OFR MARKETS MONITOR
OFFICE OF FINANCIAL RESEARCH

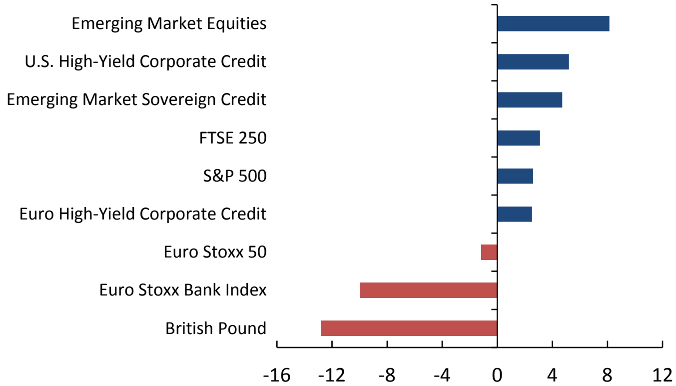
Third Quarter 2016
(data as of September 30)

A review of financial market themes and developments

Initial Shock from U.K. Referendum Subsides

In the third quarter, investors' risk appetites quickly recovered from the initial shock of the United Kingdom (U.K.) vote to exit the European Union (see the second quarter Financial Markets Monitor). The recovery was driven by the absence of major financial dislocations after the vote and expectations that central banks would increase monetary accommodation. U.S. equity indexes set new highs, and corporate bonds and many emerging market assets rallied. The ultimate financial and political effects of the U.K.'s exit will depend on the terms, which will take months or years to negotiate. That process could introduce further confidence shocks to global markets.

Figure 1. Global asset returns since U.K. referendum (percent)
Most asset prices recovered from U.K. vote to exit EU



Notes: Index 100 = June 23, 2016. Emerging market equities is the MSCI Emerging Markets index; the credit indexes are Bloomberg derived indexes.
Source: Bloomberg L.P.

Key developments in the third quarter of 2016

- Global risky assets recovered most of the losses triggered by the U.K. referendum (see Figure 1). The recovery was attributed to the absence of severe market dislocations after the vote, expectations for easier policy from major central banks, and continued stability in China's economy and markets.
- A major reform of U.S. money market funds will take effect on October 14. In anticipation, assets in prime money market funds have fallen more than 40 percent in 2016. Divestments by prime funds have increased short-term U.S. dollar borrowing rates, most notably the London interbank offered rate (LIBOR). However, even with the increase, LIBOR and other U.S. interest rates remain at the low end of their long-term range.
- Emerging markets attracted capital from overseas investors during the third quarter, as interest rates in advanced economies remained at historically low levels. Oil prices rose on news that the Organization for Petroleum Exporting Countries informally agreed to cut production, but the market remains oversupplied. Oil prices are still 60 percent below their mid-2014 levels.
- Deutsche Bank's equity price hit record lows on news of a potentially large fine from the U.S. Department of Justice. Global risk sentiment initially retreated and European financial stocks fell more than 7 percent.

 Contributors: Viktoria Baklanova, Ted Berg, Thomas Piontek, Daniel Stemp.

U.K. referendum shock fades but uncertainty lingers.

The initial economic data since the U.K. referendum have been better than many had feared, though the longer-term economic impact remains uncertain. The U.K. Composite Purchasing Managers' Index (PMI), a key indicator of economic activity, bounced back sharply in August after plunging in July (see Figure 2). Retail sales for July were also surprisingly resilient. As a result, many economists have upgraded their 2017 U.K. growth forecasts from recession to low, positive growth (see Figure 3).

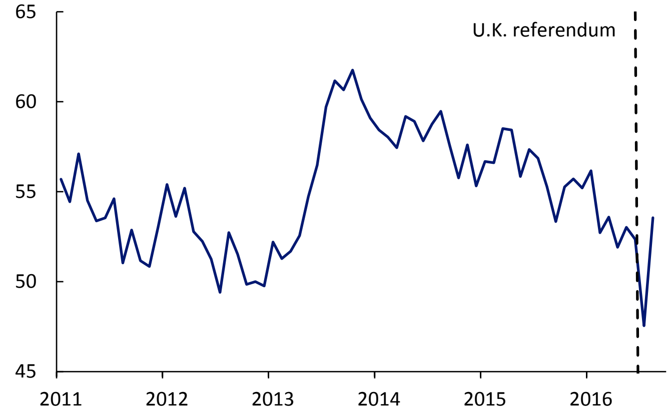
Political stability returned to the U.K. quickly. Theresa May became prime minister on July 13, less than one month after David Cameron resigned. However, uncertainty remains over how and when the U.K. will exit the European Union (EU). The new government has signaled it will trigger Article 50, the procedure to formally exit the EU, sometime next year. It has ruled out a potential second referendum, an early election, or a vote in Parliament. It is unclear if the U.K. will maintain access to the EU single market or the EU customs union, which would have major implications for trade and investment. Most experts doubt that trade and financial agreements can be negotiated for an orderly exit within the two years allowed under Article 50. An extension would require approval from the other EU members, presenting another political risk to economic confidence in the U.K. and broader Europe.

Major global interest rates were more volatile, still near historical lows.

In the aftermath of the U.K. referendum, markets and analysts expected additional monetary easing in advanced economies, particularly in Europe and Japan. The Bank of England met those expectations, but other central banks did not, leading to some volatility in major interest rates.

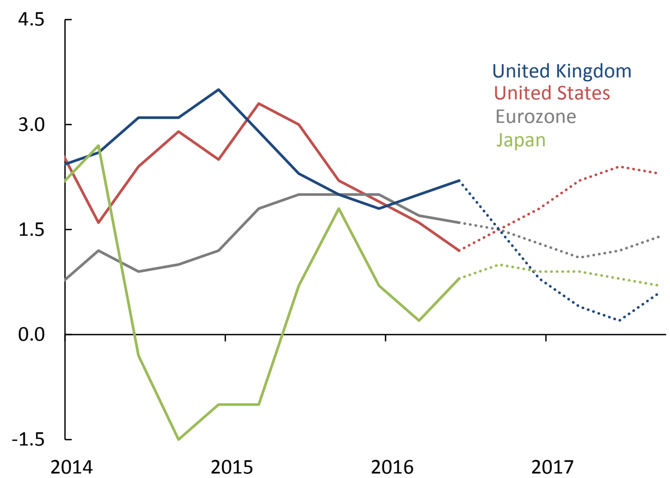
- The Bank of Japan left its policy rate unchanged in September, but shifted the focus of its monetary operations. The operations will aim to control the yield curve and target a level of zero percent for the 10-year Japanese government bond yield.

Figure 2. U.K. composite PMI (index)
Markets supported by rebound in some U.K. data



Note: PMI reading above 50 indicates increasing activity.
Source: Haver Analytics

Figure 3. Actual real GDP growth and forecasts (annual percent change) U.K. expected to avoid recession after referendum



Note: Forecasts are weighted averages of Bloomberg survey results.
Source: Bloomberg L.P.

- The Bank of England announced a comprehensive package of new easing measures in August, cutting interest rates and expanding its asset purchase program. Long-term U.K. sovereign bond yields moved to historical lows.
- The European Central Bank left policy on hold in September, surprising markets and leading to a sizable upward move in major global interest rates.
- The Federal Reserve kept its policy rate unchanged in September, but signaled an upcoming rate hike later this year. The market-implied probability of a 25 basis point rate increase by year-end is now approximately 60 percent.

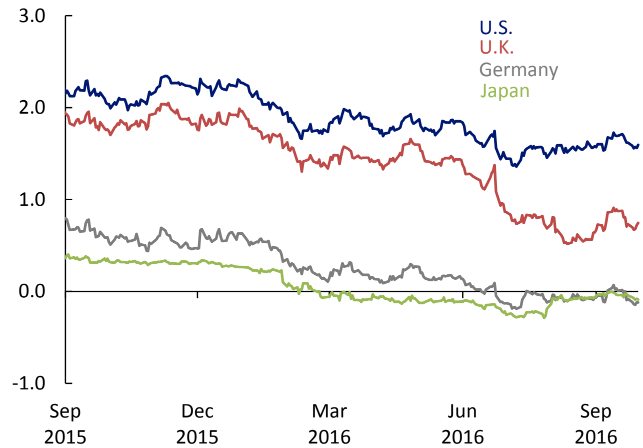
Despite the market disappointment, monetary policies in major economies remain extraordinarily accommodative and their long-term interest rates remain close to the historic lows hit after the U.K. referendum result. As discussed in previous OFR publications, U.S. long-term interest rates continue to be held down by their strong value relative to German, Japanese, and U.K. bonds (see Figure 4), with evidence of increasing foreign inflows from those markets into U.S. fixed income funds (see Figure 5). As discussed in our *2015 Financial Stability Report* factors suppressing long-term U.S. interest rates may persist for years and continue to incentivize rapid credit growth in the nonfinancial business sector and more risk-taking by investors.

Global risk assets rebounded from the sharp declines following the surprise U.K. vote to leave.

Many global financial markets quickly recovered from the shock of the U.K. referendum and continued to strengthen during the third quarter. The recovery was attributed to the absence of economic or financial dislocations from the U.K. referendum, expectations for global central banks to increase accommodation or delay policy tightening, and receding risks of a sharp economic slowdown in China.

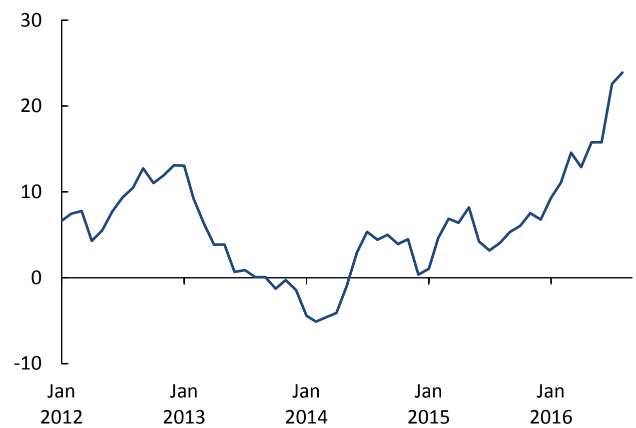
The S&P 500 is now 3 percent above the level prior to the vote, and it reached a record high in August (see Figure 6). U.S. stock valuations continue to appear excessive based on a number of metrics. Measures of implied and realized price volatility

Figure 4. 10-year sovereign bond yields (percent)
Yields remain low amid accommodative central bank policy



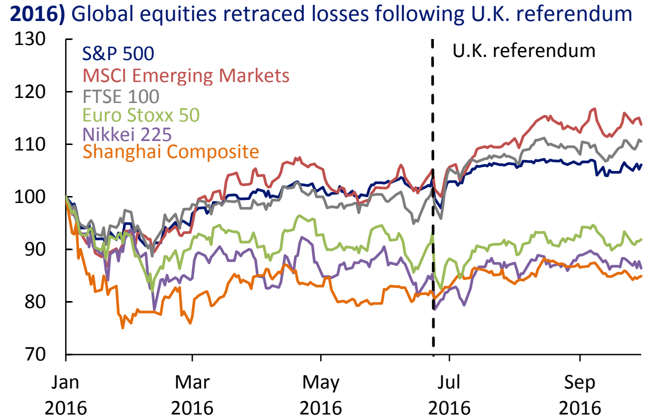
Source: Bloomberg L.P.

Figure 5. Japan's net purchases of foreign long-term debt securities (¥ trillions) Higher U.S. interest rates have attracted foreign investors



Note: Data is a rolling 12-month average.
Source: Haver Analytics

Figure 6. Year-to-date global equity returns (Index 100 = Jan. 1, 2016) Global equities retraced losses following U.K. referendum



Source: Bloomberg L.P.

across key assets also initially declined, reaching their lowest levels in 2016. U.S. corporate credit spreads tightened considerably, with investment grade and high-yield spreads 21 and 160 basis points tighter since the referendum, and now near their lowest levels since July 2015 (see Figure 7). The tightening in U.S. spreads has accompanied strong foreign inflows into U.S. fixed income funds, which have been attributed to a global reach for yield amid lower and increasingly negative rates in other advanced economies.

The October U.S. money market fund reform deadline is driving a shift in money market fund assets and a repricing of U.S. dollar funding rates.

Since the start of the year, assets in prime money market funds have declined by more than 40 percent (more than $700 billion). At the same time, assets under management of government money market funds have surged by a similar amount (see Figure 8). These changes are driven by fund conversions and investor reallocations ahead of the October 14 implementation of money market fund reform.

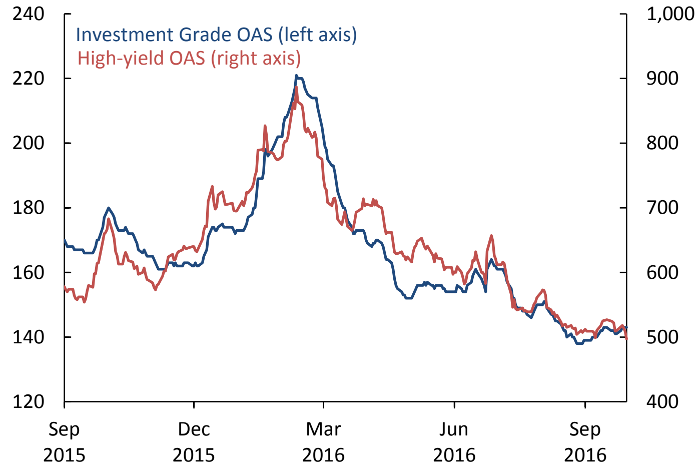
The reforms are intended to make prime and tax-exempt money market funds less vulnerable to runs by investors by changing some key features of these funds. They are also intended to limit the potential stress on the financial system if a run occurs. Runs on prime funds in 2008 were a key accelerant to the financial crisis.

The reform requires prime and tax-exempt money market funds with institutional investors to let their net asset values float with the price of the assets in which they are invested. These funds, retail and institutional, will also have to adopt liquidity fees and redemption restrictions called "gates." Funds would be able use liquidity fees and gates in stressful markets to limit cash outflows. Government money market funds are not required to adopt liquidity fees and gates, and can maintain a stable net asset value.

U.S. dollar LIBOR rates rose without disruptions in U.S. dollar funding.

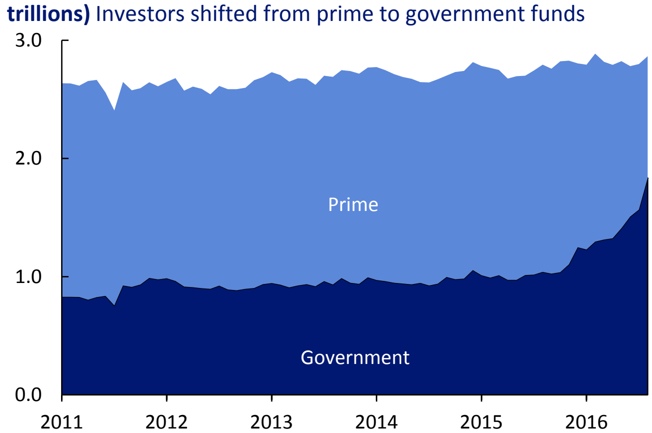
The sharp decline in the assets of prime money market funds is having ripple effects. The funds' investments in the short-term debt and deposits of banks have declined, increasing the interest rates

Figure 7. Option-adjusted spreads (basis points)
Improved risk sentiment and demand boosted U.S. credit



Source: Haver Analytics

Figure 8. Assets under management in money market funds ($ trillions) Investors shifted from prime to government funds



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

banks must pay. As a result, the three-month U.S. dollar LIBOR has increased notably since July. Historically, LIBOR has increased only during times of market stress or when the Federal Reserve tightened monetary policy. However, the recent increase is modest compared with the increases during the financial crisis and LIBOR remains at the low end of its historical range (see Figure 9).

Cash outflows from prime funds also affected the foreign exchange swap market. Foreign banks need U.S. dollars to finance the purchase of U.S. dollar-denominated assets. Borrowing from money market funds used to be an efficient way to access U.S. dollars. Because of the decline in demand for short-term bank debt, foreign banks have turned to foreign exchange swaps to obtain dollar funding. Short-dated cross-currency basis swap spreads have been negative since 2014, and continue to widen, in part, due to increased demand (see Figure 10).

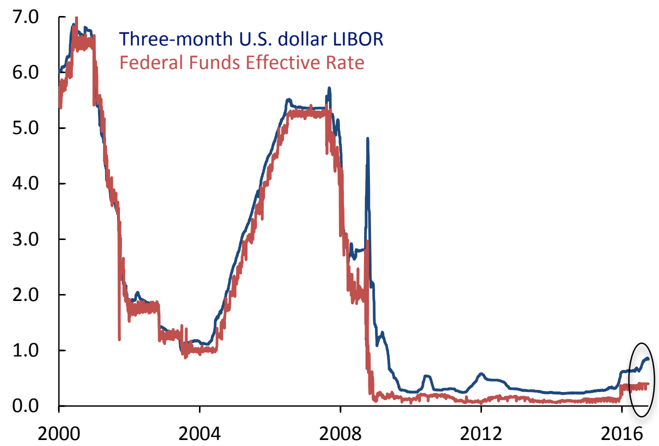
The rise in U.S. dollar LIBOR has also affected nonfinancial floating rate debt.

Because of the increase in U.S. dollar LIBOR, many debt issuers that use the benchmark rate will have higher funding costs. For example, U.S. dollar LIBOR is referenced in a large number of corporate loans, retail mortgages, floating rate bonds, and securitized products. The Market Participants Group on Reforming Interest Rate Benchmarks has estimated the notional value of financial products indexed to U.S. dollar LIBOR at more than $360 trillion. The increase in benchmark rates raises interest costs for these counterparties, but total borrowing costs remain near the bottom of their historical range.

Secured funding rates spiked again at quarter-end, but remained in a normal range during the rest of the quarter.

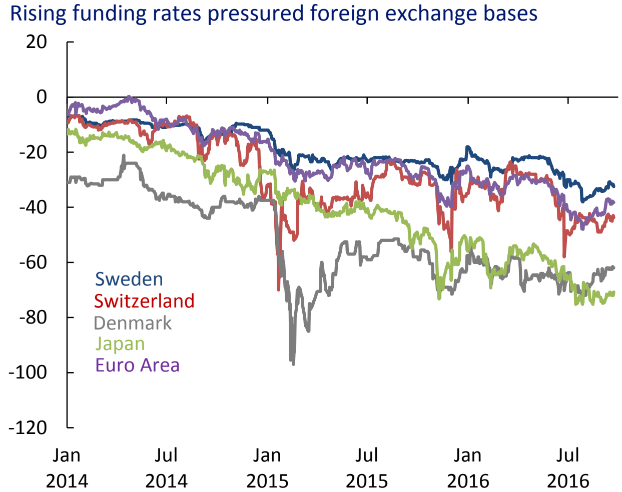
The overnight Treasury General Collateral Financing (GCF) repo rate spiked again at the end of the quarter, reaching its highest level in years. The spike was driven by the familiar withdrawal of banks from short-term funding markets at quarter-end, a pattern detailed in a [2015 OFR working paper](). Outside of the quarter-end period, repo rates remained range-bound (see Figure 11).

Figure 9. U.S. dollar LIBOR and effective Federal Funds rate (percent)
LIBOR and Federal Funds rates have diverged



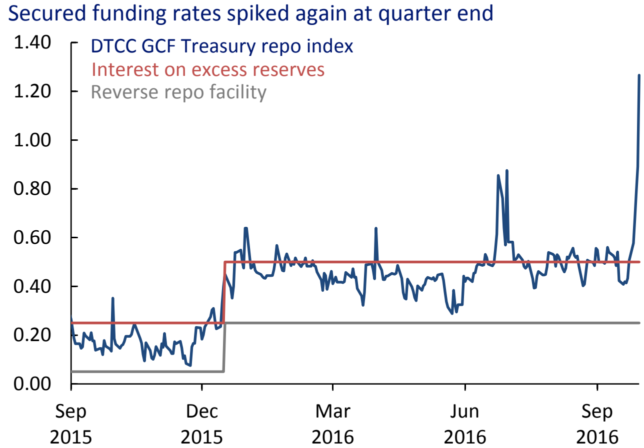
Source: Bloomberg L.P.

Figure 10. One-year cross-currency basis swap rates (basis points)
Rising funding rates pressured foreign exchange bases



Source: Bloomberg L.P.

Figure 11. Short-term interest rates (percent)
Secured funding rates spiked again at quarter end



Source: Bloomberg L.P.

Emerging markets and oil prices remain volatile.

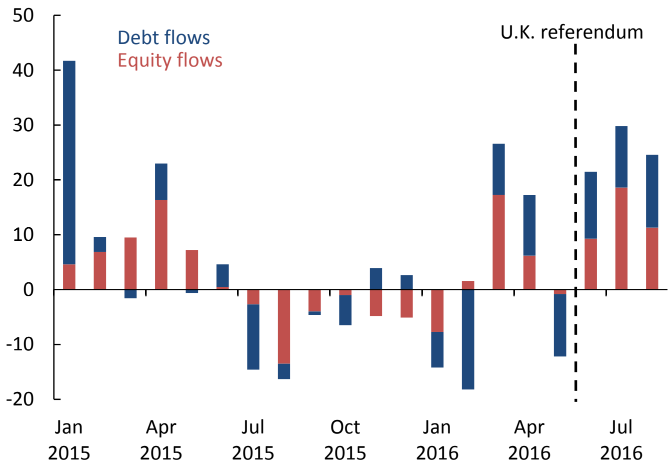
Emerging market assets also benefitted from reach-for-yield behavior in the third quarter, despite continued political risks in Turkey and Brazil. The benchmark MSCI (Morgan Stanley Capital International) Emerging Market Index rose more than 8 percent for the third quarter, even after some reversal in mid-September. Emerging market sovereign bond spreads tightened 70 basis points. Portfolio capital flows remained strong (see Figure 12).

Oil ministers from the Organization for Petroleum Exporting Countries (OPEC) informally agreed in September to cut oil production for the first time since 2008. Such a move would exert downward pressure on oil prices, which remain 60 percent below 2014 highs, primarily due to excess supply. However, analysts express considerable doubt about the implementation of the informal OPEC agreement. Crude oil prices continued to trade in the range of $40-50 per barrel during the third quarter, where they have been since April (see Figure 13).

Deutsche Bank came under significant market pressure.

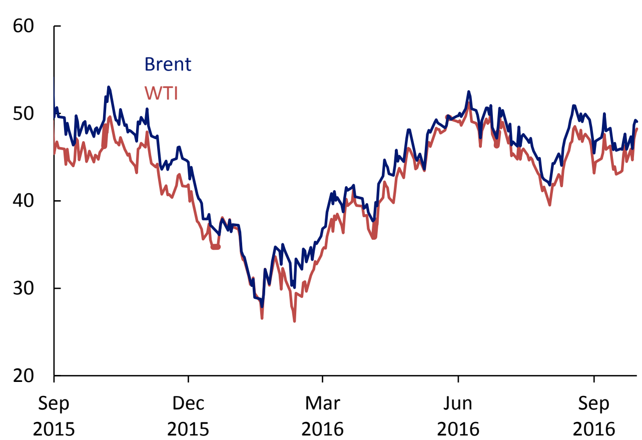
Deutsche Bank's equity price continued its yearlong decline, hitting new all-time lows (see Figure 14). With €1.8 trillion ($2 trillion) in assets, Deutsche Bank is Germany's largest bank and a global systemically important bank. Its equity price declined more than 20 percent after reports in September that the U.S. Department of Justice sought a $14 billion settlement from the bank related to mortgage-backed securities. Its equity price has partially recovered, but remains volatile. Its market capitalization stands at just 26 percent of its book value. Press reports of counterparties pulling back from Deutsche Bank have weighed on broader European bank stocks, which fell 7 percent in September.

Figure 12. Portfolio flows into emerging markets ($ billions)
Emerging markets attracted capital after referendum



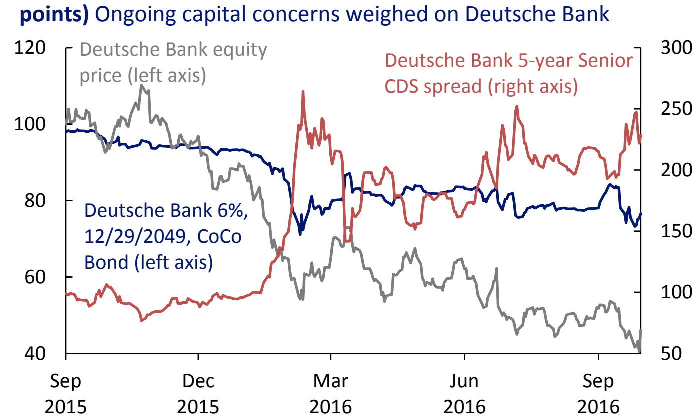
Source: Bloomberg L.P.

Figure 13. Oil futures price per barrel ($)
Oil recovered from summertime slide



Source: Bloomberg L.P.

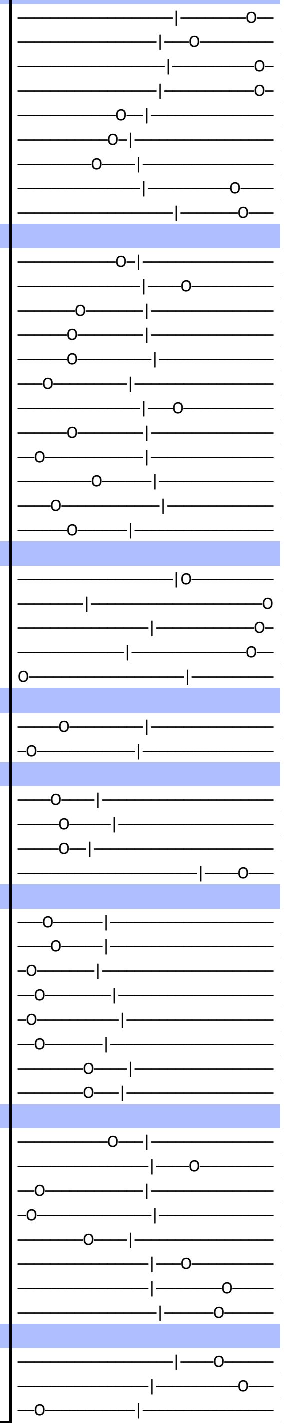
Figure 14. Bond price ($), equity price (index), and spread (basis points) Ongoing capital concerns weighed on Deutsche Bank



Note: CoCo represents contingent convertible capital securities.
Source: Bloomberg L.P.

Selected Global Asset Price Developments

	LATEST LEVEL (9/30/2016)	CHANGE SINCE 6/23/2016	90-DAY CHANGE (bps or %)	90-DAY CHANGE (standard deviations)*	YTD CHANGE (bps or %)	12-MONTH RANGE**
EQUITIES						
S&P 500	2168	2.6%	3.3%	0.2	6%	
U.S. KBW Bank Index	71	3.4%	9.2%	0.6	-3%	
Russell 2000	1252	6.8%	8.7%	0.6	10%	
Nasdaq	5312	8.2%	9.7%	0.5	6%	
Euro Stoxx 50	3002	-1.2%	4.8%	0.3	-8%	
Shanghai Composite	3005	3.9%	2.6%	0.0	-15%	
Nikkei 225	16450	1.3%	5.6%	0.5	-14%	
Hang Seng	23297	11.6%	12.0%	0.9	6%	
FTSE All World	276	2.5%	4.8%	0.4	5%	
RATES						
U.S. 2-Year Yield	0.76%	-2	18	0.4	-29	
U.S. 2-Year Swap Rate	1.01%	10	28	0.6	-17	
U.S. 10-Year Yield	1.59%	-15	12	0.4	-68	
U.S. 10-Year Swap Rate	1.46%	-17	9	0.3	-73	
U.S. 30-Year Yield	2.32%	-24	3	0.2	-70	
U.S. 2y10y Spread	83	-13	-6	-0.1	-39	
U.S. 5Y5Y Inflation Breakeven	1.78%	14	27	0.6	-3	
U.S. 5Y5Y Forward Rate	2.11%	-21	9	0.3	-77	
Germany 10-Year Yield	-0.12%	-21	1	0.2	-75	
Japan 10-Year Yield	-0.09%	5	13	0.6	-35	
U.K. 10-Year Yield	0.75%	-63	-12	-0.1	-121	
Euro area 5Y5Y Inflation Breakeven	1.36%	-7	4	0.4	-33	
FUNDING						
1M T-Bill Yield	0.18%	-8	1	0.1	6	
DTCC GCF Treasury Repo	1.27%	65	39	2.3	63	
3M Libor	0.85%	21	20	0.4	24	
Libor-OIS Spread	42	14	14	0.5	19	
EURUSD 3M CCY Basis Swap	-55	-19	-15	-0.3	-37	
U.S. MBS						
FNMA Current Coupon	2.36%	-16	5	0.2	-64	
FHLMC Primary Rate	3.42%	-14	-6	0.0	-59	
CREDIT						
CDX Investment Grade 5-Year CDS Spread	78	0	-3	-0.2	-10	
CDX High Yield 5-Year CDS Spread	414	-21	-20	-0.1	-60	
CDX Itraxx Euro 5-Year CDS Spread	75	-1	-11	-0.4	-2	
U.S. 5-Year Sovereign CDS Spread	20	0	0	0.0	2	
IMPLIED VOLATILITY						
VIX Index	13	-23%	-15%	-0.6	-27%	
V2X Index	20	-38%	-24%	-0.9	-11%	
VDAX Index	18	-29%	-28%	-1.0	-15%	
MOVE Index	61	-18%	-17%	-0.9	-11%	
3M2Y Swaption Volatility	49	-16%	-4%	-0.2	-12%	
3M10Y Swaption Volatility	70	-8%	-7%	-0.4	-5%	
DB G10 FX Volatility Index	10	-9%	-12%	-0.7	3%	
JPM EMFX Volatility Index	10	6%	1%	-0.1	-8%	
FOREIGN EXCHANGE & COMMODITIES						
U.S. Dollar Index***	95	2.1%	-0.7%	-0.2	-3%	
EUR/USD	1.12	-1.3%	1.2%	0.2	3%	
USD/JPY	101	-4.5%	-1.8%	-0.3	-16%	
GBP/USD	1.30	-12.8%	-2.5%	-0.6	-12%	
USD/CHF	0.97	1.4%	-0.5%	0.0	-3%	
Brent Crude	50	-5.0%	-1.7%	0.1	13%	
Gold	1316	4.7%	-0.5%	-0.3	24%	
S&P GSCI Commodities Index	364	-4.3%	-2.6%	-0.4	17%	
EMERGING MARKETS						
JPM EMFX Index	69	-0.2%	-0.1%	0.1	4%	
MSCI Emerging Market Equity Index	903	8.1%	8.3%	0.5	14%	
CDX EM 5-Year CDS Spread	241	-41	-31	-0.4	-116	



* 90-Day change standard deviations based on quarterly data from January 1994 or earliest available thereafter.

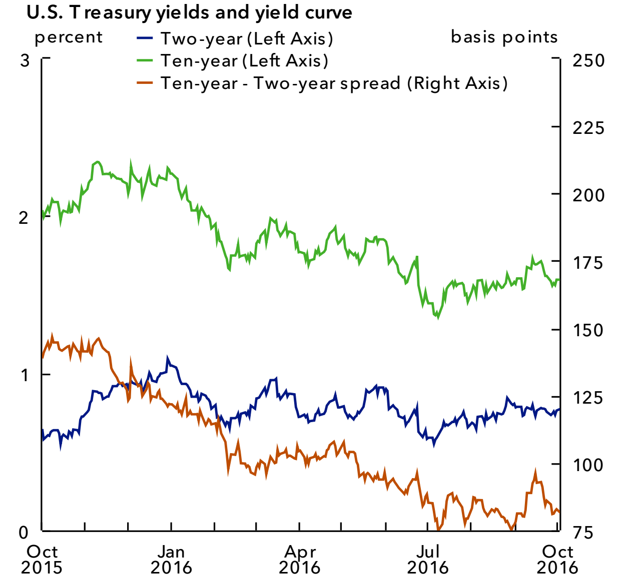
** Trailing 12-month range. Latest (O); Mean (|).

*** 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

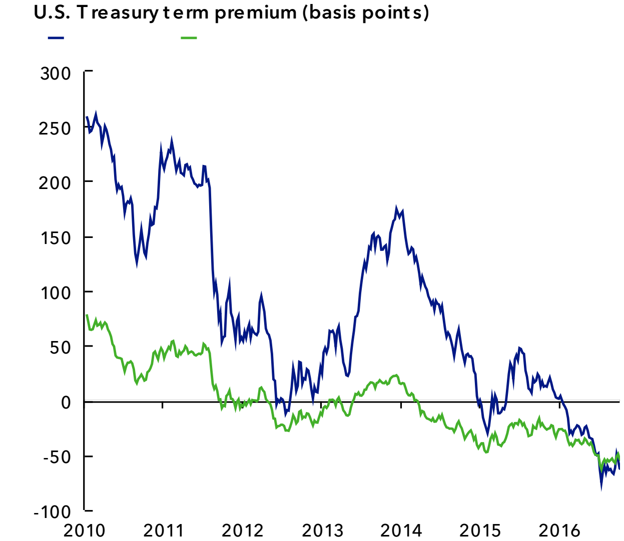
Select U.S. Interest Rates

U.S. Treasury yields and yield curve



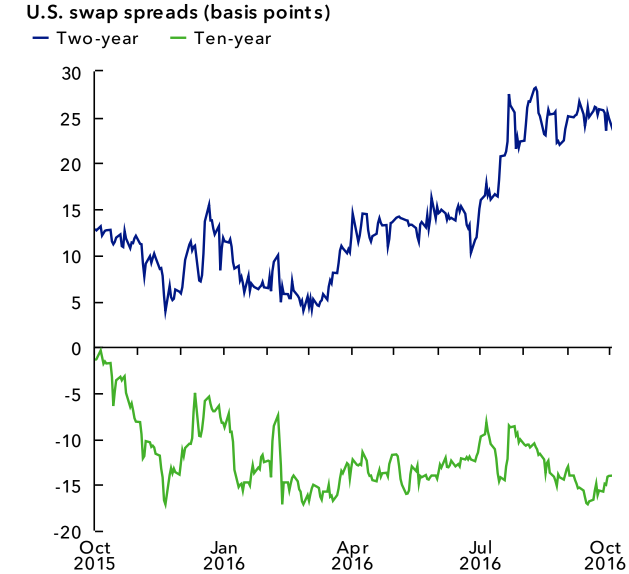
Source: Bloomberg L.P.

U.S. Treasury term premium (basis points)



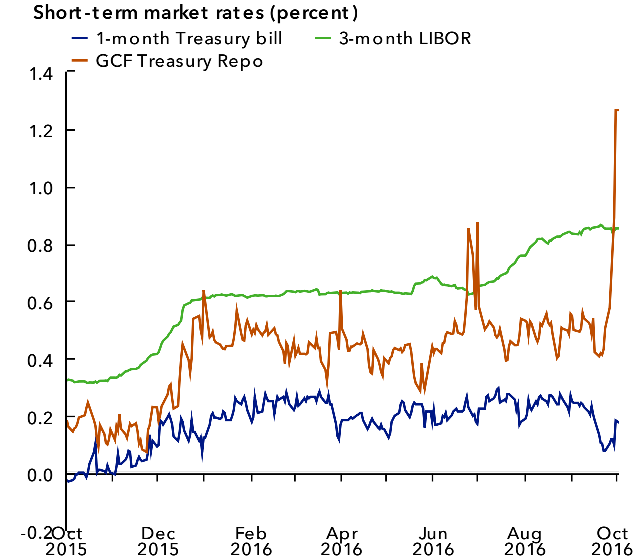
Note: Adrian, Crump, & Moench model
Source: Bloomberg L.P.

U.S. swap spreads (basis points)



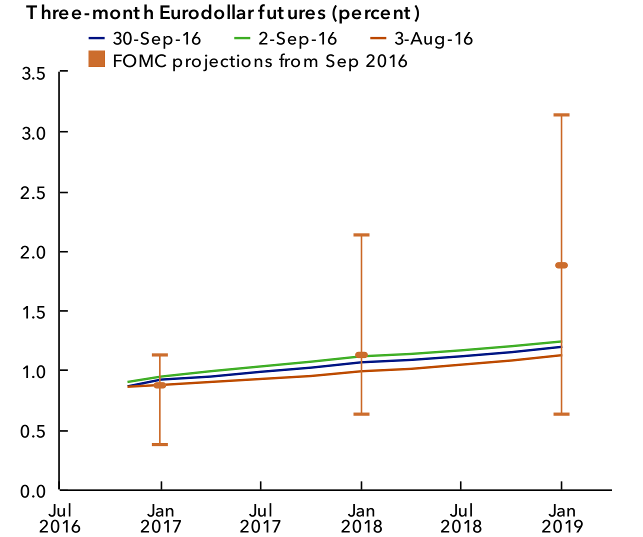
Source: Bloomberg L.P.

Short-term market rates (percent)



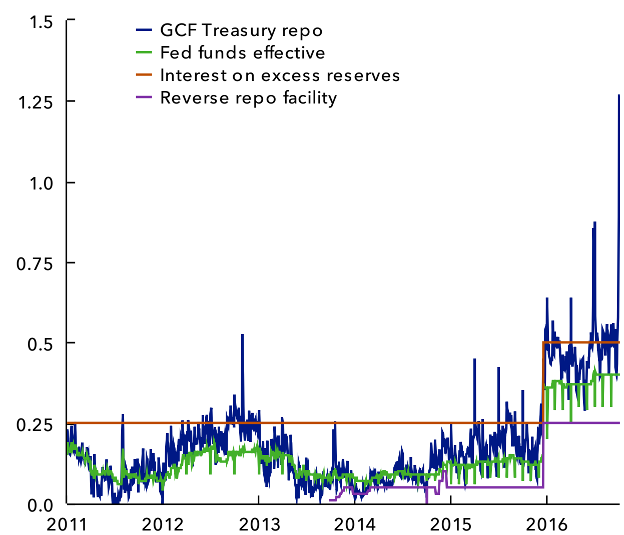
Source: Bloomberg L.P.

Three-month Eurodollar futures (percent)



Notes: The high and low points of the Sep FOMC projections are the maximum and minimum forecasts. The rectangle represents the median.
Source: Bloomberg L.P.

Money market and policy interest rates (percent)

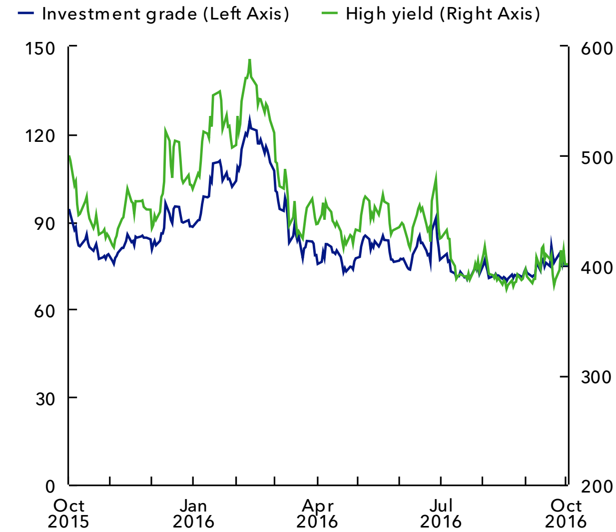


Source: Bloomberg L.P.

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

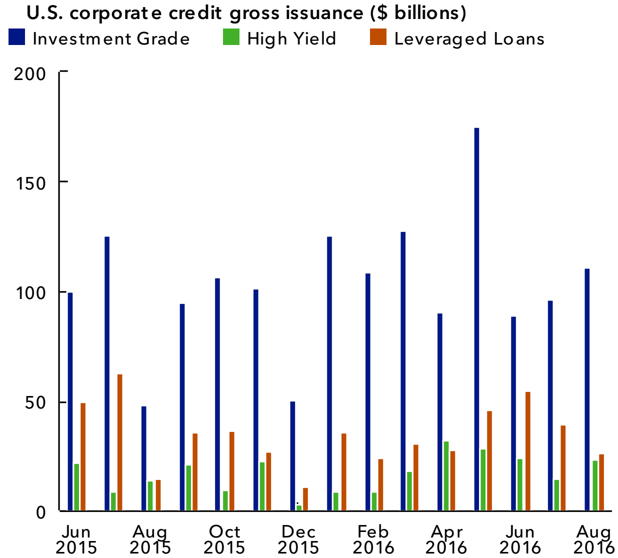
Source: Haver Analytics

U.S. corporate CDS indexes (basis points)



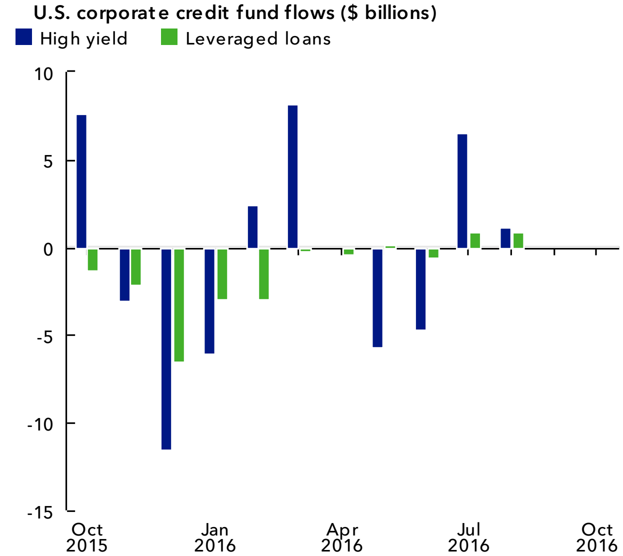
Note: Five-year maturity CDS Index
Source: Bloomberg L.P.

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



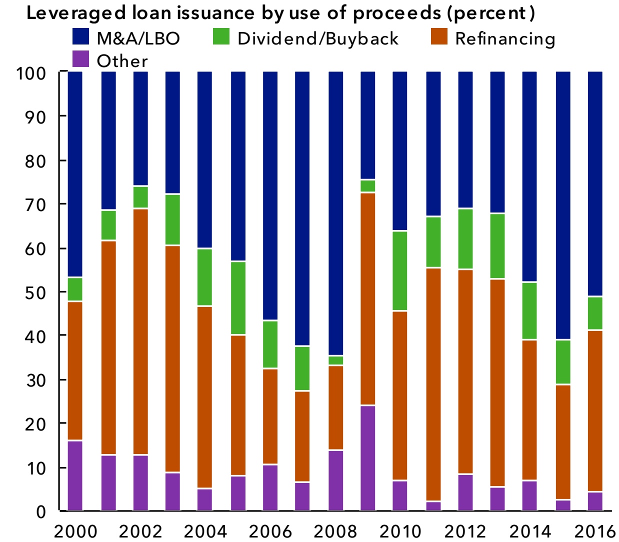
Sources: Securities Industry and Financial Markets Association, Standard & Poor's Leveraged Commentary & Data

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



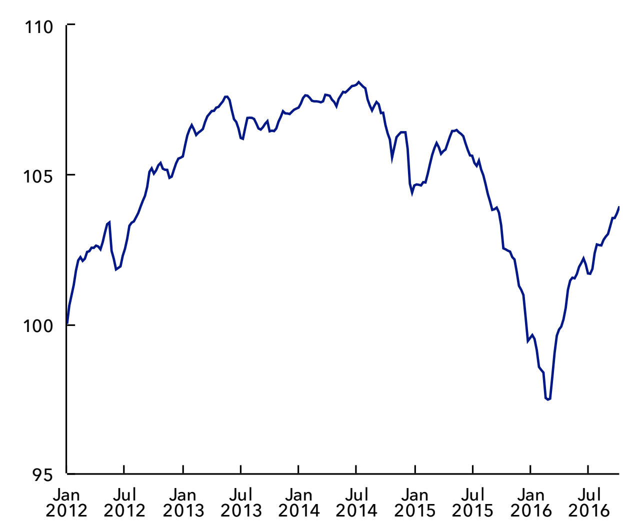
Note: Flows data are released with one-month lag.
Source: Haver Analytics

Leveraged loan issuance by use of proceeds (percent)



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

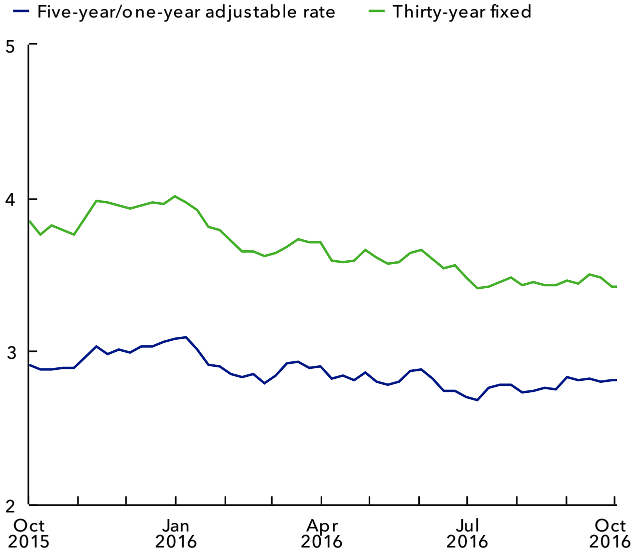
Leveraged loan price activity



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

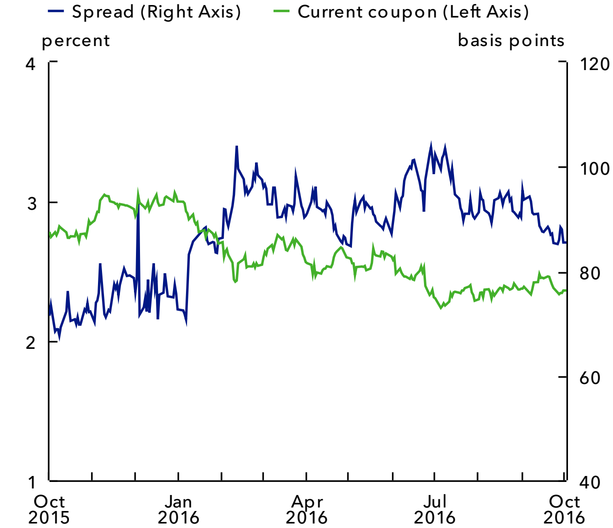
Primary and Secondary Mortgage Markets

Primary mortgage rates (percent)



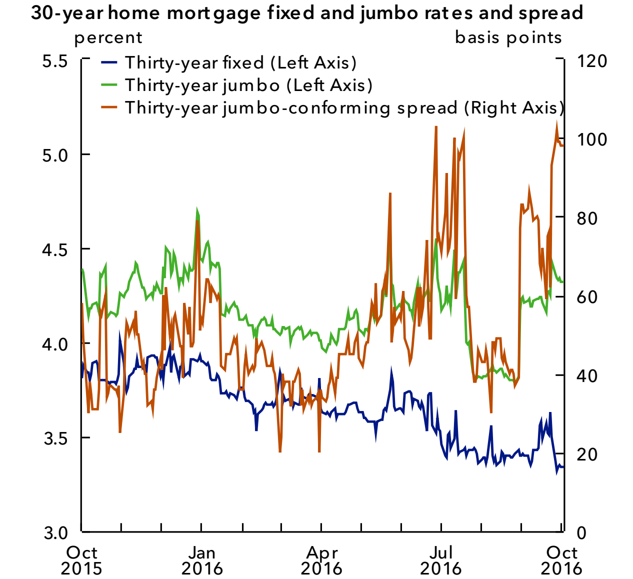
Source: Bloomberg L.P.

MBS yield and option-adjusted spread to U.S. Treasury securities



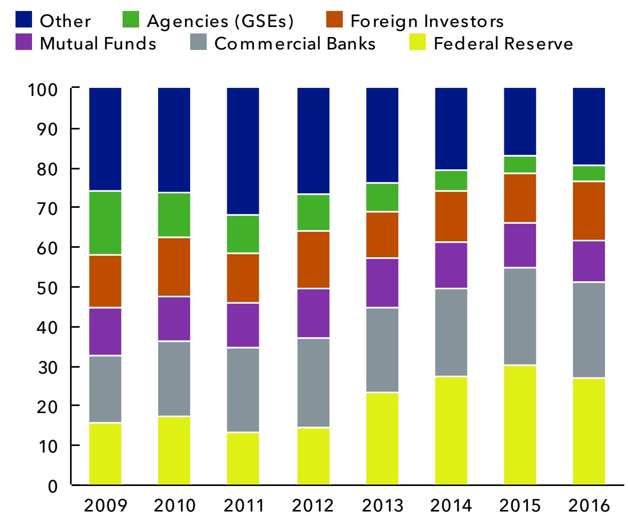
Source: Bloomberg L.P.

30-year home mortgage fixed and jumbo rates and spread



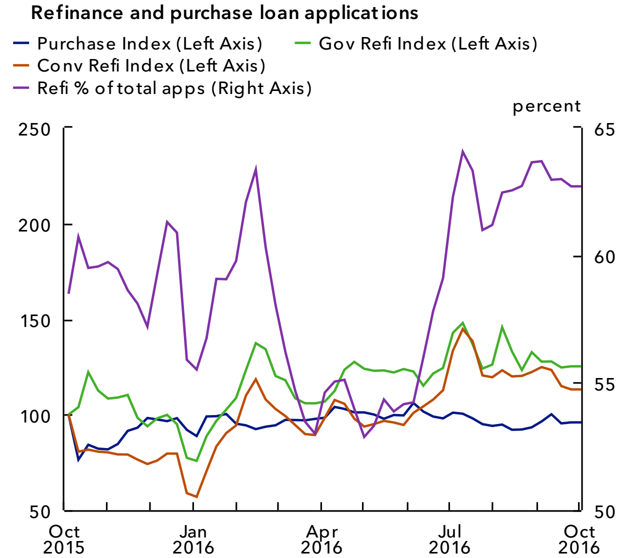
Source: Bloomberg L.P.

Agency MBS holdings by investor



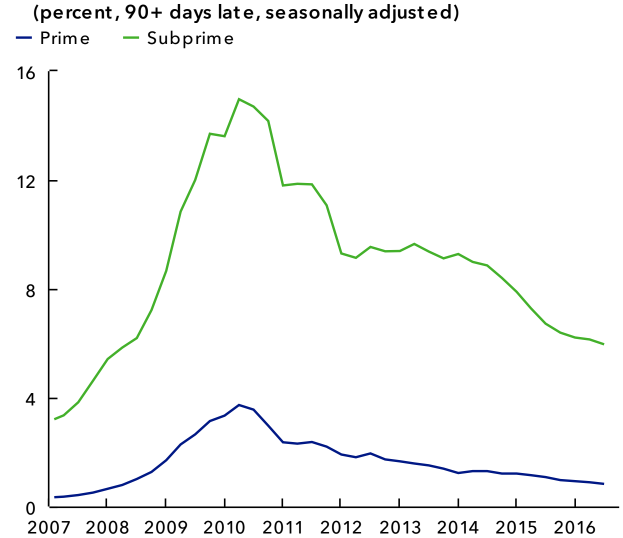
Note: Data for 2016 is as of second quarter 2016.
Source: Inside Mortgage Finance

Refinance and purchase loan applications



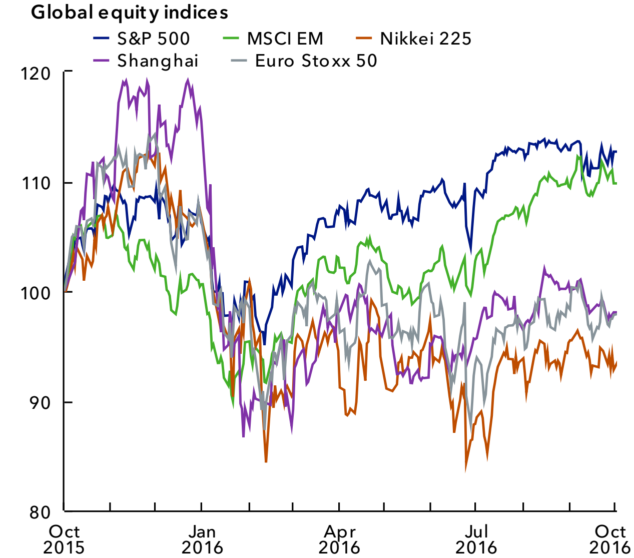
Note: Index 100 = October 01, 2015.
Source: Bloomberg L.P.

Conventional mortgage severe delinquencies (percent, 90+ days late, seasonally adjusted)



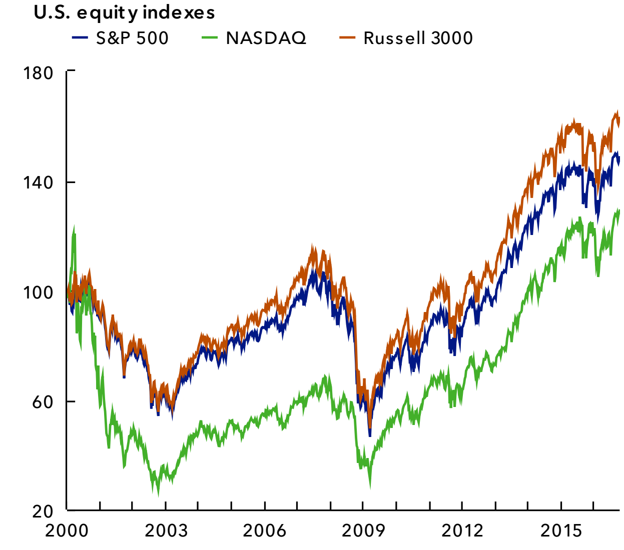
Source Haver Analytics

Global equity indices



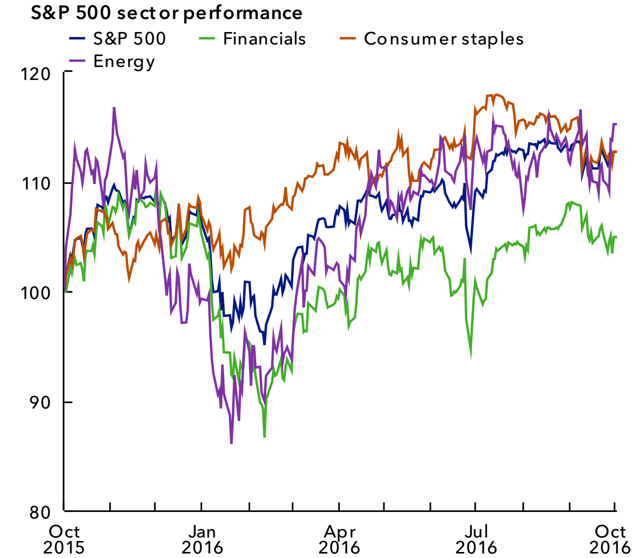
Note: Index = October 01, 2015.
Source: Bloomberg L.P.

U.S. equity indexes



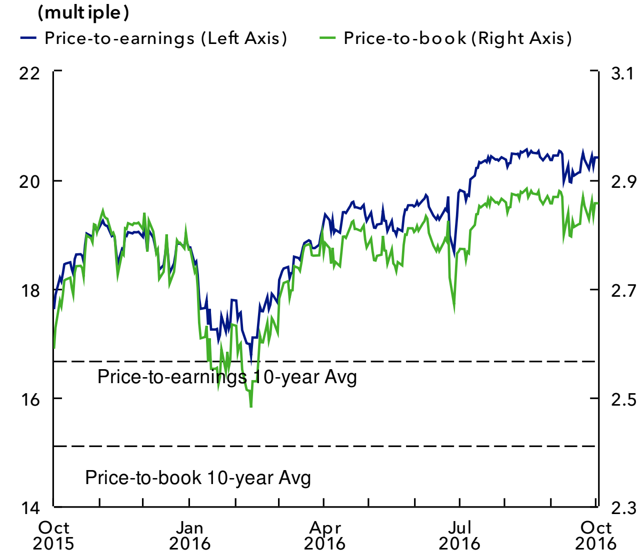
Note: Index 100 = Jan 01, 2000.
Source; Bloomberg L.P.

S&P 500 sector performance



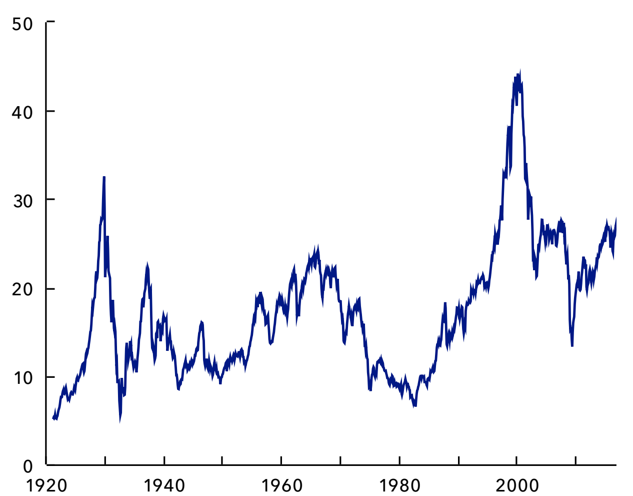
Note: Index 100 = October 01, 2015.
Source: Bloomberg L. P.

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



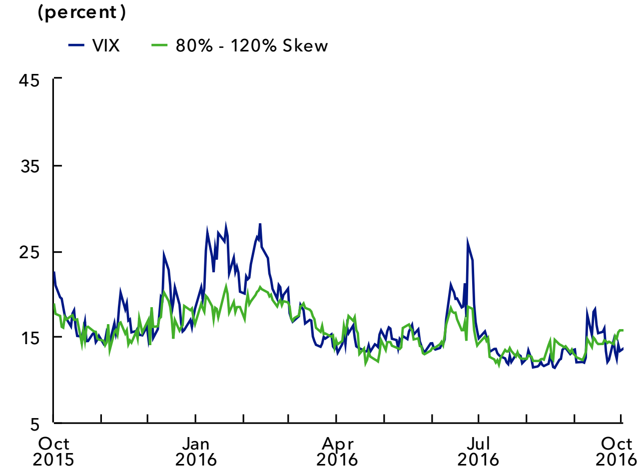
Source: Bloomberg L.P.

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

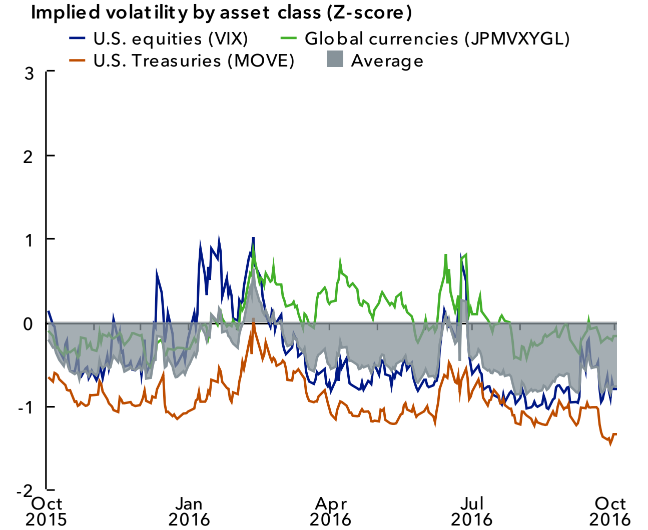
S&P 500 implied volatility and option skew (percent)



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.

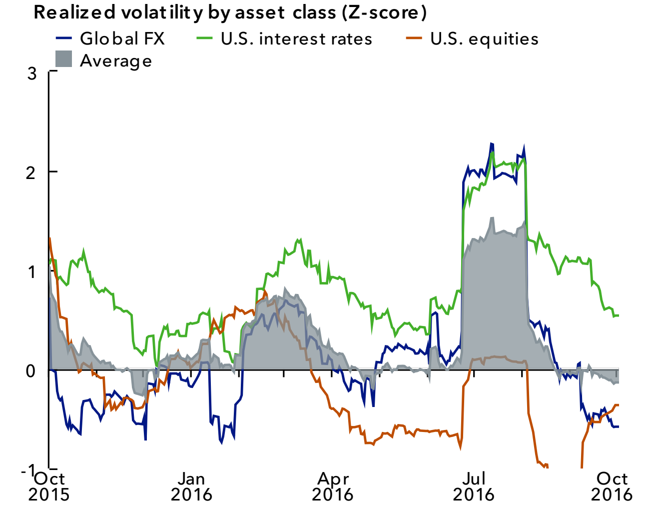
Volatility

Implied volatility by asset class (Z-score)



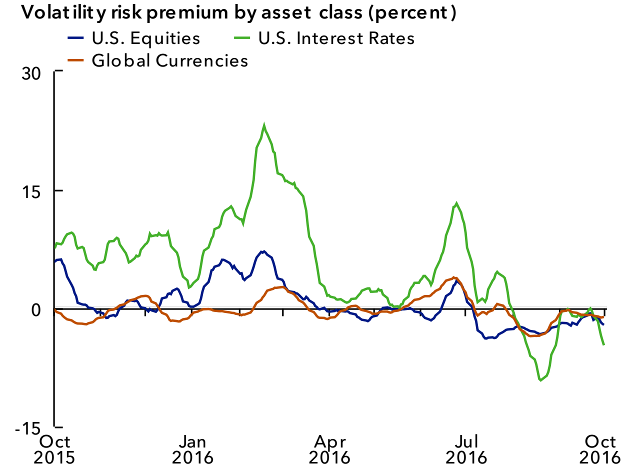
Notes: Z-score represents the distance from the average, expressed in standard deviations. Standardization uses data going back to January 01, 1993.
Source: Bloomberg L.P.

Realized volatility by asset class (Z-score)



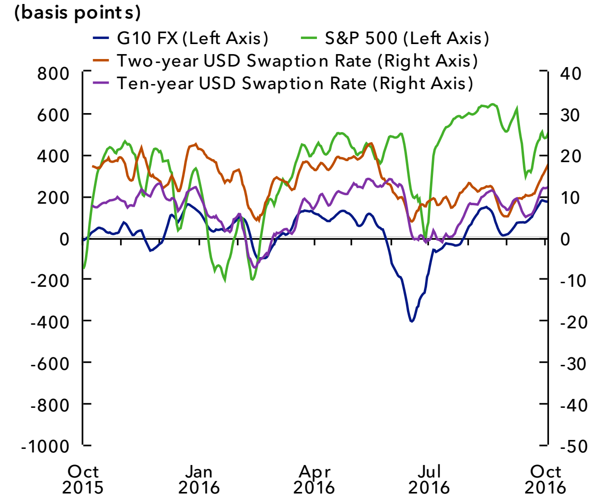
Notes: Thirty-day realized volatility. Equities based on S&P 500 index, interest rates based on weighted average of Treasury yield curve, FX based on weights from JPMVXY index. Standardization uses data going back to January 01, 1993.
Sources: Bloomberg L.P., OFR analysis

Volatility risk premium by asset class (percent)



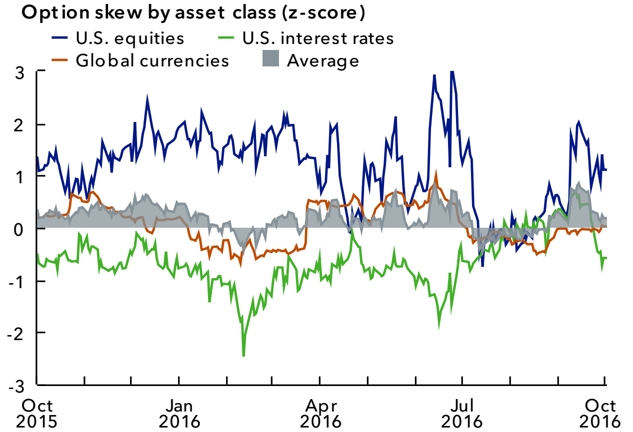
Notes: One-month option-implied volatility minus one-month model-predicted volatility. The latter is computed based on realized volatility, using a hetero-autoregressive model with 1, 5, and 22 day lags. U.S. Interest Rates represents the average volatility risk premium of two- and ten-year swap rates. 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)



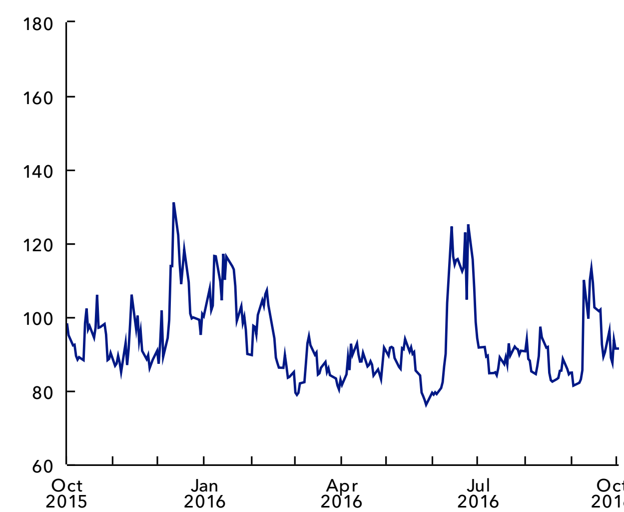
Notes: Seven-day moving average. Slope represents difference between one-year and one-month maturities. G10 FX based on weights from Deutsche Bank's CVIX index.
Sources: Bloomberg L.P., OFR analysis

Option skew by asset class (z-score)



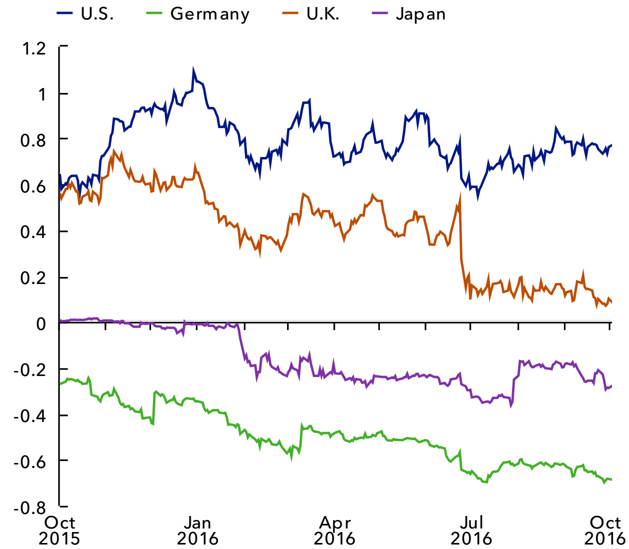
Notes: Option skew is the difference between three-month implied volatility of out of the money puts and calls with strikes equal distance from the spot price (+/- 10 percent). Higher values reflect greater demand for downside risk protection. Equities represents S&P500 index. Interest rates represent weighted average skew of Treasury 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



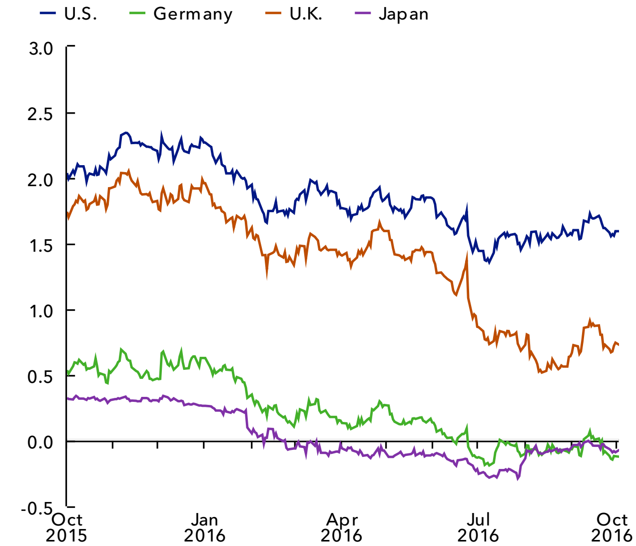
Note: VVIX Index measures the expected volatility of the 30-day forward price of the CBOE VIX Index.
Source: Bloomberg L.P.

Two-year sovereign bond yields (percent)



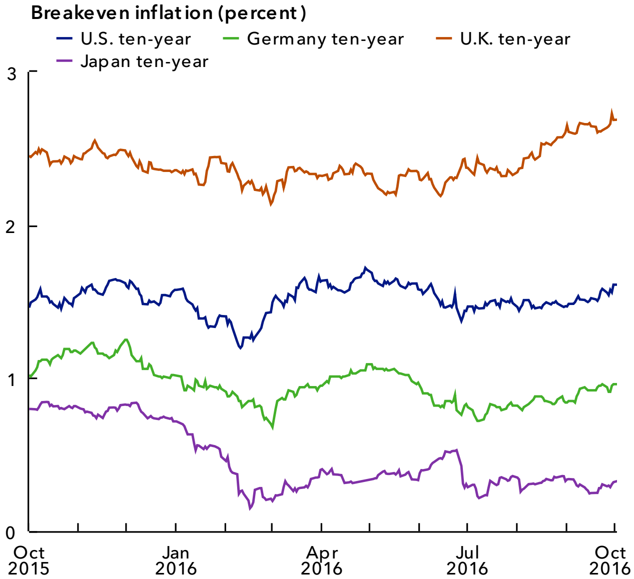
Source: Bloomberg L.P.

Ten-year sovereign bond yields (percent)



Source: Bloomberg L.P.

Breakeven inflation (percent)

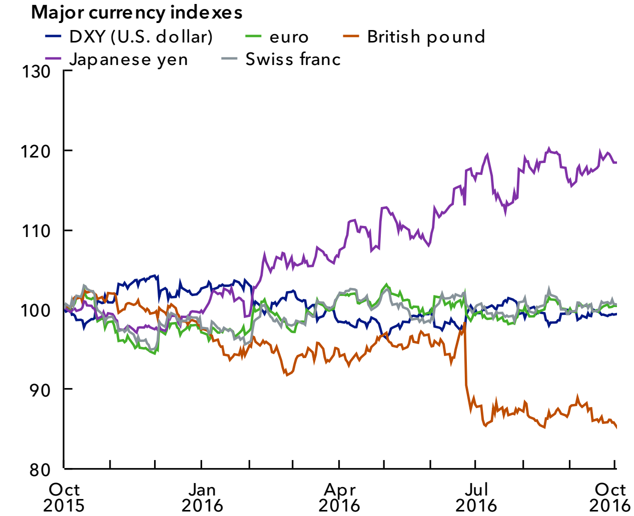


Source: Bloomberg L. P.

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

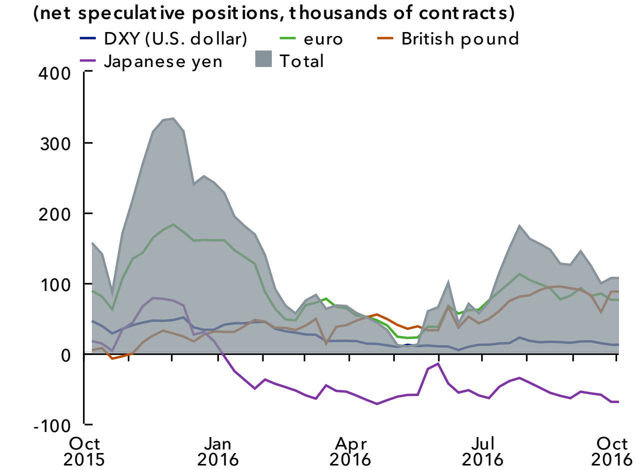
Source: Bloomberg L.P.

Major currency indexes



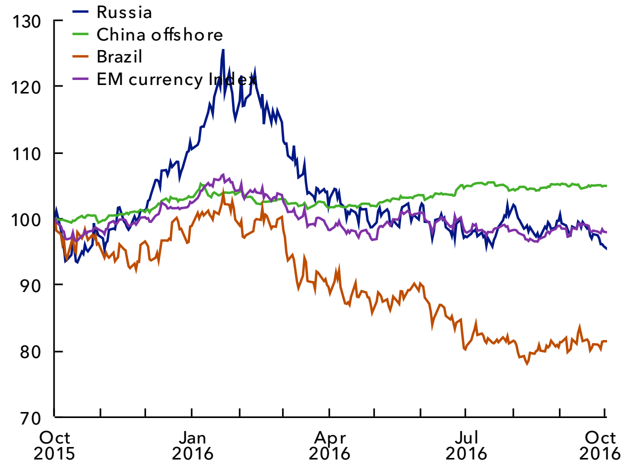
Notes: Foreign currency increases represent greater strength versus the U.S. dollar. DXY increases represent greater strength of the U.S. dollar versus a basket of major world currencies. Index 100 = October 01, 2015.
Source: Bloomberg L.P.

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



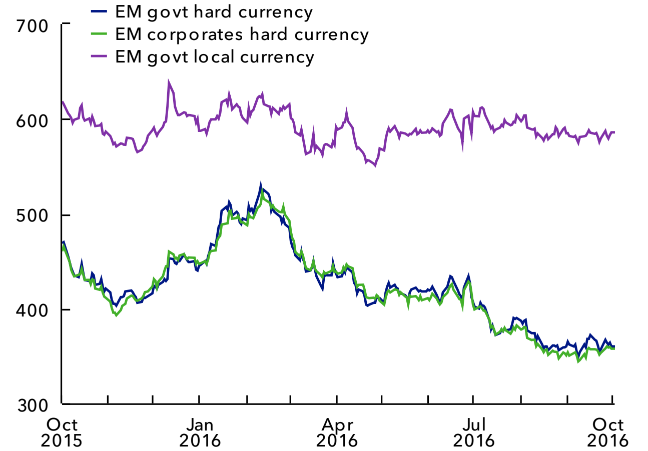
Notes: Positive values represent net U.S. dollar long positions. The Dollar Index (DXY) is a futures contract based on the U.S. dollar's value against a basket of major world currencies. To express a U.S. dollar long position in a non-U.S. dollar contract, the contract must be shorted.
Source: Bloomberg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

Emerging market currencies
(foreign currency units per U.S. dollar)



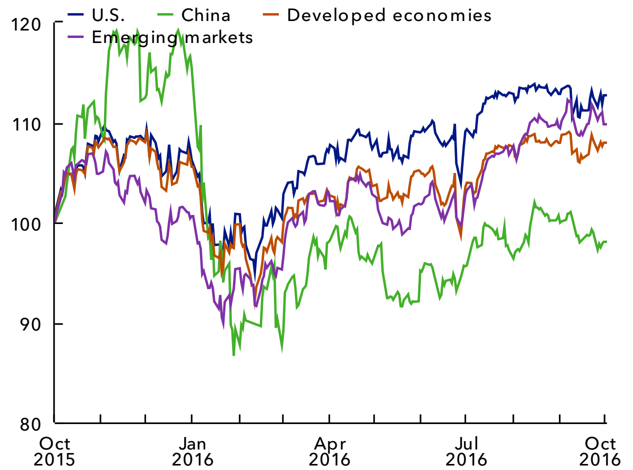
Notes: Increasing values indicate weakening versus the U.S. dollar. The J.P. Morgan EM currency Index is inverted to show the same interpretation as other currency indexes. Index 100=October 01, 2015.
Source: Bloomberg L.P.

Spreads to Treasuries (basis points)



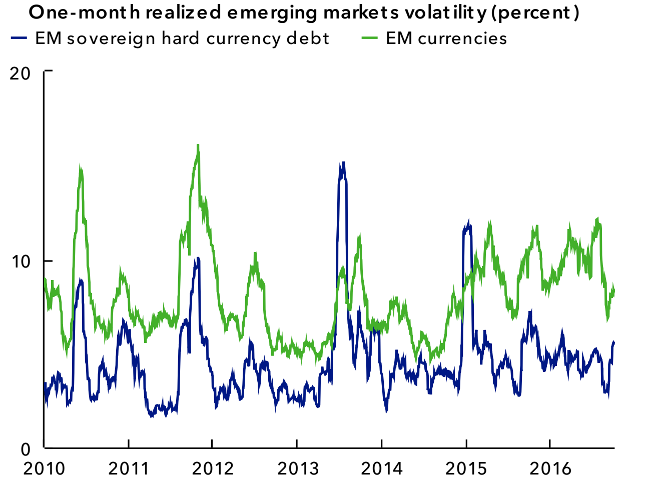
Notes: EM government and corporate hard currency spreads-to-worst are from the dollar-denominated J.P. Morgan Emerging Markets Bond Index Global and the J.P. Morgan Corporate Emerging Markets Bond Index. Government local currency spreads are the nominal yield difference between the J.P. Morgan Government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

Equity price indexes



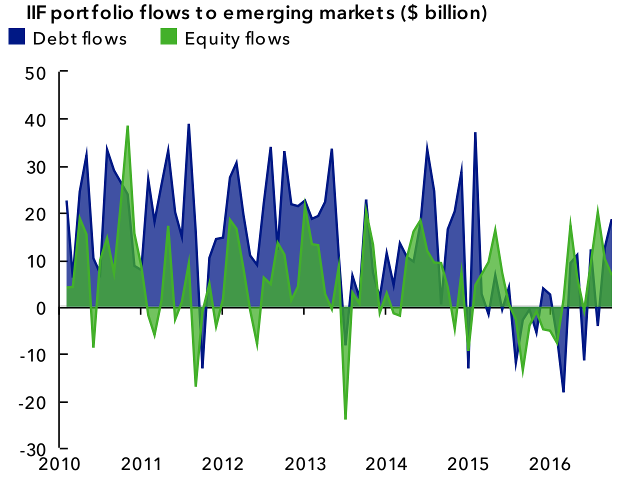
Notes: The US equity index is the S&P 500 Index. The Chinese equity index is the Shanghai Composite Index. The Developed Economies index is the MSCI World Index and the Emerging Markets index is the MSCI EM Index (both are in local terms). Index 100 = October 01, 2015.
Source: Bloomberg L.P.

One-month realized emerging markets volatility (percent)



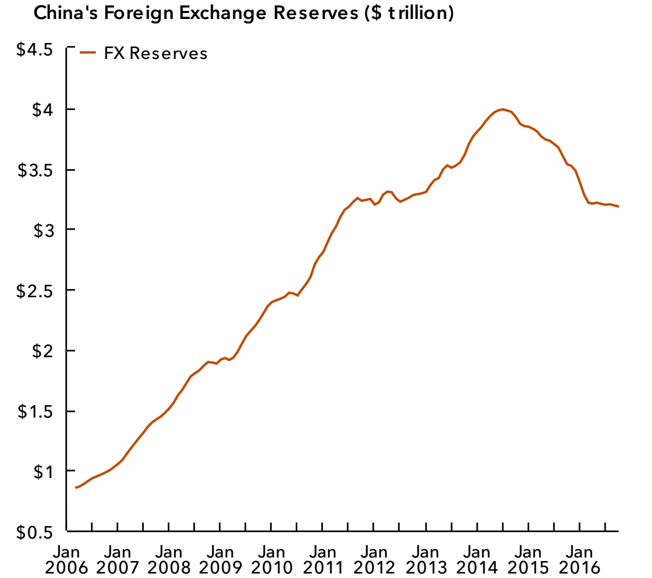
Notes: Realized volatility is the annualized standard deviation. Hard currency sovereign debt based on the J.P. Morgan Emerging Bonds - Global Price Index and currencies based on a weighted average of EM currency returns against the dollar using weights from J.P. Morgan VXY-EM currency volatility index.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

IIF portfolio flows to emerging markets ($ billion)

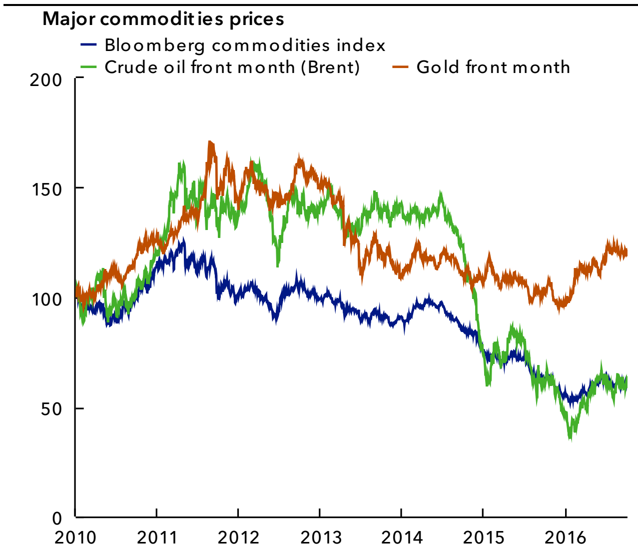


Notes: Data represent the Institute of International Finance's monthly estimates of non-resident flows into thirty EM countries. Data for latest observations are derived from IIF's empirical estimates using data from a smaller subset of countries, net issuance, and other financial market indicators.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

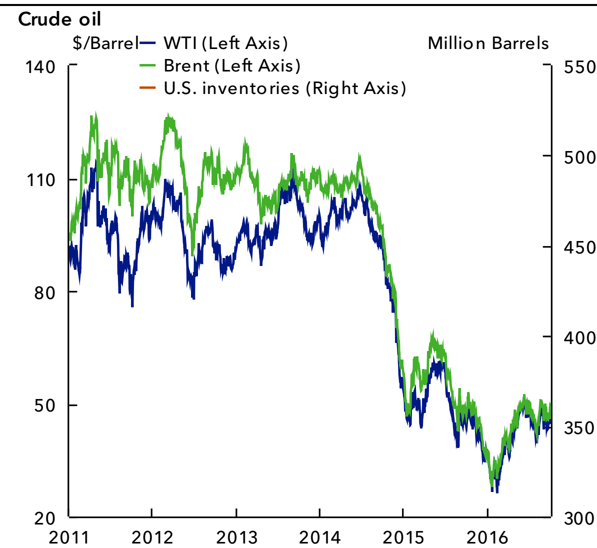
China's Foreign Exchange Reserves ($ trillion)



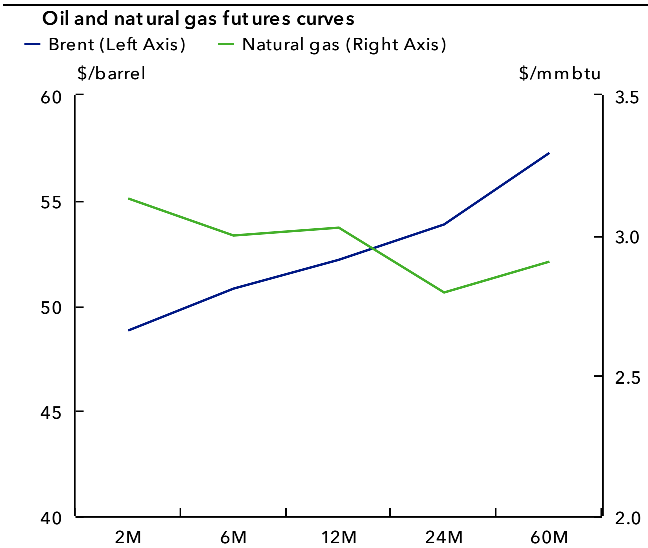
Source: Bloomberg



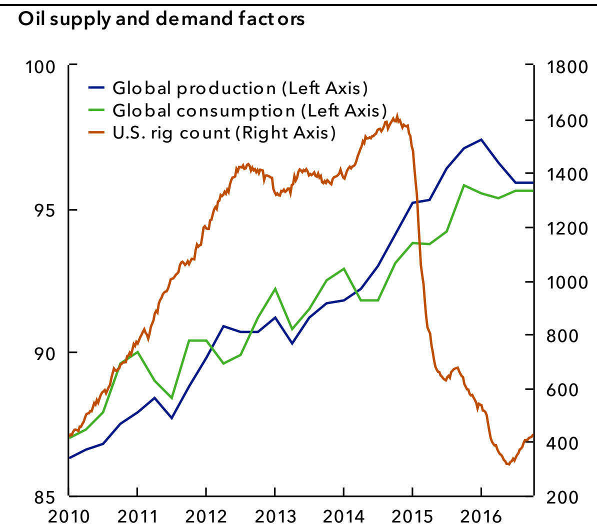
Notes: Index 100 = January 01, 2010
Source: Bloomberg L.P.



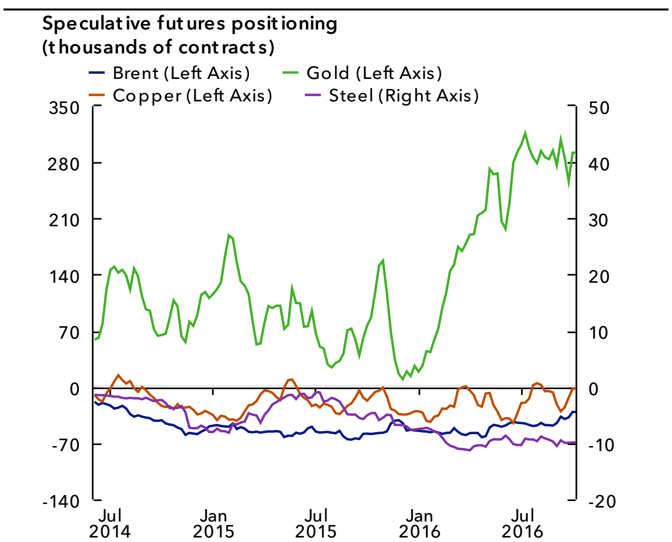
Note: WTI and Brent are front-month contracts.
Source: Bloomberg L.P.



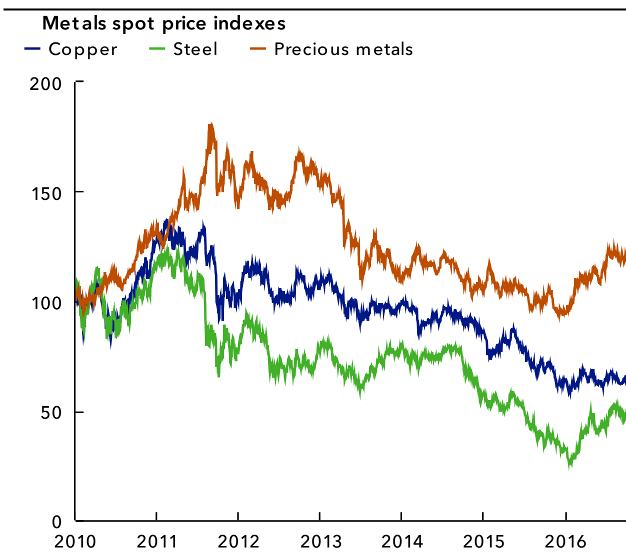
Note: Data as of Sep. 30, 2016.
Sources: Bloomberg L.P., OFR analysis



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



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



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