

## **Prefatory Note**

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Class II FOMC – Restricted (FR)

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# Report to the FOMC on Economic Conditions and Monetary Policy



## Book A

### Economic and Financial Conditions: Current Situation and Outlook

October 22, 2014

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Prepared for the Federal Open Market Committee  
by the staff of the Board of Governors of the Federal Reserve System

Authorized for Public Release

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## Domestic Economic Developments and Outlook

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The recent deterioration in overall financial market conditions has led us to downgrade our medium-term projection; however, the incoming information on economic activity to date has generally been close to our expectations in the September Tealbook. In the labor market, payroll employment rose a bit more in September than we had anticipated, and the unemployment rate once again surprised us to the downside. We have responded by slightly raising our outlook for payroll gains and marking down our unemployment rate projection over the near term. On the spending side, the data on business fixed investment and consumer spending came in about as we had anticipated, on net, but the recent news from the housing sector has been somewhat disappointing. We now project that real GDP will rise at an annual rate of nearly 3 percent in the second half of the year, little changed from the September Tealbook.

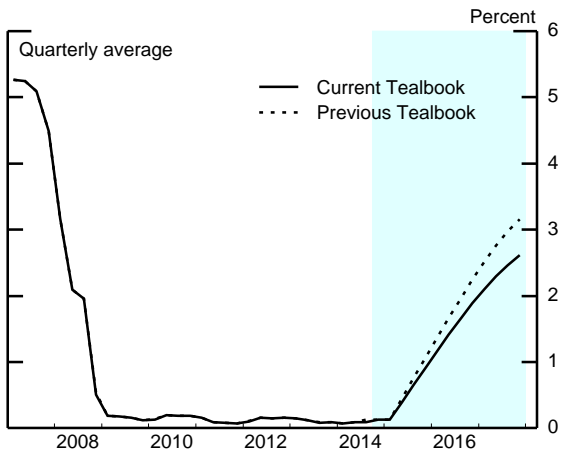
Amid growing concerns over global economic growth prospects and geopolitical issues, we have seen an appreciable rise in the exchange value of the dollar and a noticeable decline in the stock market since the time of the September Tealbook. Given the implications of these developments for resource utilization and inflation, the monetary policy rule that we use for our forecast now calls for a lower path for the federal funds rate after its liftoff from the effective lower bound. Even with that assumed offset from monetary policy, our key conditioning assumptions are notably weaker, on balance, than in the September Tealbook, and we have therefore marked down our forecast for GDP growth over the medium term. In particular, our current forecast anticipates that real GDP will rise 2.4 percent in 2015, 2.6 percent in 2016, and 2.1 percent in 2017— $\frac{1}{4}$  percentage point lower in each year than in the previous Tealbook.

Although the unemployment rate starts the projection slightly lower than expected in the September Tealbook, it also declines by less over the medium term because of the weaker pace of output growth. All told, the unemployment rate is anticipated to average 5.2 percent in 2017, 0.3 percentage point higher than in our previous projection and equal to our estimate of its natural rate.

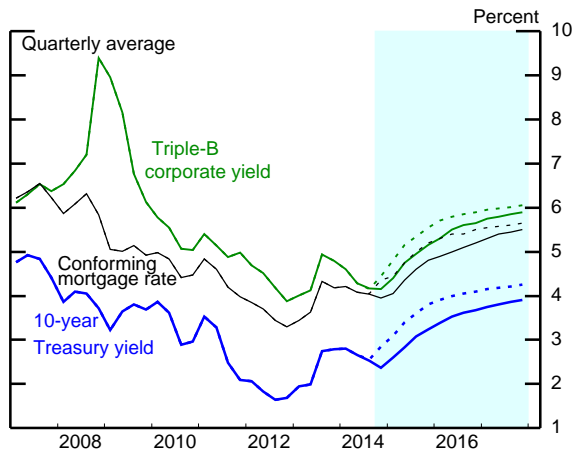
We have lowered our forecast for consumer price inflation in the current quarter and early next year largely in response to the continued slide in oil prices. Although our

### Key Background Factors underlying the Baseline Staff Projection

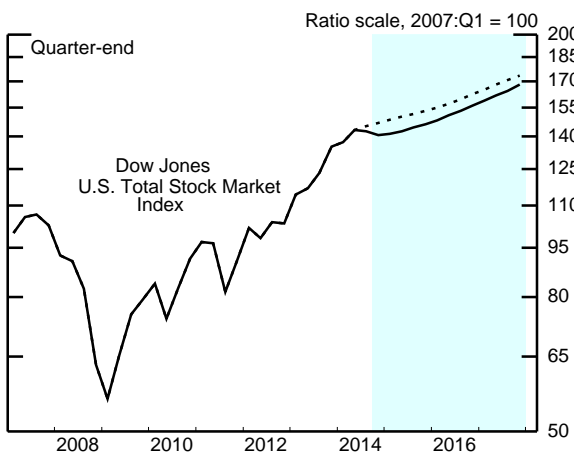
#### Federal Funds Rate



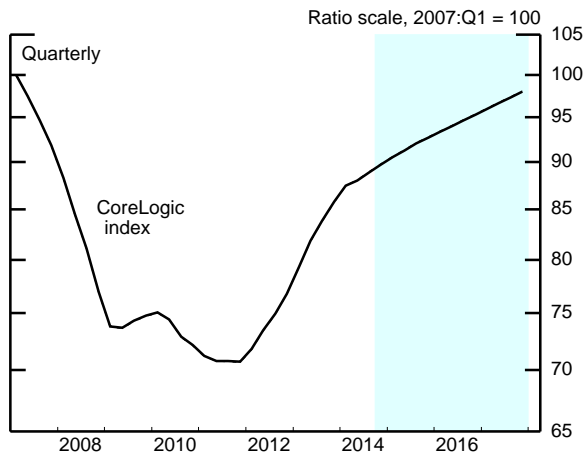
#### Long-Term Interest Rates



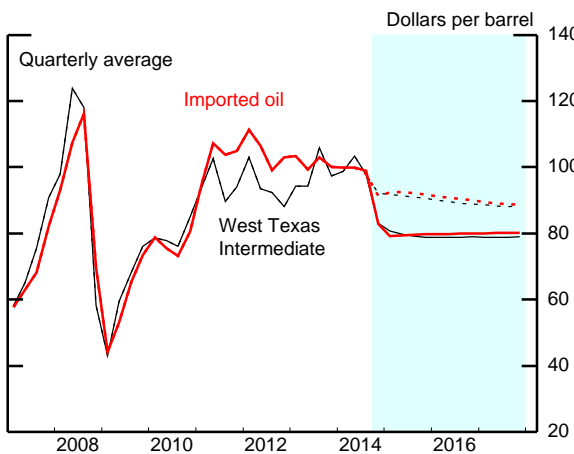
#### Equity Prices



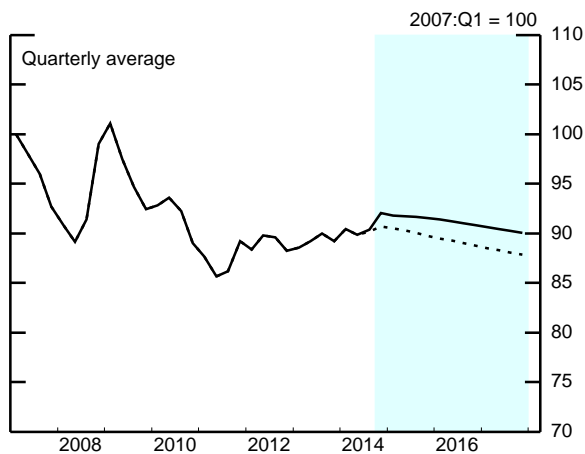
#### House Prices



#### Crude Oil Prices



#### Broad Real Dollar



medium-term path for core PCE price inflation is a touch lower than in the previous Tealbook, we continue to expect core consumer inflation to step up gradually over the projection period as resource slack diminishes, rising from 1.5 percent this year to 1.8 percent in 2017. With consumer energy prices anticipated to edge higher over the medium term, headline inflation is projected to run close to core inflation.

As always, numerous risks attend our outlook. As has been the case for some time, we view the uncertainty around our projection for real GDP growth, inflation, and the unemployment rate as roughly in line with the average of the past 20 years, a period that includes considerable volatility. We see the risks to both our GDP and inflation projections as being tilted to the downside, reflecting the recent financial turbulence and heightened concerns over foreign economic growth as well as our assessment that neither monetary policy nor fiscal policy appear well positioned to offset substantial adverse shocks to the economy. We continue to see the risks around our outlook for the unemployment rate as roughly balanced, as the downside risks to real activity are about offset by the possibility that the unemployment rate could continue to decline more rapidly than we expect.<sup>1</sup>

## KEY BACKGROUND FACTORS

### Monetary Policy

- Our assumptions for the current LSAP program are unchanged. We assume that asset purchases will conclude this month.
- We continue to assume that the federal funds rate will lift off from its effective lower bound in the second quarter of 2015. We still construe the two-quarter lag from the assumed end in asset purchases to the liftoff of the federal funds rate to be consistent with the “considerable time” language in the Committee’s recent statements.
- Following liftoff, the federal funds rate rises at a pace determined by the prescriptions of an inertial version of the Taylor (1999) policy rule. Reflecting the weaker medium-term outlook in this Tealbook, the federal

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<sup>1</sup> The exhibit “Forecast Confidence Intervals and Alternative Scenarios” in the Risks and Uncertainty section presents FRB/US-generated confidence intervals in graphical form around the baseline forecast.

funds rate rises to 2.6 percent by the end of 2017, about 55 basis points lower than was projected in the September Tealbook.

### **Other Interest Rates**

- The yield on 10-year Treasury securities has declined about 30 basis points since the time of the September Tealbook. Our medium-term trajectory for the Treasury yield has been revised down about 45 basis points, on average, mainly reflecting the lower long-run path of the federal funds rate in this projection. Our forecast continues to call for a significant rise in Treasury yields over the next three years as the 10-year valuation window moves through the period of extremely low short-term interest rates and the effects of the FOMC's balance sheet policies gradually wane.
- Our medium-term forecasts for corporate bond yields and mortgage rates have been revised essentially in line with our revisions to the path for the Treasury yield.

### **Equity Prices and Home Prices**

- Since the September Tealbook, equity prices have declined about 3 percent, whereas we had projected a small increase. We expect this downward surprise to be partially retraced, and thus our revised projection has stock prices rising over the medium term at a slightly faster average annual pace than in the September Tealbook. (The staff baseline projection is predicated on the view that equity valuations are roughly in line with historical norms, based on levels of price-to-earnings ratios. For a different perspective, see the box “Alternative View: The U.S. Stock Market Is Overvalued.”)
- The latest readings on house prices have been well aligned with our September Tealbook forecast. Thus, we have maintained our projection that house price appreciation will continue to slow—from nearly 12 percent last year to around 5 percent this year and then to an average of about 3 percent per year over the medium term.

### **Fiscal Policy**

- Our assumptions for fiscal policy are unchanged from the September Tealbook. We estimate that fiscal policy actions at all levels of government

will be a neutral influence on real GDP growth in the second half of this year and in 2015 and will boost growth by  $\frac{1}{4}$  percentage point in both 2016 and 2017.

### Foreign Economic Activity and the Dollar

- After increasing at an annual rate of  $2\frac{1}{4}$  percent in the first half of this year, foreign real GDP is projected to rise  $2\frac{3}{4}$  percent in the second half and to increase about 3 percent per year over the medium term. This forecast is revised down a bit, especially in the near term, as recent data on foreign economic activity have generally been weaker than expected. Moreover, our concerns about downside risks have increased, especially for the euro area and China.
- The broad nominal index for the dollar has appreciated about  $1\frac{3}{4}$  percent since the previous Tealbook. (See the box “The Recent Appreciation of the Dollar” in the International Economic Developments and Outlook section.) Looking ahead, we expect the dollar to depreciate about  $\frac{3}{4}$  percent annually in real terms, as some further appreciation against the currencies of the advanced foreign economies is more than offset by depreciation against the currencies of the emerging market economies. This pace of depreciation is a bit slower than in the previous Tealbook, reflecting changes in how we forecast emerging market currencies.<sup>2</sup> All told, given the recent appreciation of the dollar and the upward shift in the tilt of our forecast, we expect the broad real dollar to be nearly  $2\frac{1}{2}$  percent higher at the end of 2017 relative to the previous Tealbook.

### Oil and Other Commodity Prices

- Continuing a decline that began in June, the spot price of Brent crude oil has fallen \$13 per barrel since the time of the September Tealbook, reaching \$86 per barrel on October 21, near a four-year low. The decline reflects a combination of strong global oil production, signs of softer global oil demand, and the recent appreciation of the dollar. Concerns about the longer-term prospects for global oil production amid geopolitical turmoil have led farther-dated futures prices to fall by less than spot prices. As a result, we now

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<sup>2</sup> See Robert Martin and Robert Vigfusson (2014), “The Staff Forecast for the Foreign Exchange Value of the Dollar,” memorandum to the FOMC, October 22.

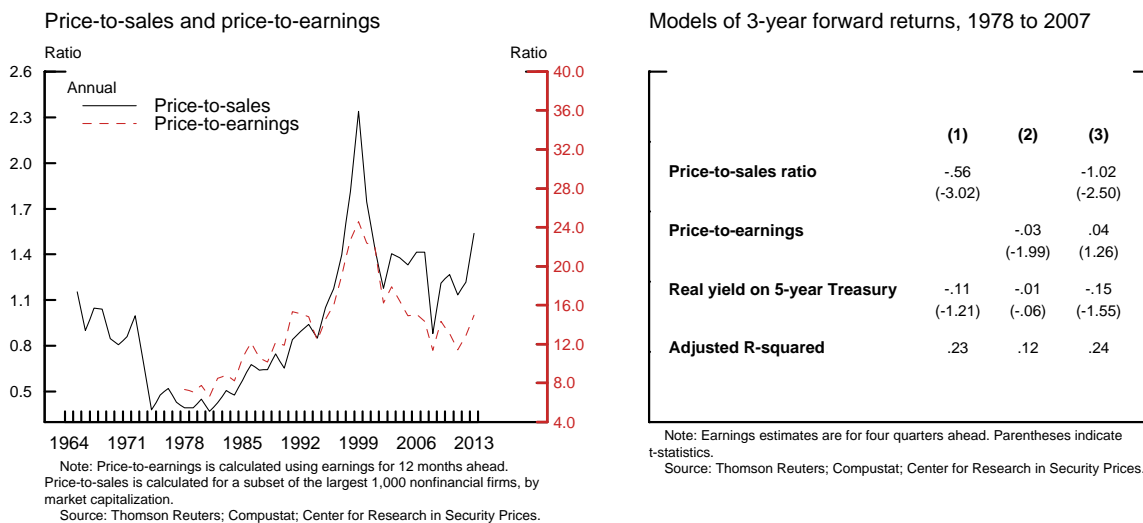


## Alternative View: The U.S. Stock Market Is Overvalued

In contrast to the staff’s baseline assumption for the path of equity prices, this discussion presents the view that the U.S. stock market is substantially overvalued.<sup>1</sup> The staff view is based on the historically moderate level of the ratio of current prices to 12-month-forward earnings (even before the recent sell-off), but other indicators, such as the price-to-sales ratio, suggest that U.S. stock valuations are stretched. In particular, for equity markets to revert to their post-1990 average price-to-sales ratio, aggregate share prices would need to decline about 20 percent.

I measure the price-to-sales ratio for the U.S. nonfinancial sector as the total market capitalization of the 1,000 largest nonfinancial firms in the United States divided by the total revenue of these firms. As shown by the black curve in the figure on the left, over the past 50 years, the current level of the price-to-sales ratio has been surpassed only by its temporarily lofty level in the late 1990s. A similar picture emerges from the ratio of the market capitalization of U.S. stocks to GDP (not shown). In contrast, the price-to-earnings ratio, the dotted red curve, is currently near the 70th percentile of its distribution.

The table on the right shows regression models of the three-year-ahead stock market return. The adjusted R-square (which measures the fit of the regression) is higher in the model that uses the price-to-sales ratio (column 1) than in the one that uses the price-to-earnings ratio (column 2). In the model that uses both (column 3), the effect of the price-to-earnings ratio is not statistically significant. Given the current level of the price-to-sales ratio, column 1 suggests that over the next three years, the market return is likely to be about 20 percent lower than average.<sup>2</sup>



<sup>1</sup> Prepared by Nitish Ranjan Sinha.

<sup>2</sup> The price-to-sales ratio in September was 1.6, 0.4 higher than the post-1990 average level of 1.2. Multiplying the difference of 0.4 by the coefficient of 0.56 provides the estimate of a 22.4 percent lower return over the next three years.

$$\frac{\text{price}}{\text{sales}} = \underbrace{\frac{\text{price}}{\text{earnings}}}_{\text{P/E ratio}} \times \underbrace{\frac{\text{earnings}}{\text{sales}}}_{\text{profit margin}}$$

The equation above decomposes the price-to-sales ratio into two potentially mean-reverting factors. The first is the ratio of current market value to 12-month-forward corporate earnings, while the second is the ratio of 12-month-forward corporate earnings to current sales—that is, future profit margins. Currently, price-to-earnings ratios are moderately higher than average, but profit margins are near historical highs.

As the economic recovery advances further and unemployment continues to decline, it is possible that wage growth will pick up enough to cause labor’s share of output to rise. As a result, profit margins could move down toward historical averages and, in the process, disappoint equity investors.

The macroeconomic implications of a potential market “correction” that brings the price-to-sales ratio back near its historical average level are nontrivial. As noted earlier, in a scenario where stock prices revert quickly to a price-to-sales ratio of 1.2—in line with the post-1990 average though still somewhat above the long-run average—stock prices would decrease about 20 percent. Using a rule of thumb from the FRB/US model, such a decline in equity prices would, over the next few years, lead to a 1 percent reduction in the level of real GDP and about a ½ percentage point increase in the unemployment rate relative to the baseline projection.

project that the price of imported oil will decrease from \$100 per barrel in August (the most recent available data) to about \$79 per barrel by the end of this year, as declines in spot prices feed through, and be little changed thereafter. The downward revision to the forecast is about \$13 per barrel in the near term but tapers to about \$9 per barrel by the end of 2017.

- Nonfuel commodity prices have fallen significantly since the time of the September Tealbook. Metals prices declined about 5 percent, reflecting both the recent appreciation of the dollar and concerns about slowing growth in China. Meanwhile, good harvests led to continued declines in corn and soybean prices. Over the forecast period, we project nonfuel commodity prices to remain about flat, in line with prices from futures markets.

## **RECENT DEVELOPMENTS AND THE NEAR-TERM OUTLOOK FOR REAL GDP**

The incoming data on spending and production appear consistent with our view that real GDP growth in the second half of the year will substantially exceed the tepid average pace of economic growth in the first half (which we continue to view as anomalously low). We now project real GDP to rise at an annual rate of 2¾ percent in the third quarter and 3 percent in the fourth—a contour that is little changed from our projection in the September Tealbook.

- On the whole, the recent data for consumer spending have been in line with our expectations, and we still estimate that real PCE rose at a modest annual rate of 2 percent in the third quarter, in part because unusually cool summer weather held down demand for energy services.<sup>3</sup> In the current quarter we continue to anticipate that consumer spending will increase at a more robust 3½ percent pace, as the weather returns to seasonal norms, and spending is supported by improvements in the job market, households' real disposable incomes, and consumer sentiment.<sup>4</sup>

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<sup>3</sup> The BEA now estimates that real PCE increased at an annual rate of 2½ percent in the second quarter, close to our September Tealbook projection but lower than our projection at the time of the September FOMC meeting. As we expected, the BEA's estimate included an upward revision to spending for medical services that we had incorporated into our forecast for the FOMC meeting after the September Tealbook had closed. However, the BEA's estimate also included an offsetting downward revision in spending for other services that we had not anticipated.

<sup>4</sup> Excluding energy services, real PCE growth is projected to be 2¼ percent in the third quarter and 3 percent in the fourth quarter.

- The incoming information on housing-sector activity has generally been softer than we had anticipated. Most notably, single-family building permits held steady in August and September, whereas we had expected a noticeable increase. We now expect real residential investment to rise at an annual rate of 6¾ percent in the second half of the year, noticeably slower than our projection of a 11 percent increase in the September Tealbook. (The box “Recent Changes in Income and Wealth across the Income Distribution” includes a discussion of home and auto purchases by households in different parts of the income distribution.)
- We continue to expect real spending on equipment and intangibles to post a moderate gain in the second half of the year, supported by generally upbeat business sentiment readings and consistent with ongoing improvements in expectations for earnings of capital goods producers. Our projection calls for business investment in nonresidential structures (outside of the drilling and mining sector) to move sideways over the second half of the year as vacancy rates remain elevated and financing for new construction has eased only a little. Overall, our near-term projection for business fixed investment is essentially unrevised from the previous Tealbook.
- The data on inventory investment in the third quarter have been weaker than expected, and we anticipate that this surprise will only partially unwind in the fourth quarter. Accordingly, we now forecast that the change in business inventory investment will be a small drag on real GDP growth in the second half of the year, compared with it having a neutral effect in the September Tealbook projection.
- We expect net exports to contribute ¼ percentage point (annual rate) to real GDP growth in the second half of the year, slightly more than in the September Tealbook on account of stronger-than-expected exports in the August trade data. Real exports are estimated to have risen 5½ percent in the third quarter, a bit faster than might be expected given the sluggish pace of foreign economic growth and lagged effects of previous dollar appreciation. Export growth is expected to slow to a 3 percent pace in the fourth quarter. Real imports are also projected to slow, from an unusually rapid pace in the

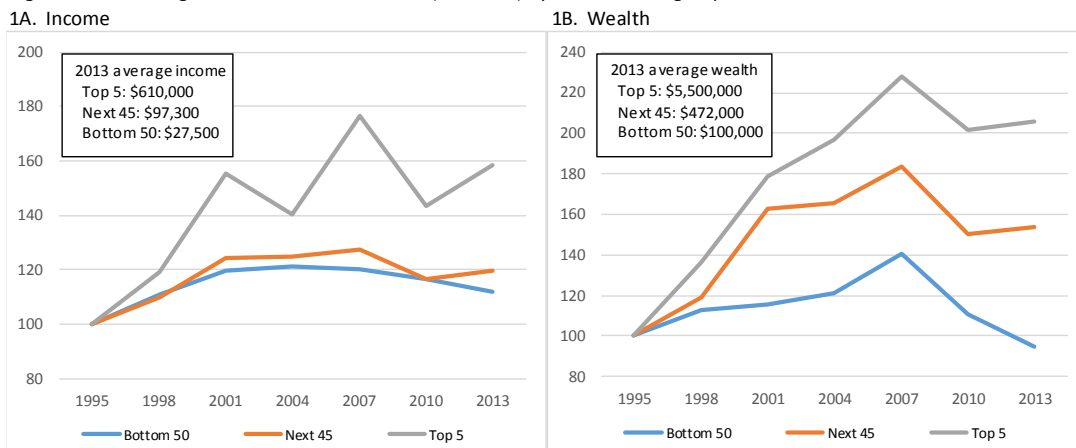
## Recent Changes in Income and Wealth across the Income Distribution

The distribution of income and wealth of U.S. households has become more unequal in recent decades.<sup>1</sup> This discussion uses data from the recently completed 2013 Survey of Consumer Finances (SCF) to highlight changes in income and wealth across the income distribution and points to some ways that households have responded to these changes since the Great Recession.

Over much of the past two decades, real income and wealth rose for families in the bottom and middle of the income distribution.<sup>2</sup> The blue lines in figure 1 show that, between 1995 and 2007, families in the bottom half of the income distribution saw their inflation-adjusted income rise 20 percent and their wealth rise 40 percent.<sup>3</sup> Families in the next 45 percent of the income distribution (percentiles 51 to 95) experienced similar rates of income growth, but their wealth gains were twice as large as those for families in the bottom half of the distribution. Families in the top 5 percent experienced significantly larger increases in both income and wealth.

The Great Recession resulted in declines in income and wealth for all three income groups from 2007 to 2010; the steepest loss of income was for families at the top of the distribution. As the economic recovery took hold from 2010 to 2013, income and wealth started to rise for families in the top 5 percent and in the next 45 percent of the distribution, although average levels for both groups remained well below pre-recession peaks. For families in the bottom half of the distribution, both income and wealth declined further from 2010 to 2013.

Figure 1. Real average actual income and wealth (1995=100) by usual income group



<sup>1</sup> See Jesse Bricker, Lisa J. Dettling, Alice Henriques, Joanne W. Hsu, Kevin B. Moore, John Sabelhaus, Jeffrey Thompson, and Richard A. Windle (2014), “Changes in U.S. Family Finances From 2010 to 2013: Evidence from the Survey of Consumer Finances,” *Federal Reserve Bulletin*, vol. 100 (September), pp. 1–41, [www.federalreserve.gov/pubs/bulletin/2014/pdf/scf14.pdf](http://www.federalreserve.gov/pubs/bulletin/2014/pdf/scf14.pdf).

<sup>2</sup> Wealth is defined as family net worth in the SCF.

<sup>3</sup> Figure 1A shows changes in actual income for families sorted into “usual” income groups. The SCF directly asks for the “usual” income in a “normal” year, which is less affected by transitory fluctuations than actual income. Income is for the calendar year preceding the survey; thus, in the 2013 SCF, respondents reported 2012 annual income.

The changes in wealth across the income distribution importantly reflect the housing market bust. Families at all income levels lost home equity between 2007 and 2013, and the rate of homeownership declined among families in the bottom 95 percent of the distribution.<sup>4</sup>

The SCF also contains other information on households, such as home purchases and new-car buying, which reflect how families have responded to the income and wealth changes observed in the SCF through 2013.

Amid a heavy volume of foreclosures and depressed levels of home equity, fewer families were buying houses from 2007 to 2010. Indeed, the share of families in their current owner-occupied residence for two years or less fell sharply across the income distribution (figure 2). Between 2010 and 2013, the rate of homebuying fell further for families in the bottom half of the distribution, stabilized for the next 45 percent, and rebounded for the highest-income families. By 2013, the likelihood of being in a recently purchased home had returned to pre-recession levels for families in the top 5 percent of the income distribution, but it remained well below pre-recession levels for the rest of the distribution.

Figure 2. Share of families living in currently owned home for 2 years or less, by usual income group (selected years)

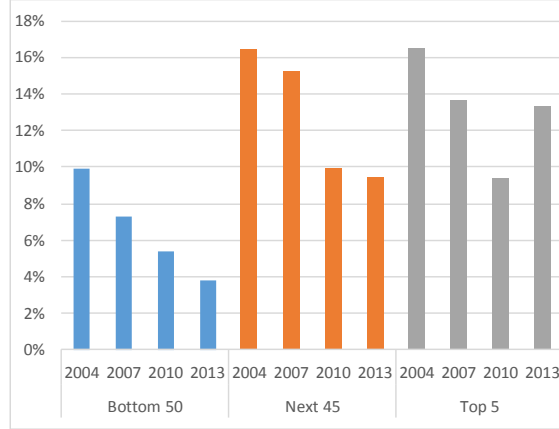
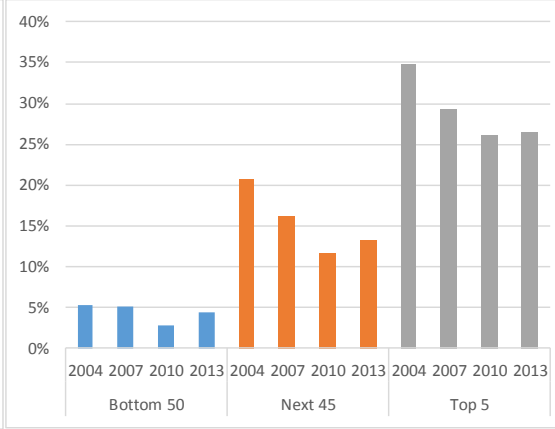


Figure 3. Share of families buying new car in past year, by usual income group (selected years)



The effects of the changes in real incomes and wealth across the income distribution are also evident in car buying behavior. In the SCF, new-car buying peaked in 2004, and it declined across the income distribution between 2007 and 2010 (figure 3). As the economic recovery took hold, purchases of new cars rose for all income groups from 2010 to 2013, in contrast with the narrower recovery in home purchases. However, the rate of new-car purchases in 2013 remained below pre-crisis levels across the distribution.

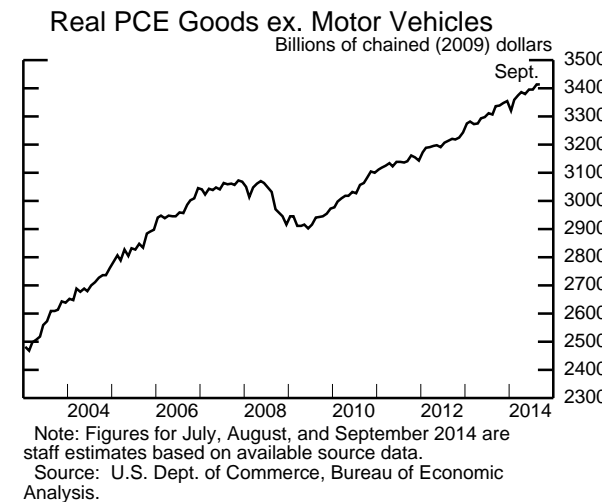
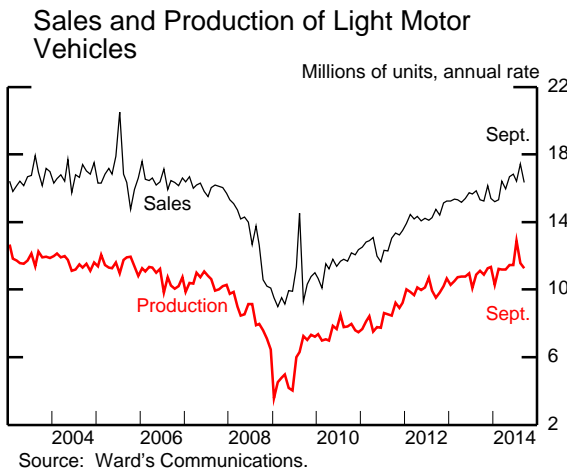
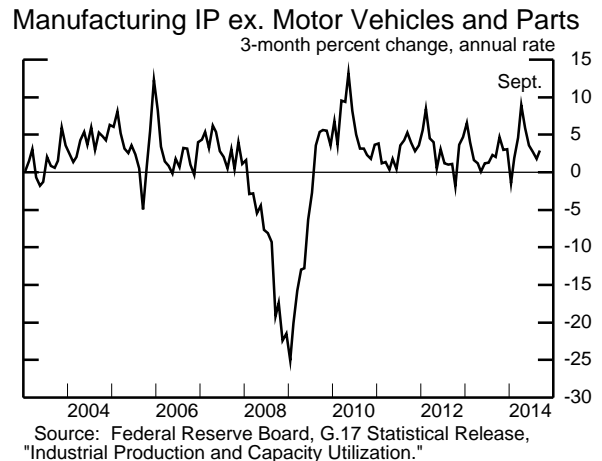
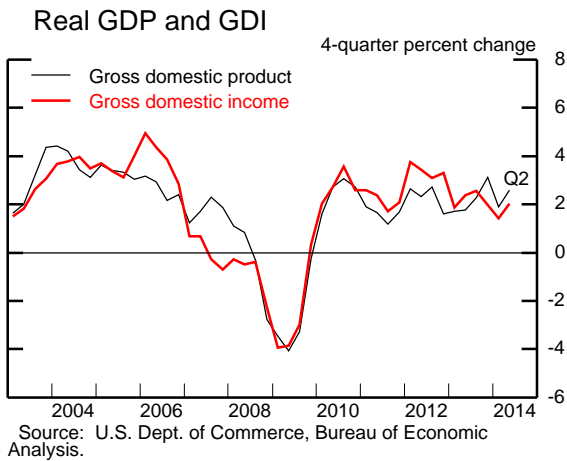
<sup>4</sup> Adjusting house values in the SCF based on local price changes between the survey month in 2013 and June 2014 suggests that home equity has increased since 2013, particularly for families in the bottom 95 percent of the distribution. Nevertheless, after adjusting house values in the SCF, home equity for all groups is estimated to remain well below 2007 levels.

**Summary of the Near-Term Outlook**  
(Percent change at annual rate except as noted)

Measure	2014:Q2		2014:Q3		2014:Q4	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
<b>Real GDP</b>	<b>4.4</b>	<b>4.6</b>	<b>2.8</b>	<b>2.7</b>	<b>3.0</b>	<b>3.0</b>
Private domestic final purchases	3.7	3.8	2.9	2.8	3.9	3.5
Personal consumption expenditures	2.5	2.5	2.0	1.9	3.4	3.4
Residential investment	8.6	8.8	9.9	8.0	11.8	5.5
Nonres. private fixed investment	9.5	9.7	6.1	6.7	4.1	3.7
Government purchases	1.7	1.7	-1.0	1.5	-1	-1.6
<i>Contributions to change in real GDP</i>						
Inventory investment <sup>1</sup>	1.2	1.4	.1	-.6	-.1	.4
Net exports <sup>1</sup>	-.3	-.3	.5	.6	-.2	-.1
<b>Unemployment rate<sup>2</sup></b>	<b>6.2</b>	<b>6.2</b>	<b>6.1</b>	<b>6.1</b>	<b>5.9</b>	<b>5.8</b>
<b>PCE chain price index</b>	<b>2.3</b>	<b>2.3</b>	<b>1.3</b>	<b>1.2</b>	<b>.9</b>	<b>-.2</b>
Ex. food and energy	2.0	2.0	1.5	1.4	1.4	1.2

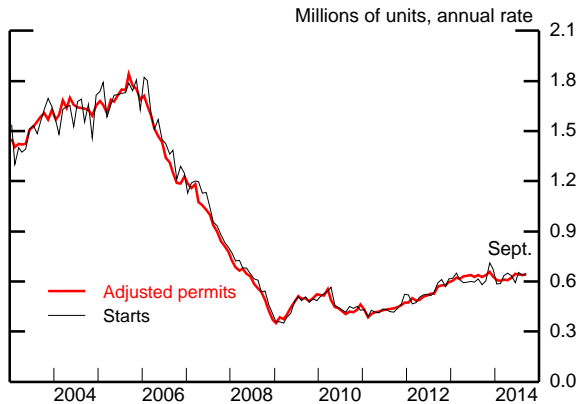
1. Percentage points.  
2. Percent.

**Recent Nonfinancial Developments (1)**



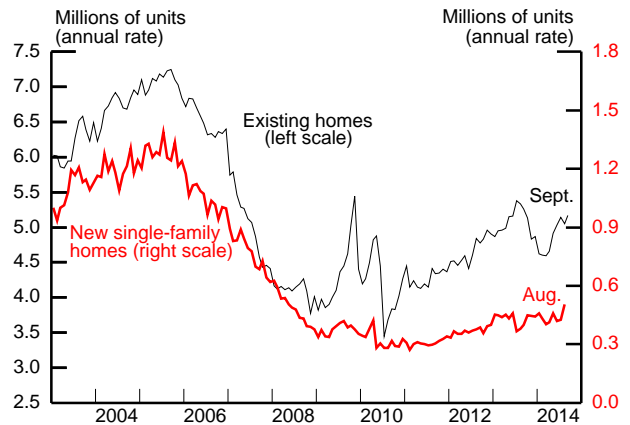
## Recent Nonfinancial Developments (2)

### Single-Family Housing Starts and Permits



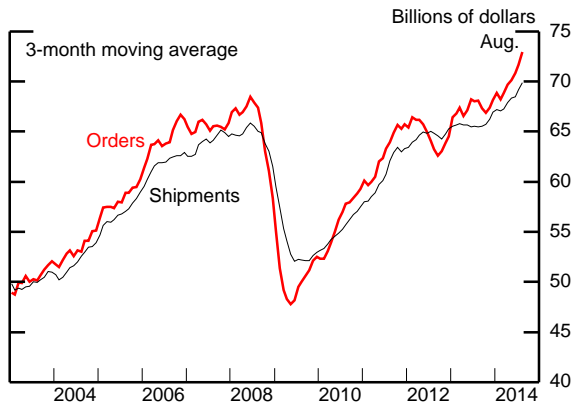
Note: Adjusted permits equal permit issuance plus total starts outside of permit-issuing areas.  
Source: U.S. Census Bureau.

### Home Sales



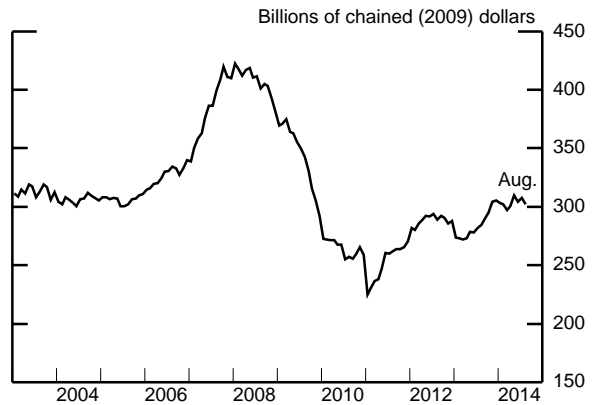
Source: For existing, National Association of Realtors; for new, U.S. Census Bureau.

### Nondefense Capital Goods ex. Aircraft



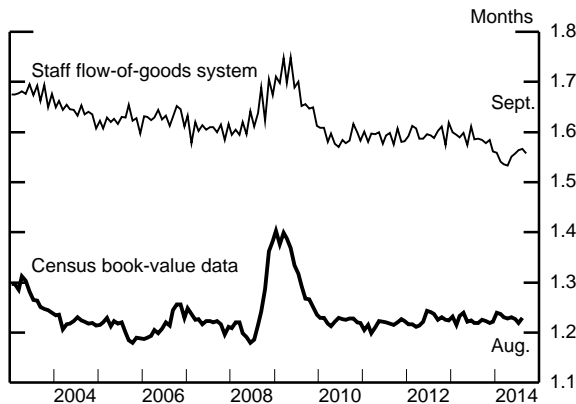
Source: U.S. Census Bureau.

### Nonresidential Construction Put in Place



Note: Nominal CPIP deflated by BEA prices through 2014:Q2 and by the staff's estimated deflator thereafter.  
Source: U.S. Census Bureau.

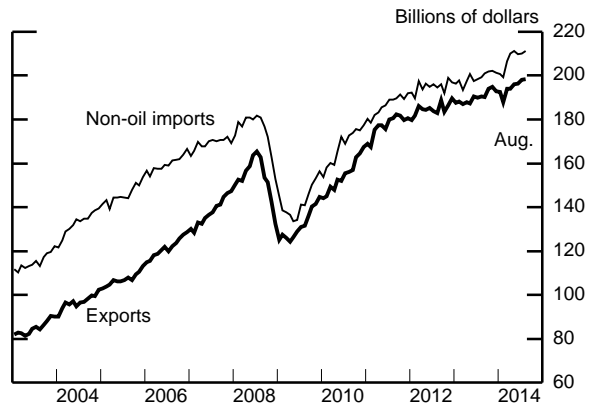
### Inventory Ratios ex. Motor Vehicles



Note: Flow-of-goods system inventories include manufacturing and mining industries except motor vehicles and parts and are relative to consumption. Census data cover manufacturing and trade ex. motor vehicles and parts, and inventories are relative to sales.

Source: U.S. Census Bureau; staff calculations.

### Exports and Non-oil Imports



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis; U.S. Census Bureau.



first half to 2 percent in the second, despite support from the higher value of the dollar.

- Manufacturing production rose at a solid pace in September, but monthly gains have been choppy recently, partly reflecting swings in motor vehicle assemblies. For the third quarter as a whole, manufacturing output rose at a moderate annual rate of 3½ percent, a little less than its average increase in the first half of the year. In the current quarter, we expect factory output to expand 3 percent, little changed from our previous projection and in line with recent readings on new orders from the national and regional manufacturing surveys.

## THE MEDIUM-TERM OUTLOOK FOR REAL GDP

Beyond the near term, our forecast for output growth is lower than in the September Tealbook. We now expect real GDP growth to be 2.4 percent in 2015 and 2.6 percent in 2016 and then to ease to 2.1 percent in 2017 as monetary policy accommodation continues to be withdrawn. The projected level of real GDP at the end of 2017 is ¾ percent lower than in our previous forecast.

- The downward revision to our medium-term outlook for GDP growth reflects the higher path for the dollar and lower trajectory for equity prices, as well as our weaker outlook for foreign economic growth. (For a discussion of how shifts in the exchange rate influence the domestic economy, see the box “The Effect of the Dollar on U.S. GDP and Inflation.”) However, with lower projected output growth and inflation, the policy rule that we use for our forecast now calls for a lower path for the federal funds rate over the medium term, which partially offsets these forces. The decline in current and future crude oil prices since the September Tealbook provides a small additional offsetting boost to GDP growth.
- We anticipate that output growth over the next two years will exceed its potential rate, supported by accommodative monetary policy and a lifting of the restraint from the changes in fiscal policy seen over the past few years. These developments are expected to bolster consumer and business confidence, which, in turn, should provide additional support to spending growth.

- We have made no material changes to our supply-side assumptions in this projection. Accordingly, the revisions we made to the GDP forecast carry through to the GDP gap. We now expect real GDP to be at its potential level in 2017, rather than being  $\frac{3}{4}$  percent above potential in the September Tealbook.

## THE OUTLOOK FOR THE LABOR MARKET

The recent data generally suggest that conditions in the labor market are a bit stronger than we expected in the September Tealbook.

- Total nonfarm payrolls rose 248,000 in September, about 25,000 more than we had projected. This reading, combined with upward revisions to July and August, put the level of total payrolls about 90,000 higher in September than we had anticipated in the previous Tealbook. We have reacted by pushing up our forecast for payroll gains in the fourth quarter to 225,000 per month, 10,000 more than in the September Tealbook.
- The unemployment rate fell 0.2 percentage point in September, to 5.9 percent; we had expected it to hold steady at 6.1 percent. In response, we lowered our fourth-quarter unemployment rate projection 0.1 percentage point, to 5.8 percent. Similarly, we adjusted our participation rate projection down a bit in response to an unexpected 0.1 percentage point decline last month.
- The staff's labor market conditions index, which summarizes the movements in 19 labor market indicators, increased a bit more in September than in August, but the pace of improvement over the third quarter as a whole was somewhat more subdued than in the second quarter.

We continue to expect gradual improvement in the labor market over the medium term. The pace of this improvement, though, is slower than in the September Tealbook because of our weaker projection for GDP growth.

- We now expect monthly job gains to average about 160,000 in 2015 and 175,000 in 2016 and then slow to around 130,000 in 2017. On average, these gains are 20,000 less per month than in the September Tealbook.

## The Effect of the Dollar on U.S. GDP and Inflation

The dollar has appreciated sharply since the middle of the year, with the broad dollar index increasing 4 percent from the beginning of July through October 21, provoking heightened interest in the effect of dollar movements on the U.S. economy. In this discussion, we review our rules of thumb for translating changes in the dollar into effects on U.S. GDP and inflation.<sup>1</sup>

One important consideration in analyzing the effects of a change in the dollar on the domestic economy is the source of that change. A rise in the dollar elicited by strengthening U.S. demand, for example, would be associated with higher U.S. GDP and higher interest rates. Conversely, a rise in the dollar triggered by gloomier prospects abroad would be associated with more adverse effects on the economy. For the purposes of this exercise, we assume the dollar's initial movement is triggered by an exogenous dollar-specific shock.

Another important consideration in deriving our rules of thumb is our assessment of how monetary policy reacts to dollar shocks. To illuminate this issue, we first present estimates based on the staff's trade equations under the assumption that monetary policy is held constant. We then use the staff's general-equilibrium SIGMA model to consider the economic effects of a shock to the dollar when monetary policy is allowed to respond endogenously to those effects.

When monetary policy is held constant, the effect of the dollar on U.S. GDP through trade channels is quite large. As shown in table 1 on the next page, a 10 percent appreciation of the dollar lowers real exports (line 1 in the table) and increases real imports (line 2), on net pushing down the level of U.S. real GDP by almost 2 percent after three years (line 3). Applying a Keynesian expenditure multiplier to this aggregate demand change, as is done in the judgmental staff projection, increases the negative drag on GDP to 2¾ percent after three years (line 4). The higher dollar also lowers core import price inflation (line 5); core consumer price inflation in the U.S. is lower as well (line 6), reflecting both the decline in core import prices and the greater amount of slack that results from weaker domestic activity. These inflation effects are rather small, however, reflecting both the limited pass-through of exchange rates to import prices and the relatively small share of imports in U.S. consumption.

In reality, a shock to the dollar that leads to reduced economic activity and lower inflation would likely elicit an easing of monetary policy in response. Pinning down the exact extent of that easing and assessing its effects on the economy is challenging. As one way to gauge the effect of a dollar shock on the U.S. economy when monetary policy is allowed to respond, we used the staff's general-equilibrium SIGMA model. SIGMA includes an explicit monetary policy rule as well as mechanisms linking monetary policy actions back to U.S. GDP and prices.<sup>2</sup> As shown in table 2, also on the next page, a 10 percent dollar appreciation in SIGMA lowers real GDP (line 3) by considerably less than the amount shown in table 1, as SIGMA embodies a fairly aggressive

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<sup>1</sup> This discussion summarizes material from the October 22, 2014, memorandum to the FOMC "The Effect of the Dollar on U.S. GDP and Inflation," by Christopher J. Erceg and Joseph W. Gruber.

<sup>2</sup> In SIGMA, monetary policy follows the inertial version of a Taylor (1999) rule that is similar, but not identical, to the rule used in the judgmental projection.

monetary policy response (line 5), which in turn is highly effective in supporting domestic demand (line 4).<sup>3</sup> Nevertheless, the overall effect of the dollar shock on output and inflation is still appreciable.

What do these estimates imply for the effects of the roughly 3½ percent increase in the projected path of the dollar between the July Tealbook and the October Tealbook? The effects implied by the staff’s trade equations augmented with a multiplier, calculated by appropriately scaling the estimates shown in lines 4 and 6 of table 1, are to decrease the level of real GDP by almost 1 percent after three years while lowering core PCE inflation by about 0.1 percentage point in each of the next three years. Of course, these estimates hold many aspects of the forecast constant, including monetary policy. Allowing for a monetary policy response, the SIGMA model suggests that the dollar appreciation will lower GDP by about ¼ percent after three years.

In the judgmental forecast, the cumulative effect of revisions between the July and October Tealbooks to the GDP growth projection from 2015 to 2017 leaves the level of GDP down 1¼ percent, while the projected fed funds rate at the end of 2017 is revised down by 125 basis points over the same period. Whereas the effect of the higher dollar has importantly contributed to the downward revision to GDP—and therefore to the projected revision to policy rates—other factors have also played a substantial role. A rough parsing suggests that, taking into account the policy offset, about one-half of the decline in the medium-term GDP projection between the July and October Tealbooks is attributable to the higher dollar. As for inflation, between the July and October Tealbooks, the staff projection for core consumer price inflation has been revised down 0.2 percentage points in 2015 and 2016 and 0.1 percentage point in 2017. The higher dollar, through its effects on both U.S. real activity and import prices, accounts for most of that revision.

Thus, the staff’s judgmental forecast attributes a somewhat greater drag on GDP from the higher dollar than does SIGMA. The different GDP effects likely reflect some differences in the operation of key transmission channels, including how interest rates affect aggregate demand and how resource slack affects inflation. Such differences are not surprising given the considerable uncertainty surrounding how these transmission channels operate in practice.

**Table 1: Effects of 10 Percent Dollar Appreciation in Staff Trade Equations\***

	Deviation from baseline after:		
	1 year	2 years	3 years
<b>Percent</b>			
1 Real exports	-2.9	-6.1	-7.8
2 Real imports	2.3	4.0	4.0
3 Direct effect on U.S. GDP	-0.8	-1.6	-1.9
4 U.S. GDP with multiplier	-1.1	-2.2	-2.7
<b>Percentage Points</b>			
5 Core import price inflation	-3.0	0.0	0.0
6 U.S. core PCE inflation	-0.3	-0.2	-0.2

\* Results in line 4 reflect the staff’s assumed GDP multipliers; results in line 6 reflect the staff’s multipliers and inflation rules of thumb.

**Table 2: Effects of 10 Percent Dollar Appreciation in SIGMA**

	Deviation from baseline after:		
	1 year	2 years	3 years
<b>Percent</b>			
1 Real exports	-3.6	-5.7	-6.0
2 Real imports	3.4	4.6	4.5
3 U.S. GDP	-0.6	-0.8	-0.6
4 U.S. domestic demand	0.7	1.1	1.3
<b>Percentage Points</b>			
5 Federal funds rate	-0.1	-0.5	-0.5
6 U.S. core PCE inflation	-0.5	-0.2	-0.1

<sup>3</sup> Although the policy rate is currently constrained at the effective lower bound, the baseline forecast has rates increasing in the middle of next year, providing scope in the SIGMA simulation for more accommodative policy further out in the forecast.

- From its slightly lower-than-expected starting point at the end of this year, the unemployment rate is now projected to decline more slowly over the medium term than previously envisioned, reflecting the diminished outlook for real activity. All told, we expect it to be 5.2 percent in 2017, 0.3 percentage point higher than in the September Tealbook. Thus, the unemployment rate is no longer forecast to undershoot its natural rate during the medium-term projection period.

## THE OUTLOOK FOR INFLATION

We have lowered our projection for total PCE price inflation noticeably in both the second half of this year and early next year, mainly in response to steeper-than-anticipated declines in oil prices. Over the medium term, we continue to expect PCE price inflation to gradually edge up as the downward pressures on inflation from falling energy prices and lower import prices fade next year, resource slack slowly diminishes, and long-term inflation expectations hold steady.

- After increasing at an annual rate of 2¼ percent in the second quarter, total PCE prices are estimated to have risen just 1¼ percent in the third quarter. In the current quarter, we now expect total consumer prices to *decline* at an annual rate of ¼ percent, reflecting the drop in consumer energy prices as well as an easing of both food and core price inflation.
- Incoming data on core PCE prices have been a bit below our expectations, and with a lower forecast for core import prices, our near-term projection for core price inflation is a little lower than in our previous projection. We now expect core PCE prices to rise 1¼ percent in the second half of the year following a 2 percent increase in the second quarter. Our projection for core inflation in the second half is also held down slightly by the residual seasonality that we find in these data.
- The incoming readings for consumer food prices in August and September were a little higher than we had projected in the September Tealbook. However, these data still point to an easing of food price inflation in the third quarter following its surge last spring; moreover, favorable crop conditions in many parts of the country have contributed to a marked decline in farm prices, which should lead to a further deceleration in food prices this quarter.

- As the recent declines in crude oil prices continue to feed through to lower retail gasoline prices, we anticipate that PCE energy prices will fall sharply this quarter and decline further in the first quarter of next year. Thereafter, we expect consumer energy prices to rise modestly through the end of 2017.
- The recent appreciation of the dollar and lower commodity prices are expected to hold down the prices of imported core goods in the near term. We estimate that core import prices rose at an annual rate of just ½ percent in the third quarter, and we expect these prices to fall 1 percent in the current and next quarters. Import price inflation is then expected to turn positive and slowly move up to 1¼ percent by 2016, consistent with moderate foreign inflation and relatively flat projections for commodity prices and the dollar.
- Over the medium term, as resource slack diminishes further and with long-term inflation expectations projected to remain stable, we expect core PCE price inflation to edge up from 1.5 percent in 2014 to 1.8 percent in 2017. This path is a little below our projection in the September Tealbook due to the weaker outlook for real activity and the pass-through of lower core import and energy prices. Reflecting the modest projected increases in consumer energy prices, total PCE inflation is expected to be roughly in line with core price inflation over the medium term.
- We have received little information on labor compensation since the previous Tealbook projection. Average hourly earnings were slightly below our expectations in September, and the 12-month change in this measure of wages continues to hover around 2 percent. Over the medium term, though, we continue to expect a gradual acceleration in compensation as the labor market tightens.

## THE LONG-TERM OUTLOOK

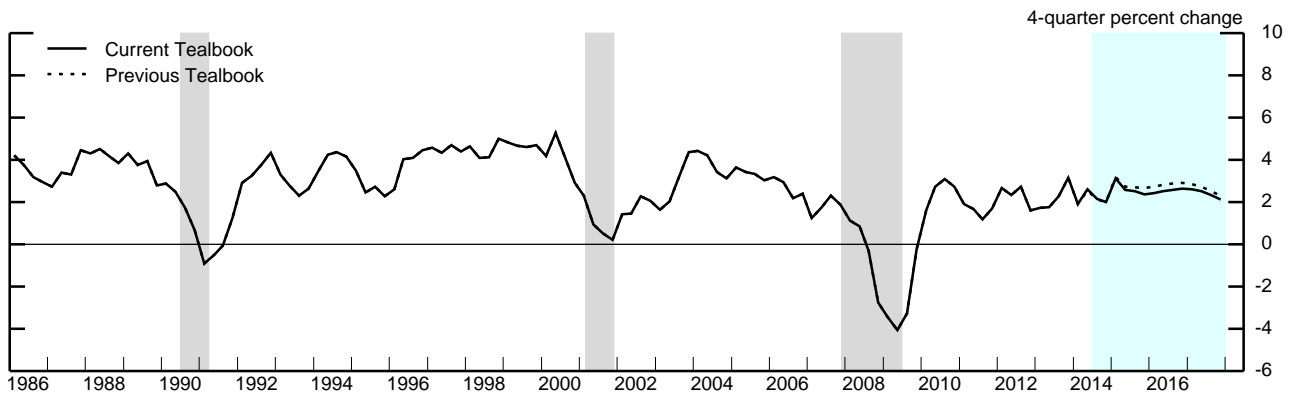
- Beyond 2017, the federal funds rate continues to be set according to the prescriptions of an inertial version of the Taylor (1999) rule. This policy rule assumes a long-run equilibrium level of the nominal federal funds rate of 3¾ percent.

- With inflation gradually moving toward 2 percent, the federal funds rate continues to rise, approaching its longer-run normal value early in the next decade.
- Real GDP rises at the projected growth rate of potential output after 2017. The unemployment rate is at its natural rate at the end of 2017 and remains at that level thereafter.
- Consumer price inflation remains  $\frac{1}{4}$  percentage point below the Committee's 2 percent objective at the beginning of 2018. Longer-run inflation expectations slowly move up to the Committee's target, but consumer price inflation does not reach 2 percent until early in the next decade.

**Projections of Real GDP and Related Components**  
 (Percent change at annual rate from final quarter  
 of preceding period except as noted)

Measure	2014	2014		2015	2016	2017
		H1	H2			
<b>Real GDP</b>	<b>2.0</b>	<b>1.2</b>	<b>2.8</b>	<b>2.4</b>	<b>2.6</b>	<b>2.1</b>
Previous Tealbook	2.0	1.1	2.9	2.7	2.9	2.3
Final sales	2.0	1.1	2.9	2.3	2.6	2.4
Previous Tealbook	2.0	1.1	2.9	2.6	2.9	2.5
Personal consumption expenditures	2.3	1.9	2.6	3.0	2.7	2.4
Previous Tealbook	2.3	1.8	2.7	3.0	2.8	2.5
Residential investment	4.1	1.5	6.7	9.5	9.7	7.3
Previous Tealbook	6.0	1.4	10.8	11.0	10.7	6.0
Nonresidential structures	4.2	7.6	.9	-2.4	.6	.4
Previous Tealbook	6.8	7.8	5.9	-7	1.1	.7
Equipment and intangibles	5.7	5.0	6.5	2.7	3.6	2.6
Previous Tealbook	4.8	4.8	4.9	3.1	4.2	3.0
Federal purchases	-1.3	-.5	-2.1	-3.6	-1.4	-1.0
Previous Tealbook	-2.0	-.5	-3.4	-3.3	-1.1	-.8
State and local purchases	1.1	1.0	1.3	1.5	1.8	2.0
Previous Tealbook	1.2	1.1	1.3	1.5	1.8	2.0
Exports	2.3	.4	4.3	3.7	4.4	5.0
Previous Tealbook	2.2	.3	4.0	4.4	5.1	5.4
Imports	4.3	6.7	1.9	4.1	4.5	3.8
Previous Tealbook	4.4	6.5	2.3	4.0	4.6	3.9
Contributions to change in real GDP (percentage points)						
Inventory change	.0	.1	-.1	.1	.1	-.3
Previous Tealbook	.0	.0	.0	.1	.1	-.2
Net exports	-.4	-1.0	.3	-.2	-.1	.1
Previous Tealbook	-.4	-1.0	.2	-.1	-.1	.1

Real GDP



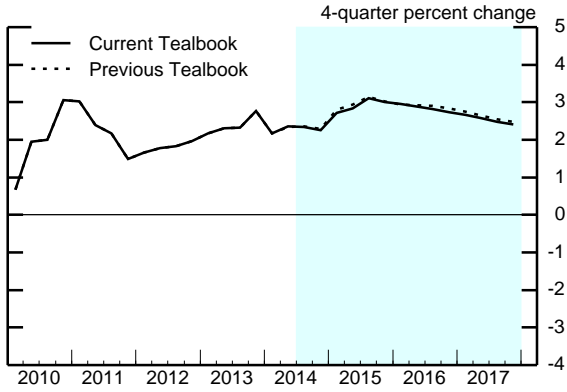
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

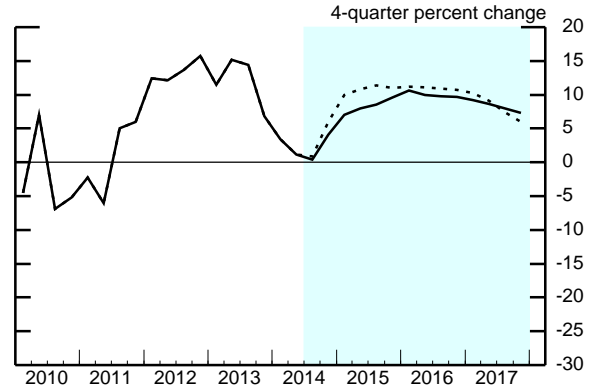


### Components of Final Demand

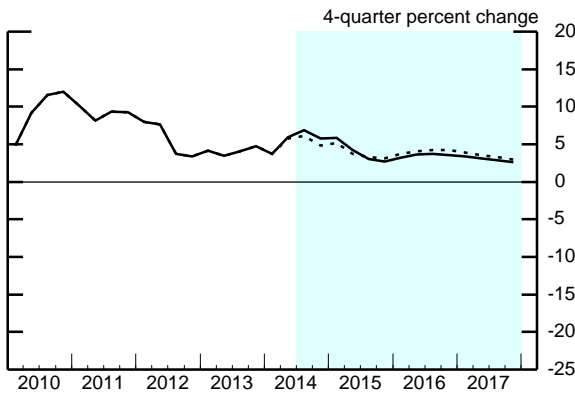
Personal Consumption Expenditures



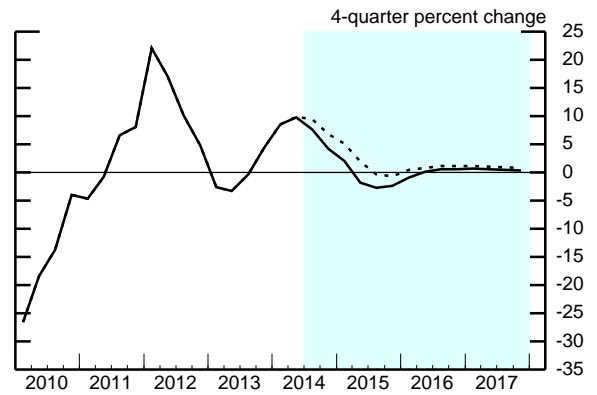
Residential Investment



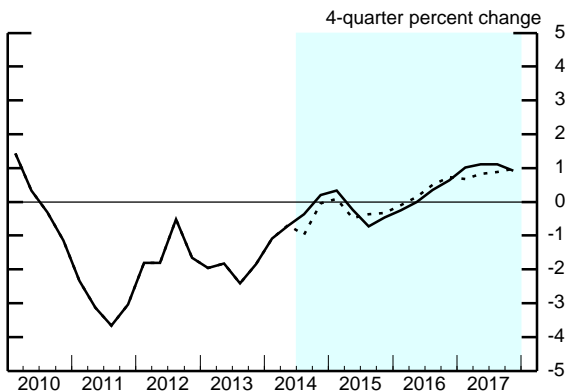
Equipment and Intangibles



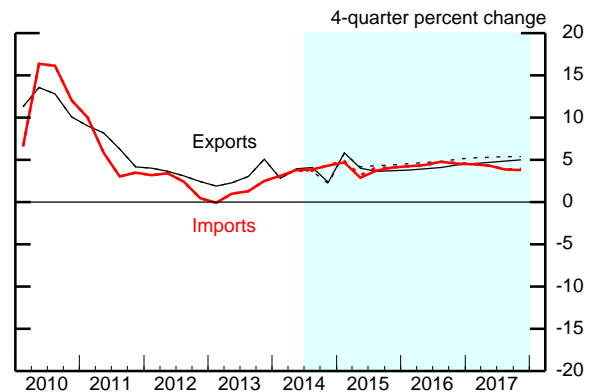
Nonresidential Structures



Government Consumption & Investment

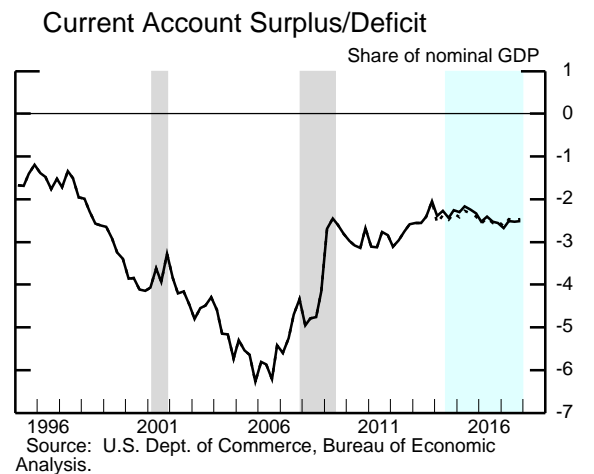
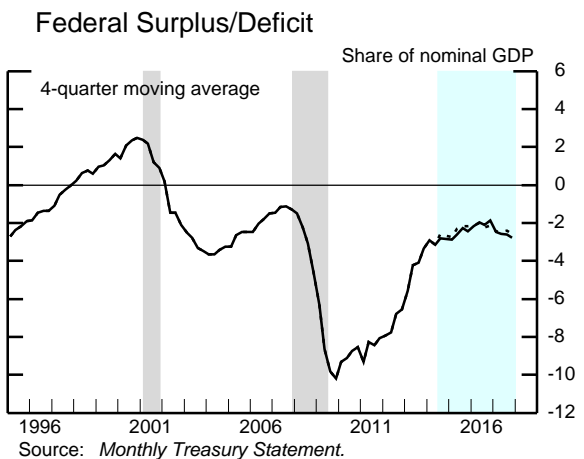
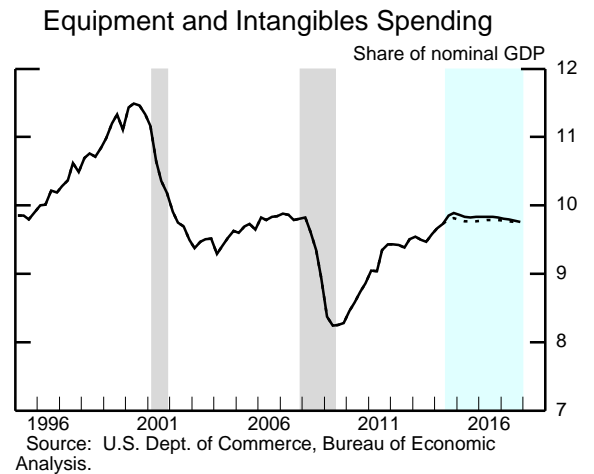
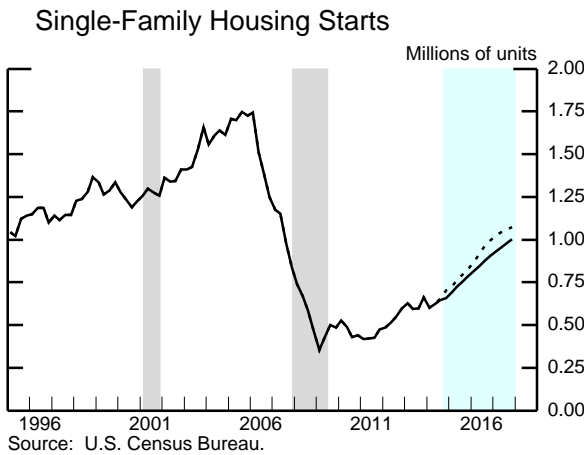
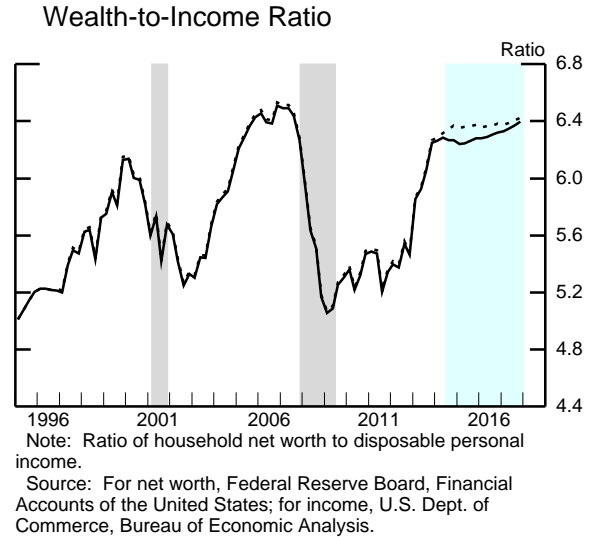
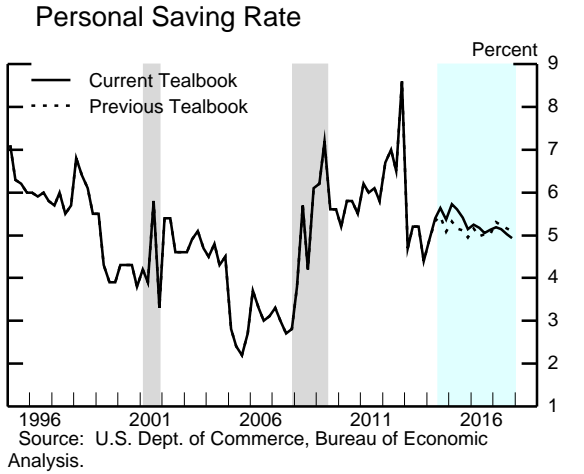


Exports and Imports



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

### Aspects of the Medium-Term Projection



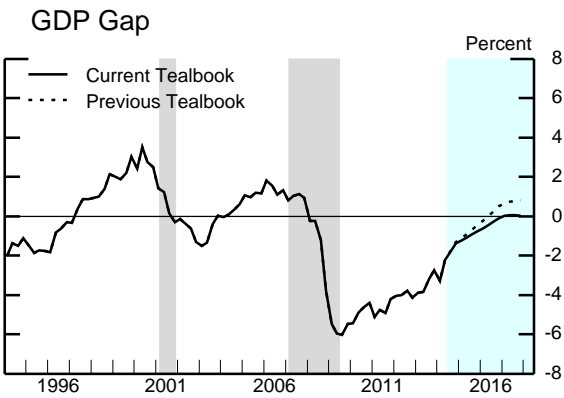
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

**Decomposition of Potential GDP**  
(Percent change, Q4 to Q4, except as noted)

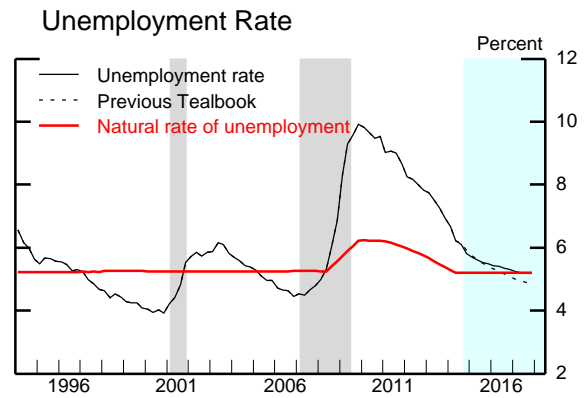
Measure	1974-95	1996-2000	2001-07	2008-10	2011-13	2014	2015	2016	2017
Potential real GDP	3.1	3.4	2.6	1.7	1.6	.6	1.7	1.9	2.0
Previous Tealbook	3.1	3.4	2.6	1.7	1.6	.5	1.7	1.9	2.0
<i>Selected contributions<sup>1</sup></i>									
Structural labor productivity <sup>2</sup>	1.6	2.9	2.8	1.5	1.2	.7	1.7	1.8	1.9
Previous Tealbook	1.6	2.9	2.8	1.5	1.2	.6	1.7	1.8	1.9
Capital deepening	.7	1.5	.9	.4	.4	.7	.7	.8	.8
Multifactor productivity	.7	1.1	1.6	.9	.7	-.1	.9	1.0	1.0
Structural hours	1.5	1.0	.7	.2	.6	.2	.3	.3	.3
Previous Tealbook	1.5	1.0	.7	.2	.6	.2	.3	.3	.3
Labor force participation	.4	.0	-.3	-.4	-.5	-.8	-.5	-.5	-.5
Previous Tealbook	.4	.0	-.3	-.4	-.5	-.8	-.5	-.5	-.5
<b>Memo:</b>									
GDP gap <sup>3</sup>	-1.8	2.5	.9	-4.4	-2.8	-1.4	-.8	-.1	.0
Previous Tealbook	-1.8	2.5	.9	-4.4	-2.8	-1.3	-.4	.5	.8

Note: For multiyear periods, the percent change is the annual average from Q4 of the year preceding the first year shown to Q4 of the last year shown.

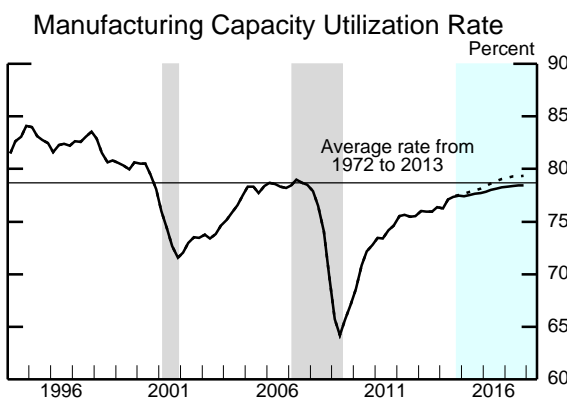
1. Percentage points.
2. Total business sector.
3. Percent difference between actual and potential GDP in the final quarter of the period indicated. A negative number indicates that the economy is operating below potential.



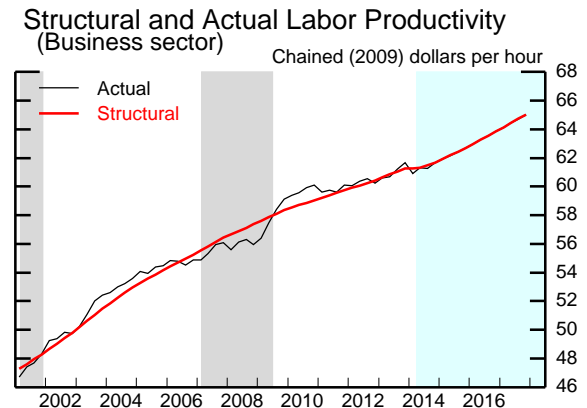
Note: The GDP gap is the percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.  
Source: U.S. Dept. of Commerce, BEA; staff assumptions.



Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.



Source: Federal Reserve Board, G.17 Statistical Release, "Industrial Production and Capacity Utilization."



Source: U.S. Department of Labor, Bureau of Labor Statistics; U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

**The Outlook for the Labor Market**

Measure	2014	2014		2015	2016	2017
		H1	H2			
Output per hour, business <sup>1</sup>	.0	-1.1	1.1	1.7	1.8	1.9
Previous Tealbook	.0	-1.3	1.3	1.7	1.8	1.9
Nonfarm private employment <sup>2</sup>	220	222	218	151	161	112
Previous Tealbook	211	222	200	180	180	130
Labor force participation rate <sup>3</sup>	62.7	62.8	62.7	62.6	62.4	62.2
Previous Tealbook	62.8	62.8	62.8	62.6	62.4	62.2
Civilian unemployment rate <sup>3</sup>	5.8	6.2	5.8	5.5	5.3	5.2
Previous Tealbook	5.9	6.2	5.9	5.4	5.1	4.9

1. Percent change from final quarter of preceding period at annual rate.

2. Thousands, average monthly changes.

3. Percent, average for the final quarter in the period.

Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

**Inflation Projections**

(Percent change at annual rate from final quarter of preceding period)

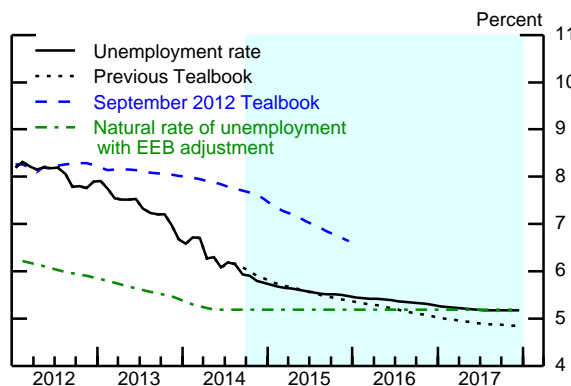
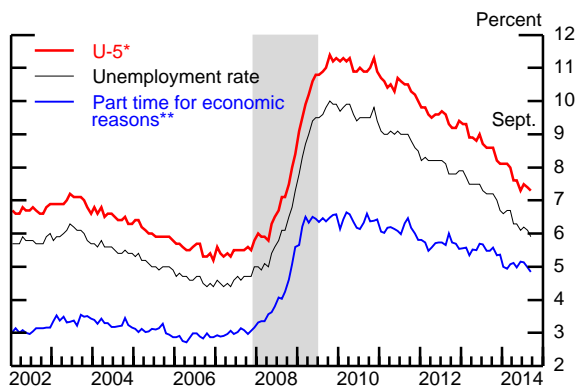
Measure	2014	2014		2015	2016	2017
		H1	H2			
PCE chain-weighted price index	1.2	1.9	.5	1.4	1.6	1.7
Previous Tealbook	1.5	1.8	1.1	1.5	1.6	1.7
Food and beverages	2.7	2.9	2.5	1.0	1.5	1.8
Previous Tealbook	2.2	2.9	1.5	.9	1.5	1.8
Energy	-5.5	4.6	-14.7	-1.1	1.2	.9
Previous Tealbook	-.9	4.6	-6.0	.6	-.1	.2
Excluding food and energy	1.5	1.6	1.3	1.5	1.6	1.8
Previous Tealbook	1.5	1.6	1.5	1.6	1.7	1.8
Prices of core goods imports <sup>1</sup>	.6	1.5	-.3	.4	1.2	1.2
Previous Tealbook	1.0	1.5	.5	1.1	1.3	1.3

1. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

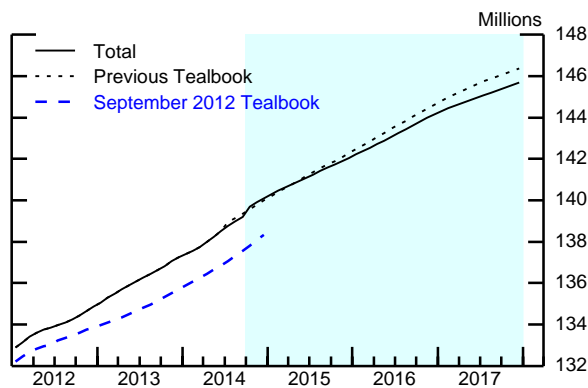
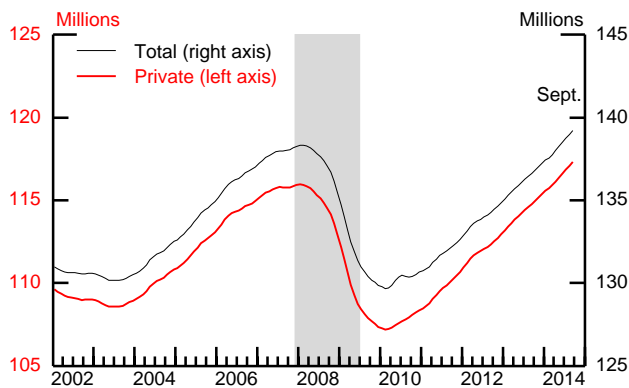
## Labor Market Developments and Outlook (1)

### Measures of Labor Underutilization



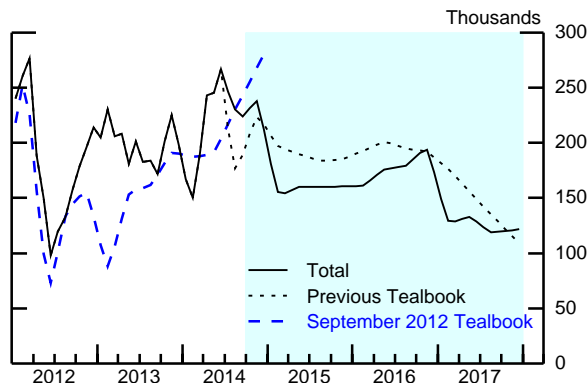
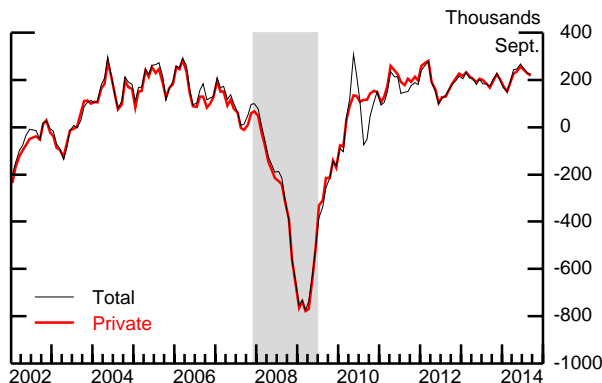
\* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.  
 \*\* Percent of Current Population Survey employment.  
 EEB Extended and emergency unemployment benefits.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Level of Payroll Employment\*



\* 3-month moving averages in history; average levels in each quarter during the forecast period.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Change in Payroll Employment\*

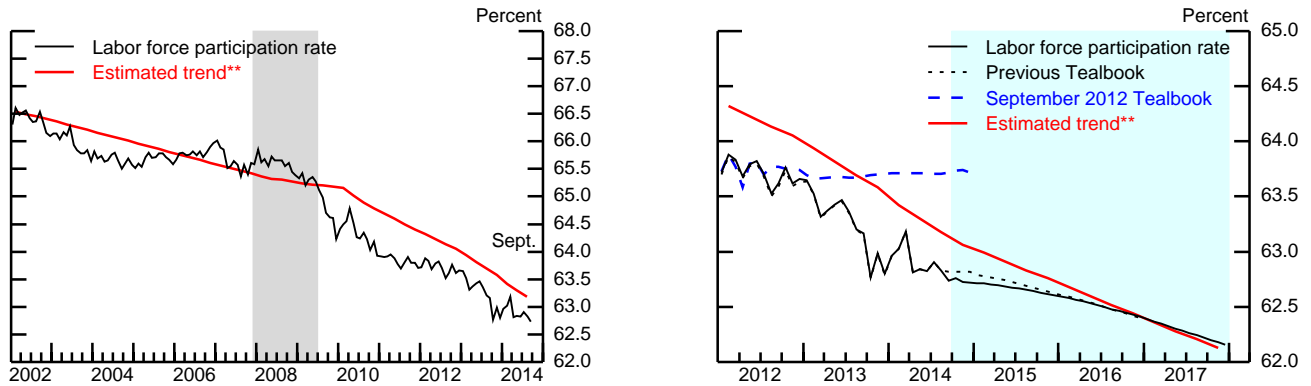


\* 3-month moving averages in history; average monthly changes in each quarter during the forecast period.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

Note: In September 2012, judgmental projections were prepared through 2015 for the Summary of Economic Projections variables, including the unemployment rate, while projections for other variables, including the labor force participation rate and payroll employment, were prepared only through 2014. This exhibit therefore reports a 2015 projection from the September 2012 Tealbook only for the unemployment rate.  
 The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

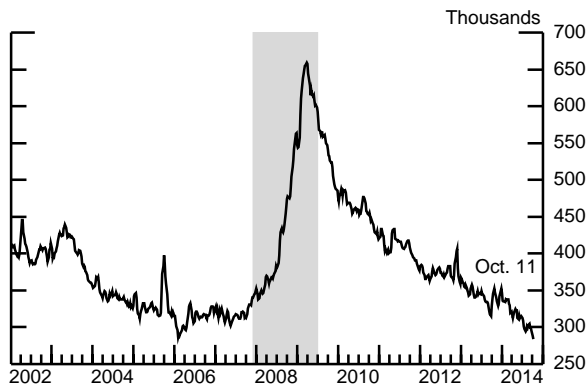
## Labor Market Developments and Outlook (2)

### Labor Force Participation Rate\*



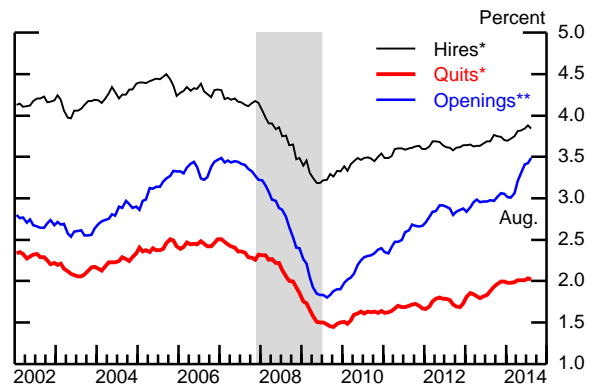
\* Published data adjusted by staff to account for changes in population weights.  
 \*\* Includes staff estimate of the effect of extended and emergency unemployment benefits.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

### Initial Unemployment Insurance Claims\*



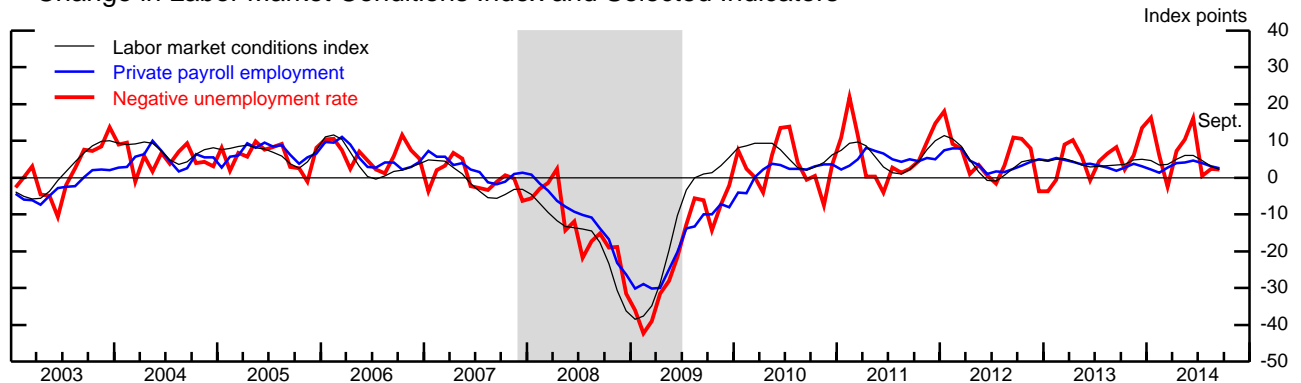
\* 4-week moving average.  
 Source: U.S. Department of Labor, Employment and Training Administration.

### Private Hires, Quits, and Job Openings



\* Percent of private nonfarm payroll employment, 3-month moving average.  
 \*\* Percent of private nonfarm payroll employment plus unfilled jobs, 3-month moving average.  
 Source: Job Openings and Labor Turnover Survey.

### Change in Labor Market Conditions Index and Selected Indicators\*



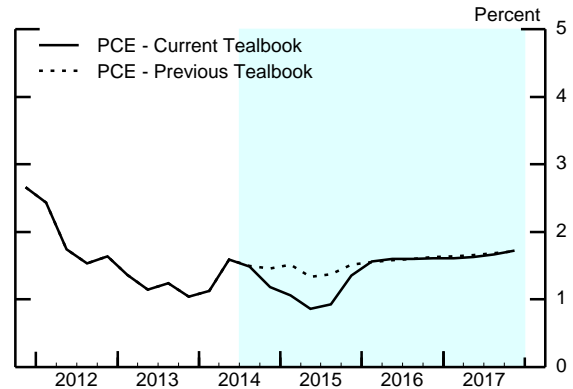
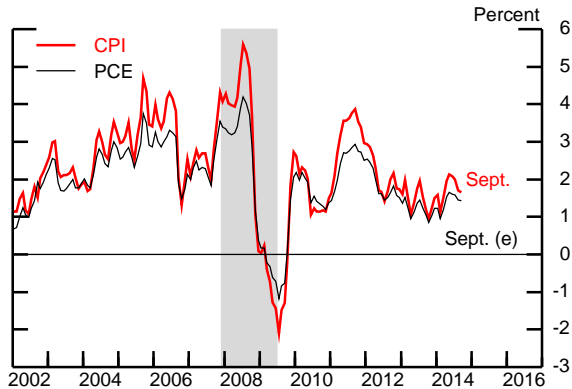
Note: Labor market conditions index estimated by staff; indexes for unemployment rate and private payroll employment are standardized deviations from estimated trend.  
 \* 3-month moving average.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

## Inflation Developments and Outlook (1)

(Percent change from year-earlier period)

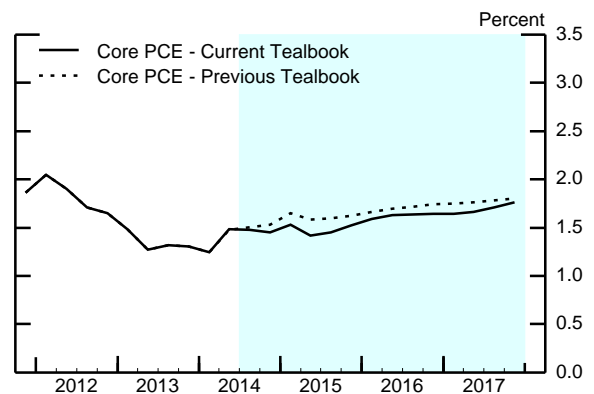
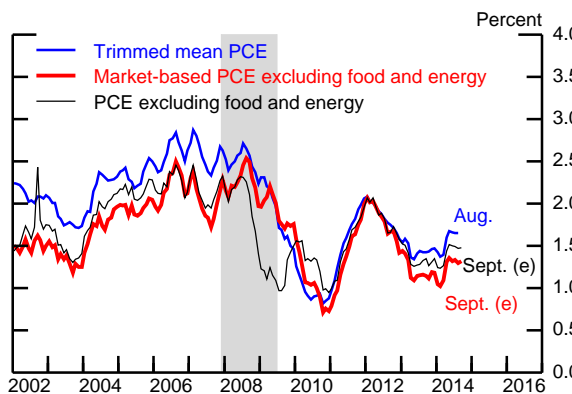
### Headline Consumer Price Inflation



Note: PCE prices from July to September 2014 are staff estimates (e).

Source: For CPI, U.S. Department of Labor, Bureau of Labor Statistics; for PCE, U.S. Department of Commerce, Bureau of Economic Analysis.

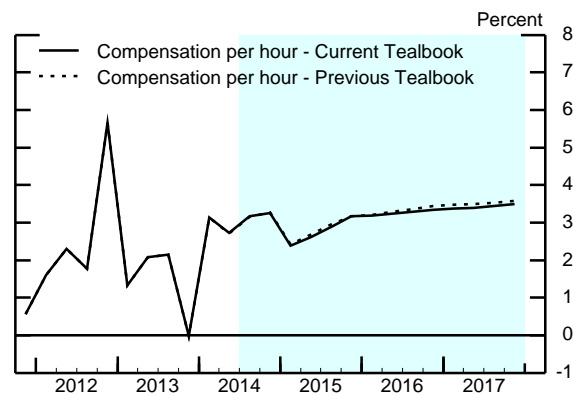
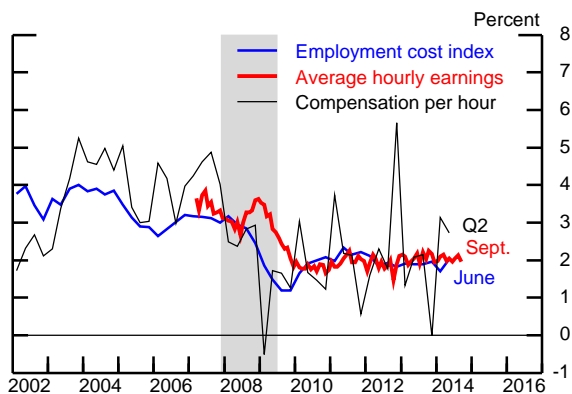
### Measures of Underlying PCE Price Inflation



Note: Core PCE prices from July to September 2014 are staff estimates (e).

Source: For trimmed mean PCE, Federal Reserve Bank of Dallas; otherwise, U.S. Department of Commerce, Bureau of Economic Analysis.

### Labor Cost Growth



Source: U.S. Department of Labor, Bureau of Labor Statistics.

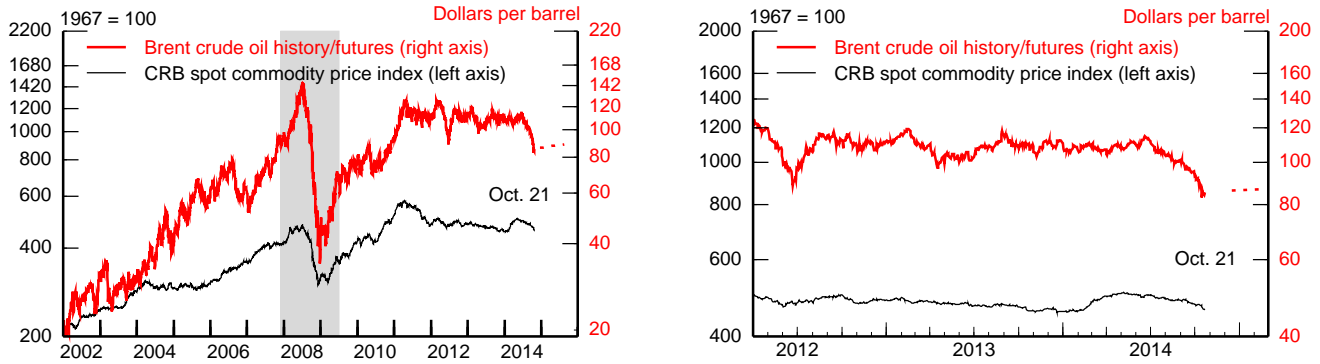
Note: Compensation per hour is for the business sector. Average hourly earnings are for the private nonfarm sector. The employment cost index is for the private sector.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

## Inflation Developments and Outlook (2)

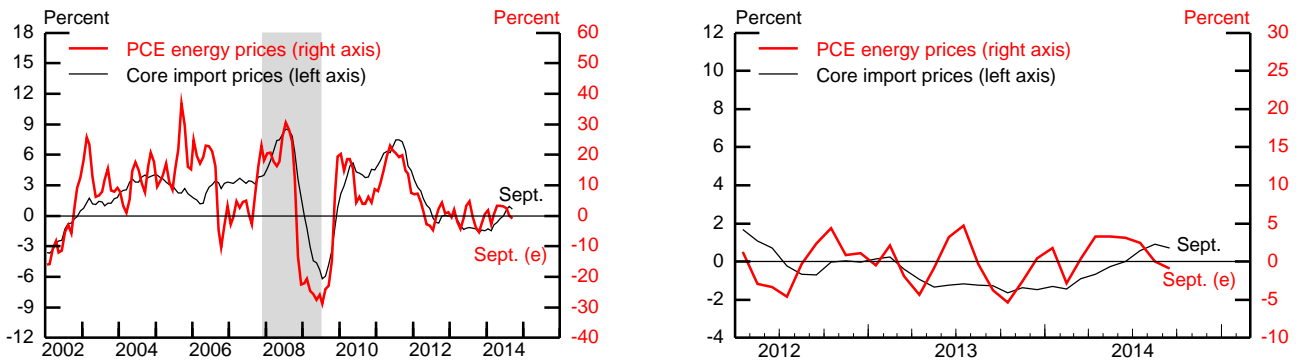
(Percent change from year-earlier period, except as noted)

### Commodity and Oil Price Levels



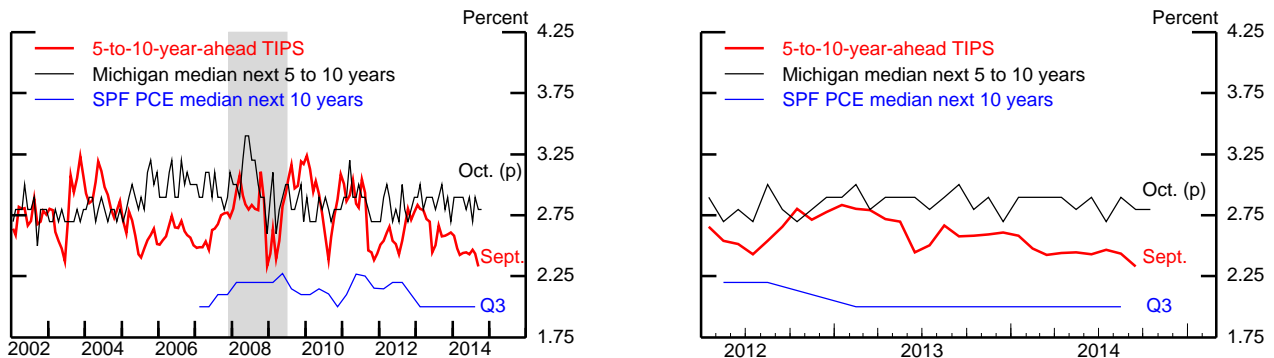
Note: Futures prices (dotted lines) are the latest observations on monthly futures contracts.  
 Source: For oil prices, U.S. Department of Energy, Energy Information Agency; for commodity prices, Commodity Research Bureau (CRB).

### Energy and Import Price Inflation



Note: PCE prices from July to September 2014 are staff estimates (e).  
 Source: For core import prices, U.S. Dept. of Labor, Bureau of Labor Statistics; for PCE, U.S. Dept. of Commerce, Bureau of Economic Analysis.

### Long-Term Inflation Expectations



Note: Based on a comparison of an estimated TIPS (Treasury Inflation-Protected Securities) yield curve with an estimated nominal off-the-run Treasury yield curve, with an adjustment for the indexation-lag effect.  
 p Preliminary.

SPF Survey of Professional Forecasters.  
 Source: For Michigan, Thomson Reuters/University of Michigan Surveys of Consumers; for SPF, Federal Reserve Bank of Philadelphia; for TIPS, Federal Reserve Board staff calculations.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

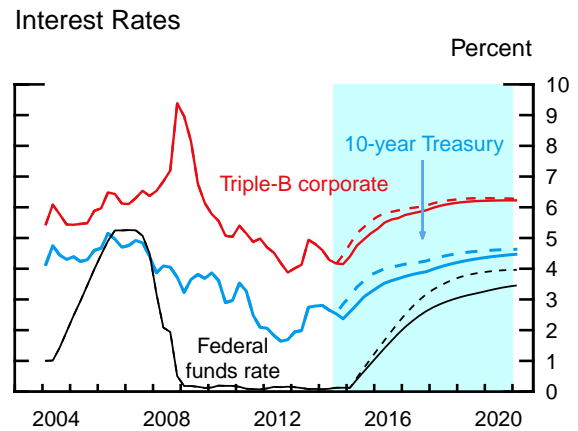
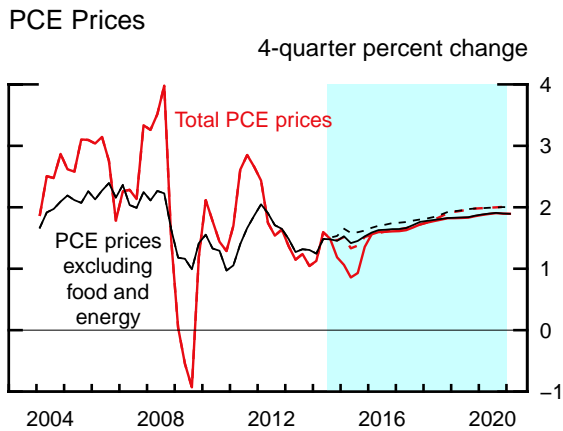
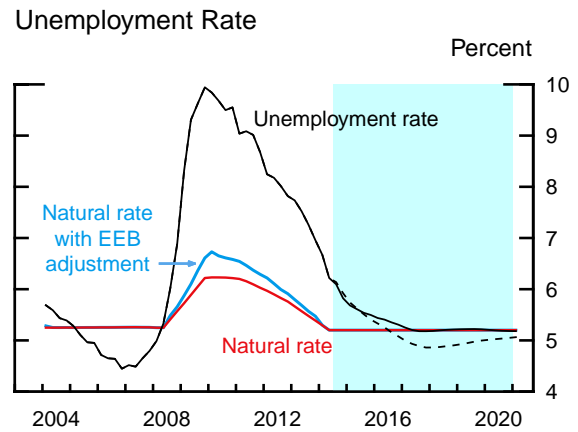
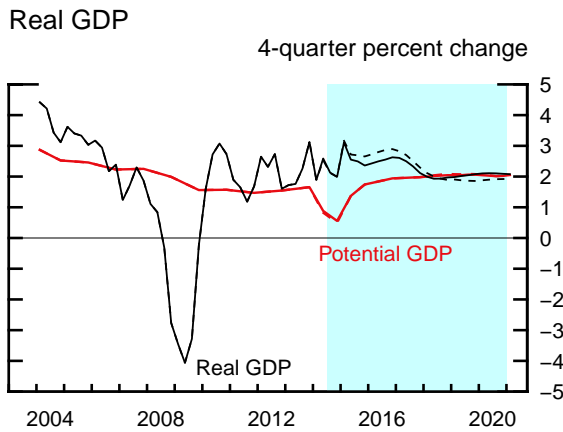


# The Long-Term Outlook

(Percent change, Q4 to Q4, except as noted)

Measure	2014	2015	2016	2017	2018	2019	Longer run
Real GDP	2.0	2.4	2.6	2.1	2.0	2.1	2.0
Previous Tealbook	2.0	2.7	2.9	2.3	1.9	1.9	2.0
Civilian unemployment rate <sup>1</sup>	5.8	5.5	5.3	5.2	5.2	5.2	5.2
Previous Tealbook	5.9	5.4	5.1	4.9	4.9	5.0	5.2
PCE prices, total	1.2	1.4	1.6	1.7	1.8	1.9	2.0
Previous Tealbook	1.5	1.5	1.6	1.7	1.9	2.0	2.0
Core PCE prices	1.5	1.5	1.6	1.8	1.8	1.9	2.0
Previous Tealbook	1.5	1.6	1.7	1.8	1.9	2.0	2.0
Federal funds rate <sup>1</sup>	.1	.9	1.9	2.6	3.0	3.2	3.8
Previous Tealbook	.1	1.1	2.3	3.2	3.7	3.9	3.8
10-year Treasury yield <sup>1</sup>	2.4	3.2	3.7	3.9	4.2	4.3	4.6
Previous Tealbook	2.8	3.8	4.1	4.3	4.5	4.6	4.6

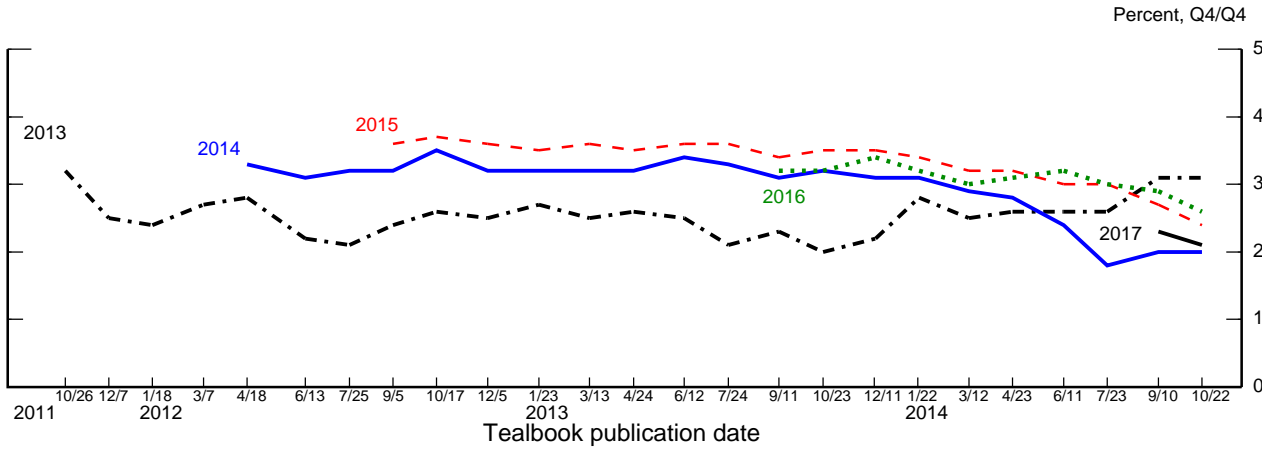
1. Percent, average for the final quarter of the period.



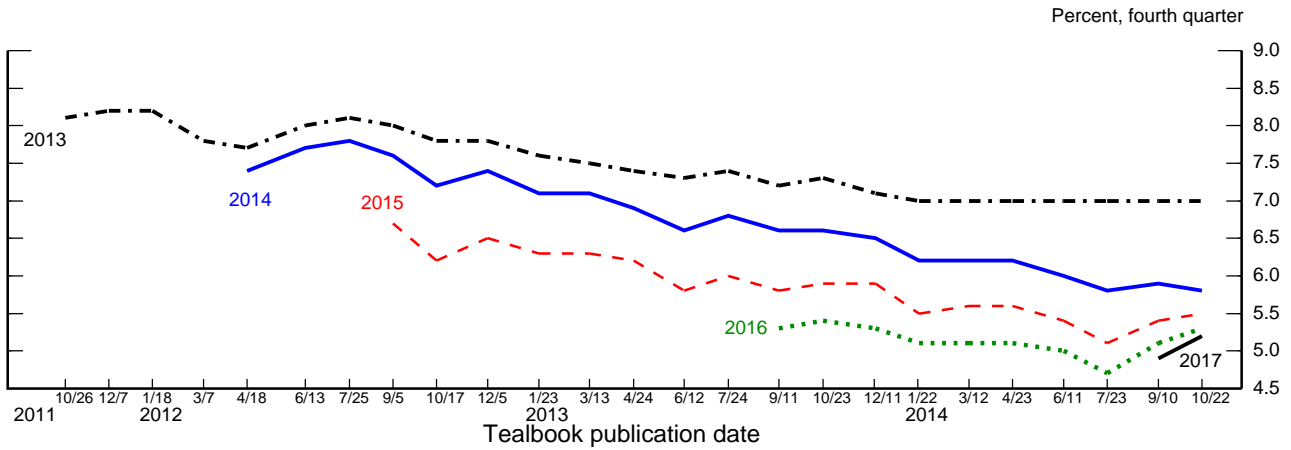
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

### Evolution of the Staff Forecast

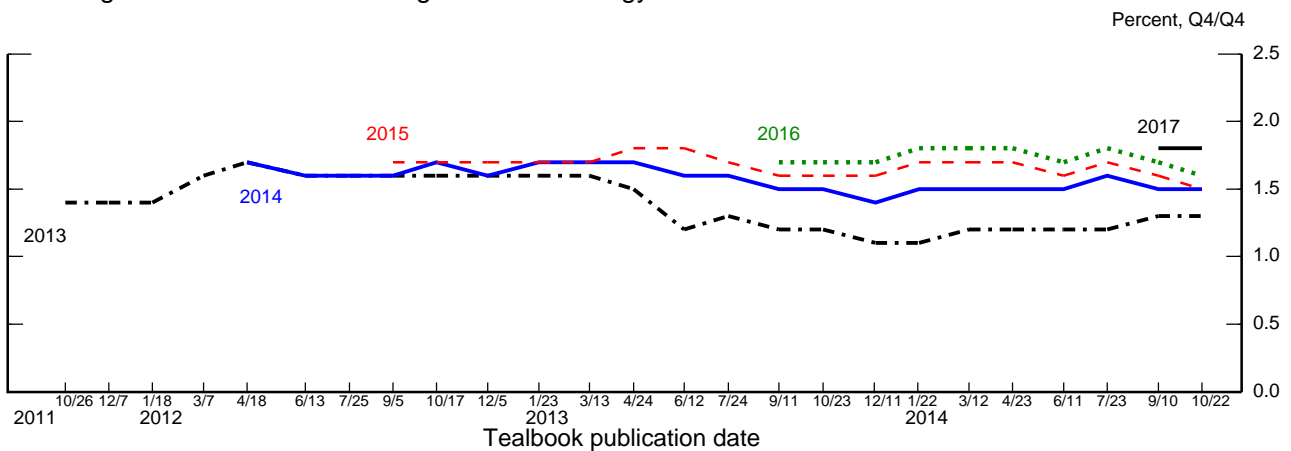
Change in Real GDP



Unemployment Rate



Change in PCE Prices excluding Food and Energy



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## International Economic Developments and Outlook

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Recent data on foreign economic activity have been mixed, surprising on the downside for the euro area and several emerging market economies (EMEs), but coming in stronger than expected in China, where official third-quarter GDP data were just released. We estimate that real GDP in the foreign economies registered growth of 2¾ percent at an annual rate in the third quarter, about ¼ percentage point lower than in the September Tealbook. The third-quarter outcome was an improvement over the second quarter's 2¼ percent growth, but the pickup largely reflected some rebound in activity in Japan following its earlier tax-related plunge.

We still expect growth abroad to gradually move up to 3 percent in early 2015 and to edge up further over the rest of the forecast period. The pickup in growth in part reflects a return to near-trend growth rates in the EMEs. Growth in the advanced foreign economies (AFEs) will be supported by accommodative monetary policies, diminishing fiscal drag, and the substantial appreciation of the U.S. dollar in recent months (see the box "The Recent Appreciation of the Dollar"). We also assume an easier monetary policy stance in Canada, the euro area, and the United Kingdom, as we detail below.

Our outlook has been revised down somewhat in light of the generally weaker data and the heightened stresses in financial markets over the intermeeting period. However, the sharp deterioration in financial markets appears to be greater than warranted by our straight read of these data, perhaps because markets are focusing more closely on the sizable downside risks to the outlook. In the Risks and Uncertainty section, we explore the implications for the U.S. economy of a sharp weakening in foreign economic activity and, separately, a stronger U.S. dollar.

Economic slack and, more importantly, falling commodity prices have continued to push down headline inflation in the AFEs. We have marked down our fourth-quarter inflation forecast for these economies by nearly 1 percentage point, to ¼ percent. We expect inflation to remain low in the near term, particularly in the euro area and Japan, and then gradually rise as accommodative monetary policy supports the recovery. Aggregate EME inflation has remained subdued, reflecting lower food and fuel price inflation. As these factors dissipate, we expect inflation to average 3¼ percent over the forecast period.

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## The Recent Appreciation of the Dollar

As shown in the upper-left panel on the next page, since the beginning of July, the dollar has appreciated sharply against the currencies of both the advanced foreign economies (AFEs) and the emerging market economies (EMEs), with almost all of this rise occurring before the end of September. The increase has been broad based, with the dollar rising against almost all foreign currencies except the heavily managed Chinese renminbi. Moreover, the overall appreciation of the dollar since July 1 is large by historical standards—the change in the AFE index corresponds to about the 94th percentile for all equivalent-length periods dating back to 1973.

Some of the dollar's movements since July can be explained by the steady stream of weaker-than-expected data from abroad, whereas U.S. data were generally viewed as more positive. The concerns over the foreign outlook were primarily focused on the euro area and China, but data from Japan and South America were also weak. As shown by indexes measuring economic surprises (the upper-right panel on the next page), data releases in the euro area and the EMEs have been consistently below expectations since August. In contrast, cumulative economic surprises, although weakening of late, have been positive, on balance, in the United States.

The data surprises, along with recent policy actions by the European Central Bank (ECB), contributed to a widening gap in policy expectations, which also helped support the dollar. Expected policy rates in the United Kingdom at the end of 2015 (the lower-left panel, next page) are down nearly 60 basis points since July 1, and expected euro-area rates have turned negative. Over the past few months, the ECB moved its deposit rate to negative 0.2 percent and announced a new asset purchase program. In contrast, U.S. policy expectations held relatively steady through September. Since that time, expectations for fed funds rates have fallen sharply, declining about 30 basis points and coinciding with the recent flattening out of the dollar.

In an effort to parse out the relative importance of the above-mentioned factors in explaining the run-up in the value of the dollar through the end of September, we used our empirical model of the dollar's movements to examine the contributions of macroeconomic surprises (foreign and domestic), differentials in 24-month-ahead expected policy rates (U.S. less foreign OIS rates), and financial stress (VIX and foreign stress indexes) to changes in bilateral dollar exchange rates—against the euro, U.K. pound, and yen. The lower-right panel on the next page shows the cumulative explanatory power of these variables. Changes in differentials in expected policy rates are by far the most important contributor. Macroeconomic surprises also boosted the value of the dollar, and the recent rise in financial stress played some role in the appreciation of the dollar relative to the European currencies.

Even so, as suggested by the bottom two rows of the table (next page), the model explains only between one-fourth and one-third of the run-up in these exchange rates. Thus, other factors, which are more difficult to quantify, may have contributed to the appreciation of the dollar. Notably, the flow of incoming data summarized in the macroeconomic surprise variable may not be capturing the full extent of the market's concerns about the foreign outlook. Those data have been weak but not extremely so, and outside forecasters, such as the International Monetary Fund and Consensus Economics, have marked down their forecasts only a touch in response.

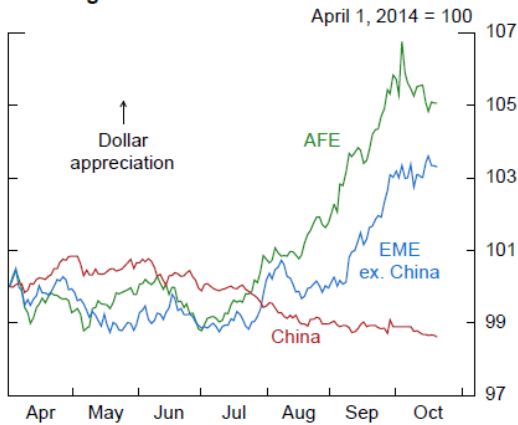
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Board staff have also marked down their projections for the foreign economies by only a small amount over the past few months.

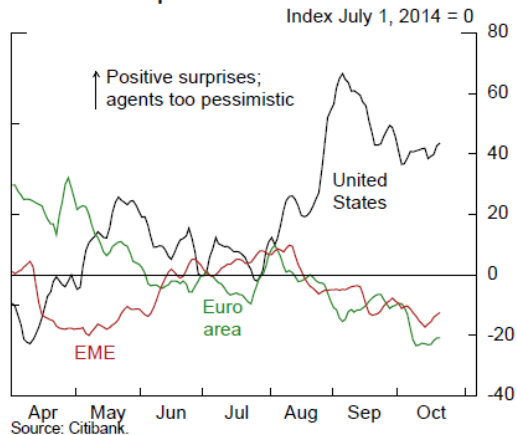
However, even if the modal foreign outlook has not deteriorated substantially in recent months, it is likely that market perceptions of the downside risks to the foreign outlook have indeed become more pronounced. Prospects for effective, aggressive policies to jumpstart growth and inflation in the euro area are dim; “Abenomics” appears to be losing momentum; and uncertainty about whether China’s property prices may move from a correction to a crash has increased. Consistent with these heightened concerns about downside risks, the decline in market-based measures of expected policy rates accelerated in mid-October amid large price swings across a range of asset classes, including commodities, equities, and bonds. Finally, we had been puzzled earlier in the summer by the sanguine response of markets to economic and geopolitical risks abroad. It is possible that financial markets are now swinging back toward more fully pricing in these risks.

In sum, our sense is that, along with some deterioration in foreign economic performance relative to the United States and resulting changes in expectations for policy rates, heightened concern about the downside risks to the outlook abroad have played an important role in boosting the dollar in recent months.

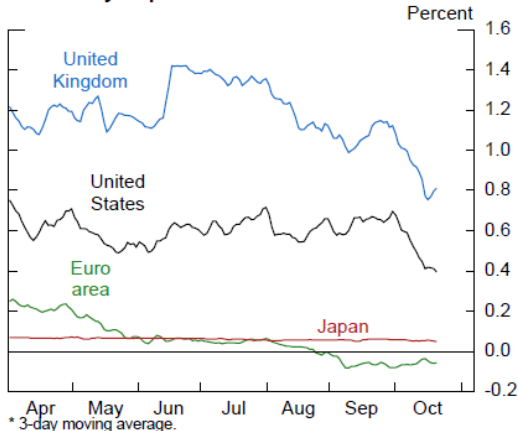
**Exchange Rate Indexes**



**Economic Surprise Indexes**



**OIS Policy Expectations: December 2015\***



**Contribution to Exchange Rate Change\***

	Euro	Pound	Yen
<i>Change in:</i>	Percentage point contribution		
Macroeconomic surprise	0.28	0.08	0.18
Expected policy differential	1.82	1.22	1.74
Financial stress	0.06	0.43	-0.07
<i>Memo items:</i>	Percent		
Total model estimate	2.16	1.74	1.86
Actual dollar appreciation	8.30	5.78	8.00

\* Change from July 1, 2014, to September 30, 2014.

## ADVANCED FOREIGN ECONOMIES

- ***Euro area.*** Industrial production fell sharply in the euro area in August, largely owing to an outsized drop in German car production, and survey measures of business sentiment continued to trend down in September. However, consumption data, including those for Germany, were upbeat, and German car production mostly recovered in September. We expect GDP to increase at a meager  $\frac{3}{4}$  percent pace in the second half of this year before gradually firming to a still-subdued 2 percent rate in 2017, supported by diminishing fiscal drag and accommodative monetary policy. The depreciation of the euro should contribute to a pickup in exports, while domestic demand benefits from lower oil prices. Even so, the euro-area growth forecast is down nearly  $\frac{1}{2}$  percentage point in the second half of this year and about  $\frac{1}{4}$  percentage point in 2015, reflecting both disappointing data and some fallout from the recent financial market turbulence.

The recent decline in commodity prices is expected to keep headline inflation around  $\frac{1}{2}$  percent in the current quarter. As the output gap narrows and commodity prices stabilize, inflation should gradually move up to  $1\frac{1}{2}$  percent by the end of 2017. Amid slower projected growth and weaker inflation, we now expect that the European Central Bank (ECB) will purchase a total of €500 billion in private-sector assets, which is €200 billion more than we assumed in the September Tealbook. The ECB began purchasing covered bonds last week, plans to start buying asset-backed securities this quarter, and is reported to be considering a new program to buy corporate bonds next year. We anticipate that the ECB will keep policy rates near zero through the forecast period.

- ***United Kingdom.*** Real GDP growth is estimated to have stepped down from a robust  $3\frac{1}{2}$  percent pace in the first half of this year to a still-solid  $2\frac{3}{4}$  percent in the third quarter, reflecting a moderation in both domestic and external demand. Although retail sales expanded briskly through August, industrial production has leveled off, and manufacturing and services PMIs fell in September. We expect GDP growth to moderate a bit more, to  $2\frac{1}{4}$  percent by 2017, as the output gap closes.

Twelve-month headline inflation declined to 1.2 percent in September, pushed down by the lagged effects of prior exchange rate appreciation and, more recently, a fall in food and transport price inflation; core inflation also declined. The recent fall in energy prices prompted us to reduce our inflation forecast further in the near term, but we continue to expect inflation to gradually move up to 2 percent by the end of 2016. Amid diminished price pressures, we now expect the Bank of England to begin raising its policy rate in the second quarter of 2015, one quarter later than we had previously anticipated, and then to normalize policy at a somewhat slower pace than we had previously assumed.

- **Japan.** We estimate that Japanese real GDP grew 2 percent in the third quarter, rebounding only weakly from the consumption tax hike–induced slump in the second quarter. Although data through September indicate some pickup in consumption and exports, industrial production fell sharply in August and consumer confidence declined in September. We expect growth to slow further, to 1½ percent in the current quarter, and to only ½ percent in 2015 after another consumption tax hike. Thereafter, we expect growth to pick up a bit to 1 percent, above the country’s ½ percent potential growth rate but not enough to close the output gap by the end of 2017.

Inflation is estimated to have been 1½ percent in the third quarter. Given declines in commodity prices, we expect inflation to drop to zero in the current quarter. Inflation should rise to about 1 percent by the middle of next year before edging up to 1¼ percent in 2016 and 2017. With growth slowing and inflation well below target, we continue to assume that the Bank of Japan will step up the pace of asset purchases in early 2015.

- **Canada.** Recent data, including a modest rise in July monthly GDP and a decline in the manufacturing PMI in September, have been in line with our view that real GDP growth moderated to 2½ percent in the third quarter. We see GDP expanding at this pace through the end of 2016 before slowing to a near-potential rate of 2 percent by the end of 2017. The forecast has been revised down a bit, as drag from lower commodity prices slightly outweighs the boost to net exports provided by the recent depreciation of the Canadian dollar.



Lower energy prices are expected to push inflation below 1 percent this quarter and next, 1 percentage point lower than in the September Tealbook on average. Then, as the output gap closes, inflation should slowly edge up and reach the Bank of Canada's 2 percent target by 2017. In light of the lower growth outlook and contained inflation pressures, we now project that the Bank's first rate hike will occur in the fourth quarter of 2015, one quarter later than in the September Tealbook, and the rate will rise more gradually thereafter.

## EMERGING MARKET ECONOMIES

- **China.** Economic activity in China expanded at a robust  $7\frac{3}{4}$  percent pace in the third quarter, the same pace as the second quarter. A notable deceleration in August industrial production, released just after the September Tealbook, had suggested that output growth might slow, but, as it turned out, industrial production rebounded sharply in September. Exports also grew strongly in the third quarter. In contrast, domestic demand indicators weakened, reflecting a sharp downturn in the property market. Moreover, targeted stimulus measures announced since April appear to be providing less support to the economy than we had anticipated. Given the lack of momentum in domestic demand, we now see economic growth falling to  $7\frac{1}{4}$  percent in the current quarter and edging down to just below 7 percent by the end of the forecast period. This forecast is down  $\frac{1}{4}$  percentage point in the fourth quarter and a bit less further out.

Chinese inflation posted an annual rate of only  $2\frac{1}{4}$  percent in the third quarter, and on a 12-month basis, inflation has fallen to  $1\frac{1}{2}$  percent, its lowest level in nearly 5 years, reflecting declines in food and fuel prices. We expect inflation to move back up to 3 percent by the middle of next year as these disinflationary pressures wane.

- **Other Emerging Asia.** We estimate that real GDP in the rest of emerging Asia expanded  $3\frac{3}{4}$  percent in the third quarter, supported in part by robust exports to the United States. This estimate is a little lower than in the September Tealbook, partly in response to weaker-than-expected exports to China. Moreover, social unrest has weighed on economic activity in Hong Kong. We see growth in the region remaining at  $3\frac{3}{4}$  percent in the current

quarter and then rising gradually to a near-trend pace of 4¼ percent by the end of the forecast horizon, supported by strengthening exports and, in Korea and Thailand, by additional policy stimulus. Inflation in the region moderated to about 2 percent in the third quarter, primarily reflecting a deceleration in food and energy prices. As the effects of these temporary factors fade, inflation should settle in at about 3½ percent by early next year.

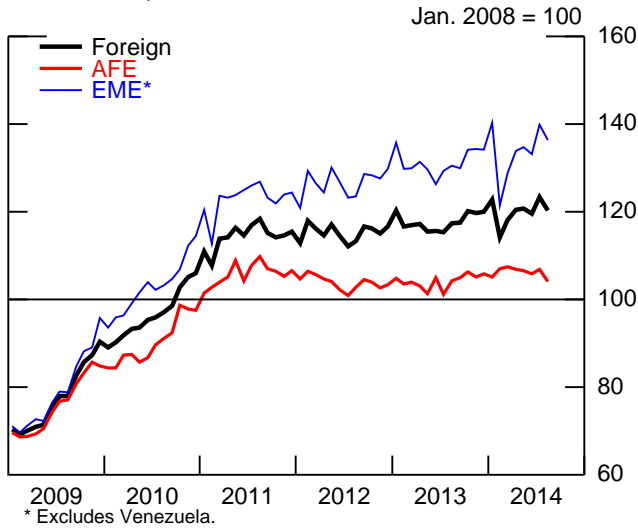
- **Latin America.** Recent data suggest that **Mexico's** growth, after staging a comeback in the second quarter from a prolonged slump, moderated to a still-strong 3¾ percent in the third quarter. Export growth slowed sharply in July and August from the heady pace of the second quarter, and manufacturing activity moderated as well. However, domestic demand indicators have been upbeat. Construction activity has been especially strong, suggesting that residential investment continued to recover from its weakness of the past two years. Retail sales and consumer confidence also strengthened and unemployment has trended down. We expect growth to remain around the current pace over the forecast period, boosted by continued accommodative monetary policy and the effects of recent structural reforms. Inflation rose to nearly 4½ percent in the third quarter, driven primarily by a jump in food prices, but it is expected to drop back to 3¼ percent by early next year and remain at that level over the remainder of the forecast period.

After a recession in the first half of the year, we estimate that **Brazil's** economy stabilized in the third quarter. Industrial production expanded in July and August, arresting its first-half decline. However, exports were flat in the third quarter, confidence indicators continued to deteriorate, and 12-month inflation rose to 6.7 percent in September, breaching the central bank's target band. Lackluster growth in recent years and persistently high inflation have pushed President Dilma Rousseff into a tight presidential race against the pro-business candidate Aécio Neves, the outcome of which will be decided on October 26. Regardless of who wins, the next government faces difficult challenges, and we expect the economy to recover only slowly and inflation to stay stubbornly high over the medium term. Brazilian financial markets have been fluctuating with the polling returns, as observers believe that if Neves wins, he would take steps to improve macroeconomic management and implement structural reforms. Growth has been weak in other South

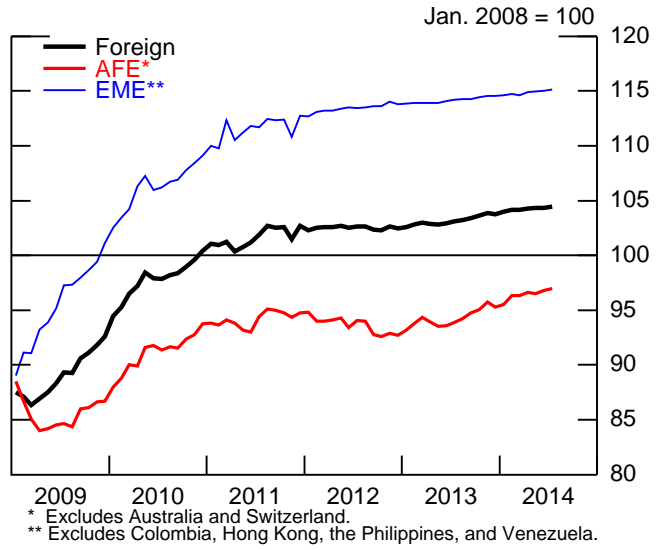
American economies. In **Chile**, the central bank cut its policy rate again in mid-October to support the weakening economy, which has been hurt by the falling prices of commodities, especially copper.

### Recent Foreign Indicators

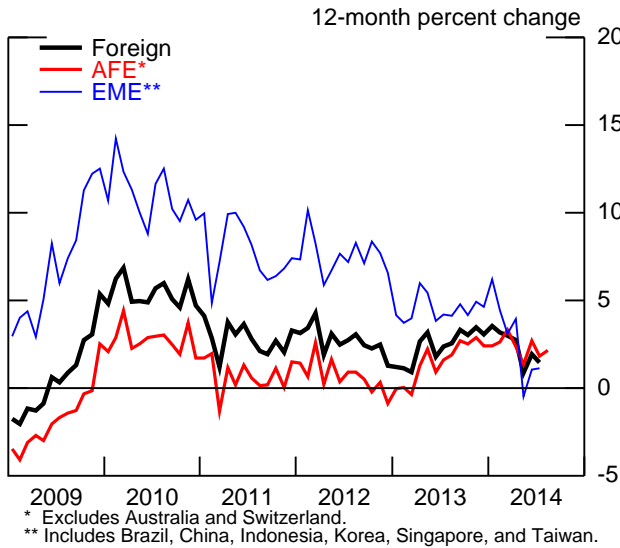
Nominal Exports



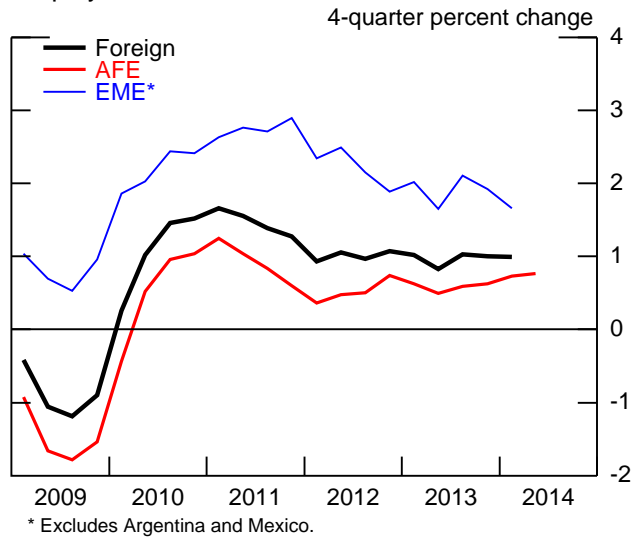
Industrial Production



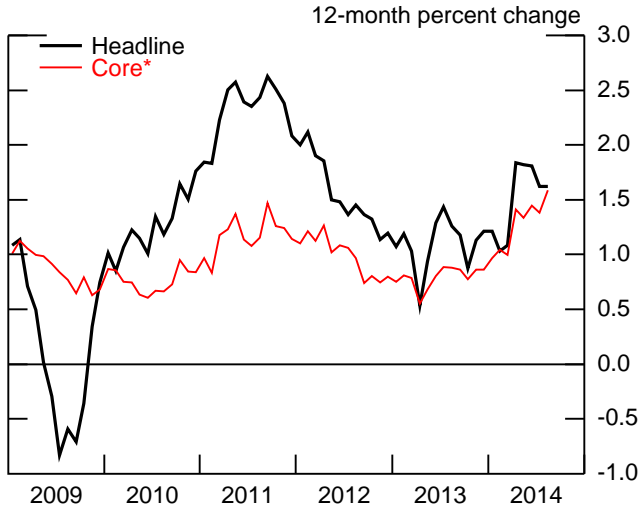
Retail Sales



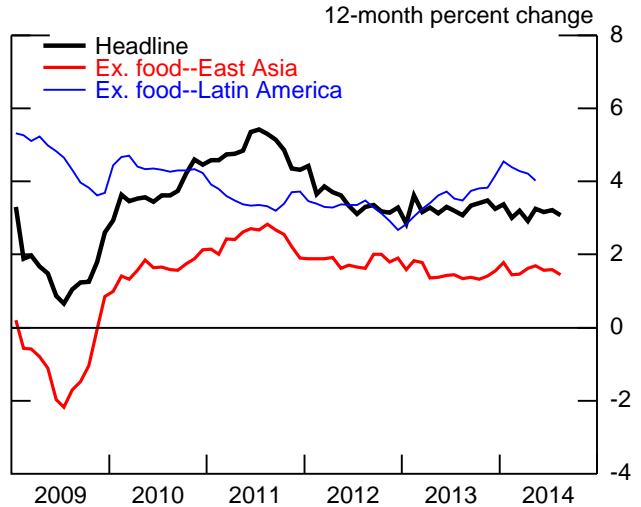
Employment



Consumer Prices: Advanced Foreign Economies



Consumer Prices: Emerging Market Economies



Note: Excludes Australia, Sweden, and Switzerland.  
\* Excludes all food and energy; staff calculation.  
Source: Haver Analytics and CEIC.

# The Foreign GDP Outlook

**Real GDP\***

Percent change, annual rate

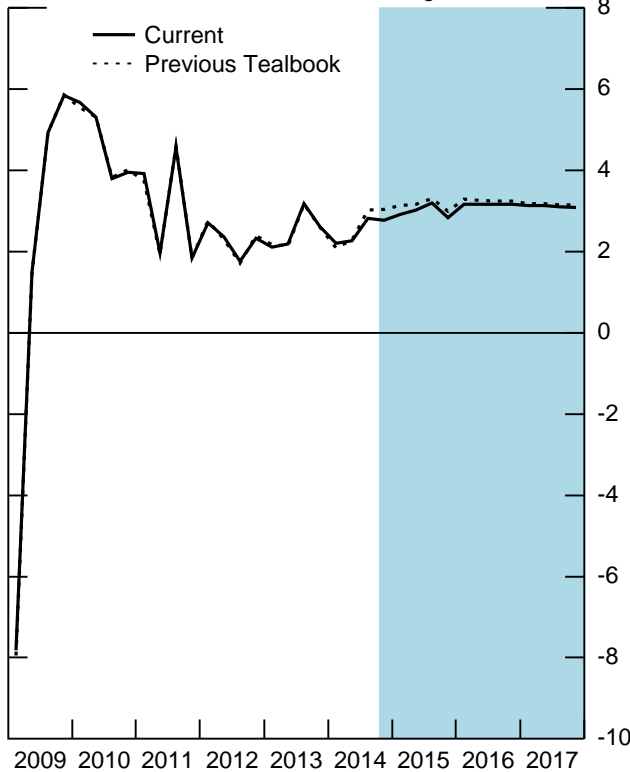
	2013	2014				2015	2016	2017
		Q1	Q2	Q3	Q4			
<b>1. Total Foreign</b>	<b>2.5</b>	<b>2.2</b>	<b>2.3</b>	<b>2.8</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>3.1</b>
<i>Previous Tealbook</i>	2.5	2.1	2.3	3.0	3.0	3.2	3.3	3.2
<b>2. Advanced Foreign Economies</b>	<b>1.9</b>	<b>1.9</b>	<b>1.1</b>	<b>1.9</b>	<b>1.8</b>	<b>2.0</b>	<b>2.1</b>	<b>2.1</b>
<i>Previous Tealbook</i>	2.0	1.8	1.0	2.1	2.1	2.1	2.2	2.1
3. Canada	2.7	0.9	3.1	2.5	2.4	2.5	2.5	2.3
4. Euro Area	0.4	1.2	0.3	0.7	0.8	1.5	1.9	2.0
5. Japan	2.4	6.0	-7.1	2.1	1.5	0.4	1.1	1.1
6. United Kingdom	2.7	3.0	3.7	2.8	2.5	2.4	2.4	2.3
<b>7. Emerging Market Economies</b>	<b>3.1</b>	<b>2.6</b>	<b>3.5</b>	<b>3.7</b>	<b>3.7</b>	<b>4.0</b>	<b>4.2</b>	<b>4.1</b>
<i>Previous Tealbook</i>	3.0	2.4	3.6	3.9	4.0	4.2	4.3	4.2
8. China	7.6	6.2	7.7	7.7	7.2	7.0	7.0	6.9
9. Emerging Asia ex. China	3.6	2.5	3.2	3.7	3.8	4.2	4.3	4.1
10. Mexico	0.6	1.8	4.2	3.7	3.5	3.5	3.6	3.6
11. Brazil	2.2	-0.6	-2.4	0.4	1.4	1.8	2.1	2.2

\* GDP aggregates weighted by shares of U.S. merchandise exports.

Int'l Econ Devel & Outlook

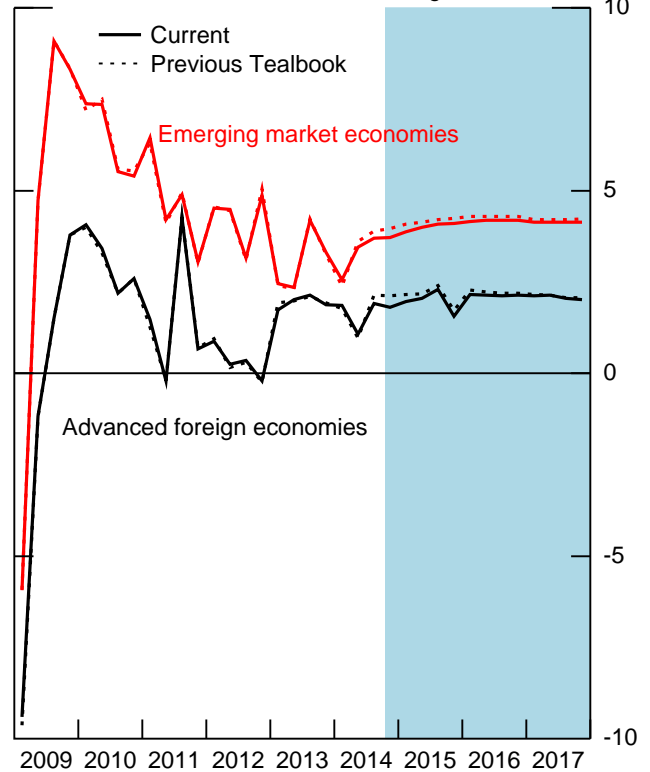
**Total Foreign GDP**

Percent change, annual rate



**Foreign GDP**

Percent change, annual rate



## The Foreign Inflation Outlook

### Consumer Prices\*

Percent change, annual rate

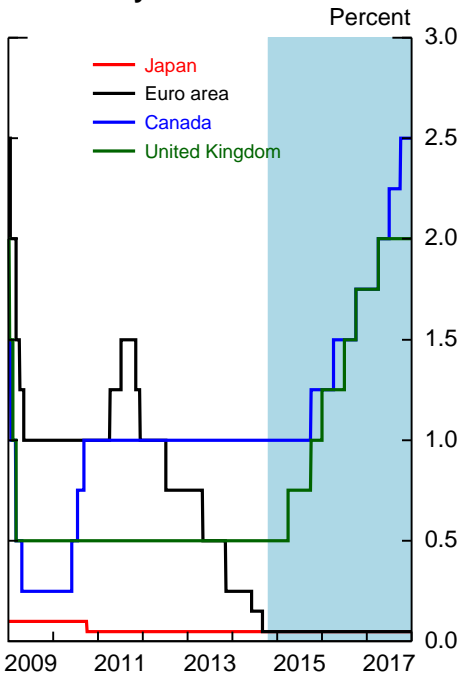
	2013	2014				2015	2016	2017
		Q1	Q2	Q3	Q4			
<b>1. Total Foreign</b>	<b>2.3</b>	<b>2.0</b>	<b>3.1</b>	<b>2.1</b>	<b>1.7</b>	<b>2.5</b>	<b>2.6</b>	<b>2.6</b>
<i>Previous Tealbook</i>	2.3	2.0	3.0	2.4	2.4	2.6	2.6	2.6
<b>2. Advanced Foreign Economies</b>	<b>1.0</b>	<b>1.1</b>	<b>3.2</b>	<b>1.1</b>	<b>0.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>
<i>Previous Tealbook</i>	1.0	1.1	3.3	1.2	1.2	1.7	1.6	1.7
3. Canada	1.0	2.8	3.7	1.3	0.2	1.5	1.9	2.0
4. Euro Area	0.8	0.2	0.4	0.6	0.4	1.2	1.5	1.6
5. Japan	1.4	0.4	9.4	1.5	0.1	2.1	1.2	1.3
6. United Kingdom	2.1	1.2	1.8	1.6	1.0	1.7	1.9	2.0
<b>7. Emerging Market Economies</b>	<b>3.4</b>	<b>2.6</b>	<b>2.9</b>	<b>2.8</b>	<b>2.9</b>	<b>3.3</b>	<b>3.3</b>	<b>3.3</b>
<i>Previous Tealbook</i>	3.3	2.7	2.8	3.3	3.3	3.4	3.3	3.3
8. China	2.9	0.8	2.0	2.2	1.9	3.0	3.0	3.0
9. Emerging Asia ex. China	3.4	2.9	3.1	1.8	3.2	3.5	3.5	3.5
10. Mexico	3.7	4.8	3.3	4.4	3.5	3.3	3.3	3.3
11. Brazil	5.9	6.5	7.4	6.2	6.2	5.6	5.5	5.5

\* CPI aggregates weighted by shares of U.S. non-oil imports.

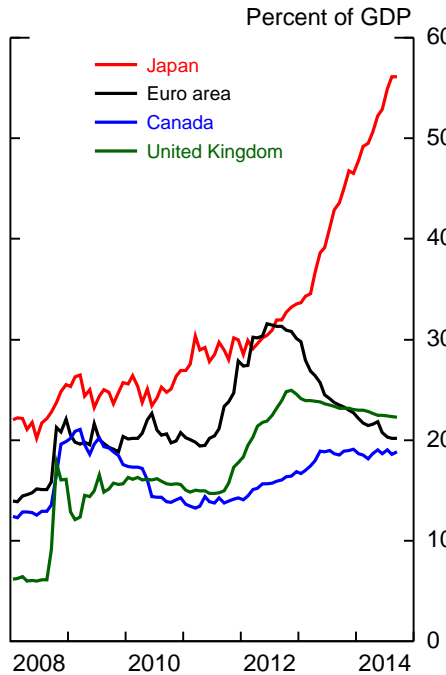
Int'l Econ Devel & Outlook

## Foreign Monetary Policy

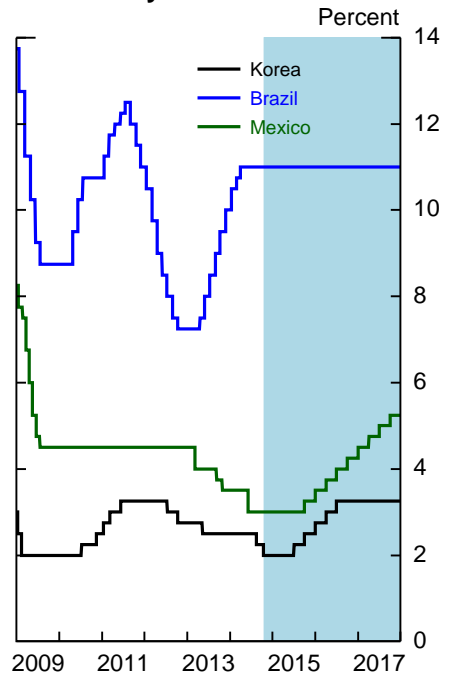
**AFE Policy Rates**



**AFE Central Bank Balance Sheets**

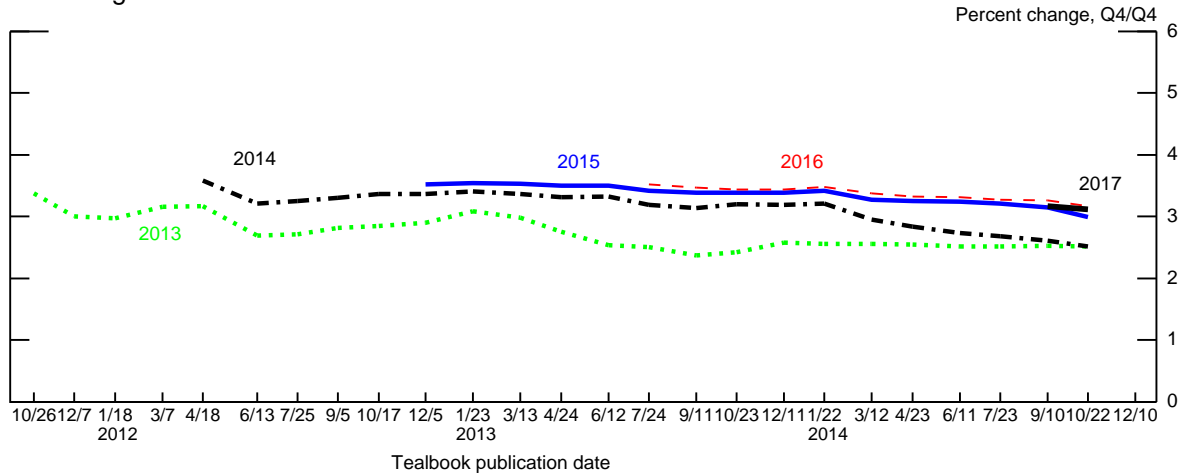


**EME Policy Rates**

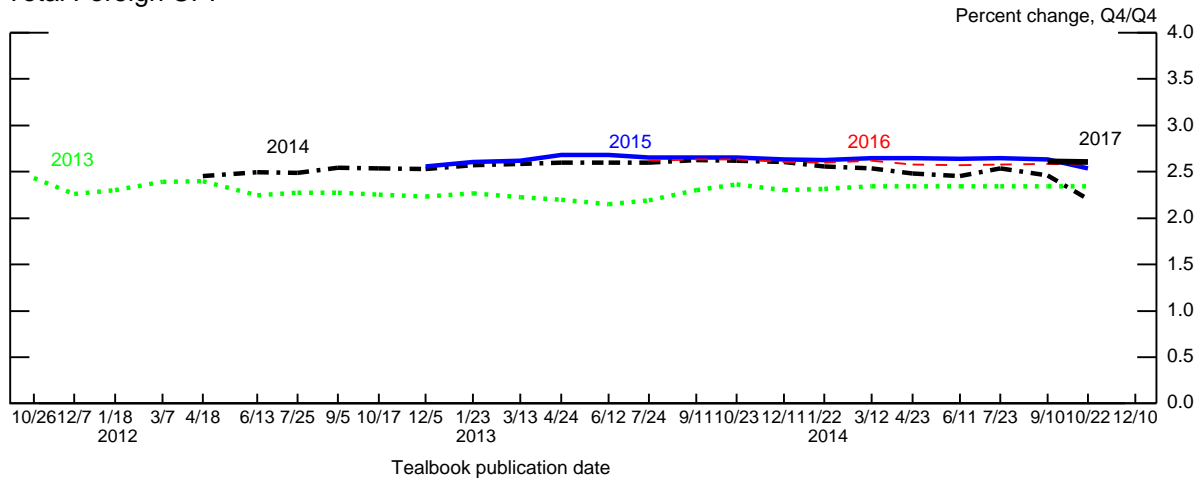


### Evolution of Staff's International Forecast

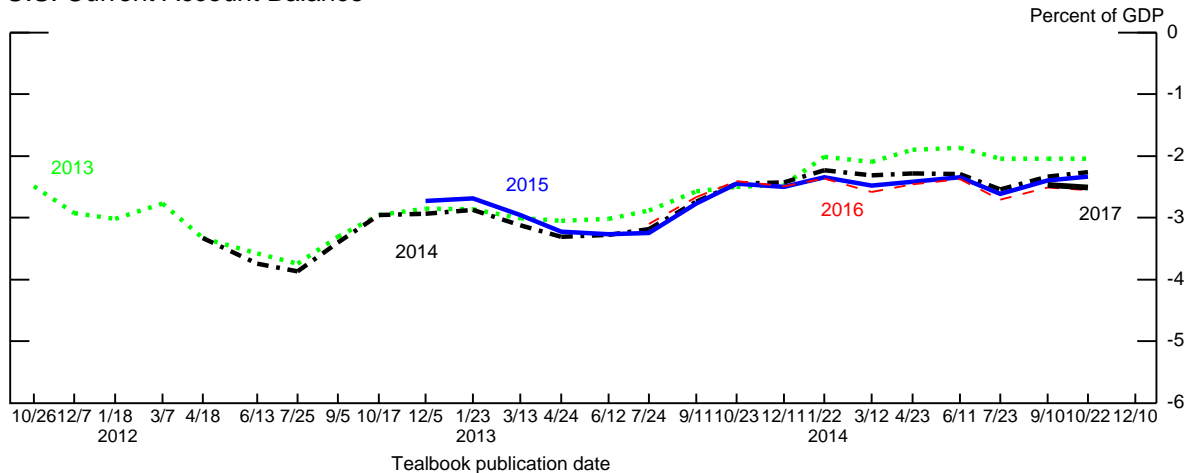
Total Foreign GDP



Total Foreign CPI



U.S. Current Account Balance



Int'l Econ Devel & Outlook

## Financial Developments

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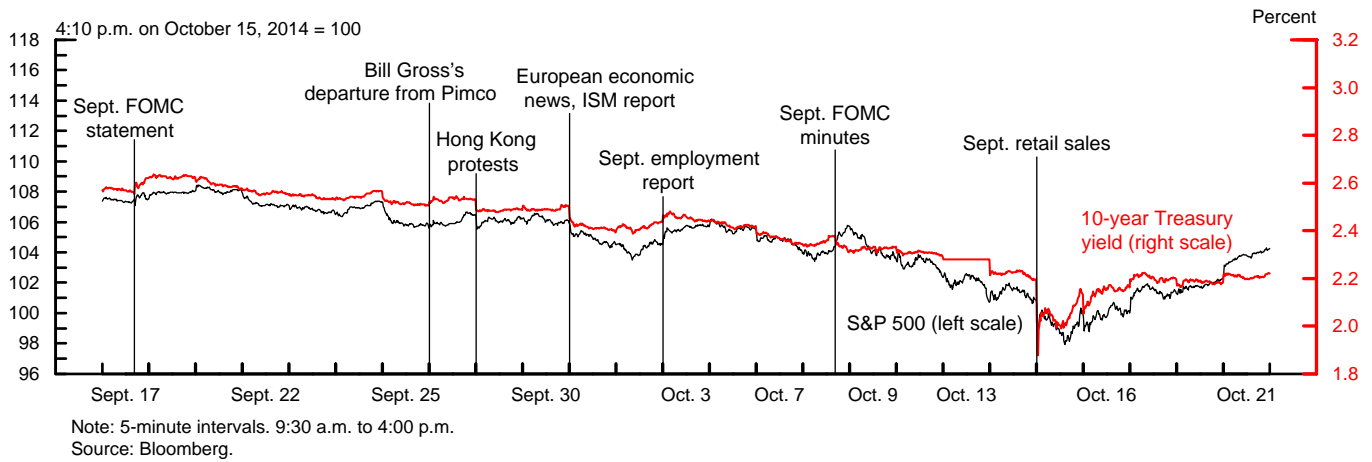
Over the intermeeting period, perceptions of a deterioration in economic prospects abroad, together with somewhat weaker-than-expected U.S. economic data releases, prompted a sharp pullback from risky assets. In addition, a number of technical factors reportedly contributed to volatile interest rate moves in mid-October. Concerns about a possible wider spread of Ebola also appeared to weigh on market sentiment at times. Federal Reserve communications were perceived as modestly more accommodative than expected on net.

- Yields on nominal Treasury securities declined 16 to 36 basis points across the curve, and market-based measures of inflation compensation fell amid declining commodity prices and lower-than-expected data on CPI inflation.
- The anticipated path of the federal funds rate implied by market quotes shifted down notably, on net, over the intermediate period. Respondents to the Open Market Desk's primary dealer survey, however, continued to see the second quarter of 2015 as the most likely time of liftoff.
- The S&P 500 index dropped 3 percent, and the VIX increased significantly over the period, albeit from very low levels. Corporate bond spreads widened, particularly for speculative-grade debt.
- Against the backdrop of heightened risks to the global economic outlook, broad foreign equity indexes fell substantially over the period. Benchmark sovereign yields abroad declined markedly. The nominal broad index of the dollar increased about 1¼ percent on net.
- Some money market rates declined leading into quarter-end, reportedly in part reflecting the announcement following the September FOMC meeting of changes to the overnight reverse repurchase agreement (ON RRP) exercise. After quarter-end, however, short-term rates generally moved back toward pre-announcement levels.
- In the October Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), banks reported that loan demand had strengthened, and

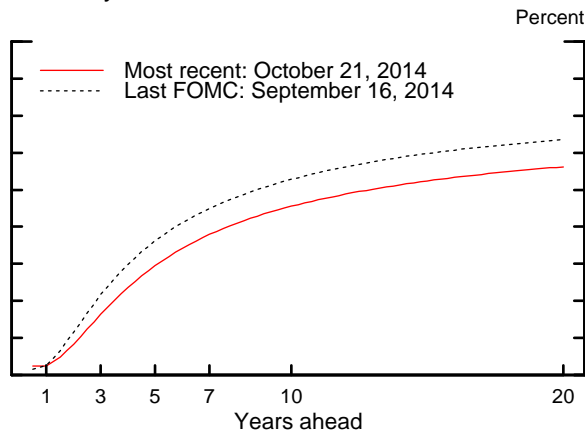


### Treasury Yields and Policy Expectations

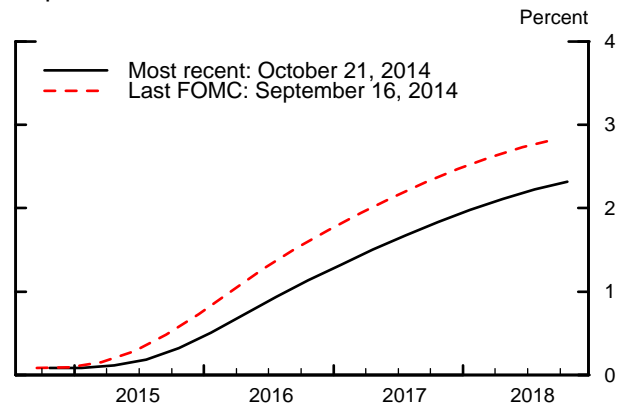
10-Year Treasury Yield and S&P 500 Index



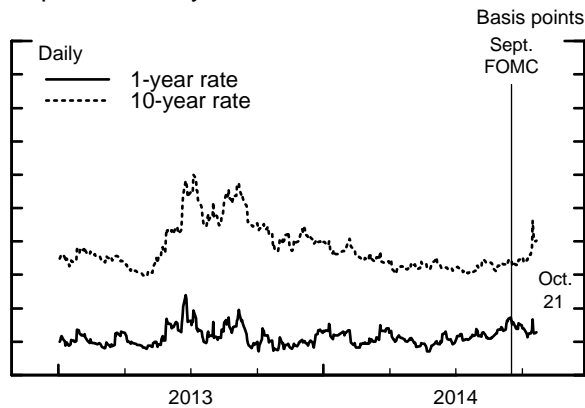
Treasury Yield Curve



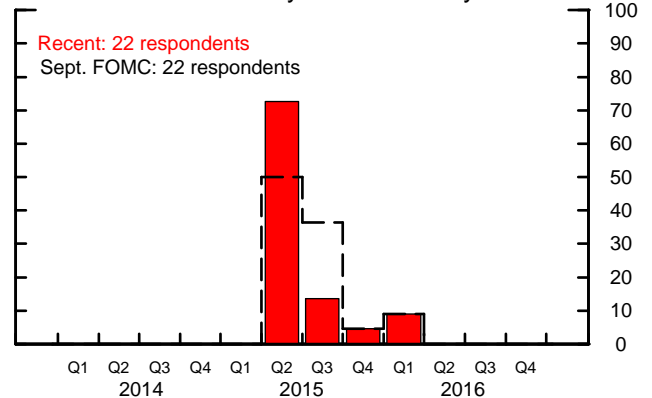
Implied Federal Funds Rate



Implied Volatility



Distribution of Modal Timing of First Rate Increase from the Desk's Primary Dealer Survey



Financial Developments

that lending standards had changed little for most major loan types in the third quarter.<sup>1</sup> Consumer credit continued to expand in the third quarter, while mortgage lending remained tepid. Issuance of corporate bonds and leveraged loans slowed sharply, at least for a time, during the week of heightened market volatility.

## **TREASURY YIELDS AND POLICY EXPECTATIONS**

Concerns about the global growth outlook and the implications for U.S. economic performance reportedly contributed to a significant decline in Treasury yields over the period. Growing anxiety about the potential further spread of Ebola may have put some downward pressure on rates, particularly in the past two weeks. U.S. economic data releases that were somewhat weaker than expected, on net, also contributed to the decline in Treasury yields. The Treasury market experienced significant volatility on October 15, with 5- and 10-year Treasury yields plunging intraday as much as 30 basis points. Swaption-implied volatilities on longer-term interest rates jumped on the day and have stayed elevated since then. While the release of the somewhat weaker-than-expected September U.S. retail sales data was seen as the proximate trigger for these sharp price movements, market participants indicated that a number of technical factors apparently amplified these moves (see the box “Treasury Market Volatility and Technical Factors”).

Communications on the day of the September FOMC meeting were interpreted as slightly less accommodative than expected, on balance, and pushed Treasury yields a bit higher. Market participants took note of the upward revisions in the median projected level for the federal funds rate at the end of 2015 and 2016 that were discussed at the postmeeting press conference.<sup>2</sup> By contrast, the September FOMC minutes were seen as modestly more accommodative than expected, as market participants reportedly highlighted policymakers’ concerns about the weaker global economic outlook and the potential adverse effects of the strengthening of the dollar. In addition, communications

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<sup>1</sup> See Vladimir Yankov (2014), “The October 2014 Senior Loan Officer Opinion Survey on Bank Lending Practices,” memorandum to the FOMC, October 23.

<sup>2</sup> The Policy Normalization Principles and Plans, released at the same time as the September FOMC statement, generally were seen as unsurprising, given the discussion in the minutes of recent meetings. However, changes to the ON RRP exercise, also announced on the same day, were largely unexpected, and commentary suggested that strains at quarter-end might partly have reflected the short period of time that investors had to adjust their funding and investment plans. In the event, however, the strains were moderate and short lived (see the box “Money Market Dynamics around Quarter-End”).

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## Treasury Market Volatility and Technical Factors

On the morning of October 15, yields on longer-term nominal Treasury securities dropped 30 basis points in about an hour before retracing much of the decline by the close of business (figure 1). Amid very high trading volumes, Treasury market liquidity worsened significantly: Bid-asked spreads widened and measures of market depth deteriorated (figure 2). In the Treasury futures market, volumes soared (figure 3). At the same time, market-based implied volatility on longer-term rates jumped. During the past two decades, intraday yield movements as large as those seen on October 15 occurred only six times, and these were mostly associated with major monetary policy announcements or foreign or domestic financial crises. Market commentary regarding last week's moves emphasized that many investors were surprised by the intraday volatility in rate markets because these markets are typically regarded as among the most liquid in the world.<sup>1</sup>

Market participants noted that the drivers of volatility on October 15 are still not entirely understood, in part because only limited market data is available for very recent events. The proximate trigger for the initial decrease in yields appears to have been the 8:30 a.m. release of weaker-than-expected retail sales data for September, which came against a backdrop of growing concerns regarding the global economic outlook, heightened uncertainty around central bank policy in Europe, and, to a lesser extent, fears of the further spread of Ebola. Longer-term rates fell by an additional 15 basis points or more in a few minutes after 9:30 a.m. before quickly reversing. Market liquidity, which was already significantly impaired, declined further and at a rapid pace amid these sharp moves in rates.

Market participants have pointed to a number of factors that may have contributed to the heightened volatility on the day. Many institutional investors, which had apparently been holding substantial positions designed to produce gains should U.S. interest rates increase, reportedly attempted to rapidly close out these trades.<sup>2</sup> The consequent decline in rates may have been amplified by a limited willingness of dealers to facilitate such transactions in light of more

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<sup>1</sup> Market participants noted that volatility and trading volumes increased considerably in other liquid markets, such as equity and foreign exchange markets, amid the volatility in rate markets.

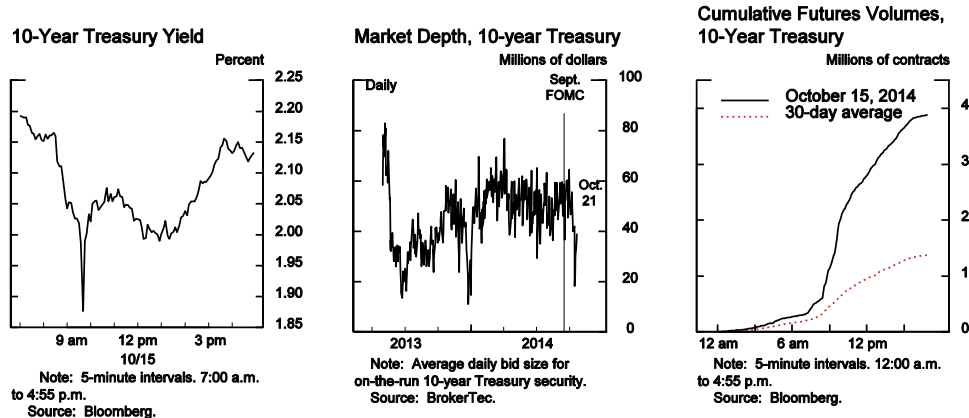
<sup>2</sup> An extensive theoretical literature has demonstrated how rising losses can force speculators who use leverage to exit their positions, exacerbating changes in prices and market liquidity. For canonical models, see Andrei Shleifer and Robert W. Vishny (1997), "The Limits of Arbitrage," *Journal of Finance*, vol. 52 (1), pp. 35–55; and Markus K. Brunnermeier and Lasse Heje Pedersen (2009), "Market Liquidity and Funding Liquidity," *Review of Financial Studies*, vol. 22 (6), pp. 2201–38.

With respect to the positions held by institutional investors, contacts also noted that a number of market participants who had sold volatility tried to unwind these positions or hedge their exposures by taking long positions in the cash Treasury market or in interest rate swaps, thus putting additional downward pressure on rates.

stringent regulatory constraints and more conservative risk-management practices after the financial crisis.<sup>3</sup> Some market participants suggested that a structural decline in the levels of staffing and experience at interest rate trading desks over the past few years also resulted in dealers being less willing to make markets when order flows are large and one-sided—as was reportedly the case on October 15.

Market commentary has also highlighted that an ongoing structural shift away from voice-driven, client-to-dealer trading and toward electronic trading that uses algorithm-based strategies was an important exacerbating factor. Increasingly, firms employ algorithms to accommodate small, idiosyncratic order flows, reducing the price impact caused by such flows by taking short-term, partially hedged positions in securities that appear mispriced. Under normal circumstances, these firms actively provide intraday liquidity to the market. However, on October 15, as certain internal thresholds were crossed, some of these firms chose to limit their activities for a time, contributing to the deterioration in market liquidity and sharp moves in prices. Some dealers and other market participants also reportedly pulled back from marketmaking. Nonetheless, conversations with market participants and a preliminary analysis of trading data suggest that some firms employing high-frequency trading strategies continued to transact in cash and futures markets, even as volatility surged. However, even the firms that continued to make markets reportedly did so only at wider bid-asked spreads and at significantly reduced trade sizes.

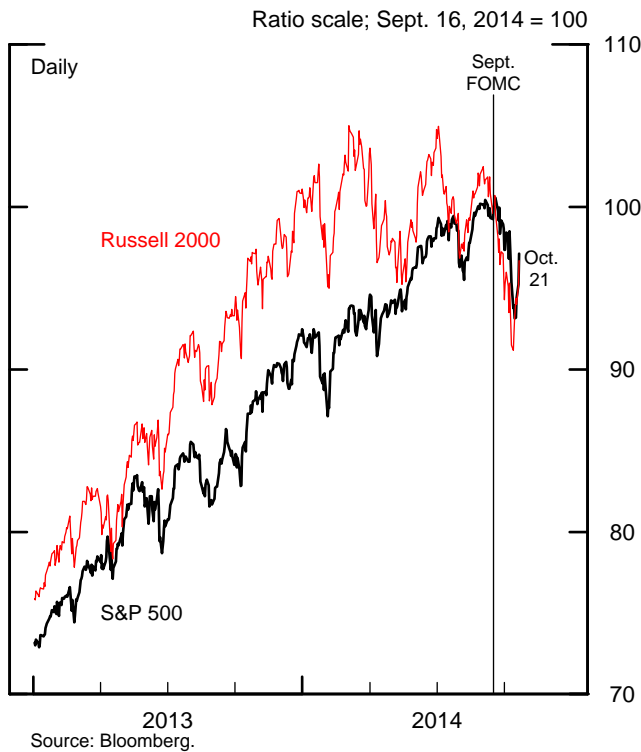
Given this overall mix of factors, yields fell sharply and volatility spiked, reportedly until other market participants—such as asset managers and nonfinancial corporations—stepped in by establishing short rate positions.



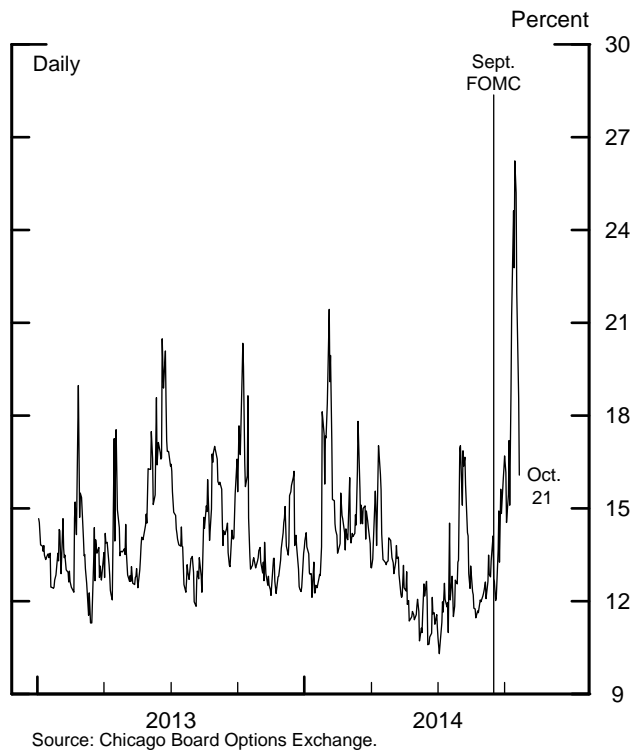
<sup>3</sup> A number of market participants also mentioned that the change in leadership and strategy at Pimco, which had been a significant seller of interest rate optionality in previous months, may have added to dealers’ reluctance to intermediate on October 15, as the cost of such protection was already high.

### Equity Prices and Bond Spreads

Equity Price Indexes

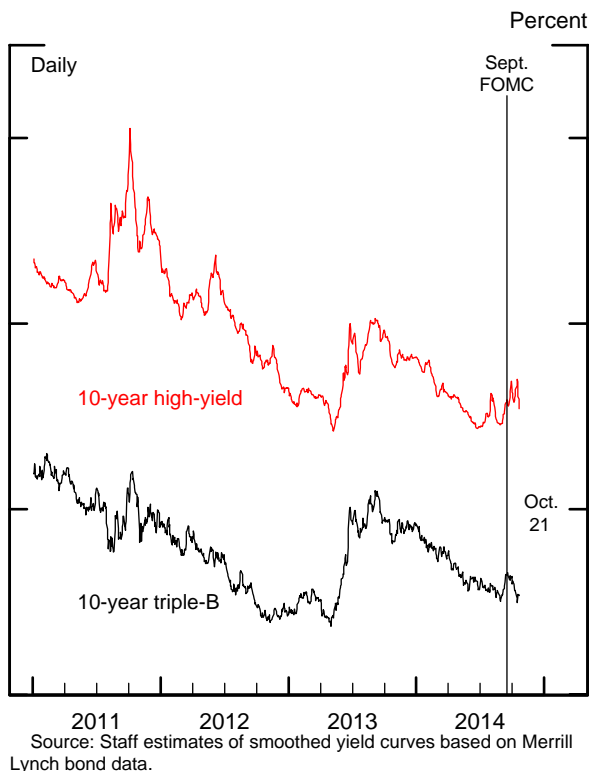


Implied Volatility on S&P 500 (VIX)

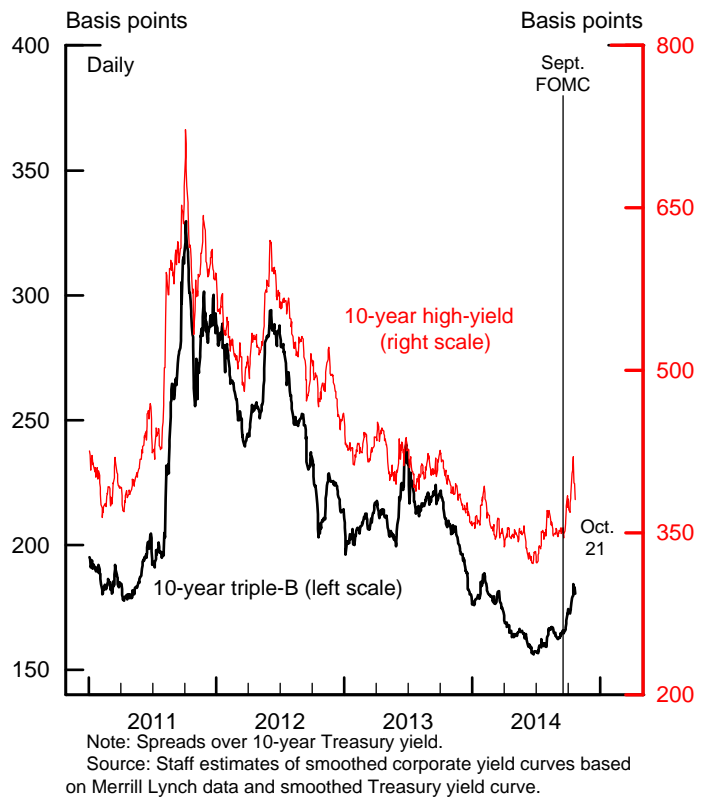


Financial Developments

Corporate Bond Yields



Corporate Bond Spreads



by some Committee participants later in the period reportedly reinforced the downward pressure on yields for a time.

On balance, the nominal Treasury yield curve flattened noticeably over the intermeeting period, with the 2-year yield moving down 16 basis points and the 10-year yield declining 36 basis points. TIPS-based inflation compensation over the next 5 years and 5 to 10 years ahead fell 26 basis points and 17 basis points, respectively, extending the declines seen since the summer. These moves reportedly reflected concerns about global growth and the risk of building disinflationary pressures, the lower-than-expected August CPI report, the decline in oil prices, and the appreciation of the dollar (see the box “Recent Declines in Inflation Compensation”). Inflation compensation measures based on inflation swaps showed declines similar to those of their TIPS-based counterparts. Current-coupon agency MBS yields decreased 37 basis points, about in line with the 10-year Treasury yield, while option-adjusted spreads on the production-coupon MBS decreased slightly.

The path of the federal funds rate based on financial market quotes shifted down markedly over the intermeeting period, with the end-of-2016 federal funds rate implied by OIS quotes declining nearly 50 basis points to about 1.20 percent. Market-based measures suggest that the timing of liftoff for the federal funds rate was pushed back to late 2015. Measures of near-term uncertainty regarding the path of policy moved down over the period on net.

In contrast to the decline implied by financial market quotes, the median dealer’s projected path of the federal funds rate in the Desk’s October survey was little changed. The distribution across dealers of the most likely timing of the liftoff in the federal funds rate became more concentrated at the second quarter of 2015, as some dealers shifted their expectations toward the second quarter from the third quarter. All but one dealer expected the asset purchases to end in October.

## **EQUITY PRICES AND BOND RISK SPREADS**

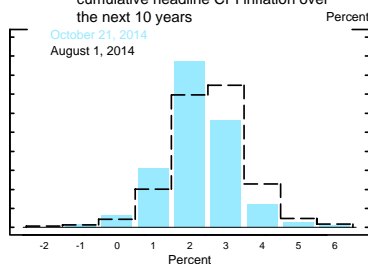
Broad domestic equity price indexes decreased about 3 percent over the intermeeting period on net. Stock prices for sectors more sensitive to global demand—such as basic materials, energy, and industrial goods—fell more than the broader index. The VIX, an index of option-implied volatility of one-month returns on the S&P 500 index, increased significantly over the period and briefly touched levels last seen in 2011.

## Recent Declines in Inflation Compensation

Measures of inflation compensation from Treasury Inflation-Protected Securities (TIPS) and inflation swaps have declined noticeably since early August, with 5-to-10-year-forward inflation compensation reaching levels last seen in 2011. In addition, the probability distribution for average headline CPI inflation over the next 10 years, as implied by inflation derivatives, suggests that the downward drift in inflation compensation over the period has been associated with a lower probability of relatively high inflation outcomes (figure 1).<sup>1</sup> In contrast, as can be seen from the blue and black curves in figure 2, measures of long-term inflation expectations based on *Blue Chip Economic Indicators* and the Desk's primary dealer surveys remained stable, on balance, over the past several months.<sup>2</sup>

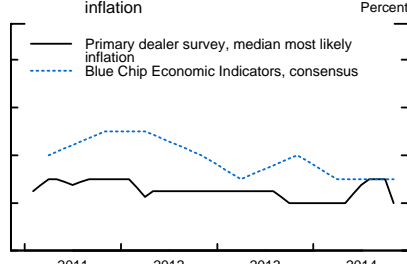
Market participants offered several potential explanations for the decline in the 5-to-10-year-forward inflation compensation, including some pass-through effects of recent low realized inflation and declines in oil prices on longer-horizon inflation compensation, as well as concerns about the growth outlook and disinflationary pressure abroad.<sup>3</sup> In addition, several market commentaries highlighted the notable negative co-movement between longer-run inflation compensation and the strength of the U.S. dollar in recent years, as can be seen in figure 3. Some of these proposed explanations would appear to be more relevant for shorter—rather than longer—horizon inflation compensation. For example, a stronger dollar could lead to disinflationary pressures by lowering import prices, but such effects are unlikely to persist for a prolonged period of time. Nonetheless, the strengthening of the dollar and the decline in longer-horizon inflation compensation could be reflecting the same underlying factors, such as a weaker

Figure 1. Probability distribution of annualized cumulative headline CPI inflation over the next 10 years



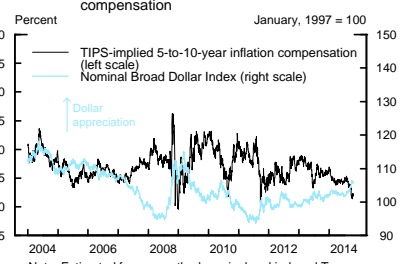
Note: Model-free probability distribution implied by inflation caps and floors.  
Source: BGC Partners; Bloomberg.

Figure 2. Survey-based expectations of long-term inflation



Source: Federal Reserve Bank of New York Survey of Primary Dealers; Blue Chip.

Figure 3. Dollar Index and forward inflation compensation



Note: Estimated from smoothed nominal and indexed Treasury yield curves.  
Source: Federal Reserve Bank of New York; Barclays; staff estimate.

<sup>1</sup> The probability distribution in figure 1 is derived under the assumption that average inflation takes discrete values at integer percentage points. Thus, the bar for, say, 3 percent, should perhaps be thought of as representing the probability attached to average inflation outcomes between 2.5 percent and 3.5 percent.

<sup>2</sup> Long-term inflation expectations based on *Blue Chip Economic Indicators* and the Desk's primary dealer surveys are, approximately, for the 7-to-11-year and 5-to-10-year horizons, respectively. Inflation expectations over the 5-to-10-year horizon based on the Survey of Professional Forecasters exhibited some declines in recent quarters, but that series is relatively volatile, and its recent declines represent reversals of earlier increases.

<sup>3</sup> One possible reason for the pass-through effect is that, in response to changes in the intermediate-term inflation outlook, investors are reportedly more likely to adjust their positions in the more recently issued, and thus more liquid, longer-term TIPS rather than the older-vintage TIPS with shorter remaining maturities. Market participants also cited safe-haven flows into nominal Treasury securities as a potential technical factor driving the decline in forward inflation compensation.



global economic outlook relative to the United States or safe-haven flows into U.S. nominal Treasury securities.

To examine some of these possible effects, we regress monthly changes in TIPS-implied inflation compensation on monthly changes in variables intended to capture the outlooks for domestic and global growth and inflation as well as safe-haven flows into nominal Treasury securities and liquidity conditions in the TIPS market.<sup>4</sup> We then use the model estimates to decompose the changes in inflation compensation between the end of July 2014 and the end of September 2014. Of both the 33 basis point and 36 basis point declines in the 5-year and 5-to-10-year inflation compensation measures, respectively, the regression attributes about 10 basis points to the stronger dollar. Other variables in the regression contribute 18 basis points and 7 basis points, respectively, to the declines in the two measures, while a significant portion of the move in forward inflation compensation remains unexplained. These results depend on the variables used in the decomposition, which may not capture the full extent of investors' concerns about the global economic and inflation outlook. For example, in response to a special question in the Desk's October primary dealer survey, dealers attributed a significant portion of the decline in forward inflation compensation from early September through mid-October to lower expected inflation and inflation risk premiums.

**Decomposition of the changes in the 5-year and 5-to-10-year inflation compensation implied by TIPS, end of July 2014 to end of September 2014, in basis points**

	5-year IC		5-to-10-year IC	
	Parameter	Change	Parameter	Change
Constant	-1.17	-2	-.49	-1
Nonfarm payrolls	.01	-2	.00	0
Michigan inflation expectations	10.97	1	.61	0
Euro-area PMI	3.65**	-6	.13	0
Euro-area inflation expectations	-.51	0	-1.02	0
Oil price	1.37***	-10	-.27	2
Broad dollar index	-2.94*	-9	-3.21***	-10
VIX	-.20	0	.01	0
TIPS liquidity	-.65***	1	-.98***	-7
Change explained by the model		-27		-17
Actual change		-33		-36

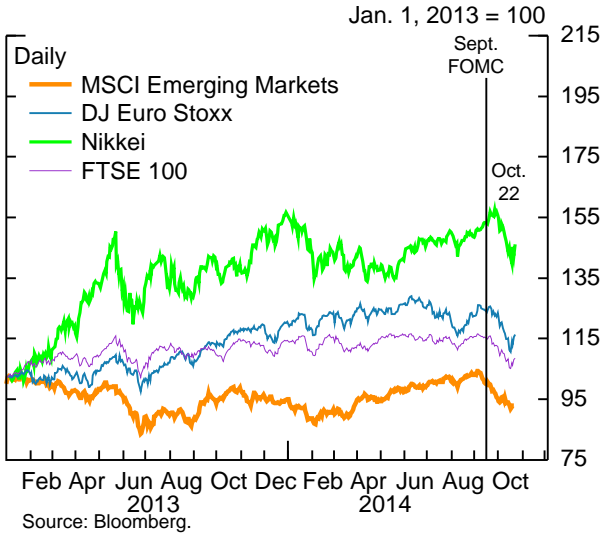
\*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10% levels, respectively. IC means inflation compensation.

<sup>4</sup> The list of independent variables intended to capture economic conditions and outlook includes nonfarm payrolls, median expectations for average inflation over the next 5 to 10 years from the Thomson Reuters/University of Michigan Surveys of Consumers, the purchasing managers index for the euro area (to capture European growth concerns), and inflation expectations for the euro area over the next year derived from the Consensus Forecasts survey. We also include factors with potential pass-through effects on longer-term inflation compensation, such as the West Texas Intermediate spot oil price and the nominal broad index of the dollar. Finally, we include the VIX to capture risk aversion and safe-haven demand effects, and the spreads between inflation swaps- and TIPS-implied measures of inflation compensation at the corresponding horizons to capture liquidity conditions in the TIPS market. We estimate the model using monthly data from September 2004 to September 2014, the latest month for which all data are available.

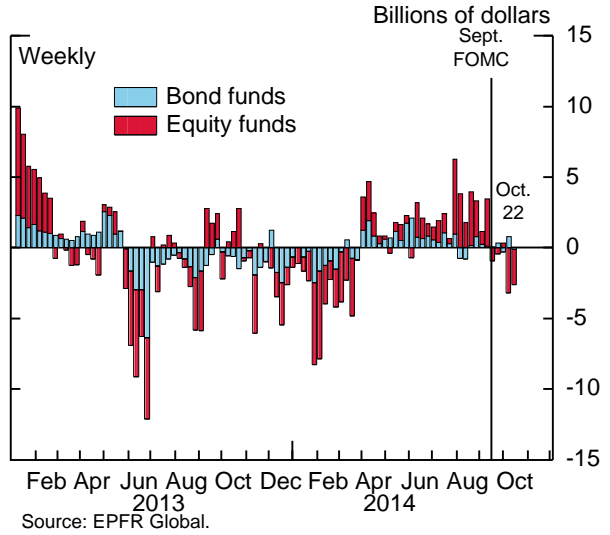


### Foreign Developments

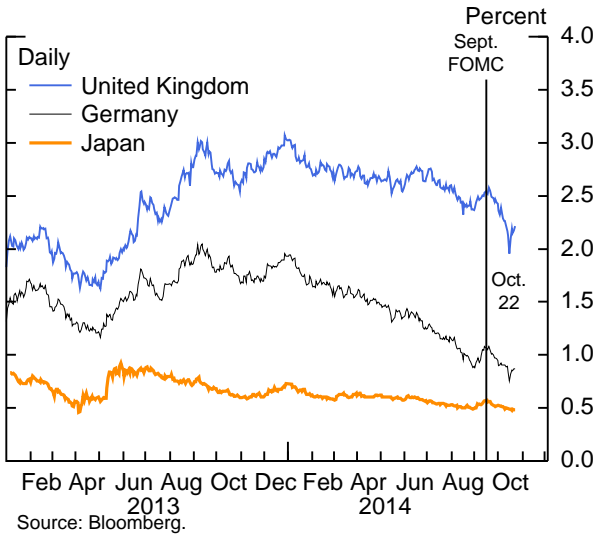
Stock Price Indexes



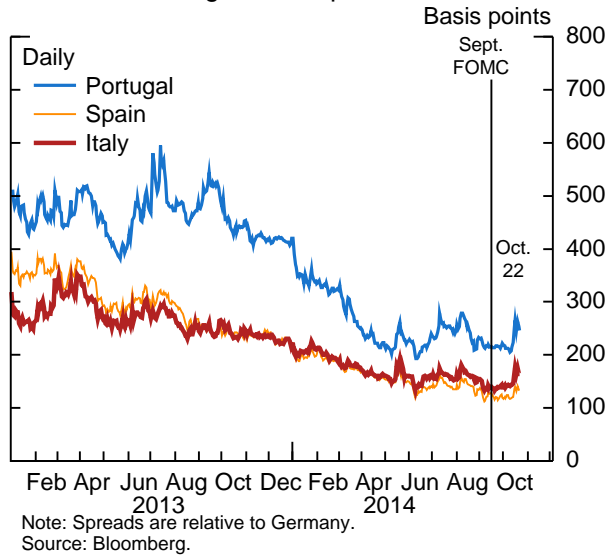
EME Fund Flows



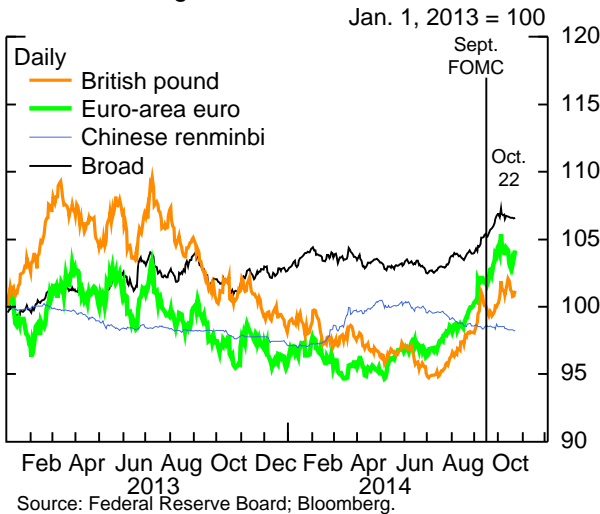
AFE 10-Year Nominal Benchmark Yields



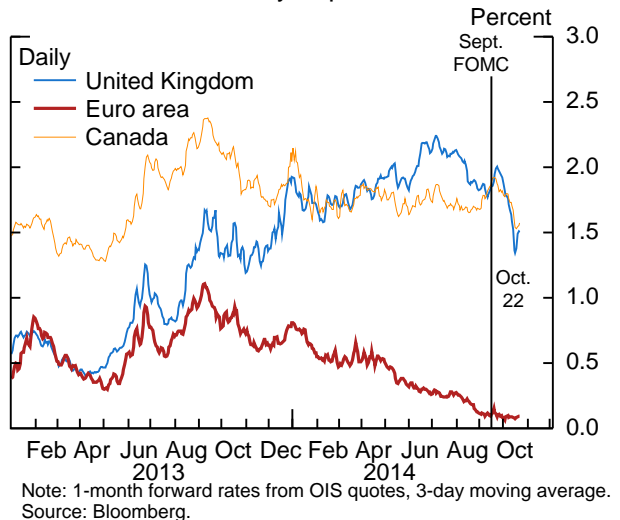
10-Year Sovereign Bond Spreads



Dollar Exchange Rate Indexes



36-Month-Ahead Policy Expectations



Financial Developments

About one-third of firms in the S&P 500 index have reported earnings for the third quarter, with the reports generally about in line with expectations. As a consequence, earnings projections from Wall Street analysts were little changed and continued to imply modest growth in earnings per share compared with the prior quarter.

Yields on investment-grade corporate bonds decreased less than those on comparable-maturity Treasury securities, while yields on speculative-grade bonds decreased a bit, on net. As a result, corporate bond spreads widened, particularly for speculative-grade securities. Market functioning and liquidity in the corporate bond market were little changed even amid the large price moves.<sup>3</sup>

## FOREIGN DEVELOPMENTS

Over the intermeeting period, financial market participants appeared to become more anxious about the outlook for global growth, especially in the euro area and China. In mid-October, a range of asset classes—including commodities, equities, and bonds—experienced large price swings. Measures of implied volatility increased in many markets, especially those for equities. All told, since the September FOMC meeting, major equity indexes are down between 6 and 10 percent in Europe, 7 percent in Japan, and a bit less in emerging Asia. Net flows into EME-dedicated mutual funds turned negative over the past two weeks.

Reflecting, to varying degrees, concerns about the economy, declining inflation expectations, and anticipations of easier monetary policy, sovereign yields fell in most foreign advanced economies. In line with U.S. yields, the U.K. 10-year sovereign yield fell almost 40 basis points. German yields declined to just below 90 basis points, as euro-area inflation expectations 5 to 10 years ahead fell to 1.8 percent, a new record low. Spreads of yields on 10-year sovereign bonds over comparable German yields widened a bit in Italy and Portugal, and they increased more than 2 percentage points in Greece, in part reflecting concerns that Greece may exit its IMF program prematurely. Spreads for most EME bonds also widened.

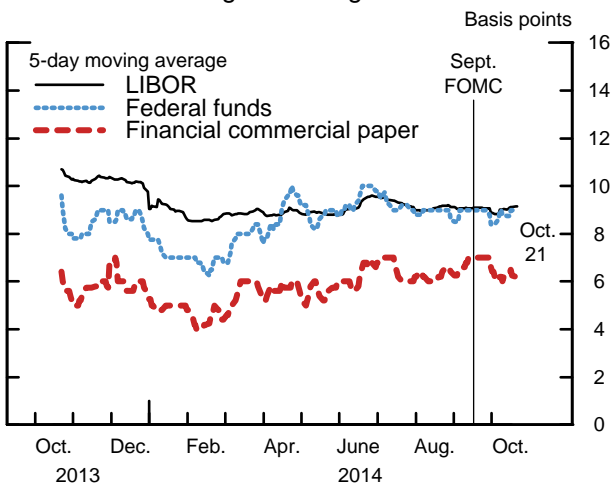
Over the first half of the intermeeting period, the dollar continued to appreciate against most of the currencies of our trading partners, with the prominent exception of the

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<sup>3</sup> Some market participants had speculated that, following Bill Gross's departure in late September, asset classes to which Pimco's largest fund reportedly had sizable exposures, such as high-yield bonds, could come under pressure. However, such pressure did not materialize.

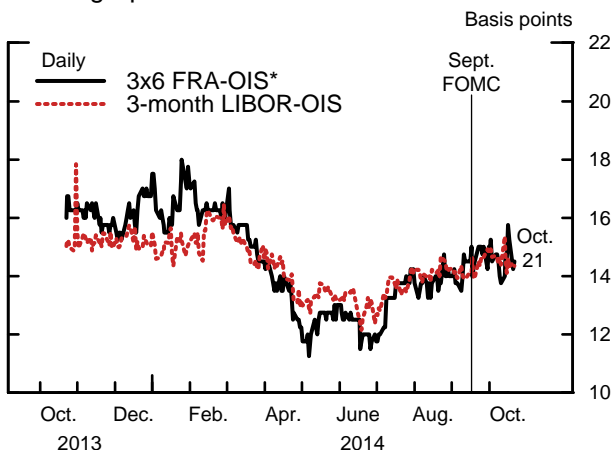
# Short-Term Funding Markets and Federal Reserve Operations

## Unsecured Overnight Funding Rates



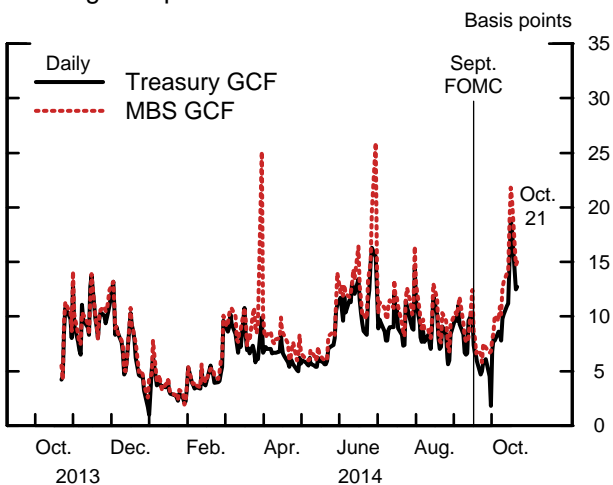
Source: Bloomberg; Depository Trust & Clearing Corporation.

## Funding Spreads



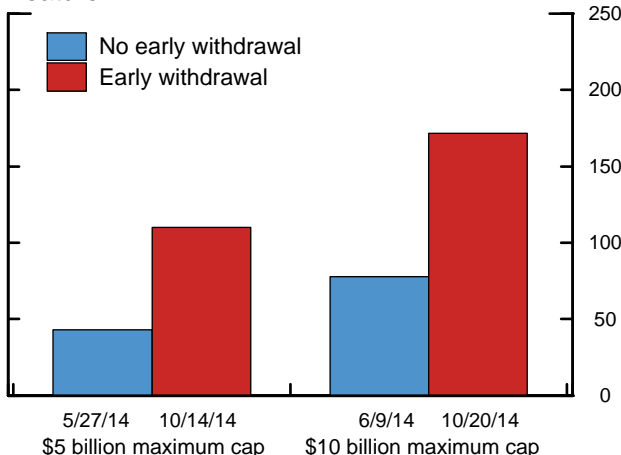
\* Spread is calculated from a LIBOR forward rate agreement (FRA) 3 to 6 months in the future and the forward overnight index swap (OIS) rate for the same period.  
 Source: Bloomberg.

## Overnight Repo Rates



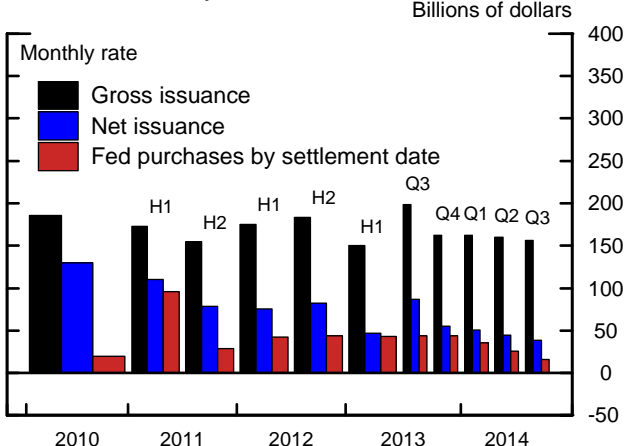
Note: GCF is general collateral finance.  
 Source: Bloomberg.

## Demand for TDF Deposits with Early Withdrawal Feature



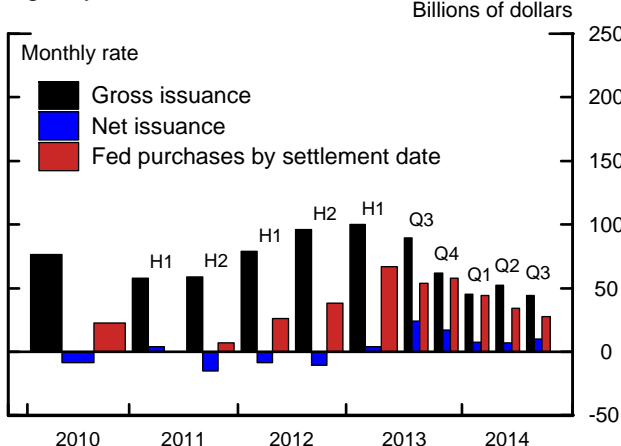
Note: TDF is Term Deposit Facility.  
 Source: Federal Reserve Board.

## Nominal Treasury Issuance and Fed Purchases



Note: Excludes bills.  
 Source: U.S. Department of the Treasury; Federal Reserve Bank of New York.

## Agency MBS Issuance and Fed Purchases



Note: Issuance and purchases of 30-year fixed-rate agency MBS.  
 Source: Federal Reserve Bank of New York.

Chinese renminbi. The run-up reflected a combination of downbeat data abroad and U.S. data that were generally viewed as positive. In addition, the ongoing decline in market-based policy expectations in the euro area and the United Kingdom likely contributed to the rise in the value of the dollar. (See the box “The Recent Appreciation of the Dollar” in the International Economic Developments and Outlook section.) Since early October, the dollar has depreciated slightly, as concerns emerged about U.S. economic growth and as expectations for the path of the federal funds rate moved down. On net over the intermeeting period, the staff’s broad nominal dollar index increased about 1¼ percent.

## **SHORT-TERM FUNDING MARKETS AND FEDERAL RESERVE OPERATIONS**

Despite some volatility related to quarter-end, conditions in unsecured funding markets were little changed, on net, over the intermeeting period.<sup>4</sup> In secured funding markets, some money market rates fell in the days leading into quarter-end, reportedly reflecting in part the announcement of the changes to the ON RRP exercise following the September FOMC meeting (see the box “Money Market Dynamics around Quarter-End”).<sup>5</sup> After quarter-end, however, short-term rates generally moved back toward their pre-announcement levels. More recently, general collateral repo rates increased in mid-October and have remained elevated, reflecting a number of factors.<sup>6</sup> Market participants are reportedly focused on the approaching year-end, but, thus far, repo rates over the turn of the year implied by futures contracts do not point to significant pressures.

Over the intermeeting period, the Federal Reserve began a series of expanded test operations of the Term Deposit Facility involving offerings of deposits with an early withdrawal feature. Deposits awarded in the first two operations—at \$110 billion and

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<sup>4</sup> The effective federal funds rate averaged 9 basis points over the intermeeting period, with the intraday standard deviation averaging about 4 basis points.

<sup>5</sup> At its September meeting, the Committee announced the introduction of a \$300 billion aggregate cap, an auction process to allocate ON RRPs when the cap is binding, and an increase in the individual maximum bid size from \$10 billion to \$30 billion.

<sup>6</sup> In addition to the usual supply and demand factors that can lead to firmness in repo rates, such as an increase in net Treasury securities outstanding and a decrease in demand by Freddie Mac ahead of its payment date for MBS principal and interest, market participants also pointed to some investors unwinding short Treasury positions, which puts upward pressure on these repo rates.

## Money Market Dynamics around Quarter-End

Money market dynamics around the September quarter-end were influenced by three factors: dealer firms' continued reductions in their repo holdings, the Treasury's bill paydowns since early September, and unexpected changes to the overnight reverse repurchase agreement (ON RRP) operations announced close to quarter-end. Taken together, these factors likely led to softer money market rates leading up to and including quarter-end, and, to a lesser extent, just after quarter-end.

Going into quarter-end, cash lenders reportedly faced more limited investment opportunities, reflecting the efforts of major borrowers—including dealers and foreign banks—to pare their balance sheets, especially on the quarter-end statement date, but also more generally over time (figure 1, next page). A seasonal decline in Treasury bills outstanding further contributed to the reduction in risk-free short-term investments.

Separately, following the September FOMC meeting, several changes were made to the parameters of the ON RRP operations. Effective September 22, the individual maximum bid was raised from \$10 billion to \$30 billion, a \$300 billion overall size limit for each operation was added, and an auction mechanism to allocate ON RRP when the overall limit binds was introduced. These changes were largely unexpected by the market and may have been responsible for the decline in money market yields near quarter-end, as money fund managers who were unsure they would be able to place cash at the ON RRP scrambled to find alternative investments. Notably, there was a shift lower in the distribution of triparty repo rates at that time (figure 2, next page). Yields on Treasury bills with relatively short remaining maturities also moved down after the announcement.

While money markets were strained over quarter-end, the strains were less severe than some had anticipated, likely reflecting in part investors' efforts to reallocate funds ahead of quarter-end. Counterparties submitted \$407 billion in bids to the ON RRP operation on the quarter-end at a weighted-average rate of negative 0.4 basis points, including many money market fund bids at negative rates. The overall limit of \$300 billion was awarded at a stop-out rate of 0 basis points. Consistent with previous quarter-ends, balances left with custodian banks rose about \$80 billion, as money market funds were unable to place this cash elsewhere.<sup>1</sup> In repo markets more broadly, there was a larger decline in repo rates and volumes on September 30 than on the previous three quarter-ends (table 1, next page). The distribution of triparty repo rates shifted down further on quarter-end (figure 2, red bars) and there was some intraday volatility in rates on very light volume, especially after the close of the ON RRP operation.

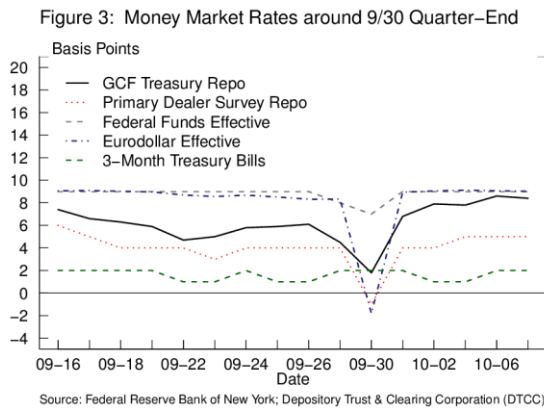
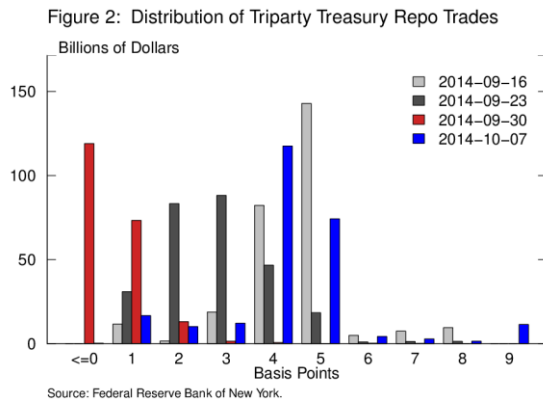
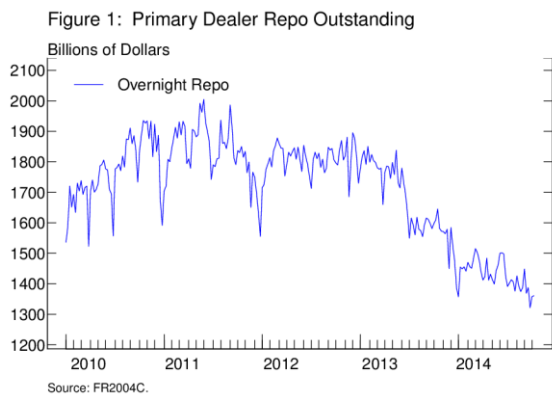
In unsecured markets, behavior this quarter-end was similar to previous quarter-ends, with volumes falling by more than half (table 1). The exception was the brokered Eurodollar rate, which printed at negative 2 basis points (figure 3, next page). This is the first time the Eurodollar rate has printed negative since data collection began in March 2010 and appeared to

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<sup>1</sup> Of the \$107 billion not allocated in the ON RRP operation, \$60 billion was from money funds and likely went to custodian banks.

reflect the trades of one or more large firms who had very limited alternatives over the quarter-end.

Despite the strain before and on quarter-end, most rates and volumes quickly returned to normal over subsequent days, with both secured and unsecured markets trading at pre-quarter-end levels the next day. The distribution of triparty repo rates shifted back up the week after quarter-end to nearly their pre-announcement levels (figure 2, blue bars). Triparty repo volumes are still down somewhat from their pre-quarter-end amounts and the Treasury bill curve remains persistently lower in longer-dated bills, perhaps reflecting in part market participants' demand for collateral heading into year-end.



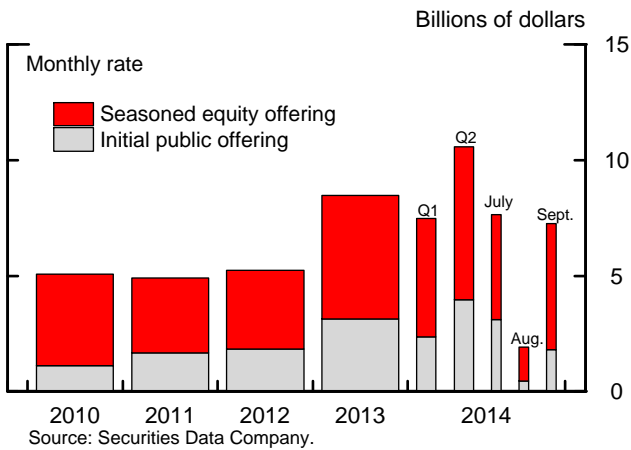
**Table 1: Change on Quarter-End Relative to Prior 10-Day Average**

	Brokered Federal Funds		Brokered Eurodollar		GCF Repo	
	Rate (bps)	Volume (%)	Rate (bps)	Volume (%)	Rate (bps)	Volume (%)
2013:Q4	-2	-61	-5	-58	-5	-27
2014:Q1	-2	-32	-4	-59	3	-12
2014:Q2	-1	-56	-6	-66	4	-24
2014:Q3	-2	-56	-11	-63	-4	-47

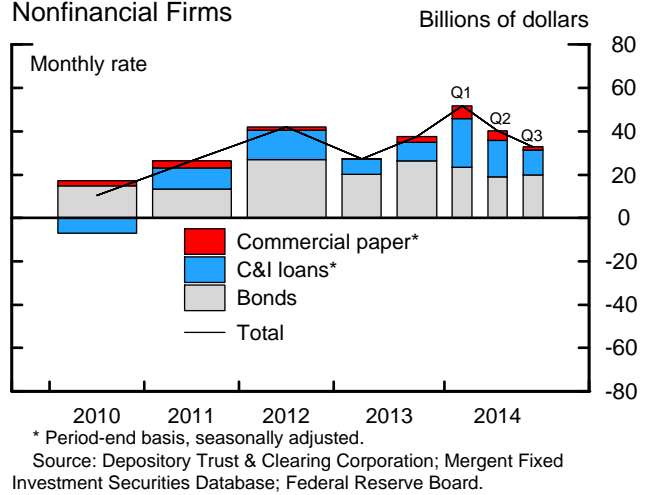
Source: Federal Reserve Bank of New York; Depository Trust & Clearing Corporation (DTCC).

### Business Finance

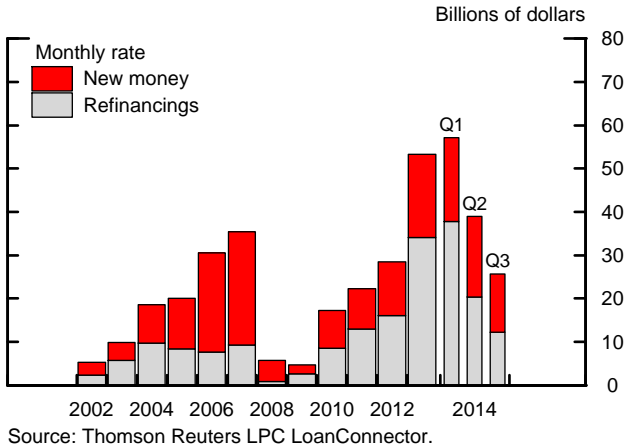
Gross Proceeds from Nonfinancial Equity Issuance



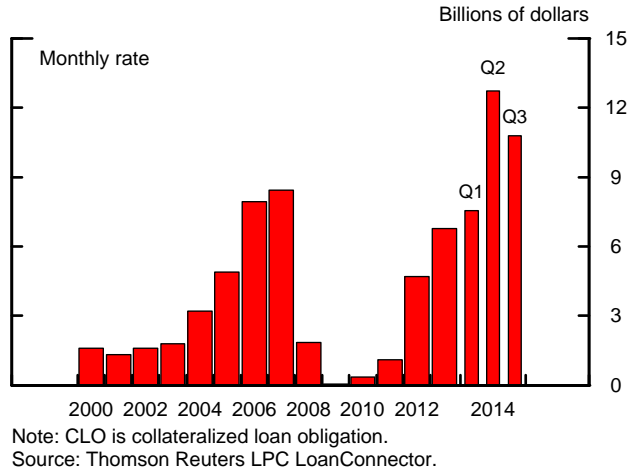
Selected Components of Net Debt Financing, Nonfinancial Firms



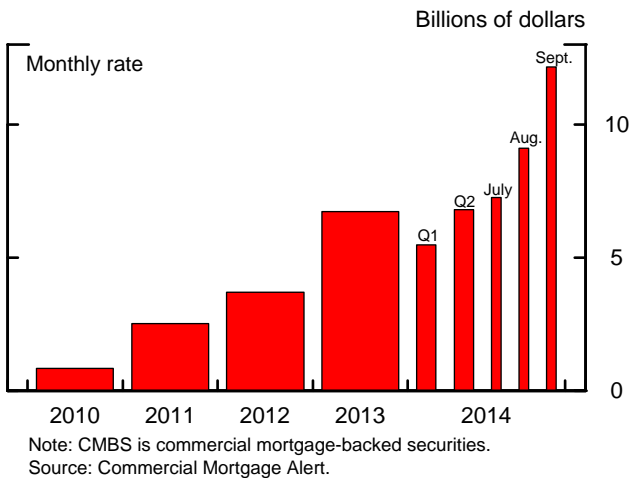
Institutional Leveraged Loan Issuance, by Purpose



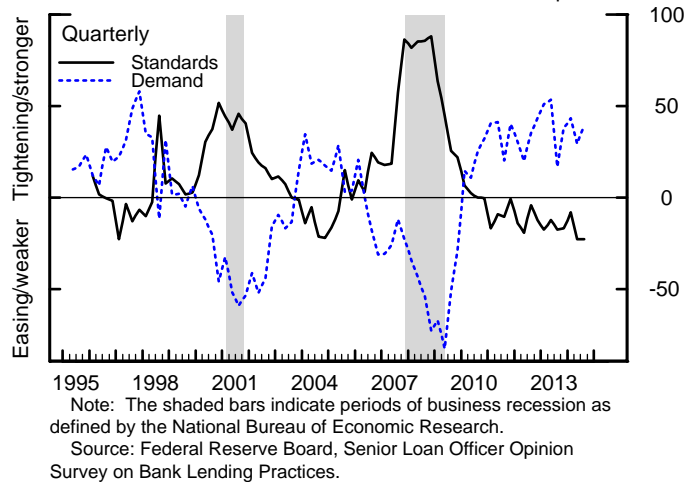
U.S. CLO Issuance



CMBS Issuance



Change in Standards and Demand for Commercial Real Estate Loans



Financial Developments



\$172 billion, respectively—were more than double those at earlier operations without the early withdrawal feature.<sup>7</sup>

Notwithstanding the extreme intraday swing in mid-October, liquidity conditions in the Treasury markets changed little on net. Over the intermeeting period, the Desk purchased \$13 billion of Treasury securities and \$32 billion of agency MBS securities. The Desk conducted \$175 million of dollar rolls. As of October 21, the Federal Reserve's outright holdings of Treasury securities topped \$2.4 trillion, and its holdings of mortgage-backed securities were about \$1.7 trillion.<sup>8</sup>

MBS liquidity conditions were somewhat strained when market volatility picked up around the middle of the month. Of note, one Federal Reserve MBS purchase operation on October 15, at the time of heightened market volatility, was extended because of lack of participation by some dealers, and offer-to-cover ratios in some securities reached new lows that week. The ratio of the Desk's MBS settlements to gross issuance of these securities increased in September to 47 percent, mainly reflecting an uptick in settlements.

## **BUSINESS FINANCE**

The pace of financing by nonfinancial businesses picked up in both credit and equity markets in September and early October. Gross issuance of investment- and speculative-grade bonds rebounded from seasonal lows over the summer. An increasing number of speculative-grade issuers reported that they would use the proceeds of bond issues to finance mergers and acquisitions (M&A).<sup>9</sup> Gross public equity issuance by domestic nonfinancial firms also picked up from a lackluster pace in the previous months,

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<sup>7</sup> In the first two operations, the maximum award amount per counterparty was \$5 billion and \$10 billion, respectively, and the interest rate was 1 basis point above the IOER rate in both cases.

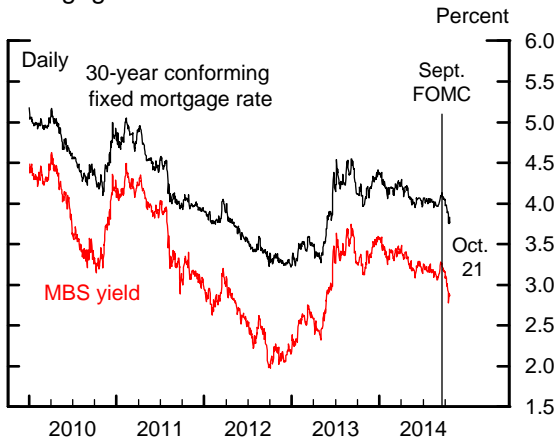
<sup>8</sup> The Treasury Department auctioned \$154 billion of nominal fixed-rate coupon securities and \$13 billion of TIPS over the intermeeting period, with bid-to-cover ratios somewhat weaker than recent averages. The Treasury's \$13 billion second reopening of the two-year Floating Rate Note on September 24 was characterized as well received. On October 9, the Treasury conducted a small-value buyback operation in the amount of \$22 million to ensure operational readiness of its buyback infrastructure. This operation was not a precursor or signal of any pending policy changes regarding the Treasury's use of buybacks more broadly.

<sup>9</sup> Supported by record corporate cash holdings and favorable financing conditions, the pace of cash-financed mergers also picked up notably in the third quarter, driven by an increase in the number of medium- and small-sized deals.



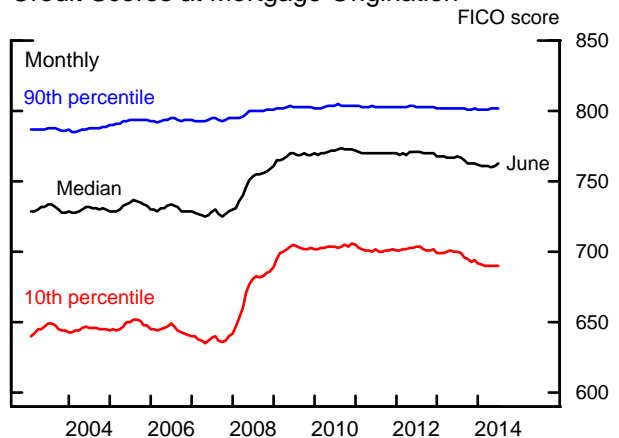
### Household Finance

Mortgage Rate and MBS Yield



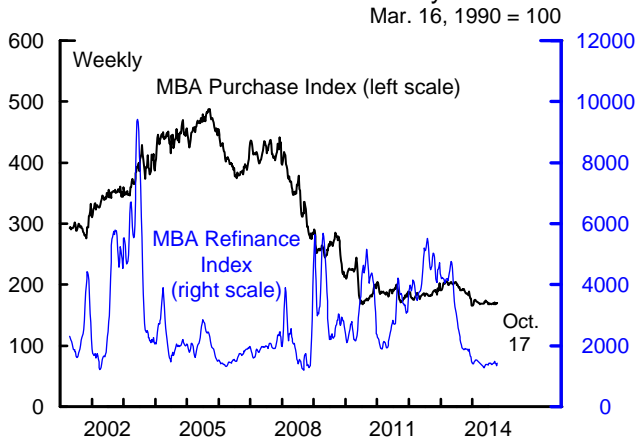
Note: The MBS yield is the Fannie Mae 30-year current-coupon rate.  
Source: For MBS yield, Barclays; for mortgage rate, Loansifter.

Credit Scores at Mortgage Origination



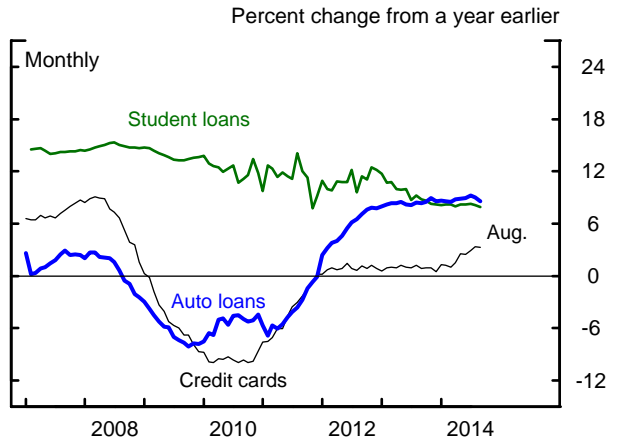
Note: Concerns 30-year GSE-backed purchase mortgages originated in month shown.  
Source: LPS Applied Analytics.

Purchase and Refinance Activity



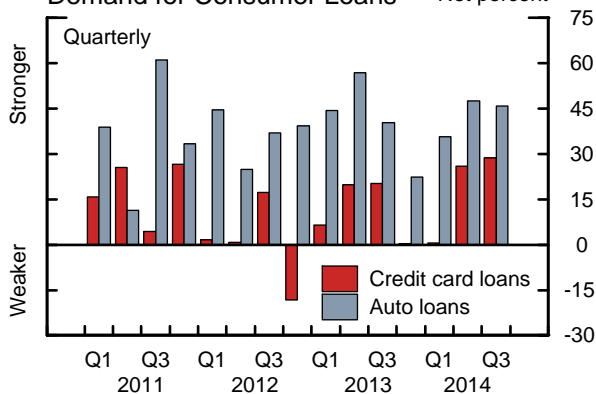
Note: The data are seasonally adjusted by FRB staff.  
Source: Mortgage Bankers Association.

Consumer Credit



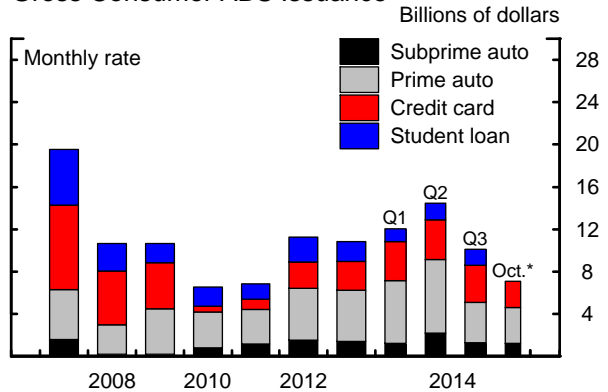
Note: The data are not seasonally adjusted.  
Source: Federal Reserve Board.

Net Percentage of Banks Reporting Stronger Demand for Consumer Loans



Note: Responses are weighted by survey respondents' holdings of relevant loan types as reported on Call Reports.  
Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

Gross Consumer ABS Issuance



\* Month to date.  
Source: Inside MBS & ABS; Merrill Lynch; Federal Reserve Board.

owing to a rebound in seasoned equity offerings. However, bond and equity issuance slowed sharply last week as financial market volatility increased.

Commercial and industrial loans on banks' books continued to expand at a robust pace in the third quarter. Banks reported stronger loan demand, on net, from large and middle-market firms in the October SLOOS and cited various reasons for the strengthening, with increased M&A financing being the most commonly mentioned factor. Issuance of institutional leveraged loans slowed some in September. However, investors' interest in the asset class remained strong, with continued outflows from retail loan funds being more than offset by robust CLO issuance. In recent weeks, amid the heightened volatility in broader financial markets, investors were cautious in funding new issuance of leveraged loans, especially for small-sized deals.

Credit conditions in commercial real estate (CRE) markets continued to ease. Gradual, though persistent, declines in vacancies as well as increased availability of financing have helped boost CRE prices. The volume of CMBS issuance remained robust in September, and strong origination volumes are expected over the next few months. The growth of CRE loans on the balance sheets of large banks slowed in the third quarter, while outstanding loans at small banks continued to expand at a moderate pace. According to the October SLOOS, banks continued to ease CRE lending standards, on net, and reported stronger demand for the three major types of such loans.

## **HOUSEHOLD FINANCE**

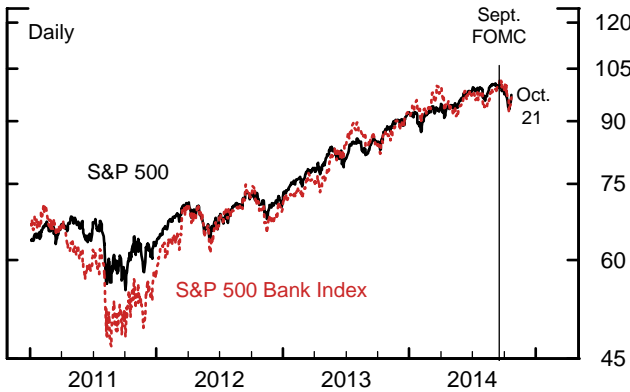
Credit conditions in residential mortgage markets remained tight despite the easing of two factors weighing on credit availability—capacity constraints and regulatory uncertainty—over the past year. Indicators of purchase and refinance activity continued to hover around their recent subdued levels. Since the September FOMC meeting, mortgage rates to qualified borrowers have declined 24 basis points, a little less than MBS yields.

Conditions in most consumer credit markets remained accommodative during the third quarter. Auto loans continued to be widely available and appeared to be on pace for another large increase in the third quarter. Respondents to the October SLOOS indicated that demand for auto loans had strengthened further over the same period. The recovery in revolving credit that began earlier this year continued through the summer. Although standards are still tight for borrowers with less-than-pristine credit histories, supervisory

### Banking Developments and Money

S&P 500 Stock Price Indexes

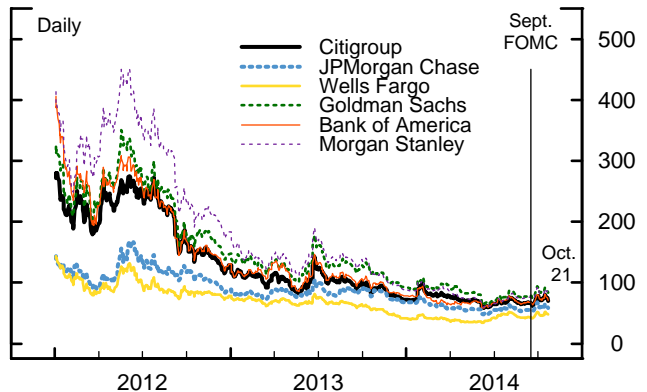
Log scale; Sept. 16, 2014 = 100



Source: Bloomberg.

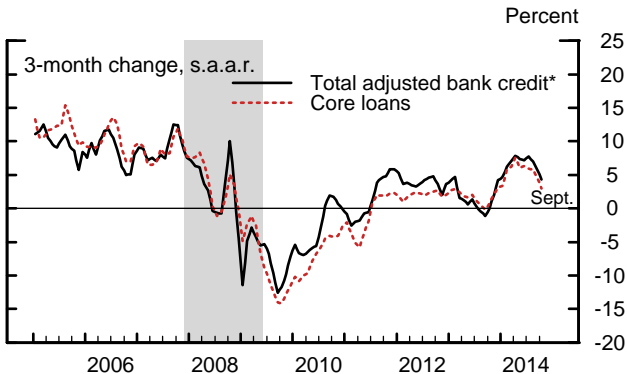
CDS Spreads of Large Bank Holding Companies

Basis points



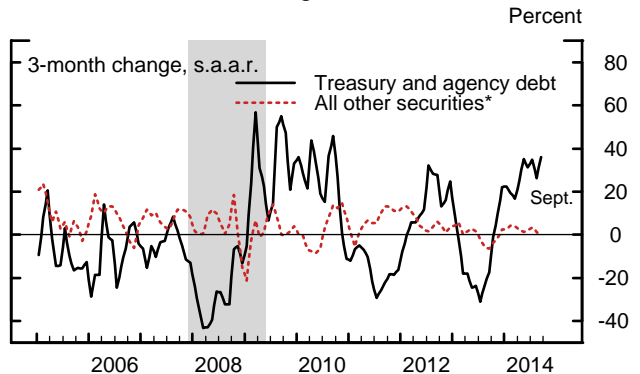
Source: Markit.

Bank Credit



\* The data have been adjusted to remove the estimated effects of certain changes to accounting standards and nonbank structure activity of \$5 billion or more.  
Source: Federal Reserve Board.

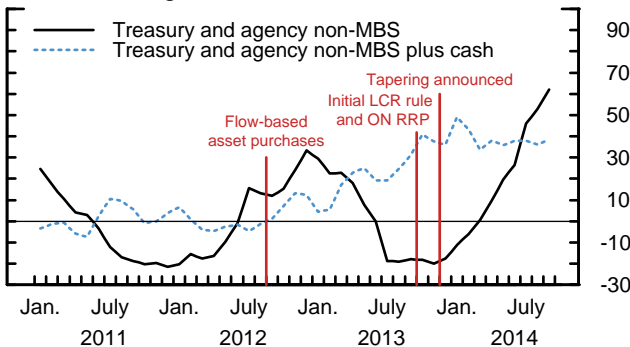
Banks' Securities Holdings



\* All other securities are total securities excluding Treasury and agency debt.  
Source: Federal Reserve Board.

Financial Developments

Treasury and Agency Securities and Cash Assets at Large Domestic Banks



Note: Year-over-year growth rates are shown. LCR is liquidity coverage ratio; ON RRP is overnight reverse repurchase agreement.

Source: Federal Reserve Board, FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

Growth of M2 and Its Components

Percent, s.a.a.r.	M2	Liquid deposits	Small time deposits	Retail MMFs	Curr.
2013	6.0	7.9	-13.6	1.6	6.6
2014:Q1	6.7	8.5	-8.8	-4.8	7.4
2014:Q2	6.3	7.2	-8.2	-9	10.4
2014:Q3	5.4	6.8	-4.3	-5.2	5.5
Sept.	3.7	5.1	-7.0	-6.5	3.3

Note: Retail MMFs are retail money market funds.  
Source: Federal Reserve Board.

Note: The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

data on credit card loans at large bank holding companies (BHCs) indicated an increase in July in the share of new accounts originated to consumers with lower credit scores. Moreover, according to the October SLOOS, demand for credit card loans increased and banks continued to raise credit limits on such loans. Despite the recent volatility in financial markets, financing and liquidity conditions in the consumer ABS market remained largely stable in recent weeks.

## **BANKING DEVELOPMENTS AND MONEY**

The stock prices of large U.S. BHCs decreased over the intermeeting period, roughly in line with the broader equity market, while CDS spreads for large BHCs edged up, about in line with the CDX nonfinancial investment-grade index. Earnings reports for large banks were mixed in the third quarter. Banks reported that low interest rates and litigation expenses continued to put downward pressure on bank profitability, and net interest margins continued to narrow at several banks as a result of lower loan interest rates and increased holdings of relatively low-yielding securities. However, investment banking revenue was strong and trading revenue improved, reportedly helped by market volatility in September.

Bank credit decelerated slightly in the third quarter amid slower growth in core loans. Banks' securities holdings continued to expand, mainly driven by increases in holdings of U.S. Treasury securities. With reserve balances growing more slowly because of the reduction in the pace of Federal Reserve asset purchases, some banks are reportedly increasing their holdings of U.S. Treasury securities to meet Basel III liquidity requirements.<sup>10</sup> In total, reserves and Treasury securities, which account for the majority of high-quality liquid assets at commercial banks subject to the standard liquidity coverage ratio, continued to increase briskly at large domestic banks in the third quarter.

Growth of M2 slowed to an annual rate of 3¾ percent in September, with nearly all of the components slowing last month. The monetary base contracted in September, primarily because of a decline in reserve balances resulting from increased take-up in the Federal Reserve's ON RRP exercise.

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<sup>10</sup> Holdings of U.S. Treasury securities by commercial banks that are subject to the standard liquidity coverage ratio requirement have risen about \$130 billion thus far this year.

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## Risks and Uncertainty

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### ALTERNATIVE SCENARIOS

To illustrate some of the risks to the outlook, we construct a number of alternatives to the baseline projection using simulations of staff models. In the first scenario, the recent volatility in financial markets signals the beginning of an extended period of heightened risk aversion and depressed consumer and business confidence that results in further declines in equity valuations, wider corporate bond spreads, and weaker real economic activity. By contrast, the second scenario considers the possibility that the better-than-expected improvements in the labor market so far this year are consistent with a stronger pace for the economic recovery. The third scenario features a deeper and more protracted reduction in potential output growth than assumed in the baseline. In the fourth scenario, the trajectory of longer-term inflation expectations is lower than in the baseline, leading to a shallower path of actual inflation in the coming years. The fifth scenario considers the risk that the foreign exchange value of the dollar appreciates sharply. The last scenario examines the possibility that foreign economic growth is significantly weaker than in our baseline outlook.

We generate the first four scenarios using the FRB/US model and the final two using the multicountry SIGMA model. Once the federal funds rate has lifted off from its effective lower bound, its movements are governed—as in the baseline forecast—by an inertial version of the Taylor (1999) rule. The date of liftoff in each scenario is set using a mechanical procedure intended to be broadly consistent with the guidance provided in the Committee’s recent statements.<sup>1</sup> In all cases, we assume that the size and composition of the SOMA portfolio follow their baseline paths.

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<sup>1</sup> Specifically, in the first three scenarios, the inertial Taylor (1999) rule takes over in the quarter following the observation of an unemployment rate of 5.7 percent, the level of unemployment prevailing in the baseline one quarter prior to liftoff. In the “Lower Long-Term Inflation Expectations” scenario, where the path of inflation is significantly different from the baseline, the choice of liftoff date is meant to capture the Committee’s intention “to maintain the current target range for the federal funds rate for a considerable time after the asset purchase program ends, especially if projected inflation continues to run below the Committee’s 2 percent longer-run goal,” as stated in the September FOMC statement. For the last two scenarios, we assume a broadly similar policy rule to the one used in the first four scenarios. One key difference relative to the FRB/US simulations is that the policy rule in SIGMA uses a measure of slack equal to the difference between actual output and the model’s estimate of the level of output that would occur in the absence of slow adjustment of wages and prices.

**Alternative Scenarios**

(Percent change, annual rate, from end of preceding period except as noted)

Measure and scenario	2014		2015	2016	2017	2018-19
	H1	H2				
<i>Real GDP</i>						
Extended Tealbook baseline	1.2	2.8	2.4	2.6	2.1	2.0
Increased financial turbulence	1.2	2.1	1.1	1.7	1.7	2.2
Faster recovery with higher inflation	1.2	3.5	3.6	3.5	2.4	1.8
No room to grow	1.2	2.8	1.7	1.3	.6	.8
Lower long-term inflation expectations	1.2	2.8	2.5	3.0	2.7	2.0
Stronger dollar	1.2	2.8	1.8	2.4	2.2	2.2
Weaker foreign growth	1.2	2.8	2.0	2.2	2.0	2.4
<i>Unemployment rate<sup>1</sup></i>						
Extended Tealbook baseline	6.2	5.8	5.5	5.3	5.2	5.2
Increased financial turbulence	6.2	5.9	6.1	6.3	6.4	6.1
Faster recovery with higher inflation	6.2	5.7	4.9	4.3	4.1	4.4
No room to grow	6.2	5.8	5.5	5.6	5.9	6.3
Lower long-term inflation expectations	6.2	5.8	5.5	5.1	4.7	4.7
Stronger dollar	6.2	5.8	5.7	5.7	5.6	5.5
Weaker foreign growth	6.2	5.8	5.6	5.6	5.6	5.4
<i>Total PCE prices</i>						
Extended Tealbook baseline	1.9	.5	1.4	1.6	1.7	1.8
Increased financial turbulence	1.9	.5	1.4	1.6	1.7	1.7
Faster recovery with higher inflation	1.9	.4	1.5	1.9	2.3	2.5
No room to grow	1.9	.5	1.6	2.0	2.1	2.1
Lower long-term inflation expectations	1.9	.5	1.2	1.4	1.5	1.6
Stronger dollar	1.9	.0	.7	1.4	1.6	1.8
Weaker foreign growth	1.9	.3	.7	1.0	1.3	2.0
<i>Core PCE prices</i>						
Extended Tealbook baseline	1.6	1.3	1.5	1.6	1.8	1.8
Increased financial turbulence	1.6	1.3	1.5	1.6	1.8	1.7
Faster recovery with higher inflation	1.6	1.2	1.6	1.9	2.4	2.5
No room to grow	1.6	1.3	1.7	2.0	2.2	2.1
Lower long-term inflation expectations	1.6	1.3	1.3	1.4	1.6	1.6
Stronger dollar	1.6	1.2	1.0	1.4	1.7	1.7
Weaker foreign growth	1.6	1.3	1.3	1.3	1.6	1.8
<i>Federal funds rate<sup>1</sup></i>						
Extended Tealbook baseline	.1	.1	.9	1.9	2.6	3.2
Increased financial turbulence	.1	.1	.1	.1	.1	.1
Faster recovery with higher inflation	.1	.1	1.5	3.1	4.5	5.4
No room to grow	.1	.1	1.6	3.1	3.7	3.6
Lower long-term inflation expectations	.1	.1	.1	.2	1.7	3.3
Stronger dollar	.1	.1	.6	1.4	2.1	2.9
Weaker foreign growth	.1	.1	.7	1.4	1.9	2.7

1. Percent, average for the final quarter of the period.

## Increased Financial Turbulence

In this scenario, the recent bout of financial market volatility marks the beginning of a widespread reassessment of risk. The resulting asset price declines and wider bond spreads from heightened risk aversion depress consumer and business confidence. These developments put downward pressure on business investment, hiring, and consumer spending, leading to broad-based weakness in economic activity. All told, real GDP growth slows to 1 percent in 2015 and 1¾ percent in the period from 2016 to 2017. The unemployment rate rises above 6 percent in early 2015 and averages 6¼ percent from 2016 to 2019, causing the federal funds rate to stay at the effective lower bound through 2019. Downward pressure on inflation from weaker aggregate demand is largely offset by a reduction in aggregate supply induced by slower investment growth. As a result, inflation is roughly unchanged relative to the baseline.

## Faster Recovery with Higher Inflation

As pointed out in the staff's quantitative surveillance assessment report, both the financial and nonfinancial sectors appear well positioned to weather the recent episode of financial market volatility. In addition, the labor market has continued to improve, lending standards have continued to ease, manufacturing output growth has been solid, and fiscal policy restraint has faded. In this scenario, the steady improvement in labor market conditions boosts household and business confidence in the durability of the economic expansion, driving a virtuous cycle marked by more rapid economic growth than in the baseline. We also assume that inflation will be more sensitive to reductions in resource slack than is implicit in the FRB/US model, analogous to the larger inflation effects in some DSGE models.

Real GDP growth averages 3½ percent in 2015 and 2016, 1 percentage point higher than in the baseline; the unemployment rate falls below 4¼ percent in early 2017. With resource utilization running tighter, inflation rises faster than in the baseline, reaching 2½ percent in early 2018.<sup>2</sup> The federal funds rate lifts off one quarter earlier and rises more steeply thereafter, passing 4 percent in mid-2017 and reaching 5½ percent in late 2019. Given enough time, this path for the federal funds rate would eventually

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<sup>2</sup> The larger rise in inflation depends importantly on the substantially steeper wage and price Phillips curves used in this scenario. Had we used our standard coefficients in these equations, inflation would have peaked at 2 percent.

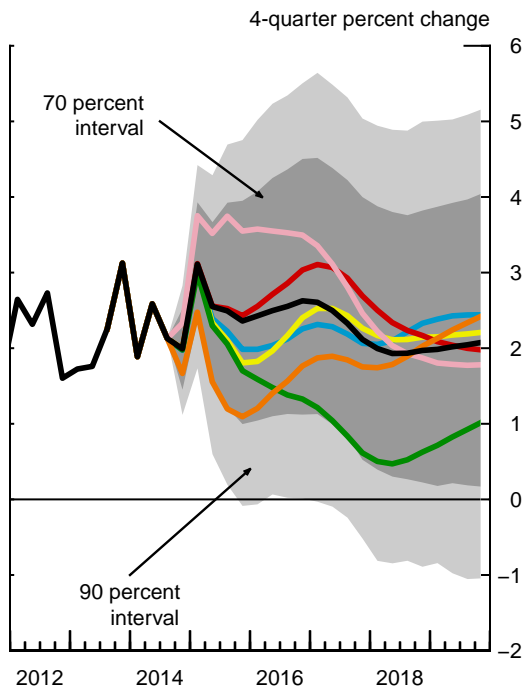


## Forecast Confidence Intervals and Alternative Scenarios

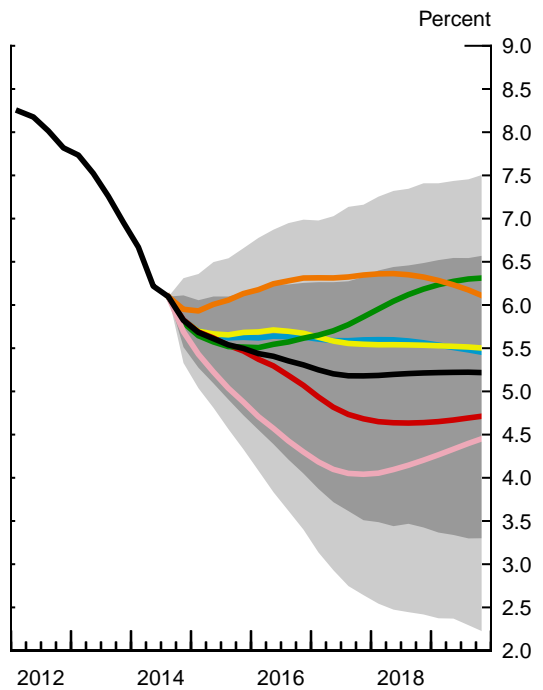
Confidence Intervals Based on FRB/US Stochastic Simulations

- Extended Tealbook baseline
- No room to grow
- Stronger dollar
- Increased financial turbulence
- Lower long-term inflation expectations
- Weaker foreign growth
- Faster recovery with higher inflation

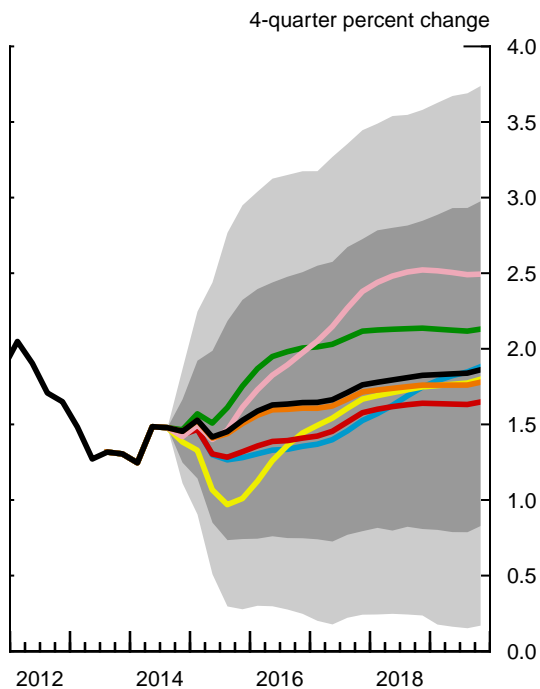
Real GDP



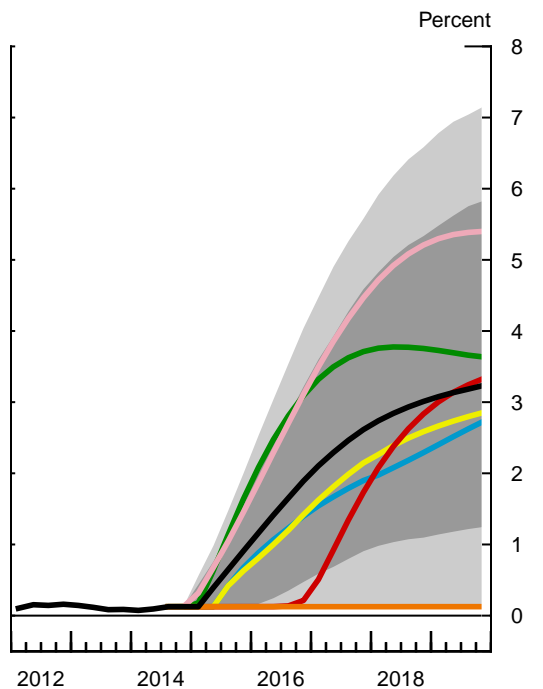
Unemployment Rate



PCE Prices excluding Food and Energy



Federal Funds Rate



Risks & Uncertainty

drive the unemployment rate to its assumed natural rate and bring inflation back down to 2 percent.

### **No Room to Grow**

Some of the models we consult suggest that potential output may currently be lower than is assumed in the baseline projection and may grow more slowly in the future. In this scenario, we assume that structural productivity gains in recent years have been slower than the staff currently estimates and continue to be so over the projection period; we also assume that the natural rate of unemployment has been constant at 6¼ percent since early 2011 and will remain at that level in the future. With these assumptions, potential output has expanded at an annual rate of only 1 percent since 2011; looking ahead, it rises at only a 1¼ percent pace through 2019. As a consequence, the output gap is estimated to have closed in the previous quarter.

Compared with the baseline, real GDP growth is substantially slower as households and firms base their spending on lower levels of—and slower anticipated growth in—permanent income and potential output. Inflation is higher than in the baseline, reflecting the effects of both tighter resource utilization and lower productivity. The unemployment rate begins to move up in 2016 and reaches the higher assumed natural rate of 6¼ percent in early 2019. Inflation is slightly above 2 percent in that year.

### **Lower Long-Term Inflation Expectations**

In the baseline projection, consumer price inflation is projected to increase gradually to the Committee's longer-run target of 2 percent. A key assumption behind this projection is that the level of long-term inflation expectations relevant for wage and price setting is currently 1.8 percent and eventually rises to 2 percent. However, some models point to even lower estimates of long-term inflation expectations, and there is an associated risk that these expectations could remain low for an extended period of time.<sup>3</sup>

In this scenario, we assume that households and businesses form their long-term expectations adaptively based on past inflation and that long-term inflation expectations currently stand at 1.5 percent. Low actual inflation in the coming years and the subdued inflation expectations are mutually reinforcing. As a result, inflation in this scenario runs

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<sup>3</sup> See Deb Lindner (2014), "Why Is Inflation Persistently Low in the Judgmental Forecast?" memorandum to the FOMC, June 4; and Thomas Laubach, John Roberts, Jae Sim, and Brad Strum (2014) "Long-Term Inflation Expectations and Risks to the Inflation Outlook," memorandum to the FOMC, September 5.

**Selected Tealbook Projections and 70 Percent Confidence Intervals Derived from Historical Tealbook Forecast Errors and FRB/US Simulations**

Measure	2014	2015	2016	2017	2018	2019
<i>Real GDP</i>						
<i>(percent change, Q4 to Q4)</i>						
Projection	2.0	2.4	2.6	2.1	2.0	2.1
Confidence interval						
Tealbook forecast errors	1.5–2.5	.7–4.1	.7–4.5	...	...	...
FRB/US stochastic simulations	1.5–2.5	1.0–4.0	1.1–4.5	.5–4.0	.2–3.8	.2–4.1
<i>Civilian unemployment rate</i>						
<i>(percent, Q4)</i>						
Projection	5.8	5.5	5.3	5.2	5.2	5.2
Confidence interval						
Tealbook forecast errors	5.7–5.9	4.8–6.2	4.1–6.5	...	...	...
FRB/US stochastic simulations	5.5–6.1	4.7–6.1	4.0–6.3	3.5–6.3	3.4–6.5	3.3–6.6
<i>PCE prices, total</i>						
<i>(percent change, Q4 to Q4)</i>						
Projection	1.2	1.4	1.6	1.7	1.8	1.9
Confidence interval						
Tealbook forecast errors	1.0–1.4	.2–2.5	.6–2.6	...	...	...
FRB/US stochastic simulations	.9–1.5	.5–2.3	.5–2.7	.6–2.9	.7–3.0	.7–3.1
<i>PCE prices excluding food and energy</i>						
<i>(percent change, Q4 to Q4)</i>						
Projection	1.5	1.5	1.6	1.8	1.8	1.9
Confidence interval						
Tealbook forecast errors	1.2–1.7	.9–2.1	.9–2.4	...	...	...
FRB/US stochastic simulations	1.2–1.7	.7–2.3	.7–2.5	.8–2.7	.8–2.8	.8–3.0
<i>Federal funds rate</i>						
<i>(percent, Q4)</i>						
Projection	.1	.9	1.9	2.6	3.0	3.2
Confidence interval						
FRB/US stochastic simulations	.1–.1	.1–1.6	.5–3.2	.9–4.6	1.1–5.3	1.2–5.8

Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2013 set of model equation residuals.

Intervals derived from Tealbook forecast errors are based on projections made from 1979 to 2013, except for PCE prices excluding food and energy, where the sample is 1981–2013.

... Not applicable. The Tealbook forecast horizon has typically extended about 2 years.

persistently below baseline and reaches only slightly above 1½ percent in 2019, causing liftoff to occur in the first quarter of 2017, almost two years later than in the baseline. At that time, the unemployment rate has declined to 5 percent, ¼ percentage point below its natural rate. However, given the decline in long-term inflation expectations, inflation projected one to two years ahead is still below the Committee’s 2 percent objective despite tighter labor market conditions.

### **Stronger Dollar**

We project that the broad real dollar will depreciate slightly over the forecast period. However, the dollar may continue to appreciate for any number of reasons, including a greater-than-expected reaction by investors to the prospective normalization of policy rates in the United States, heightened concern about the foreign outlook, or both. In this scenario, we examine the possibility that the broad real dollar appreciates 10 percent relative to baseline by the end of next year due to foreign exchange risk premium shocks.<sup>4</sup>

The stronger exchange value of the dollar reduces U.S. real net exports substantially and also pushes down inflation as a result of lower import prices and greater resource slack. Consequently, the federal funds rate remains at its effective lower bound one quarter longer than in the baseline and U.S. monetary policy removes accommodation more gradually going forward, with the federal funds rate in 2016 about 50 basis points below the baseline path. The more accommodative policy stance provides a boost to U.S. domestic demand and helps reduce the adverse effect of the stronger dollar on real activity. Even so, U.S. real GDP rises at an annual rate of only 1¾ percent, on average, in 2015—about ½ percentage point below the baseline. Lower import prices cause core PCE inflation to run about ½ percentage point below baseline next year before gradually reverting to baseline thereafter.

### **Weaker Foreign Growth**

Our baseline forecast projects some pickup in foreign GDP growth relative to its tepid pace through most of this year. However, the materialization of downside risks to the global outlook—a renewed recession in the euro area, a hard landing in China, or an escalation of geopolitical stresses—could trigger financial market turbulence and widespread declines in foreign growth. In this scenario, foreign GDP growth is assumed

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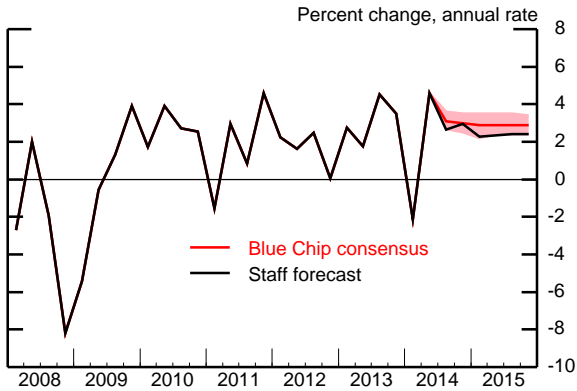
<sup>4</sup> This scenario is identical to the one presented in the box “The Effect of the Dollar on U.S. GDP and Inflation” in the Domestic Economic Developments and Outlook section.

to average 1 percentage point below the baseline over the next three years. Weaker foreign demand and some flight-to-safety flows to dollar-denominated assets induce the broad real dollar to appreciate by about 4 percent relative to the baseline by the end of 2015.

The slower foreign growth and stronger dollar cause U.S. real net exports to fall relative to the baseline. All told, U.S. real GDP expands by 2 percent in 2015, about ½ percentage point less than in the baseline. Weaker U.S. economic activity and lower import price inflation hold core inflation to about 1¼ percent through 2016. Relative to the previous scenario, the path of the federal funds rate runs a little further below baseline after 2016.

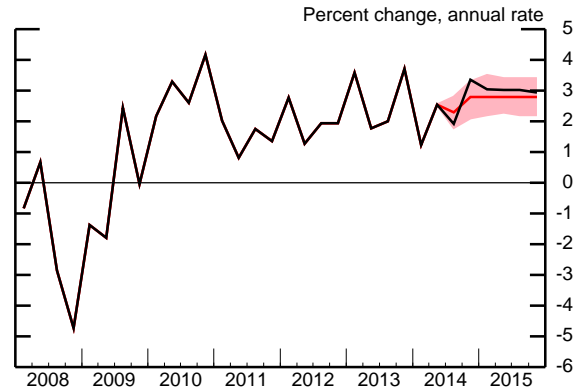
### Tealbook Forecast Compared with Blue Chip (Blue Chip survey released October 10, 2014)

Real GDP

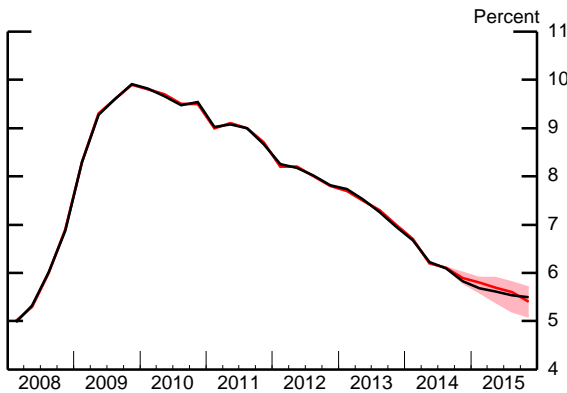


Note: The shaded area represents the area between the Blue Chip top 10 and bottom 10 averages.

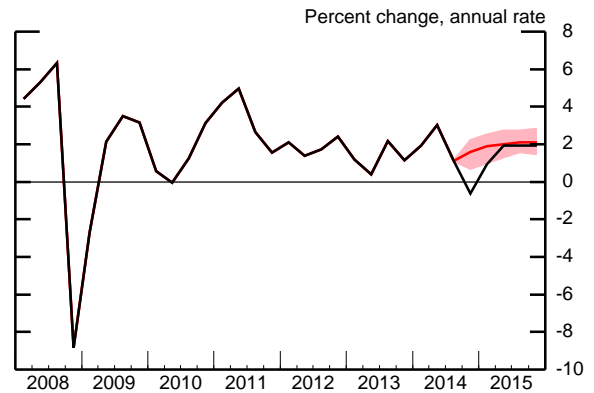
Real PCE



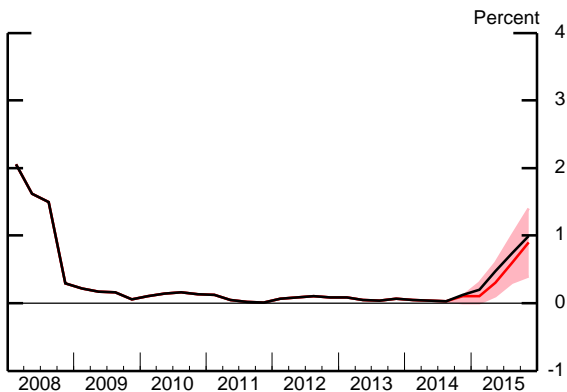
Unemployment Rate



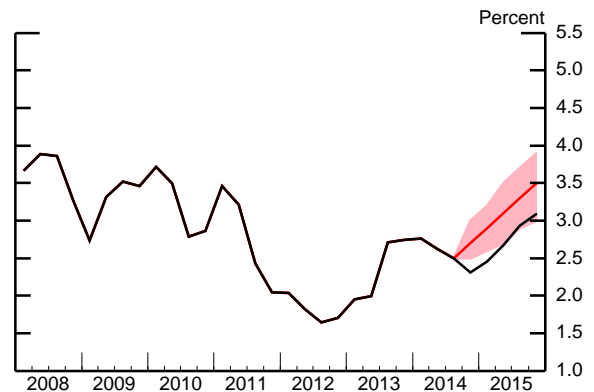
Consumer Price Index



Treasury Bill Rate



10-Year Treasury Yield



Note: The yield is for on-the-run Treasury securities. Over the forecast period, the staff's projected yield is assumed to be 15 basis points below the off-the-run yield.

**Assessment of Key Macroeconomic Risks (1)**

**Probability of Inflation Events**

(4 quarters ahead—2015:Q3)

Probability that the 4-quarter change in total PCE prices will be ...	Staff	FRB/US	EDO	BVAR
<i>Greater than 3 percent</i>				
Current Tealbook	.02	.02	.10	.06
Previous Tealbook	.04	.04	.11	.06
<i>Less than 1 percent</i>				
Current Tealbook	.54	.46	.30	.17
Previous Tealbook	.33	.31	.29	.15

**Probability of Unemployment Events**

(4 quarters ahead—2015:Q3)

Probability that the unemployment rate will ...	Staff	FRB/US	EDO	BVAR
<i>Increase by 1 percentage point</i>				
Current Tealbook	.02	.01	.21	.01
Previous Tealbook	.01	.01	.20	.01
<i>Decrease by 1 percentage point</i>				
Current Tealbook	.27	.27	.07	.30
Previous Tealbook	.31	.26	.08	.30

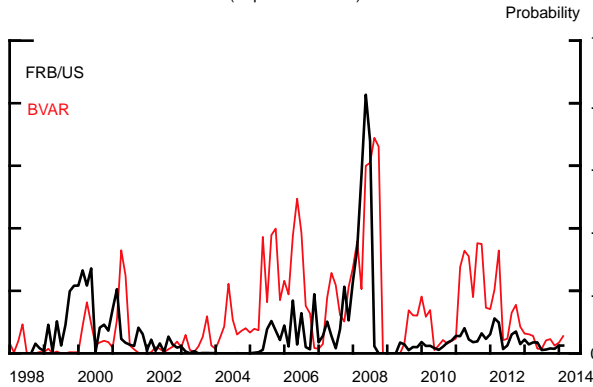
**Probability of Near-Term Recession**

Probability that real GDP declines in each of 2014:Q4 and 2015:Q1	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.04	.02	.02	.02	.07
Previous Tealbook	.03	.02	.02	.02	.07

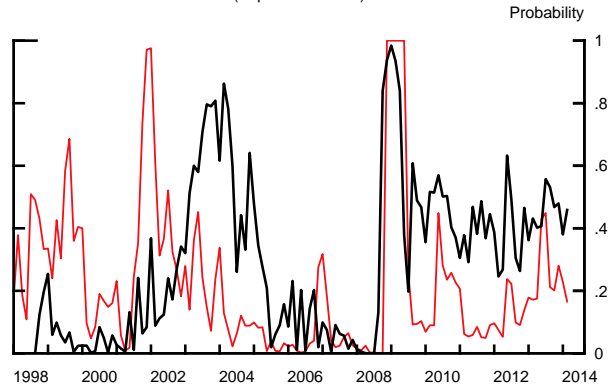
Note: “Staff” represents Tealbook forecast errors applied to the Tealbook baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook in each quarter; if the second Tealbook for the current quarter has not yet been published, the preceding quarter is taken as the latest historical observation.

## Assessment of Key Macroeconomic Risks (2)

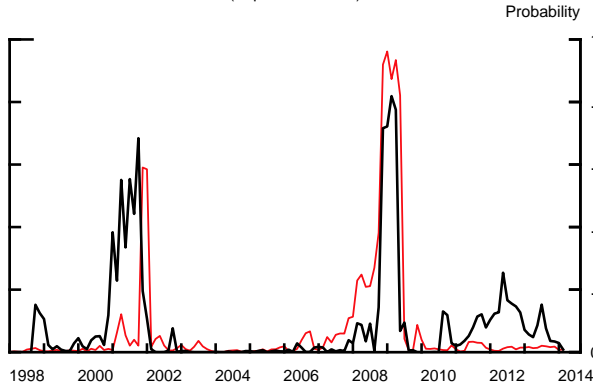
Probability that Total PCE Inflation Is above 3 Percent  
(4 quarters ahead)



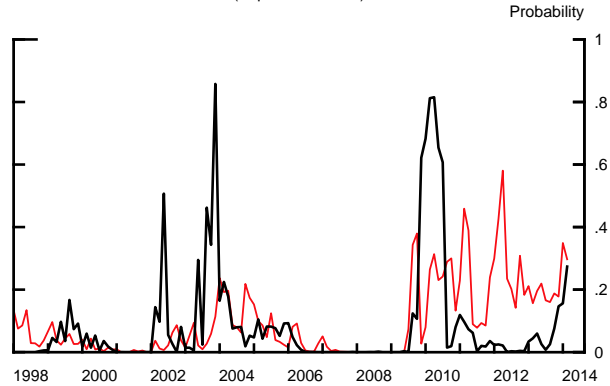
Probability that Total PCE Inflation Is below 1 Percent  
(4 quarters ahead)



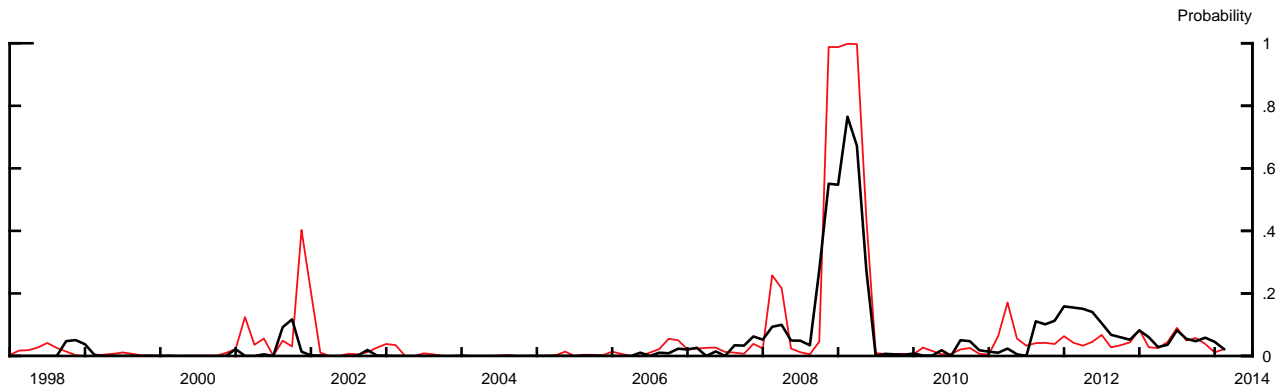
Probability that the Unemployment Rate Increases 1 ppt  
(4 quarters ahead)



Probability that the Unemployment Rate Decreases 1 ppt  
(4 quarters ahead)



Probability that Real GDP Declines in Each of the Next Two Quarters



Note: See notes on facing page. Recession and inflation probabilities for FRB/US and the BVAR are real-time estimates. See Robert J. Tetlow and Brian Ironside (2007), "Real-Time Model Uncertainty in the United States: The Fed, 1996–2003," *Journal of Money, Credit and Banking*, vol. 39 (October), pp. 1533–61.



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**Changes in GDP, Prices, and Unemployment**  
(Percent, annual rate except as noted)

Interval	Nominal GDP		Real GDP		PCE price index		Core PCE price index		Unemployment rate <sup>1</sup>	
	09/10/14	10/22/14	09/10/14	10/22/14	09/10/14	10/22/14	09/10/14	10/22/14	09/10/14	10/22/14
<i>Quarterly</i>										
2014:Q1	-8	-8	-2.1	-2.1	1.4	1.4	1.2	1.2	6.7	6.7
2014:Q2	6.6	6.8	4.4	4.6	2.3	2.3	2.0	2.0	6.2	6.2
2014:Q3	4.5	4.1	2.8	2.7	1.3	1.2	1.5	1.4	6.1	6.1
2014:Q4	4.6	4.2	3.0	3.0	.9	-2	1.4	1.2	5.9	5.8
2015:Q1	4.4	3.9	2.5	2.3	1.6	.9	1.7	1.5	5.7	5.7
2015:Q2	4.3	4.1	2.6	2.3	1.6	1.5	1.7	1.5	5.6	5.6
2015:Q3	4.4	4.2	2.7	2.4	1.5	1.5	1.6	1.6	5.5	5.5
2015:Q4	4.5	4.1	2.8	2.4	1.4	1.5	1.5	1.5	5.4	5.5
2016:Q1	4.7	4.5	2.8	2.5	1.7	1.7	1.9	1.7	5.3	5.4
2016:Q2	4.7	4.4	2.9	2.6	1.7	1.7	1.8	1.7	5.3	5.4
2016:Q3	4.7	4.4	3.0	2.7	1.6	1.6	1.6	1.6	5.2	5.4
2016:Q4	4.6	4.4	2.9	2.7	1.5	1.5	1.6	1.6	5.1	5.3
<i>Two-quarter<sup>2</sup></i>										
2014:Q2	2.8	2.9	1.1	1.2	1.8	1.9	1.6	1.6	-8	-8
2014:Q4	4.6	4.2	2.9	2.8	1.1	.5	1.5	1.3	-3	-4
2015:Q2	4.4	4.0	2.5	2.3	1.6	1.2	1.7	1.5	-3	-2
2015:Q4	4.4	4.1	2.8	2.4	1.5	1.5	1.6	1.5	-2	-1
2016:Q2	4.7	4.5	2.8	2.6	1.7	1.7	1.8	1.7	-1	-1
2016:Q4	4.7	4.4	3.0	2.7	1.6	1.5	1.6	1.6	-2	-1
<i>Four-quarter<sup>3</sup></i>										
2013:Q4	4.6	4.6	3.1	3.1	1.0	1.0	1.3	1.3	-8	-8
2014:Q4	3.7	3.5	2.0	2.0	1.5	1.2	1.5	1.5	-1.1	-1.2
2015:Q4	4.4	4.0	2.7	2.4	1.5	1.4	1.6	1.5	-5	-3
2016:Q4	4.7	4.4	2.9	2.6	1.6	1.6	1.7	1.6	-3	-2
2017:Q4	4.1	4.0	2.3	2.1	1.7	1.7	1.8	1.8	-2	-1
<i>Annual</i>										
2013	3.7	3.7	2.2	2.2	1.2	1.2	1.3	1.3	7.4	7.4
2014	3.7	3.7	2.1	2.1	1.4	1.3	1.4	1.4	6.2	6.2
2015	4.6	4.2	2.8	2.6	1.4	1.1	1.6	1.5	5.6	5.6
2016	4.6	4.3	2.8	2.5	1.6	1.6	1.7	1.6	5.2	5.4
2017	4.4	4.2	2.6	2.4	1.7	1.7	1.8	1.7	4.9	5.2

1. Level, except for two-quarter and four-quarter intervals.  
 2. Percent change from two quarters earlier; for unemployment rate, change is in percentage points.  
 3. Percent change from four quarters earlier; for unemployment rate, change is in percentage points.

Greensheets

Changes in Real Gross Domestic Product and Related Items

(Percent, annual rate except as noted)

Item	2014				2015				2016				2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>
	Q2	Q3	Q4		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP	4.6	2.7	3.0		2.3	2.3	2.4	2.4	2.5	2.6	2.7	2.7	2.0	2.4	2.6	2.1
<i>Previous Tealbook</i>	4.4	2.8	3.0		2.5	2.6	2.7	2.8	2.8	2.9	3.0	2.9	2.0	2.7	2.9	2.3
Final sales	3.2	3.3	2.6		2.1	2.4	2.5	2.3	2.6	2.6	2.5	2.6	2.0	2.3	2.6	2.4
<i>Previous Tealbook</i>	3.1	2.8	3.1		2.6	2.5	2.6	2.7	2.9	2.8	2.9	2.9	2.0	2.6	2.9	2.5
Priv. dom. final purch.	3.8	2.8	3.5		2.7	3.1	3.2	3.2	3.2	3.1	3.0	2.9	2.8	3.0	3.1	2.6
<i>Previous Tealbook</i>	3.7	2.9	3.9		3.2	3.2	3.2	3.3	3.4	3.4	3.3	3.1	2.9	3.2	3.3	2.6
Personal cons. expend.	2.5	1.9	3.4		3.0	3.0	3.0	2.9	2.8	2.8	2.7	2.6	2.3	3.0	2.7	2.4
<i>Previous Tealbook</i>	2.5	2.0	3.4		3.3	3.0	2.9	3.0	2.9	2.9	2.8	2.7	2.3	3.0	2.8	2.5
Durables	14.1	7.8	9.8		8.3	7.2	7.2	7.4	6.1	6.3	6.0	5.4	8.6	7.5	6.0	3.8
Nondurables	2.2	.8	1.7		2.1	2.4	2.4	2.2	1.8	2.1	2.1	2.3	1.2	2.3	2.1	2.2
Services	.9	1.3	2.9		2.5	2.6	2.5	2.4	2.6	2.4	2.4	2.3	1.6	2.5	2.4	2.2
Residential investment	8.8	8.0	5.5		6.1	12.4	10.5	9.3	10.4	9.8	9.6	9.1	4.1	9.5	9.7	7.3
<i>Previous Tealbook</i>	8.6	9.9	11.8		9.7	11.9	12.1	10.4	10.7	11.1	11.4	9.6	6.0	11.0	10.7	6.0
Nonres. priv. fixed invest.	9.7	6.7	3.7		.1	.9	2.2	2.9	2.9	3.1	2.9	2.6	5.4	1.5	2.9	2.1
<i>Previous Tealbook</i>	9.5	6.1	4.1		1.0	2.1	2.7	3.2	3.8	3.6	3.3	3.2	5.3	2.2	3.5	2.4
Equipment & intangibles	8.9	7.9	5.0		1.8	2.1	3.2	3.6	3.7	3.8	3.6	3.2	5.7	2.7	3.6	2.6
<i>Previous Tealbook</i>	8.5	5.2	4.6		2.4	2.8	3.5	3.8	4.6	4.4	4.0	3.8	4.8	3.1	4.2	3.0
Nonres. structures	12.6	2.6	-.7		-5.5	-3.3	-1.3	.5	.4	.6	.5	.6	4.2	-2.4	.6	.4
<i>Previous Tealbook</i>	12.9	9.3	2.6		-3.6	-.4	.0	1.1	1.1	1.0	1.0	1.2	6.8	-.7	1.1	.7
Net exports <sup>2</sup>	-460	-436	-440		-446	-450	-455	-467	-475	-480	-491	-492	-446	-454	-484	-489
<i>Previous Tealbook</i> <sup>2</sup>	-459	-440	-447		-450	-452	-452	-458	-461	-464	-472	-467	-448	-453	-466	-459
Exports	11.1	5.6	3.0		3.6	3.8	4.0	3.3	4.1	4.3	4.5	4.6	2.3	3.7	4.4	5.0
Imports	11.3	.7	3.1		4.0	3.7	4.0	4.6	4.6	4.4	5.3	3.8	4.3	4.1	4.5	3.8
Gov't. cons. & invest.	1.7	1.5	-1.6		-.2	-.6	-.5	-.5	.6	.4	.9	.6	.2	-.5	.6	.9
<i>Previous Tealbook</i>	1.7	-1.0	-.1		-.3	-.6	-.5	.0	.7	.4	1.0	.9	.0	-.3	.7	1.0
Federal	-.9	2.1	-6.2		-2.9	-4.0	-3.8	-3.8	-1.2	-1.9	-.6	-1.8	-1.3	-3.6	-1.4	-1.0
Defense	-.9	5.2	-8.3		-3.3	-4.8	-4.5	-4.7	-1.7	-2.9	-1.5	-2.7	-1.7	-4.3	-2.2	-1.6
Nondefense	-3.8	-2.8	-2.6		-2.3	-2.6	-2.6	-2.3	-.4	-.3	.8	-.2	-.7	-2.4	.0	.0
State & local	3.4	1.2	1.4		1.4	1.5	1.5	1.5	1.6	1.7	1.9	2.0	1.1	1.5	1.8	2.0
Change in priv. inventories <sup>2</sup>	85	61	76		83	82	80	84	82	83	89	95	64	82	87	68
<i>Previous Tealbook</i> <sup>2</sup>	78	80	77		75	76	81	87	83	83	94	96	67	80	89	79

1. Change from fourth quarter of previous year to fourth quarter of year indicated.

2. Billions of chained (2009) dollars.

**Changes in Real Gross Domestic Product and Related Items**  
(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Real GDP	-2.8	-2	2.7	1.7	1.6	3.1	2.0	2.4	2.6	2.1
<i>Previous Tealbook</i>	-2.8	-2	2.7	1.7	1.6	3.1	2.0	2.7	2.9	2.3
Final sales	-2.1	-4	2.0	1.5	2.1	2.6	2.0	2.3	2.6	2.4
<i>Previous Tealbook</i>	-2.1	-4	2.0	1.5	2.1	2.6	2.0	2.6	2.9	2.5
Priv. dom. final purch.	-4.1	-2.4	3.5	2.6	2.6	3.2	2.8	3.0	3.1	2.6
<i>Previous Tealbook</i>	-4.1	-2.4	3.5	2.6	2.6	3.2	2.9	3.2	3.3	2.6
Personal cons. expend.	-2.0	-2	3.1	1.5	2.0	2.8	2.3	3.0	2.7	2.4
<i>Previous Tealbook</i>	-2.0	-2	3.1	1.5	2.0	2.8	2.3	3.0	2.8	2.5
Durables	-12.9	2.5	9.3	4.8	7.5	5.9	8.6	7.5	6.0	3.8
Nondurables	-2.7	-2	3.3	4	1.0	2.5	1.2	2.3	2.1	2.2
Services	.3	-8	2.0	1.4	1.5	2.4	1.6	2.5	2.4	2.2
Residential investment	-24.3	-10.8	-5.2	6.0	15.8	6.9	4.1	9.5	9.7	7.3
<i>Previous Tealbook</i>	-24.3	-10.8	-5.2	6.0	15.8	6.9	6.0	11.0	10.7	6.0
Nonres. priv. fixed invest.	-8.9	-12.2	8.1	9.0	3.7	4.7	5.4	1.5	2.9	2.1
<i>Previous Tealbook</i>	-8.9	-12.2	8.1	9.0	3.7	4.7	5.3	2.2	3.5	2.4
Equipment & intangibles	-11.8	-6.0	12.0	9.2	3.3	4.8	5.7	2.7	3.6	2.6
<i>Previous Tealbook</i>	-11.8	-6.0	12.0	9.2	3.3	4.8	4.8	3.1	4.2	3.0
Nonres. structures	-1.2	-27.1	-4.0	8.0	4.8	4.4	4.2	-2.4	.6	.4
<i>Previous Tealbook</i>	-1.2	-27.1	-4.0	8.0	4.8	4.4	6.8	-7	1.1	.7
Net exports <sup>1</sup>	-558	-395	-459	-459	-452	-420	-446	-454	-484	-489
<i>Previous Tealbook</i> <sup>1</sup>	-558	-395	-459	-459	-452	-420	-448	-453	-466	-459
Exports	-2.8	.8	10.1	4.2	2.4	5.1	2.3	3.7	4.4	5.0
Imports	-6.0	-6.2	12.0	3.5	.4	2.5	4.3	4.1	4.5	3.8
Gov't. cons. & invest.	3.3	2.3	-1.1	-3.0	-1.7	-1.9	.2	-.5	.6	.9
<i>Previous Tealbook</i>	3.3	2.3	-1.1	-3.0	-1.7	-1.9	.0	-.3	.7	1.0
Federal	8.4	3.9	3.2	-4.0	-2.6	-6.3	-1.3	-3.6	-1.4	-1.0
Defense	9.4	3.6	2.0	-4.1	-4.9	-6.1	-1.7	-4.3	-2.2	-1.6
Nondefense	6.5	4.6	5.5	-3.9	1.4	-6.6	-.7	-2.4	.0	.0
State & local	.2	1.3	-4.0	-2.3	-1.0	1.2	1.1	1.5	1.8	2.0
Change in priv. inventories <sup>1</sup>	-34	-148	58	38	57	64	64	82	87	68
<i>Previous Tealbook</i> <sup>1</sup>	-34	-148	58	38	57	64	67	80	89	79

1. Billions of chained (2009) dollars.

**Contributions to Changes in Real Gross Domestic Product**  
(Percentage points, annual rate except as noted)

Item	2014				2015				2016				2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>
	Q2	Q3	Q4		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP <i>Previous Tealbook</i>	4.6	2.7	3.0		2.3	2.3	2.4	2.4	2.5	2.6	2.7	2.7	2.0	2.4	2.6	2.1
	4.4	2.8	3.0		2.5	2.6	2.7	2.8	2.8	2.9	3.0	2.9	2.0	2.7	2.9	2.3
Final sales <i>Previous Tealbook</i>	3.2	3.3	2.6		2.1	2.4	2.5	2.3	2.6	2.6	2.5	2.6	2.0	2.3	2.6	2.4
	3.2	2.8	3.1		2.6	2.5	2.6	2.7	2.9	2.8	2.7	2.9	2.0	2.6	2.8	2.5
Priv. dom. final purch. <i>Previous Tealbook</i>	3.2	2.4	2.9		2.3	2.6	2.7	2.7	2.7	2.6	2.6	2.5	2.3	2.6	2.6	2.2
	3.1	2.5	3.2		2.7	2.7	2.7	2.8	2.9	2.9	2.8	2.6	2.4	2.7	2.8	2.2
Personal cons. expend. <i>Previous Tealbook</i>	1.8	1.3	2.3		2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.5	2.0	1.9	1.6
	1.7	1.4	2.3		2.2	2.0	2.0	2.0	2.0	2.0	1.9	1.8	1.6	2.1	1.9	1.7
Durables	1.0	.6	.7		.6	.5	.5	.6	.5	.5	.5	.4	.6	.6	.5	.3
Nondurables	.3	.1	.3		.3	.4	.4	.3	.3	.3	.3	.3	.2	.3	.3	.3
Services	.4	.6	1.3		1.1	1.2	1.2	1.1	1.2	1.1	1.1	1.0	.7	1.1	1.1	1.0
Residential investment <i>Previous Tealbook</i>	.3	.2	.2		.2	.4	.3	.3	.4	.3	.3	.3	.1	.3	.3	.3
	.3	.3	.4		.3	.4	.4	.4	.4	.4	.4	.4	.2	.4	.4	.2
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	1.2	.8	.5		.0	.1	.3	.4	.4	.4	.4	.3	.7	.2	.4	.3
	1.2	.8	.5		.1	.3	.3	.4	.5	.5	.4	.4	.7	.3	.4	.3
Equipment & intangibles <i>Previous Tealbook</i>	.8	.8	.5		.2	.2	.3	.4	.4	.4	.4	.3	.5	.3	.3	.3
	.8	.5	.4		.2	.3	.3	.4	.4	.4	.4	.4	.5	.3	.4	.3
Nonres. structures <i>Previous Tealbook</i>	.4	.1	.0		-.2	-.1	.0	.0	.0	.0	.0	.0	.1	-.1	.0	.0
	.4	.3	.1		-.1	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0
Net exports <i>Previous Tealbook</i>	-.3	.6	-.1		-.2	-.1	-.1	-.3	-.2	-.1	-.2	.0	-.4	-.2	-.1	.1
	-.3	.5	-.2		-.1	-.1	.0	-.1	-.1	-.1	-.2	.1	-.4	-.1	-.1	.1
Exports	1.4	.7	.4		.5	.5	.5	.4	.5	.6	.6	.6	.3	.5	.6	.7
Imports	-1.8	-.1	-.5		-.6	-.6	-.6	-.7	-.7	-.7	-.8	-.6	-.7	-.6	-.7	-.6
Gov't. cons. & invest. <i>Previous Tealbook</i>	.3	.3	-.3		.0	-.1	-.1	-.1	.1	.1	.2	.1	.0	-.1	.1	.2
	.3	-.2	.0		.0	-.1	-.1	.0	.1	.1	.2	.2	.0	-.1	.1	.2
Federal	-.1	.1	-.4		-.2	-.3	-.3	-.3	-.1	-.1	.0	-.1	-.1	-.2	-.1	-.1
Defense	.0	.2	-.4		-.1	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.1	-.1
Nondefense	-.1	-.1	-.1		-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	-.1	.0	.0
State & local	.4	.1	.2		.2	.2	.2	.2	.2	.2	.2	.2	.1	.2	.2	.2
Change in priv. inventories <i>Previous Tealbook</i>	1.4	-.6	.4		.2	.0	-.1	.1	-.1	.0	.2	.2	.0	.1	.1	-.3
	1.2	.1	-.1		-.1	.0	.1	.2	-.1	.0	.3	.1	.0	.1	.1	-.2

1. Change from fourth quarter of previous year to fourth quarter of year indicated.

**Changes in Prices and Costs**  
(Percent, annual rate except as noted)

Item	2014				2015				2016				2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>
	Q2	Q3	Q4	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
	GDP chain-wt. price index <i>Previous Tealbook</i>	2.1	1.4	1.2	1.6	1.6	1.7	1.7	1.6	1.9	1.8	1.7				
PCE chain-wt. price index <i>Previous Tealbook</i>	2.3	1.2	-2	.9	1.5	1.5	1.5	1.5	1.7	1.7	1.6	1.5	1.2	1.4	1.6	1.7
Energy <i>Previous Tealbook</i>	2.3	1.3	.9	1.6	1.6	2.1	1.4	1.4	1.7	1.7	1.6	1.5	1.5	1.5	1.6	1.7
Food <i>Previous Tealbook</i>	5.2	-4.1	-24.0	-9.8	2.1	2.1	1.6	1.6	1.2	1.2	1.2	1.0	-5.5	-1.1	1.2	.9
Ex. food & energy <i>Previous Tealbook</i>	5.2	-4.0	-8.0	1.0	1.0	1.0	.4	.1	-1	.0	.1	-2	-9	.6	-1	.2
Ex. food & energy, market based <i>Previous Tealbook</i>	4.5	3.1	2.0	1.0	.9	1.0	1.2	1.2	1.4	1.5	1.5	1.5	2.7	1.0	1.5	1.8
CPI <i>Previous Tealbook</i>	4.5	2.2	.9	.8	.8	.9	1.1	1.1	1.4	1.5	1.5	1.5	2.2	.9	1.5	1.8
Ex. food & energy <i>Previous Tealbook</i>	2.0	1.4	1.2	1.5	1.5	1.6	1.5	1.5	1.7	1.7	1.6	1.6	1.5	1.5	1.6	1.8
ECL, hourly compensation <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	2.0	1.5	1.4	1.7	1.7	1.6	1.5	1.5	1.9	1.8	1.6	1.6	1.5	1.6	1.7	1.8
Business sector Output per hour <i>Previous Tealbook</i>	1.8	1.4	1.2	1.5	1.5	1.6	1.5	1.5	1.8	1.7	1.6	1.6	1.3	1.5	1.6	1.8
Compensation per hour <i>Previous Tealbook</i>	1.8	1.6	1.4	1.7	1.7	1.7	1.6	1.5	1.9	1.8	1.6	1.6	1.5	1.6	1.7	1.8
Unit labor costs <i>Previous Tealbook</i>	1.8	1.6	1.4	1.7	1.7	1.7	1.6	1.5	1.9	1.8	1.6	1.6	1.5	1.6	1.7	1.8
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook</i> <sup>3</sup>	3.0	1.1	-6	.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.3	1.7	1.9	2.0
	3.0	1.4	1.0	1.9	1.9	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	1.9	1.9	2.0
	2.5	1.3	1.6	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	1.8	2.0	2.0	2.1
	2.5	1.7	1.9	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.1	2.1	1.9	2.1	2.1	2.1
	3.4	2.3	2.5	2.8	2.7	2.7	2.7	2.7	3.3	3.1	3.1	3.1	2.3	2.7	3.1	3.3
	3.4	2.3	2.5	2.8	2.7	2.8	2.8	2.8	3.3	3.1	3.1	3.2	2.3	2.7	3.2	3.4
Business sector Output per hour <i>Previous Tealbook</i>	2.9	-.3	2.6	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.9	.0	1.7	1.8	1.9
Compensation per hour <i>Previous Tealbook</i>	2.5	1.1	1.5	1.4	1.6	1.6	1.8	1.8	1.7	1.7	1.9	1.8	.0	1.7	1.8	1.9
Unit labor costs <i>Previous Tealbook</i>	2.2	2.0	2.0	3.4	3.1	3.1	3.1	3.1	3.5	3.3	3.3	3.3	3.2	3.2	3.3	3.5
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook</i> <sup>3</sup>	2.1	2.0	2.2	3.4	3.1	3.1	3.1	3.1	3.6	3.4	3.4	3.4	3.3	3.2	3.4	3.6
	-7	2.3	-6	1.7	1.5	1.4	1.3	1.3	1.7	1.4	1.4	1.4	3.2	1.5	1.5	1.6
	-4	.9	.7	1.9	1.5	1.2	1.3	1.3	1.9	1.6	1.5	1.6	3.3	1.5	1.6	1.7
	.2	.5	-1.1	-9	.6	.9	1.1	1.1	1.3	1.2	1.2	1.2	.6	.4	1.2	1.2
	.2	.9	.1	.5	1.2	1.3	1.3	1.3	1.5	1.3	1.3	1.3	1.0	1.1	1.3	1.3

1. Change from fourth quarter of previous year to fourth quarter of year indicated.  
 2. Private-industry workers.  
 3. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Greensheets

Changes in Prices and Costs

(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GDP chain-wt. price index <i>Previous Tealbook</i>	1.9 1.9	.4 .4	1.8 1.8	1.9 1.9	1.8 1.8	1.4 1.4	1.5 1.7	1.6 1.7	1.7 1.8	1.8 1.8
PCE chain-wt. price index <i>Previous Tealbook</i>	1.5 1.5	1.2 1.2	1.3 1.3	2.7 2.7	1.6 1.6	1.0 1.0	1.2 1.5	1.4 1.5	1.6 1.6	1.7 1.7
Energy <i>Previous Tealbook</i>	-8.2 -8.2	2.3 2.3	6.4 6.4	12.0 12.0	2.1 2.1	-2.6 -2.6	-5.5 -9	-1.1 .6	1.2 -1	.9 .2
Food <i>Previous Tealbook</i>	6.9 6.9	-1.8 -1.8	1.3 1.3	5.1 5.1	1.2 1.2	.7 .7	2.7 2.2	1.0 .9	1.5 1.5	1.8 1.8
Ex. food & energy <i>Previous Tealbook</i>	1.6 1.6	1.4 1.4	1.0 1.0	1.9 1.9	1.6 1.6	1.3 1.3	1.5 1.5	1.5 1.6	1.6 1.7	1.8 1.8
Ex. food & energy, market based <i>Previous Tealbook</i>	2.2 2.2	1.8 1.8	.7 .7	1.9 1.9	1.5 1.5	1.2 1.2	1.3 1.5	1.5 1.6	1.6 1.7	1.8 1.8
CPI <i>Previous Tealbook</i>	1.6 1.6	1.5 1.5	1.2 1.2	3.3 3.3	1.9 1.9	1.2 1.2	1.3 1.8	1.7 1.9	1.9 1.9	2.0 2.0
Ex. food & energy <i>Previous Tealbook</i>	2.0 2.0	1.8 1.8	.6 .6	2.2 2.2	1.9 1.9	1.7 1.7	1.8 1.9	2.0 2.1	2.0 2.1	2.1 2.1
ECL, hourly compensation <sup>1</sup> <i>Previous Tealbook</i> <sup>1</sup>	2.4 2.4	1.2 1.2	2.1 2.1	2.2 2.2	1.8 1.8	2.0 2.0	2.3 2.3	2.7 2.7	3.1 3.2	3.3 3.4
Business sector Output per hour <i>Previous Tealbook</i>	-2 -2	5.6 5.6	1.7 1.7	.0 .0	.3 .3	2.4 2.4	.0 .0	1.7 1.7	1.8 1.8	1.9 1.9
Compensation per hour <i>Previous Tealbook</i>	2.9 2.9	1.3 1.3	1.2 1.2	.6 .6	5.7 5.7	.0 .0	3.2 3.3	3.2 3.2	3.3 3.4	3.5 3.6
Unit labor costs <i>Previous Tealbook</i>	3.2 3.2	-4.2 -4.2	-4 -4	.6 .6	5.4 5.4	-2.3 -2.3	3.2 3.3	1.5 1.5	1.5 1.6	1.6 1.7
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	3.9 3.9	-1.9 -1.9	2.3 2.3	4.3 4.3	.2 .2	-1.0 -1.0	.6 1.0	.4 1.1	1.2 1.3	1.2 1.3

1. Private-industry workers.

2. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Other Macroeconomic Indicators

Item	2014				2015				2016				2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
	<i>Employment and production</i>	.8	.7	.7	.6	.5	.5	.5	.5	.5	.5	.6				
Nonfarm payroll employment <sup>2</sup>	6.2	6.1	5.8	5.7	5.6	5.5	5.5	5.4	5.4	5.4	5.3	5.8	5.5	5.3	5.2	
Unemployment rate <sup>3</sup>	6.2	6.1	5.9	5.7	5.6	5.5	5.4	5.4	5.3	5.2	5.1	5.9	5.4	5.1	4.9	
<i>Previous Tealbook<sup>3</sup></i>	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	
Natural rate of unemployment <sup>3</sup>	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	
<i>Previous Tealbook<sup>3</sup></i>	-2.2	-1.8	-1.4	-1.2	-1.1	-9	-8	-6	-5	-3	-1	-1.4	-8	-1	.0	
GDP gap <sup>4</sup>	-2.2	-1.8	-1.3	-1.1	-9	-7	-4	-2	.0	.3	.5	-1.3	-4	.5	.8	
<i>Previous Tealbook<sup>4</sup></i>	5.5	3.2	4.0	2.1	3.0	2.1	1.7	3.0	2.8	2.7	2.6	4.1	2.2	2.7	2.0	
Industrial production <sup>5</sup>	5.5	3.0	3.2	3.5	3.6	2.5	2.2	3.4	3.2	3.0	2.9	3.9	2.9	3.1	2.3	
<i>Previous Tealbook<sup>5</sup></i>	6.8	3.5	3.1	1.8	2.6	2.6	2.6	2.8	2.9	2.8	2.7	3.7	2.4	2.8	2.2	
Manufacturing industr. prod. <sup>5</sup>	6.8	3.8	3.0	2.6	3.1	3.0	3.1	3.3	3.6	3.3	3.1	3.7	3.0	3.3	2.6	
<i>Previous Tealbook<sup>5</sup></i>	77.1	77.3	77.5	77.4	77.5	77.6	77.7	77.8	78.0	78.2	78.3	77.5	77.7	78.3	78.4	
Capacity utilization rate - mfg. <sup>3</sup>	77.1	77.4	77.6	77.6	77.8	78.0	78.2	78.4	78.6	78.9	79.0	77.6	78.2	79.0	79.3	
<i>Previous Tealbook<sup>3</sup></i>	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.0	1.1	1.3	1.5	
Housing starts <sup>6</sup>	16.5	16.7	16.6	16.6	16.6	16.7	16.7	16.7	16.7	16.7	16.7	16.4	16.6	16.7	16.6	
Light motor vehicle sales <sup>6</sup>	6.8	4.1	4.2	3.9	4.1	4.2	4.1	4.5	4.4	4.4	4.4	3.5	4.0	4.4	4.0	
<i>Income and saving</i>	4.4	3.2	2.3	4.7	2.5	2.2	1.8	3.3	2.5	2.2	2.9	3.3	2.8	2.7	2.2	
Nominal GDP <sup>5</sup>	4.2	2.5	2.0	4.4	2.3	2.7	2.3	3.8	2.2	3.0	2.6	3.0	2.9	2.9	2.6	
Real disposable pers. income <sup>5</sup>	5.4	5.6	5.4	5.7	5.6	5.4	5.1	5.2	5.2	5.1	5.1	5.4	5.1	5.1	4.9	
<i>Previous Tealbook<sup>5</sup></i>	5.3	5.4	5.1	5.3	5.2	5.1	5.0	5.2	5.0	5.0	5.0	5.1	5.0	5.0	5.1	
Personal saving rate <sup>3</sup>	38.3	3.9	.1	1.6	2.9	3.7	.4	5.1	3.2	3.0	3.4	-8	2.1	3.7	3.0	
<i>Previous Tealbook<sup>3</sup></i>	12.0	12.0	11.9	11.8	11.8	11.8	11.7	11.7	11.7	11.7	11.6	11.9	11.7	11.6	11.5	
Corporate profits <sup>7</sup>	-584	-493	-467	-489	-472	-475	-458	-511	-492	-499	-516	-526	-473	-504	-573	
Profit share of GNP <sup>3</sup>	-227	-253	-235	-230	-229	-222	-216	-205	-211	-205	-205	-239	-224	-206	-194	
Net federal savings <sup>8</sup>	18.3	18.5	18.5	18.7	18.7	18.7	18.6	18.5	18.7	18.6	18.7	18.5	18.6	18.7	18.7	
Net state & local savings <sup>8</sup>	3.2	4.2	4.2	4.3	4.3	4.3	4.1	4.0	4.1	4.1	4.1	4.2	4.1	4.1	3.9	
Gross national saving rate <sup>3</sup>																
Net national saving rate <sup>3</sup>																

1. Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise indicated.  
 2. Change, millions.  
 3. Percent; annual values are for the fourth quarter of the year indicated.  
 4. Percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.  
 Annual values are for the fourth quarter of the year indicated.  
 5. Percent change, annual rate.  
 6. Level, millions; annual values are annual averages.  
 7. Percent change, annual rate, with inventory valuation and capital consumption adjustments.  
 8. Billions of dollars; annual values are annual averages.



Greensheets

Other Macroeconomic Indicators

(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Employment and production</i>										
Nonfarm payroll employment <sup>1</sup>	-2.8	-5.6	.8	2.0	2.2	2.4	2.6	2.0	2.1	1.6
Unemployment rate <sup>2</sup>	6.9	9.9	9.5	8.7	7.8	7.0	5.8	5.5	5.3	5.2
<i>Previous Tealbook<sup>2</sup></i>	6.9	9.9	9.5	8.7	7.8	7.0	5.9	5.4	5.1	4.9
Natural rate of unemployment <sup>2</sup>	5.6	6.2	6.2	6.0	5.8	5.4	5.2	5.2	5.2	5.2
<i>Previous Tealbook<sup>2</sup></i>	5.6	6.2	6.2	6.0	5.8	5.4	5.2	5.2	5.2	5.2
GDP gap <sup>3</sup>	-3.8	-5.5	-4.4	-4.2	-4.1	-2.8	-1.4	-8	-1	.0
<i>Previous Tealbook<sup>3</sup></i>	-3.8	-5.5	-4.4	-4.2	-4.1	-2.8	-1.3	-4	.5	.8
Industrial production <sup>4</sup>	-8.9	-5.5	6.2	3.2	3.2	3.3	4.1	2.2	2.7	2.0
<i>Previous Tealbook<sup>4</sup></i>	-8.9	-5.5	6.2	3.2	3.2	3.3	3.9	2.9	3.1	2.3
Manufacturing industr. prod. <sup>4</sup>	-11.6	-6.1	6.4	3.1	3.5	2.9	3.7	2.4	2.8	2.2
<i>Previous Tealbook<sup>4</sup></i>	-11.6	-6.1	6.4	3.1	3.5	2.9	3.7	3.0	3.3	2.6
Capacity utilization rate - mfg. <sup>2</sup>	70.0	67.1	72.7	74.6	75.5	76.4	77.5	77.7	78.3	78.4
<i>Previous Tealbook<sup>2</sup></i>	70.0	67.1	72.7	74.6	75.5	76.4	77.6	78.2	79.0	79.3
Housing starts <sup>5</sup>	.9	.6	.6	.6	.8	.9	1.0	1.1	1.3	1.5
Light motor vehicle sales <sup>5</sup>	13.1	10.4	11.5	12.7	14.4	15.5	16.4	16.6	16.7	16.6
<i>Income and saving</i>										
Nominal GDP <sup>4</sup>	-9	.1	4.6	3.6	3.5	4.6	3.5	4.0	4.4	4.0
Real disposable pers. income <sup>4</sup>	1.1	-7	2.6	1.7	5.0	-1.9	3.3	2.8	2.7	2.2
<i>Previous Tealbook<sup>4</sup></i>	1.1	-7	2.6	1.7	5.0	-1.9	3.0	2.9	2.9	2.6
Personal saving rate <sup>2</sup>	6.1	5.6	5.5	5.8	8.6	4.4	5.4	5.1	5.1	4.9
<i>Previous Tealbook<sup>2</sup></i>	6.1	5.6	5.5	5.8	8.6	4.4	5.1	5.0	5.0	5.1
Corporate profits <sup>6</sup>	-30.8	53.7	18.0	6.8	3.8	4.7	-8	2.1	3.7	3.0
Profit share of GNP <sup>2</sup>	6.9	10.6	12.0	12.3	12.4	12.4	11.9	11.7	11.6	11.5
Net federal saving <sup>7</sup>	-634	-1,249	-1,329	-1,244	-1,079	-649	-526	-473	-504	-573
Net state & local saving <sup>7</sup>	-165	-272	-237	-216	-233	-225	-239	-224	-206	-194
Gross national saving rate <sup>2</sup>	14.9	14.6	15.2	16.1	17.8	17.9	18.5	18.6	18.7	18.7
Net national saving rate <sup>2</sup>	-1.6	-1.7	-4	.8	2.8	3.0	4.2	4.1	4.1	3.9

1. Change, millions.

2. Percent; values are for the fourth quarter of the year indicated.

3. Percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.

Values are for the fourth quarter of the year indicated.

4. Percent change.

5. Level, millions; values are annual averages.

6. Percent change, with inventory valuation and capital consumption adjustments.

7. Billions of dollars; values are annual averages.

**Staff Projections of Federal Sector Accounts and Related Items**  
(Billions of dollars except as noted)

Item	Fiscal year				2014				2015				2016			
	2014	2015	2016	2017	Q1 <sup>a</sup>	Q2 <sup>a</sup>	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
					Not seasonally adjusted											
<b>Unified budget</b>					Seasonally adjusted annual rates											
Receipts	3,021	3,261	3,433	3,552	656	938	760	737	678	1,024	822	765	723	1,086	859	796
Outlays	3,504	3,667	3,824	4,061	897	890	878	922	927	933	884	987	926	961	950	981
Surplus/deficit	-483	-406	-392	-509	-241	47	-117	-185	-249	92	-63	-222	-203	125	-92	-185
<i>Previous Tealbook</i>	-444	-392	-421	-471	-241	47	-78	-193	-258	119	-59	-195	-256	139	-108	-181
Means of financing:																
Borrowing	798	432	512	629	262	-46	211	202	273	-136	93	252	233	-95	122	215
Cash decrease	-70	88	0	0	20	3	-19	-4	18	74	0	0	0	0	0	0
Other <sup>1</sup>	-244	-115	-120	-120	-42	-4	-74	-13	-42	-30	-30	-30	-30	-30	-30	-30
Cash operating balance, end of period	158	70	70	70	142	139	158	162	144	70	70	70	70	70	70	70
<b>NIPA federal sector</b>																
Receipts	3,285	3,504	3,677	3,837	3,243	3,292	3,400	3,419	3,490	3,534	3,575	3,609	3,657	3,699	3,745	3,789
Expenditures	3,829	3,980	4,167	4,395	3,803	3,875	3,893	3,886	3,979	4,005	4,050	4,067	4,168	4,190	4,244	4,305
Consumption expenditures	956	950	948	966	957	956	961	951	955	950	945	941	950	950	952	952
Defense	611	609	605	614	610	610	618	609	612	608	605	602	607	606	606	605
Nondefense	345	342	343	352	347	345	343	341	343	342	340	339	343	344	346	347
Other spending	2,873	3,030	3,219	3,430	2,846	2,920	2,932	2,936	3,023	3,055	3,105	3,127	3,218	3,241	3,292	3,352
Current account surplus	-544	-476	-490	-558	-560	-584	-493	-467	-489	-472	-475	-458	-511	-492	-499	-516
Gross investment	258	250	243	243	251	255	260	254	252	249	246	244	243	242	242	241
Gross saving less gross investment <sup>2</sup>	-529	-446	-445	-506	-539	-565	-478	-444	-462	-440	-439	-417	-468	-445	-451	-465
<b>Fiscal indicators</b>																
High-employment (HEB) surplus/deficit <sup>3</sup>	-368.4	-375.5	-415.0	-509.6	-343.4	-414.1	-357.9	-349.2	-387.8	-376.8	-388.3	-376.0	-430.3	-418.5	-435.3	-461.0
Change in HEB, percent of potential GDP	-1.2	.0	.1	.4	-1.1	.4	-.3	-.1	.2	-.1	.0	-.1	.3	-.1	.1	.1
Fiscal impetus (FI), percent of GDP <sup>4</sup>	-1.1	.0	.2	.2	-5.5	.1	.3	-.3	-.3	.0	.1	.1	.1	.1	.2	.2
<i>Previous Tealbook</i>	-2.2	.0	.2	.2	-6.6	.0	-.2	-.1	-.3	.0	.1	.2	.1	.1	.3	.3
Federal purchases	-1.1	-2.2	-1.1	-1.1	.0	-1.1	-.4	-.4	-2.2	-.3	-.3	-.3	-1.1	-1.1	.0	-1.1
State and local purchases	.1	.2	.2	.2	-1.1	.4	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2
Taxes and transfers	-2.2	.1	.1	.0	-4.4	-.3	.0	.0	-2.2	.1	.1	.2	.0	.1	.1	.1

1. Other means of financing include checks issued less checks paid, accrued items, and changes in other financial assets and liabilities.  
 2. Gross saving is the current account surplus plus consumption of fixed capital of the general government as well as government enterprises.  
 3. HEB is gross saving less gross investment (NIPA) of the federal government in current dollars, with cyclically sensitive receipts and outlays adjusted to the staff's measure of potential output and the natural rate of unemployment. The sign on Change in HEB, as a percent of nominal potential GDP, is reversed. Quarterly figures for change in HEB are not at annual rates.  
 4. Fiscal impetus measures the contribution to growth of real GDP from fiscal policy actions at the general government level (excluding multiplier effects). It equals the sum of the direct contributions to real GDP growth from changes in federal purchases and state and local purchases, plus the estimated contribution from real consumption and investment that is induced by discretionary policy changes in transfers and taxes.  
 a. Actual.

**Foreign Real GDP and Consumer Prices: Selected Countries**  
(Quarterly percent changes at an annual rate)

Measure and country	2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Real GDP<sup>1</sup></b>												
Total foreign	2.2	2.3	2.8	2.8	2.9	3.0	3.2	2.8	3.2	3.2	3.2	3.2
<i>Previous Tealbook</i>	2.1	2.3	3.0	3.0	3.1	3.2	3.3	3.0	3.3	3.3	3.3	3.3
Advanced foreign economies	1.9	1.1	1.9	1.8	2.0	2.1	2.3	1.6	2.2	2.1	2.1	2.1
Canada	.9	3.1	2.5	2.4	2.4	2.5	2.5	-3.7	2.5	2.5	2.4	2.4
Japan	6.0	-7.1	2.1	1.5	1.4	1.1	2.9		1.5	.9	1.0	1.1
United Kingdom	3.0	3.7	2.8	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Euro area	1.2	.3	.7	.8	1.3	1.5	1.6	1.7	1.7	1.9	1.9	1.9
Germany	2.7	-6	.7	1.2	1.7	1.7	1.9	2.0	2.0	2.0	2.0	2.0
Emerging market economies	2.6	3.5	3.7	3.7	3.9	4.0	4.1	4.1	4.2	4.2	4.2	4.2
Asia	3.9	4.9	5.2	5.0	5.2	5.2	5.2	5.2	5.3	5.3	5.3	5.3
Korea	3.8	2.0	3.9	3.9	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
China	6.2	7.7	7.7	7.2	7.1	7.1	7.0	7.0	7.0	7.0	7.0	7.0
Latin America	1.4	2.5	2.6	2.7	2.8	3.0	3.2	3.2	3.2	3.3	3.3	3.3
Mexico	1.8	4.2	3.7	3.5	3.4	3.5	3.6	3.6	3.6	3.6	3.6	3.6
Brazil	-6	-2.4	.4	1.4	1.6	1.8	2.0	2.0	2.1	2.1	2.1	2.1
<b>Consumer prices<sup>2</sup></b>												
Total foreign	2.0	3.1	2.1	1.7	2.2	2.4	2.5	3.0	2.6	2.6	2.6	2.6
<i>Previous Tealbook</i>	2.0	3.0	2.4	2.4	2.5	2.5	2.5	3.0	2.6	2.6	2.6	2.6
Advanced foreign economies	1.1	3.2	1.1	.3	.8	1.2	1.4	2.5	1.5	1.6	1.6	1.7
Canada	2.8	3.7	1.3	.2	.8	1.6	1.7	1.8	1.9	1.9	1.9	1.9
Japan	.4	9.4	1.5	.1	.3	.9	1.0	6.3	1.1	1.2	1.2	1.3
United Kingdom	1.2	1.8	1.6	1.0	1.6	1.6	1.8	1.9	1.8	1.9	1.9	2.0
Euro area	.2	.4	.6	.4	1.0	1.1	1.3	1.3	1.4	1.4	1.5	1.6
Germany	.2	.4	1.8	.5	1.3	1.4	1.5	1.6	1.7	1.7	1.7	1.7
Emerging market economies	2.6	2.9	2.8	2.9	3.3	3.4	3.3	3.3	3.3	3.3	3.3	3.3
Asia	1.6	2.4	2.0	2.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Korea	1.4	2.2	.6	2.8	3.3	3.2	3.2	3.2	3.3	3.3	3.3	3.3
China	.8	2.0	2.2	1.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Latin America	5.3	4.3	4.9	4.0	3.7	3.8	3.8	3.8	3.7	3.7	3.7	3.7
Mexico	4.8	3.3	4.4	3.5	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Brazil	6.5	7.4	6.2	6.2	5.6	5.6	5.6	5.6	5.5	5.5	5.5	5.5

<sup>1</sup> Foreign GDP aggregates calculated using shares of U.S. exports.

<sup>2</sup> Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

**Foreign Real GDP and Consumer Prices: Selected Countries**  
(Percent change, Q4 to Q4)

Measure and country	-----Projected-----										
	2009	2010	2011	2012	2013	2014	2015	2016	2017		
<b>Real GDP<sup>1</sup></b>											
Total foreign	1.0	4.7	3.1	2.3	2.5	2.5	3.0	3.2	3.1		
<i>Previous Tealbook</i>	.9	4.7	3.0	2.3	2.5	2.6	3.2	3.3	3.2		
Advanced foreign economies	-1.4	3.1	1.5	.3	1.9	1.7	2.0	2.1	2.1		
Canada	-1.4	3.6	2.4	1.0	2.7	2.2	2.5	2.5	2.3		
Japan	-.6	3.5	.2	-.3	2.4	.5	.4	1.1	1.1		
United Kingdom	-1.5	2.2	1.5	.4	2.7	3.0	2.4	2.4	2.3		
Euro area	-2.4	2.3	.7	-.9	.4	.8	1.5	1.9	2.0		
Germany	-3.0	4.4	2.4	.1	1.1	1.0	1.8	2.0	1.9		
Emerging market economies	3.9	6.4	4.6	4.3	3.1	3.4	4.0	4.2	4.1		
Asia	7.8	8.0	5.0	5.5	5.1	4.7	5.2	5.3	5.2		
Korea	4.9	6.1	3.0	2.1	3.6	3.4	4.0	4.0	3.9		
China	11.3	9.7	8.7	7.7	7.6	7.2	7.0	7.0	6.9		
Latin America	.0	4.7	4.1	3.2	1.2	2.3	3.1	3.3	3.3		
Mexico	-1.2	4.5	4.2	3.3	.6	3.3	3.5	3.6	3.6		
Brazil	5.3	5.3	1.3	1.8	2.2	-.3	1.8	2.1	2.2		
<b>Consumer prices<sup>2</sup></b>											
Total foreign	1.2	3.2	3.4	2.3	2.3	2.2	2.5	2.6	2.6		
<i>Previous Tealbook</i>	1.2	3.2	3.4	2.3	2.3	2.5	2.6	2.6	2.6		
Advanced foreign economies	.2	1.7	2.2	1.3	1.0	1.4	1.5	1.6	1.7		
Canada	.8	2.2	2.7	-.9	1.0	2.0	1.5	1.9	2.0		
Japan	-2.0	-.3	-.3	-.2	1.4	2.8	2.1	1.2	1.3		
United Kingdom	2.2	3.4	4.6	2.6	2.1	1.4	1.7	1.9	2.0		
Euro area	.4	2.0	2.9	2.3	.8	.4	1.2	1.5	1.6		
Germany	.3	1.6	2.6	2.0	1.3	.7	1.4	1.7	1.7		
Emerging market economies	2.0	4.3	4.3	3.1	3.4	2.8	3.3	3.3	3.3		
Asia	1.2	4.3	4.5	2.6	3.1	2.1	3.2	3.2	3.2		
Korea	2.4	3.2	3.9	1.7	1.1	1.7	3.3	3.3	3.3		
China	.6	4.6	4.6	2.1	2.9	1.7	3.0	3.0	3.0		
Latin America	3.9	4.4	4.0	4.3	4.0	4.6	3.8	3.7	3.6		
Mexico	4.0	4.3	3.5	4.1	3.7	4.0	3.3	3.3	3.3		
Brazil	4.3	5.6	6.7	5.6	5.9	6.6	5.6	5.5	5.5		

<sup>1</sup> Foreign GDP aggregates calculated using shares of U.S. exports.

<sup>2</sup> Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

Greensheets

U.S. Current Account

Quarterly Data

	2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>U.S. current account balance</b>	<b>-408.5</b>	<b>-394.0</b>	<b>-426.1</b>	<b>-400.1</b>	<b>-409.9</b>	<b>-391.0</b>	<b>-407.3</b>	<b>-430.2</b>	<b>-468.8</b>	<b>-453.8</b>	<b>-481.3</b>	<b>-489.9</b>
<i>Previous Tealbook</i>	-435.5	-410.9	-434.4	-413.7	-433.7	-411.3	-425.9	-444.1	-481.0	-461.7	-487.8	-486.5
Current account as percent of GDP	-2.4	-2.3	-2.4	-2.3	-2.3	-2.2	-2.2	-2.3	-2.5	-2.4	-2.5	-2.6
<i>Previous Tealbook</i>	-2.6	-2.4	-2.5	-2.3	-2.4	-2.3	-2.3	-2.4	-2.6	-2.4	-2.5	-2.5
Net goods & services	-498.1	-521.0	-494.3	-452.5	-447.9	-439.1	-446.6	-463.8	-475.4	-471.5	-487.8	-493.0
Investment income, net	218.2	221.7	210.1	192.3	190.1	181.4	175.3	167.2	158.7	151.1	142.5	136.7
Direct, net	292.8	286.0	273.7	255.0	255.2	256.0	259.8	263.4	267.0	272.2	277.3	284.9
Portfolio, net	-74.6	-64.3	-63.6	-62.7	-65.1	-74.5	-84.5	-96.2	-108.3	-121.2	-134.8	-148.3
Other income and transfers, net	-128.5	-94.7	-141.9	-140.0	-152.1	-133.4	-136.0	-133.6	-152.1	-133.4	-136.0	-133.6

Billions of dollars, s.a.a.r.

Annual Data

	Projected										
	2009	2010	2011	2012	2013	2014	2015	2016	2017		
<b>U.S. current account balance</b>	<b>-380.8</b>	<b>-443.9</b>	<b>-459.3</b>	<b>-460.8</b>	<b>-400.3</b>	<b>-407.2</b>	<b>-409.6</b>	<b>-473.5</b>	<b>-504.1</b>		
<i>Previous Tealbook</i>	-380.8	-443.9	-459.3	-460.8	-400.3	-423.6	-428.8	-479.3	-498.3		
Current account as percent of GDP	-2.6	-3.0	-3.0	-2.9	-2.4	-2.3	-2.3	-2.5	-2.6		
<i>Previous Tealbook</i>	-2.6	-3.0	-3.0	-2.9	-2.4	-2.4	-2.4	-2.5	-2.5		
Net goods & services	-383.8	-494.7	-548.6	-537.6	-476.4	-491.5	-449.4	-481.9	-490.1		
Investment income, net	132.3	185.7	229.0	211.4	208.5	210.6	178.5	147.2	124.8		
Direct, net	257.7	288.0	298.6	281.6	290.9	276.9	258.6	275.4	307.3		
Portfolio, net	-125.4	-102.3	-69.5	-70.2	-82.3	-66.3	-80.1	-128.1	-182.5		
Other income and transfers, net	-129.3	-135.0	-139.8	-134.6	-132.4	-126.3	-138.8	-138.8	-138.8		

Billions of dollars

## Abbreviations

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ABS	asset-backed securities
AFE	advanced foreign economy
BHC	bank holding company
CDS	credit default swaps
CLO	collateralized loan obligation
CMBS	commercial mortgage-backed securities
CPI	consumer price index
CRE	commercial real estate
Desk	Open Market Desk
DSGE	dynamic stochastic general equilibrium
ECB	European Central Bank
EME	emerging market economy
FBO	foreign banking organization
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
IMF	International Monetary Fund
LSAP	large-scale asset purchase
M&A	mergers and acquisitions
MBS	mortgage-backed securities
OIS	overnight index swap
ON RRP	overnight reverse repurchase agreement
PCE	personal consumption expenditures
PMI	purchasing managers index
repo	repurchase agreement
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SOMA	System Open Market Account
S&P	Standard & Poor's
TIPS	Treasury Inflation-Protected Securities