

## **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

April 22, 2015

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

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## Domestic Economic Developments and Outlook

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The information we received during the intermeeting period suggests that household and business spending, production, and labor demand were all weaker last quarter than we projected in the March Tealbook. We now estimate that real GDP was about unchanged in the first quarter—compared with a 1¾ percent increase in the March projection—and that industrial production contracted.<sup>1</sup> Although the labor market continued to improve last quarter, payrolls rose 70,000 per month less than we had expected, and the unemployment rate in March was 0.1 percentage point higher.

In response to the incoming data, we lowered our projection for real GDP growth in the second quarter to just under 2½ percent, ¼ percentage point less than in the March Tealbook, and trimmed our forecast for payroll gains in the coming months. Nevertheless, we judge much of the weakness in the recent data to be the result of transitory factors or noise, with few implications for GDP growth beyond the first half of this year. Over the medium term, monetary policy is assumed to be a bit more accommodative in this projection, and other conditioning factors are a little more supportive, on balance, of economic growth. All told, we revised up modestly our forecast of output growth beyond the near term, with real GDP increasing about 2½ percent in the second half of this year and in 2016 before slowing to 2 percent in 2017. At the end of the medium term, the level of real GDP is about ¼ percent below the March Tealbook projection. The output gap at that time is positive, but with our unchanged supply-side assumptions, the gap is slightly smaller than in the March Tealbook.

The unemployment rate in the current projection declines from 5.5 percent in March to 5.1 percent in the final quarter of 2017, slightly below our estimate of its natural rate but a bit higher than in the March Tealbook. The modest decrease in the unemployment rate over the projection period remains more gradual than implied by the change in the GDP gap, as we continue to anticipate that an unwinding of the current unusual weakness in labor force participation will attenuate the decline in the jobless rate.

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<sup>1</sup> The BEA is scheduled to publish its initial estimate of first-quarter GDP on April 29, the second day of the FOMC meeting.

## Comparing the Staff Projection with Other Forecasts

The staff forecasts of real GDP growth and inflation are, on balance, a little lower than the most recent Blue Chip Consensus outlook and the Survey of Professional Forecasters (SPF) median projection (although the latter dates from mid-February). The staff's forecast of the unemployment rate is a bit higher than those of the outside forecasts.

### Comparison of Tealbook and Outside Forecasts

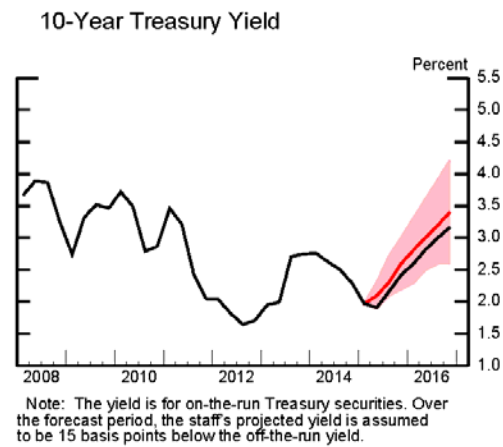
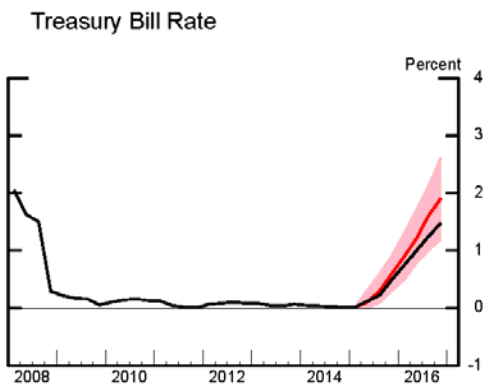
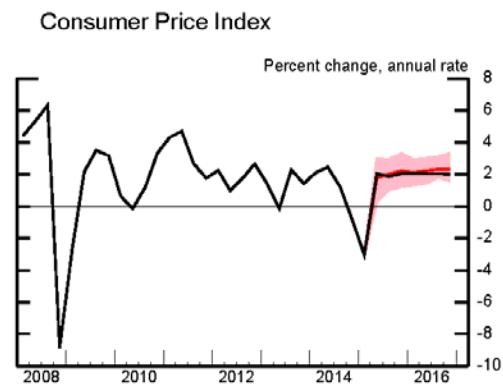
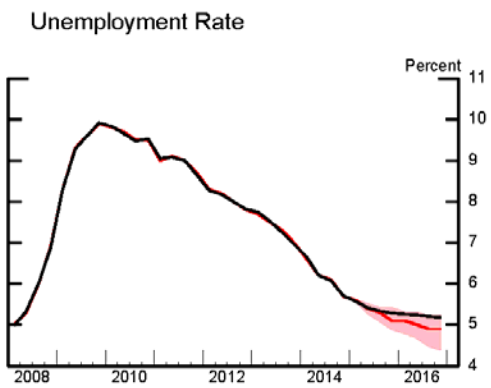
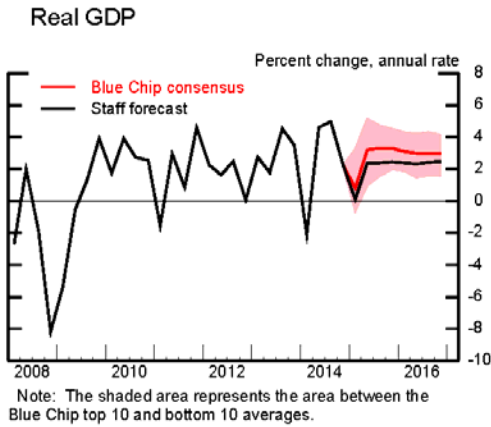
	2015	2016
<b>GDP (Q4/Q4 percent change)</b>	<b>1.8</b>	<b>2.4</b>
<i>March Tealbook</i>	2.2	2.3
Blue Chip (4/10/15)	2.7	2.7
SPF median (2/13/15)	2.8	n.a.
<b>Unemployment rate (Q4 level)</b>	<b>5.3</b>	<b>5.2</b>
<i>March Tealbook</i>	5.2	5.1
Blue Chip (4/10/15)	5.1	4.9
SPF median (2/13/15)	5.2	n.a.
<b>Consumer price inflation (Q4/Q4 percent change)</b>	<b>0.7</b>	<b>2.0</b>
<i>March Tealbook</i>	0.6	2.1
Blue Chip (4/10/15)	0.8	2.2
SPF median (2/13/15)	1.1	2.1
<b>PCE price inflation (Q4/Q4 percent change)</b>	<b>0.6</b>	<b>1.6</b>
<i>March Tealbook</i>	0.6	1.7
SPF median (2/13/15)	1.1	1.9
<b>Core PCE price inflation (Q4/Q4 percent change)</b>	<b>1.3</b>	<b>1.6</b>
<i>March Tealbook</i>	1.3	1.6
SPF median (2/13/15)	1.4	1.7

Note: SPF is the Survey of Professional Forecasters. Blue Chip does not provide results for PCE price inflation. The Blue Chip Consensus contains about 50 panelists, and the SPF about 40. Roughly 20 panelists contribute to both surveys.

n.a. Not available.

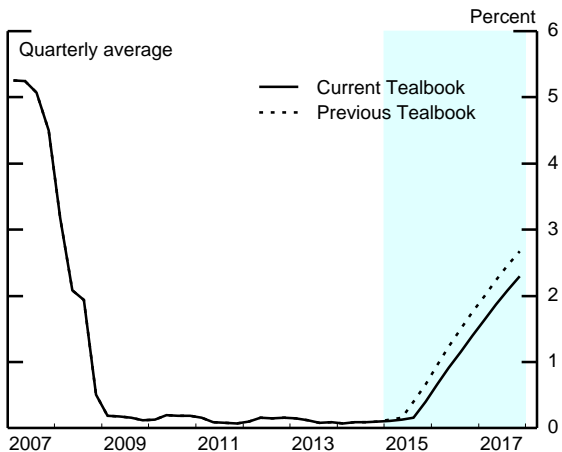
Source: Blue Chip Economic Indicators; Federal Reserve Bank of Philadelphia.

### Tealbook Forecast Compared with Blue Chip (Blue Chip survey released April 10, 2015)

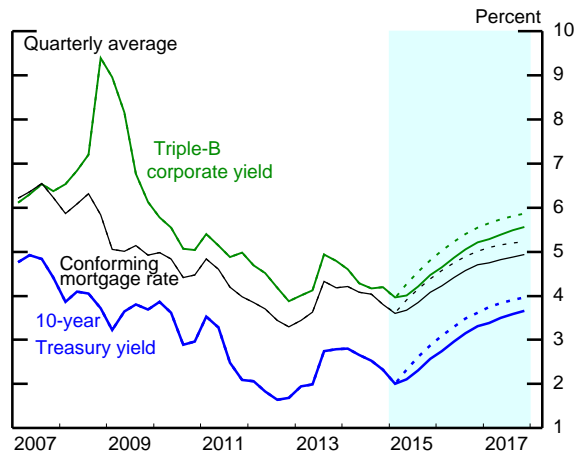


### Key Background Factors underlying the Baseline Staff Projection

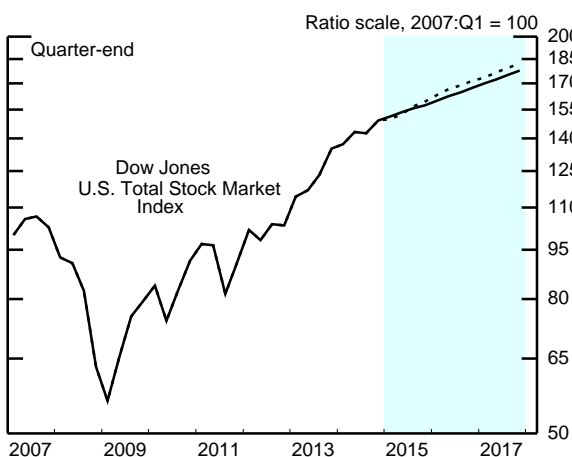
#### Federal Funds Rate



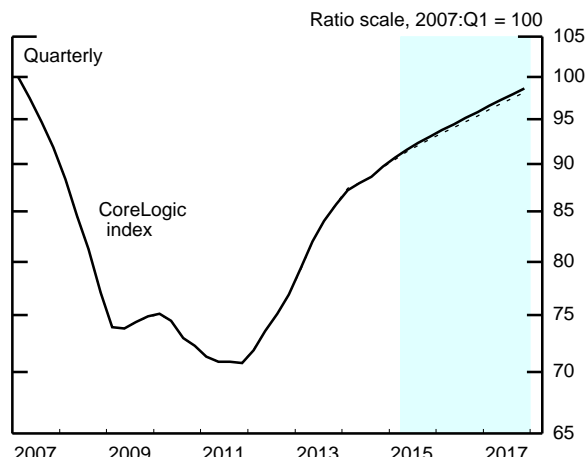
#### Long-Term Interest Rates



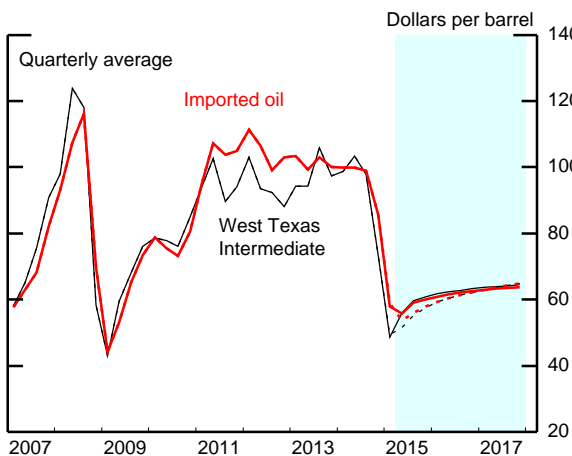
#### Equity Prices



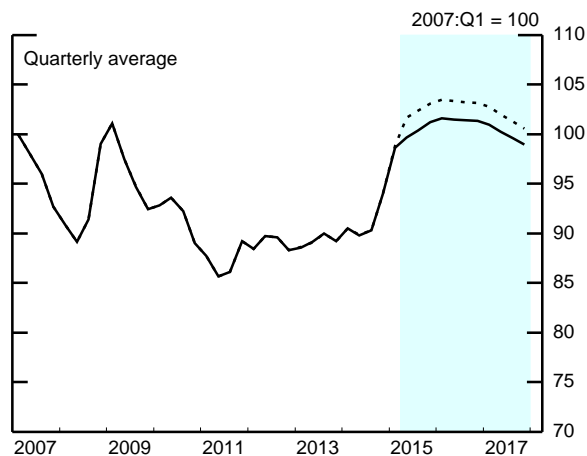
#### House Prices



#### Crude Oil Prices



#### Broad Real Dollar



We estimate that total PCE prices fell 2 percent in the first quarter, dragged down by the earlier sharp declines in oil prices, and that core PCE prices rose just  $\frac{3}{4}$  percent, partially reflecting soft readings that we think are transitory. Both estimates are unrevised from the March Tealbook. With these temporary influences on inflation anticipated to fade, both headline and core price inflation are projected to be  $1\frac{1}{2}$  percent in the current quarter and then to edge up to  $1\frac{3}{4}$  percent by 2017, as energy prices rise, import prices turn up next year, and resource utilization tightens further.

As always, numerous risks attend our outlook. We view the uncertainty around our projection for real GDP growth, the unemployment rate, and inflation as broadly in line with the average of the past 20 years, a period that includes considerable volatility. We have maintained our assessment that the risks to our GDP projection are tilted somewhat to the downside, largely reflecting our view that neither monetary nor fiscal policy appears well positioned to offset substantial adverse shocks to the economy. We still see the risks around our outlook for the unemployment rate as roughly balanced, as the downside risks to real activity are offset by the possibility that the unemployment rate could continue to decline more rapidly than we expect (despite the small upside surprises in recent months). Our concerns with respect to the inflation outlook remain mostly on the downside, given the still-muted readings on TIPS-based measures of inflation compensation and risks to domestic inflation from dollar appreciation.

The box “Tealbook Forecast Errors: An Update through 2014” discusses the recent errors in the staff’s forecasts for GDP, unemployment, and inflation. A related discussion is in the box “New Exhibit on Prediction Intervals Derived from Historical Tealbook Forecast Errors” in the Risks and Uncertainty section.

## **KEY BACKGROUND FACTORS**

### **Monetary Policy**

- We now assume that the federal funds rate will lift off from its effective lower bound after the September meeting rather than after the June meeting. This small modification to our monetary policy assumption is broadly consistent with the responses to both the “flash” Survey of Primary Dealers conducted following the March FOMC meeting and the latest survey, as well as with expectations of liftoff suggested by the federal funds futures market. As in our previous projections, following liftoff, the federal funds rate is assumed to



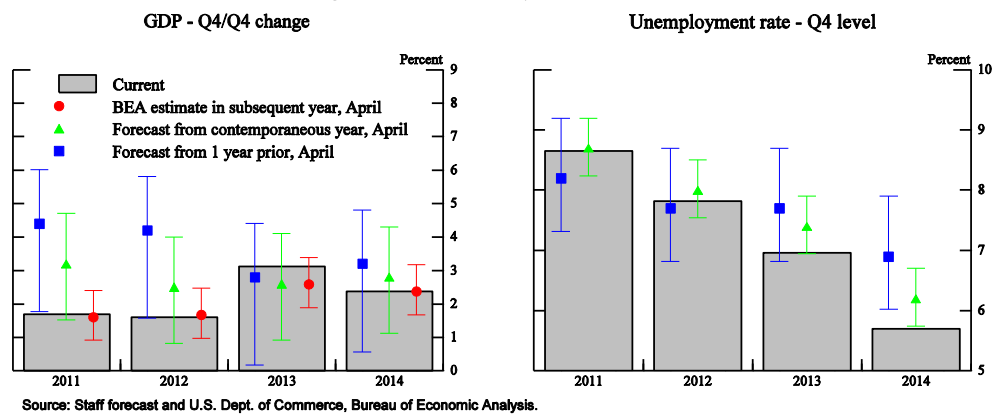
## Tealbook Forecast Errors: An Update through 2014

As was the case for 2013, staff forecasts were roughly in line with the latest estimates of real GDP growth for 2014 but did not anticipate the sizable drop in the unemployment rate. Meanwhile, inflation in 2014 was slightly below the staff's expectations. Here we present and discuss these recent forecast errors.

The gray bars in the left panel of figure 1 show the currently published Q4/Q4 percent changes in real GDP from 2011 to 2014; the blue squares show the forecasts for growth made in the April Tealbook one year prior, and the green triangles show the forecast from the April Tealbook in the contemporaneous year. The whisker bands around the squares and triangles demarcate 70 percent forecast-error bands, with unusually large forecast errors represented by cases where the top of a gray bar (the actual value) falls outside one of the whisker bands. Because the bars themselves represent the latest revised data, the red dots show the Bureau of Economic Analysis (BEA) estimate of GDP growth for each year from April of the subsequent year (known as the third estimates), along with 70 percent bands computed from past revisions.

The staff errors in forecasting 2013 and 2014 GDP growth were not particularly large, and while the forecasts for 2014 Q4/Q4 GDP growth currently appear slightly too high, revisions could easily reverse that conclusion—for example, forecasts of 2013 GDP growth that earlier appeared slightly too high now appear to have been slightly too low, given the subsequent upward revisions to the BEA's estimates. Indeed, an array of indicators suggest economic growth stepped up in 2014 from its 2013 pace, currently estimated to be around 3 percent. For example, the pace of payroll employment gains picked up in 2014, and the unemployment rate fell by more than in prior years. As such, the staff views GDP growth in 2014 as likely held down by measurement error, and an upward revision to 2014 GDP growth would not be surprising.

Figure 1: Real Activity Forecast Errors

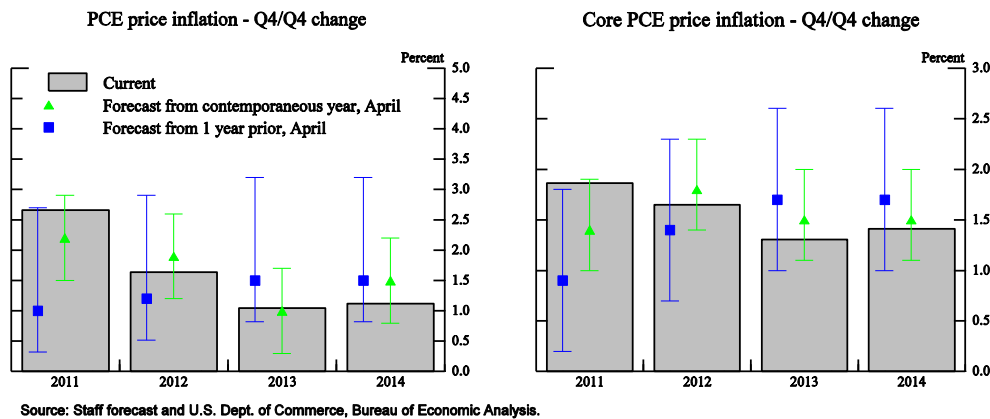


As shown in the right panel of figure 1, the staff’s errors in forecasting the unemployment rate in 2014:Q4 were unusually large. In addition, the staff’s projections for the unemployment rate one quarter and further ahead were consistently too high from August 2011 to October 2014, with the forecast errors reflecting a mix of lower-than-expected labor force participation and higher-than-expected household survey employment. Payroll employment gains (not shown) also were larger in 2014 than the staff had anticipated.

Figure 2 shows the staff’s forecasts, with standard error bands, for total and core PCE price inflation along with the latest estimates from 2011 to 2014. The figure shows that the errors in forecasting 2014 inflation were not particularly large. The contemporaneous-year forecast error for 2014 inflation was concentrated in energy, reflecting lower-than-anticipated crude oil prices, while the error in forecasting 2014 inflation one year ahead was spread across more categories, including the broad non-energy, non-housing services category.

The staff compensation growth forecasts (not shown) also appear to have been slightly too high recently—for example, the staff forecast of the four-quarter growth rate of the employment cost index for hourly compensation over 2014 was 2¾ percent in April 2013 and 2½ percent in April 2014, above the current published value of 2¼ percent. Similarly, the staff forecast of the four-quarter growth rate of nonfarm business compensation per hour over 2014 was about 3 percent in April 2013 and 2½ percent in April 2014, compared with the current Bureau of Labor Statistics estimate of 2½ percent.<sup>1</sup>

Figure 2: Price Inflation Forecast Errors



<sup>1</sup> The staff recently switched from forecasting nonfarm business compensation per hour (CPH) to business CPH, which shows a slightly lower Q4/Q4 growth rate in 2014, around 2¼ percent instead of 2½ percent.

rise at a pace determined by the prescriptions of an inertial version of the Taylor (1999) policy rule. The projected path of the federal funds rate is a bit lower than in the March projection, reaching an average of 2.3 percent in the fourth quarter of 2017.<sup>2</sup>

### Other Interest Rates

- Our projection continues to call for the 10-year Treasury yield to rise significantly, albeit a bit less steeply than in previous rounds. This downward revision reflects the new trajectory of expected short-term rates along with a slightly lower projected path for the term premium. The rising path of the Treasury yield reflects the movement of the 10-year valuation window through the period of extremely low short-term interest rates, as well as an increase in term premiums that is due in part to the waning of the effects of the FOMC's balance sheet policies.
- Our forecasts for corporate bond yields and mortgage rates in the medium term have been revised essentially in line with the changes to the path for the Treasury yield.

### Equity Prices and Home Prices

- Equity prices are projected to rise 6 percent per year over the forecast period, a little slower than in the March Tealbook. This revision reflects a slightly shallower projected decline in the equity premium.
- Incoming data on house prices have been in line with our expectations, leaving our forecast little changed from the March Tealbook. We continue to project that house price appreciation will slow, from 4¾ percent last year to an average rate of about 3¼ percent per year from 2015 to 2017.

### Fiscal Policy

- We have made no changes to our fiscal policy assumptions in this forecast. We continue to anticipate that fiscal policy actions at all levels of government

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<sup>2</sup> If we had maintained our assumption that the federal funds rate would lift off in June, the FRB/US model projects that, relative to our current forecast, real GDP growth would be less than 0.1 percentage point weaker in both 2016 and 2017, the unemployment rate would be less than 0.1 percentage point higher at the end of 2017, inflation would be a couple of basis points lower in 2017, and the federal funds rate would be about 15 basis points higher at the end of the medium term.

will swing from a small drag on real GDP growth in 2014 to a small stimulus this year and over the rest of the medium term.

### **Foreign Economic Activity and the Dollar**

- We estimate that foreign real GDP growth slowed from an annual rate of 2¾ percent in the second half of 2014 to a surprisingly low 1¾ percent in the first quarter of this year. We project that foreign economic growth will bounce back and reach 3 percent by the end of this year—supported by accommodative monetary policies, depreciated currencies, and still-low oil prices—and that it will maintain this pace, roughly its trend rate, in 2016 and 2017. Foreign real GDP growth in the first half of 2015 is ½ percentage point lower than in the March Tealbook and is essentially unrevised thereafter.
- The broad nominal dollar has depreciated about 2 percent since the March Tealbook, consistent with the downward shift in the expected path of the federal funds rate and weaker-than-expected U.S. economic data. However, we project that the nominal dollar will appreciate 2¾ percent through the remainder of 2015 as investors refocus their attention on the divergence between expected monetary policies in the United States and abroad. Thereafter, as foreign economic growth firms and as some tail risks for the euro-area economy diminish, the nominal dollar is projected to weaken. Our forecast leaves the broad real dollar about 1½ percent lower at the end of the forecast period relative to the previous Tealbook.

### **Oil and Other Commodity Prices**

- The spot price of Brent crude oil has risen \$6 per barrel since the time of the March Tealbook, reaching \$62 per barrel on April 21. The rise appears primarily to reflect signs that U.S. production may level out soon, which would help reduce the current supply glut. Prices for futures contracts with delivery at the end of 2017 were little changed. We expect the price of imported oil to move up from \$56 per barrel this quarter to about \$64 per barrel by the end of the forecast period—a projected path that, relative to the March Tealbook, is \$3 per barrel higher in the second half of this year and little changed on average for the remainder of the forecast period.

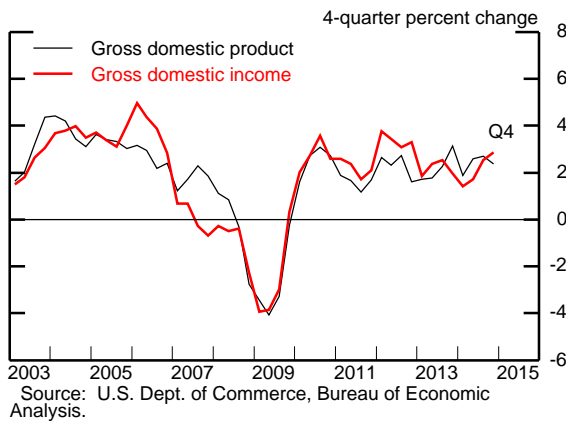
**Summary of the Near-Term Outlook**  
(Percent change at annual rate except as noted)

Measure	2014:Q4		2015:Q1		2015:Q2	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
<b>Real GDP</b>	<b>2.1</b>	<b>2.2</b>	<b>1.7</b>	<b>.1</b>	<b>2.6</b>	<b>2.4</b>
Private domestic final purchases	4.3	4.5	3.0	.9	4.1	3.1
Personal consumption expenditures	4.2	4.4	3.5	1.9	4.4	4.2
Residential investment	4.5	3.8	1.4	1.8	8.5	1.1
Nonres. private fixed investment	4.4	4.7	.7	-4.3	1.5	-1.9
Government purchases	-2.0	-1.9	-.8	-2.3	.1	1.3
<i>Contributions to change in real GDP</i>						
Inventory investment <sup>1</sup>	-.1	-.1	.1	.4	.1	.2
Net exports <sup>1</sup>	-1.0	-1.0	-.7	-.6	-1.0	-.6
<b>Unemployment rate<sup>2</sup></b>	<b>5.7</b>	<b>5.7</b>	<b>5.5</b>	<b>5.6</b>	<b>5.3</b>	<b>5.4</b>
<b>PCE chain price index</b>	<b>-.4</b>	<b>-.4</b>	<b>-2.0</b>	<b>-2.0</b>	<b>1.3</b>	<b>1.5</b>
Ex. food and energy	1.1	1.1	.8	.8	1.4	1.6

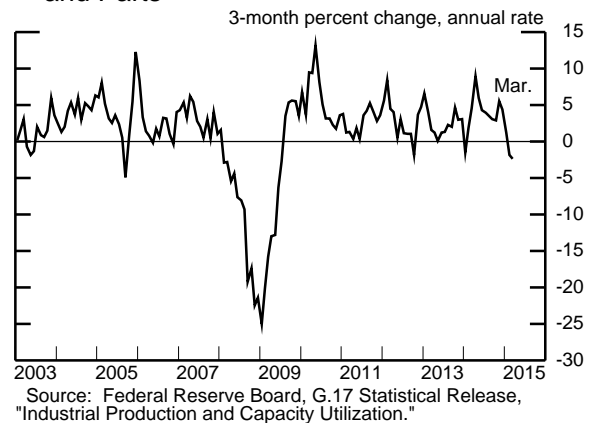
1. Percentage points.  
2. Percent.

**Recent Nonfinancial Developments (1)**

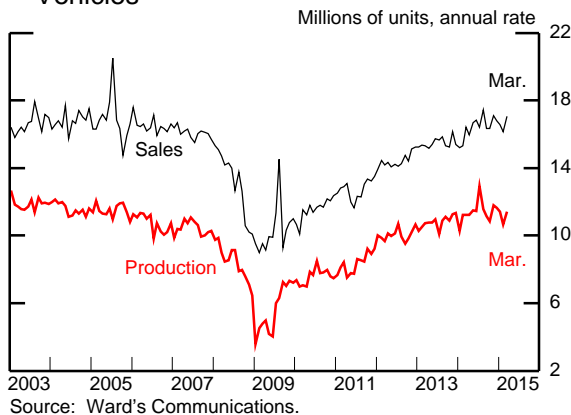
Real GDP and GDI



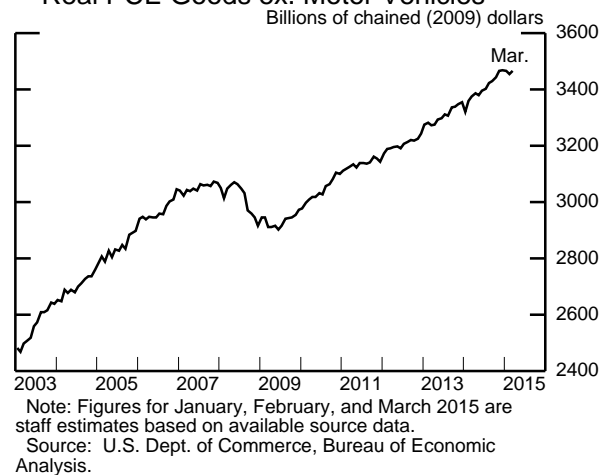
Manufacturing IP ex. Motor Vehicles and Parts



Sales and Production of Light Motor Vehicles



Real PCE Goods ex. Motor Vehicles



- Among non-oil commodity prices, iron ore and zinc prices have declined sharply in response to increases in supply and to concerns about Chinese demand. However, the price of copper moved higher because of supply disruptions.

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

As noted earlier, the incoming spending data have been disappointing, on balance, and we have downgraded our estimates for nearly all of the major categories of final sales in the first quarter. We currently estimate that real GDP was about unchanged last quarter, compared with a 1¾ percent increase in the March Tealbook. (Estimates of first-quarter GDP growth from most other near-term forecasting approaches within the System have also revised down considerably over the past two months. See the box “Nowcasting Models within the Federal Reserve System.”) While we judge some of the weakness seen in a variety of indicators to be the result of transitory factors or statistical noise, we also perceive some of the incoming data as suggesting a slower pace of underlying spending than we had previously expected.<sup>3</sup> As a result, we have marked down slightly the projected second-quarter increase in real GDP to a little below 2½ percent.

- Much of the downward revision to our first-quarter estimate reflects a considerable slowing in real PCE growth, from 4½ percent in the fourth quarter of last year to only 2 percent in the first quarter of this year, about 1½ percentage points less than we expected in the March Tealbook. We have attributed some of the weakness in first-quarter consumer spending to transitory factors. For example, light motor vehicle sales rebounded in March, consistent with our assumption that February sales had been held down by unusually bad weather. However, core retail sales bounced back in March by less than we expected, and overall PCE appears inexplicably soft last quarter. With the fundamentals underpinning consumer spending remaining solid, we expect real PCE growth to step up to a 4¼ percent pace in the current quarter, only about ¼ percentage point less than in the March forecast. (For information on recent developments in households’ health-care spending, see

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<sup>3</sup> These transitory factors include the harsh weather in February, disrupted production associated with the West Coast port dispute, a measurement problem for core retail sales that is related to the inclusion of gasoline sales in the tallies for some large retailers, and apparent residual seasonality in the data on state and local government construction spending.

## Nowcasting Models within the Federal Reserve System

“Nowcasting” is the prediction of economic conditions in the present and the very near future. One important development in recent years has been the application of statistical methods capable of dealing with mixed-frequency information to nowcasting. Such methods are particularly helpful because they allow data that reflect the state of economic activity at frequencies higher than the quarterly releases of the national accounts measures to be incorporated in a formal way. The availability of these techniques has spurred a great deal of interest in nowcasting, including among Federal Reserve System staff. Here we summarize the nowcasting models used across the Federal Reserve System for estimating real GDP growth with real-time data and show the nowcasts of first-quarter real GDP growth from the various models.

Most nowcasts of real GDP growth use one of two approaches. The first, more traditional approach is often referred to as a “tracking model.” The second, more modern approach is based on statistical models that formalize the influence of many data releases on estimates of GDP growth.<sup>1</sup>

Under the more traditional approach, the quarterly growth rates of the major expenditure components of GDP are estimated using either accounting translations of the available data or so-called bridge equations that regress the growth rate of each component of GDP on a few related variables, which are typically monthly. Under the bridge equation method, missing values of the “explanatory” variables in the quarter of interest are forecast using, for example, time-series models. The nowcast of real GDP growth is then constructed by aggregating the nowcasts of its components in a way that attempts to mimic the Bureau of Economic Analysis methodology, sometimes incorporating judgmental adjustments to the process.

In contrast, the more modern approach formulates the nowcast process as a joint system in which a large set of observed variables at low (quarterly) or high (monthly, weekly, or daily) frequencies, among which is quarterly real GDP growth, are related to high-frequency latent variables. Given the large number of variables used to provide information about the state of the economy, conventional econometric models—such as least-squares regression—would run the risk of being highly parameterized, which could make their estimation imprecise. The nowcasting models typically employ one of two approaches to solve this high-dimensionality problem. First, in “dynamic factor models,” a few unobserved macroeconomic factors driving the evolution of economic activity are extracted from the observed variables and ultimately used to produce the nowcasts; “factor-augmented autoregressions” are variants of these models. Second, models can gain precision by applying estimation methods that overcome the high-dimensionality issue; the use of Bayesian vector autoregressions (VARs) is one such technique. Because

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<sup>1</sup> In the summary table on the next page, all of the models use one of the two approaches to at least some degree. However, some Federal Reserve Banks use models that are hybrids of the two broad approaches described in the text. For the sake of brevity, we do not explain them here, but the respective regional Banks can provide additional information.

these approaches can be applied to data at different frequencies, they are often referred to as mixed-frequency models.

Within the Federal Reserve System, 14 different nowcasting models are currently in use (see the table below). For each model, the table shows nowcasts of real GDP growth for the first quarter of this year as of both February 13 and April 16. The nowcasts at these two dates illustrate how the estimates can change as more information is added to the process. In this instance, they show how these different models have interpreted the generally disappointing data received in recent weeks: The median nowcast declined from 2.5 percent on February 13 to 1.4 percent on April 16.<sup>2</sup> Additionally, even though the same information is available to the models at a given point in time, the flow of information can determine the variability of the nowcasts beyond the particularities of the individual models: Early in the quarter, when information is very limited, the models likely yield forecasts of real GDP growth mostly based on recent historical data; as more news becomes available from the data releases, the nowcasts could start to differ depending on the features of the models. For example, for 2015:Q1, the dispersion of estimates across models as of April 16 was greater than it was on February 13.

**Nowcasting Models within the Federal Reserve System  
and Estimates of Near-Term Real GDP Growth**

Bank	Model type	2015:Q1 nowcasts* as of	
		2/13/15	4/16/15
FRB New York	1. Factor-augmented autoregressions	2.6	1.8
	2. Factor-augmented autoregressions (financials only)	2.3	2.4
FRB Cleveland	1. Bayesian regressions with stochastic volatility	2.5	1.3
	2. Tracking model	1.5	0.6
FRB Atlanta	1. Tracking model combined with Bayesian VARs, dynamic factor models, and factor-augmented autoregressions (publicly available as “GDPNow”)	2.3	0.1
FRB Chicago	1. Dynamic factor models	2.8	1.4
	2. Bayesian VARs	2.8	0.7
FRB St. Louis	1. Dynamic factor models	2.4	1.7
	2. News index model	2.3	2.0
	3. Let-the-data-decide regressions	2.5	2.1
FRB Minneapolis	1. Bayesian VARs	2.7	1.9
FRB Kansas City	1. Judgmental tracking model	1.5	0.7
Board of Governors	1. Board staff forecast (judgmental tracking model)**	2.6	0.5
	2. Dynamic factor models	3.3	0.5
<b>Memo: Median</b>		<b>2.5</b>	<b>1.4</b>

\* Measured as the percent change from the previous quarter at an annual rate.

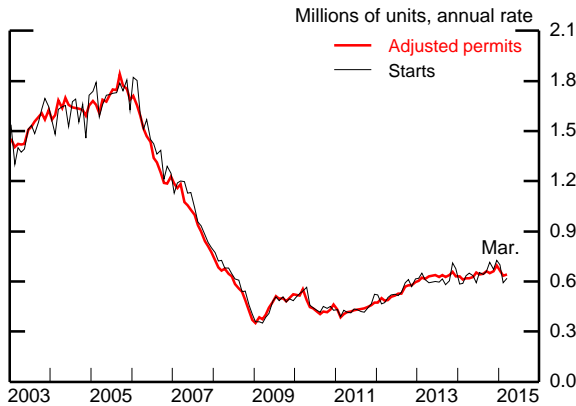
\*\* The April Tealbook estimate, which incorporates data received after April 16, is 0.1 percent.

<sup>2</sup> The one model that did not reduce its estimate of 2015:Q1 real GDP growth from February 13 to April 16 is the FRB New York model, which only uses financial variables.



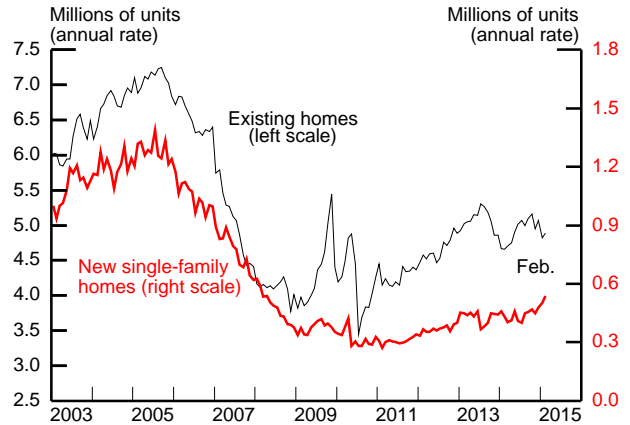
## Recent Nonfinancial Developments (2)

### Single-Family Housing Starts and Permits



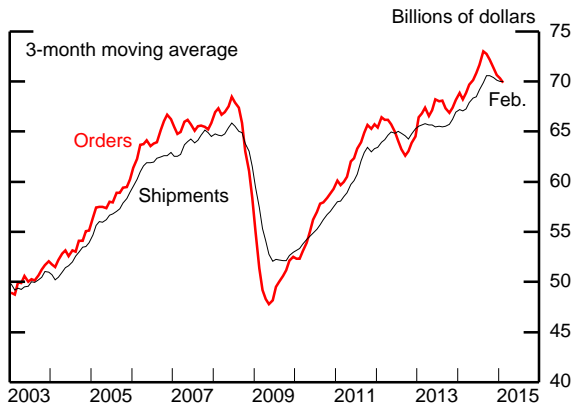
Note: Adjusted permits equal permit issuance plus total starts outside of permit-issuing areas.  
Source: U.S. Census Bureau.

### Home Sales



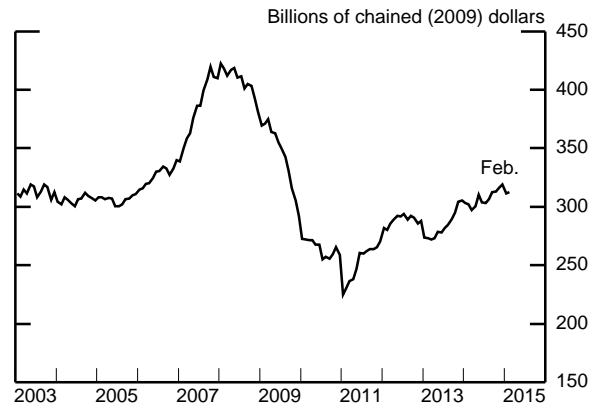
Source: For existing, National Association of Realtors; for new, U.S. Census Bureau.

### Nondefense Capital Goods ex. Aircraft



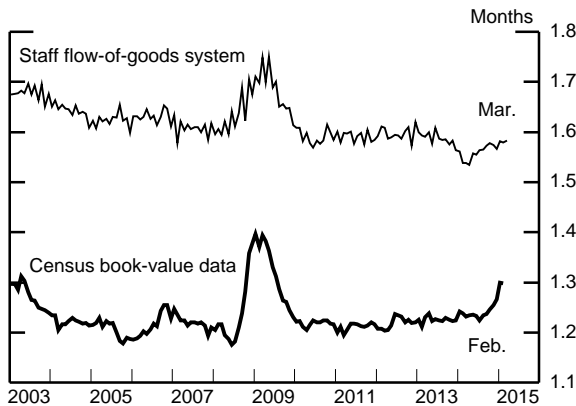
Source: U.S. Census Bureau.

### Nonresidential Construction Put in Place



Note: Nominal CIPPI deflated by BEA prices through 2014:Q4 and by the staff's estimated deflator thereafter.  
Source: U.S. Census Bureau.

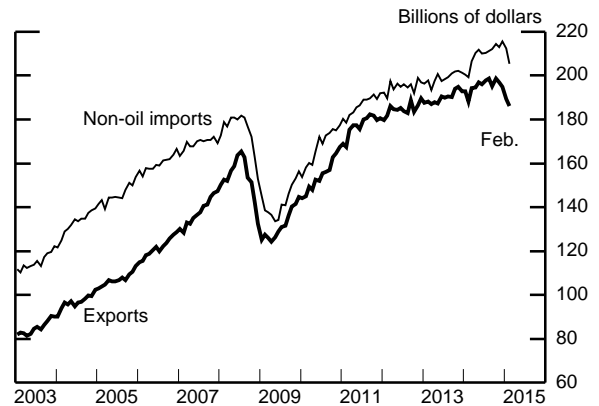
### Inventory Ratios ex. Motor Vehicles



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.

the box “Health Insurance Coverage and Medical Spending in the First Year of the Affordable Care Act”.)

- The incoming data on housing starts and permits were well below our already lackluster expectations. We attribute some of the weaker-than-anticipated readings on housing construction to the severe winter weather in February, but the paltry March rebound in starts and permits suggests that weather was not the principal factor depressing construction activity. Consequently, we marked down our projection for housing starts in the coming months and now expect real residential investment to increase at an annual rate of only 1½ percent in the first half of this year, 3½ percentage points less than in the previous Tealbook.
- Business fixed investment is forecast to decline in the first half of the year compared with the small gain projected in the March Tealbook. In particular, spending on nonresidential structures is now projected to fall at an annual rate of 20 percent in the first half, reflecting a plunge in outlays on drilling structures in response to the earlier drop in crude oil prices. Moreover, we expect outlays on equipment and intangibles to rise only modestly in the first half, consistent with weak recent data on orders, shipments, and net imports of capital goods, as well as tepid forward-looking indicators of business spending.
- Both real exports and real imports appear considerably weaker in the first quarter than expected in the March Tealbook. However, taken as a whole, net exports are projected to be a bit less of a drag on GDP growth than in our previous projection.<sup>4</sup> Net exports are now estimated to have subtracted ⅔ percentage point from real GDP growth in the first quarter, and they are expected to subtract the same amount in the second as exports flatten out and imports rebound.
- In the industrial sector, mining output fell last quarter as the sharp declines in the drilling of new oil and gas wells were only partly offset by continuing increases in the extraction of oil and gas from existing wells. Manufacturing

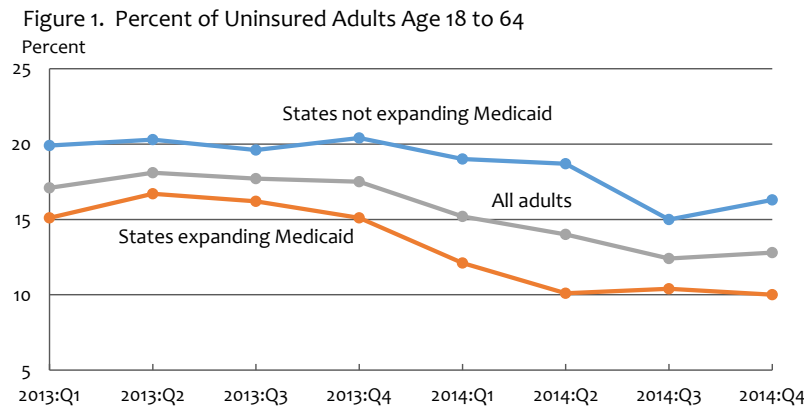
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<sup>4</sup> Although the West Coast port labor dispute likely reduced both exports and, especially, imports in the first quarter, the February decline was too large for the labor dispute to be the primary explanation.

## Health Insurance Coverage and Medical Spending in the First Year of the Affordable Care Act

In this discussion, we examine changes in health insurance coverage and medical spending during the first year of the Affordable Care Act (ACA). Although the ACA became law in 2010, implementation of the major components began only in 2014.

The four main provisions of the ACA, designed to increase health insurance coverage, are the expansion of Medicaid eligibility, the introduction of health insurance exchanges, the individual mandate, and the employer mandate. In 2014, the expansion of Medicaid eligibility to adults with household incomes up to 138 percent of the poverty line was adopted by 28 states and the District of Columbia.<sup>1</sup> These locations accounted for 9½ million net new Medicaid enrollees.<sup>2</sup> States that did not expand eligibility added 1½ million net new enrollees.<sup>3</sup> The health insurance exchanges—government-administered marketplaces where individuals can purchase insurance and receive income-based subsidies for premiums—enrolled another 8 million individuals. An estimated 57 percent of these enrollees were previously uninsured.<sup>4</sup> All told, as shown in the figure below, the uninsured rate for adults age 18 to 64 fell from about 18 percent at the end of 2013 to about 13 percent by the end of 2014. The uninsured rate in states that expanded



Source: Health Reform Monitoring Survey, Urban Institute.

<sup>1</sup> Prior to the Medicaid expansion, childless adults in most states were not eligible for Medicaid or the income limit was lower than 138 percent of the poverty line.

<sup>2</sup> See Department of Health and Human Services, Centers for Medicare and Medicaid Services (2015), *Medicaid and CHIP: January 2015 Monthly Applications, Eligibility Determinations and Enrollment Report* (Washington: HHS, March), <http://medicaid.gov/medicaid-chip-program-information/program-information/downloads/medicaid-and-chip-january-2015-application-eligibility-and-enrollment-data.pdf>.

<sup>3</sup> Increased Medicaid enrollment in states that did not expand eligibility may reflect increased awareness of Medicaid eligibility because of the publicity surrounding the ACA, easier enrollment in Medicaid through the health insurance exchanges, and greater demand for insurance coverage as a result of the individual mandate.

<sup>4</sup> See Kaiser Family Foundation (2014), *Survey of Non-group Health Insurance Enrollees* (Menlo Park, Calif.: KFF, June), <http://kaiserfamilyfoundation.files.wordpress.com/2014/06/survey-of-non-group-health-insurance-enrollees-findings-final.pdf>.

Medicaid eligibility declined 5 percentage points (from a level of 15 percent) compared with a 4 percentage point decrease (from a level of 20 percent) for states that did not expand Medicaid eligibility.

Given the rise in the number of people with health insurance, it seems likely that the ACA boosted spending on health-care-related goods and services. However, parsing out the increase in spending directly associated with the ACA is not straightforward, as other factors may also have caused outlays for health care to increase in 2014. One approach is to compare the increase in health spending in 2014 with the average increase in past years in order to roughly net out the influence of other factors. Our preferred measure of health spending, real personal consumption expenditures (PCE) for health-care goods and services, grew 4.1 percent over the four quarters of 2014. In the three years prior to the implementation of the ACA, health spending rose an average of 2.7 percent. The difference between these growth rates is consistent with the ACA boosting real PCE health spending growth roughly  $1\frac{1}{4}$  percentage points in 2014.

Another approach to estimating the effect of the ACA on real PCE health spending is to combine the decline in the uninsured rate during 2014 with assumptions about average health spending by uninsured and insured individuals; in particular, we assume that the newly insured spend twice as much on health care as uninsured people of the same age.<sup>5</sup> This method suggests that the ACA boosted the growth in real PCE health spending 1.2 percentage points in 2014. Thus, both approaches point to an increase in health spending growth of roughly  $1\frac{1}{4}$  percentage points. In dollar terms, this suggests that the ACA increased PCE health spending by \$30 billion, equivalent to adding 0.2 percentage point to the growth rate of real GDP in 2014.<sup>6</sup>

Looking forward to 2015, we expect the uninsured rate to continue to fall, but the magnitude of any further decline depends on a number of factors. One is whether additional states choose to expand Medicaid eligibility. Another is that individuals who failed to obtain insurance will be paying the individual mandate penalty for the first time this year (as 2014 final tax payments were due by April 15). Paying the penalty may increase its salience and lead to increased enrollment in the exchanges. Moreover, the penalty rises in 2015 and again in 2016. Finally, the employer mandate for firms with 100 or more employees began this year, although this mandate is expected to have only modest consequences, as the vast majority of these firms already offer health insurance to their employees.

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<sup>5</sup> This assumption is based on the results in Jack Hadley and John Holahan (2003), "Covering the Uninsured: How Much Would It Cost?" *Health Affairs*, June, <http://content.healthaffairs.org/content/early/2003/06/04/hlthaff.w3.250/suppl/DC1>.

<sup>6</sup> In addition, the ACA may have increased nonhealth spending, as the subsidies may have freed up consumer resources that were formerly devoted to purchasing insurance. Offsetting these effects, the increased taxes and cuts to Medicare providers used to finance the expansion probably reduced aggregate demand.

output also moved down last quarter, reflecting both temporary factors (such as the West Coast port labor dispute) and longer-lived factors (such as weaker demand due to the appreciation of the dollar). Looking ahead, the survey-based measures of new orders activity are at levels that suggest only a modest rise in factory output this quarter, leaving a projected first-half pace that is much weaker than that in the March Tealbook.

## **THE MEDIUM-TERM OUTLOOK FOR REAL GDP**

Given our view that much of the recent weakness in real activity likely reflects transitory influences, we continue to project that real GDP will increase about 2¼ percent per year, on average, over the medium term. As in previous Tealbooks, we expect the ongoing normalization of monetary policy to weigh more heavily on economic growth over time.

- We expect real GDP to increase at an annual rate of 2½ percent in the second half of this year, just a touch faster than in the March Tealbook, as the slightly weaker momentum in domestic spending suggested by the recent data is a bit more than offset by the effect of the lower dollar on net exports; for the year as a whole, GDP growth is 1¾ percent, ½ percentage point less than in the March Tealbook. Real GDP is projected to increase 2½ percent next year—a shade faster than in the March projection, as the lower interest rates and the lower dollar provide a greater boost to activity—and then to slow to 2 percent in 2017. All told, the level of real GDP at the end of the medium term is ¼ percent lower than in the March Tealbook.
- In previous Tealbooks, we have often interpreted a divergence in signals of slack as a reason to adjust our supply-side assumptions. However, the incoming data for spending, production, and the labor market all suggest slightly greater resource slack than we had projected in March. As a result, we did not change our forecast of potential output in this projection, which rises about 1½ percent this year and 1¾ percent over the rest of the medium term. Real GDP rises somewhat faster than potential output over the medium term and is ¼ percent above its potential at the end of 2017, a slightly smaller output gap compared with the March Tealbook given the downward revision to GDP in this projection.

## THE OUTLOOK FOR THE LABOR MARKET

Although the March employment report was not as strong as we had expected, the labor market has continued to improve in recent months. In the near term, we expect payroll employment to rise at a similar rate as in the first quarter and the unemployment rate to edge down further.

- The smaller-than-expected payroll increase in March followed several months of outsized gains. For the first quarter as a whole, payroll employment growth averaged about 200,000 per month. This pace, while still solid, is roughly 70,000 less than we had projected at the time of the March Tealbook.
- The unemployment rate remained at 5.5 percent in March, whereas we had projected it to move down 0.1 percentage point. Similarly, the labor force participation rate was lower than anticipated, edging down 0.1 percentage point, whereas we had expected it to be flat.
- The staff's labor market conditions index indicated that the labor market continued to improve in the first quarter, albeit at a slower pace than in the second half of last year.
- We expect payroll employment to rise about 200,000 jobs per month this quarter and the unemployment rate to edge down to 5.4 percent. Relative to the March Tealbook, projected payroll gains average 40,000 less per month and the projected unemployment rate is 0.1 percentage point higher.

Consistent with the modest revision to real output over our medium-term projection, the outlook for the labor market is little changed.

- We expect monthly private job gains to average about 200,000 in the second half of this year, the same pace as in the first half. Increases in payroll employment are expected to slow to around 165,000 in 2016 and 125,000 in 2017, as productivity moves back up toward its trend.
- The unemployment rate is projected to move down from an average of 5.6 percent in the first quarter of this year to 5.1 percent at the end of 2017. The path of the unemployment rate is 0.1 percentage point higher over the

projection period, which is consistent with the slightly weaker path of the GDP gap.

- As in previous Tealbooks, we view the unemployment rate gap as currently understating the amount of slack remaining in the labor market as a result of an unusually low labor force participation rate and an unusually elevated level of involuntary part-time employment. As the economy continues to improve, we expect more individuals to be drawn into the labor market and the rate of involuntary part-time employment to move down. The improvement in labor force participation relative to its trend attenuates the decline in the unemployment rate, which only edges down over the next three years even as GDP continues to increase moderately faster than its potential.

## THE OUTLOOK FOR INFLATION

Recent data on inflation have been a touch higher, on balance, than anticipated in our March Tealbook projection and support our expectation that consumer price inflation will step up in the second quarter. Over the medium term, our forecast for PCE inflation is little changed.

- We estimate that total PCE prices fell at an annual rate of 2 percent in the first quarter, principally reflecting a steep drop in consumer energy prices, and core PCE prices rose just  $\frac{3}{4}$  percent. Our estimates for both total and core PCE inflation are unchanged from the March Tealbook, as a slightly higher reading on core CPI prices in March was offset by softer medical services prices implied by incoming PPI data.
- Factoring in the March CPI data and the slightly higher path of oil prices, we now project both total PCE inflation and core PCE inflation to rise to about  $1\frac{1}{2}$  percent in the second quarter, roughly  $\frac{1}{4}$  percentage point above the March projection.<sup>5</sup>
- Following the declines in farm commodity prices observed late last year and early this year, indexes of spot and futures prices for foodstuffs have been relatively stable. That said, the data on consumer food prices surprised us on

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<sup>5</sup> Despite a projected upturn in total PCE prices in the second quarter, the 12-month change in this price measure is expected to edge lower in coming months and temporarily turn negative in June.

the downside, and our current forecast for the first half of this year is noticeably lower than in the March Tealbook. We now estimate that PCE food prices edged down in the first quarter, and we project them to decrease at a similar pace in the second quarter.<sup>6</sup> In the medium term, consumer food prices are projected to rise at a pace in line with core inflation.

Beyond the near term, we expect inflation to move up gradually to 1¾ percent as energy prices rise, import prices turn up next year, and resource utilization tightens further in an environment of well-anchored long-run inflation expectations.

- Core import prices are expected to decline at an average annual rate of 4 percent in the first half of this year, reflecting the previous appreciation of the dollar and net declines in commodity prices as well as unusually low foreign inflation. With our projection that the dollar will peak early next year and foreign CPI inflation will pick up, core import price inflation is expected to turn positive by the start of 2016 and move up to 1¾ percent in 2017. (See the box “The Effect of the Dollar on U.S. Core Import and Consumer Prices.”)
- Expected PCE inflation over the next 10 years from the Survey of Professional Forecasters (SPF) remains unchanged at the FOMC’s longer-run inflation objective. However, the preliminary April reading on expected inflation over the next 5 to 10 years from the Michigan Survey ticked down to the bottom of the range seen over recent years. TIPS-based measures of inflation compensation have been little changed recently and remain only slightly above the low levels observed earlier this year. We have not altered our assessment of the level of long-term inflation expectations relevant for wage and price setting, but one of the scenarios in the Risks and Uncertainty section explores the possibility that these long-term inflation expectations are lower than we assume.
- With import prices expected to begin to turn up early next year and with labor and product markets tightening, we continue to project core PCE price inflation to rise from 1¼ percent this year to 1¾ percent in 2017. As consumer energy prices are projected to rise only a bit faster than core prices

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<sup>6</sup> Even though drought conditions in California worsened, prices of fruits and vegetables in March were lower than we expected.



## The Effect of the Dollar on U.S. Core Import and Consumer Prices

Since last summer, the broad nominal dollar has appreciated 13 percent (see figure 1 on the next page). A stronger dollar lowers U.S. inflation by reducing the prices we pay for our imported goods and services. This discussion reviews our estimates of the exchange rate pass-through to U.S. core import prices and examines the implications of these estimates for our forecast of core PCE inflation.<sup>1</sup>

The prices we pay for our imports reflect the value of our exchange rate as well as foreign prices for these products and global commodity prices. In terms of forecasting import prices, the staff finds it useful to focus on the prices of imported “core goods,” which we define as imports of goods excluding oil, natural gas, computers, and semiconductors.<sup>2</sup> According to the staff’s econometric model of core import prices, a 10 percent dollar appreciation is estimated to reduce the level of core import prices by 3 percent, all within two quarters. This relatively small effect reflects, in part, that, for reasons of competition and market structure, producers tend to vary their markup over cost rather than allow the dollar prices of their goods to move fully with exchange rates.<sup>3</sup> Our pass-through estimate of one-third is within the range of estimates in the academic literature.

Declines in core goods import prices, in turn, depress U.S. core PCE inflation, as these imports constitute part of the U.S. consumption basket. Core PCE prices are also held down indirectly through the drag that an appreciation of the dollar has on net exports and, thus, on aggregate demand. All told, including these “GDP effects,” the staff’s judgmental forecasting rule is that a 10 percent appreciation of the dollar lowers U.S. core PCE inflation nearly  $\frac{1}{4}$  percentage point in each of the first two years following the shock, and 0.1 percentage point in the third year. This somewhat limited effect reflects both the small pass-through from the dollar to import prices and the small share of core imports—about 10 percent—in U.S. GDP.

The recent behavior of core goods import price inflation and our staff forecast are shown by the solid black line in figure 2 on the next page. As can be seen, core import prices have fallen sharply and are expected to continue to decline in the near term. To assess the role of the dollar in this decline, we compare the import price model’s current prediction (the dashed red line) with the prediction if we keep all else equal but use the dollar path from the June 2014 Tealbook, before the dollar’s run-up (the solid red line).<sup>4</sup> The model attributes

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<sup>1</sup>Although this discussion focuses on how the dollar affects core import inflation and core PCE inflation, a rise in the dollar also lowers the dollar price of oil. The lower oil price reduces headline inflation by somewhat more than core PCE inflation, but that difference is only material in the near term.

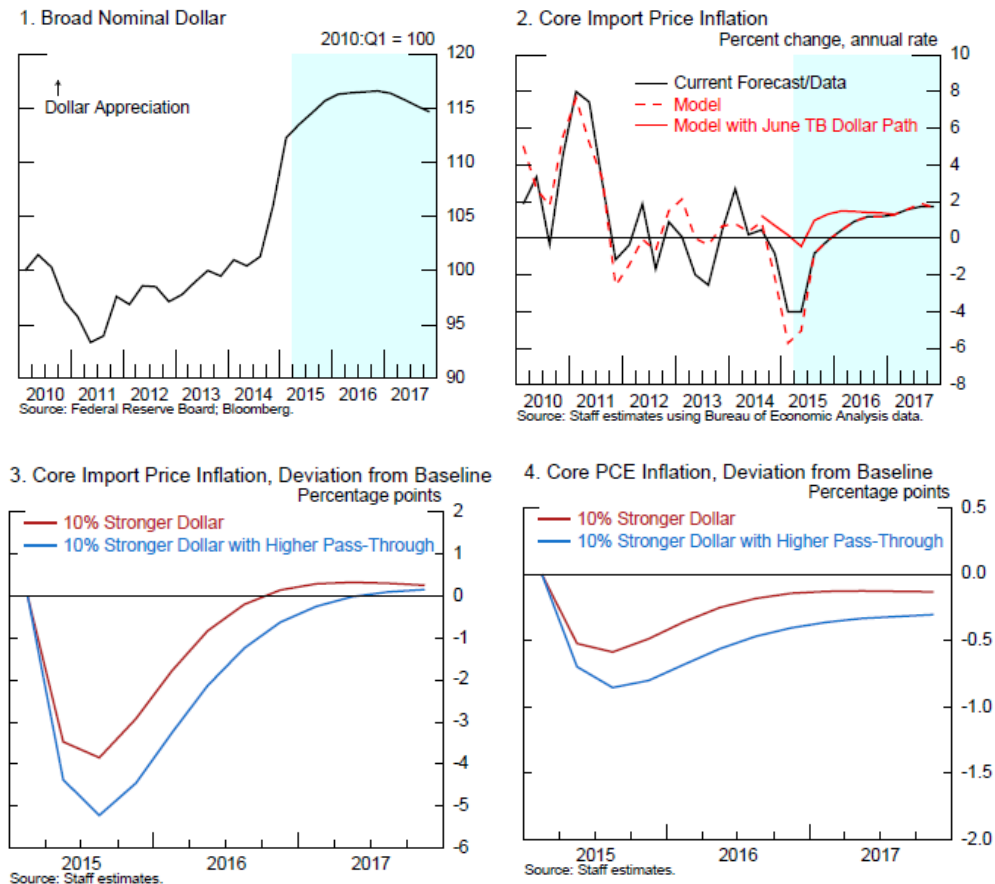
<sup>2</sup>We exclude these categories because they can obscure the economic signals coming from underlying import prices. Oil and natural gas prices are very volatile, and the price indexes for computers and semiconductors are constructed to account for the rapid pace of technological change, which makes them behave very differently from other goods.

<sup>3</sup>Another reason for low pass-through is that, reflecting the importance of global supply chains, many imported goods are produced using intermediate inputs whose costs are fixed in dollars.

<sup>4</sup>In making this comparison, we incorporate the implications that the different path of the dollar has for nonfuel commodity prices.

much of the weakness in import prices to the sharp appreciation of the dollar, as can be seen by comparing the two model paths.

As mentioned above, our model estimates of the pass-through of exchange rate changes to core goods import prices are consistent with those in the literature, but there is a range of these estimates. Although, so far, core goods import prices have declined less than what our model predicts, there is a risk that pass-through going forward will be higher than our current estimate. We examine this possibility using the staff’s SIGMA model. In particular, we compare the effect of an additional 10 percent appreciation of the dollar using our standard version of SIGMA (where pass-through is about one-third) with the case where pass-through is assumed to be one-half.<sup>5</sup> This higher pass-through represents the upper end of the plausible estimates in the literature. As can be seen by comparing the red and blue lines in figure 3, the higher pass-through coefficient amplifies the effect of the dollar on core import price inflation, reducing it by about 1 percentage point in the first year and by somewhat less in the second. The effect of higher pass-through on core PCE inflation, shown in figure 4, is smaller; core PCE inflation falls about ¼ percentage point more than in the standard pass-through case in each of the two years following the shock.



<sup>5</sup> The details of this simulation using the standard pass-through assumption is presented in the “Stronger dollar” scenario in the Risks and Uncertainty section of this Tealbook. Note that the PCE price response in SIGMA is somewhat larger than the response in the judgmental forecast, primarily because inflation is more sensitive to resource slack in SIGMA.

after the first quarter, total PCE inflation runs at about the same pace as core inflation through the medium term.

- We have received little data on compensation since the previous Tealbook, but the data we did receive continue to suggest that recent wage increases remain subdued: In the 12 months through March, average hourly earnings of all employees increased 2 percent, in line with our forecast in the March Tealbook. As labor markets tighten over the forecast period, we continue to expect hourly compensation to accelerate, with increases in the productivity and cost measure of compensation picking up from 2¼ percent last year to about 3 percent this year and to 3½ percent in 2016 and 2017.

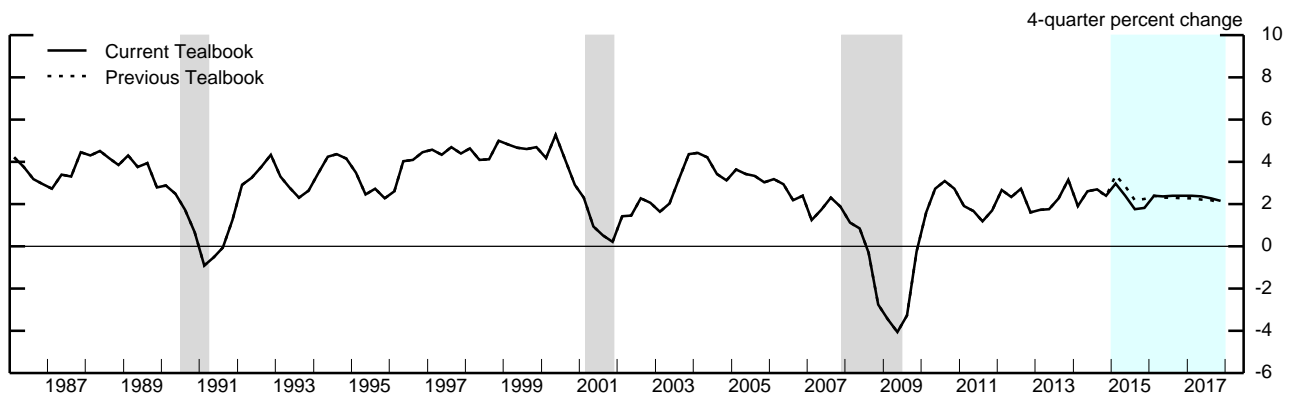
## THE LONG-TERM OUTLOOK

- 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 3½ percent.
- The federal funds rate rises further after 2017 and reaches its long-run value by 2020.
- As monetary accommodation continues to be withdrawn, real GDP growth slows to 1¾ percent in 2018 and in 2019, just slightly below the growth rate of potential. The unemployment rate moves down to 5.0 percent in 2018 before edging up to its natural rate of 5.2 percent.
- PCE price inflation remains slightly below the Committee's long-run objective at the end of 2017. However, with the unemployment rate below the natural rate, longer-run inflation expectations gradually edge up and PCE price inflation increases to 2 percent by 2019.

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

Measure	2014	2015	2015		2016	2017
			H1	H2		
<b>Real GDP</b>	<b>2.4</b>	<b>1.8</b>	<b>1.2</b>	<b>2.4</b>	<b>2.4</b>	<b>2.1</b>
Previous Tealbook	2.4	2.2	2.2	2.3	2.3	2.0
Final sales	2.4	1.8	1.0	2.7	2.4	2.3
Previous Tealbook	2.3	2.3	2.1	2.5	2.3	2.2
Personal consumption expenditures	2.9	3.6	3.0	4.1	3.3	2.5
Previous Tealbook	2.8	3.9	3.9	3.9	3.2	2.6
Residential investment	2.5	6.2	1.4	11.2	11.5	7.8
Previous Tealbook	2.7	9.2	4.9	13.7	9.7	5.1
Nonresidential structures	6.5	-11.5	-19.5	-2.8	.3	.5
Previous Tealbook	6.5	-6.2	-8.8	-3.6	1.5	.7
Equipment and intangibles	6.1	2.8	2.1	3.6	4.0	2.6
Previous Tealbook	6.0	4.1	4.1	4.1	4.0	2.5
Federal purchases	.2	-2.3	-2.9	-1.7	-1.3	-.9
Previous Tealbook	.2	-2.3	-2.8	-1.8	-1.3	-.9
State and local purchases	1.2	1.2	1.0	1.5	2.0	2.2
Previous Tealbook	1.2	1.5	1.2	1.7	2.0	2.2
Exports	2.4	-1.2	-2.7	.4	1.1	3.1
Previous Tealbook	2.4	-.1	-.3	.0	.7	2.9
Imports	5.6	3.8	1.8	5.9	5.8	3.9
Previous Tealbook	5.5	6.1	5.3	6.8	6.2	3.8
Contributions to change in real GDP (percentage points)						
Inventory change	.0	.0	.3	-.3	.0	-.1
Previous Tealbook	.0	.0	.1	-.1	.0	-.2
Net exports	-.6	-.8	-.6	-.8	-.8	-.2
Previous Tealbook	-.6	-1.0	-.9	-1.0	-.9	-.3

Real GDP

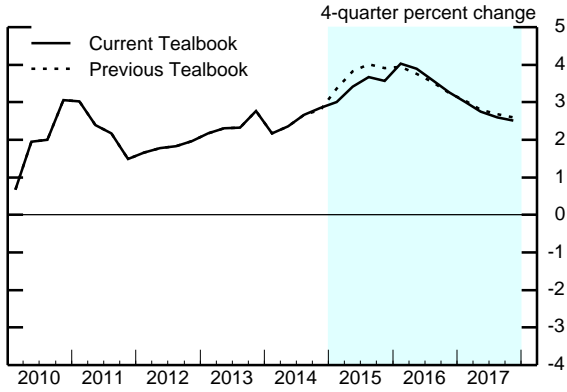


Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

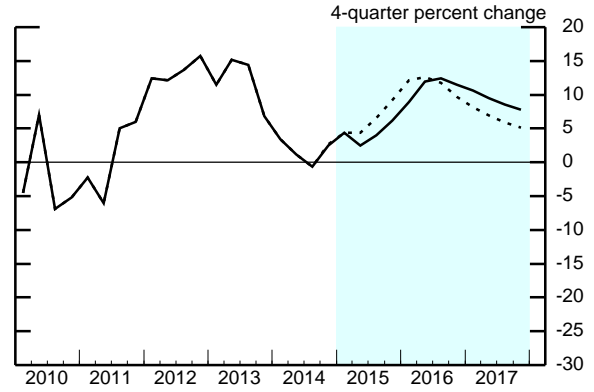
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

### Components of Final Demand

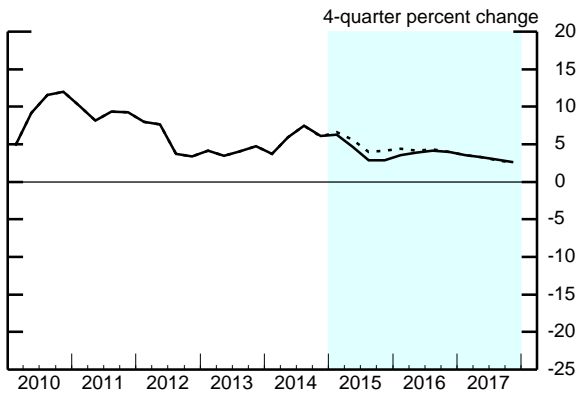
Personal Consumption Expenditures



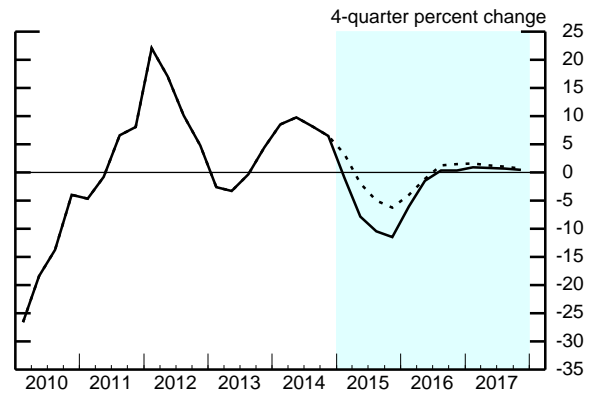
Residential Investment



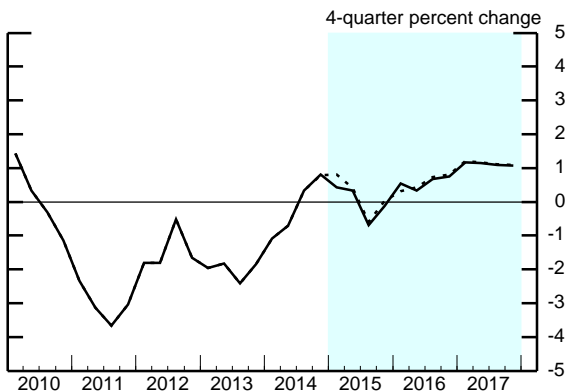
Equipment and Intangibles



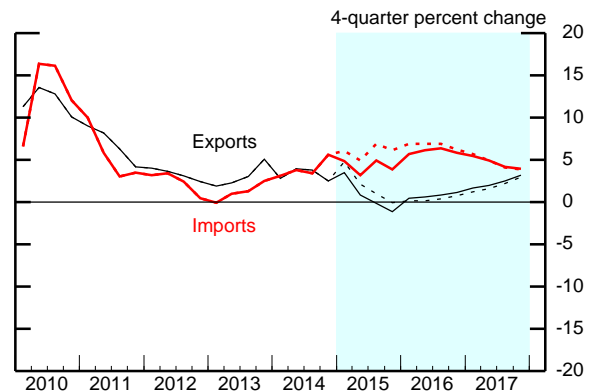
Nonresidential Structures



Government Consumption & Investment

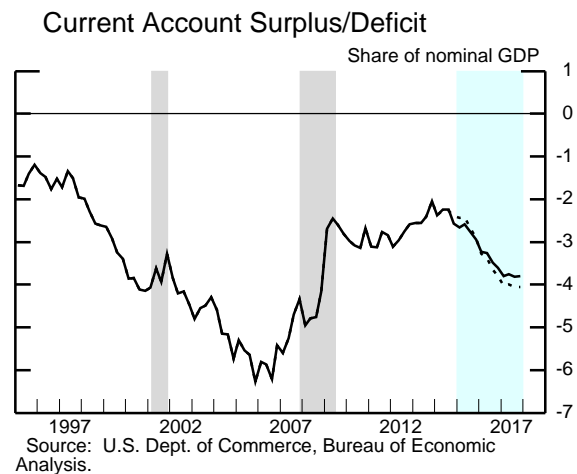
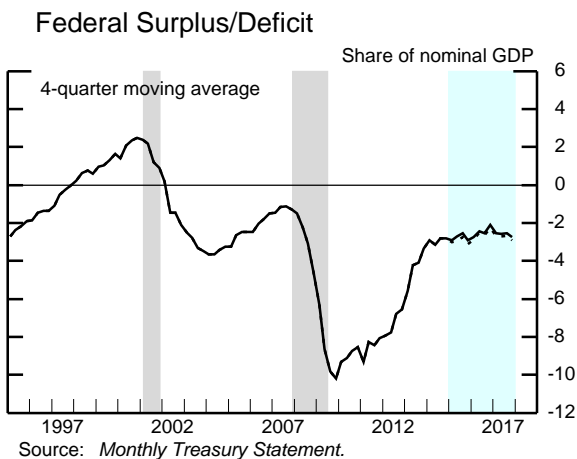
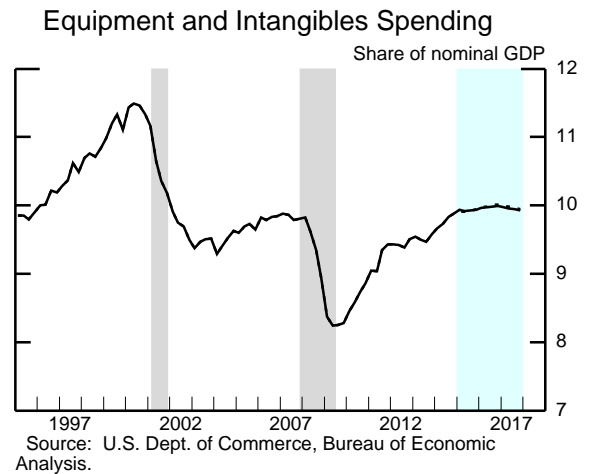
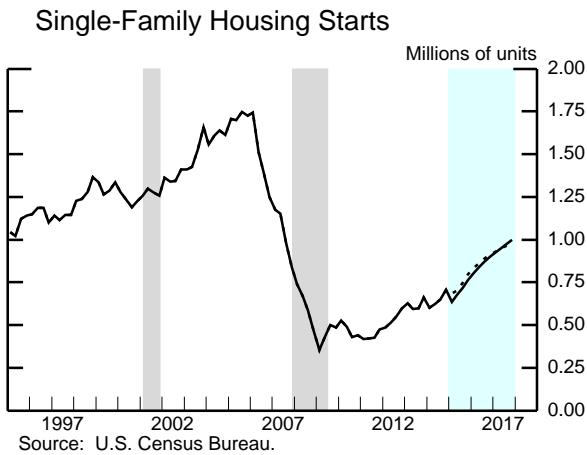
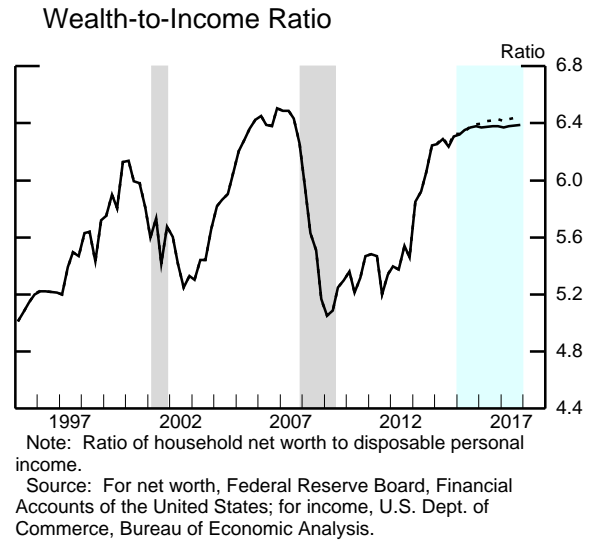
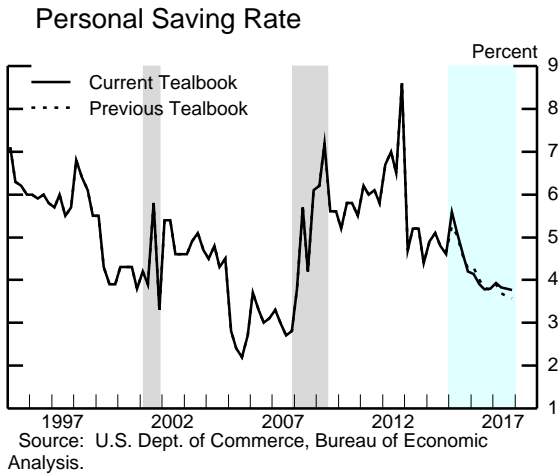


Exports and Imports



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.

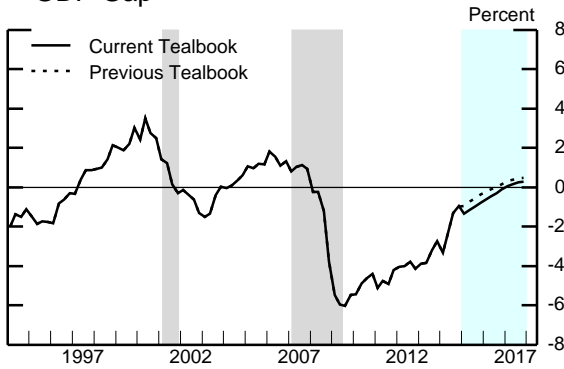
**Decomposition of Potential GDP**  
(Percent change, Q4 to Q4, except as noted)

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	.5	1.6	1.7	1.7
Previous Tealbook	3.1	3.4	2.6	1.7	1.6	.5	1.6	1.7	1.7
<i>Selected contributions<sup>1</sup></i>									
Structural labor productivity <sup>2</sup>	1.6	2.9	2.8	1.5	1.2	.5	1.5	1.6	1.6
Previous Tealbook	1.6	2.9	2.8	1.5	1.2	.5	1.5	1.6	1.6
Capital deepening	.7	1.5	.9	.5	.4	.6	.7	.8	.8
Multifactor productivity	.7	1.1	1.6	.9	.7	-.2	.7	.7	.7
Structural hours	1.5	1.0	.7	.2	.7	.7	.3	.3	.3
Previous Tealbook	1.5	1.0	.7	.2	.7	.7	.3	.3	.3
Labor force participation	.4	.0	-.3	-.4	-.5	-.5	-.5	-.5	-.5
Previous Tealbook	.4	.0	-.3	-.4	-.5	-.5	-.5	-.5	-.5
<b>Memo:</b>									
GDP gap <sup>3</sup>	-1.8	2.5	.9	-4.4	-2.8	-1.0	-.8	-.1	.3
Previous Tealbook	-1.8	2.5	.9	-4.4	-2.8	-1.0	-.4	.2	.5

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.

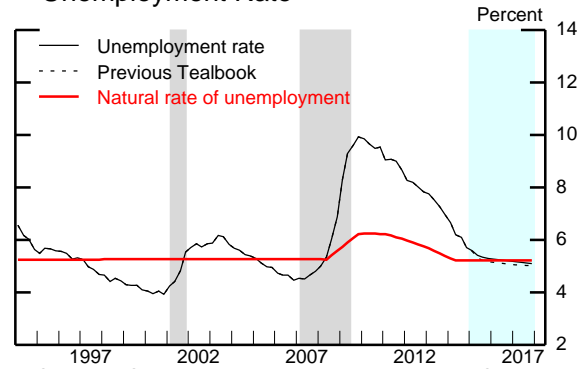
1. Percentage points.
2. Total business sector.
3. Percent difference between actual and potential GDP in the final quarter of the period indicated. A negative number indicates that the economy is operating below potential.

**GDP Gap**



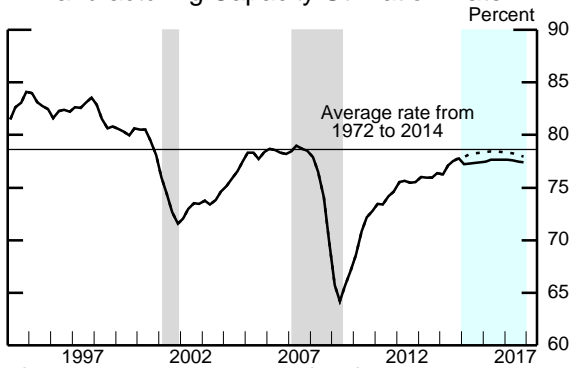
Note: The GDP gap is the percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.  
Source: U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

**Unemployment Rate**



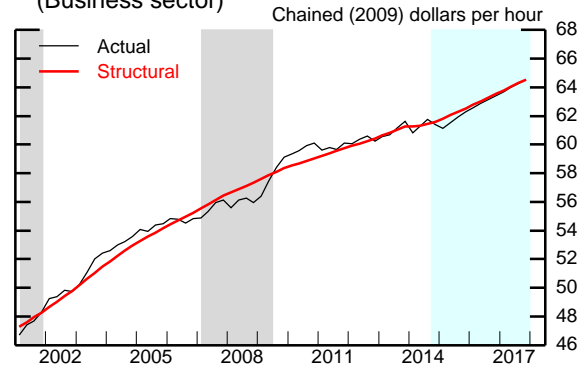
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

**Manufacturing Capacity Utilization Rate**



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

**Structural and Actual Labor Productivity (Business sector)**



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	2015	2015		2016	2017
			H1	H2		
Output per hour, business <sup>1</sup>	-.4	1.4	.4	2.5	1.8	1.8
Previous Tealbook	-.4	1.6	1.3	1.8	1.7	1.7
Nonfarm private employment <sup>2</sup>	254	202	204	200	165	125
Previous Tealbook	254	230	253	208	165	123
Labor force participation rate <sup>3</sup>	62.8	62.7	62.8	62.7	62.6	62.4
Previous Tealbook	62.8	62.7	62.8	62.7	62.6	62.4
Civilian unemployment rate <sup>3</sup>	5.7	5.3	5.4	5.3	5.2	5.1
Previous Tealbook	5.7	5.2	5.3	5.2	5.1	5.0

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	2015	2015		2016	2017
			H1	H2		
PCE chain-weighted price index	1.1	.6	-.2	1.5	1.6	1.8
Previous Tealbook	1.1	.6	-.3	1.6	1.7	1.9
Food and beverages	2.8	.6	-.2	1.4	1.6	1.9
Previous Tealbook	2.8	.8	.4	1.2	1.6	1.9
Energy	-6.1	-11.4	-24.4	3.8	2.6	1.6
Previous Tealbook	-6.1	-11.5	-24.9	4.3	3.3	2.4
Excluding food and energy	1.4	1.3	1.2	1.4	1.6	1.8
Previous Tealbook	1.4	1.3	1.1	1.5	1.6	1.8
Prices of core goods imports <sup>1</sup>	.6	-2.3	-4.0	-.5	.9	1.6
Previous Tealbook	.6	-2.4	-4.2	-.7	1.1	1.7

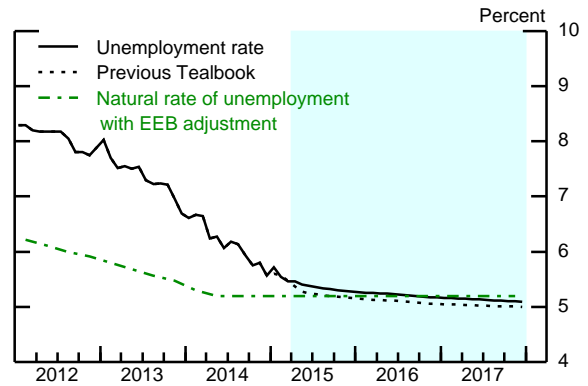
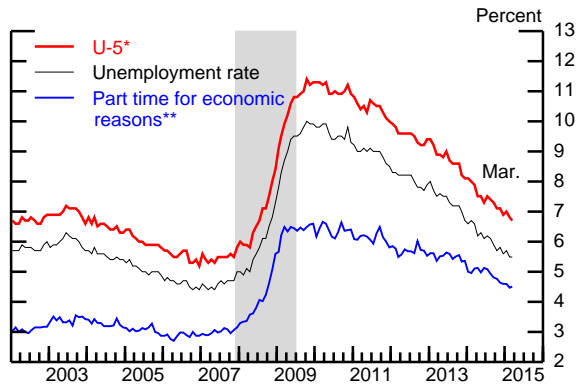
1. Core goods imports exclude computers, semiconductors, oil, and natural gas.

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



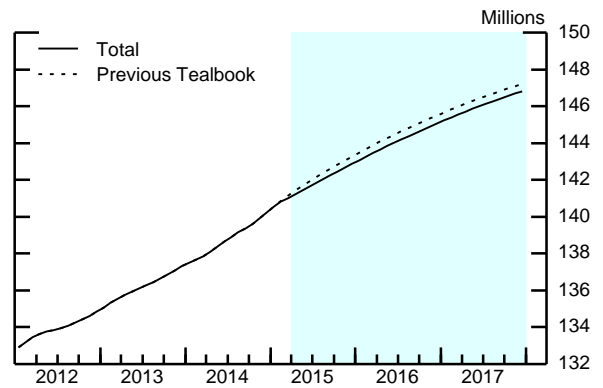
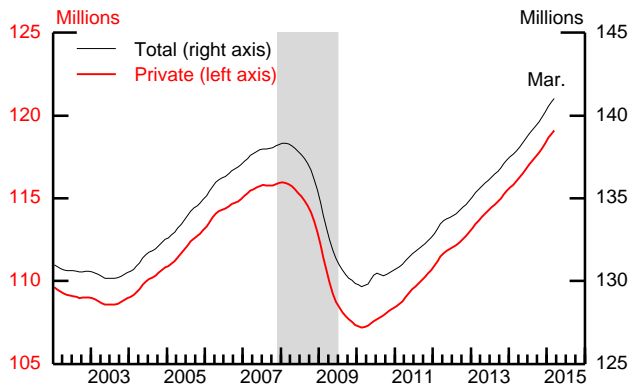
## Labor Market Developments and Outlook (1)

### Measures of Labor Underutilization



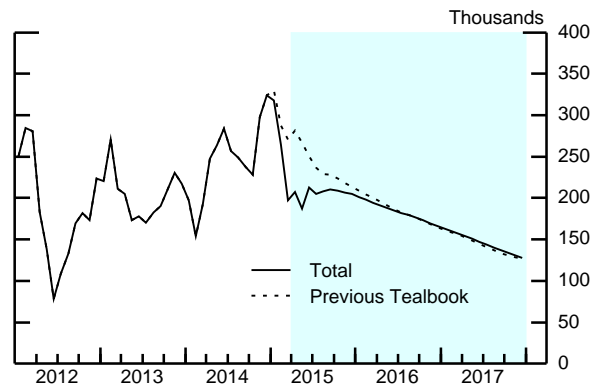
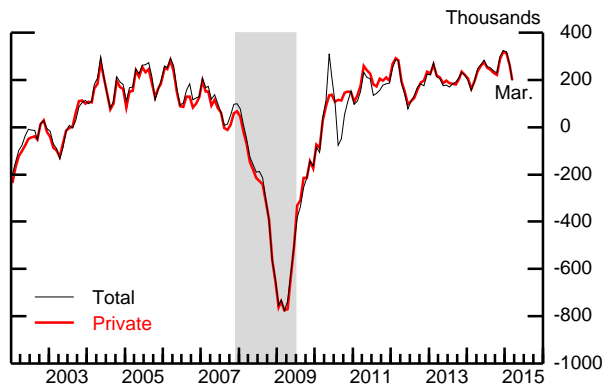
\* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.  
 \*\* Percent of Current Population Survey employment.  
 EEB Extended and emergency unemployment benefits.  
 Source: U.S.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

### Level of Payroll Employment\*



\* 3-month moving averages.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Change in Payroll Employment\*

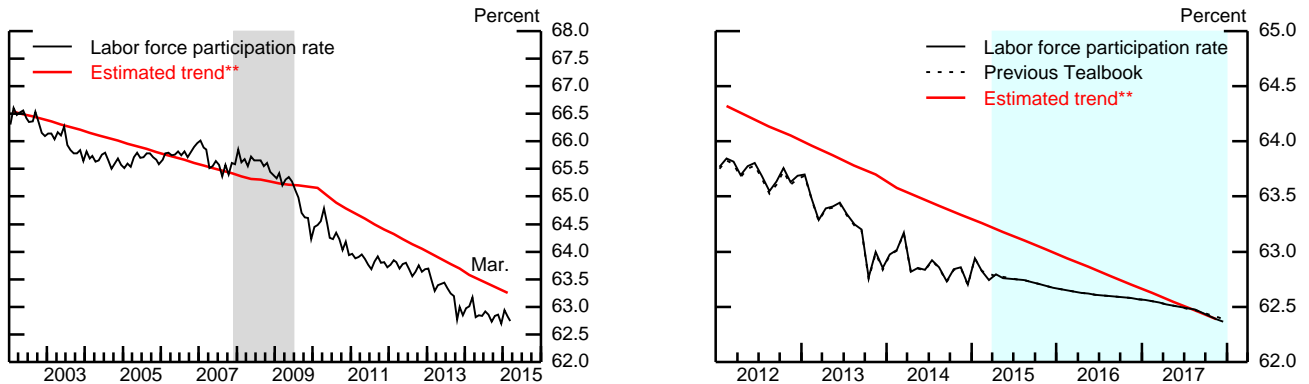


\* 3-month moving averages.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

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

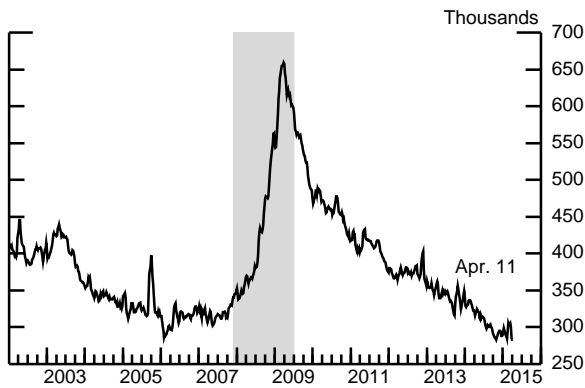
## Labor Market Developments and Outlook (2)

Labor Force Participation Rate\*



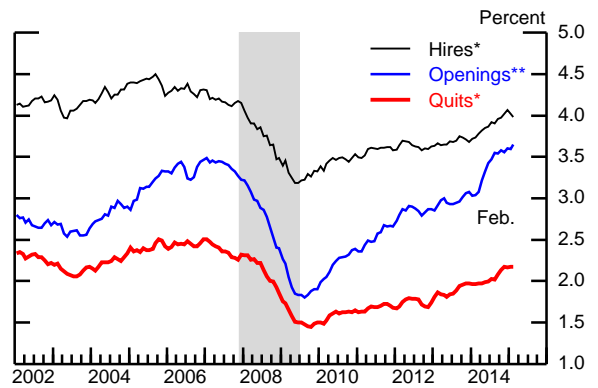
\* Published data adjusted by staff to account for changes in population weights.  
 \*\* Includes staff estimate of the effect of extended and emergency unemployment benefits.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Initial Unemployment Insurance Claims\*



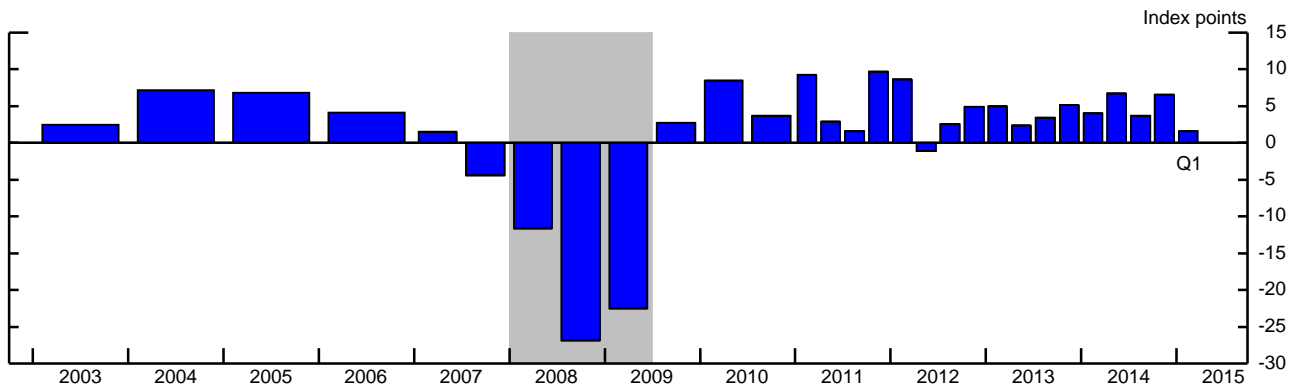
\* 4-week moving average.  
 Source: U.S. Department of Labor, Employment and Training Administration.

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.

Average Monthly Change in Labor Market Conditions Index



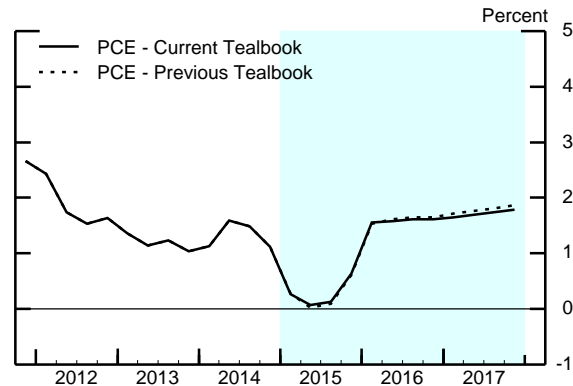
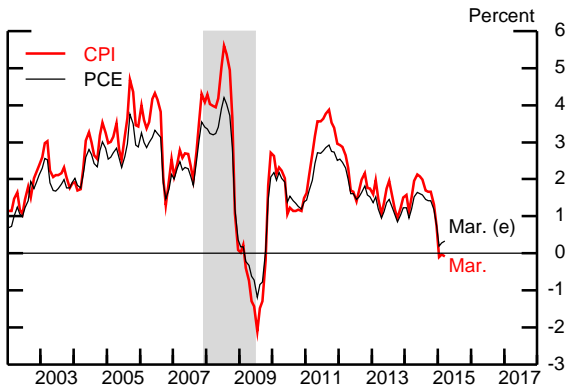
Note: Labor market conditions index estimated by staff.

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)

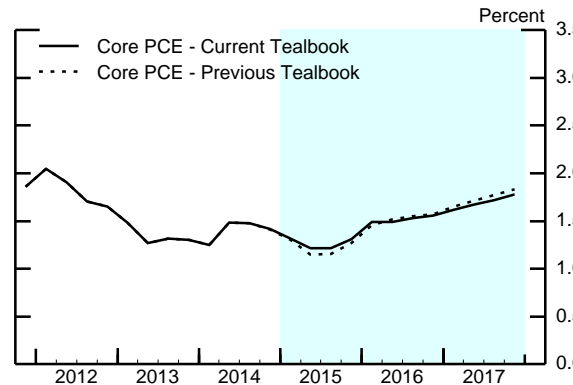
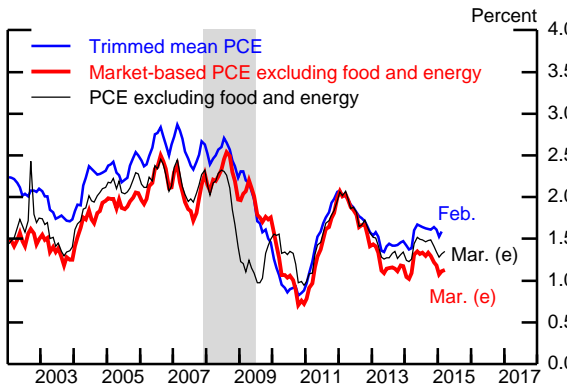
#### Headline Consumer Price Inflation



Note: PCE prices from January to March 2015 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.

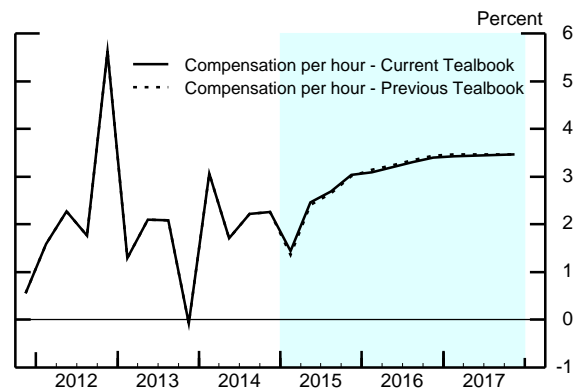
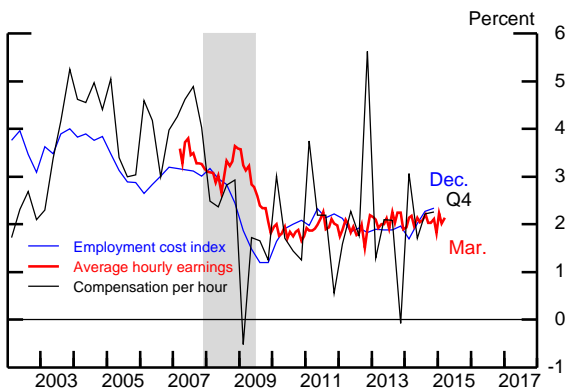
#### Measures of Underlying PCE Price Inflation



Note: Core PCE prices from January to March 2015 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



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.

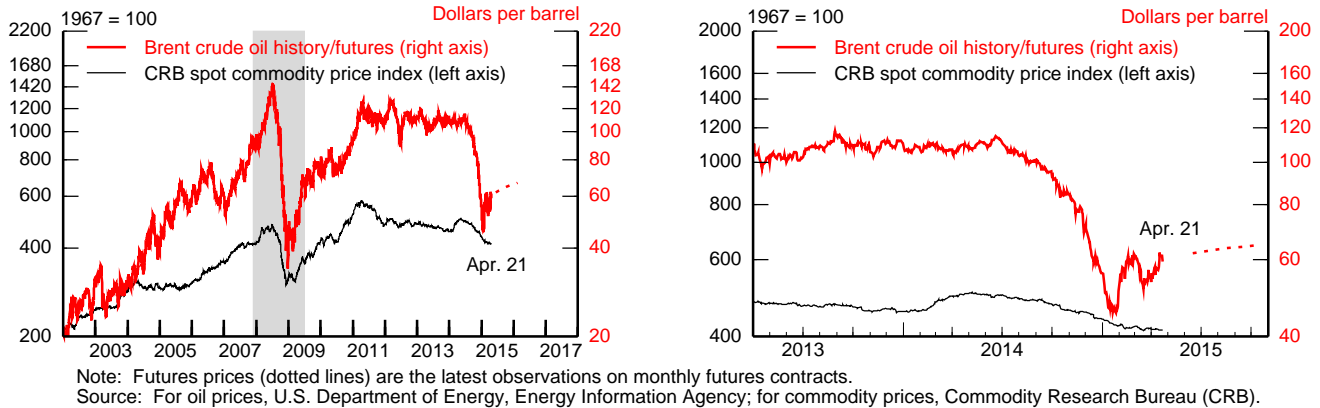
Source: U.S. Department of Labor, Bureau of Labor Statistics.

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

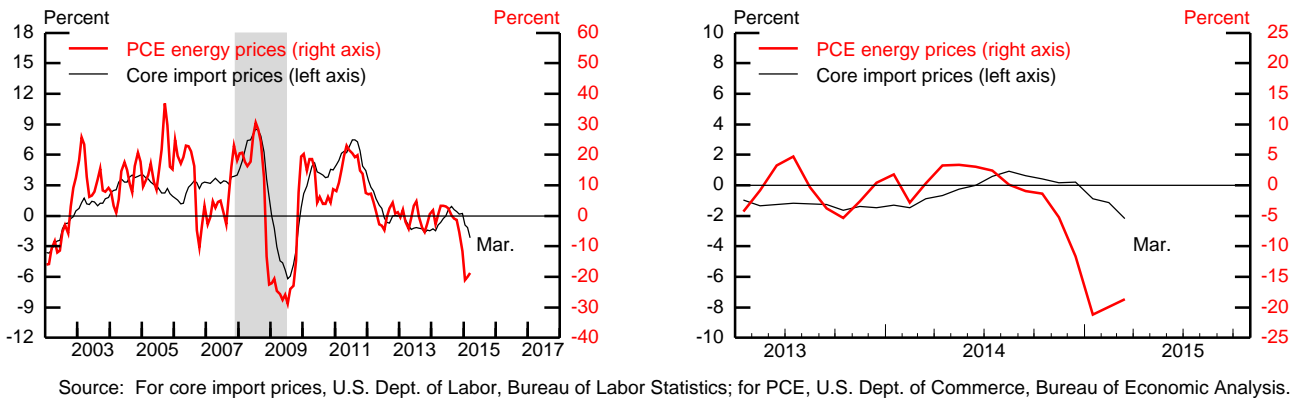
## Inflation Developments and Outlook (2)

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

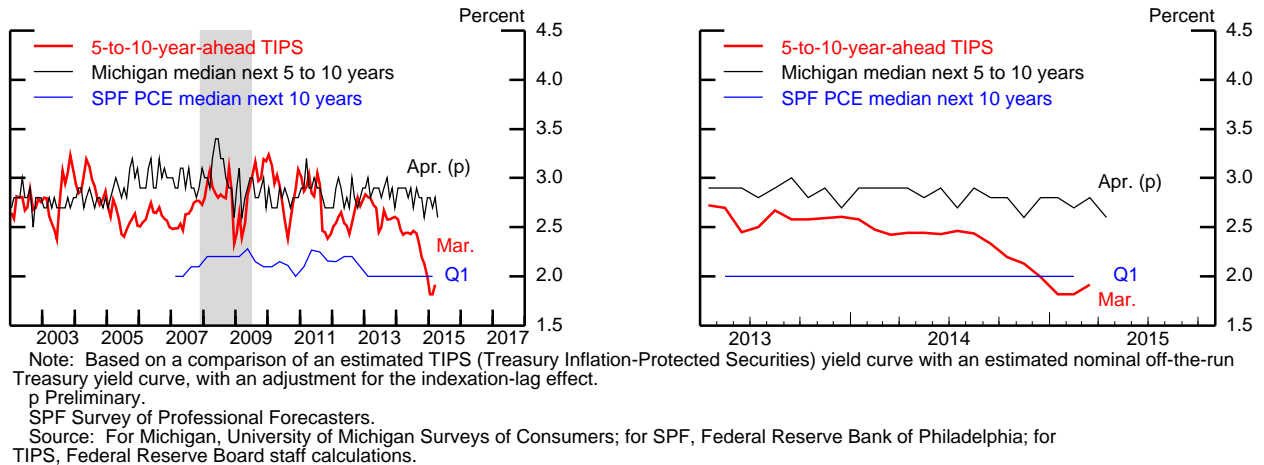
### Commodity and Oil Price Levels



### Energy and Import Price Inflation



### Long-Term Inflation Expectations



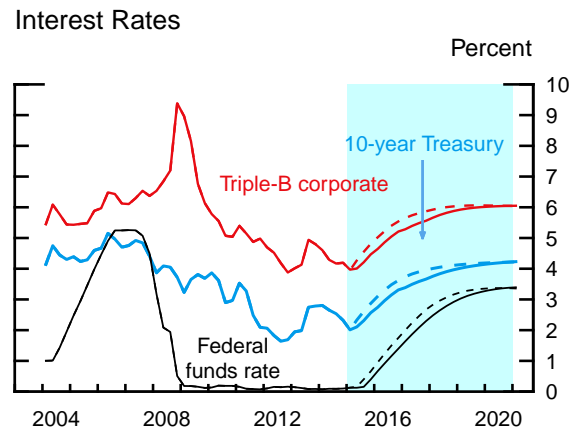
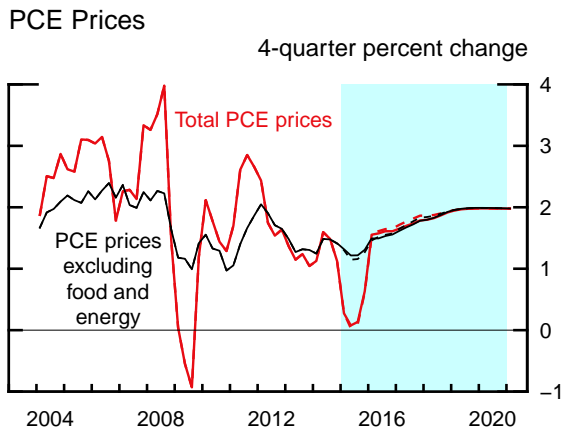
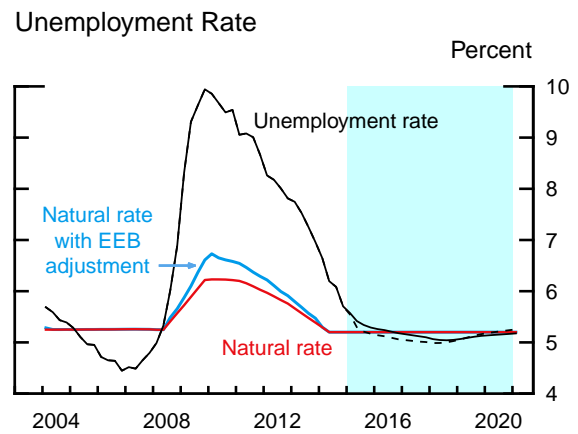
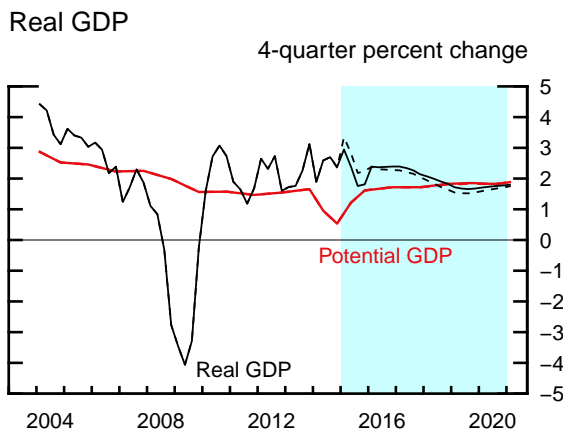
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

## The Long-Term Outlook

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

Measure	2015	2016	2017	2018	2019	Longer run
Real GDP	1.8	2.4	2.1	1.8	1.7	1.9
Previous Tealbook	2.2	2.3	2.0	1.6	1.5	1.9
Civilian unemployment rate <sup>1</sup>	5.3	5.2	5.1	5.0	5.1	5.2
Previous Tealbook	5.2	5.1	5.0	5.0	5.2	5.2
PCE prices, total	.6	1.6	1.8	1.9	2.0	2.0
Previous Tealbook	.6	1.7	1.9	1.9	2.0	2.0
Core PCE prices	1.3	1.6	1.8	1.9	2.0	2.0
Previous Tealbook	1.3	1.6	1.8	1.9	2.0	2.0
Federal funds rate <sup>1</sup>	.4	1.4	2.3	2.9	3.2	3.5
Previous Tealbook	.7	1.8	2.7	3.2	3.3	3.5
10-year Treasury yield <sup>1</sup>	2.6	3.3	3.7	4.0	4.1	4.3
Previous Tealbook	2.9	3.6	4.0	4.1	4.2	4.3

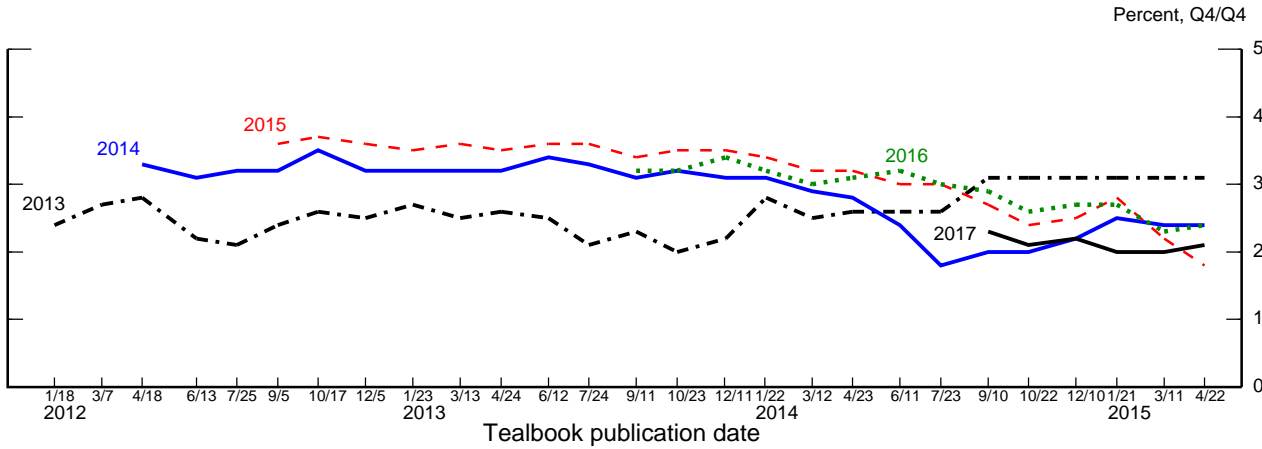
1. Percent, average for the final quarter of the period.



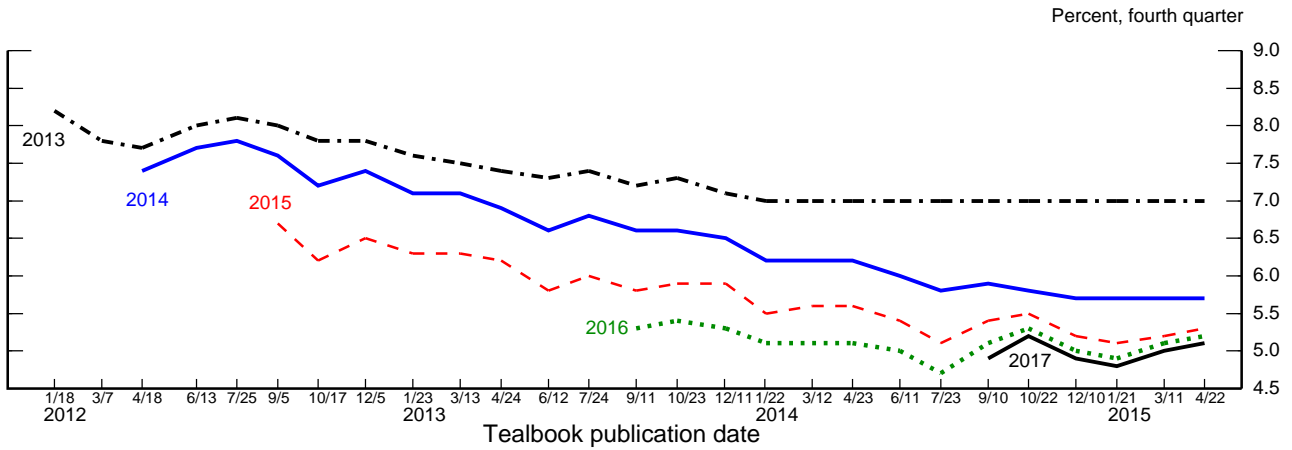
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

### Evolution of the Staff Forecast

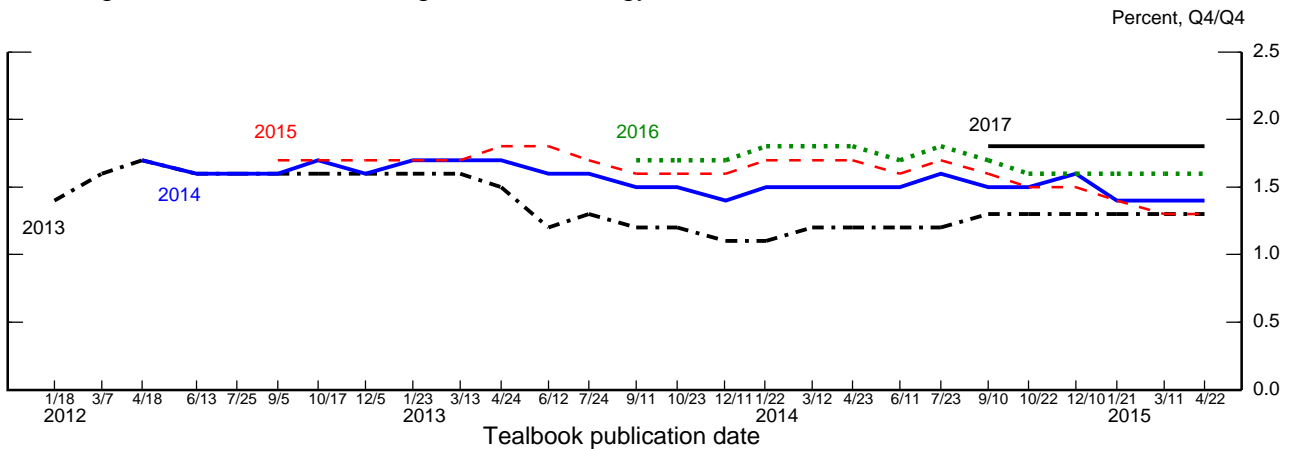
#### Change in Real GDP



#### Unemployment Rate



#### Change in PCE Prices excluding Food and Energy



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## International Economic Developments and Outlook

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We estimate that foreign real GDP growth slowed from a 2¾ percent annual pace in the second half of 2014 to 1¾ percent in the first quarter of this year, ¾ percentage point below our March Tealbook forecast. The deceleration in GDP was widespread across advanced foreign economies (AFEs) and emerging market economies (EMEs) and was accompanied by a slowing in industrial production and international trade.

Although the recent weakness gives us pause, we do not expect the first-quarter slump to persist. Part of the unexpected decline reflected a greater-than-anticipated hit from lower oil prices to economic activity in Canada—our largest trading partner—and, with oil prices stabilizing, we expect this effect to dissipate. A dip in Chinese growth also is expected to be retraced as the authorities add to policy stimulus. In addition, a projected step-up in U.S. growth from its first-quarter weakness, along with the continuation of highly accommodative monetary policies and the positive effects of past currency depreciation, should support activity abroad. Thus, we continue to project that foreign growth will rise to a near-trend pace of 3 percent by late this year and remain at that pace in 2016 and 2017. That said, we certainly see a risk that the first-quarter slump reflects deeper underlying weakness in the foreign economies than we have assumed.

Although data suggest that euro-area activity is improving, the situation in Greece has grown more worrisome. The Greek government is running out of cash and there has been little apparent progress toward an agreement with its official creditors that would unlock loan disbursements. We judge there to be an appreciable likelihood that Greece will impose capital controls and miss debt payments in coming months, increasing the risk that it will eventually leave the euro area. Because we also assume that European authorities will take concerted actions to protect other peripheral economies from disarray, Greek developments are still expected to have fairly limited spillovers to the rest of the euro area. However, we see a significant risk of a Greek exit that prompts a much more adverse reaction, one that roils financial markets and plunges the euro area back into recession. We describe such a scenario in the Risks and Uncertainty section.

Data on foreign inflation have come in about as expected. In the AFEs, we estimate that consumer prices fell at an annual rate of ¾ percent in the first quarter following a ½ percent decline in the fourth. As energy prices rise and earlier currency



depreciation passes through to consumer prices, inflation should move up to 1 percent this quarter and to 1¾ percent by late 2016, also supported by diminishing resource slack. Similarly, in the EMEs, consumer price inflation dipped to just ½ percent in the first quarter, in part because of a steep decline in retail energy prices, but should rise back toward 3 percent in coming quarters.

Amid low inflation and continued economic slack, we see monetary policy remaining highly accommodative in the AFEs and relatively easy in many EMEs as well. In contrast to the previous intermeeting period, central banks have taken few new policy actions since the March FOMC meeting. A notable exception is China, where the authorities cut the reserve requirement ratio to support economic growth.

## ADVANCED FOREIGN ECONOMIES

- ***Euro area.*** Recent indicators of economic activity, including industrial production, retail sales, and the composite purchasing managers index (PMI), suggest further firming of GDP growth, which we estimate at 1¾ percent in the first quarter. We continue to see strong fundamental support for euro-area growth from ongoing monetary stimulus, past currency depreciation and oil price declines, and easing credit conditions. We see these positive factors outweighing the negative effect of Greek developments, described in the following paragraph, helping euro-area GDP growth to rise to almost 2 percent in the second half of this year and to average 2¼ percent in 2016 and 2017. Inflation was negative 1½ percent at an annual rate last quarter, close to our projection in the March Tealbook. As energy prices stabilize and the output gap narrows, inflation should rise to 1½ percent by the end of this year and 1¾ percent by the end of 2017. We continue to expect the European Central Bank (ECB) to purchase assets totaling about €1.2 trillion by September 2016 and to keep its main policy rate near zero through the end of 2017.

Negotiations between **Greece** and its creditors aimed at unlocking financial assistance from European authorities and the International Monetary Fund continue to be extraordinarily difficult. Despite some progress in recent weeks, the two sides remain far from an agreement. Meanwhile, the Greek government is running out of cash, and concerns are mounting that it will default on some of the nearly €3 billion in payments on its medium- and long-

term debt coming due over the next month. These fears have apparently intensified deposit outflows from Greek banks in recent weeks. All told, we see an appreciable likelihood of capital controls and sovereign default, which could eventually culminate in Greek exit from the euro area. In our baseline outlook, spillovers to the rest of the euro area from financial turmoil in Greece are limited, reflecting reduced exposure by European banks to Greece, support from the ECB's ongoing sovereign debt purchases, and expectations that European authorities will take aggressive actions to keep remaining peripheral economies in the euro area. Thus, financial tensions emanating from Greece exert only a modest drag on euro-area growth this year. However, considerably more-adverse responses to a Greek default or exit represent a substantial downside risk to the outlook.

- **Canada.** We now estimate that real GDP growth slowed to  $\frac{1}{4}$  percent in the first quarter, more than 1 percentage point below our March Tealbook estimate. January monthly GDP fell, February imports of machinery and equipment—which are highly correlated with investment—declined, and the March manufacturing PMI remained in contractionary territory for a second month. These data likely reflect the harsh winter weather, a sharper-than-expected effect of the decline in oil prices on Canada's oil sector, and slowing U.S. demand. As these effects dissipate, we expect GDP growth to bounce back to  $1\frac{1}{2}$  percent in the second quarter and to rise to  $2\frac{1}{2}$  percent in 2016. The Canadian economy should be supported by the projected upward tilt in oil prices, accommodative monetary policy, and moderate U.S. growth. Compared with the March Tealbook, this projection is  $\frac{1}{2}$  percentage point lower in 2015 and little changed thereafter.

As expected in the March Tealbook, first-quarter consumer prices were flat, held down by lower energy prices. As oil prices bottom out, we expect inflation to bounce back to  $1\frac{3}{4}$  percent in the second quarter and to reach the 2 percent target by 2017. Amid contained inflation pressures and weaker growth, we now expect the Bank of Canada to start tightening monetary policy in the second quarter of 2016, one quarter later than we had previously assumed.

- **Japan.** We estimate that real GDP growth slowed to a 1 percent pace in the first quarter from 1.5 percent in the fourth quarter. This estimate is almost

1 percentage point below our projection in the March Tealbook, reflecting weaker-than-expected data for both the domestic and the external sectors. However, this year's spring wage negotiations yielded the largest gains in nearly two decades, supporting our forecast that private consumption will firm going forward. Accordingly, and amid considerable monetary policy stimulus, we project that GDP growth will rise to 1½ percent this quarter and average just below that pace through 2016. In 2017, the recovery will likely grind to a halt as a second hike to the consumption tax rate is implemented. Consumer prices appear to have been roughly flat in the first quarter, with lower energy prices offsetting the boost from a depreciated yen. With oil prices picking up, we project that inflation will increase to ¾ percent in the second quarter. Thereafter, as the output gap narrows and inflation expectations resume rising, we see inflation moving up to almost 1½ percent by early 2017.

- **United Kingdom.** We estimate that real GDP growth moderated to 2 percent in the first quarter from 2.5 percent in the fourth quarter. This estimate is ½ percentage point below our forecast in the March Tealbook due to weaker-than-expected data on external trade, industrial production, and construction activity. That said, PMIs and business confidence indicators through March have been strong, suggesting that growth will rebound to 2¾ percent in the second quarter. We expect GDP growth to remain robust through the remainder of this year and next before moderating somewhat to 2¼ percent by 2017 as the output gap closes. Declines in food and energy prices pushed inflation down to negative 1¾ percent at an annual rate in the first quarter. We expect inflation to rebound and increase to the Bank of England's (BOE) target of 2 percent by 2017 as the transitory effects of lower energy prices dissipate and slack in the U.K. economy is eliminated. Given the BOE's recent communication on the dangers of deflationary pressures in the United Kingdom, we have pushed back our expectation for the date of the BOE's first rate hike to the first quarter of 2016. We continue to predict a gradual pace for subsequent policy rate increases.

## EMERGING MARKET ECONOMIES

- **China.** Recently released GDP data indicate that economic growth in China stepped down from an annual rate of 7 percent in the fourth quarter to only

5¼ percent in the first quarter, 1¾ percentage points below our March Tealbook estimate. Industrial production and exports dropped sharply in March. Indicators of domestic demand, such as fixed-asset investment and retail sales growth, were somewhat stronger, although investment has decelerated considerably since the beginning of last year as the property market has cooled. We see growth picking up to a 7¼ percent pace in the second half of the year, supported by recent and further monetary easing as authorities seek to keep growth near their 7 percent target for this year; authorities already announced a 100 basis point cut in banks' reserve requirement ratios. Growth should also be supported by a strengthening of exports as demand in China's trading partners picks up and as the drag from last year's appreciation of the real trade-weighted renminbi lessens. We see growth then decreasing to about 6½ percent by the end of the forecast period, in line with our estimate of declining potential growth, and a bit below our March Tealbook forecast.

Inflation dipped below zero in the first quarter from 1 percent in the fourth quarter. The decline is primarily due to falling food and fuel prices. We expect inflation to rebound to 2½ percent by the end of the year and to hold at that pace over the remainder of the forecast period.

- ***Other Emerging Asia.*** We estimate that growth in the rest of emerging Asia edged down to 3¾ percent in the first quarter, almost ½ percentage point below our March forecast, owing primarily to a widespread decline in exports. Although most of the region's economies are estimated to have slowed, growth in Korea and Hong Kong appears to have picked up from depressed levels in the fourth quarter. With growth in the advanced economies projected to bounce back, we expect the decline in Asian exports to be short-lived and still see GDP growth in the region rising to 4½ percent by the end of 2015. Growth will also be supported by still-low oil prices and accommodative monetary policies. Incoming data suggest that inflation likely bottomed out in the first quarter at negative ½ percent, largely reflecting the pass-through of lower oil prices. We see inflation rising to 3¼ percent by 2016.
- ***Latin America.*** Recent indicators for **Mexico** suggest growth slowed from 2¾ percent in the fourth quarter to 2 percent in the first quarter, 1 percentage point lower than in the March Tealbook. Mexican manufacturing output and

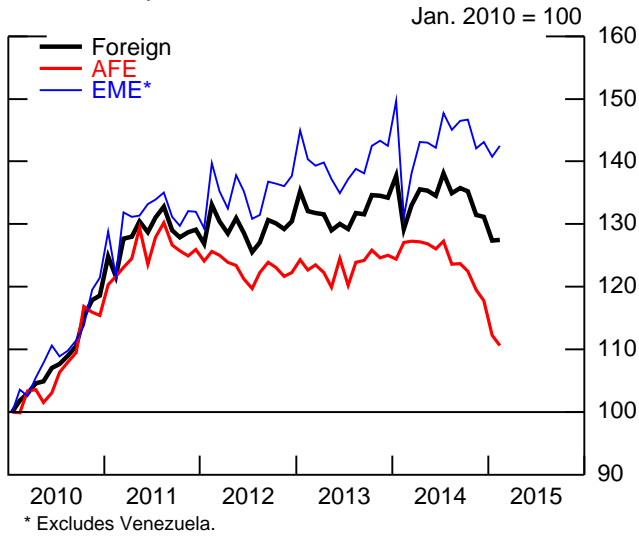
exports through February were weak, consistent with the sharp drop in U.S. manufacturing production in the first quarter. Some of that weakness likely was caused by the labor dispute at U.S. West Coast ports, which disrupted supply chains, and by the severe U.S. winter weather. We expect Mexican growth to rebound in the current quarter to 2¾ percent, in line with the path for U.S. manufacturing activity, and average about 3¼ percent over the rest of the forecast period, boosted by the significant depreciation of the peso since mid-2014 and the effect of past economic reforms. Headline inflation plunged to ¼ percent in the first quarter from more than 4 percent in the fourth, owing to a fall in some food and energy prices and the one-off effect of telecommunications reform. As the effects of these factors fade, we expect inflation to move up to about 3¼ percent by the second half of this year and stay at that rate thereafter.

Real GDP readings received since the March Tealbook indicate that **South American** economies grew in aggregate at an annual rate of ½ percent in the fourth quarter. Chile and Colombia enjoyed solid growth, but Argentina's economy continued to flatline, and Venezuela plunged into recession.

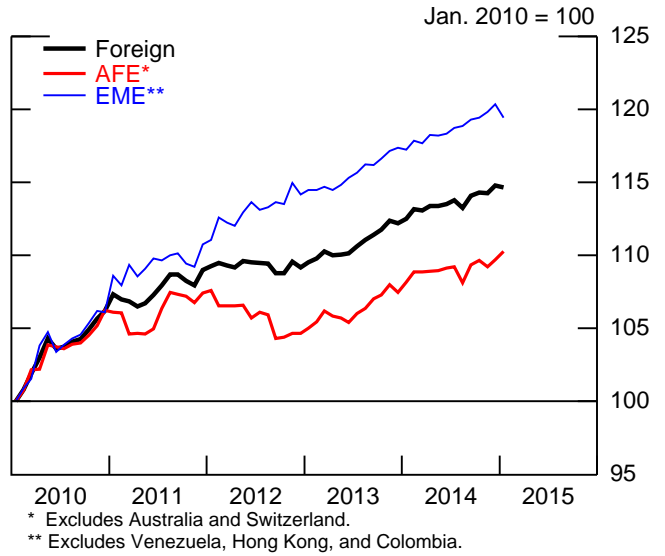
In **Brazil**, real GDP grew at an annual rate of 1¼ percent in the fourth quarter, which, although meager, was better than we expected. Growth was supported by strong private consumption, which more than offset a contraction in investment and exports. Despite this positive surprise, we expect GDP to contract at an annual rate of nearly 2 percent in the first half of this year and to expand only slightly during the second half. Domestic demand is held back by the adverse effects on consumer and business confidence of the corruption scandal at Petrobras and the tighter monetary and fiscal policies implemented to combat inflation and restore fiscal discipline. Next year, we anticipate less drag from monetary policy and expect confidence to improve. Accordingly, the economy should begin to expand, albeit at a subdued 2 percent rate. Inflation increased to an annual rate of 11 percent in the first quarter because of the pass-through from the sizable depreciation of the *real* and an increase in administered prices. As the effects of these factors wane, and with policy interest rates likely to be kept near their current 12¾ percent level, we expect inflation to moderate to 5¾ percent next year.

### Recent Foreign Indicators

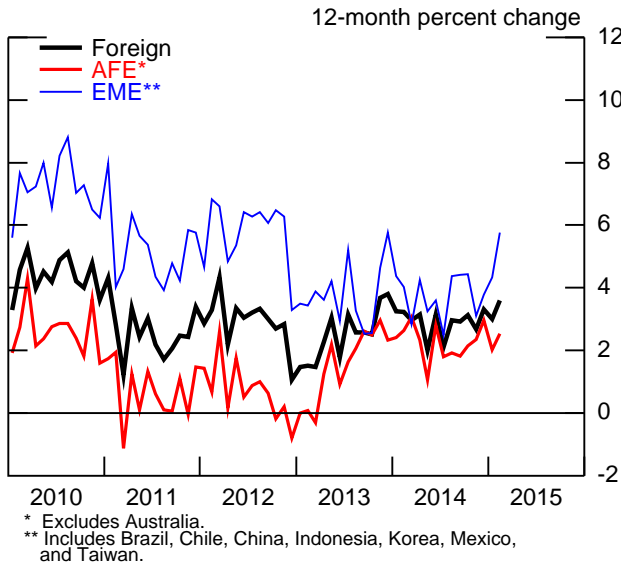
Nominal Exports



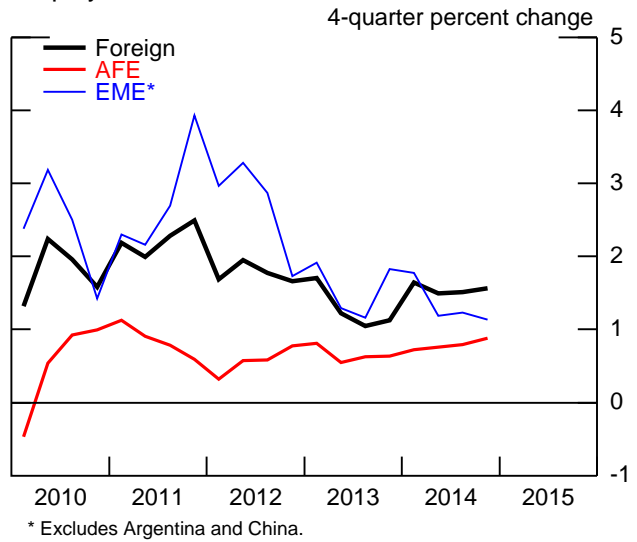
Industrial Production



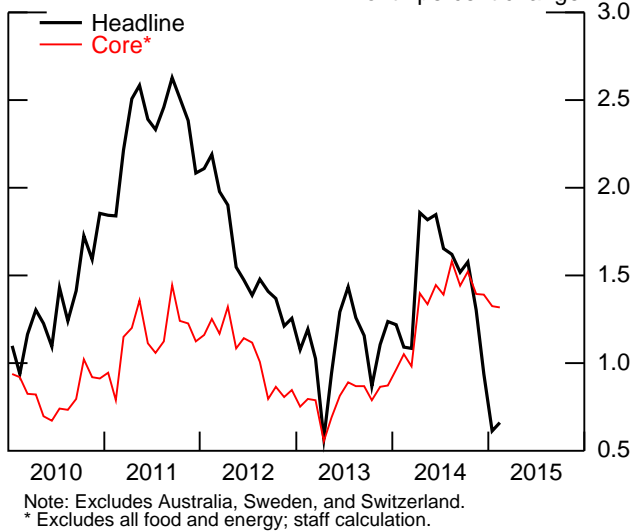
Retail Sales



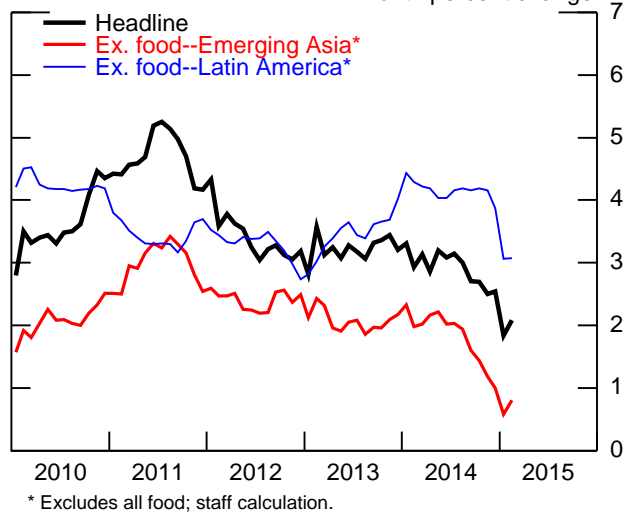
Employment



Consumer Prices: Advanced Foreign Economies



Consumer Prices: Emerging Market Economies



Int'l Econ Devel & Outlook

# The Foreign GDP Outlook

## Real GDP\*

Percent change, annual rate

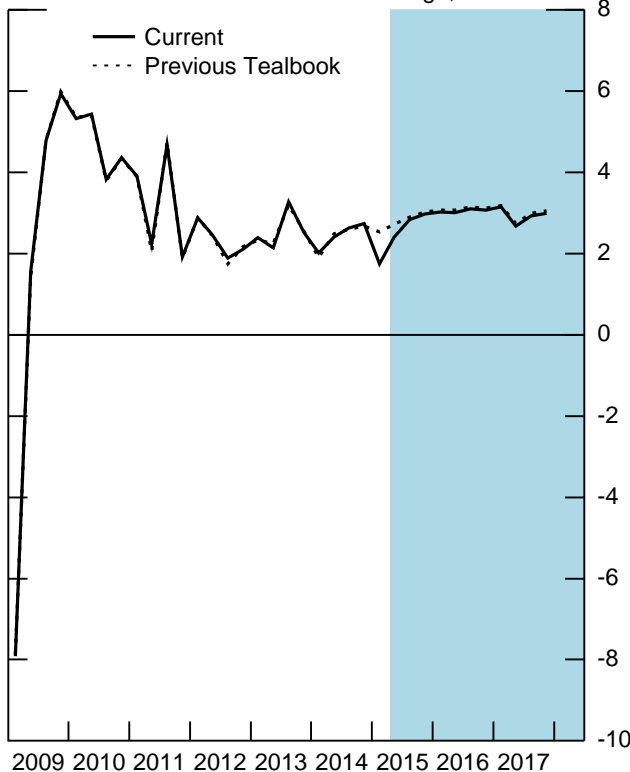
	2014			2015			2016	2017
	H1	Q3	Q4	Q1	Q2	H2		
<b>1. Total Foreign</b>	<b>2.2</b>	<b>2.6</b>	<b>2.7</b>	<b>1.8</b>	<b>2.4</b>	<b>2.9</b>	<b>3.1</b>	<b>2.9</b>
<i>Previous Tealbook</i>	2.2	2.6	2.7	2.5	2.7	3.0	3.1	3.0
<b>2. Advanced Foreign Economies</b>	<b>1.6</b>	<b>1.7</b>	<b>2.0</b>	<b>1.0</b>	<b>1.8</b>	<b>2.1</b>	<b>2.2</b>	<b>1.9</b>
<i>Previous Tealbook</i>	1.6	1.7	2.0	1.7	1.9	2.2	2.2	2.0
3. Canada	2.4	3.2	2.4	0.2	1.6	2.2	2.4	2.1
4. Euro Area	0.7	0.7	1.3	1.7	1.7	1.9	2.1	2.3
5. Japan	-0.8	-2.6	1.5	1.0	1.5	1.5	1.3	-0.3
6. United Kingdom	3.5	2.5	2.5	2.0	2.7	2.6	2.5	2.3
<b>7. Emerging Market Economies</b>	<b>2.8</b>	<b>3.6</b>	<b>3.4</b>	<b>2.5</b>	<b>3.0</b>	<b>3.7</b>	<b>3.9</b>	<b>3.9</b>
<i>Previous Tealbook</i>	2.8	3.5	3.3	3.3	3.5	3.7	4.0	4.0
8. China	7.0	8.1	7.0	5.3	6.3	7.2	6.6	6.5
9. Emerging Asia ex. China	3.0	4.0	3.9	3.8	4.2	4.4	4.4	4.2
10. Mexico	2.8	2.1	2.7	1.9	2.7	3.3	3.1	3.2
11. Brazil	-1.5	0.6	1.3	-1.7	-2.1	0.3	1.9	2.3

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

Int'l Econ Devel & Outlook

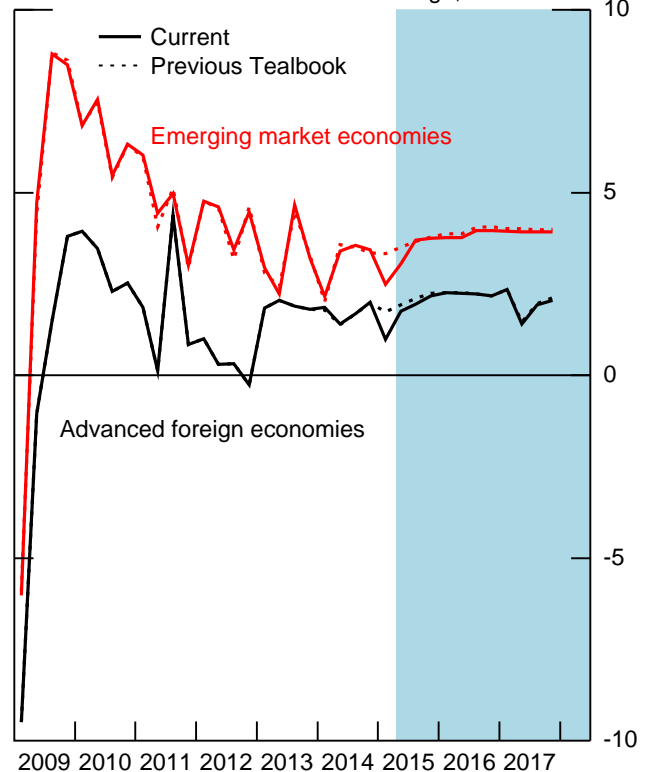
### Total Foreign GDP

Percent change, annual rate



### Foreign GDP

Percent change, annual rate



## The Foreign Inflation Outlook

### Consumer Prices\*

Percent change, annual rate

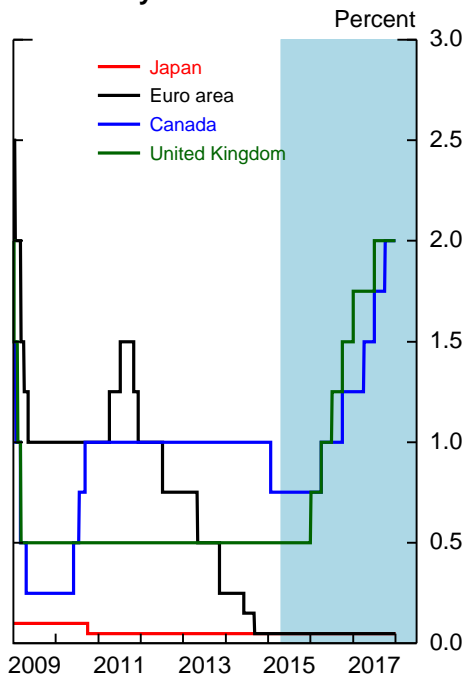
	2014			2015			2016	2017
	H1	Q3	Q4	Q1	Q2	H2		
<b>1. Total Foreign</b>	<b>2.5</b>	<b>2.0</b>	<b>1.1</b>	<b>-0.1</b>	<b>2.0</b>	<b>2.3</b>	<b>2.4</b>	<b>2.6</b>
<i>Previous Tealbook</i>	2.5	2.0	1.1	-0.0	2.1	2.3	2.5	2.6
<b>2. Advanced Foreign Economies</b>	<b>2.2</b>	<b>0.9</b>	<b>-0.4</b>	<b>-0.8</b>	<b>1.1</b>	<b>1.4</b>	<b>1.6</b>	<b>2.0</b>
<i>Previous Tealbook</i>	2.2	0.9	-0.4	-0.7	1.1	1.4	1.6	2.0
3. Canada	3.2	1.2	-0.0	-0.1	1.7	1.8	1.9	2.0
4. Euro Area	0.4	0.5	-0.6	-1.6	1.0	1.4	1.6	1.7
5. Japan	4.9	1.2	-0.6	0.1	0.8	0.8	1.1	2.7
6. United Kingdom	1.6	1.2	-0.7	-1.8	1.2	1.8	1.8	1.9
<b>7. Emerging Market Economies</b>	<b>2.7</b>	<b>2.9</b>	<b>2.3</b>	<b>0.4</b>	<b>2.7</b>	<b>3.0</b>	<b>3.1</b>	<b>3.1</b>
<i>Previous Tealbook</i>	2.8	2.9	2.3	0.5	2.8	3.1	3.1	3.1
8. China	1.4	2.2	1.0	-0.4	2.0	2.4	2.5	2.5
9. Emerging Asia ex. China	2.8	2.1	1.3	-0.5	2.5	3.0	3.2	3.3
10. Mexico	4.1	4.4	4.2	0.3	2.7	3.3	3.3	3.3
11. Brazil	7.0	6.2	6.0	11.1	9.9	5.9	5.6	5.4

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

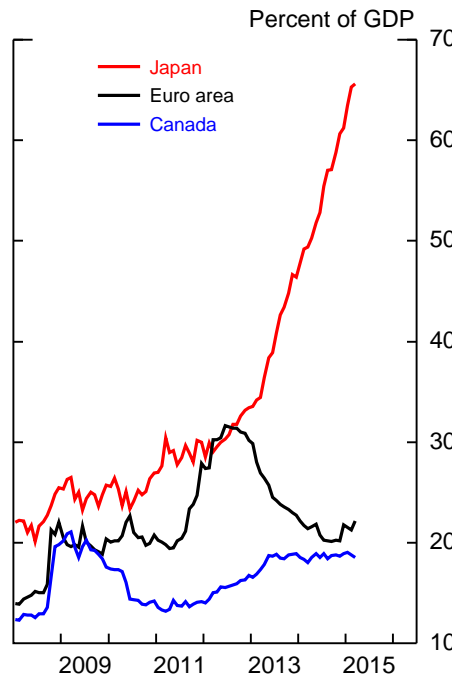
Int'l Econ Devel & Outlook

## Foreign Monetary Policy

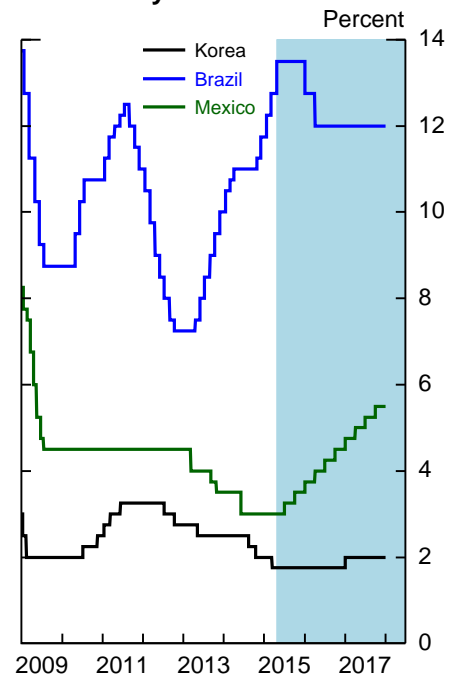
**AFE Policy Rates**



**AFE Central Bank Balance Sheets**



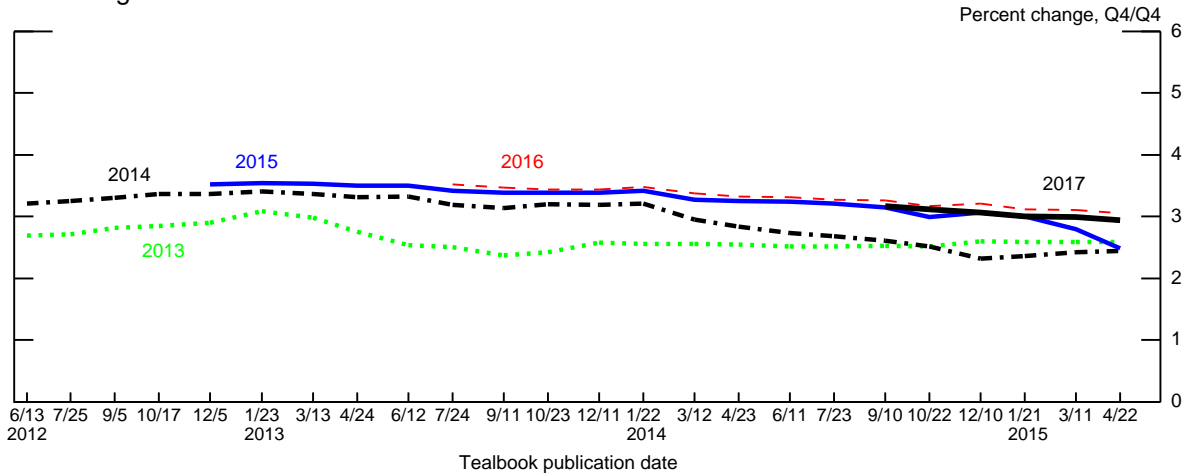
**EME Policy Rates**



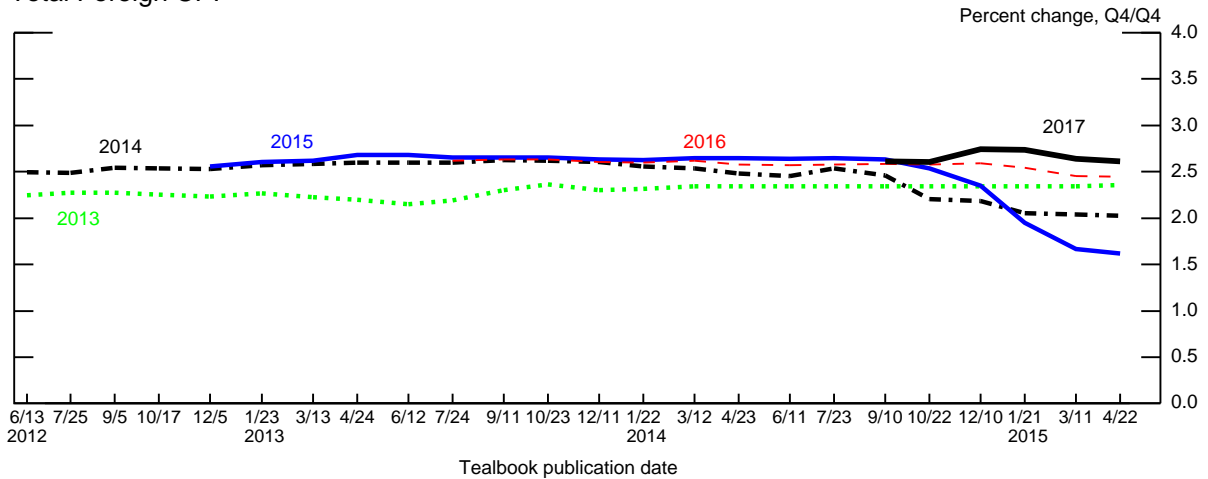


### Evolution of Staff's International Forecast

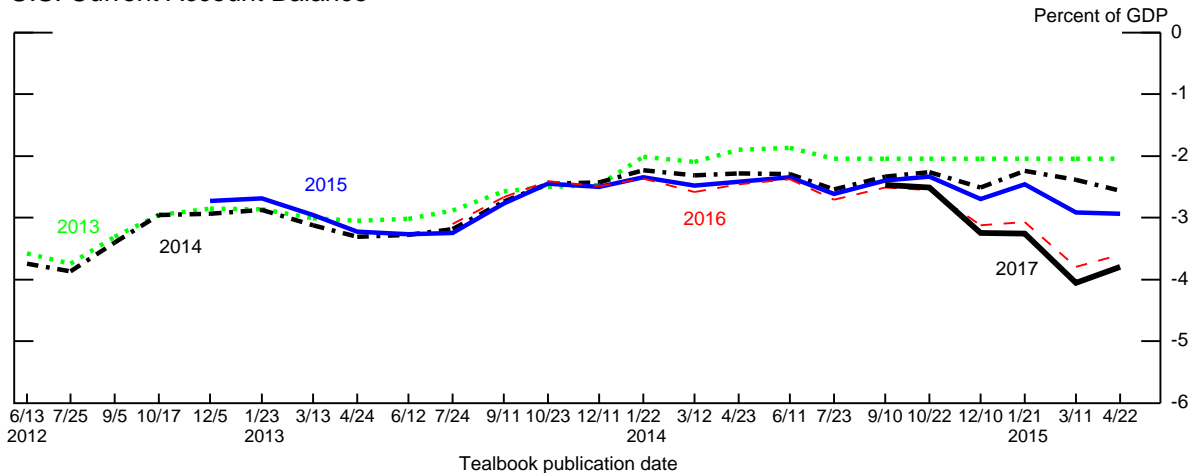
Total Foreign GDP



Total Foreign CPI



U.S. Current Account Balance



## Financial Developments

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Financial conditions, on balance, became more supportive of economic activity over the intermeeting period. Domestic monetary policy communications that investors interpreted as more accommodative than anticipated put downward pressure on interest rates while supporting risky asset prices. Generally weaker-than-expected domestic economic data, especially the March U.S. employment report, also pushed interest rates lower but weighed on risk sentiment at times.

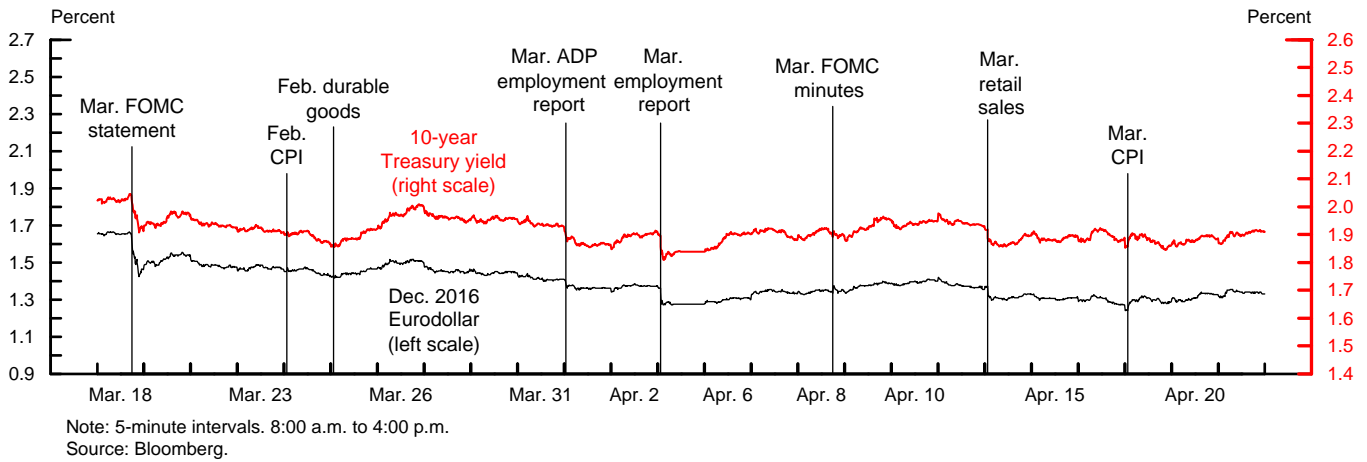
- The federal funds rate at the end of 2016 implied by OIS quotes decreased 32 basis points. Results of the Open Market Desk's surveys of primary dealers and market participants indicated that the probability of liftoff at the June meeting had been marked down, and that the highest odds are now placed on liftoff at the September 2015 meeting.
- Yields on nominal Treasury securities with maturities between 2 and 10 years declined 13 to 21 basis points, while 5-to-10-year-forward inflation compensation rose.
- Yields on corporate bonds generally followed Treasury yields down. Equity prices increased slightly, on net, as the shifts in monetary policy expectations likely were partially offset by the weaker economic data.
- Those same factors, as well as some improvements in the outlook for the euro area, contributed to a small depreciation in the nominal exchange value of the U.S. dollar.
- Businesses raised significant amounts of funds, particularly for M&A activity. On balance, banks reportedly eased lending standards and experienced increased loan demand in the first quarter.<sup>1</sup>

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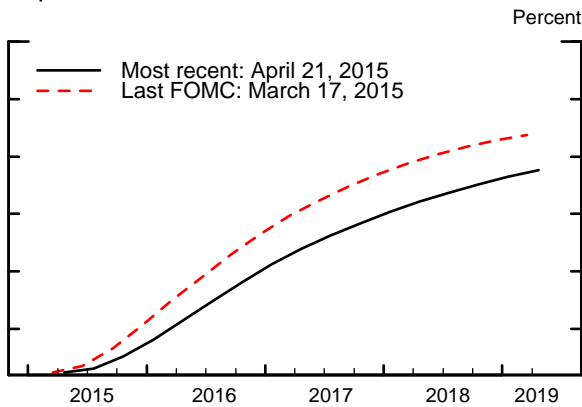
<sup>1</sup> See John Driscoll (2015), "The April 2015 Senior Loan Officer Opinion Survey on Bank Lending Practices," memorandum to the FOMC, April 23.

### Treasury Yields and Policy Expectations

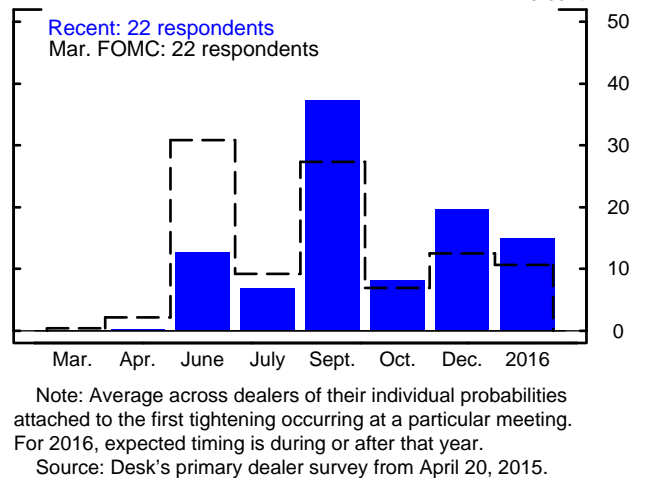
#### Selected Interest Rates



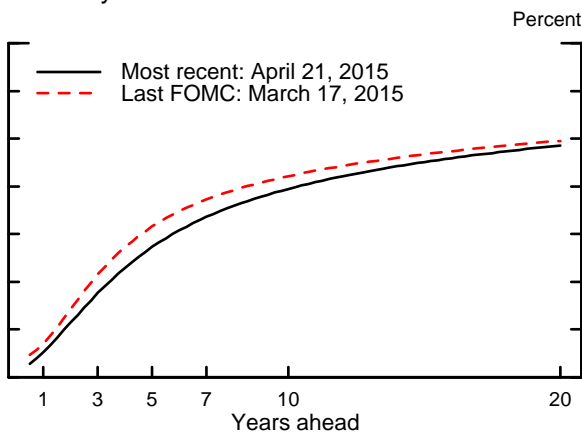
#### Implied Federal Funds Rate



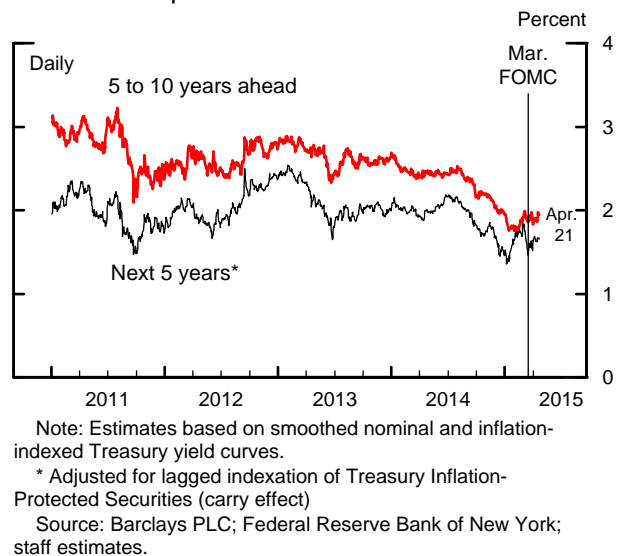
#### Distribution of Expected Timing of First Rate Increase from the Desk's Primary Dealer Survey



#### Treasury Yield Curve



#### Inflation Compensation



## **TREASURY YIELDS AND POLICY EXPECTATIONS**

Federal Reserve communications following the March FOMC meeting were characterized by investors as more accommodative than expected despite the removal of the “patient” language from the March FOMC statement. Market participants reportedly focused on the sizable downward revisions to the projected path of the federal funds rate in the Summary of Economic Projections, as well as downward revisions to participants’ projections for inflation, GDP growth, and the longer-run unemployment rate. Over the remainder of the period, investors further marked down their expected path for short-term interest rates in response to weaker-than-expected domestic economic data, with the disappointing March employment report garnering particular attention.

On balance since the March FOMC meeting, the federal funds rates at the end of 2016 and end of 2017 implied by OIS quotes have each fallen about 35 basis points. According to the Desk’s surveys of dealers and market participants, investors now see the September 2015 meeting as the most likely date for the first increase in the federal funds rate target range, and the probability of liftoff at the December 2015 meeting was larger than that at the June meeting.

Nominal Treasury yields out to around 10 years decreased somewhat, consistent with the more-accommodative-than-expected FOMC communications and generally weak tone of the economic data. On net, 2-, 5-, and 10-year yields moved down 15, 21, and 13 basis points, respectively. However, 20- and 30-year yields were relatively little changed.

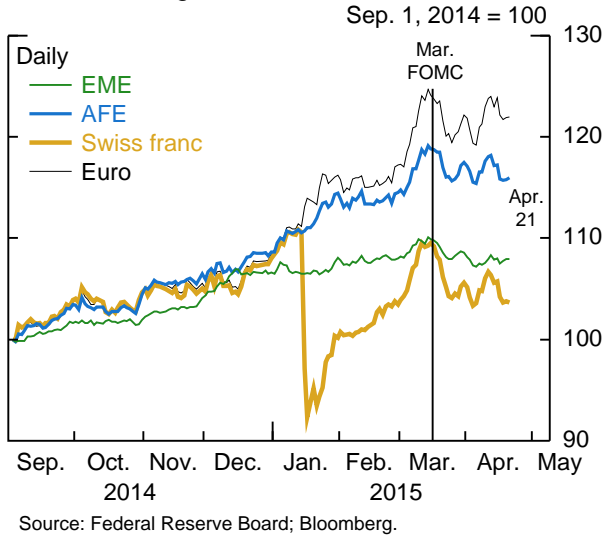
Over the intermeeting period, TIPS yields declined more than their nominal counterparts, as did their associated implied forward rates. Consistent with the shift in monetary policy expectations, increases in oil prices, and higher-than-expected February and March CPI reports, the 5-year measure of inflation compensation based on TIPS moved up 19 basis points. The 5-to-10-year TIPS-based forward measure of inflation compensation rose 9 basis points. Changes in inflation compensation measures based on inflation swaps were similar.

## **FOREIGN DEVELOPMENTS**

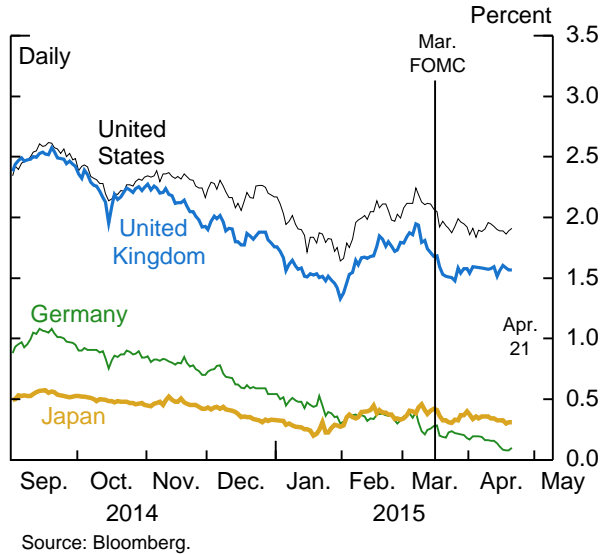
Since the March FOMC meeting, the U.S. dollar has depreciated broadly, consistent with the downward shift in the expected path of the federal funds rate and the

### Foreign Developments

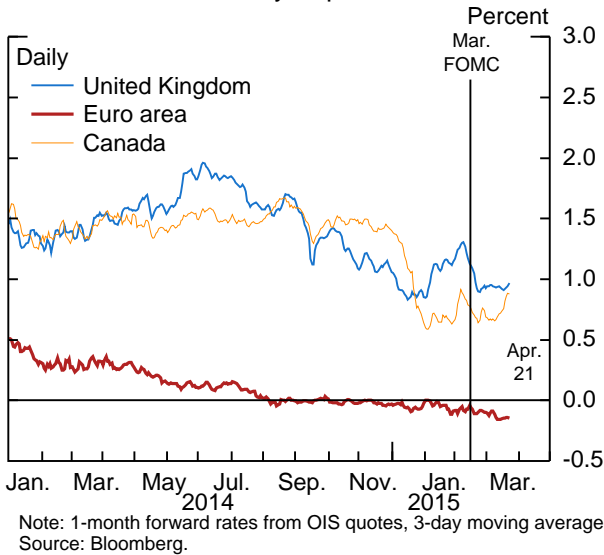
Dollar Exchange Rate Indexes



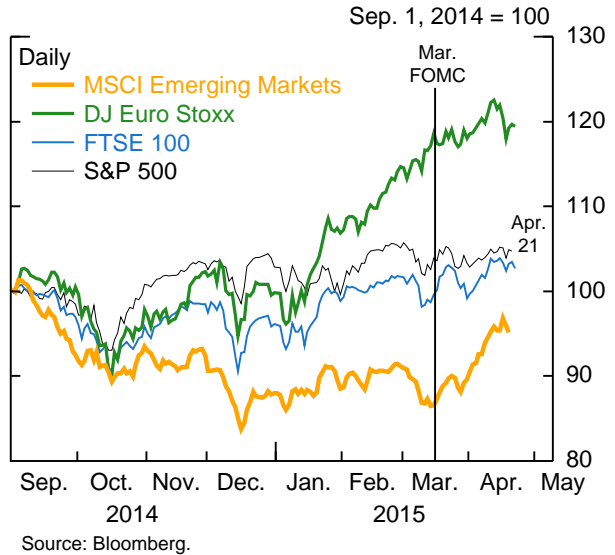
AFE and U.S. 10-Year Nominal Benchmark Yields



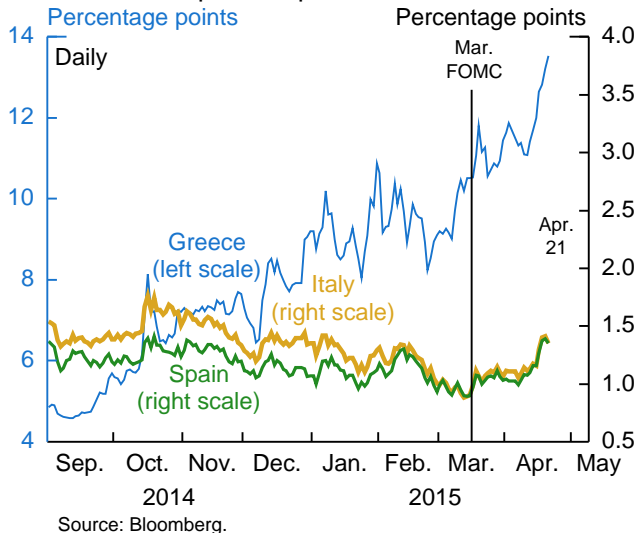
24-Month-Ahead Policy Expectations



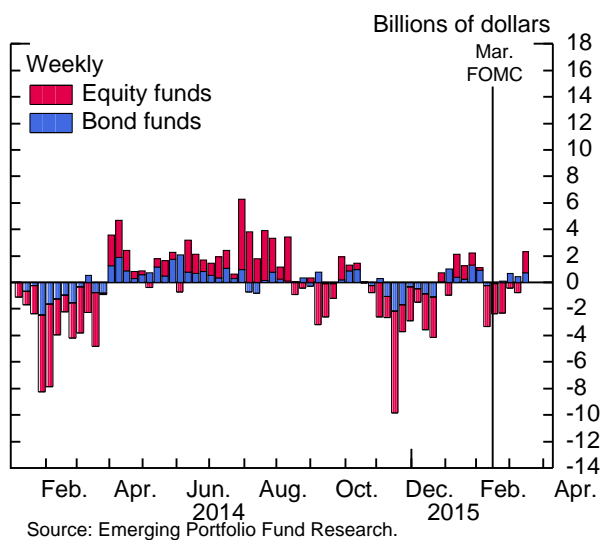
Stock Price Indexes



10-Year Peripheral Spreads



Flows to EME-Dedicated Funds



Financial Developments

weak tone of the incoming economic data. This move was reinforced by positive economic data in the euro area. However, the dollar stabilized later in the period. On net over the intermeeting period, the broad nominal dollar index declined about 2 percent. After appreciating significantly last year and early this year, the real value of the broad U.S. dollar is close to its historical average since 1973.

AFE sovereign yields were modestly lower during the period. Ten-year yields in the United Kingdom fell in tandem with those on U.S. Treasury securities, largely because of a similar shift in expectations toward later removal of monetary policy accommodation. German sovereign yields also decreased modestly amid ECB purchases of sovereign debt, despite relatively strong euro-area macroeconomic data releases. In addition, Swedish and Swiss yield curves declined and are currently negative out through 5 years and 10 years, respectively.

AFE equity markets, particularly those in the euro area and Japan, slightly outperformed equities in the United States. A widespread increase in EME equity prices was reinforced by market perceptions of reduced EME risks, with the recent rise in oil prices appearing to play a role for the major oil exporters. Equity prices in China and Hong Kong moved significantly higher, buoyed in part by monetary policy accommodation and recent deregulation allowing greater flows between the Chinese and Hong Kong stock markets.

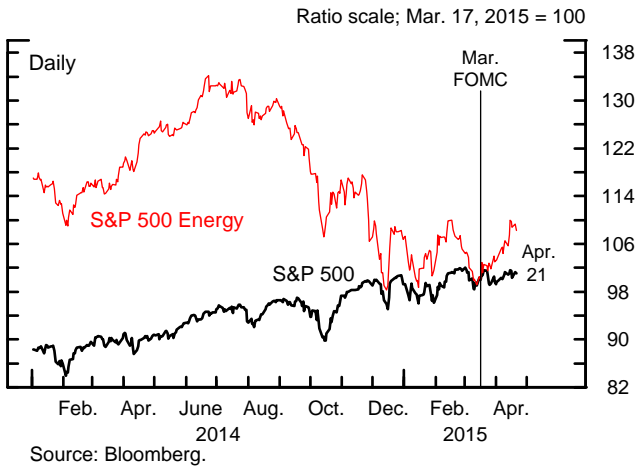
Although the Greek government made a timely payment to the IMF on April 9, Greek sovereign spreads continued to widen, as the Greek government struggled to reach an agreement with official creditors ahead of upcoming obligation dates. Concerns about Greece led Portuguese, Italian, and Spanish sovereign spreads to edge wider, although they remain quite narrow.

## **U.S. EQUITY PRICES AND CORPORATE BOND YIELDS**

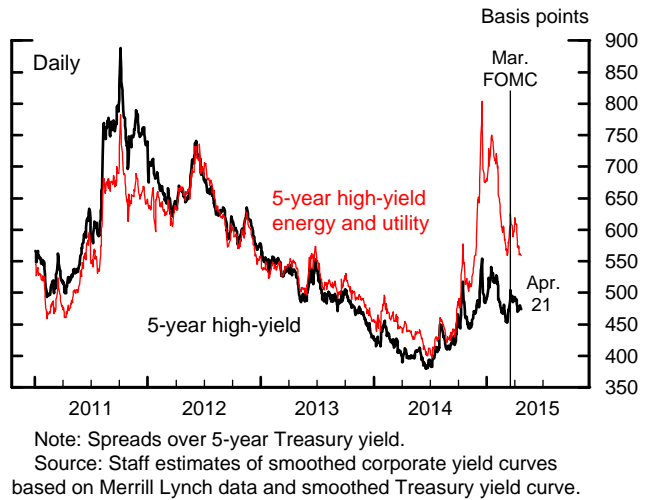
Over the intermeeting period, broad U.S. equity price indexes increased slightly, on net, as market expectations of more accommodative monetary policy and stabilization of oil prices were partially offset by the on-balance weaker-than-anticipated macroeconomic news. Stock prices for energy firms, which account for about 10 percent of the S&P 500 index, retraced a small portion of their substantial drop since mid-2014. One-month option-implied volatility on the S&P 500 index decreased slightly and remained at about the middle of its range over the past year.

### U.S. Equity Prices and Business Finance

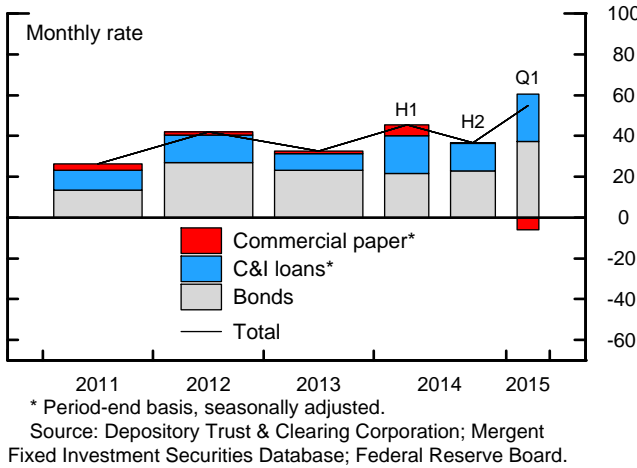
Equity Price Indexes



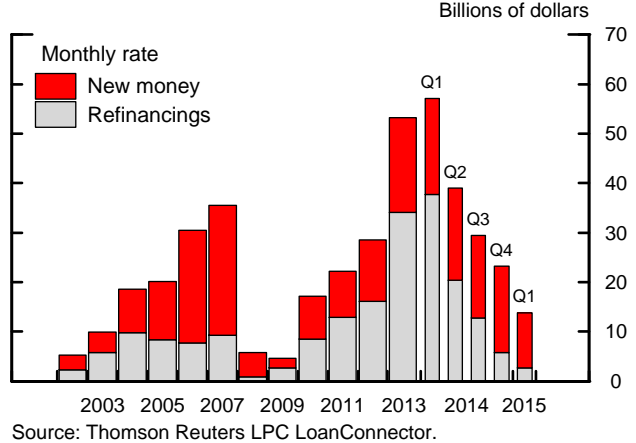
High-Yield Corporate Bond Spreads



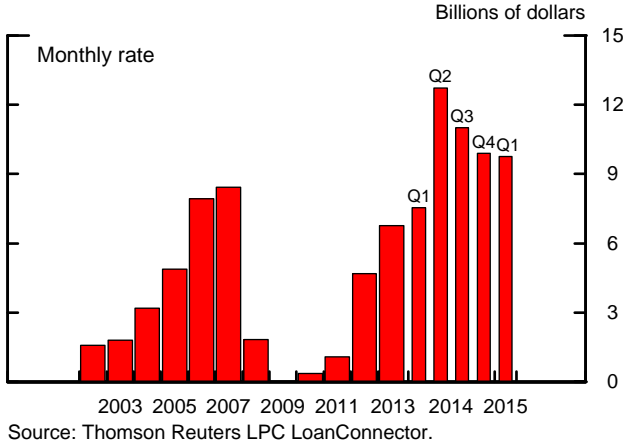
Selected Components of Net Debt Financing, Nonfinancial Firms



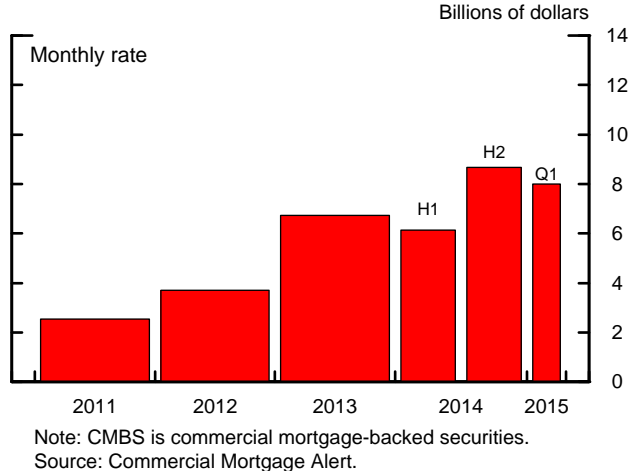
Institutional Leveraged Loan Issuance, by Purpose



U.S. CLO Issuance



CMBS Issuance



Financial Developments

With about 20 percent of earnings reports for firms in the S&P 500 index on hand and equity analysts' forecasts for the rest, the staff estimates that earnings per share in the first quarter decreased notably over the previous quarter. Even so, a larger-than-usual fraction of firms has reported earnings above forecasts. In March, equity analysts continued to revise down their forecasts for year-ahead earnings per share for firms in the S&P 500 index, though noticeably less than in the previous two months. The moderation of the downward revisions likely reflects, in part, the stabilization of the dollar and oil prices (see the box "Effects of Dollar Appreciation on U.S. Corporate Profits").

Yields on corporate bonds generally followed Treasury yields down over the intermeeting period. Spreads of 10-year triple-B-rated corporate bond yields over comparable-maturity Treasury securities were about unchanged, while yield spreads on speculative-grade corporate bonds narrowed somewhat. The narrowing was due, in part, to lower spreads for speculative-grade energy firms, but spreads for those firms remained above their historical median levels.

## **BUSINESS FINANCE**

Financing conditions for nonfinancial businesses continued to be accommodative, and businesses raised substantial amounts of funds in bond, equity, and loan markets, particularly for M&A and leveraged buyout activities. Investment- and speculative-grade corporate bond issuance was strong in the first quarter. Seasonally adjusted domestic nonfinancial CP outstanding rebounded in recent weeks after having declined slightly in the first quarter. Public equity issuance rose in the first quarter, supported by a surge in seasoned offerings. Growth of C&I loans on banks' books was 12 percent at an annual rate over the same period, consistent with reports from banks in the April SLOOS that they had experienced increased loan demand from large and middle-market firms and reduced loan pricing. In the syndicated leveraged loan market, issuance of new money loans slowed in the first quarter relative to its pace over the past year but remained strong. However, gross issuance of leveraged loans was considerably smaller over the past two quarters than earlier in 2014, as refinancing activity dropped to its lowest level in a few years. Even so, CLO issuance in February and March rebounded to near the robust pace registered during most of the second half of last year.

Financing for commercial real estate (CRE) remained broadly available for large and small loans and the full range of property types. CRE loans on banks' books expanded appreciably in the first quarter, and, in the April SLOOS, banks reported a

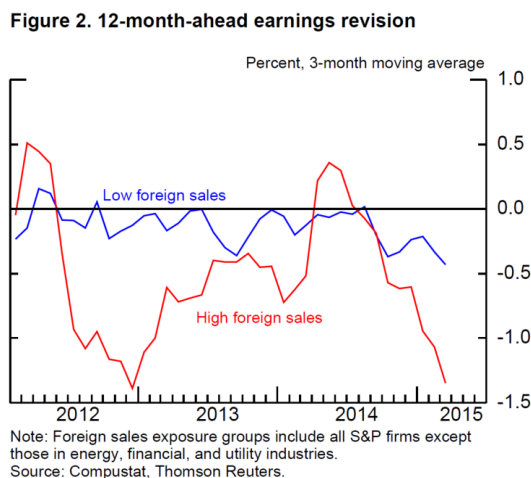
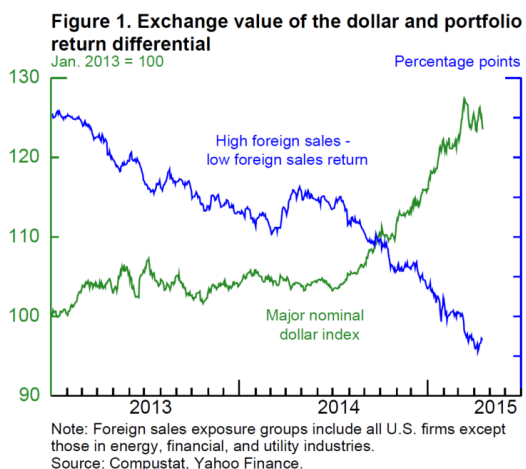


## Effects of Dollar Appreciation on U.S. Corporate Profits

U.S. corporate profits fell about 1.5 percent in the fourth quarter of last year. In part, this weakness reflects a decline in profits of the energy sector, which have been hurt by the decline in oil prices. The strength of the U.S. dollar has also had an effect. Dollar appreciation lowers the profits of some U.S. corporations through two channels: (1) If unhedged, profits earned by foreign subsidiaries translate into fewer U.S. dollars, and (2) U.S. exports become less competitive compared with goods produced in other countries.

Over the past several months, equity investors have been factoring the effects of dollar appreciation into their expectations for corporate earnings and portfolio allocation decisions. The blue line in figure 1 shows the difference between the stock returns of firms with high foreign sales (that is, firms with at least 50 percent of revenue earned abroad, directly or through exports) and low foreign sales (that is, firms with less than 20 percent of sales abroad).<sup>1</sup> While the shares of firms with high foreign sales underperformed in 2013, their relative performance worsened as the dollar began to appreciate last summer. Also, as shown in figure 2, S&P 500 firms with high foreign sales have experienced relatively large downward revisions to earnings expectations over the past six months.

The earnings of U.S. foreign subsidiaries, which account for about 25 percent of the overall profits of U.S. nonfinancial corporations, declined 7 percent in the fourth quarter of 2014 and are estimated to have declined another 5 percent in the first quarter of 2015. To gauge how much of this recent decline in foreign profits can be accounted for by the strength of the dollar, we use the staff's

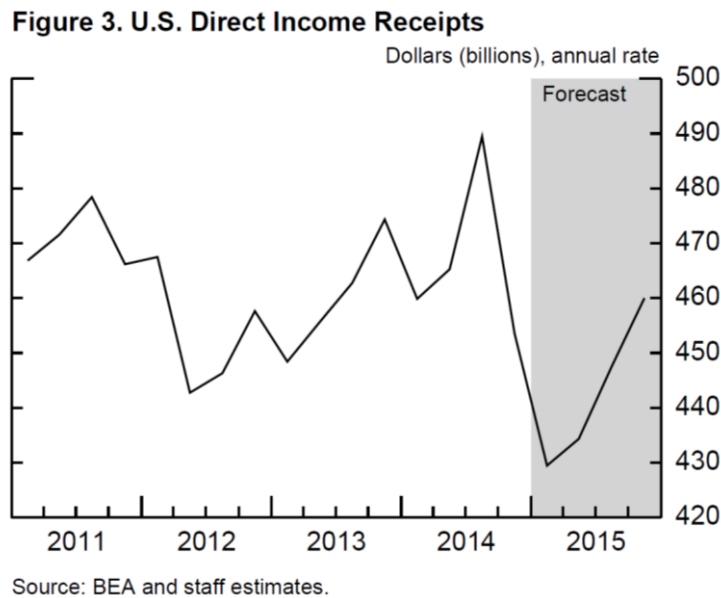


<sup>1</sup> Firms with high foreign sales tend to be larger and account for almost 75 percent of S&P 500 nonfinancial earnings excluding oil and utilities. We exclude oil firms to isolate the effect of the U.S. dollar. We also exclude utilities firms because they typically pay high dividends and so their stock returns are typically closely tied to movements in bond markets.

forecast model for direct investment receipts, which are roughly equivalent to the income of foreign subsidiaries. The model depends on the exchange value of the dollar, the foreign output gap, and the relative price of imported oil.

Figure 3 shows the evolution of direct investment receipts, including the forecast for 2015. Direct investment receipts fell sharply in the fourth quarter of 2014 and are projected to fall further in the first quarter of 2015. Our model attributes about half of the estimated 12 percent decline in direct investment receipts over these two quarters to the appreciation of the dollar and about half to the decline in oil prices. The modest recovery in receipts projected over the remainder of 2015 is due in large part to somewhat higher oil prices and a slight narrowing of the foreign output gap.

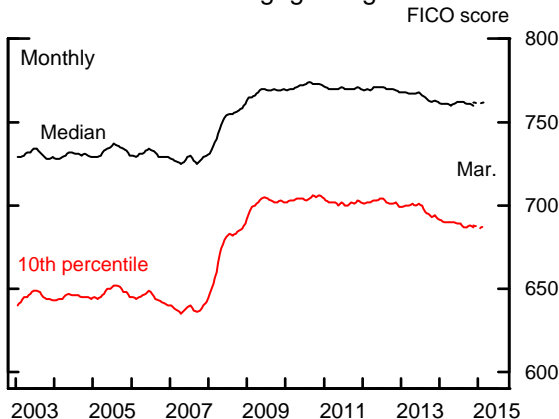
Overall, we find that the recent appreciation of the U.S. dollar is having a significant effect on U.S. firms' profits, especially for firms with high foreign sales, and explains roughly half of the recent decline in profits earned from foreign subsidiaries.



Financial Developments

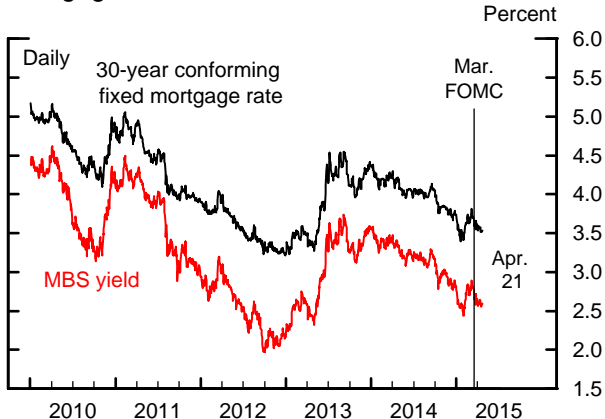
### Household Finance

Credit Scores at Mortgage Origination



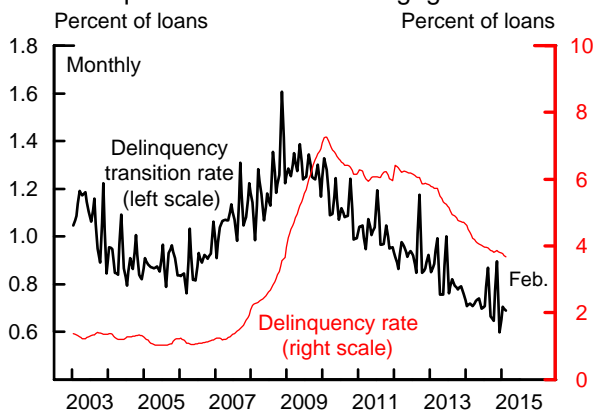
Note: Concerns 30-year GSE-backed purchase mortgages originated in month shown. Dotted lines reflect forecast based on data on mortgage locks.  
 Source: For data, LPS Applied Analytics/Black Knight; for forecast, Optimal Blue.

Mortgage Rate and MBS Yield



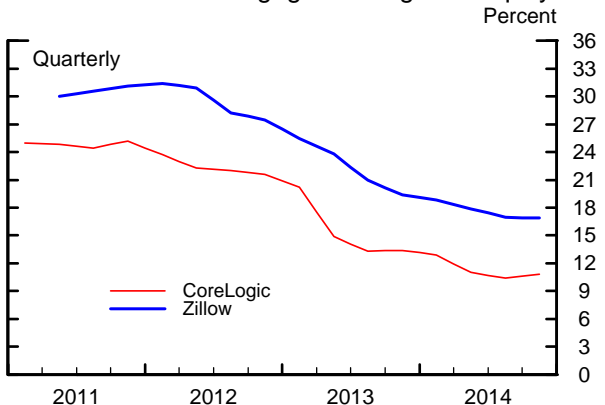
Note: The MBS yield is the Fannie Mae 30-year current-coupon rate.  
 Source: For MBS yield, Barclays; for mortgage rate, Loansifter.

Delinquencies on Prime Mortgages



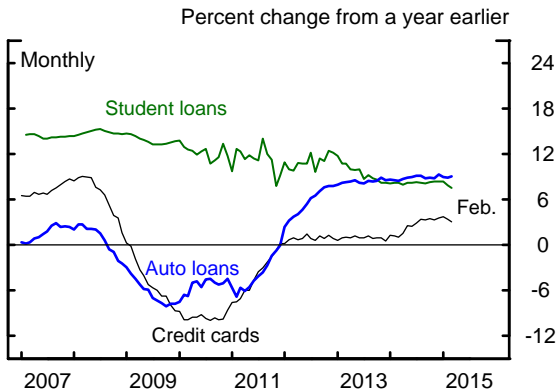
Note: For delinquency rate, percent of loans 90 or more days past due or in foreclosure. For transition rate, percent of previously current mortgages that transition to being at least 30 days delinquent each month.  
 Source: LPS Applied Analytics/Black Knight.

Percent of Total Mortgages in Negative Equity



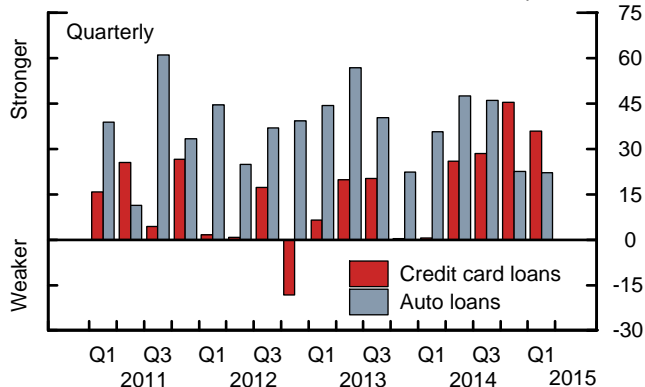
Source: Staff estimates based on data from Black Knight, CoreLogic, and Mortgage Bankers Association.

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.

Financial Developments

further easing of standards on such loans and another strengthening of demand. In addition, survey respondents indicated that they eased some CRE loan terms over the past year, and they largely pointed to more aggressive competition, as well as improving outlooks for vacancy rates and property prices, as reasons for doing so. Indeed, CRE prices continued to rise through the fourth quarter of 2014, supported in part by rising rents and declining vacancy rates as well as by accommodative financing conditions. Meanwhile, CMBS issuance was about 50 percent higher than in the first quarter of last year, and spreads of CMBS rates over Treasury swap rates remained narrow.

## **HOUSEHOLD FINANCE**

Credit conditions for residential mortgages were generally little changed over the intermeeting period, and lending volumes stayed light. In the April SLOOS, some large banks reported having eased standards on GSE-eligible, government-guaranteed, and jumbo mortgage loans in the first quarter. Although house prices rose moderately again in February, the downtrend in the share of mortgages in a negative equity position has flattened somewhat in recent quarters; at 11 to 17 percent, depending on the source, this share remained elevated relative to pre-crisis levels.

On balance over the intermeeting period, financing conditions in consumer credit markets stayed generally accommodative, and the latest readings on credit performance of consumer debt were little changed. According to the April SLOOS, bank lending standards on consumer loans were about unchanged in the first quarter. Outstanding balances of auto and student loans continued to expand at a robust pace through February, as such credit remained widely available, including to borrowers with subprime credit scores. In contrast, borrowing through credit card accounts appeared to have slowed noticeably. Nonetheless, the April SLOOS indicated that demand for credit cards had strengthened further, consistent with confidential supervisory data through January showing growth in new accounts and increases in credit lines.

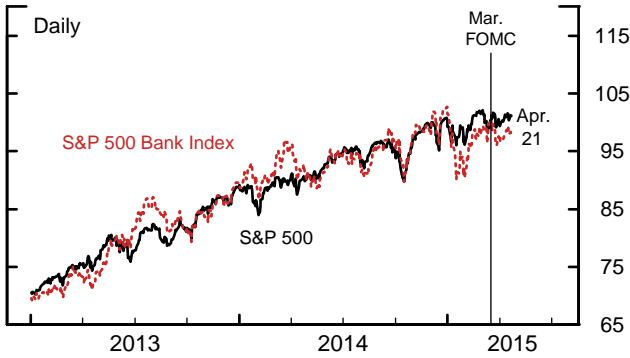
## **BANKING DEVELOPMENTS AND MONEY**

Over the intermeeting period, the equity prices of large bank holding companies slightly underperformed broad equity price indexes, though CDS spreads for such institutions edged down. The majority of large banks that have reported earnings exceeded analysts' profit forecasts for the first quarter on gains in noninterest income.

## Banking Developments and Money

S&P 500 Stock Price Indexes

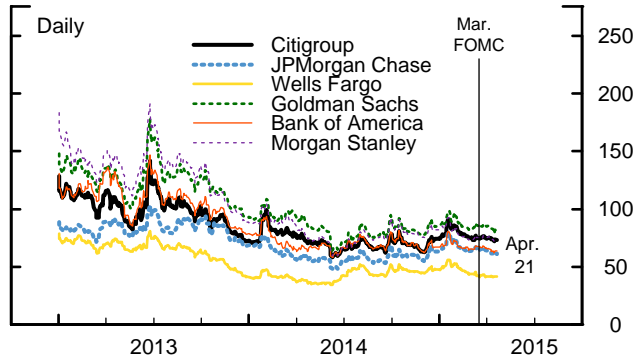
Ratio scale; Mar. 17, 2015 = 100



Source: Bloomberg.

CDS Spreads of Large Bank Holding Companies

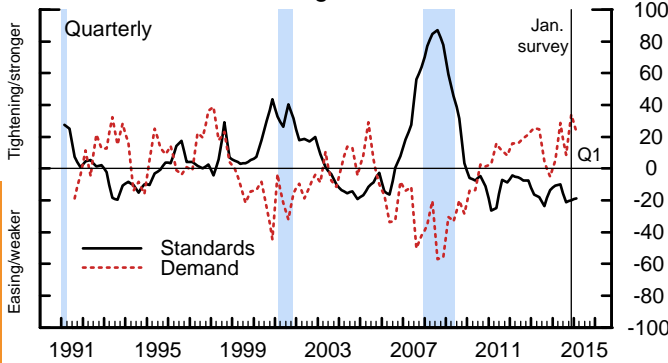
Basis points



Source: Markit.

Changes in Standards and Demand across Core Loan Categories

Net percent

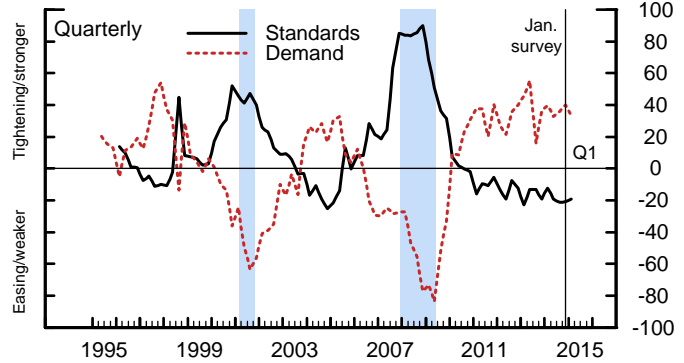


Note: A composite index that represents the net percentage of loans on respondents' balance sheets that were in categories for which banks reported tighter lending standards or stronger loan demand over the past 3 months, with results weighted by survey respondents' holdings of loans in each category.

Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

Changes in Standards and Demand for Commercial Real Estate Loans

Net percent

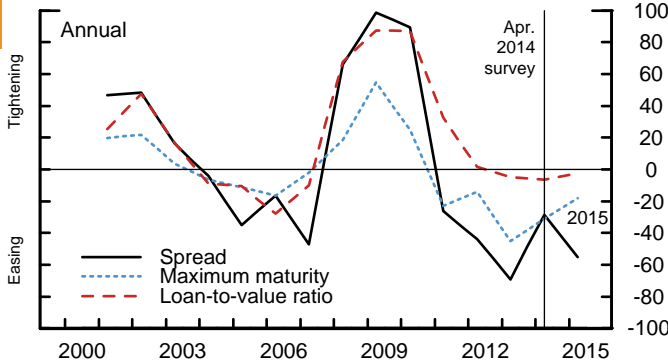


Note: Responses are weighted by survey respondents' holdings of relevant loan types as reported on Call Reports.

Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

Changes in Loan Terms for Commercial Real Estate Loans

Net percent



Note: The survey asks about changes in CRE loan terms over the preceding 12 months. Responses are weighted by survey respondents' holdings of CRE loans as reported on Call Reports.

Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

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

Growth of M2 and Its Components

	Percent, s.a.a.r.				
	M2	Liquid deposits	Small time deposits	Retail MMFs	Curr.
2014	5.7	7.0	-8.0	-2.4	7.5
2014:H1	6.1	7.3	-7.7	-2.8	8.5
2014:H2	5.2	6.5	-8.7	-2.0	6.2
2015:Q1	7.6	9.2	-12.1	-2.7	9.7
Feb.-Mar.	7.1	9.7	-18.6	-7.8	6.1

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

However, compressed net interest margins reportedly continued to limit overall profitability.

M2 expanded at an average annual rate of 7 percent over February and March, reflecting strong growth in liquid deposits and U.S. currency, while small time deposits and retail money funds continued to run off. The monetary base, on net, was about flat over the past two months, as increases in currency were partially offset by declines in reserve balances.

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

Testing of the Federal Reserve's overnight and term reverse repurchase agreement (ON RRP and term RRP, respectively) operations continued over the intermeeting period.<sup>2</sup> In March, the Desk auctioned two term RRP operations that covered quarter-end. The first operation, on March 19, attracted bids just in excess of the \$75 billion offer amount and was allocated at 9 basis points. The second operation, on March 30, offered \$125 billion but was undersubscribed and allocated at the maximum rate of 10 basis points. In total, take-up of the Federal Reserve's term and overnight RRP programs on this quarter-end (\$378 billion) was similar to that on year-end 2014 (\$397 billion).<sup>3</sup>

Overall, the ON RRP and term RRP operations continued to provide a soft floor on unsecured money market rates during the intermeeting period, even over quarter-end. The federal funds and Eurodollar rates generally stayed within a range of 11 to 13 basis points, although they dipped to 6 basis points and 5 basis points, respectively, at the March quarter-end.<sup>4</sup> Quarter-end effects in other unsecured funding markets were also fairly muted. However, foreign banking organizations' reserve balances temporarily fluctuated by \$300 billion around quarter-end, continuing a pattern reportedly associated with the introduction of the Basel III minimum leverage ratio requirement in foreign jurisdictions.

In secured markets, temporary funding pressures also were evident at quarter-end. Overnight GCF repo rates for Treasury securities increased more than expected, especially in the interdealer GCF market. The one-day jump in GCF repo rates could

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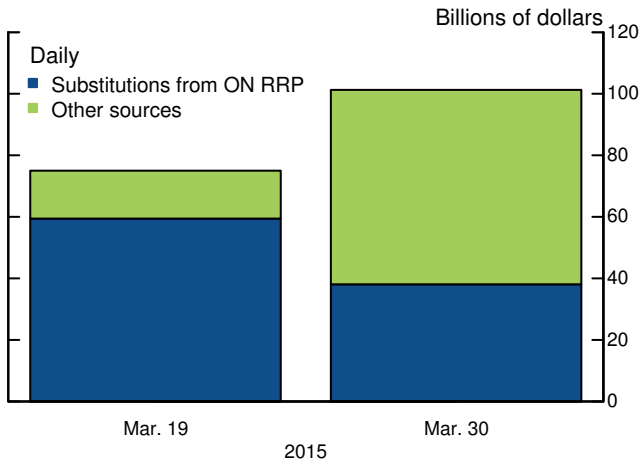
<sup>2</sup> Twenty-five new counterparties became eligible to participate in RRP operations on March 16, 2015. So far, their participation has been limited, representing just over \$23 billion of the \$378 billion take-up at quarter-end.

<sup>3</sup> At the September 2014 quarter-end, when there were no term RRP operations, \$407 billion in bids were received for the \$300 billion capped ON RRP operation.

<sup>4</sup> The effective federal funds rate averaged 12 basis points over the intermeeting period, with the intraday standard deviation averaging 4 basis points.

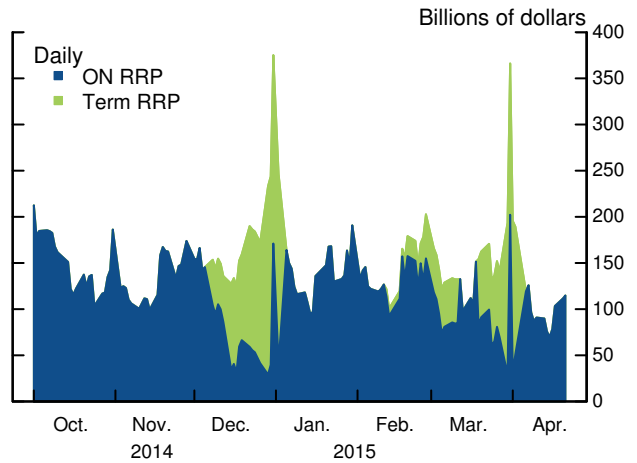
### Funding Markets and Policy Implementation

Sources of Term RRP Awards



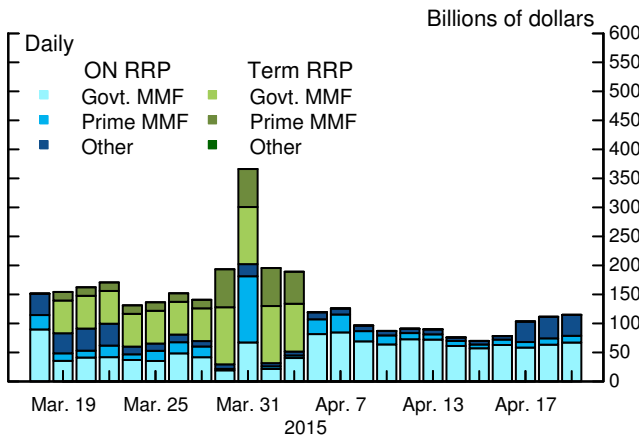
Note: ON RRP is overnight reverse repurchase agreement; term RRP is term reverse repurchase agreement.  
Source: Federal Reserve Bank of New York.

ON RRP and Term RRP Take-Up



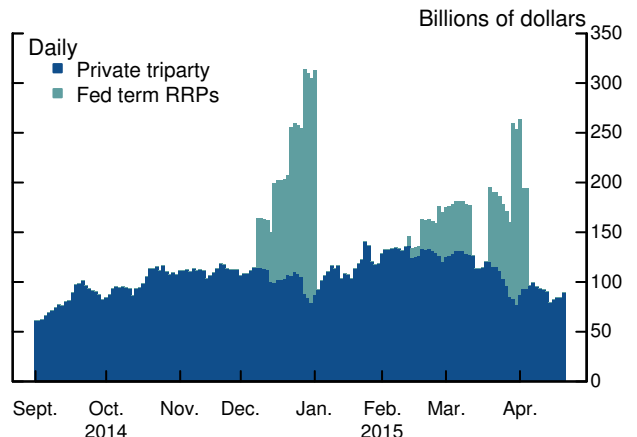
Note: ON RRP is overnight reverse repurchase agreement; term RRP is term reverse repurchase agreement.  
Source: Federal Reserve Bank of New York.

ON RRP and Term RRP Take-Up, by Type



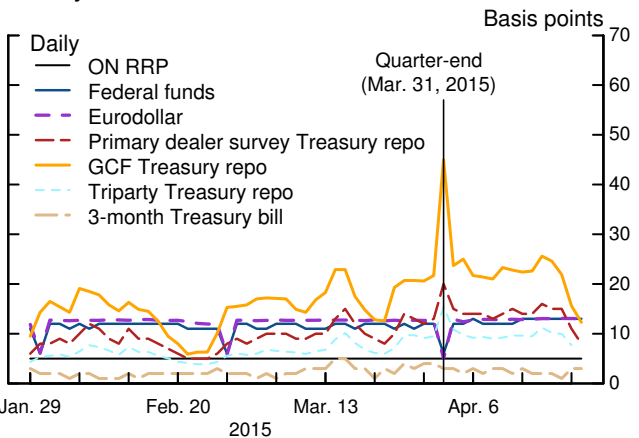
Note: ON RRP is overnight reverse repurchase agreement; term RRP is term reverse repurchase agreement; MMF is money market fund.  
Source: Federal Reserve Bank of New York.

Outstanding Term Treasury Repo



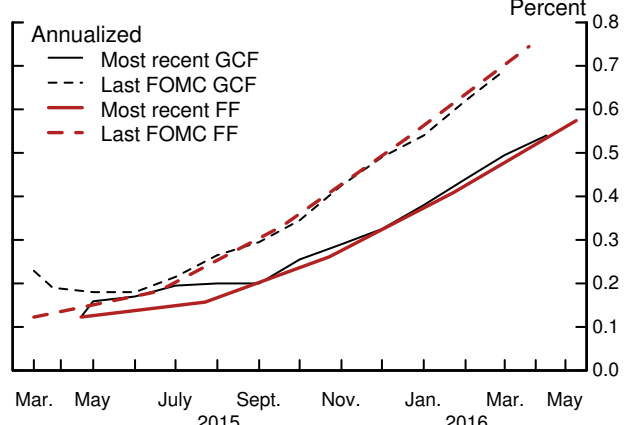
Note: Term refers to all trades having a tenor greater than 1 day; excludes trades between related counterparties. Term RRP is term reverse repurchase agreement; repo is repurchase agreement.  
Source: Federal Reserve Bank of New York.

Money Market Rates



Note: ON RRP is overnight reverse repurchase agreement; GCF is general collateral finance; repo is repurchase agreement.  
Source: Depository Trust & Clearing Corporation; Federal Reserve Bank of New York; Federal Reserve Board.

Expected Overnight Treasury GCF Repo and Fed Funds Rates



Note: Last FOMC is March 17, 2015; most recent is April 21, 2015. Federal funds (FF) rates are estimated using overnight index swap quotes with a spline approach; GCF rates are calculated using GCF Treasury repo futures quotes.  
Source: Bloomberg; staff estimates.

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have reflected a reduction in the willingness of some dealers to lend in the repo market due in part to balance sheet adjustments at quarter-end. Over the intermeeting period as a whole, the expected path of the overnight GCF repo rate implied by futures contracts moved about in line with the OIS-implied federal funds rate path.

## **TREASURY AND AGENCY FINANCE AND MARKET FUNCTIONING**

Liquidity conditions in the Treasury and MBS markets remained stable over the intermeeting period.<sup>5</sup> The average bid-asked spread, on-the-run premiums, and fails-to-deliver were little changed. The daily bid size and (interdealer) trading volume were also about unchanged but remained at the historically low levels that have prevailed since 2009. More broadly, however, market participants continued to express concerns about the robustness of market liquidity during times of increased stress.

Over the intermeeting period, the Desk purchased \$41 billion of MBS under the reinvestment program and rolled \$2.5 billion in the expected settlements. In addition, prepayment speeds on agency MBS held by the Federal Reserve rose in recent weeks as a result of the pickup in the refinancing activity in response to the low level of mortgage rates in late January. The high levels of repayments will result in increased Desk reinvestment purchases in the rest of April and May.

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<sup>5</sup> Since the March FOMC meeting, the Treasury Department has auctioned \$148 billion of Treasury nominal fixed-coupon securities, \$13 billion of Treasury Inflation-Protected Securities, and \$13 billion of two-year Floating Rate Notes.



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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, aggregate demand is persistently weaker than anticipated in the baseline. In the second, the recent lackluster readings on spending and production prove to be more transitory and the underlying pace of economic activity is stronger than assumed in the baseline projection, leading to a higher path of inflation. The third scenario considers the possibility that the trajectory of long-term inflation expectations is lower than in the baseline, leading to a shallower path of actual inflation in the coming years. The fourth scenario examines the possibility that the natural rate of unemployment is lower, and potential output grows faster, than in the baseline. In the fifth scenario, the exit of Greece from the euro-area monetary union causes Europe to plunge into a deep recession with severe adverse effects on global financial conditions and confidence. The final scenario considers the possibility that the broad real dollar appreciates 10 percent relative to the baseline.

We generate the first, third, and fourth scenarios using the FRB/US model, while the second one uses the EDO model. The final two scenarios are generated using the multicountry SIGMA model. Once the federal funds rate has lifted off from its current target range, 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.

### Persistent Slowdown in Economic Activity

Recent data on consumer spending, housing construction, business investment, and industrial production, as well as the latest employment report, have come in weaker than anticipated. In this scenario, we assume that this softness in economic activity turns

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<sup>1</sup> For the scenarios run in SIGMA, we assume a broadly similar policy rule to the FRB/US and EDO simulations. One key difference relative to the FRB/US and EDO 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	2015		2016	2017	2018-19
	H1	H2			
<i>Real GDP</i>					
Extended Tealbook baseline	1.2	2.4	2.4	2.1	1.8
Persistent slowdown in economic activity	.5	.6	.6	1.7	2.5
Faster growth with higher inflation	2.1	3.9	3.6	2.0	1.4
Lower long-term inflation expectations	1.2	2.4	2.4	2.2	1.8
Room to grow	1.4	2.7	3.0	3.2	3.0
Greek exit with severe spillovers	.8	.5	1.0	2.2	2.3
Stronger dollar	1.2	1.8	2.0	2.2	1.9
<i>Unemployment rate<sup>1</sup></i>					
Extended Tealbook baseline	5.4	5.3	5.2	5.1	5.1
Persistent slowdown in economic activity	5.6	5.8	6.4	6.5	5.8
Faster growth with higher inflation	5.2	4.8	4.3	4.4	4.8
Lower long-term inflation expectations	5.4	5.3	5.2	5.1	5.0
Room to grow	5.4	5.3	5.1	4.8	4.1
Greek exit with severe spillovers	5.5	5.6	6.2	6.2	5.9
Stronger dollar	5.4	5.4	5.5	5.4	5.4
<i>Total PCE prices</i>					
Extended Tealbook baseline	-.2	1.5	1.6	1.8	1.9
Persistent slowdown in economic activity	-.2	1.5	1.6	1.7	1.8
Faster growth with higher inflation	-.2	1.7	2.0	2.3	2.4
Lower long-term inflation expectations	-.3	1.2	1.1	1.2	1.5
Room to grow	-.3	1.3	1.3	1.5	1.7
Greek exit with severe spillovers	-.4	.7	.6	1.2	1.7
Stronger dollar	-.8	1.0	1.4	1.7	1.8
<i>Core PCE prices</i>					
Extended Tealbook baseline	1.2	1.4	1.6	1.8	2.0
Persistent slowdown in economic activity	1.2	1.4	1.5	1.7	1.8
Faster growth with higher inflation	1.3	1.7	2.0	2.3	2.4
Lower long-term inflation expectations	1.1	1.1	1.1	1.2	1.5
Room to grow	1.2	1.2	1.3	1.5	1.7
Greek exit with severe spillovers	1.1	.9	.7	1.2	1.7
Stronger dollar	.9	.9	1.3	1.7	1.8
<i>Federal funds rate<sup>1</sup></i>					
Extended Tealbook baseline	.1	.4	1.4	2.3	3.2
Persistent slowdown in economic activity	.1	.3	.4	.5	1.6
Faster growth with higher inflation	.1	.6	2.7	4.2	5.1
Lower long-term inflation expectations	.1	.4	1.2	1.8	2.7
Room to grow	.1	.1	.3	1.0	2.5
Greek exit with severe spillovers	.1	.3	.3	.5	2.0
Stronger dollar	.1	.3	1.0	1.9	2.9

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

out to be more persistent than projected in the baseline forecast. In particular, the projected acceleration in consumer demand and housing construction is delayed relative to the baseline as household confidence in the recovery falters and the pace of household formation remains low. In turn, these conditions adversely affect profits and business confidence, causing firms to reduce their investment spending.

Real GDP rises only  $\frac{1}{2}$  percent this year and next and  $1\frac{3}{4}$  percent in 2017, about  $1\frac{1}{4}$  percentage points less than the baseline on average. The unemployment rate rises to 6.5 percent in 2017 before gradually moving back toward its assumed natural rate; inflation is slightly lower than in the baseline projection. Given this weaker outlook, the federal funds rate remains at or below 50 basis points until early 2018. The federal funds rate reaches  $1\frac{1}{2}$  percent by the end of 2019, about  $1\frac{3}{4}$  percentage points below baseline.

### **Faster Growth with Higher Inflation**

While much of the incoming data have been lackluster, some forward-looking indicators have remained firm. In particular, initial claims for unemployment insurance are very low, job openings are elevated, and consumer sentiment remains upbeat. In this scenario, households' and businesses' confidence about the underlying strength of the economy leads them to be more willing to spend and hire than in the baseline, supporting a much faster economic expansion. We also assume that inflation will be more sensitive to reductions in resource slack than in the standard version of the EDO model, consistent with the estimates of some other DSGE models.<sup>2</sup>

Real GDP growth averages 4 percent in the second half of 2015 and  $3\frac{1}{2}$  percent in 2016, compared with  $2\frac{1}{2}$  percent in the baseline projection. The unemployment rate falls below 5 percent by the end of 2015, bottoms out at  $4\frac{1}{4}$  percent at the beginning of 2017 and then increases slowly for the remainder of the forecast period. With resource utilization running tighter, inflation rises faster than in the baseline, reaching almost  $2\frac{1}{2}$  percent in 2019.<sup>3</sup> The federal funds rate lifts off in the third quarter of 2015, as in the baseline, but rises more steeply thereafter, passing 4 percent in the second half of 2017 and reaching 5 percent in 2019. Given enough time, this path for the federal funds rate

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<sup>2</sup> We make inflation more sensitive to slack by reducing the adjustment cost parameters for prices and wages in EDO. In particular, we use values that are two standard deviations below the EDO point estimates of these two parameters.

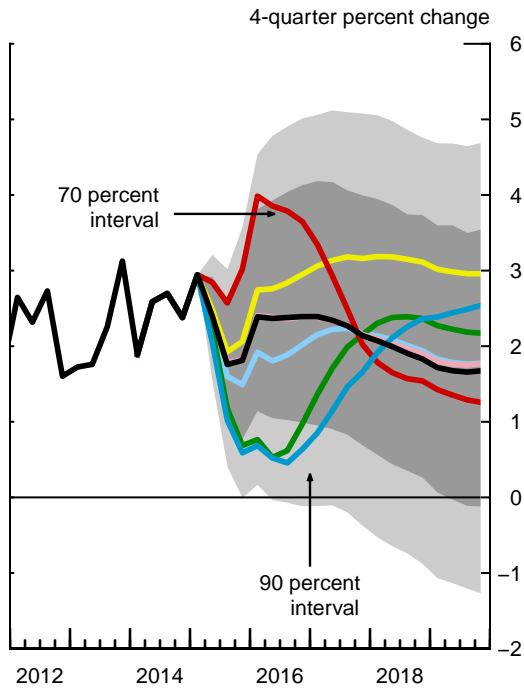
<sup>3</sup> The larger rise in inflation depends importantly on the substantially smaller adjustment costs for wages and prices in this scenario. Had we used our standard coefficients in these equations, inflation would have peaked at only a little over 2 percent.

# Forecast Confidence Intervals and Alternative Scenarios

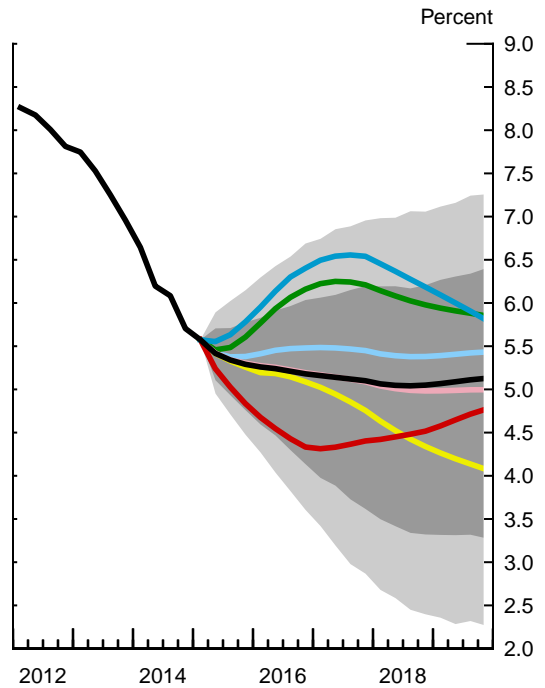
Confidence Intervals Based on FRB/US Stochastic Simulations

- Extended Tealbook baseline
- Persistent slowdown in economic activity
- Faster growth with higher inflation
- Lower long-term inflation expectations
- Room to grow
- Greek exit with severe spillovers
- Stronger dollar

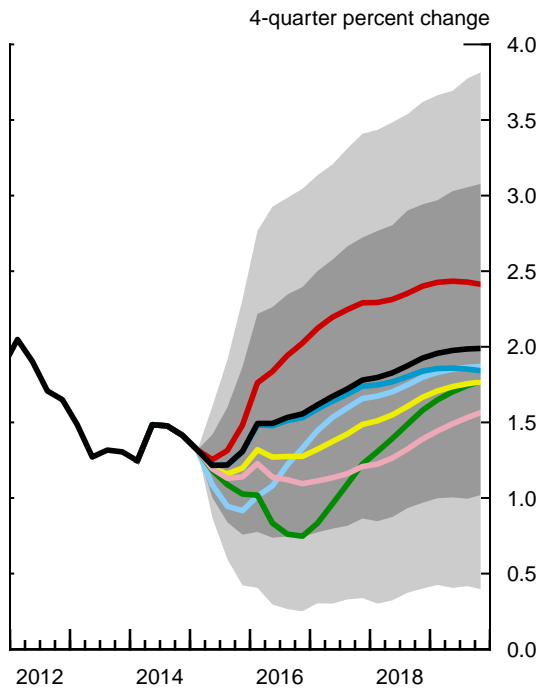
Real GDP



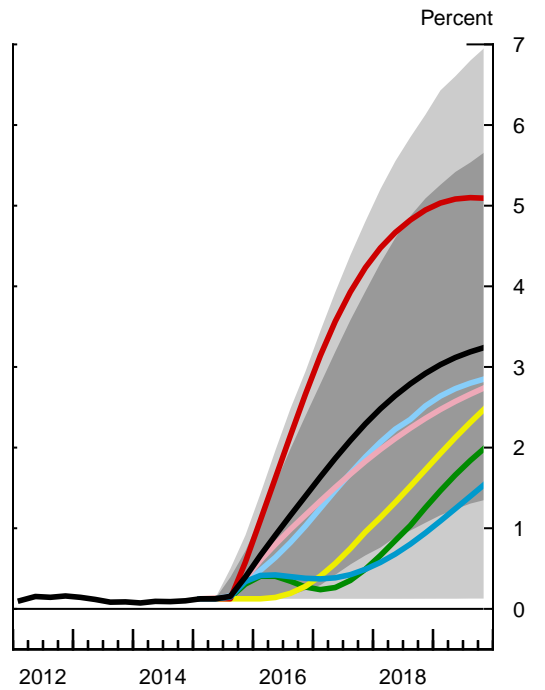
Unemployment Rate



PCE Prices excluding Food and Energy



Federal Funds Rate



Risks & Uncertainty

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

### **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, a wide range of uncertainty surrounds this assumption, and some models the staff consults currently point to lower long-term inflation expectations.

In this scenario, we assume that long-term inflation expectations currently stand at 1.5 percent and that, going forward, households and businesses form their expectations adaptively based on past inflation. The subdued inflation expectations and low actual inflation in the coming years are mutually reinforcing. As a result, inflation in this scenario runs persistently below the baseline and is only slightly above 1½ percent in 2019. The federal funds rate increases more slowly after liftoff because of the lower trajectory of inflation, but given the inertial specification of the policy rule, the path of real interest rates is roughly unchanged from its baseline trajectory. As a result, the paths of real GDP growth and the unemployment rate are roughly unchanged as well.

### **Room to Grow**

While the unemployment rate has come down substantially over the past few years, inflation has not picked up, with core PCE inflation averaging less than 1½ percent since 2012. One reason wage and price gains have remained modest despite falling unemployment may be that the staff's estimate for the natural rate of unemployment is too high. In this scenario, we assume that the natural rate of unemployment has fallen faster over the past five years than assumed by the staff, to 4.5 percent in the current quarter, and that it continues to fall, reaching 4.2 percent in early 2016, 1 percentage point less than in the baseline. This lower trajectory for the natural rate of unemployment is also consistent with the rapid decrease in unemployment seen in recent years given the modest rates of GDP growth. In addition, we assume that structural productivity gains in recent years have been about ¼ percentage point higher than in the baseline. With these assumptions, potential output rises, on average, about ¾ percentage point more than in the baseline over the 2015–19 period. The output gap closes only in the first quarter of 2019.

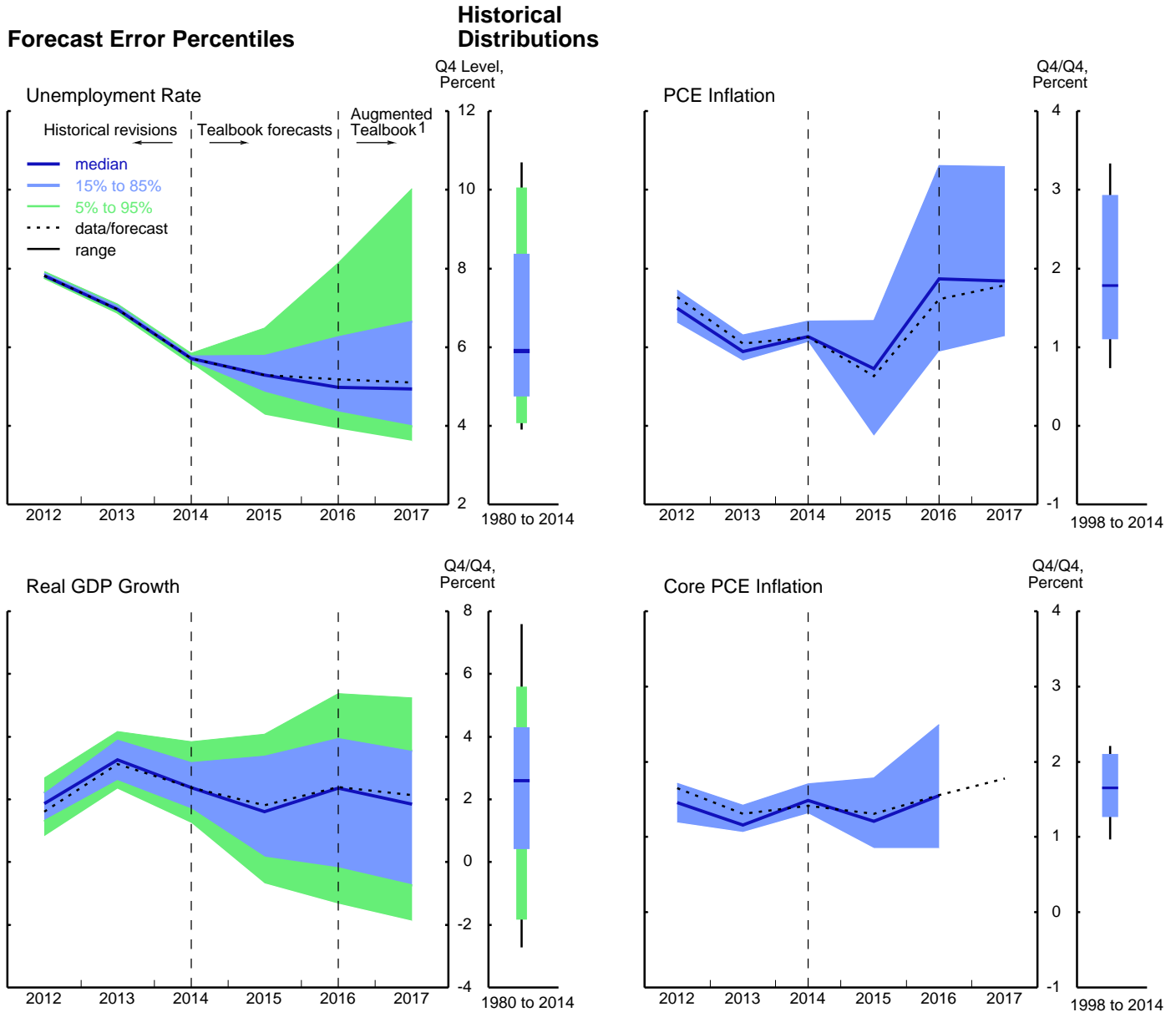
**Selected Tealbook Projections and 70 Percent Confidence Intervals Derived from Historical Tealbook Forecast Errors and FRB/US Simulations**

Measure	2015	2016	2017	2018	2019
<i>Real GDP</i>					
<i>(percent change, Q4 to Q4)</i>					
Projection	1.8	2.4	2.1	1.8	1.7
Confidence interval					
Tealbook forecast errors	.1–3.4	-.2–3.9	-.8–3.5	...	...
FRB/US stochastic simulations	.8–2.9	1.0–4.1	.7–4.0	.3–3.7	-.1–3.5
<i>Civilian unemployment rate</i>					
<i>(percent, Q4)</i>					
Projection	5.3	5.2	5.1	5.0	5.1
Confidence interval					
Tealbook forecast errors	4.8–5.8	4.3–6.3	4.0–6.7	...	...
FRB/US stochastic simulations	4.8–5.8	4.1–6.0	3.6–6.2	3.3–6.2	3.3–6.4
<i>PCE prices, total</i>					
<i>(percent change, Q4 to Q4)</i>					
Projection	.6	1.6	1.8	1.9	2.0
Confidence interval					
Tealbook forecast errors	-.1–1.3	.9–3.3	1.1–3.3	...	...
FRB/US stochastic simulations	.0–1.3	.7–2.6	.8–2.8	.9–3.0	.9–3.1
<i>PCE prices excluding food and energy</i>					
<i>(percent change, Q4 to Q4)</i>					
Projection	1.3	1.6	1.8	1.9	2.0
Confidence interval					
Tealbook forecast errors	.8–1.8	.8–2.5	...	...	...
FRB/US stochastic simulations	.8–1.9	.7–2.4	.9–2.7	1.0–2.9	1.0–3.1
<i>Federal funds rate</i>					
<i>(percent, Q4)</i>					
Projection	.4	1.4	2.3	2.9	3.2
Confidence interval					
FRB/US stochastic simulations	.1–.7	.2–2.4	.7–3.9	1.1–5.1	1.4–5.7

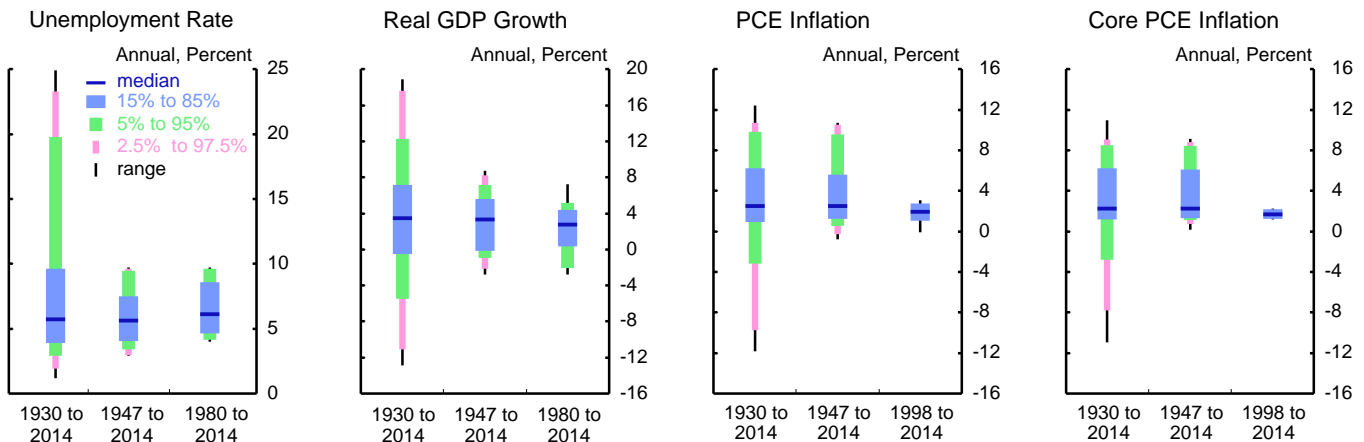
Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2014 set of model equation residuals. Intervals derived from Tealbook forecast errors are based on projections made from 1980 to 2014 for real GDP and unemployment and from 1998 to 2014 for PCE prices. The intervals for real GDP, unemployment, and total PCE prices are extended into 2017 using information from the Blue Chip survey and forecasts from the CBO and CEA.

... Not applicable.

### Prediction Intervals Derived from Historical Tealbook Forecast Errors



### Historical Distributions



1. Augmented Tealbook prediction intervals use 1- and 2-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2017.





## New Exhibit on “Prediction Intervals Derived from Historical Tealbook Forecast Errors”

This Tealbook round the staff is introducing a set of new measures for understanding the uncertainty surrounding its forecast. This new exhibit touches on two broad areas of uncertainty: first, uncertainty about the current (and past) state of the economy, informed by revisions to the data, and second, uncertainty about how the economy will evolve, informed by the staff’s historical forecast errors.

Emphasizing historical forecast errors has two important benefits. First, these errors are conceptually closely related to the uncertainty we want to capture around the current staff forecast. Second, this procedure requires relatively few assumptions—chiefly, that forecast errors across time can be meaningfully combined into a single distribution that will be relevant over the projection period.

Another way that the staff characterizes uncertainty is through stochastic simulations of the FRB/US model. (The model-based uncertainty bands will continue to be shown in the exhibit illustrating the alternative simulations.) However, these model simulations rely on a specific model that differs in some important aspects from the judgmental procedures the staff uses. In addition, the FRB/US model simulations do not incorporate uncertainty about data revisions.

The top four panels of the new exhibit show fan charts for the key variables of our projection: the unemployment rate, GDP growth, and total and core PCE inflation. Each fan chart includes revision intervals derived from the historical distribution of revisions to the data. As shown in the fan charts, uncertainty due to data revisions varies widely across variables. For example, because the unemployment rate is not subject to revision (other than for revised seasonal factors), its revision bands are very small, whereas the revision bands around past estimates for real GDP growth are much wider.

Over the medium-term forecast period, the fan charts show both the 70 percent and 90 percent prediction-interval bands derived from the percentiles of the sizes of past staff forecast errors.<sup>1</sup> Note that the standard against which the staff forecasts are evaluated is the latest vintage of the data, so this method will also take account of the uncertainty resulting from any data revisions following the initial estimates. The prediction intervals allow us to make a number of

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<sup>1</sup> Because we have a limited history of Tealbook projections two years ahead, we extend the prediction-interval bands into 2017 using information from outside forecasters (the date range denoted as “Augmented Tealbook” in the exhibit). Specifically, we use forecasts from the CEA, CBO, and Blue Chip consensus, and we assume that any forecast deterioration from one to two years ahead would apply equally to the Tealbook projections. To reflect that change in procedures, we separate the bands for 2016 and 2017 with a second dashed line (and we do not extend the band for core PCE inflation because of limited data on outside forecasts of core inflation).

observations about the staff's historical forecast record. For example, for the unemployment rate, the median staff forecast error one year ahead is negative—the median lies slightly below the forecast line—because the historical forecasts have been too high slightly more often than they have been too low. However, the green band around the same forecast extends much higher above the forecast line than below it, because rare large misses to the upside have been much larger in magnitude than rare large misses to the downside.

We use Tealbook forecasts from 1980 to 2014 for computing prediction intervals for GDP growth and the unemployment rate but the shorter range of 1998 to 2014 for our inflation measures. The shorter range for the inflation measures, during which inflation outcomes have fallen in a much smaller range over the past near-two decades than previously, reflects our judgment that this is the period that is most relevant for assessing the amount of uncertainty surrounding our inflation projections.<sup>2</sup>

To the right of each of the four fan charts is the historical distribution of the corresponding series over the time period we deem most useful for assessing uncertainty. Comparing the staff projections in the fan charts with these historical distributions can aid in the interpretation of the prediction-interval bands. For example, by 2017 the staff forecast of the unemployment rate is low, and therefore the unconditional 90 percent confidence range placed around it dips below the lowest reading since 1980. This result suggests that a 90 percent range conditional on other factors, such as the state of the economy, would likely not extend down as low as shown in the fan chart.

The results in the upper fan charts rely crucially on the assumption that the historical periods chosen for calculating the distribution of forecast errors in the fan charts are relevant for the forecast period. To provide some perspective, at the bottom of the exhibit, the distributions of the actual history of the four series are shown for three time periods. A few points jump out. First, the intervals for samples that extend back to 1930 are considerably wider than those based on post-World War II data, illustrating that large tail events can fall well outside our current estimates of likely outcomes. Second, the historical realizations of GDP growth and the unemployment rate from 1980 to 2014, the period over which we compute the staff forecast errors, look roughly similar to the realizations for the entire period following World War II. Finally, as noted previously, the distribution of inflation outcomes has been much more compressed in recent years, and while we believe this recent period provides the more appropriate guide to the future, we cannot be certain that is so.

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<sup>2</sup> The beginning date of 1998 for this shorter range was chosen based on the availability of data on staff forecast errors for core PCE inflation. The date range used for inflation is too short to provide enough data to construct meaningful 90 percent (green) bands for core or total PCE inflation, and therefore no 90 percent bands are shown for the inflation measures.

Inflation rises more slowly than in the baseline, reflecting both greater resource slack and faster productivity growth.<sup>4</sup> Core PCE inflation reaches only 1¾ percent at the end of 2019. The federal funds rate remains at its current target range for an additional year, lifting off in the third quarter of 2016. The unemployment rate continues falling after 2016, reaching its natural rate in the first half of 2019 and moving below it thereafter. As a result of a combination of higher structural productivity and more-accommodative monetary policy, real GDP growth picks up, averaging about 3 percent over the 2016–19 period.<sup>5</sup>

### **Greek Exit with Severe Spillovers**

Our baseline assumption is that the European authorities will keep spillovers from developments in Greece reasonably contained, even in the event that debt negotiations break down completely and Greece’s crisis deepens. However, it is far from assured that the firewalls erected during the past few years—and aggressive actions that the authorities would presumably take to limit contagion—will succeed in containing the crisis to Greece, especially if Greece actually leaves the euro area. In this scenario, we consider a more dire outcome in which Greece abandons the euro and causes the euro area to plunge into a deep recession with severe adverse effects on global financial conditions and confidence.

Specifically, our scenario assumes that financial conditions in the euro area tighten sharply and that confidence plummets amid rising unemployment and heightened disinflationary pressures. Peripheral sovereign spreads rise 400 basis points above baseline while euro-area corporate borrowing spreads rise more than 200 basis points. As a result, euro-area real GDP falls about 6 percent relative to the baseline by the end of 2016. The euro-area crisis has substantial adverse spillovers to the United States. U.S. corporate bond spreads are assumed to rise about 100 basis points, while flight-to-safety flows cause the trade-weighted dollar to increase nearly 8 percent and depress 10-year

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<sup>4</sup> A higher path of productivity holds down marginal costs of production, which are a key determinant of inflation in FRB/US and many other macroeconomic models.

<sup>5</sup> In this scenario, policymakers are aware of the faster structural productivity growth. If policymakers instead learned about the faster structural productivity growth only gradually, and thus the stance of the federal funds rate was tighter than they would have implemented if fully informed, real GDP growth would be ¼ percentage point lower and inflation would be 10 basis points lower, on average, through 2019 than in the original scenario. In this case, the unemployment rate would decline to only 4½ percent at the end of 2019.

Treasury yields about 25 basis points. Credit conditions tighten even more in the EMEs, and their currencies depreciate substantially against the dollar.

Weaker foreign activity and the stronger dollar cause U.S. real net exports to fall relative to the baseline. Given that U.S. domestic demand also declines relative to the baseline as a result of lower confidence and weaker financial conditions, U.S. real GDP expands only  $\frac{1}{2}$  percent in the second half of 2015 and 1 percent in 2016. Lower domestic demand and lower import price inflation cause U.S. core inflation to run at about  $\frac{3}{4}$  percent in 2016, about 1 percentage point below baseline. The inertial Taylor rule prescribes a substantially shallower path for the federal funds rate than in the baseline.

### **Stronger Dollar**

The broad real dollar has depreciated about 2 percent since the March Tealbook, and in our baseline we project that the dollar will resume its appreciation going forward, rising around 3 percent before flattening out in early 2016. However, the dollar may rise considerably faster for any number of reasons, including a greater-than-expected reaction by investors to the prospective normalization of policy rates in the United States or heightened concern about the foreign outlook. In this scenario, we examine the possibility that the broad real dollar appreciates 10 percent relative to the baseline in the current quarter.<sup>6</sup>

The stronger 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, even though the federal funds rate lifts off from its effective lower bound at the same time as in the baseline, U.S. monetary policy accommodation is removed 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 2 percent in 2016—about  $\frac{1}{2}$  percentage point below the baseline—and the unemployment rate remains at 5 $\frac{1}{2}$  percent. Lower import prices and greater resource slack cause core PCE inflation to run about  $\frac{1}{2}$  percentage point below baseline in the second half of this year before gradually reverting to the baseline thereafter.

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<sup>6</sup> This scenario is identical to the one presented in the box “The Effect of the Dollar on U.S. Core Import and Consumer Prices” in the Domestic Economic Developments and Outlook section.

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

**Probability of Inflation Events**

(4 quarters ahead—2016:Q1)

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	.06	.06	.15	.00
Previous Tealbook	.05	.05	.11	.00
<i>Less than 1 percent</i>				
Current Tealbook	.24	.21	.22	.64
Previous Tealbook	.26	.22	.28	.65

**Probability of Unemployment Events**

(4 quarters ahead—2016:Q1)

Probability that the unemployment rate will ...	Staff	FRB/US	EDO	BVAR
<i>Increase by 1 percentage point</i>				
Current Tealbook	.03	.02	.24	.00
Previous Tealbook	.02	.02	.23	.00
<i>Decrease by 1 percentage point</i>				
Current Tealbook	.13	.09	.04	.40
Previous Tealbook	.18	.17	.04	.53

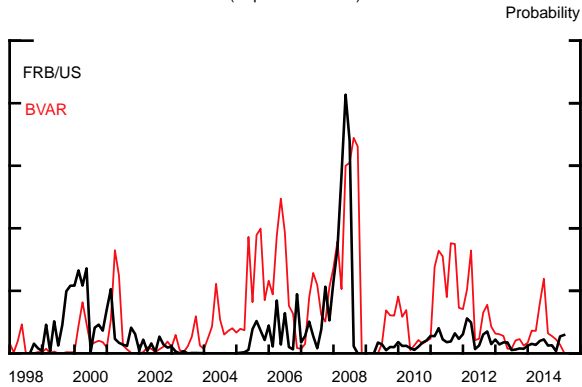
**Probability of Near-Term Recession**

Probability that real GDP declines in each of 2015:Q2 and 2015:Q3	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.05	.02	.03	.03	.30
Previous Tealbook	.04	.02	.02	.01	.13

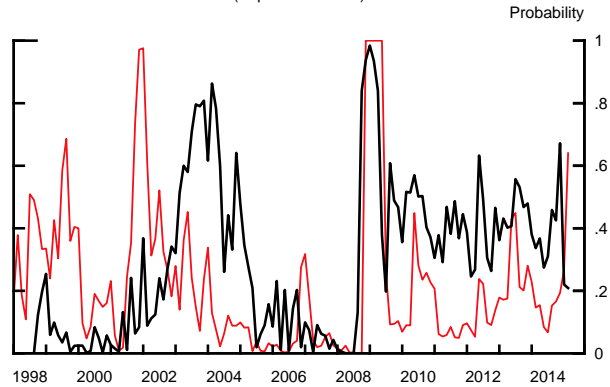
Note: "Staff" represents Tealbook forecast errors applied to the Tealbook baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook 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)

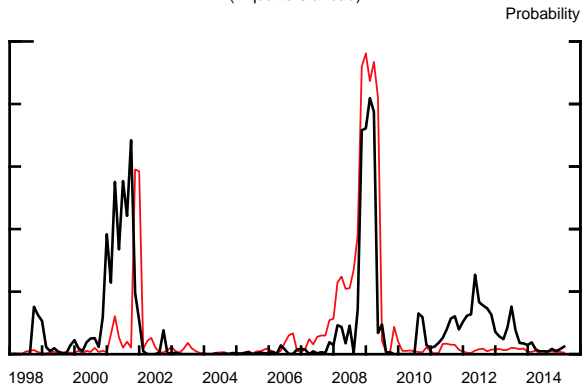
Probability that Total PCE Inflation Is above 3 Percent  
(4 quarters ahead)



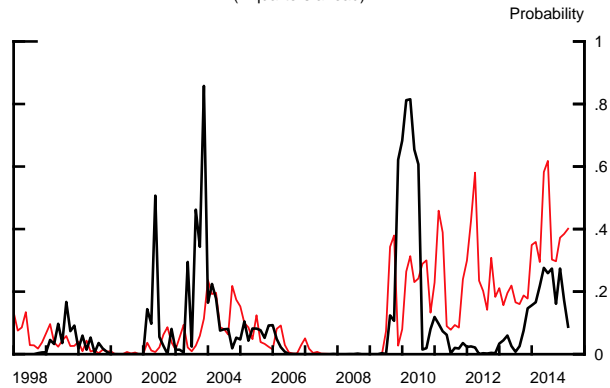
Probability that Total PCE Inflation Is below 1 Percent  
(4 quarters ahead)



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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## Appendix

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### Technical Note on “Prediction Intervals Derived from Historical Tealbook Forecast Errors”

This technical note provides additional details about the exhibit “Prediction Intervals Derived from Historical Tealbook Forecast Errors.” In the four large fan charts, the black dotted lines show staff projections and current estimates of recent values of four key economic variables: average unemployment rate in the fourth quarter of each year and the Q4/Q4 percent change for real GDP, total PCE prices, and core PCE prices. (The GDP series is adjusted to use GNP for those years when the staff forecast GNP and to strip out software and intellectual property products from the currently published data for years preceding their introduction. Similarly, the core PCE inflation series is adjusted to strip out the “food away from home” component for years before it was included in core.)

The historical distributions of the corresponding series (with the adjustments described above) are plotted immediately to the right of each of the fan charts. The thin black lines show the highest and lowest values of the series during the indicated time period. At the bottom of the page, the distributions over three different time periods are plotted for each series. To enable the use of data for years prior to 1947, we report annual-average data in this section. The annual data going back to 1930 for GDP growth, PCE inflation, and core PCE inflation are available in the conventional national accounts; we used estimates from Lebergott (1957) for the unemployment rate from 1930 to 1946.<sup>1</sup>

The prediction intervals around the current and one-year-ahead forecasts are derived from historical staff forecast errors, comparing staff forecasts with the latest published data. For the unemployment rate and real GDP growth, errors were calculated for 1980 through 2014, yielding percentiles of the sizes of the forecast errors. For PCE and core PCE inflation, errors for 1998 through 2014 were used. This shorter range reflects both more limited data on staff forecasts of PCE inflation and the staff judgment that the distribution of inflation since the mid-1990s is more appropriate for the projection period than distributions of inflation reaching further back. In all cases, the prediction intervals are computed by adding the percentile bands of the errors onto the forecast. The blue bands encompass 70 percent prediction-interval ranges; adding the green bands expands this range to 90 percent. The dark blue line plots the median of the prediction intervals. There is not enough historical forecast data to calculate meaningful 90 percent ranges for the two inflation series. A median line above the staff forecast means that forecast errors were positive more than half of the time.

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<sup>1</sup> Stanley Lebergott (1957), “Annual Estimates of Unemployment in the United States, 1900–1954,” in National Bureau of Economic Research, *The Measurement and Behavior of Unemployment* (Princeton, N.J.: Princeton University Press), pp. 213–41.



Because the staff has produced two-year-ahead forecasts for only a few years, the intervals around the two-year-ahead forecasts are constructed by augmenting the staff projection errors with information from outside forecasters: the Blue Chip consensus, the Council of Economic Advisers, and the Congressional Budget Office. Specifically, we calculate prediction intervals for outside forecasts in the same manner as for the staff forecasts. We then calculate the change in the error bands from outside forecasts from one year ahead to two years ahead and apply the average change to the staff's one-year-ahead error bands. That is, we assume that any deterioration in the performance between the one- and two-year-ahead projections of the outside forecasters would also apply to the Tealbook projections. Limitations on the availability of data mean that a slightly shorter sample is used for GDP and unemployment, and the outside projections may only be for a similar series, such as total CPI instead of total PCE prices or annual growth rates of GDP instead of four-quarter changes. In particular, because data on forecasts for core inflation by these outside forecasters are much more limited, we did not extrapolate the staff's errors for core PCE inflation two years ahead.

The intervals around the historical data in the four fan charts are based on the history of data revisions for each series. The previous-year, two-year-back, and three-year-back values as of the current Tealbook forecast are subtracted from the corresponding currently published estimates (adjusted as described earlier) to produce revisions, which are then combined into distributions and revision intervals in the same way that the prediction intervals are created.

**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>	
	03/11/15	04/22/15	03/11/15	04/22/15	03/11/15	04/22/15	03/11/15	04/22/15	03/11/15	04/22/15
<i>Quarterly</i>										
2014:Q1	-8	-8	-2.1	-2.1	1.4	1.4	1.2	1.2	6.6	6.6
2014:Q2	6.8	6.8	4.6	4.6	2.3	2.3	2.0	2.0	6.2	6.2
2014:Q3	6.4	6.4	5.0	5.0	1.2	1.2	1.4	1.4	6.1	6.1
2014:Q4	2.1	2.4	2.1	2.2	-4	-4	1.1	1.1	5.7	5.7
2015:Q1	1.7	.3	1.7	.1	-2.0	-2.0	.8	.8	5.5	5.6
2015:Q2	4.8	4.6	2.6	2.4	1.3	1.5	1.4	1.6	5.3	5.4
2015:Q3	3.9	3.7	2.3	2.4	1.5	1.5	1.4	1.4	5.2	5.3
2015:Q4	4.1	4.2	2.4	2.4	1.6	1.6	1.5	1.4	5.2	5.3
2016:Q1	4.2	4.3	2.3	2.4	1.6	1.6	1.5	1.6	5.1	5.3
2016:Q2	4.0	4.1	2.2	2.3	1.7	1.6	1.6	1.6	5.1	5.2
2016:Q3	4.0	4.2	2.3	2.4	1.7	1.6	1.6	1.6	5.1	5.2
2016:Q4	4.0	4.2	2.3	2.5	1.7	1.6	1.6	1.5	5.1	5.2
<i>Two-quarter<sup>2</sup></i>										
2014:Q2	2.9	2.9	1.2	1.2	1.9	1.9	1.6	1.6	-8	-8
2014:Q4	4.3	4.4	3.5	3.6	.4	.4	1.2	1.2	-5	-5
2015:Q2	3.3	2.4	2.2	1.2	-3	-2	1.1	1.2	-4	-3
2015:Q4	4.0	3.9	2.3	2.4	1.6	1.5	1.5	1.4	-1	-1
2016:Q2	4.1	4.2	2.3	2.3	1.7	1.6	1.6	1.6	-1	-1
2016:Q4	4.0	4.2	2.3	2.4	1.7	1.6	1.6	1.6	.0	.0
<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	3.6	3.7	2.4	2.4	1.1	1.1	1.4	1.4	-1.3	-1.3
2015:Q4	3.6	3.2	2.2	1.8	.6	.6	1.3	1.3	-5	-4
2016:Q4	4.1	4.2	2.3	2.4	1.7	1.6	1.6	1.6	-1	-1
2017:Q4	3.9	4.0	2.0	2.1	1.9	1.8	1.8	1.8	-1	-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	3.9	3.9	2.4	2.4	1.3	1.3	1.4	1.4	6.2	6.2
2015	3.7	3.3	2.6	2.2	.3	.3	1.2	1.3	5.3	5.4
2016	4.1	4.2	2.3	2.4	1.6	1.6	1.5	1.5	5.1	5.2
2017	4.0	4.1	2.2	2.3	1.8	1.7	1.7	1.7	5.0	5.1

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	5.0	2.2		.1	2.4	2.4	2.4	2.4	2.3	2.4	2.5	2.4	1.8	2.4	2.1
<i>Previous Tealbook</i>	4.6	5.0	2.1		1.7	2.6	2.3	2.4	2.4	2.2	2.3	2.3	2.4	2.2	2.3	2.0
Final sales	3.2	5.0	2.3		-3	2.2	2.6	2.8	2.8	2.5	2.4	2.3	2.4	1.8	2.4	2.3
<i>Previous Tealbook</i>	3.2	5.0	2.2		1.6	2.5	2.3	2.7	2.7	2.4	2.2	2.1	2.3	2.3	2.3	2.2
Priv. dom. final purch.	3.8	4.1	4.5		.9	3.1	4.0	4.3	4.3	4.0	3.9	3.0	3.3	3.1	3.6	2.7
<i>Previous Tealbook</i>	3.8	4.1	4.3		3.0	4.1	3.8	4.3	4.3	4.0	3.9	2.9	3.3	3.8	3.5	2.6
Personal cons. expend.	2.5	3.2	4.4		1.9	4.2	4.2	4.0	4.0	3.7	3.6	2.7	2.9	3.6	3.3	2.5
<i>Previous Tealbook</i>	2.5	3.2	4.2		3.5	4.4	3.9	3.8	3.8	3.6	3.6	2.7	2.8	3.9	3.2	2.6
Durables	14.1	9.2	6.2		1.5	6.7	7.8	8.1	8.1	7.1	6.9	5.4	8.1	6.0	6.4	4.1
Nondurables	2.2	2.5	4.1		-3	3.5	3.4	3.4	3.4	2.6	3.0	2.3	2.2	2.5	2.6	2.3
Services	.9	2.5	4.3		2.6	4.0	3.9	3.6	3.6	3.4	3.3	2.4	2.2	3.5	3.0	2.3
Residential investment	8.8	3.2	3.8		1.8	1.1	9.6	12.9	12.9	12.6	12.7	9.3	2.5	6.2	11.5	7.8
<i>Previous Tealbook</i>	8.8	3.2	4.5		1.4	8.5	12.2	15.2	15.2	12.6	10.6	6.9	2.7	9.2	9.7	5.1
Nonres. priv. fixed invest.	9.7	8.9	4.7		-4.3	-1.9	1.0	3.6	3.6	3.3	3.2	3.2	6.2	-4	3.3	2.1
<i>Previous Tealbook</i>	9.7	8.9	4.4		.7	1.5	1.1	3.8	3.8	3.7	3.5	3.0	6.1	1.8	3.5	2.1
Equipment & intangibles	8.9	10.1	4.4		1.8	2.3	3.0	4.2	4.2	4.5	3.7	3.8	6.1	2.8	4.0	2.6
<i>Previous Tealbook</i>	8.9	10.1	4.0		3.7	4.6	3.6	4.7	4.7	4.5	3.8	3.4	6.0	4.1	4.0	2.5
Nonres. structures	12.6	4.8	5.9		-22.7	-16.0	-6.5	1.0	1.0	-1.6	1.1	.8	6.5	-11.5	.3	.5
<i>Previous Tealbook</i>	12.6	4.8	5.9		-8.8	-8.8	-7.5	.4	.4	.5	2.3	1.3	6.5	-6.2	1.5	.7
Net exports <sup>2</sup>	-460	-431	-471		-497	-524	-558	-596	-596	-635	-673	-730	-453	-544	-687	-766
<i>Previous Tealbook</i> <sup>2</sup>	-460	-431	-470		-499	-541	-585	-630	-630	-677	-721	-787	-452	-564	-737	-827
Exports	11.1	4.5	4.5		-5.6	.2	.5	.4	.4	.6	.8	1.8	2.4	-1.2	1.1	3.1
Imports	11.3	-9	10.4		-7	4.4	5.7	6.1	6.1	6.4	6.2	4.1	5.6	3.8	5.8	3.9
Gov't. cons. & invest.	1.7	4.4	-1.9		-2.3	1.3	.2	.3	.3	.3	.5	.7	.8	-1	.8	1.1
<i>Previous Tealbook</i>	1.7	4.4	-2.0		-8	.1	.3	.5	.5	.4	.5	.7	.8	.0	.8	1.1
Federal	-9	9.9	-7.2		-3.8	-2.1	-1.8	-1.6	-1.6	-2.1	-1.8	-1.9	.2	-2.3	-1.3	-9
Defense	.9	16.0	-12.2		-3.6	-2.2	-1.9	-1.5	-1.5	-3.4	-2.9	-3.1	-3	-2.3	-2.1	-1.5
Nondefense	-3.8	.4	1.5		-4.1	-1.9	-1.6	-1.9	-1.9	.0	.1	.1	1.1	-2.4	.1	.1
State & local	3.4	1.1	1.6		-1.4	3.5	1.4	1.6	1.6	1.8	1.9	2.0	1.2	1.2	2.0	2.2
Change in priv. inventories <sup>2</sup>	85	82	80		95	103	96	81	81	77	66	76	71	94	72	69
<i>Previous Tealbook</i> <sup>2</sup>	85	82	78		82	87	89	78	78	76	71	73	70	84	75	69

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	2.4	1.8	2.4	2.1
<i>Previous Tealbook</i>	-2.8	-2	2.7	1.7	1.6	3.1	2.4	2.2	2.3	2.0
Final sales	-2.1	-4	2.0	1.5	2.1	2.6	2.4	1.8	2.4	2.3
<i>Previous Tealbook</i>	-2.1	-4	2.0	1.5	2.1	2.6	2.3	2.3	2.3	2.2
Priv. dom. final purch.	-4.1	-2.4	3.5	2.6	2.6	3.2	3.3	3.1	3.6	2.7
<i>Previous Tealbook</i>	-4.1	-2.4	3.5	2.6	2.6	3.2	3.3	3.8	3.5	2.6
Personal cons. expend.	-2.0	-2	3.1	1.5	2.0	2.8	2.9	3.6	3.3	2.5
<i>Previous Tealbook</i>	-2.0	-2	3.1	1.5	2.0	2.8	2.8	3.9	3.2	2.6
Durables	-12.9	2.5	9.3	4.8	7.5	5.9	8.1	6.0	6.4	4.1
Nondurables	-2.7	-2	3.3	4	1.0	2.5	2.2	2.5	2.6	2.3
Services	.3	-8	2.0	1.4	1.5	2.4	2.2	3.5	3.0	2.3
Residential investment	-24.3	-10.8	-5.2	6.0	15.8	6.9	2.5	6.2	11.5	7.8
<i>Previous Tealbook</i>	-24.3	-10.8	-5.2	6.0	15.8	6.9	2.7	9.2	9.7	5.1
Nonres. priv. fixed invest.	-8.9	-12.2	8.1	9.0	3.7	4.7	6.2	-4	3.3	2.1
<i>Previous Tealbook</i>	-8.9	-12.2	8.1	9.0	3.7	4.7	6.1	1.8	3.5	2.1
Equipment & intangibles	-11.8	-6.0	12.0	9.2	3.3	4.8	6.1	2.8	4.0	2.6
<i>Previous Tealbook</i>	-11.8	-6.0	12.0	9.2	3.3	4.8	6.0	4.1	4.0	2.5
Nonres. structures	-1.2	-27.1	-4.0	8.0	4.8	4.4	6.5	-11.5	.3	.5
<i>Previous Tealbook</i>	-1.2	-27.1	-4.0	8.0	4.8	4.4	6.5	-6.2	1.5	.7
Net exports <sup>1</sup>	-558	-395	-459	-459	-452	-420	-453	-544	-687	-766
<i>Previous Tealbook</i> <sup>1</sup>	-558	-395	-459	-459	-452	-420	-452	-564	-737	-827
Exports	-2.8	.8	10.1	4.2	2.4	5.1	2.4	-1.2	1.1	3.1
Imports	-6.0	-6.2	12.0	3.5	.4	2.5	5.6	3.8	5.8	3.9
Gov't. cons. & invest.	3.3	2.3	-1.1	-3.0	-1.7	-1.9	.8	-1	.8	1.1
<i>Previous Tealbook</i>	3.3	2.3	-1.1	-3.0	-1.7	-1.9	.8	.0	.8	1.1
Federal	8.4	3.9	3.2	-4.0	-2.6	-6.3	.2	-2.3	-1.3	-9
Defense	9.4	3.6	2.0	-4.1	-4.9	-6.1	-3	-2.3	-2.1	-1.5
Nondefense	6.5	4.6	5.5	-3.9	1.4	-6.6	1.1	-2.4	.1	.1
State & local	.2	1.3	-4.0	-2.3	-1.0	1.2	1.2	1.2	2.0	2.2
Change in priv. inventories <sup>1</sup>	-34	-148	58	38	57	64	71	94	72	69
<i>Previous Tealbook</i> <sup>1</sup>	-34	-148	58	38	57	64	70	84	75	69

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	5.0	2.2		.1	2.4	2.4	2.4	2.4	2.3	2.4	2.5	2.4	1.8	2.4	2.1
	4.6	5.0	2.1		1.7	2.6	2.3	2.4	2.3	2.2	2.3	2.3	2.4	2.2	2.4	2.0
Final sales <i>Previous Tealbook</i>	3.2	5.0	2.3		-.3	2.2	2.5	2.8	2.3	2.6	2.4	2.3	2.4	1.8	2.4	2.3
	3.2	5.0	2.2		1.6	2.5	2.2	2.6	2.1	2.4	2.2	2.1	2.3	2.2	2.3	2.2
Priv. dom. final purch. <i>Previous Tealbook</i>	3.2	3.5	3.7		.8	2.6	3.3	3.6	2.6	3.3	2.9	2.6	2.8	2.6	3.1	2.3
	3.2	3.5	3.5		2.5	3.4	3.2	3.6	2.5	3.4	2.9	2.5	2.7	3.2	3.0	2.3
Personal cons. expend. <i>Previous Tealbook</i>	1.8	2.2	3.0		1.3	2.8	2.9	2.8	1.9	2.5	2.1	1.9	1.9	2.4	2.3	1.8
	1.8	2.2	2.8		2.4	3.0	2.7	2.6	2.5	2.5	2.1	1.9	1.9	2.7	2.2	1.8
Durables	1.0	.7	.5		.1	.5	.6	.6	.4	.5	.5	.4	.6	.4	.5	.3
Nondurables	.3	.4	.6		.0	.5	.5	.5	.3	.4	.4	.3	.3	.4	.4	.3
Services	.4	1.2	1.9		1.2	1.8	1.8	1.7	1.1	1.6	1.5	1.1	1.0	1.6	1.4	1.1
Residential investment <i>Previous Tealbook</i>	.3	.1	.1		.1	.0	.3	.4	.3	.4	.4	.3	.1	.2	.4	.3
	.3	.1	.1		.0	.3	.4	.5	.3	.4	.4	.3	.1	.3	.3	.2
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	1.2	1.1	.6		-.6	-.2	.1	.4	.4	.4	.4	.4	.8	-.1	.4	.3
	1.2	1.1	.6		.1	.2	.1	.5	.4	.5	.5	.4	.8	.2	.4	.3
Equipment & intangibles <i>Previous Tealbook</i>	.8	1.0	.4		.2	.2	.3	.4	.4	.4	.4	.4	.6	.3	.4	.3
	.8	1.0	.4		.4	.5	.3	.5	.3	.4	.4	.3	.6	.4	.4	.2
Nonres. structures <i>Previous Tealbook</i>	.4	.1	.2		-.7	-.5	-.2	.0	.0	.0	.0	.0	.2	-.3	.0	.0
	.4	.1	.2		-.3	-.3	-.2	.0	.0	.1	.0	.0	.2	-.2	.0	.0
Net exports <i>Previous Tealbook</i>	-.3	.8	-1.0		-.6	-.6	-.8	-.9	-.4	-.9	-.9	-.4	-.6	-.8	-.8	-.2
	-.3	.8	-1.0		-.7	-1.0	-1.0	-1.0	-.5	-1.1	-1.0	-.5	-.6	-1.0	-.9	-.3
Exports	1.4	.6	.6		-.8	.0	.1	.1	.2	.1	.1	.2	.3	-.2	.1	.4
Imports	-1.8	.2	-1.6		.1	-.7	-.9	-.9	-.6	-1.0	-1.0	-.6	-.9	-.6	-.9	-.6
Gov't. cons. & invest. <i>Previous Tealbook</i>	.3	.8	-.4		-.4	.2	.0	.1	.1	.1	.3	.1	.1	.0	.1	.2
	.3	.8	-.4		-.1	.0	.1	.1	.1	.1	.3	.1	.1	.0	.1	.2
Federal	-.1	.7	-.5		-.3	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.0	-.2	-.1	-.1
Defense	.0	.7	-.6		-.2	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.0	-.1	-.1	-.1
Nondefense	-.1	.0	.0		-.1	.0	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0
State & local	.4	.1	.2		-.2	.4	.2	.2	.2	.2	.2	.2	.1	.1	.2	.2
Change in priv. inventories <i>Previous Tealbook</i>	1.4	.0	-.1		.4	.2	-.2	-.4	-.2	-.1	-.3	.1	.0	.0	.0	-.1
	1.4	.0	-.1		.1	.1	.1	-.3	-.1	-.1	-.1	.0	.0	.0	.0	-.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		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
GDP chain-wt. price index <i>Previous Tealbook</i>	2.1	1.4	.1	.3	2.2	1.3	1.7	1.7	1.9	1.7	1.7	1.7	1.2	1.4	1.8	1.8
PCE chain-wt. price index <i>Previous Tealbook</i>	2.1	1.4	.1	-1	2.2	1.6	1.7	1.7	1.9	1.7	1.7	1.7	1.2	1.4	1.7	1.9
Energy <i>Previous Tealbook</i>	2.3	1.2	-4	-2.0	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.1	.6	1.6	1.8
Food <i>Previous Tealbook</i>	2.3	1.2	-4	-2.0	1.3	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.1	.6	1.7	1.9
Ex. food & energy <i>Previous Tealbook</i>	5.2	-4.0	-26.0	-45.0	3.9	3.0	4.5	2.0	3.5	2.7	2.3	2.0	-6.1	-11.4	2.6	1.6
Ex. food & energy, market based <i>Previous Tealbook</i>	5.2	-4.0	-26.0	-44.7	2.0	3.8	4.7	4.7	3.9	3.3	3.2	3.0	-6.1	-11.5	3.3	2.4
CPI <i>Previous Tealbook</i>	4.5	3.1	2.1	-2	-3	1.3	1.5	1.5	1.5	1.6	1.7	1.8	2.8	.6	1.6	1.9
Ex. food & energy <i>Previous Tealbook</i>	4.5	3.1	2.1	.2	.7	1.1	1.3	1.3	1.4	1.5	1.7	1.7	2.8	.8	1.6	1.9
ECI, hourly compensation <sup>2</sup> <i>Previous Tealbook</i>	2.0	1.4	1.1	.8	1.6	1.4	1.4	1.5	1.6	1.6	1.6	1.6	1.4	1.3	1.6	1.8
Business sector Output per hour <i>Previous Tealbook</i>	2.0	1.4	1.1	.8	1.4	1.4	1.5	1.6	1.5	1.6	1.6	1.6	1.4	1.3	1.6	1.8
Compensation per hour <i>Previous Tealbook</i>	1.8	1.4	.7	.5	1.5	1.4	1.4	1.5	1.6	1.6	1.6	1.5	1.2	1.2	1.6	1.8
Unit labor costs <i>Previous Tealbook</i>	1.8	1.4	.6	.5	1.3	1.4	1.5	1.6	1.5	1.6	1.6	1.6	1.2	1.2	1.6	1.8
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook</i>	2.4	1.2	-9	-3.1	2.0	1.9	2.0	2.0	2.1	2.0	2.0	2.0	1.2	.7	2.0	2.1
	2.4	1.2	-9	-3.1	1.7	2.0	2.1	2.1	2.1	2.1	2.1	2.1	1.2	.6	2.1	2.2
	2.2	1.4	1.5	1.7	2.2	1.8	1.9	1.9	2.0	2.0	2.0	2.0	1.7	1.9	2.0	2.1
	2.2	1.4	1.5	1.5	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.1	1.7	1.8	2.0	2.2
	3.4	2.7	2.3	2.6	2.6	2.6	2.6	2.6	2.9	2.9	2.9	2.9	2.3	2.6	2.9	3.0
	3.4	2.7	2.3	2.6	2.6	2.6	2.6	2.6	2.9	2.9	2.9	2.9	2.3	2.6	2.9	3.0
Business sector Output per hour <i>Previous Tealbook</i>	2.9	3.3	-2.4	-1.8	2.8	2.7	2.3	2.3	1.9	1.8	1.8	1.8	-4	1.4	1.8	1.8
Compensation per hour <i>Previous Tealbook</i>	2.9	3.3	-2.4	.2	2.4	1.8	1.9	1.9	1.8	1.7	1.7	1.7	-4	1.6	1.7	1.7
Unit labor costs <i>Previous Tealbook</i>	-1.1	2.1	1.6	3.2	3.0	3.0	3.0	3.0	3.4	3.4	3.4	3.4	2.3	3.0	3.4	3.5
	-1.1	2.1	1.6	2.9	3.1	3.1	3.1	3.1	3.4	3.4	3.4	3.4	2.3	3.0	3.4	3.5
	-3.9	-1.2	4.0	5.1	.2	.3	.7	.7	1.5	1.5	1.6	1.6	2.7	1.6	1.5	1.7
	-3.9	-1.2	4.1	2.7	.6	1.3	1.1	1.1	1.6	1.7	1.7	1.7	2.7	1.4	1.7	1.7
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook</i>	.2	.5	-8	-4.0	-4.0	-8	-1	-1	.4	.9	1.2	1.2	.6	-2.3	.9	1.6
	.2	.5	-8	-4.0	-4.3	-1.5	.1	.1	.7	1.1	1.3	1.3	.6	-2.4	1.1	1.7

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	1.2 1.2	1.4 1.4	1.8 1.7	1.8 1.9
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	1.1 1.1	.6 .6	1.6 1.7	1.8 1.9
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	-6.1 -6.1	-11.4 -11.5	2.6 3.3	1.6 2.4
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	2.8 2.8	.6 .8	1.6 1.6	1.9 1.9
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	1.4 1.4	1.3 1.3	1.6 1.6	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	1.2 1.2	1.2 1.2	1.6 1.6	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	1.2 1.2	.7 .6	2.0 2.1	2.1 2.2
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	1.7 1.7	1.9 1.8	2.0 2.0	2.1 2.2
ECI, 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	2.6 2.6	2.9 2.9	3.0 3.0
Business sector Output per hour <i>Previous Tealbook</i>	-2 -2	5.6 5.6	1.7 1.7	.0 .0	.2 .2	2.3 2.3	-4 -4	1.4 1.6	1.8 1.7	1.8 1.7
Compensation per hour <i>Previous Tealbook</i>	2.9 2.9	1.3 1.3	1.2 1.2	.6 .6	5.6 5.6	-1 -1	2.3 2.3	3.0 3.0	3.4 3.4	3.5 3.5
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	2.7 2.7	1.6 1.4	1.5 1.7	1.7 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 .6	-2.3 -2.4	.9 1.1	1.6 1.7

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>																
Nonfarm payroll employment <sup>2</sup>	.8	.7	.9	.6	.8	.6	.6	.6	.6	.6	.5	.5	2.9	2.6	2.2	1.7
Unemployment rate <sup>3</sup>	6.2	6.1	5.7	5.3	5.6	5.4	5.3	5.3	5.3	5.2	5.2	5.2	5.7	5.3	5.2	5.1
<i>Previous Tealbook<sup>3</sup></i>	6.2	6.1	5.7	5.2	5.5	5.3	5.2	5.2	5.2	5.1	5.1	5.1	5.7	5.2	5.1	5.0
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	5.2
<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	5.2
GDP gap <sup>4</sup>	-2.3	-1.3	-1.0	-1.2	-1.3	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
<i>Previous Tealbook<sup>4</sup></i>	-2.3	-1.3	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Industrial production <sup>5</sup>	5.7	4.1	4.6	4.6	-1.0	-1.0	7	.6	.6	.6	.6	.6	4.6	-1.1	2.2	1.5
<i>Previous Tealbook<sup>5</sup></i>	5.7	4.1	4.3	4.3	1.8	1.7	.4	.6	.6	.6	.6	.6	4.5	1.1	2.0	1.4
Manufacturing industr. prod. <sup>5</sup>	7.0	4.4	3.8	3.8	-1.2	1.8	1.9	2.0	2.0	2.0	2.0	2.0	4.1	1.1	2.2	1.5
<i>Previous Tealbook<sup>5</sup></i>	7.0	4.4	3.8	3.8	2.1	3.3	1.9	1.9	1.9	1.9	1.9	1.9	4.1	2.3	1.9	1.4
Capacity utilization rate - mfg. <sup>3</sup>	77.1	77.5	77.8	77.8	77.2	77.3	77.3	77.4	77.4	77.4	77.7	77.7	77.8	77.4	77.7	77.4
<i>Previous Tealbook<sup>3</sup></i>	77.1	77.5	77.8	77.8	77.9	78.2	78.3	78.3	78.3	78.3	78.4	78.4	77.8	78.3	78.4	78.0
Housing starts <sup>6</sup>	1.0	1.0	1.1	1.2	1.0	1.0	1.1	1.2	1.2	1.2	1.4	1.4	1.0	1.1	1.3	1.5
Light motor vehicle sales <sup>6</sup>	16.5	16.7	16.7	16.7	16.6	16.8	16.7	16.7	16.7	16.7	16.6	16.6	16.4	16.7	16.6	16.5
<i>Income and saving</i>																
Nominal GDP <sup>5</sup>	6.8	6.4	2.4	4.2	.3	4.6	3.7	4.2	4.2	4.2	4.2	4.2	3.7	3.2	4.2	4.0
Real disposable pers. income <sup>5</sup>	3.1	2.4	3.6	2.2	6.5	2.0	2.1	2.2	2.2	2.2	2.8	2.8	3.1	3.2	2.8	2.5
<i>Previous Tealbook<sup>5</sup></i>	3.1	2.4	3.7	2.5	6.1	3.4	1.9	2.5	2.5	2.5	2.6	2.6	3.1	3.5	2.7	2.4
Personal saving rate <sup>3</sup>	5.1	4.8	4.6	4.2	5.6	5.1	4.6	4.2	4.2	4.2	3.8	3.8	4.6	4.2	3.8	3.8
<i>Previous Tealbook<sup>3</sup></i>	5.1	4.8	4.7	4.3	5.3	5.1	4.6	4.3	4.3	4.3	3.8	3.8	4.7	4.3	3.8	3.6
Corporate profits <sup>7</sup>	38.3	12.8	-5.5	-3.9	-18.3	8.2	4.4	-3.9	-3.9	-3.9	.6	.6	-2	-2.9	1.1	.2
Profit share of GNP <sup>3</sup>	12.0	12.2	12.0	11.3	11.4	11.5	11.5	11.3	11.3	11.3	11.0	11.0	12.0	11.3	11.0	10.6
Net federal savings <sup>8</sup>	-599	-611	-559	-593	-565	-594	-596	-593	-593	-593	-648	-648	-582	-587	-629	-699
Net state & local savings <sup>8</sup>	-227	-217	-214	-194	-185	-195	-197	-194	-194	-194	-184	-184	-225	-193	-185	-184
Gross national saving rate <sup>3</sup>	17.9	18.1	18.0	17.3	18.5	18.0	17.7	17.3	17.3	17.3	17.0	16.9	18.0	17.3	16.9	16.8
Net national saving rate <sup>3</sup>	2.9	3.1	3.0	2.2	3.7	3.0	2.6	2.2	2.2	2.2	1.7	1.6	3.0	2.2	1.6	1.2

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	2.5	2.9	2.6	2.2	1.7
Unemployment rate <sup>2</sup>	6.9	9.9	9.5	8.7	7.8	7.0	5.7	5.3	5.2	5.1
<i>Previous Tealbook<sup>2</sup></i>	6.9	9.9	9.5	8.7	7.8	7.0	5.7	5.2	5.1	5.0
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	-1.0	-0.8	-1.1	.3
<i>Previous Tealbook<sup>3</sup></i>	-3.8	-5.5	-4.4	-4.2	-4.1	-2.8	-1.0	-0.4	-2.2	.5
Industrial production <sup>4</sup>	-8.9	-5.5	6.2	3.2	3.2	3.3	4.6	-1.1	2.2	1.5
<i>Previous Tealbook<sup>4</sup></i>	-8.9	-5.5	6.2	3.2	3.2	3.3	4.5	1.1	2.0	1.4
Manufacturing industr. prod. <sup>4</sup>	-11.6	-6.1	6.4	3.1	3.5	2.9	4.1	1.1	2.2	1.5
<i>Previous Tealbook<sup>4</sup></i>	-11.6	-6.1	6.4	3.1	3.5	2.9	4.1	2.3	1.9	1.4
Capacity utilization rate - mfg. <sup>2</sup>	70.0	67.1	72.7	74.6	75.5	76.4	77.8	77.4	77.7	77.4
<i>Previous Tealbook<sup>2</sup></i>	70.0	67.1	72.7	74.6	75.5	76.4	77.8	78.3	78.4	78.0
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	16.7	16.6	16.5
<i>Income and saving</i>										
Nominal GDP <sup>4</sup>	-9	.1	4.6	3.6	3.5	4.6	3.7	3.2	4.2	4.0
Real disposable pers. income <sup>4</sup>	1.1	-7	2.6	1.7	5.0	-1.9	3.1	3.2	2.8	2.5
<i>Previous Tealbook<sup>4</sup></i>	1.1	-7	2.6	1.7	5.0	-1.9	3.1	3.5	2.7	2.4
Personal saving rate <sup>2</sup>	6.1	5.6	5.5	5.8	8.6	4.4	4.6	4.2	3.8	3.8
<i>Previous Tealbook<sup>2</sup></i>	6.1	5.6	5.5	5.8	8.6	4.4	4.7	4.3	3.8	3.6
Corporate profits <sup>6</sup>	-30.8	53.7	18.0	6.8	3.8	4.7	-2	-2.9	1.1	.2
Profit share of GNP <sup>2</sup>	6.9	10.6	12.0	12.3	12.4	12.4	12.0	11.3	11.0	10.6
Net federal saving <sup>7</sup>	-634	-1,249	-1,329	-1,244	-1,079	-649	-582	-587	-629	-699
Net state & local saving <sup>7</sup>	-165	-272	-237	-216	-233	-225	-225	-193	-185	-184
Gross national saving rate <sup>2</sup>	14.9	14.6	15.2	16.1	17.8	17.9	18.0	17.3	16.9	16.8
Net national saving rate <sup>2</sup>	-1.6	-1.7	-4	.8	2.8	3.0	3.0	2.2	1.6	1.2

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 <sup>a</sup>	Q4 <sup>a</sup>	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
									Not seasonally adjusted							
<b>Unified budget</b>																
Receipts	3,021	3,239	3,397	3,541	656	938	760	739	680	1,017	802	745	715	1,076	861	798
Outlays	3,504	3,692	3,869	4,031	897	890	877	916	943	941	892	994	950	952	973	971
Surplus/deficit	-482	-453	-472	-491	-241	47	-117	-177	-263	76	-90	-249	-235	124	-112	-173
<i>Previous Tealbook</i>	-485	-491	-492	-521	-241	47	-117	-177	-282	56	-88	-250	-241	117	-119	-184
Means of financing:																
Borrowing	798	390	440	611	262	-46	211	240	67	-43	125	126	265	-94	142	203
Cash decrease	-70	-64	153	0	20	3	-19	-65	123	-48	-74	153	0	0	0	0
Other <sup>1</sup>	-245	128	-120	-120	-42	-4	-74	1	73	15	39	-30	-30	-30	-30	-30
Cash operating balance, end of period	158	223	70	70	142	139	158	223	100	148	223	70	70	70	70	70
<b>NIPA federal sector</b>																
Receipts	3,267	3,384	3,540	3,696	3,243	3,277	3,342	3,341	3,343	3,405	3,448	3,477	3,520	3,561	3,604	3,643
Expenditures	3,844	3,963	4,155	4,379	3,803	3,875	3,953	3,901	3,909	3,999	4,044	4,070	4,155	4,166	4,229	4,290
Consumption expenditures	963	958	960	976	957	956	988	961	960	957	955	954	961	961	965	965
Defense	617	613	613	620	610	610	641	614	613	612	611	612	614	612	615	614
Nondefense	346	346	347	356	347	345	347	347	346	345	344	343	347	349	350	352
Other spending	2,882	3,005	3,195	3,403	2,846	2,920	2,965	2,940	2,949	3,042	3,089	3,116	3,194	3,205	3,264	3,325
Current account surplus	-577	-579	-615	-683	-560	-599	-611	-559	-566	-594	-596	-593	-635	-605	-625	-647
Gross investment	256	253	248	247	251	255	254	256	253	251	250	250	248	246	248	247
Gross saving less gross investment <sup>2</sup>	-561	-552	-577	-637	-539	-580	-589	-539	-540	-566	-565	-560	-598	-565	-585	-603
<b>Fiscal indicators</b>																
High-employment (HEB) surplus/deficit <sup>3</sup>	-404.2	-490.2	-548.0	-643.7	-342.9	-427.0	-488.7	-464.7	-470.0	-509.0	-517.2	-519.0	-562.9	-539.8	-570.4	-600.2
Change in HEB, percent of potential GDP	-1.0	.4	.2	.4	-1	.5	.3	-1	.0	.2	.0	.0	.2	-1	.1	.1
Fiscal impetus (FI), percent of GDP <sup>4</sup>	-1	.2	.3	.3	-6	.0	.7	-4	-4	.4	.3	.3	.1	.2	.4	.2
<i>Previous Tealbook</i>	-1	.2	.3	.3	-6	.0	.7	-4	-2	.2	.3	.3	.1	.2	.4	.2
Federal purchases	.0	-2	-1	-1	.0	-1	.7	-5	-3	-1	-1	-1	-1	-1	-1	-1
State and local purchases	.1	.1	.2	.2	-1	.4	.1	.2	-2	.4	.2	.2	-2	.2	.2	.2
Taxes and transfers	-2	.2	.1	.1	-5	-3	-1	-1	.0	.2	.2	.2	.1	.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				Projected			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Real GDP<sup>1</sup></b>												
Total foreign	2.0	2.4	2.6	2.7	1.8	2.4	2.8	3.0	3.0	3.0	3.1	3.1
<i>Previous Tealbook</i>	1.9	2.5	2.6	2.7	2.5	2.7	2.9	3.0	3.1	3.1	3.1	3.1
Advanced foreign economies	1.9	1.4	1.7	2.0	1.0	1.8	2.0	2.2	2.3	2.2	2.2	2.2
Canada	1.0	3.8	3.2	2.4	.2	1.6	2.0	2.4	2.5	2.5	2.5	2.3
Japan	5.1	-6.4	-2.6	1.5	1.0	1.5	1.5	1.5	1.4	1.3	1.2	1.4
United Kingdom	3.6	3.4	2.5	2.5	2.0	2.7	2.7	2.6	2.6	2.6	2.4	2.5
Euro area	1.1	.3	.7	1.3	1.7	1.7	1.8	1.9	2.1	2.1	2.1	2.1
Germany	3.1	-3	.3	2.8	1.8	1.8	2.0	2.0	2.2	2.2	2.3	2.3
Emerging market economies	2.2	3.4	3.6	3.4	2.5	3.0	3.7	3.8	3.8	3.8	4.0	4.0
Asia	4.1	4.9	5.5	5.0	4.4	4.9	5.5	5.4	5.2	5.2	5.2	5.2
Korea	4.4	2.0	3.2	1.1	3.1	3.6	4.2	4.2	4.1	4.1	4.1	4.1
China	6.4	7.6	8.1	7.0	5.3	6.3	7.5	7.0	6.6	6.6	6.6	6.6
Latin America	.3	2.4	2.1	2.0	1.0	1.6	2.3	2.5	2.6	2.6	2.9	2.9
Mexico	1.4	4.2	2.1	2.7	1.9	2.7	3.3	3.3	3.1	3.1	3.2	3.2
Brazil	2.6	-5.4	.6	1.3	-1.7	-2.1	-3	1.0	1.8	1.8	2.0	2.0
<b>Consumer prices<sup>2</sup></b>												
Total foreign	2.0	3.0	2.0	1.1	-1	2.0	2.2	2.4	2.4	2.4	2.5	2.5
<i>Previous Tealbook</i>	2.1	3.0	2.0	1.1	.0	2.1	2.2	2.4	2.4	2.4	2.5	2.5
Advanced foreign economies	1.3	3.0	.9	-4	-8	1.1	1.3	1.4	1.5	1.6	1.6	1.7
Canada	3.2	3.3	1.2	.0	-1	1.7	1.7	1.8	1.8	1.8	1.9	1.9
Japan	.7	9.3	1.2	-6	.1	.8	.8	.9	1.0	1.1	1.2	1.3
United Kingdom	1.4	1.7	1.2	-7	-1.8	1.2	1.8	1.8	1.8	1.7	1.8	1.8
Euro area	.4	.4	.5	-6	-1.6	1.0	1.3	1.5	1.6	1.6	1.6	1.6
Germany	.4	.3	1.5	-5	-2.0	1.4	1.5	1.6	1.7	1.7	1.7	1.8
Emerging market economies	2.5	2.9	2.9	2.3	.4	2.7	3.0	3.1	3.1	3.1	3.1	3.1
Asia	1.4	2.4	2.1	1.1	-4	2.2	2.5	2.7	2.8	2.8	2.8	2.8
Korea	1.4	2.2	.6	-2	-3	1.4	2.4	2.9	3.1	3.2	3.2	3.2
China	.8	2.0	2.2	1.0	-4	2.0	2.2	2.5	2.5	2.5	2.5	2.5
Latin America	5.3	4.3	4.9	4.8	1.7	3.8	4.0	3.9	3.9	3.9	3.9	3.8
Mexico	4.8	3.3	4.4	4.2	.3	2.7	3.3	3.3	3.3	3.3	3.3	3.3
Brazil	6.5	7.4	6.2	6.0	11.1	9.9	6.2	5.7	5.7	5.7	5.7	5.6

<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	.9	4.7	3.2	2.3	2.6	2.4	2.5	3.1	2.9	
<i>Previous Tealbook</i>	.9	4.7	3.1	2.3	2.6	2.4	2.8	3.1	3.0	
Advanced foreign economies	-1.4	3.1	1.8	.3	1.9	1.7	1.7	2.2	1.9	
Canada	-1.4	3.6	3.0	1.0	2.7	2.6	1.6	2.4	2.1	
Japan	-.6	3.5	.3	.0	2.3	-.7	1.4	1.3	-.3	
United Kingdom	-1.5	2.2	1.5	.4	2.4	3.0	2.5	2.5	2.3	
Euro area	-2.3	2.3	.6	-1.0	.4	.9	1.8	2.1	2.3	
Germany	-3.0	4.4	2.4	.1	1.1	1.5	1.9	2.2	2.3	
Emerging market economies	3.8	6.5	4.6	4.3	3.3	3.1	3.2	3.9	3.9	
Asia	7.8	8.0	5.0	5.7	5.1	4.9	5.1	5.2	5.0	
Korea	4.9	6.1	2.9	2.1	3.4	2.7	3.8	4.1	3.8	
China	11.4	9.7	8.7	7.8	7.5	7.3	6.5	6.6	6.5	
Latin America	.0	4.8	4.2	3.4	1.5	1.7	1.8	2.8	3.0	
Mexico	-1.2	4.5	4.2	3.4	1.0	2.6	2.8	3.1	3.2	
Brazil	5.2	5.8	2.5	2.3	2.1	-.3	-.8	1.9	2.3	
<b>Consumer prices<sup>2</sup></b>										
Total foreign	1.2	3.2	3.4	2.3	2.4	2.0	1.6	2.4	2.6	
<i>Previous Tealbook</i>	1.2	3.2	3.4	2.3	2.3	2.0	1.7	2.5	2.6	
Advanced foreign economies	.2	1.7	2.2	1.3	1.0	1.2	.8	1.6	2.0	
Canada	.8	2.2	2.7	1.0	1.0	1.9	1.3	1.9	2.0	
Japan	-2.0	-.3	-.3	-.2	1.4	2.5	.6	1.1	2.7	
United Kingdom	2.2	3.4	4.6	2.6	2.1	.9	.8	1.8	1.9	
Euro area	.4	2.0	2.9	2.3	.8	.2	.5	1.6	1.7	
Germany	.3	1.6	2.6	2.0	1.3	.4	.6	1.7	1.8	
Emerging market economies	2.0	4.3	4.3	3.1	3.4	2.7	2.3	3.1	3.1	
Asia	1.2	4.3	4.5	2.6	3.1	1.8	1.7	2.8	2.8	
Korea	2.4	3.2	3.9	1.7	1.1	1.0	1.6	3.2	3.2	
China	.6	4.6	4.6	2.1	2.9	1.5	1.6	2.5	2.5	
Latin America	3.9	4.4	4.0	4.3	4.0	4.8	3.3	3.9	3.7	
Mexico	4.0	4.3	3.5	4.1	3.7	4.2	2.4	3.3	3.3	
Brazil	4.3	5.6	6.7	5.6	5.9	6.5	8.2	5.6	5.4	

<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.

U.S. Current Account

Quarterly Data

	2014				2015				Projected-----2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>U.S. current account balance</b>	<b>-403.9</b>	<b>-389.1</b>	<b>-395.7</b>	<b>-453.8</b>	<b>-472.1</b>	<b>-462.5</b>	<b>-499.9</b>	<b>-537.0</b>	<b>-596.4</b>	<b>-607.1</b>	<b>-657.3</b>	<b>-685.4</b>
<i>Previous Tealbook</i>	-404.4	-389.7	-399.5	-422.1	-433.6	-434.0	-484.9	-533.7	-606.7	-630.9	-690.3	-723.6
Current account as percent of GDP	-2.4	-2.2	-2.2	-2.6	-2.7	-2.6	-2.8	-2.9	-3.2	-3.3	-3.5	-3.6
<i>Previous Tealbook</i>	-2.4	-2.2	-2.3	-2.4	-2.4	-2.4	-2.7	-2.9	-3.3	-3.4	-3.7	-3.8
Net goods & services	-494.1	-520.9	-495.8	-508.1	-472.1	-466.6	-508.5	-546.0	-587.9	-618.1	-660.8	-686.2
Investment income, net	218.6	228.8	248.5	211.8	166.5	151.9	159.0	157.1	158.0	158.8	153.9	148.8
Direct, net	293.2	293.1	314.9	281.1	249.3	242.7	253.8	262.8	275.4	290.6	302.7	316.0
Portfolio, net	-74.6	-64.3	-66.5	-69.3	-82.7	-90.8	-94.8	-105.7	-117.5	-131.8	-148.8	-167.2
Other income and transfers, net	-128.4	-97.0	-148.4	-157.5	-166.5	-147.8	-150.4	-148.0	-166.5	-147.8	-150.4	-148.0

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

Annual Data

	Projected-----2016										
	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>-410.6</b>	<b>-492.9</b>	<b>-636.6</b>	<b>-739.3</b>		
<i>Previous Tealbook</i>	-380.8	-443.9	-459.3	-460.8	-400.3	-403.9	-471.5	-662.9	-788.2		
Current account as percent of GDP	-2.6	-3.0	-3.0	-2.9	-2.4	-2.4	-2.7	-3.4	-3.8		
<i>Previous Tealbook</i>	-2.6	-3.0	-3.0	-2.9	-2.4	-2.3	-2.6	-3.5	-4.0		
Net goods & services	-383.8	-494.7	-548.6	-537.6	-476.4	-504.7	-498.3	-638.3	-730.2		
Investment income, net	132.3	185.7	229.0	211.4	208.5	226.9	158.6	154.9	144.1		
Direct, net	257.7	288.0	298.6	281.6	290.9	295.6	252.1	296.2	361.8		
Portfolio, net	-125.4	-102.3	-69.5	-70.2	-82.3	-68.7	-93.5	-141.3	-217.7		
Other income and transfers, net	-129.3	-135.0	-139.8	-134.6	-132.4	-132.8	-153.2	-153.2	-153.2		

Billions of dollars

## Abbreviations

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AFE	advanced foreign economy (IEDO, FD)
BEA	Bureau of Economic Analysis
BOE	Bank of England (IEDO)
CDS	credit default swaps (FD)
C&I	commercial and industrial (FD)
CLO	collateralized loan obligation (FD)
CMBS	commercial mortgage-backed securities (FD)
CP	commercial paper (FD)
CPH	compensation per hour
CPI	consumer price index (DEDO, FD)
CRE	commercial real estate (FD)
Desk	Open Market Desk (FD)
ECB	European Central Bank (IEDO, FD)
EME	emerging market economy (IEDO, FD)
FOMC	Federal Open Market Committee; also, the Committee (DEDO, FD)
FRB	Federal Reserve Board (DEDO)
GCF	general collateral finance (FD)
GDP	gross domestic product (DEDO, IEDO, FD, R&U)
GNP	gross national product
GSE	government-sponsored enterprise (FD)
IMF	International Monetary Fund (FD)
M&A	mergers and acquisitions (FD)
MBS	mortgage-backed securities (FD)
OIS	overnight index swap (FD)
ON RRP	overnight reverse repurchase agreement (FD)
PCE	personal consumption expenditures (DEDO, R&U)
PMI	purchasing managers index (IEDO)

repo	repurchase agreement (FD)
RRP	reverse repurchase agreement (FD)
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SOMA	System Open Market Account (R&U)
S&P	Standard & Poor's (FD)
SPF	Survey of Professional Forecasters (DEDO)
TIPS	Treasury Inflation-Protected Securities (DEDO, FD)