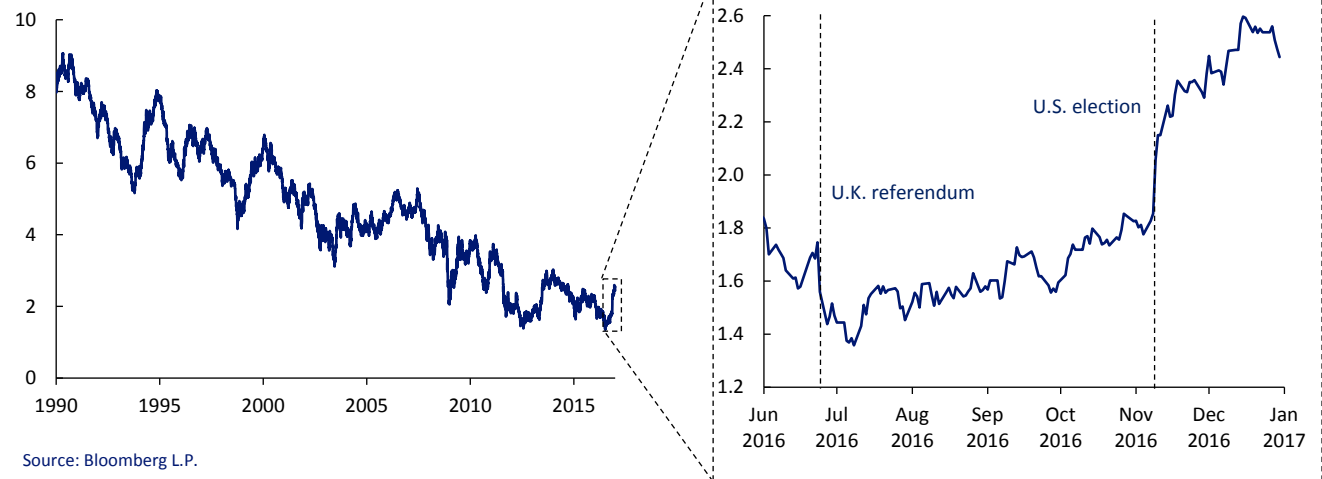


## U.S. Long-Term Interest Rates Rise, But Remain Low

*U.S. long-term interest rates have risen from all-time lows in July, driven by stronger global economic data, higher inflation expectations, and growing expectations of a U.S. shift from monetary to fiscal policy stimulus. However, U.S. long-term rates and volatility remain low by historical standards (see Figure 1). Although an improving economic backdrop tempers financial stability concerns, as discussed in the OFR’s [2016 Financial Stability Report](#) and [2016 Annual Report to Congress](#), the combination of persistently low long-term interest rates, the high level and continued growth of U.S. nonfinancial business debt, high valuations in U.S. equity and U.S. commercial real estate markets, and challenges to major financial institutions’ business models and profitability creates risks to U.S. financial stability.*

**Figure 1. 10-year Treasury bond yield (percent)**

U.S. long-term interest rates have risen from historic lows



Source: Bloomberg L.P.

### Key developments in the fourth quarter of 2016

- U.S. long-term interest rates rose sharply in the past few months, especially since the U.S. election. The 10-year Treasury yield has increased more than 100 basis points since July, when it and other global long-term rates fell to all-time lows (see Figure 1). The U.S. dollar appreciated to its strongest level in more than 10 years.
- The Federal Open Market Committee (FOMC) raised short-term interest rates 25 basis points in December as expected. Committee members projected a faster pace of tightening in 2017.
- Major U.S. stock indexes set new record highs amid a general rally in U.S. risky assets. A number of metrics show U.S. stock valuations are elevated.
- China’s capital outflows accelerated, adding to an unprecedented reduction in official reserves since 2014.

**Several factors pushed long-term interest rates higher.**

U.S. long-term interest rates have recently risen faster than at any time since the “taper tantrum” of 2013, although rates remain near the bottom of their historical range (see Figure 1). The yield on the benchmark 10-year Treasury bond has increased 108 basis points from its all-time low set in July, weeks after financial markets were rattled by the United Kingdom (U.K.) vote to leave the European Union. The rise in U.S. long-term interest rates was initially gradual and driven by stronger inflation and economic activity data in the United States and Europe. Rates jumped after the U.S. presidential election, in part reflecting expectations of a shift in the U.S. fiscal-monetary policy mix (see Figure 2).

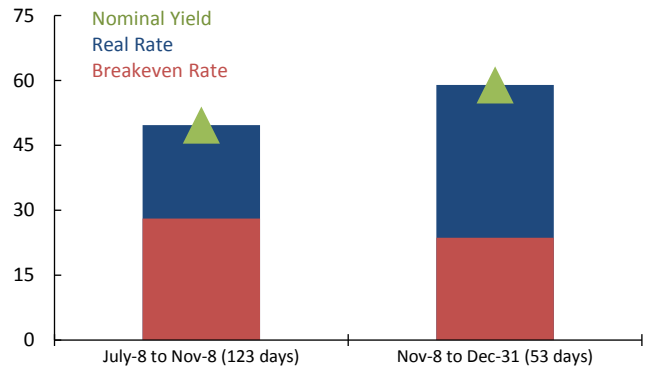
It is unclear what policies will be enacted under the new administration. With all else equal, however, a shift to fiscal stimulus, for example, through increased government spending on infrastructure and lower corporate tax rates, likely would spur economic growth, inflation, and expected future budget deficits, all of which could put upward pressure on long-term interest rates.

About a third of the total increase in U.S. 10-year Treasury note yields since the election can be attributed to higher “breakeven” rates, which capture bond market inflation compensation. Such rates are imperfect measures of inflation expectations; technical factors in bond markets also influence them. The observed U.S. inflation rate has risen from 2015 lows as oil prices have stabilized, while inflation forecasts remain anchored in a healthy range (see Figure 3).

**Major foreign interest rates also moved somewhat higher.**

Long-term interest rates also rose in other major economies during the fourth quarter (see Figure 4). The spike in Treasury yields and higher U.S. growth expectations were factors lifting global interest rates. Other factors were an improved economic outlook and reduced expectations for monetary policy easing in some countries. In the U.K., for example, the Bank of England refrained from additional monetary stimulus as economic data continued to be surprisingly strong in the months after the U.K. vote.

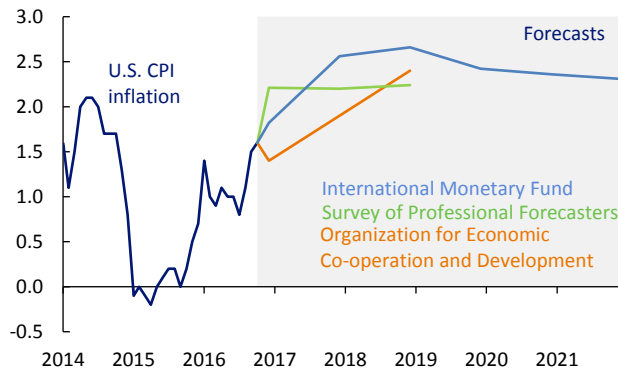
**Figure 2. Changes in 10-year Treasury bond yields (basis points)**  
Treasury yields rose faster after the U.S. election



Note: The breakeven rate is the difference between the nominal yield of a Treasury bond and the real yield of a Treasury inflation-protected security of similar maturity.

Source: Bloomberg L.P.

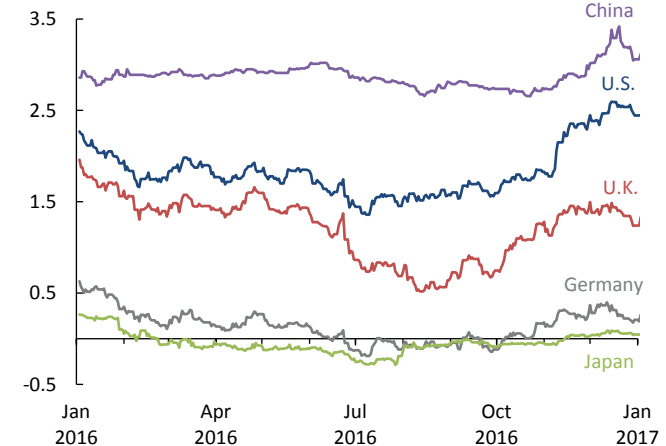
**Figure 3: U.S. inflation and expectations (year-over-year percent change)** Inflation is expected to rise but remain in a healthy range



Note: CPI stands for Consumer Price Index, which measures the weighted average of prices of a basket of consumer goods and services.

Sources: Organisation for Economic Co-operation and Development, Federal Reserve Bank of Philadelphia, International Monetary Fund, OFR analysis

**Figure 4: 10-year sovereign bond yields (percent)**  
Key long-term rates rose notably in the fourth quarter



Source: Bloomberg L.P.

Markets reacted by pushing yields on 10-year U.K. government bonds up to pre-referendum levels. In the eurozone, rates increased more modestly. Japanese rates were little changed as the Bank of Japan reiterated its intention to target 10-year yields at zero percent.

### The Federal Reserve raised rates for the second time since the financial crisis.

In December, the Federal Reserve’s FOMC voted to raise its target for short-term interest rates by 25 basis points. This rate hike is the first since last year’s “liftoff” from rates near zero percent (see the [February 2016 Financial Markets Monitor](#)). The move was widely anticipated, and trading was orderly. The effective federal funds rate quickly adjusted to trade within its new target range of 0.50 percent to 0.75 percent (see Figure 5). Rates for excess reserves and the Federal Reserve’s reverse repo facility provide the bounds of the policy rate range. The median FOMC participant now projects 75 basis points of hikes in 2017, versus 50 basis points in previous projections.

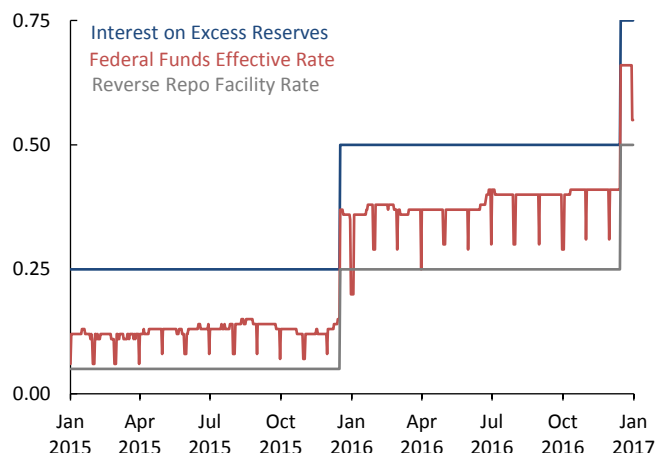
### The market adjustment to U.S. money market fund reform was orderly.

On Oct. 14, the Securities and Exchange Commission implemented a major reform of U.S. money market funds (see our [September blog](#)). Since the reform was announced in July 2014, approximately \$1.1 trillion has shifted out of prime funds and into government funds, reducing the volume of prime funds by 67 percent. Data from the OFR’s [U.S. Money Market Fund Monitor](#) show that this shift slowed after the reform (see Figure 6).

Before the reform, fund flows also caused an increase in private short-term borrowing costs, as discussed in the previous [Financial Markets Monitor](#). The LIBOR-OIS spread, an important gauge of the relative cost of banks to borrow, stopped increasing when the reform was implemented and has since receded somewhat (see Figure 7). LIBOR stands for London Interbank Offered Rate. OIS stands for Overnight Indexed Swap. LIBOR-OIS is the difference between the three-month LIBOR and OIS rates. OIS rates indicate what the market expects for future central bank interest rates.

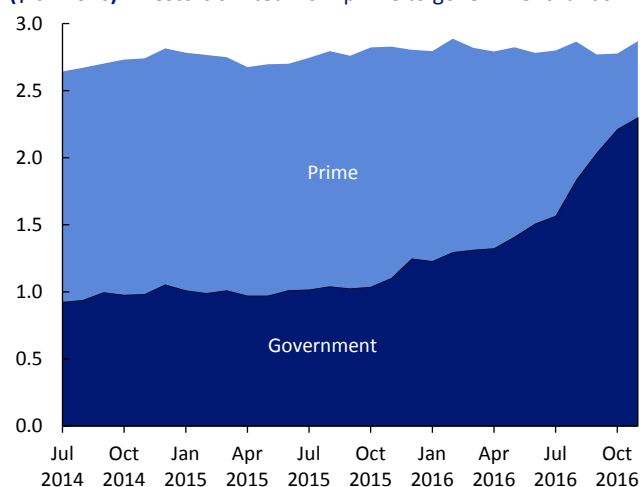
**Figure 5: Overnight interest rates (percent)**

Effective federal funds rate traded within new target range



Source: Bloomberg L.P.

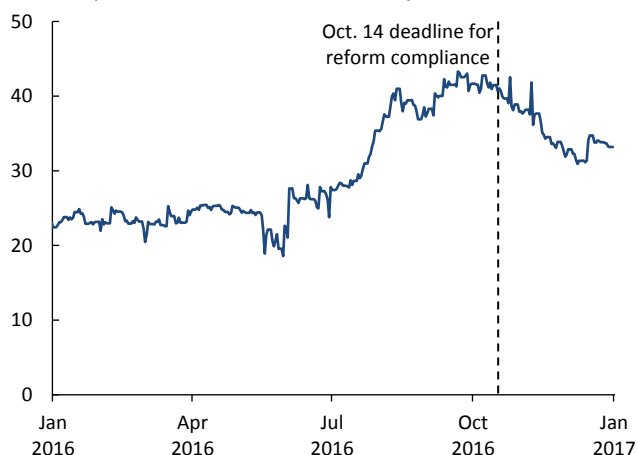
**Figure 6: Assets under management in money market funds (\$ trillions)** Investors shifted from prime to government funds



Note: Tax-exempt assets excluded.  
Sources: SEC Form N-MFP, OFR analysis

**Figure 7: 3-month LIBOR-OIS spread (basis points)**

LIBOR-OIS spread has narrowed after money market reform



Source: Bloomberg L.P.

## The U.S. dollar rose against other major currencies.

The U.S. Dollar Index surged by 7 percent in the fourth quarter, reaching its highest level in more than a decade (see Figure 8). The recent climb in U.S. yields and the rate hike by the Federal Reserve have accentuated interest rate differentials and fueled the U.S. dollar's strength. The yield spread between 10-year Treasuries and German government bonds of similar maturity is now more than 2.2 percent, the widest since 1989. Changes in foreign exchange rates showed little correlation to economic conditions in those countries, implying that the U.S. dollar's strength is due to attractive U.S. yields rather than negative factors in foreign countries. The rising U.S. dollar has not curbed investors' appetites for U.S. assets, although it is a drag on U.S. economic activity.

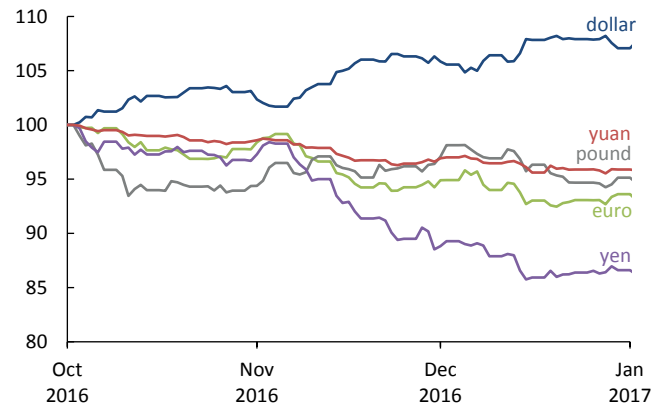
## An agreement to cut oil supply drove oil prices higher.

The Organization of Petroleum Exporting Countries agreed at its November meeting to cut production for the first time since the financial crisis. The announcement sent the U.S. benchmark for crude oil to a new high for the year at \$54 a barrel (see Figure 9). Russia and Mexico, two other major oil producers, also agreed to reduce output. In all, these actions, scheduled for implementation in January, could reduce supply by about 1.7 percent of estimated global production. The cuts are forecasted to bring supply and demand in the global oil market into balance for the first time since 2014, when prices were more than \$100 a barrel.

## U.S. corporate earnings improved, driven by energy firms.

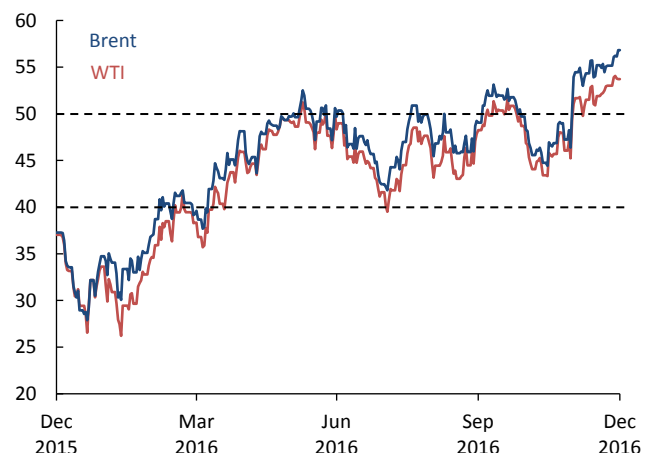
The third quarter of 2016 marked an end to the "earnings recession" in the United States. For the first time since the third quarter of 2014, quarterly operating earnings per share increased year-over-year. Earnings for S&P 500 companies exceeded analysts' expectations. For example, adjusted earnings per share increased 4 percent year-over-year, versus analyst expectations for slightly negative growth.

**Figure 8: Major global currencies (Index 100 = Sept. 30, 2016)**  
Interest rate divergence drives the U.S. dollar higher



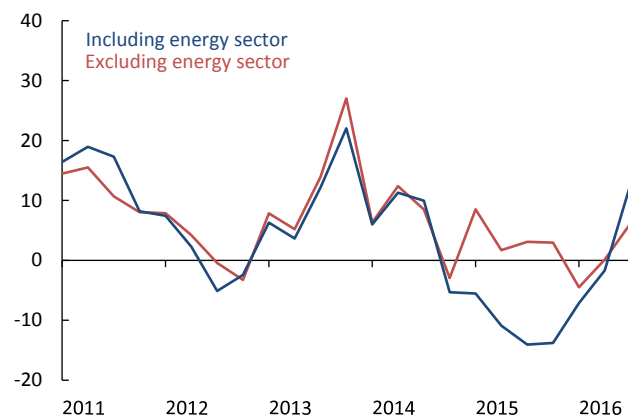
Note: dollar = The U.S. Dollar Index is an average of exchange rates between the dollar and major world currencies.  
Source: Bloomberg L.P.

**Figure 9: Oil futures price per barrel (\$)**  
Promised production cut propels oil prices to higher range



Source: Bloomberg L.P.

**Figure 10: Quarterly S&P 500 operating earnings (percent change year-over-year)** Corporate earnings rebound



Sources: Haver Analytics, OFR analysis

The turnaround was largely driven by a return to profitability for the U.S. energy sector as oil prices rose after having collapsed from mid-2014 to early 2016. The energy sector had previously been a major drag on S&P 500 corporate profits, responsible for most of the negative earnings growth during the last two years (see Figure 10).

**U.S. stock valuations are stretched.**

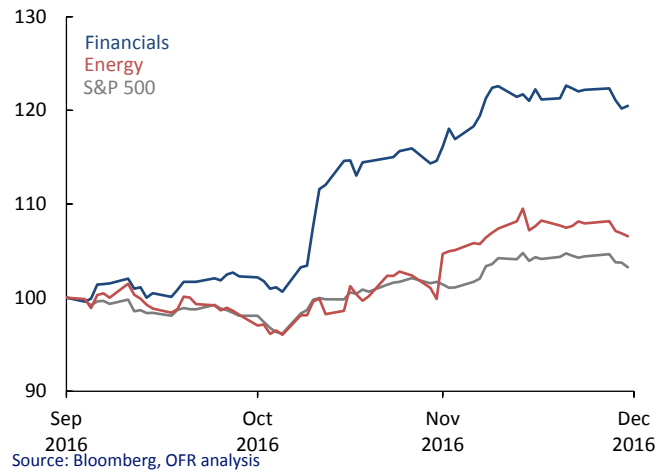
Major U.S. equity indices achieved all-time highs during the fourth quarter as prices rallied after the U.S. election. During the quarter, the U.S. benchmark equity index, S&P 500, rose 3.3 percent. The Russell 2000, which reflects the value of smaller companies, increased 8.4 percent. Financial sector stocks appreciated by almost 21 percent, more than any other sector (see Figure 11). The benchmark equity indexes in Europe, Japan, and China were also higher for the quarter.

After the rally, U.S. stock valuations were even more elevated (see Figure 12). Currently, the market's forward price-to-earnings (P/E) ratio and the Q-ratio exceed the 80th percentile of historical valuations. The Buffett Indicator (the ratio of corporate market value to gross national product) is at the 90th percentile. The cyclically adjusted P/E ratio, or CAPE, is at the 96th percentile (see Figure 13). A sharp decline in U.S. equity prices could affect U.S. financial stability if the assets are widely held by entities that use short-term funding and have high levels of leverage. A sharp decline could also amplify the financial stability risks from a severe corporate default cycle (see the OFR [2016 Financial Stability Report](#)).

**Corporate bond spreads tightened after the U.S. election.**

U.S. corporate bond spreads, for both investment grade and high yield, continued to decline in the fourth quarter, capping a rally since early 2016 (see Figure 14). The energy and materials sectors benefited from the rebound in oil and commodity prices. Investors are optimistic that corporate earnings growth can improve meaningfully over the next year, outweighing the risks associated with elevated corporate leverage. The OFR views the level and growth rate of U.S. nonfinancial corporate debt

**Figure 11: S&P 500 sector returns (Index 100 = Sept. 30, 2016)**  
U.S. stocks rallied, led by the financial and energy sectors



**Figure 12: U.S. stock valuations**

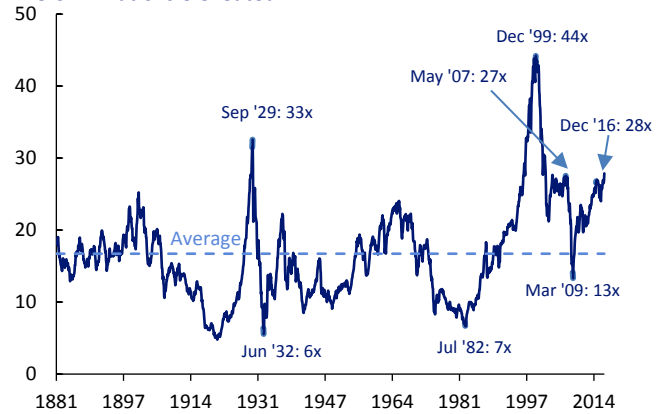
Key valuation metrics are high relative to history

Metric	Current	Historical percentile
Cyclically adjusted P/E	27.9x	96%
Q-ratio	97%	85%
Buffett Indicator	130%	90%
Forward P/E	17.6x	81%
Trailing P/E	21.0x	85%
Price-to-book	2.9x	68%

Note: P/E stands for price-to-earnings ratio. Historical ranges start in 1881, 1951, 1970, 1990, 1954, and 1990, respectively.  
Sources: Bloomberg, Haver, OFR analysis

**Figure 13: Cyclically adjusted price-to-earnings ratio (CAPE)**

The CAPE ratio is elevated



Note: CAPE is the ratio of the monthly S&P 500 price level to trailing 10-year average earnings (inflation adjusted).

Sources: Robert Shiller, OFR analysis

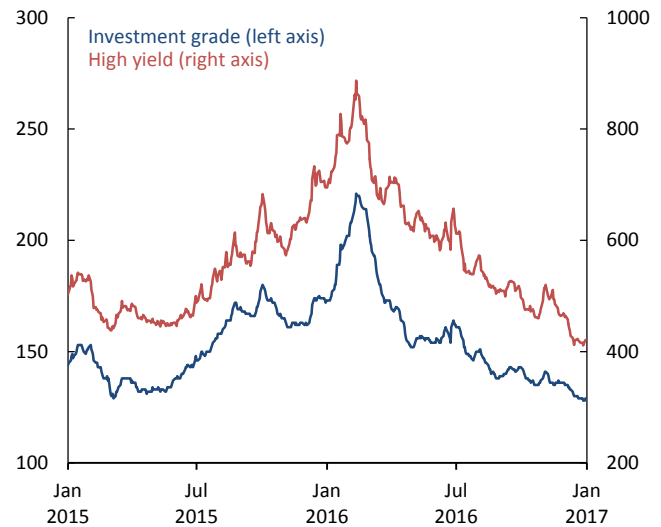
as a key potential threat to financial stability (see the OFR [2016 Financial Stability Report](#)).

**China and other emerging markets had sizable capital outflows.**

Emerging market assets sold off sharply in the days after the U.S. election. Capital outflows from funds that invest in emerging market debt were the heaviest since at least 2004. Emerging market currencies depreciated by more than 4 percent during the election week. China had especially sharp capital outflows in the fourth quarter, and its currency depreciated more than 4 percent against the U.S. dollar. Capital outflows have reduced China’s official foreign reserves by 25 percent since 2014 (see Figure 15).

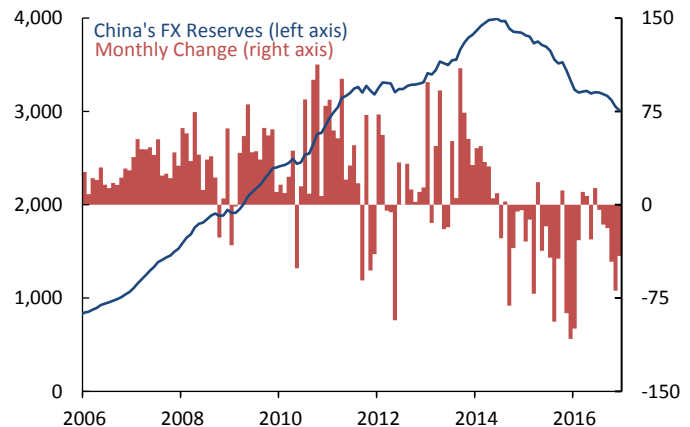
Also in China, tighter monetary conditions caused investors to pull cash from wealth management products, a type of off-balance-sheet investment vehicle used by Chinese financial institutions. A rout ensued in the \$8 trillion domestic bond market in which wealth management products are heavily invested. Since August, when the People’s Bank of China signaled its desire to rein in credit growth, the yield on 10-year Chinese government bonds has climbed 40 basis points. China and other large emerging markets face considerable challenges to financial stability amid lower growth, capital outflows, and a large overhang of private sector debt. In a severely adverse scenario, financial instability in these large emerging markets could spill over to the United States (see the OFR [2015 Financial Stability Report](#)).

**Figure 14: U.S. corporate bond option-adjusted spreads (basis points)** Corporate bond spreads continued to decline



Source: Haver Analytics

**Figure 15: Chinese foreign exchange reserves (\$ billions)** Renewed reserve declines in the fourth quarter



Source: Bloomberg L.P.



## Selected Global Asset Price Developments

	LEVEL (12/31/2016)	1Q CHANGE (bps or %)	1Q CHANGE (standard deviations)*	YTD CHANGE (bps or %)	12-MONTH RANGE**
<b>EQUITIES</b>					
S&P 500	2239	3.3%	0.2	10	
U.S. KBW Bank Index	92	29.6%	2.2	26	
Russell 2000	1357	8.4%	0.6	19	
Nasdaq	5383	1.3%	-0.1	8	
Euro Stoxx 50	3291	9.6%	0.8	1	
Shanghai Composite	3104	3.3%	0.0	-12	
Nikkei 225	19114	16.2%	1.4	0	
Hang Seng	22001	-5.6%	-0.6	0	
FTSE All World	279	1.0%	-0.1	6	
<b>RATES</b>					
U.S. 2-Year Yield	1.19%	43	0.9	14	
U.S. 2-Year Swap Rate	1.45%	44	0.8	27	
U.S. 10-Year Yield	2.44%	85	1.7	17	
U.S. 10-Year Swap Rate	2.34%	88	1.7	15	
U.S. 30-Year Yield	3.07%	75	1.7	5	
U.S. 2y10y Spread	125	42	1.3	3	
U.S. 5Y5Y Inflation Breakeven	2.05%	27	0.6	24	
U.S. 5Y5Y Forward Rate	3.05%	94	1.8	17	
Germany 10-Year Yield	0.21%	33	1.0	-42	
Japan 10-Year Yield	0.05%	14	0.6	-22	
U.K. 10-Year Yield	1.24%	49	1.2	-72	
JPM EMU Periphery Yield	1.68%	49	1.3	1	
Euro area 5Y5Y Inflation Breakeven	1.74%	39	2.5	6	
<b>FUNDING</b>					
1M T-Bill Yield	0.42%	23	0.7	29	
DTCC GCF Treasury Repo	0.47%	-80	-3.8	-17	
3M Libor	1.00%	14	0.3	39	
Libor-OIS Spread	33	-8	-0.3	10	
EURUSD 3M CCY Basis Swap	-55	0.2	0.0	-37	
<b>U.S. MBS</b>					
FNMA Current Coupon	3.13%	77	1.7	13	
FHLMC Primary Rate	4.32%	90	2.2	31	
<b>CREDIT</b>					
CDX Investment Grade 5-Year CDS Spread	67	-8	-0.4	-21	
CDX High Yield 5-Year CDS Spread	356	-45	-0.2	-117	
CDX Itraxx Euro 5-Year CDS Spread	72	0	0.0	-5	
<b>IMPLIED VOLATILITY</b>					
VIX Index	14	6%	0.0	-23	
V2X Index	18	-8%	-0.4	-18	
VDAX Index	18	-5%	-0.3	-21	
MOVE Index	72	18%	0.8	6	
3M2Y Swaption Volatility	55	11%	0.3	-2	
3M10Y Swaption Volatility	84	20%	1.0	14	
DB G10 FX Volatility Index	11	14%	0.7	17	
JPM EMFX Volatility Index	11	8%	0.2	-1	
<b>FOREIGN EXCHANGE &amp; COMMODITIES</b>					
U.S. Dollar Index***	102	7.1%	1.7	4	
EUR/USD	1.05	-6.4%	-1.3	-3	
USD/JPY	117	15.4%	2.4	-3	
GBP/USD	1.23	-4.9%	-1.1	-16	
USD/CHF	1.02	4.9%	1.0	2	
Brent Crude	57	15.8%	0.7	52	
Gold	1148	-12.8%	-2.1	8	
S&P GSCI Commodities Index	398	9.3%	0.6	28	
<b>EMERGING MARKETS</b>					
JPM EMFX Index	66	-3.6%	-0.7	1	
MSCI Emerging Market Equity Index	862	-4.6%	-0.5	9	
CDX EM 5-Year CDS Spread	242	4.9	0.0	-117	

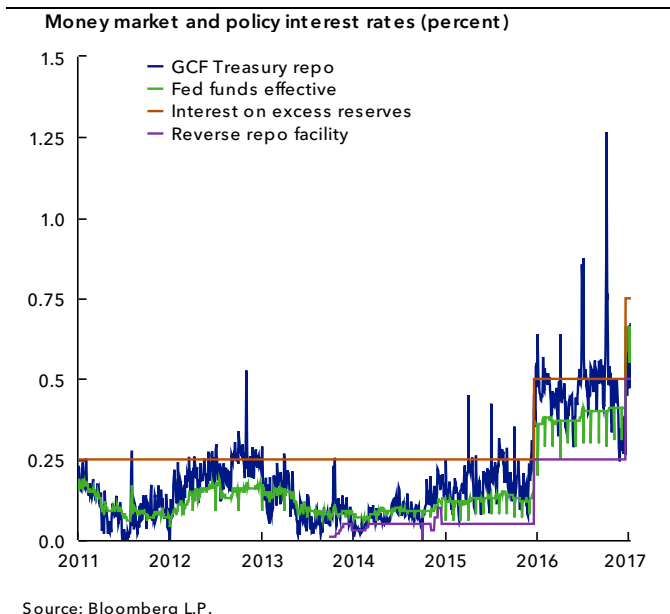
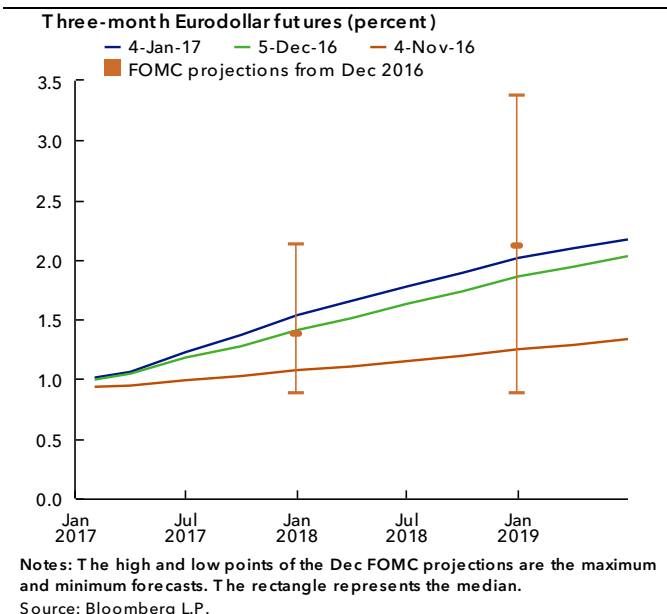
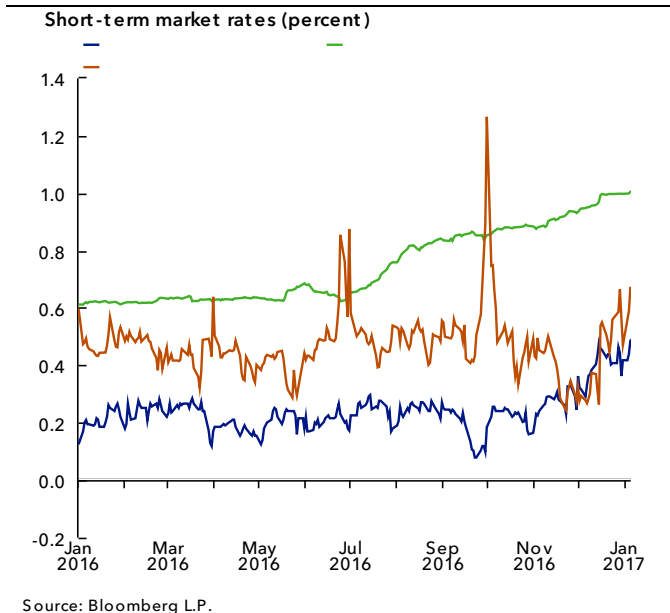
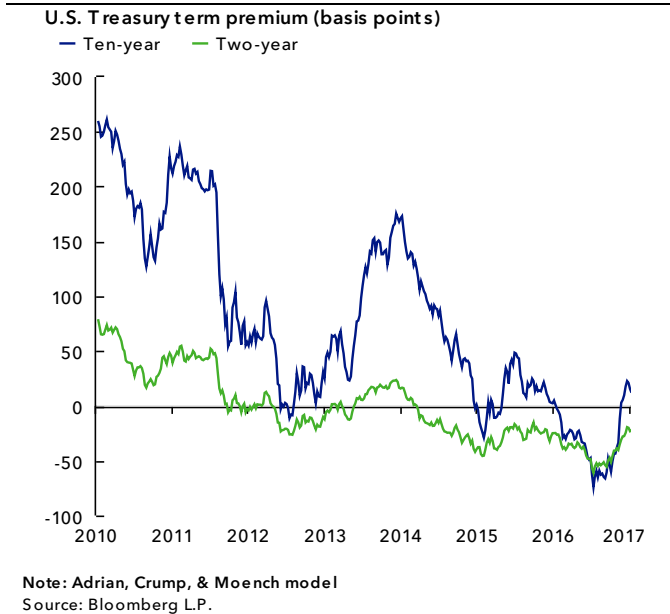
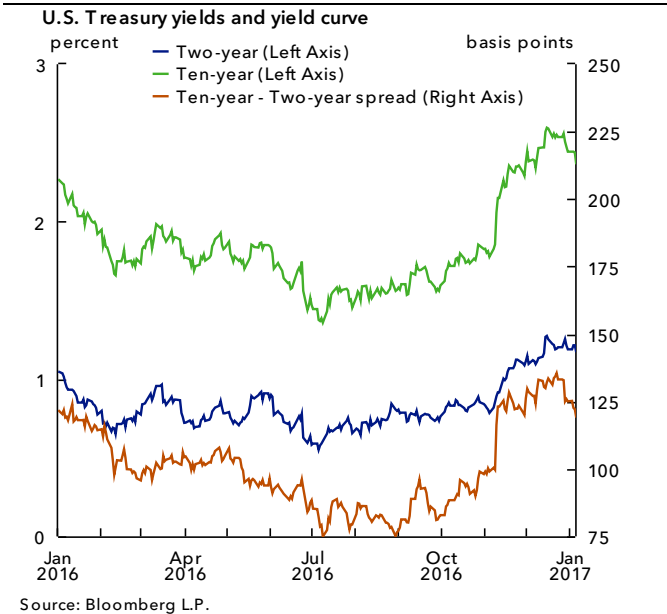
\* Standard deviations based on quarterly data from January 1994 or earliest available thereafter.

\*\* Trailing 12-month range. Latest (O); Mean ( | ).

\*\*\* Dollar index from Bloomberg (ticker: DXY); averages the exchange rates between the U.S. dollar and major world currencies.

Sources: Bloomberg L.P., OFR analysis

# Select U.S. Interest Rates



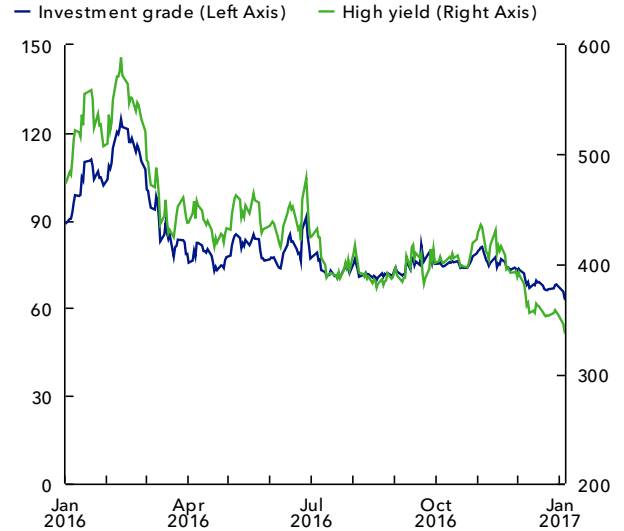


**U.S. corporate bond option-adjusted spreads (basis points)**



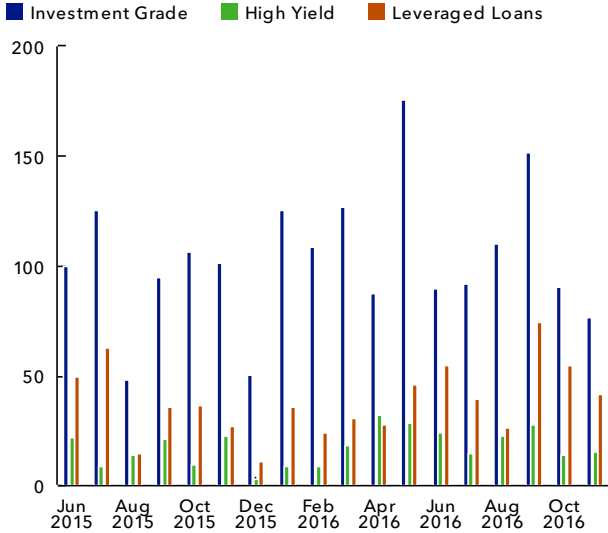
Source: Haver Analytics

**U.S. corporate CDS indexes (basis points)**



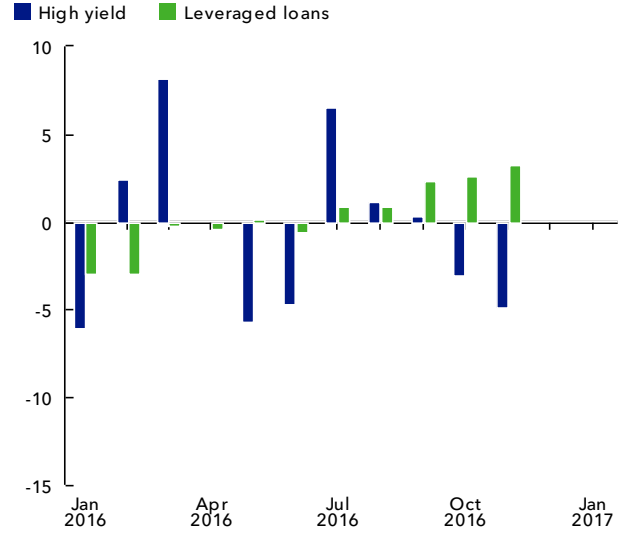
Note: Five-year maturity CDS Index  
Source: Bloomberg L.P.

**U.S. corporate credit gross issuance (\$ billions)**



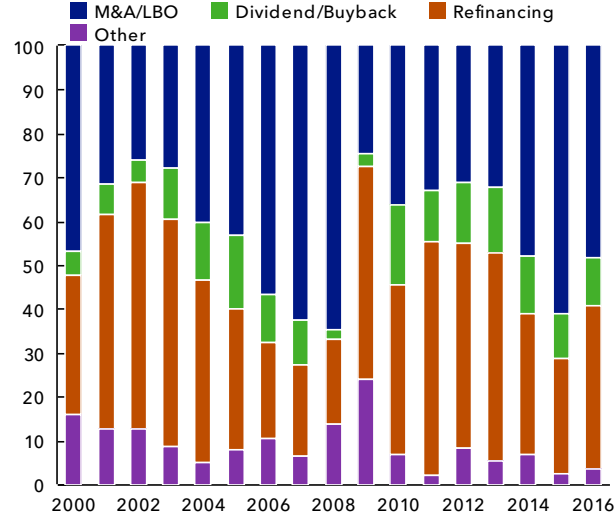
Sources: Securities Industry and Financial Markets Association, Standard & Poor's Leveraged Commentary & Data

**U.S. corporate credit fund flows (\$ billions)**



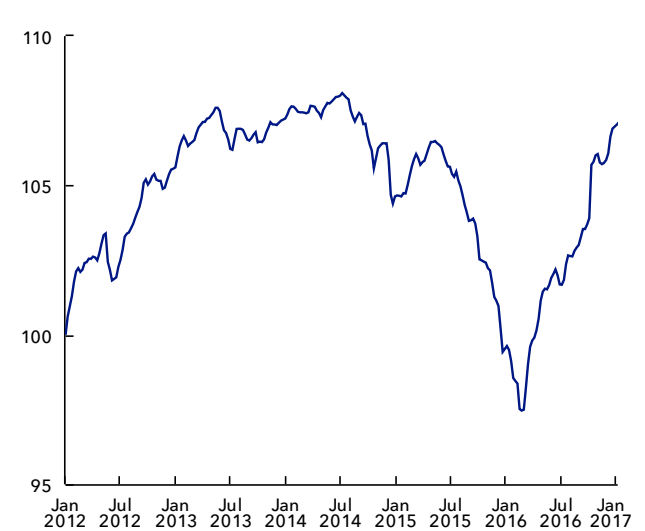
Note: Flows data are released with one-month lag.  
Source: Haver Analytics

**Leveraged loan issuance by use of proceeds (percent)**



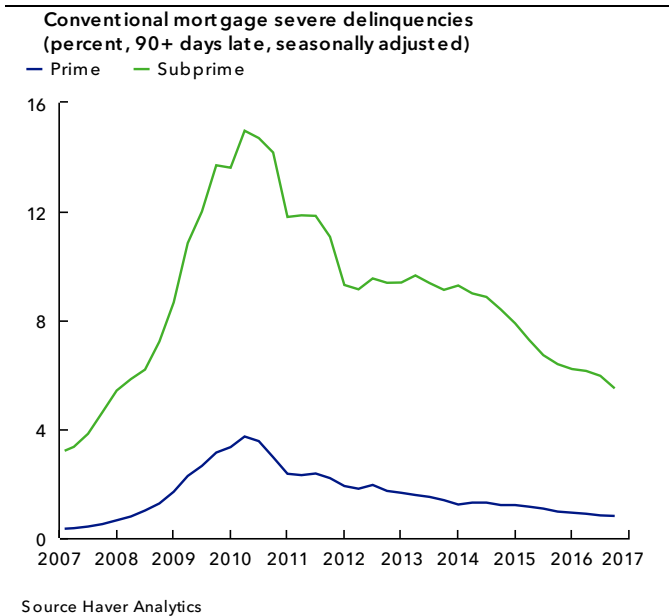
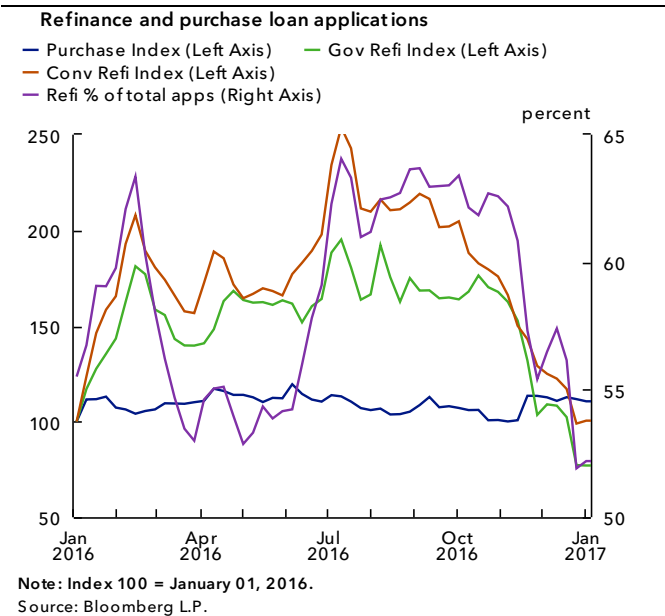
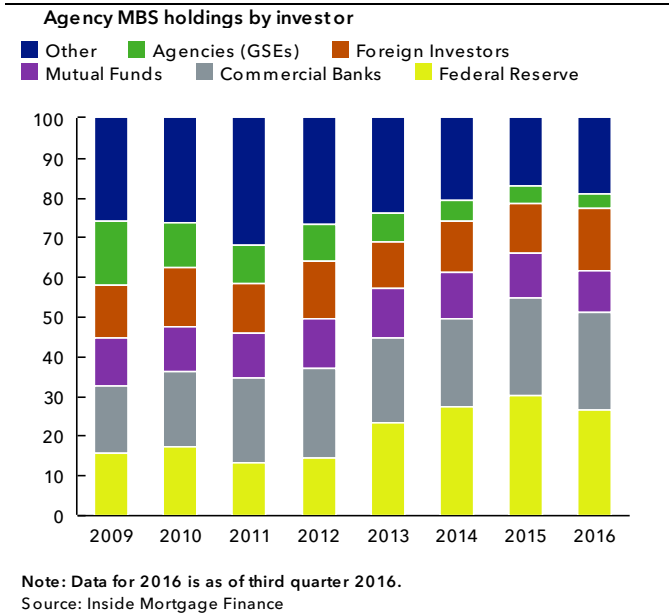
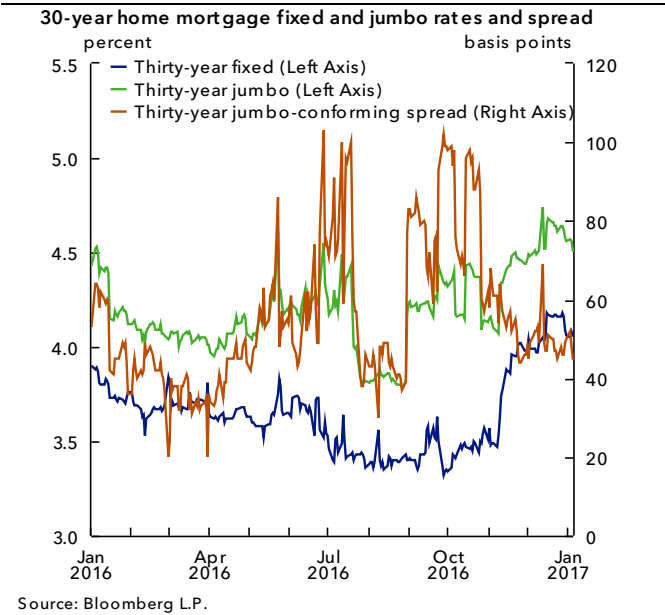
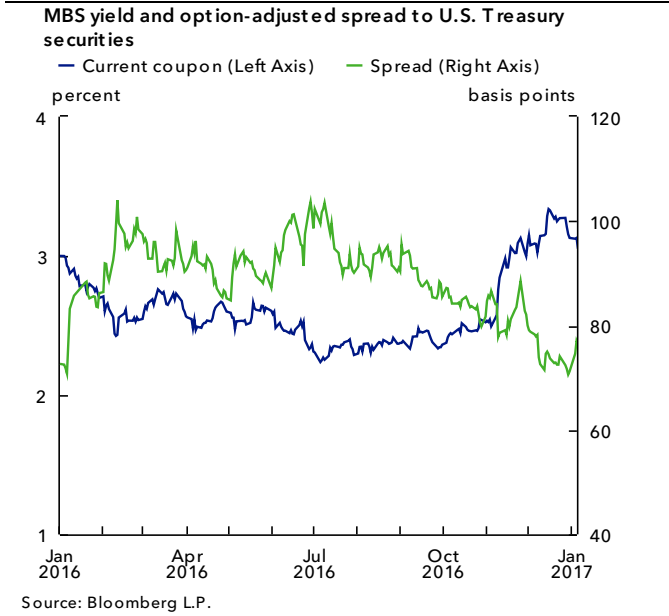
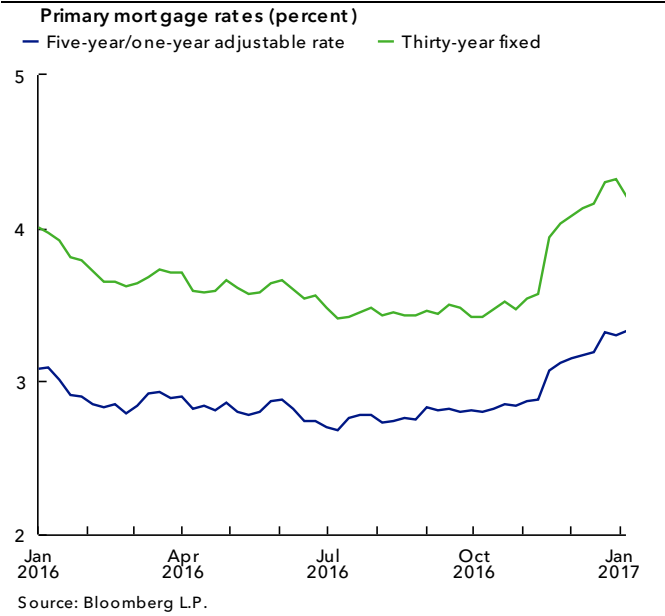
Note: Data for 2016 are year-to-date as of December.  
Sources: Standard & Poor's Leveraged Commentary & Data, OFR analysis

**Leveraged loan price activity**

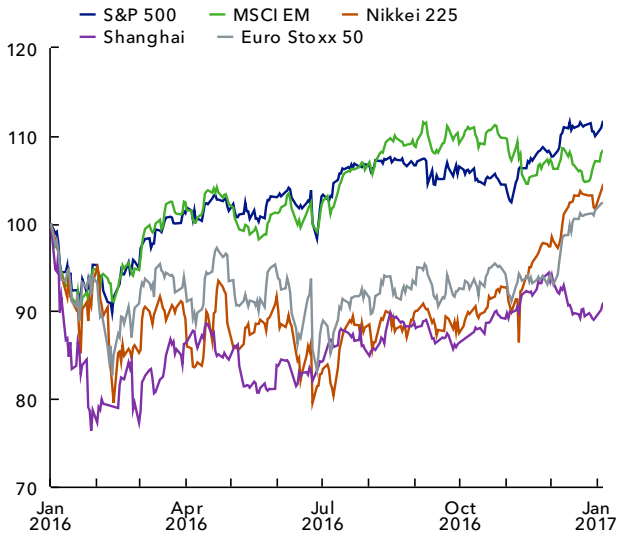


Notes: S&P Leveraged Loan Index. Index 100=January 01, 2012.  
Source: Bloomberg L.P.

# Primary and Secondary Mortgage Markets

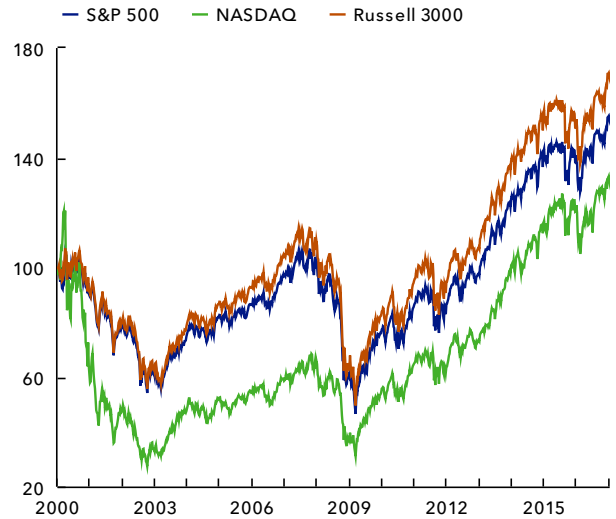


Global equity indices



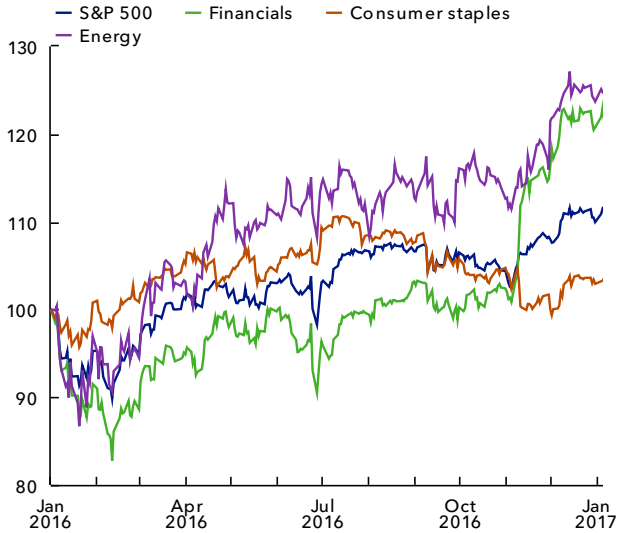
Note: Index = January 01, 2016.  
Source: Bloomberg L.P.

U.S. equity indexes



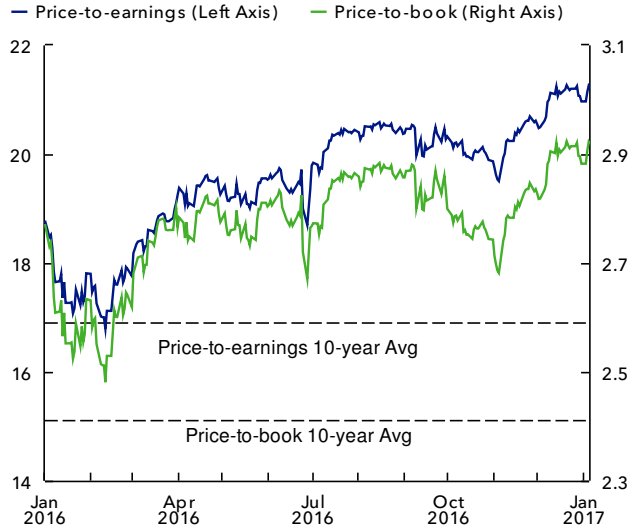
Note: Index 100 = Jan 01, 2000.  
Source: Bloomberg L.P.

S&P 500 sector performance



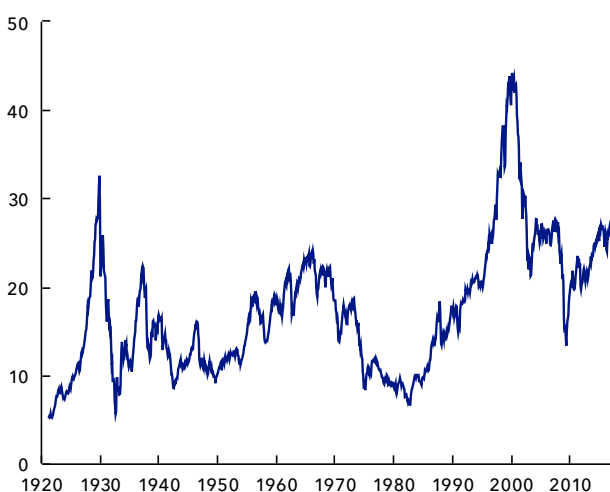
Note: Index 100 = January 01, 2016.  
Source: Bloomberg L.P.

S&P 500 price-to-earnings and price-to-book ratios (multiple)



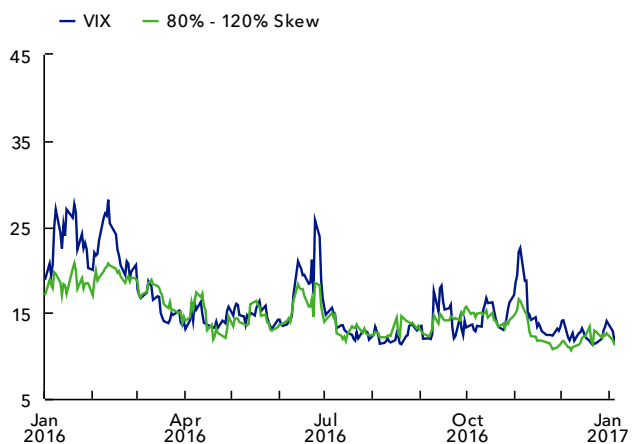
Source: Bloomberg L.P.

S&P 500 cyclically adjusted price-to-earnings (CAPE) ratio



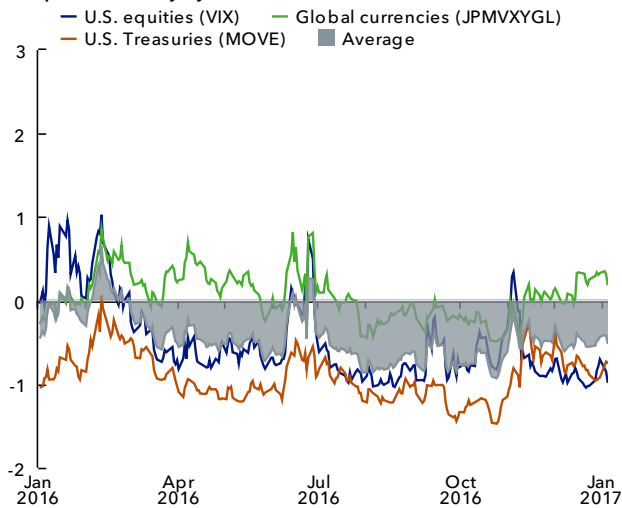
Note: CAPE is the ratio of the monthly S&P 500 price level to trailing ten-year average earnings (inflation adjusted).  
Sources: Haver Analytics, OFR analysis

S&P 500 implied volatility and option skew (percent)



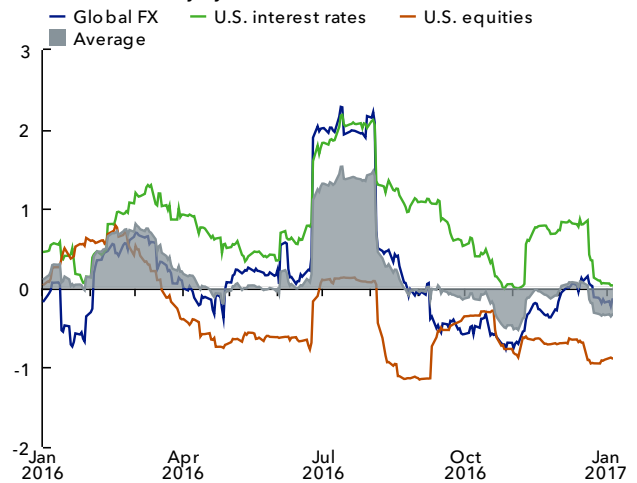
Notes: Option skew is the difference between three-month implied volatility of out of the money puts and calls with strikes equal distance from the spot price (+/- 20 percent). Higher values reflect greater demand for downside risk protection.  
Source: Bloomberg L.P.

Implied volatility by asset class (Z-score)



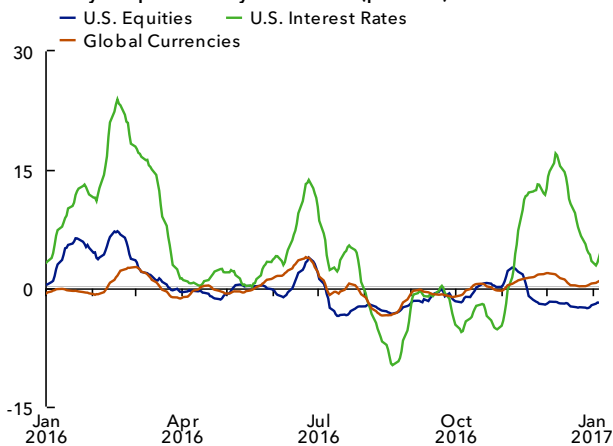
Notes: Z-score represents the distance from the average, expressed in standard deviations. Standardization uses data going back to January 01, 1993. Source: Bloomberg L.P.

Realized volatility by asset class (Z-score)



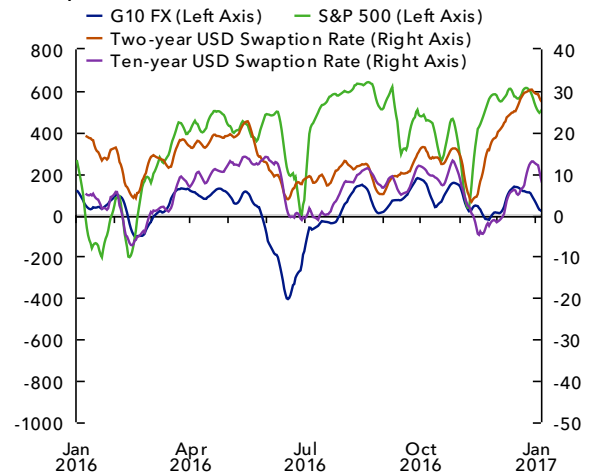
Notes: Thirty-day realized volatility. Equities based on S&P 500 index, interest rates based on weighted average of T reasury yield curve, FX based on weights from JPMVXY index. Standardization uses data going back to January 01, 1993. Sources: Bloomberg L.P., OFR analysis

Volatility risk premium by asset class (percent)



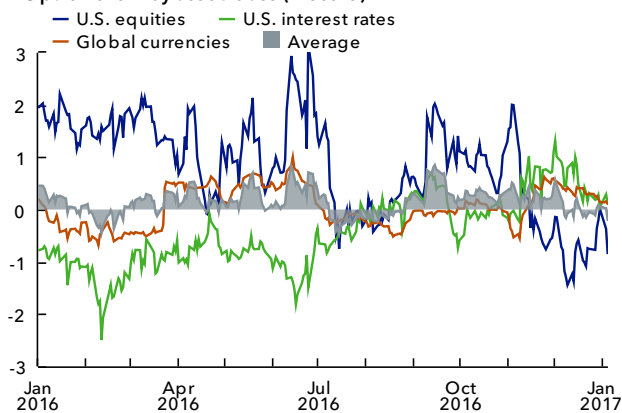
Notes: One-month option-implied volatility minus one-month model-predicted volatility. The latter is computed based on realized volatility, using a hetero-autoregressive model with 1, 5, and 22 day lags. U.S. Interest Rates represents the average volatility risk premium of two- and ten-year swap rates. Equities based on S&P 500 index. Currencies based on weights from JPMVXYGL Index. Sources: Bloomberg L.P., OFR analysis

Slopes of implied volatility curves (basis points)



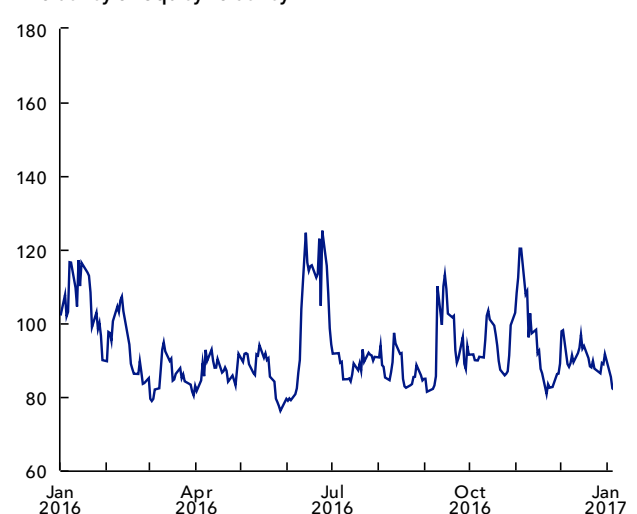
Notes: Seven-day moving average. Slope represents difference between one-year and one-month maturities. G10 FX based on weights from Deutsche Bank's CVIX index. Sources: Bloomberg L.P., OFR analysis

Option skew by asset class (z-score)



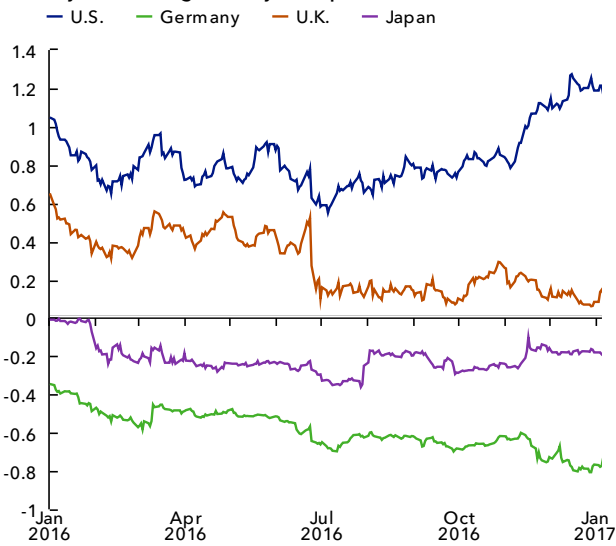
Notes: Option skew is the difference between three-month implied volatility of out of the money puts and calls with strikes equal distance from the spot price (+/- 10 percent). Higher values reflect greater demand for downside risk protection. Equities represents S&P500 index. Interest rates represent weighted average skew of T reasury futures curve. Currencies represent dollar skew against major currencies based on JPMVXY index weights. Z-score standardization uses data going back to January 01, 2006. Sources: Bloomberg L.P., OFR analysis

Volatility of equity volatility



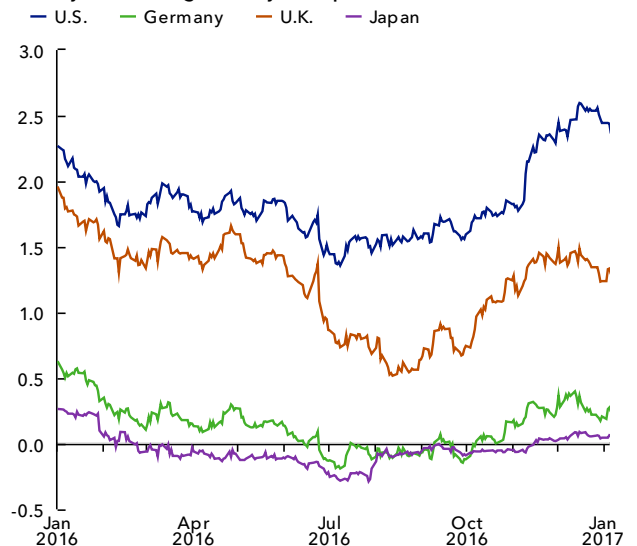
Note: VVIX Index measures the expected volatility of the 30-day forward price of the CBOE VIX Index. Source: Bloomberg L.P.

Two-year sovereign bond yields (percent)



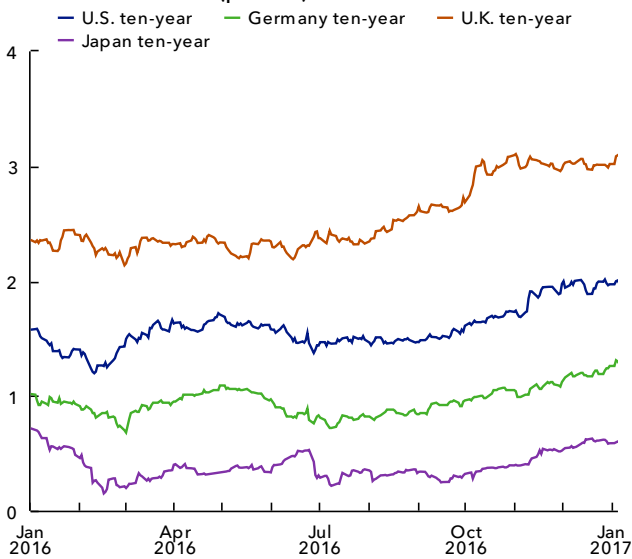
Source: Bloomberg L.P.

Ten-year sovereign bond yields (percent)



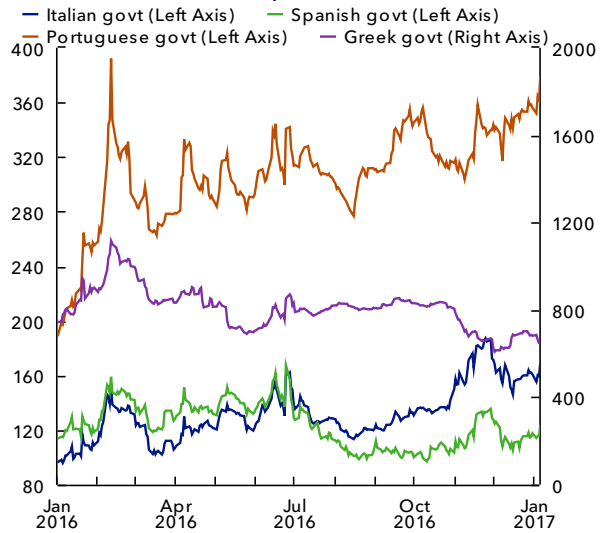
Source: Bloomberg L.P.

Breakeven inflation (percent)



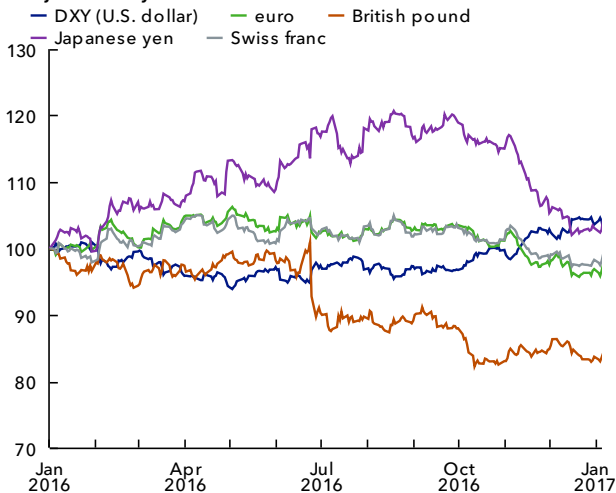
Source: Bloomberg L.P.

10-year euro area periphery government bond spreads over German bunds (basis points)



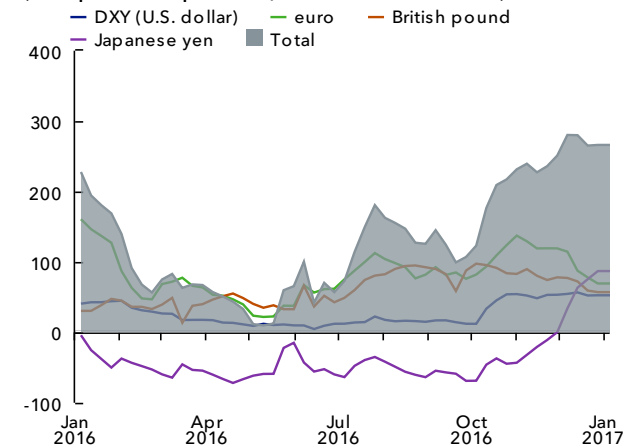
Source: Bloomberg L.P.

Major currency indexes



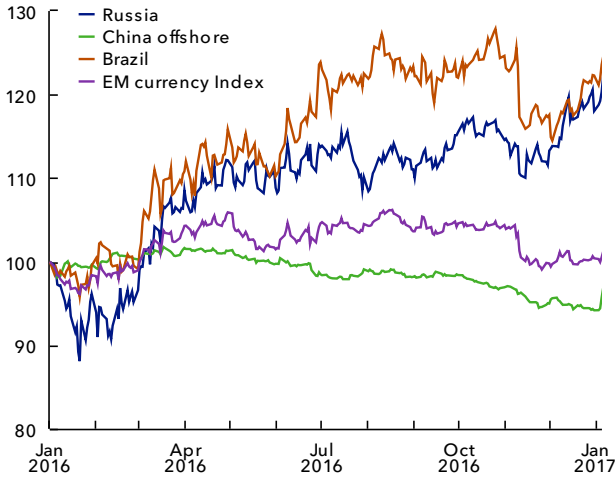
Notes: Foreign currency increases represent greater strength versus the U.S. dollar. DXY increases represent greater strength of the U.S. dollar versus a basket of major world currencies. Index 100 = January 01, 2016.  
Source: Bloomberg L.P.

U.S. dollar long positioning vs. major currencies (net speculative positions, thousands of contracts)



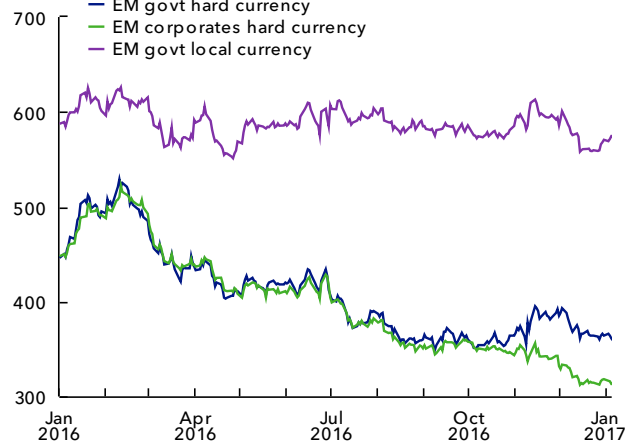
Notes: Positive values represent net U.S. dollar long positions. The Dollar Index (DXY) is a futures contract based on the U.S. dollar's value against a basket of major world currencies. To express a U.S. dollar long position in a non-U.S. dollar contract, the contract must be shorted.  
Source: Bloomberg L.P.

**Emerging market currencies**  
(U.S. dollars per foreign currency unit)



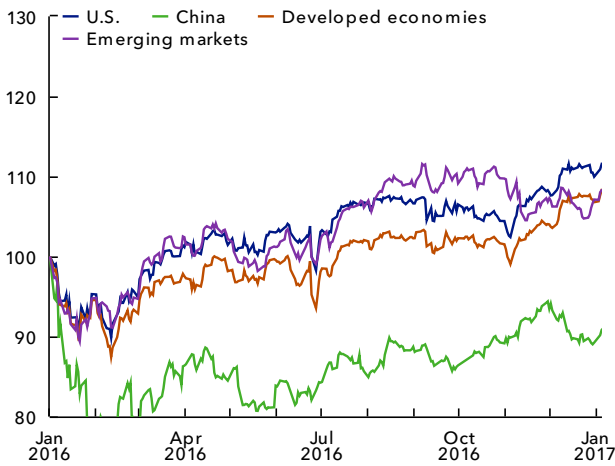
Notes: Increasing values indicate strengthening versus the U.S. dollar. Index 100=January 01, 2016.  
Source: Bloomberg L.P.

**Spreads to Treasuries (basis points)**



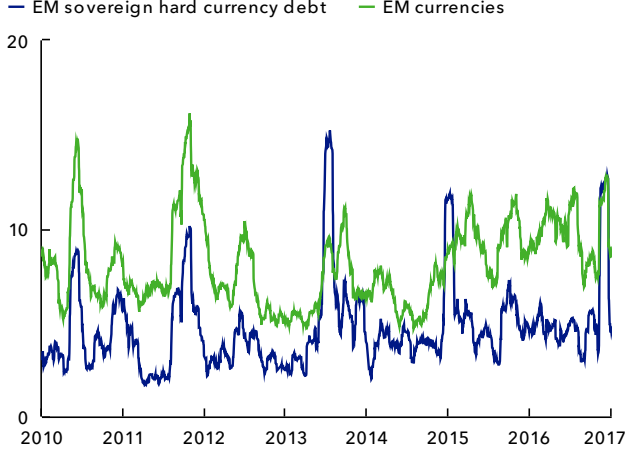
Notes: EM government and corporate hard currency spreads-to-worst are from the dollar-denominated J.P. Morgan Emerging Markets Bond Index Global and the J.P. Morgan Corporate Emerging Markets Bond Index. Government local currency spreads are the nominal yield difference between the J.P. Morgan Government Bond Index - Emerging Markets and the 5-year U.S. Treasury note.  
Source: Bloomberg L.P.

**Equity price indexes**



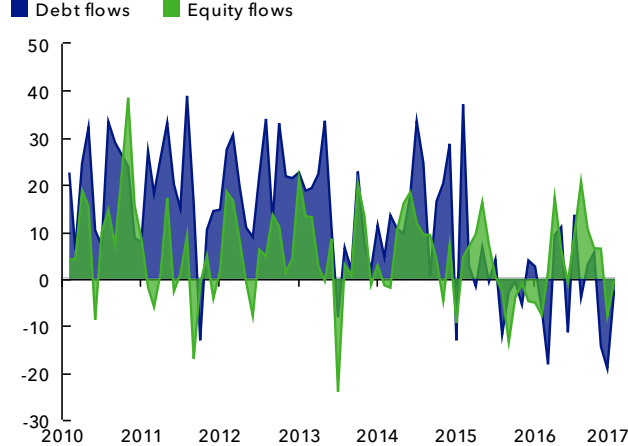
Notes: The US equity index is the S&P 500 Index. The Chinese equity index is the Shanghai Composite Index. The Developed Economies index is the MSCI World Index and the Emerging Markets index is the MSCI EM Index (both are in local terms). Index 100 = January 01, 2016.  
Source: Bloomberg L.P.

**One-month realized emerging markets volatility (percent)**



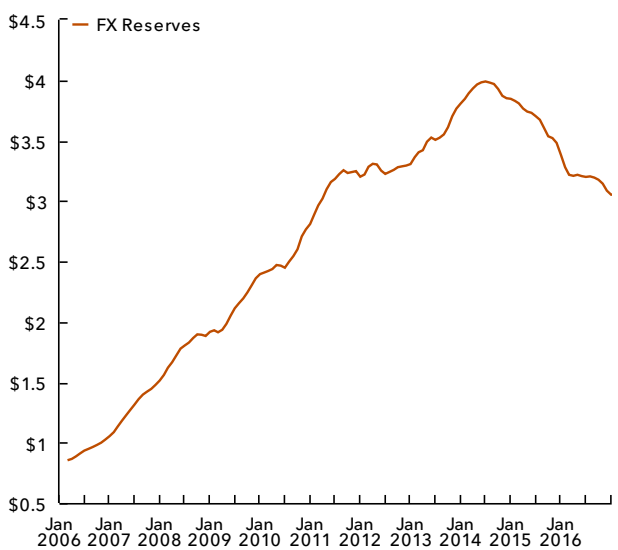
Notes: Realized volatility is the annualized standard deviation. Hard currency sovereign debt based on the J.P. Morgan Emerging Bonds - Global Price Index and currencies based on a weighted average of EM currency returns against the dollar using weights from J.P. Morgan VXY-EM currency volatility index.  
Sources: Bloomberg L.P., OFR analysis

**IIF portfolio flows to emerging markets (\$ billion)**



Notes: Data represent the Institute of International Finance's monthly estimates of non-resident flows into thirty EM countries. Data for latest observations are derived from IIF's empirical estimates using data from a smaller subset of countries, net issuance, and other financial market indicators.  
Source: Bloomberg

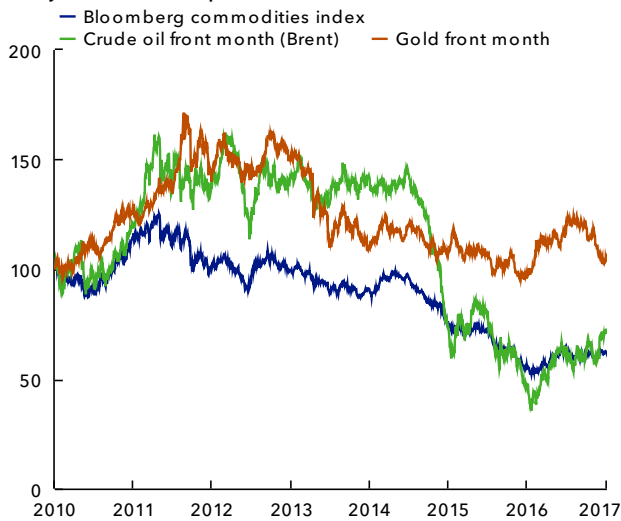
**China's Foreign Exchange Reserves (\$ trillion)**



Source: Bloomberg

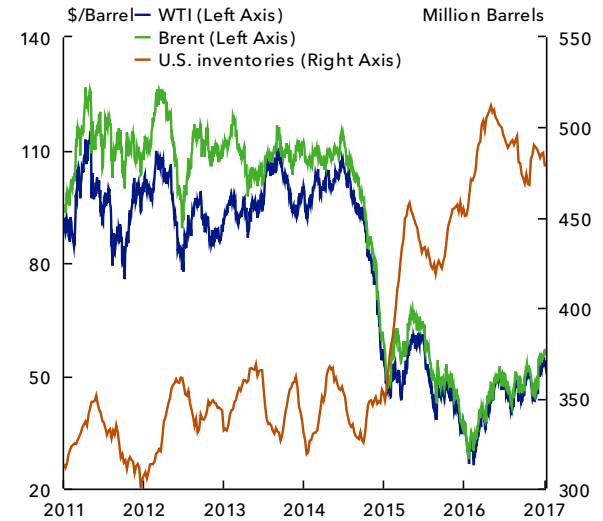


Major commodities prices



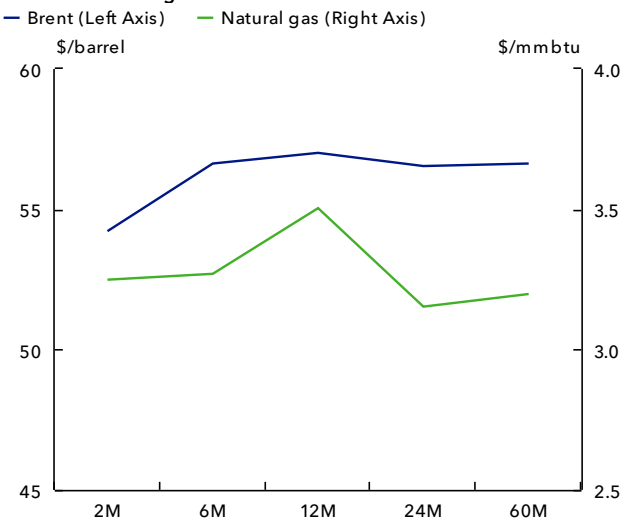
Notes: Index 100 = January 01, 2010  
Source: Bloomberg L.P.

Crude oil



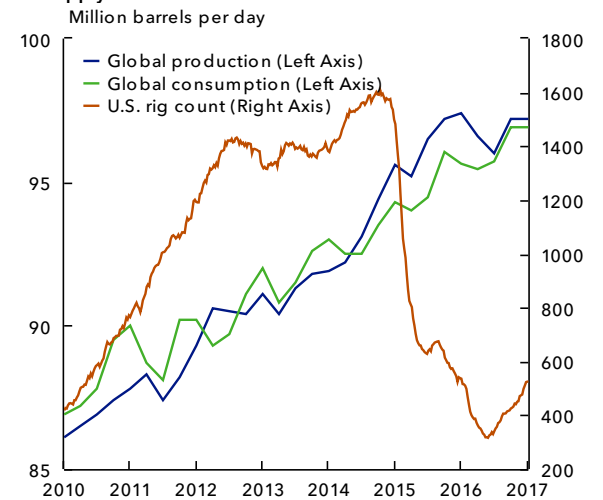
Note: WTI and Brent are front-month contracts.  
Source: Bloomberg L.P.

Oil and natural gas futures curves



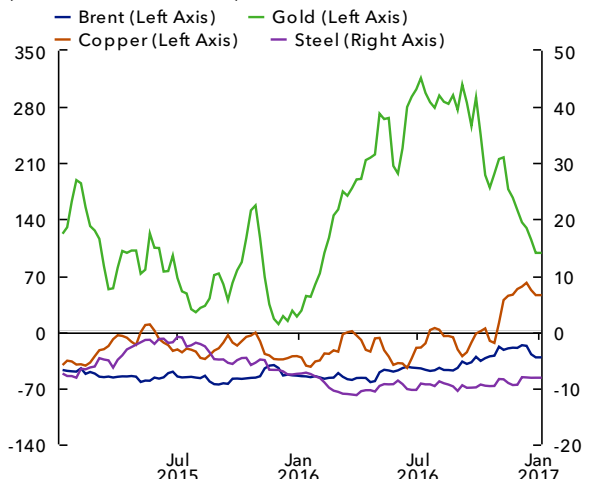
Note: Data as of January 05, 2017.  
Sources: Bloomberg L.P., OFR analysis

Oil supply and demand factors



Note: Global production and consumption are estimates by the International Energy Agency.  
Source: Bloomberg L.P.

Speculative futures positioning (thousands of contracts)



Notes: Positive values represent net long positions. Negative values represent net short positions.  
Source: Bloomberg L.P.

Metals spot price indexes



Note: Index 100 = January 01, 2010.  
Source: Bloomberg L.P.