

Prefatory Note

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Class II FOMC – Restricted (FR)

Report to the FOMC on Economic Conditions and Monetary Policy



Book A

Economic and Financial Conditions: Current Situation and Outlook

October 26, 2016

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

Incoming data indicate that the economy is expanding at a moderate rate. Real GDP growth remains on track to pick up from its weak first-half pace, as business investment turns up and the drag from inventory investment ends. However, the projected rate of growth in the second half—at 2¼ percent—is a bit lower than in the September Tealbook, reflecting the somewhat softer-than-expected readings on consumer spending in recent months. Meanwhile, labor market conditions have continued to improve, and we view the economy as essentially at full employment.

Beyond this year, we project real GDP to increase 2¼ percent in 2017, ½ percentage point stronger than this year, with continued solid gains in consumer spending and a pickup in both residential and business investment. Over 2018 and 2019, output growth slows gradually to its longer-run trend of 1¾ percent, as monetary policy tightens and the stimulus from fiscal policy diminishes. Our medium-term projection for real GDP growth is a bit weaker than in the September Tealbook, reflecting the effects of both a slightly stronger dollar and higher oil prices, but growth is still sufficient to tighten resource utilization further. In particular, GDP is projected to be 1¼ percent above its potential level at the end of 2018 and in 2019. Correspondingly, we project the unemployment rate to fall to around 4½ percent by mid-2018—about ½ percentage point below our estimate of its natural rate—and the labor force participation rate to continue to run above its trend. Consistent with the slightly weaker pace of output growth in this projection, these measures of resource utilization show a little less tightening than in the September Tealbook.

The near-term inflation forecast is somewhat higher than in the September Tealbook, reflecting upside surprises in the incoming data for both core and energy prices. We now expect the 12-month change in total PCE prices to move up from 1.0 percent in August, the most recent published data, to 1.6 percent by December, as energy prices pick up. The 12-month change in core PCE prices is projected to edge up from 1.7 percent in August to 1.8 percent in December, a path that is slightly higher than in the September Tealbook. We also nudged up our forecast of both total and core PCE inflation for next year by 0.1 percentage point to 1.7 percent; otherwise, the medium-term inflation forecast is little changed from the September Tealbook. We continue to project that PCE price inflation will move up gradually to 1.9 percent in 2019, as the effects of

Comparing the Staff Projection with Other Forecasts

The staff's projection for real GDP growth is close to the median projection from the Survey of Professional Forecasters (SPF) and the Blue Chip consensus forecast in 2016 as well as the Blue Chip in 2017. (The SPF forecast is released quarterly and is about two months old; we await the next release on November 14.) The staff's forecast for the unemployment rate is slightly above the others in 2016 and in line with the Blue Chip in 2017. The staff's projection for CPI inflation is slightly above the outside forecasters in 2016 but in line with them in 2017. The staff's projections for total and core PCE price inflation are somewhat lower than the SPF in 2016 and 2017.

Comparison of Tealbook and Outside Forecasts

| | 2016 | 2017 |
|--|------|------|
| GDP (Q4/Q4 percent change) | | |
| October Tealbook | 1.7 | 2.2 |
| Blue Chip (10/10/16) | 1.8 | 2.2 |
| SPF median (08/12/16) | 1.7 | n.a. |
| Unemployment rate (Q4 level) | | |
| October Tealbook | 4.9 | 4.6 |
| Blue Chip (10/10/16) | 4.8 | 4.6 |
| SPF median (08/12/16) | 4.7 | n.a. |
| CPI inflation (Q4/Q4 percent change) | | |
| October Tealbook | 1.7 | 2.3 |
| Blue Chip (10/10/16) | 1.5 | 2.3 |
| SPF median (08/12/16) | 1.6 | 2.3 |
| PCE price inflation (Q4/Q4 percent change) | | |
| October Tealbook | 1.5 | 1.7 |
| SPF median (08/12/16) | 1.4 | 1.9 |
| Core PCE price inflation (Q4/Q4 percent change) | | |
| October Tealbook | 1.7 | 1.7 |
| SPF median (08/12/16) | 1.8 | 1.9 |

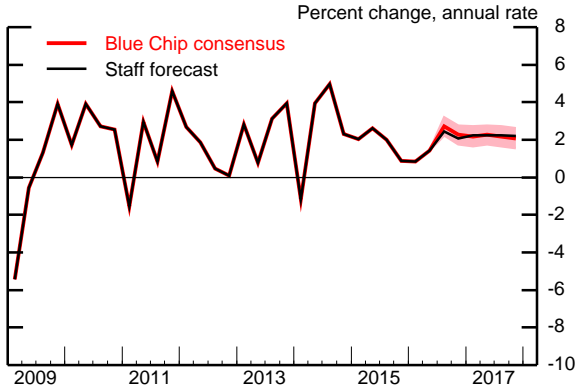
Note: SPF is the Survey of Professional Forecasters, CPI is the consumer price index, and PCE is personal consumption expenditures. Blue Chip does not provide results for PCE price inflation. The Blue Chip consensus forecast includes input from about 50 panelists, and the SPF about 40. Roughly 20 panelists contribute to both surveys.

n.a. Not available.

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

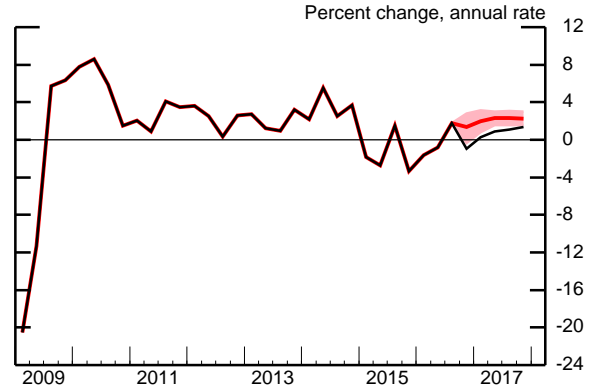
Tealbook Forecast Compared with Blue Chip (Blue Chip survey released October 10, 2016)

Real GDP

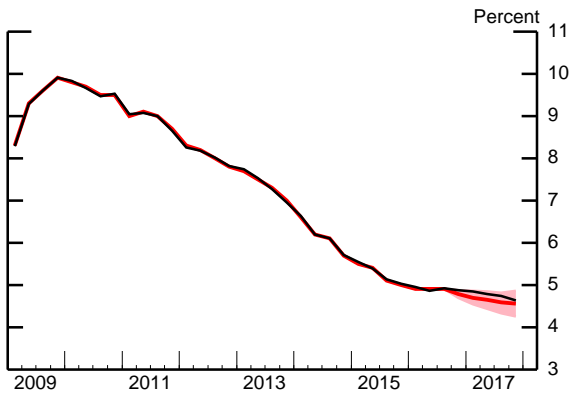


Note: The shaded area represents the area between the Blue Chip top 10 and bottom 10 averages.

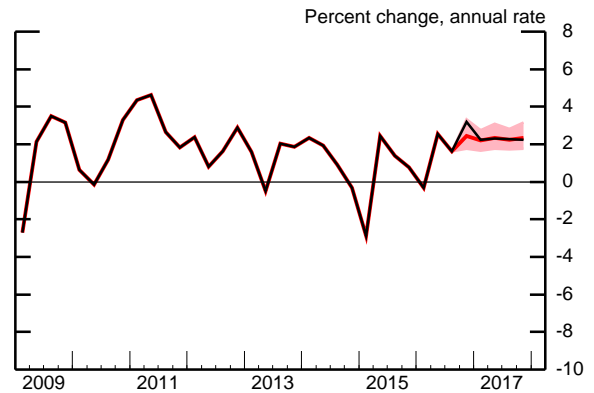
Industrial Production



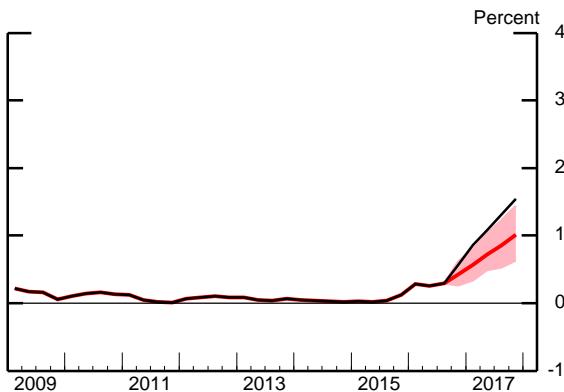
Unemployment Rate



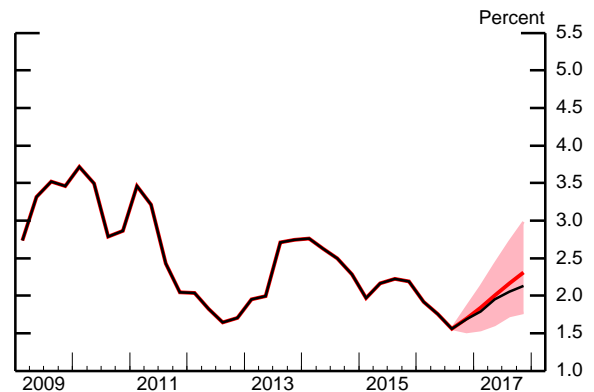
Consumer Price Index



Treasury Bill Rate



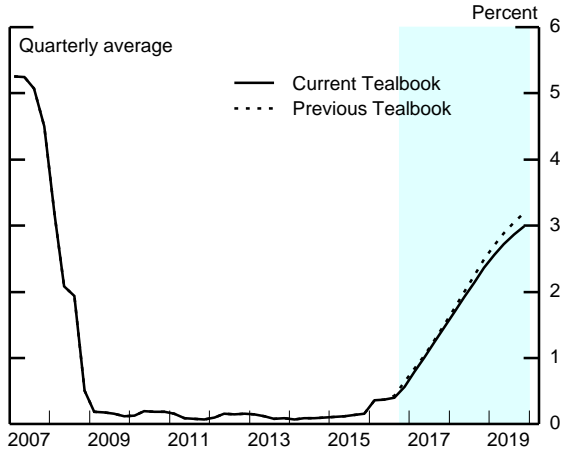
10-Year Treasury Yield



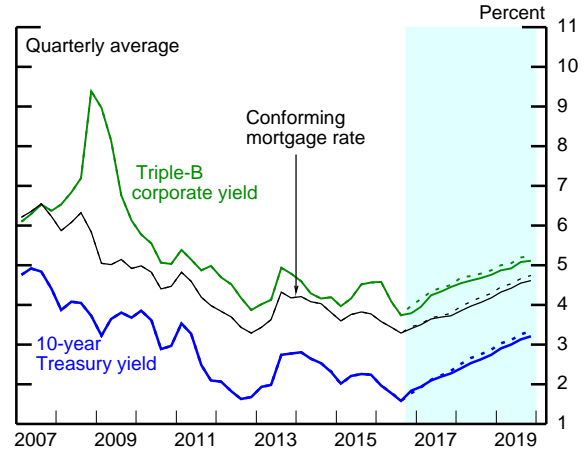
Note: The yield is for on-the-run Treasury securities. Over the forecast period, the staff's projected yield is assumed to be 15 basis points below the off-the-run yield.

Key Background Factors underlying the Baseline Staff Projection

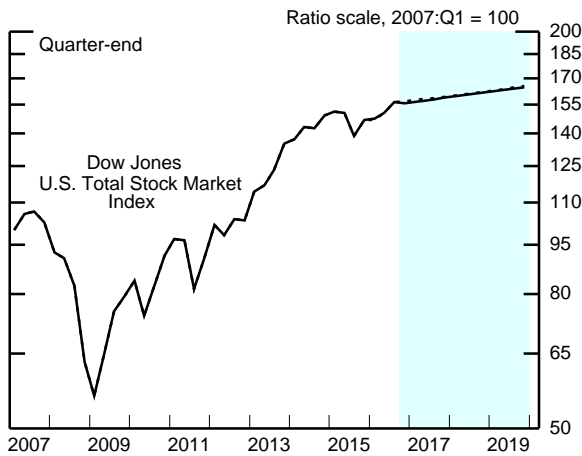
Federal Funds Rate



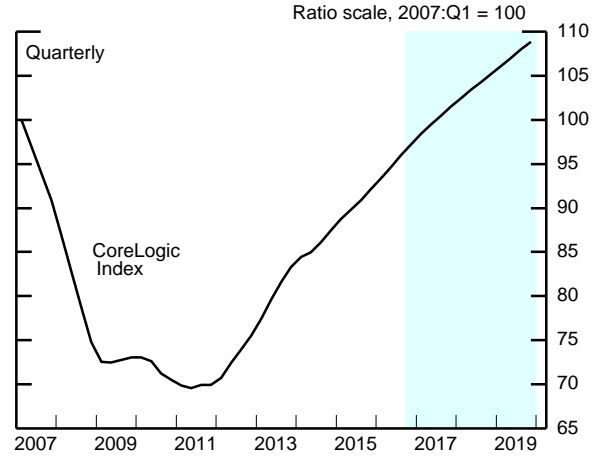
Long-Term Interest Rates



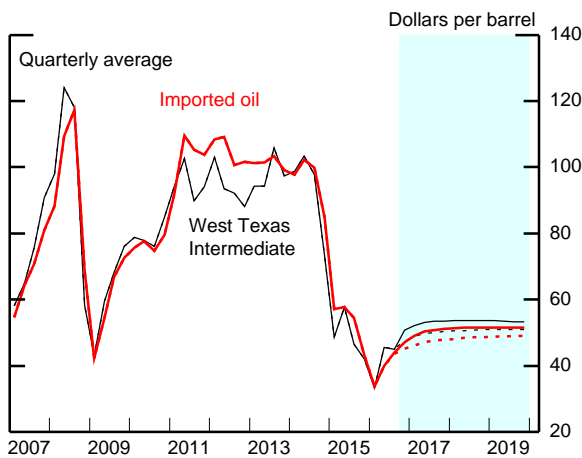
Equity Prices



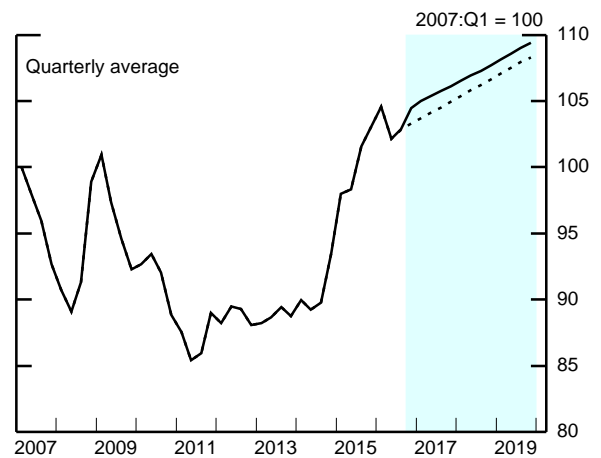
House Prices



Crude Oil Prices



Broad Real Dollar



earlier energy and import price declines fade and as resource utilization continues to tighten.

KEY BACKGROUND FACTORS

Monetary Policy

- The inertial Taylor (1999) rule (with the intercept adjustments introduced in the June Tealbook) that we use to mechanically set the federal funds rate in our projection calls for the federal funds rate to increase about 80 basis points per year over the projection period and to average about 3 percent in the fourth quarter of 2019. The federal funds rate at that time is about 25 basis points above our assumption for its long-run equilibrium level as a result of the positive output gap. Even so, the path for the federal funds rate is a bit lower than in the September Tealbook due to the slightly lower output gap in the current projection.
- We continue to assume that the SOMA portfolio will remain at its current level until the third quarter of 2017 and then begin to contract, as the proceeds from maturing assets are no longer reinvested.

Other Interest Rates

- Compared with the September Tealbook, we have revised down the projected path of the 10-year Treasury yield through 2019 in response to the lower path of future short-term interest rates. Nevertheless, we continue to expect that the 10-year Treasury yield will rise significantly over the medium term, reflecting both the movement of the 10-year valuation window through the period of extremely low short-term interest rates and a rising term premium.
- Investment-grade corporate bond spreads have narrowed more than we anticipated, leading us to revise down our projection for investment-grade corporate yields slightly more than that for 10-year Treasury yields in the near term. The path of 30-year fixed mortgage rates was revised down in line with the revision to Treasury yields.

Equity Prices and Home Prices

- The projected path of stock prices is little changed. Equity prices are projected to rise at an average annual rate of about 1½ percent over the projection period.
- Recent data on house prices were as expected. We continue to project a modest deceleration in home values from an increase of 5½ percent in 2016 to an average annual increase of 3¾ percent over the medium term.

Fiscal Policy

- We assume that discretionary policy actions at all levels of government will boost real GDP growth by 0.3 percentage point this year and next, with smaller contributions in 2018 and 2019. The support from fiscal policy is slightly less in the near term than in the September Tealbook, primarily reflecting weaker-than-expected state and local government purchases. As we had anticipated, the Congress passed a continuing resolution in September to fund the government through early December, and we expect further extensions in funding thereafter to occur without major disruption.

Foreign Economic Activity and the Dollar

- We estimate that foreign real GDP growth rebounded from an annual rate of just under 1 percent in the second quarter to an estimated 2½ percent pace in the third quarter, as economic activity in Canada and Mexico bounced back. Foreign economic growth is projected to stay at about this rate over the remainder of the forecast period, supported in part by accommodative monetary policies abroad. The near-term outlook is slightly weaker relative to the September Tealbook, with softer data in some emerging market economies and a markdown in growth prospects for Canada and the United Kingdom.
- The broad nominal dollar has appreciated about 1¼ percent since the time of the September Tealbook. The dollar rose against nearly all of the currencies of the advanced foreign economies, with an especially pronounced appreciation against the British pound. In contrast, the dollar is close to unchanged against the currencies of emerging market economies. We expect the broad nominal dollar to appreciate at an annual rate of about 2¼ percent over the medium term, as market expectations for the federal funds rate move

up toward the staff's assumption. This rate of increase in the value of the dollar is slightly lower than in the September Tealbook, as the difference between the staff's assumptions and market expectations for U.S. monetary policy narrowed somewhat during the intermeeting period.

Oil Prices

- The spot price of Brent crude oil has increased more than \$4 since the September Tealbook to \$51.50 per barrel, supported by news that OPEC member countries and Russia may cut oil production. Futures prices have increased since the previous Tealbook, with the December 2019 Brent futures prices at \$59 per barrel, up about \$3 per barrel.

THE OUTLOOK FOR REAL GDP

Real GDP growth is expected to pick up from an annual rate of about 1 percent in the first half of this year to 2¼ percent in the second half, reflecting an upturn in business fixed investment and a positive swing in the contribution from inventory investment. This projected rebound in GDP growth is slightly less than in the September Tealbook, with the downward revision concentrated in consumer spending.

- We currently estimate that real GDP increased 2½ percent in the third quarter.¹ For the fourth quarter, we forecast real GDP growth of 2 percent.² GDP growth in both quarters is about ¼ percentage point lower than in the previous Tealbook; the downward revisions were concentrated in private domestic final purchases (PDFP), which we think provides a better indication of the underlying pace of economic activity than overall GDP, so we have also nudged down GDP growth early next year.

¹ The median of the third-quarter forecasts within the System, as displayed in the table “Federal Reserve System Nowcasts of 2016:Q3 Real GDP Growth,” is 2.1 percent, which is a bit lower than the staff's estimate.

After the close of the forecast for this Tealbook, the Census Bureau released an advanced estimate of September goods trade. Our preliminary analysis suggests that the net export contribution to GDP growth increased to ¾ percentage point in the third quarter, as imports were weaker than expected and exports were stronger. Our straight read of these data would imply third-quarter GDP growth of 3 percent. However, the BEA will publish its advance estimate of third-quarter GDP on Friday, October 28.

² We estimate that Hurricane Matthew will subtract 0.1 percentage point from GDP growth in the fourth quarter and that growth in the first quarter will be higher by a similar amount.

Federal Reserve System Nowcasts of 2016:Q3 Real GDP Growth
(Percent change at annual rate from previous quarter)

| Federal Reserve entity | Type of model | Nowcast as of Oct. 25, 2016 |
|---|---|-----------------------------|
| Federal Reserve Bank | | |
| New York | <ul style="list-style-type: none"> Factor-augmented autoregressive model combination Factor-augmented autoregressive model combination, financial factors only Dynamic factor model | 1.8 1.7 2.2 |
| Cleveland | <ul style="list-style-type: none"> Bayesian regressions with stochastic volatility Tracking model | 2.1 3.0 |
| Atlanta | <ul style="list-style-type: none"> Tracking model combined with Bayesian vector autoregressions (VARs), dynamic factor models, and factor-augmented autoregressions (known as GDPNow) | 2.1 |
| Chicago | <ul style="list-style-type: none"> Dynamic factor models Bayesian VARs | 1.9 2.1 |
| St. Louis | <ul style="list-style-type: none"> Dynamic factor models News index model Let-the-data-decide regressions | 2.2 3.0 2.0 |
| Kansas City | <ul style="list-style-type: none"> Accounting-based tracking estimate | 2.6 |
| Board of Governors | <ul style="list-style-type: none"> Board staff’s forecast (judgmental tracking model)¹ Monthly dynamic factor models (DFM-45) Mixed-frequency dynamic factor model (DFM-BM) | 2.5 2.0 2.0 |
| Memo: Median of Federal Reserve System nowcasts | | 2.1 |

1. The October Tealbook forecast, finalized on October 26, is 2.5 percent.

- We expect business fixed investment to turn up in the second half of this year following notable declines in the first half. New orders for nondefense capital goods appear to have stabilized in recent months, and we expect a modest increase in equipment investment in the second half. Meanwhile, intangible investment appears to have continued growing steadily. With regard to nonresidential structures, recent increases in the number of drilling rigs in operation indicate that investment in energy-related structures is on track to move up in the fourth quarter following seven consecutive quarterly declines. Outside of drilling and mining, recent indicators suggest that outlays for nonresidential structures are increasing at a modest pace. Overall, our forecast for business investment in the second half is little changed from the September Tealbook.
- As in the September Tealbook, inventory investment is expected to slightly boost GDP growth in the second half of the year after subtracting $\frac{3}{4}$ percentage point in the first half. Nominal book values through August suggest less of a decline in inventory investment in the third quarter than in the second quarter, and the staff's flow-of-goods inventory system shows no significant inventory imbalances outside of the energy sector. Partly on this basis, and with steady growth in PDP, we expect a slow rebuilding of inventories to begin this quarter.
- Growth in consumer spending is expected to average $2\frac{1}{4}$ percent in the second half of this year, supported by continued solid gains in employment and household income as well as earlier increases in household wealth. Even so, the incoming data on consumer spending have been somewhat weaker, on balance, than expected in the September Tealbook, with disappointing retail sales for both August and September more than offsetting an upside surprise to light motor vehicle sales in September. In response, we marked down consumer spending growth through early next year.
- We continue to expect residential investment to flatten out in the fourth quarter after declining in the two previous quarters. As we had anticipated, single-family starts recovered from their sharp decline in August, but taking a somewhat longer view, single-family construction still seems to be moving

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

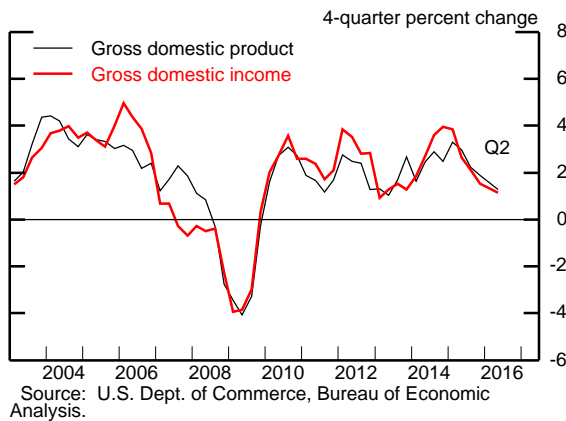
Domestic Econ Devel & Outlook

| Measure | 2016:H1 | | 2016:Q3 | | 2016:Q4 | |
|--|-------------------|------------------|-------------------|------------------|-------------------|------------------|
| | Previous Tealbook | Current Tealbook | Previous Tealbook | Current Tealbook | Previous Tealbook | Current Tealbook |
| Real GDP | 1.1 | 1.1 | 2.7 | 2.5 | 2.4 | 2.1 |
| Private domestic final purchases | 2.1 | 2.2 | 2.5 | 2.2 | 2.5 | 2.1 |
| Personal consumption expenditures | 3.0 | 2.9 | 3.0 | 2.6 | 2.2 | 1.8 |
| Residential investment | -.3 | -.3 | -5.0 | -6.3 | -1.3 | .3 |
| Nonres. private fixed investment | -1.8 | -1.3 | 2.3 | 3.0 | 5.1 | 4.3 |
| Government purchases | .0 | -.1 | 1.7 | .3 | 2.8 | 2.7 |
| <i>Contributions to change in real GDP</i> | | | | | | |
| Inventory investment ¹ | -.8 | -.8 | .5 | .2 | .0 | .2 |
| Net exports ¹ | .1 | .1 | -.2 | .3 | -.3 | -.3 |
| Unemployment rate | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 |
| PCE chain price index | 1.1 | 1.1 | 1.1 | 1.4 | 1.4 | 2.2 |
| Ex. food and energy | 1.9 | 1.9 | 1.3 | 1.6 | 1.4 | 1.5 |

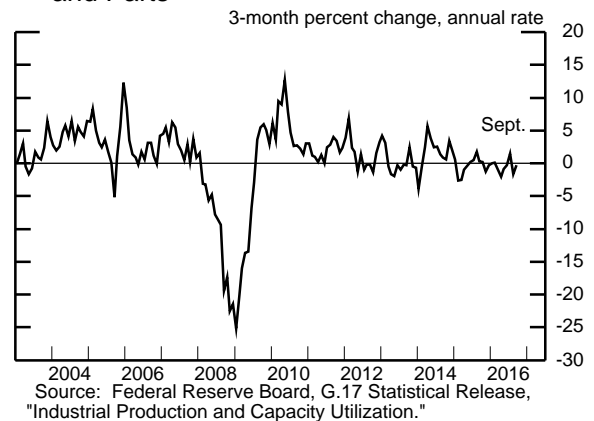
1. Percentage points.

Recent Nonfinancial Developments (1)

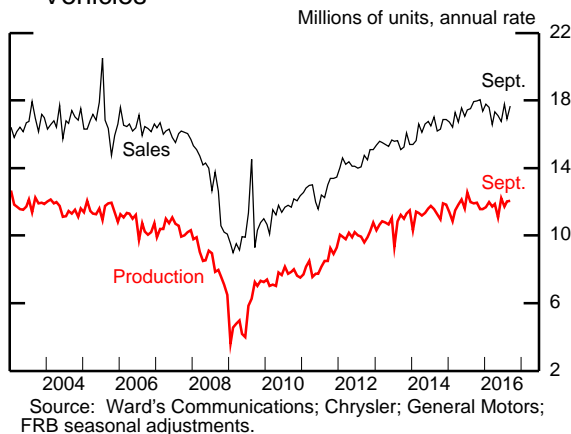
Real GDP and GDI



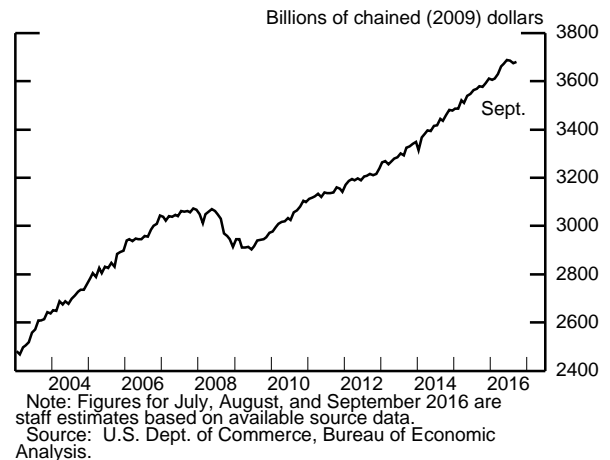
Manufacturing IP ex. Motor Vehicles and Parts



Sales and Production of Light Motor Vehicles

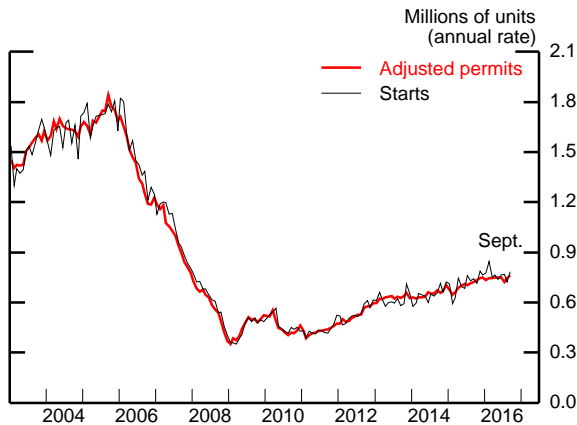


Real PCE Goods ex. Motor Vehicles



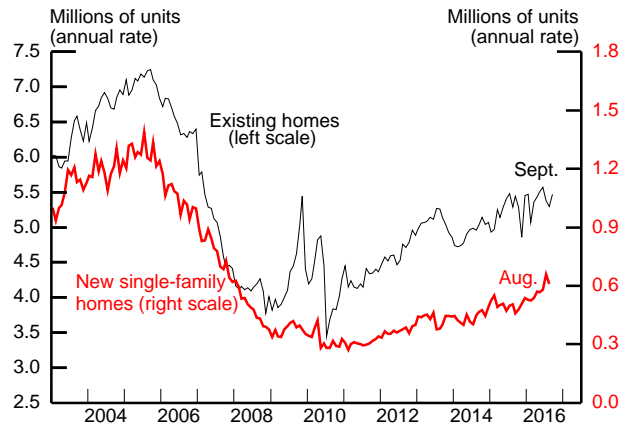
Recent Nonfinancial Developments (2)

Single-Family Housing Starts and Permits



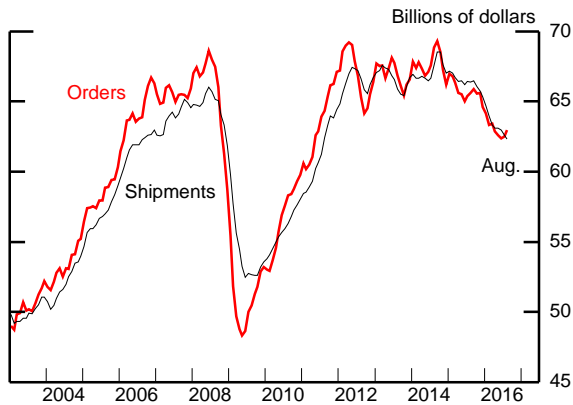
Note: Adjusted permits equal permit issuance plus total starts outside of permit-issuing areas.
Source: U.S. Census Bureau.

Home Sales



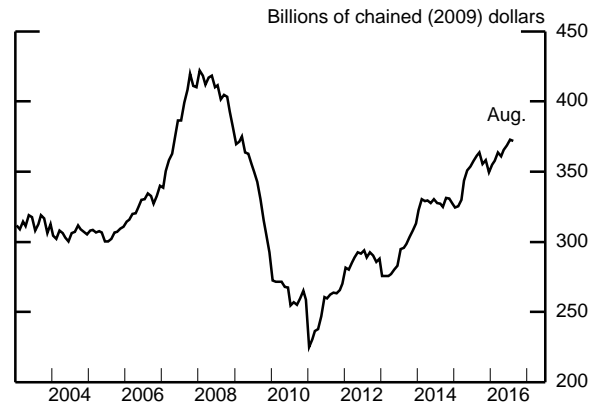
Source: For existing, National Association of Realtors; for new, U.S. Census Bureau.

Nondefense Capital Goods ex. Aircraft



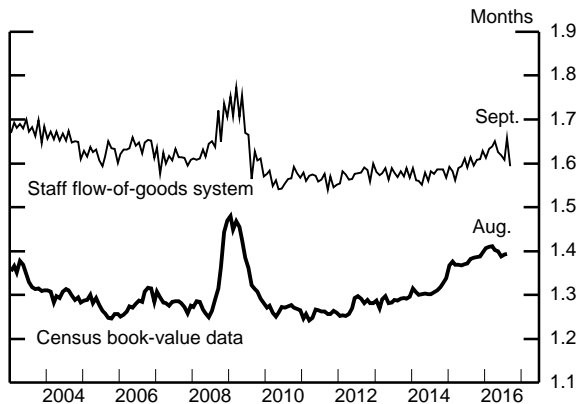
Note: Data are 3-month moving averages.
Source: U.S. Census Bureau.

Nonresidential Construction Put in Place



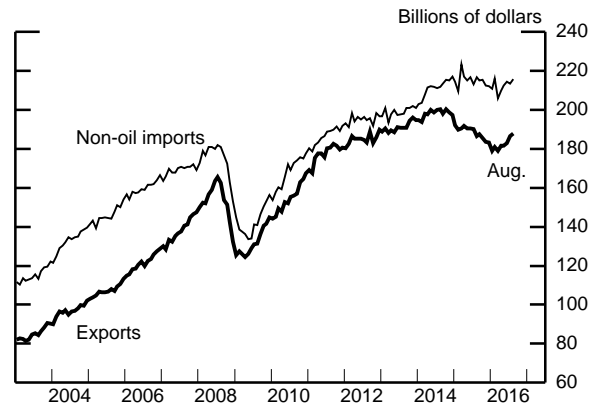
Note: Nominal CPIP deflated by BEA prices through 2016:Q2 and by the staff's estimated deflator thereafter.
Source: U.S. Census Bureau.

Inventory Ratios



Note: Flow-of-goods system inventories include manufacturing and mining industries and are relative to consumption. Census data cover manufacturing and trade, 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.

sideways.³ In contrast, housing demand—as indicated by home sales—continues to grow, supported by low mortgage rates and further improvements in the labor market. Given the very low levels of homes available for sale, we expect the rising demand to result in a pickup in residential construction activity starting early next year.

- Net exports are projected to be flat in the second half, whereas we had expected them to subtract $\frac{1}{4}$ percentage point from GDP growth in the September Tealbook. Unseasonably strong soybean exports alone flipped the net export contribution in the third quarter from a negative to a positive $\frac{1}{4}$ percentage point, though we expect that a drawdown in farm-product inventories will offset some of the topline GDP effect. In the fourth quarter, we continue to expect net exports to subtract about $\frac{1}{4}$ percentage point from GDP growth. We continue to view the underlying pace of export growth as being held down by a strong dollar and weak foreign demand.
- The level of manufacturing production has changed little, on net, in recent months (or, indeed, since late 2014), restrained by weak export demand, spillovers from earlier declines in oil and gas drilling, and slow domestic capital investment more generally. We expect factory output to continue on this flat trajectory in the fourth quarter despite some modest improvement recently in the readings for new orders from the national and regional manufacturing surveys.

Relative to its pace over 2016 as whole, GDP growth is projected to step up to about $2\frac{1}{4}$ percent in 2017, reflecting continued solid gains in consumer spending and a pickup in both residential and business investment. GDP growth then eases to 2 percent in 2018 and $1\frac{3}{4}$ percent in 2019 as monetary policy gradually tightens and the stimulus from fiscal policy diminishes.

- Our projection for real GDP growth over the medium term is a bit weaker than in the September Tealbook, reflecting a small reaction to disappointing spending data this year as well as the anticipated effects on economic activity from a slightly stronger dollar and higher oil prices.

³ Multifamily starts recorded an outsized decline in September, but given the volatility in this series, we took no signal from these data for our forecast.

- As in the September Tealbook, we expect potential output growth to pick up gradually from 1½ percent this year to 1¾ percent at the end of the medium term, driven primarily by an acceleration in structural productivity.
- With GDP growth expected to outpace our estimate of potential growth over most of the medium term, aggregate output moves above our estimate of its sustainable level. At the end of 2019, we forecast real GDP to be about 1¼ percent above potential—a slightly smaller gap than in the September Tealbook.

THE OUTLOOK FOR THE LABOR MARKET

Labor market conditions have continued to improve so far this year, with solid job growth as well as an increase in labor force participation relative to its downward trend, and we are projecting further improvements through the medium term.

- Total nonfarm payroll employment rose 156,000 in September.⁴ While private payrolls grew in line with our September forecast, state and local government employment, particularly in education, declined unexpectedly. We view the recent weakness in state and local education employment as payback for unusual strength earlier in the summer and thus took little signal from the September data for this sector. Accordingly, we anticipate that total payrolls will increase 175,000 per month, on average, in the fourth quarter, about the same as in our September projection.⁵
- In the household survey, the unemployment rate rounded up to 5.0 percent in September, whereas we had projected it to hold at 4.9 percent. We expect the unemployment rate to edge back down to 4.9 percent in the fourth quarter, which would put it at the same level as it was at the beginning of this year.
- In response to the surprising strength in the labor force participation rate so far this year—including another uptick in September to 62.9 percent—we nudged

⁴ Nonfarm payrolls were revised up nearly 20,000 in August, close to the 30,000 revision we penciled in to the September Tealbook based on the sizable upward revisions to August employment in recent years.

⁵ We estimate that Hurricane Matthew, which struck during the reference week for the October employment report, depressed payrolls by 10,000 and will boost payroll gains by the same amount in November, leaving no imprint on the average monthly change in the fourth quarter.

up our forecast for the participation rate slightly over the next year and a half to show a little more overshooting relative to its trend. We now expect the participation rate to average 62.8 percent in the fourth quarter before declining gradually next year.

- It continues to be our view that the labor market is now essentially at full employment. In the fourth quarter, we expect the unemployment rate to be 0.1 percentage point below our estimate of its natural rate, while the participation rate and the employment-to-population ratio will be slightly above our estimates of their trends. Meanwhile, the share of employees working part time for economic reasons, even with its decline in September, remains slightly elevated and likely is a small source of labor underutilization. (As discussed in the box “The Effects of the Affordable Care Act on Employer Health-Care Costs and Part-Time Employment,” we do not see much convincing evidence, at least as of yet, that the new health insurance mandates required by the Affordable Care Act have boosted the share of part-time employment.)
- The labor market conditions index, or LMCI, declined further in September, partially because of the uptick in the unemployment rate, and remains at odds with the staff’s assessment that labor market conditions have continued to improve.

The medium-term outlook for the labor market is a bit softer than our September projection, reflecting the small downward revision to the forecast for GDP growth over the next three years.

- We expect average monthly total payroll gains to slow from about 170,000 in 2017 to about 130,000 in 2018 and 100,000 in 2019. By 2019, the pace of employment growth is expected to have moved down into the range that we view as consistent with unchanged labor utilization. The path of monthly job gains over the medium term is about 10,000 lower than in the September Tealbook.
- Labor market conditions are expected to tighten further over the next couple of years, though by slightly less than in our previous forecast.

- By the end of 2019, the unemployment rate is projected to be 4.4 percent, 0.2 percentage point above its level in the September Tealbook but still 0.6 percentage point below our estimate of its natural rate.
- In addition, we project that the labor force participation rate will edge down a bit more slowly than its trend over the medium term, as sustained job gains and rising wages continue to slow outflows from the labor force while also drawing some individuals in.

THE OUTLOOK FOR INFLATION

The incoming data on consumer prices have been somewhat higher than we had anticipated in the September Tealbook, which led us to revise up our projection for both core and total PCE inflation this year and next.

- We expect that swings in energy prices will cause the 12-month change in total PCE prices to move up from 1.0 percent in August to 1.6 percent by December, with a further small increase early next year. In contrast, the trajectory for core PCE price inflation is relatively flat, with the 12-month change expected to remain near its August reading of 1.7 percent through the end of 2017. The projections for total and core PCE price inflation are revised up 0.3 percentage point and 0.1 percentage point, respectively, in 2016.
- Measured on a quarterly average basis, core PCE price inflation is expected to slow in the second half of this year relative to the first half, when inflation was boosted by some volatile price categories and what appears to be residual seasonality. Nevertheless, core goods prices have surprised us to the upside, partly reflecting unusually large increases in prescription drug prices. In addition, core services prices—both market- and non-market-based—have slowed less in recent months than we expected. As a result, we now project core PCE price inflation to be 1.6 percent in the second half, $\frac{1}{4}$ percentage point higher than in our previous forecast.⁶
- PCE energy prices are projected to jump at an annual rate of about 25 percent in the fourth quarter, a much faster pace than in the September Tealbook,

⁶ By contrast, core CPI prices have come in about as expected, and we did not change our second-half forecast for core CPI inflation.

The Effects of the Affordable Care Act on Employer Health-Care Costs and Part-Time Employment

There are concerns that the Affordable Care Act (ACA) has raised health insurance costs for employers and is leading firms to shift full-time workers to part-time status to avoid ACA penalties. However, we find little convincing support in the data that employer health-care costs have increased as a result of the ACA mandates or that employers have raised the share of part-time employment in response to the ACA, although workers appear to be facing a higher share of health-care costs. Nevertheless, it is not possible to observe what would have happened in the absence of the ACA, and the effects of the implementation of the ACA mandates may take additional time to fully appear. For both of these reasons, drawing firm conclusions remains difficult.

After various delays, the employer mandate began in 2015 for firms with 100 or more full-time equivalent (FTE) employees and in 2016 for firms with 50 to 99 FTEs.¹ The mandate requires employers to offer health insurance coverage to employees working 30 or more hours per week or pay a penalty of \$2,000 per FTE per year. Even if insurance is offered, the employer can still be penalized if the insurance fails to provide “minimal essential coverage,” be affordable (the employee contribution can be no more than 9½ percent of earnings), and cover family members through age 26.

The aggregate data do not provide convincing evidence that the ACA has significantly pushed up employers’ health insurance costs. As shown in figure 1, employers’ health insurance costs (as measured by the employment cost index) increased at an annual rate of about 3 percent in 2015 and over the first half of 2016, similar to the pace of increase seen over the preceding several years.

Nonetheless, there are a number of actions that employers may have undertaken in response to the ACA to help reduce their costs per employee covered. Indeed, the Kaiser Family Foundation’s annual Employer Health Benefits Survey documents greater use of high deductible plans—from 20 percent of workers with health insurance coverage in 2014 to 29 percent in 2016. These high

Figure 1: Growth in health insurance costs (ECI, private employers, 12-month percent change in employer costs per hour worked)

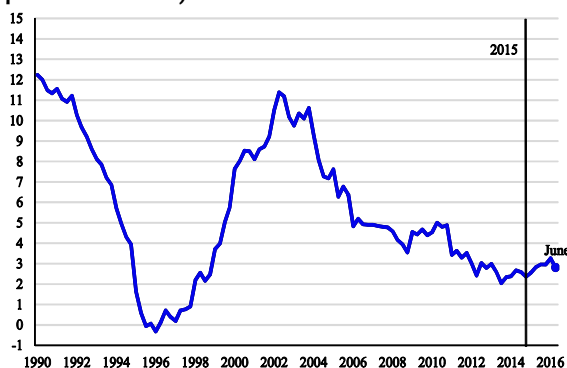
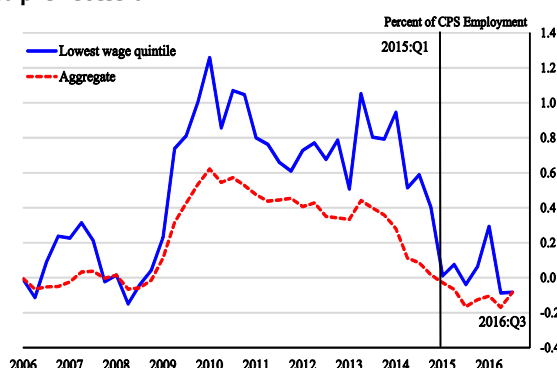


Figure 2: Difference between share of employees working 30–34 hours and 25–29 hours per week, relative to pre-recession



Note: ECI is the employment cost index. Figure 2 uses staff analysis of Current Population Survey data, and shows the four-quarter moving averages relative to the 2005–07 averages.

Source: Bureau of Labor Statistics and Census Bureau.

¹ Firms with fewer than 50 FTEs are exempt from the employer mandate.

deductible plans generally cost employers less by shifting more of the cost of health care on to the employee.

An additional way to lower costs is to decrease the number of employees that are newly eligible for health insurance either by replacing full-time workers with part-time workers or by simply eliminating full-time positions. However, the Kaiser Family Foundation’s survey shows that, on net, more firms reported to have switched workers from part-time to full-time status in response to the ACA rather than vice versa.² Further, only 3 percent of responding firms indicated that they intended to reduce hiring for full-time positions in order to contain health insurance costs due to the ACA.

Following the approach taken in several academic studies, figure 2 compares the share of people working 30 to 34 hours with the share working 25 to 29 hours.³ If the ACA were causing employers to shift workers’ hours below the threshold, we would expect to see a decrease in the share working above 30 hours relative to the share working below 30 hours a week. However, there is no clear evidence that such a shift has occurred. Figure 2 shows that the relative share displays a pronounced cyclical pattern, spiking upward in 2008 but recovering to its average level over 2005 to 2007 by the beginning of 2015. The relative share has roughly moved sideways since the mandate went into effect in 2015, both in the aggregate (the red line) and among workers in the lowest wage quintile (the blue line), who are the most likely to be affected by the employer mandate.⁴ In contrast, the relative share would likely have shown a steep decline if employers were shifting large numbers of workers below the 30-hour threshold in response to the ACA.

Finally, a survey of recent empirical studies conducted by economists at the Federal Reserve Bank of Richmond concludes that there is little evidence that the ACA has had an effect on part-time status.⁵ However, as suggested in a study of the Massachusetts health-care law that passed in 2007—which has many similarities with the ACA—an increase in part-time employment due to the ACA may emerge over a longer time horizon.⁶

² While the survey offers no explanation for this surprising finding, one possibility is that the individual mandate may have led workers to place more value on employer-provided health insurance; from the employer’s perspective, it is typically more cost effective to insure full-time workers.

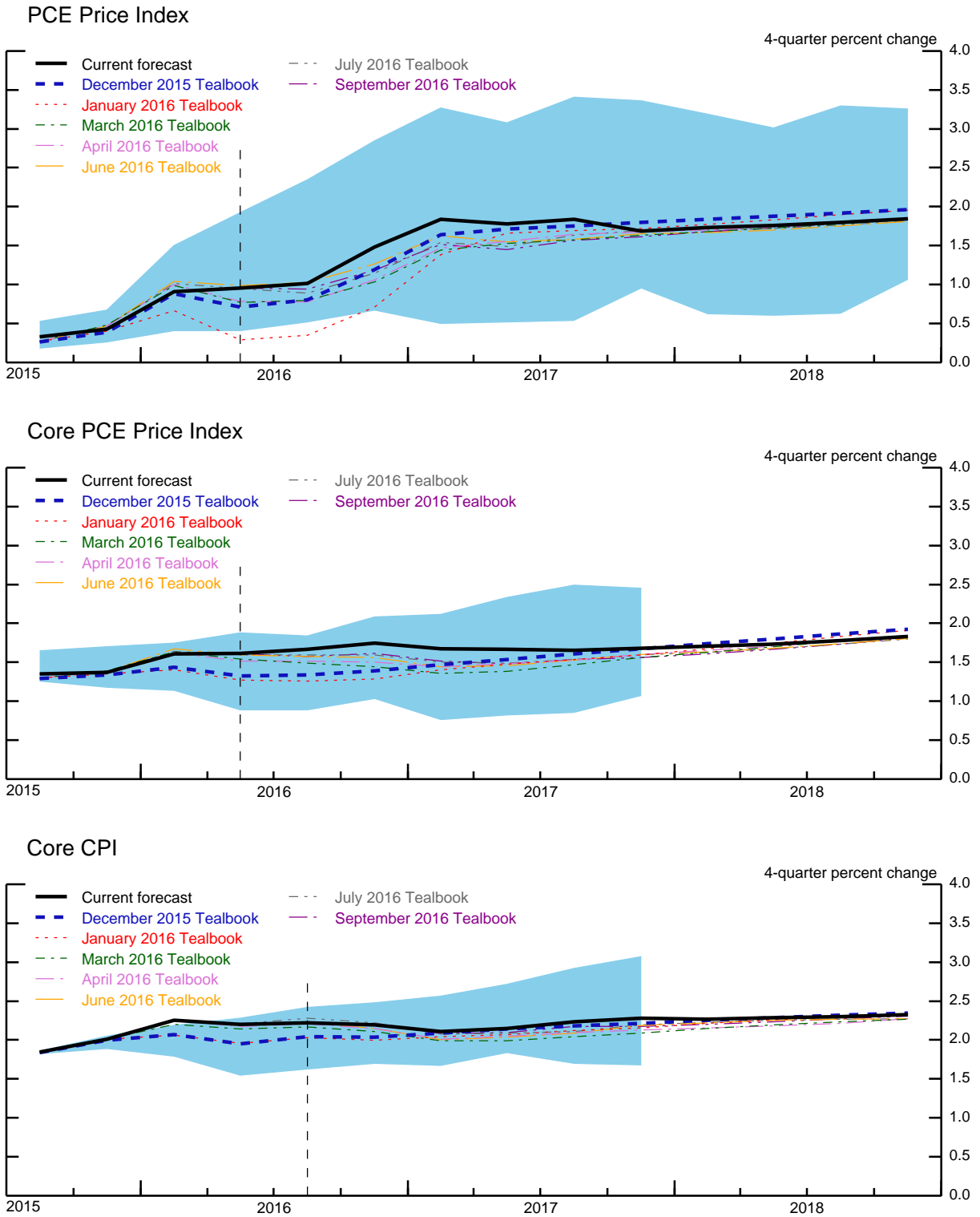
³ See Aparna Mathur, Sita Nataraj Slavov, and Michael R. Strain (2016), “Has the Affordable Care Act Increased Part-Time Employment?” *Applied Economic Letters*, vol. 23 (3); see also Asako S. Moriya, Thomas M. Selden, and Kosali I. Simon (2016), “Little Change Seen in Part-Time Employment as a Result of the Affordable Care Act,” *Health Affairs*, vol. 35 (1), pp. 119–23.

⁴ Among other reasons, workers in the lowest wage quintiles likely cost more for employers to insure because the affordability requirement of the ACA limits the cost sharing based, in part, on the earnings of the worker.

⁵ See Andreas Hornstein and David A. Price (2016), “Assessing the Effect of the Affordable Care Act on Part-Time Employment,” Economic Brief No. 16-10 (Richmond, Va.: Federal Reserve Bank of Richmond, October), https://www.richmondfed.org/publications/research/economic_brief/2016/eb_16-10. Two studies, however, do find effects of the ACA on part-time employment. See William E. Even and David A. Macpherson (2015), “The Affordable Care Act and the Growth of Involuntary Part-Time Employment,” IZA Discussion Paper 9324 (Bonn, Germany: Institute for the Study of Labor, September), <http://ftp.iza.org/dp9324.pdf>; see also Marcus Dillender, Carolyn Heinrich, and Susan Houseman (2016), “Effects of the Affordable Care Act on Part-Time Employment: Early Evidence,” Upjohn Institute Working Paper 16-258 (Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research, June), <http://dx.doi.org/10.17848/wp16-258>.

⁶ See Marcus Dillender, Carolyn Heinrich, and Susan Houseman (2016), “Health Insurance Reform and Part-Time Work: Evidence from Massachusetts,” *Labour Economics*, vol. 43 (December), pp. 151–58.

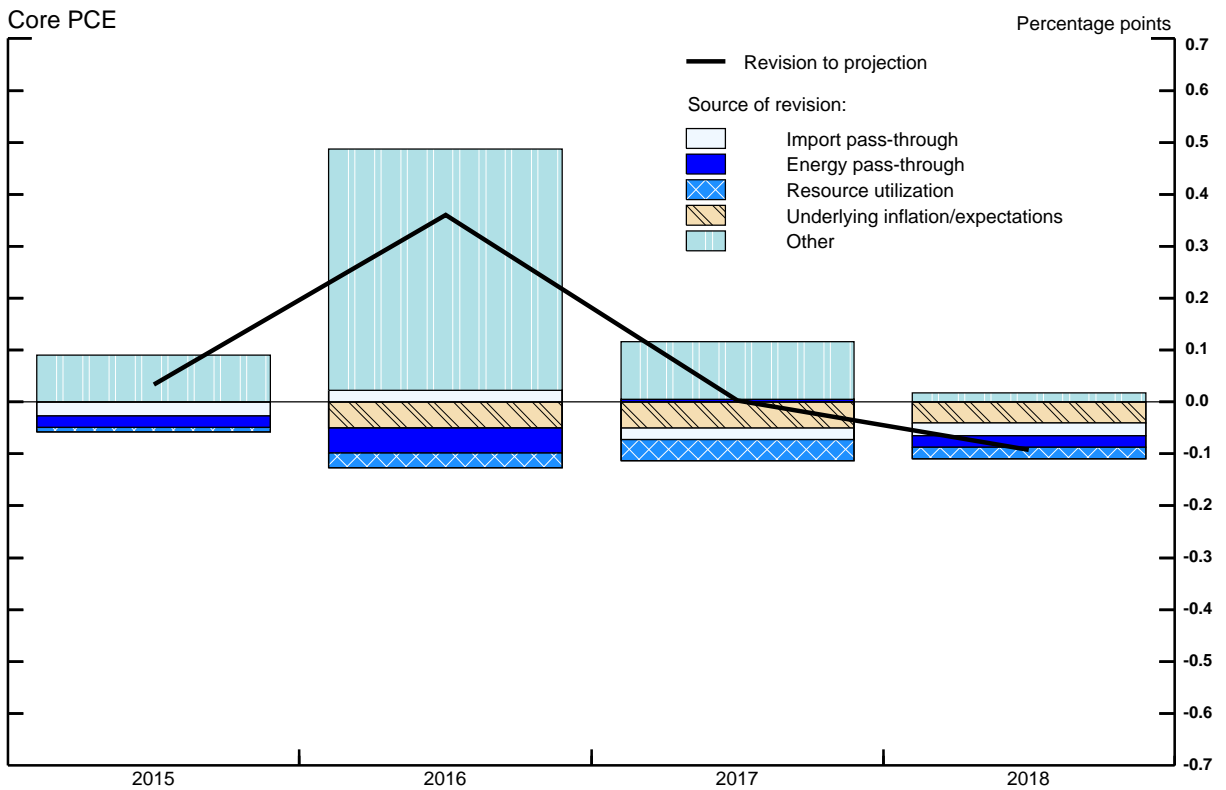
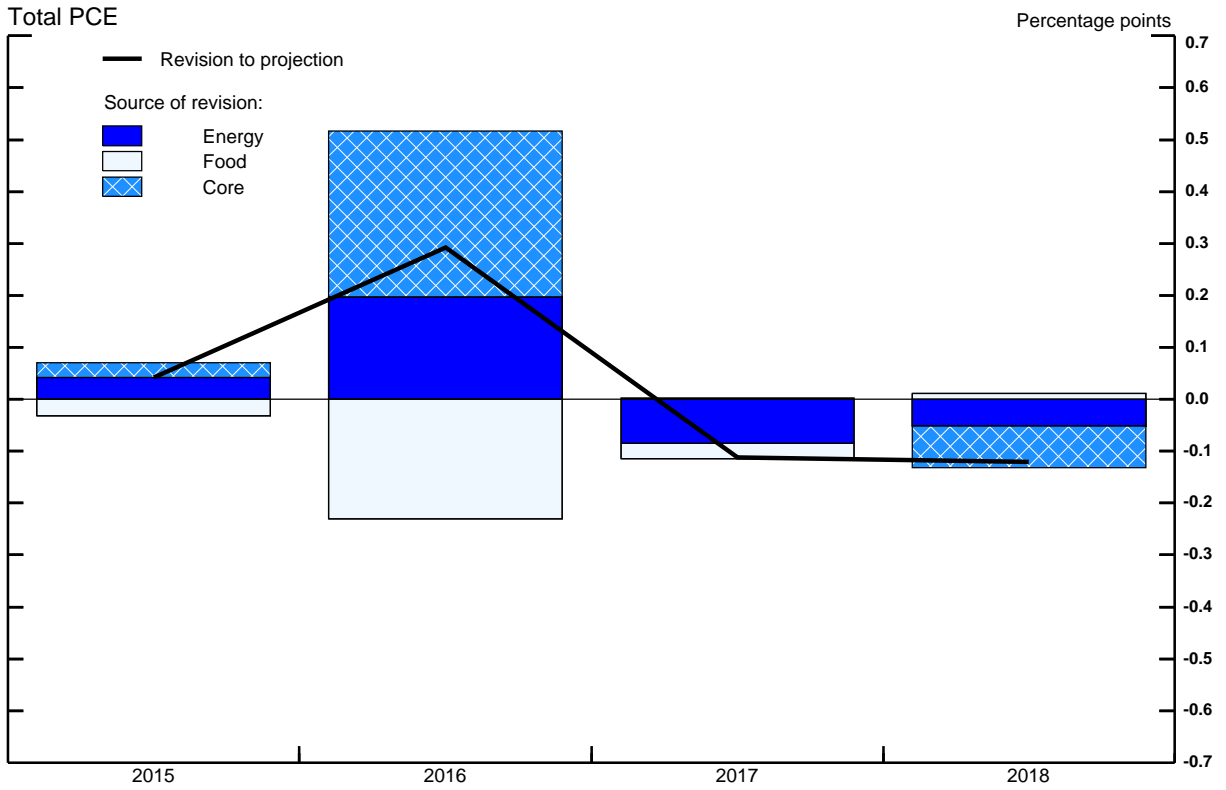
Inflation Forecasts since the December 2015 Tealbook



Note: Blue shading represents the 70 percent confidence interval for the December 2015 projection. Confidence intervals are computed using historical errors from December staff forecasts since 1998. See appendix, “Technical Note on Prediction Intervals Derived from Historical Tealbook Forecast Errors,” in the Risks and Uncertainty section. The dotted vertical lines denote the most recent quarter of data.

Source: Staff projections and judgmental rules of thumb.

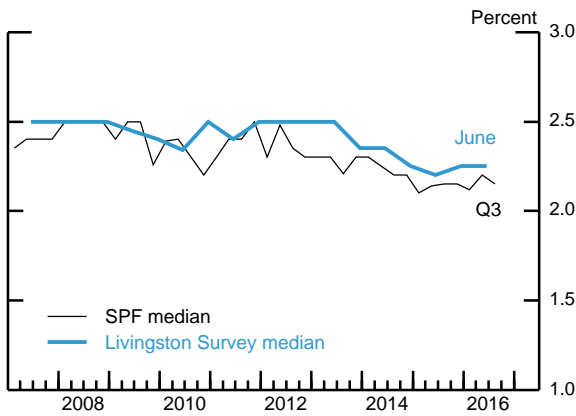
Sources of Inflation Forecast Revisions since the December 2015 Tealbook



Source: Staff projections and judgmental rules of thumb.

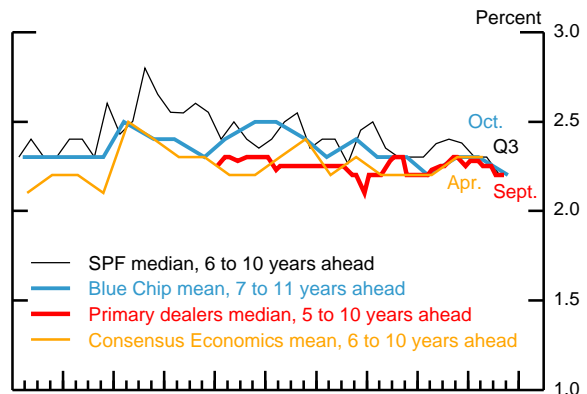
Survey Measures of Longer-Term Inflation Expectations

CPI Next 10 Years



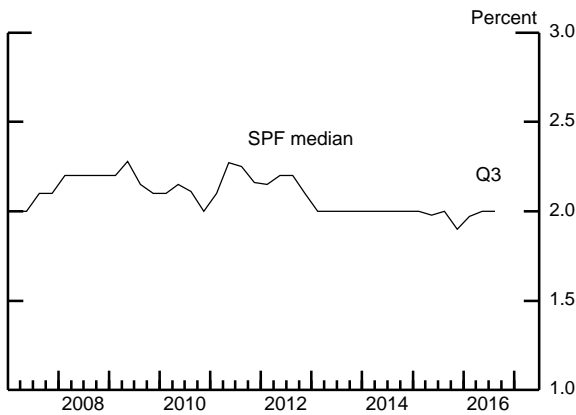
Note: SPF is Survey of Professional Forecasters.
Source: Federal Reserve Bank of Philadelphia.

CPI Forward Expectations



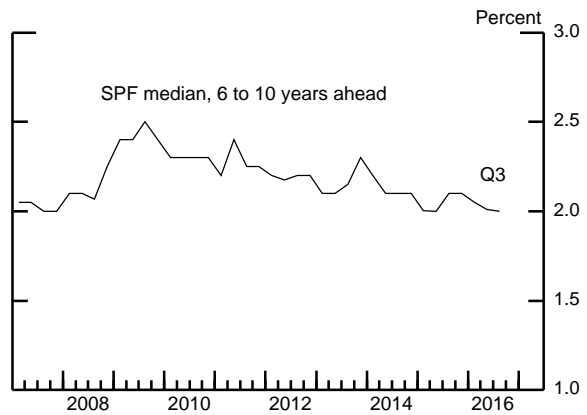
Source: Federal Reserve Bank of Philadelphia; Blue Chip Economic Indicators; Federal Reserve Bank of New York; Consensus Economics.

PCE Next 10 Years



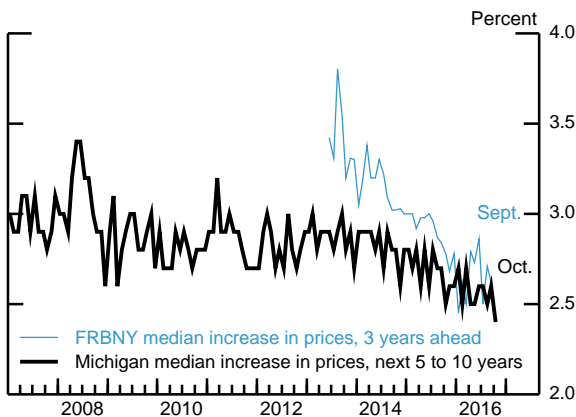
Source: Federal Reserve Bank of Philadelphia.

PCE Forward Expectations



Source: Federal Reserve Bank of Philadelphia.

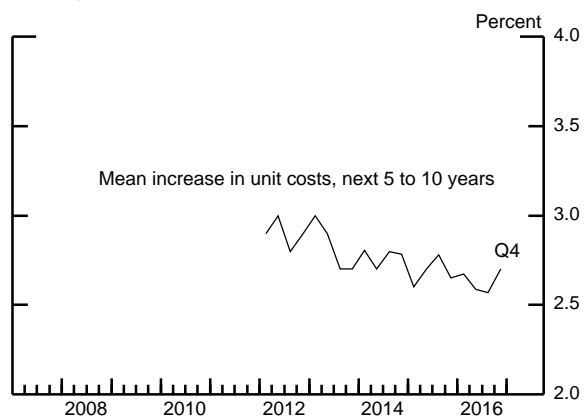
Surveys of Consumers



Note: Federal Reserve Bank of New York (FRBNY) Survey of Consumer Expectations reports expected 12-month inflation rate 3 years from the current survey date. FRBNY data begin in June 2013.

Source: University of Michigan Surveys of Consumers; Federal Reserve Bank of New York Survey of Consumer Expectations.

Survey of Business Inflation Expectations



Note: Survey of businesses in the Sixth Federal Reserve District. Data begin in February 2012.

Source: Federal Reserve Bank of Atlanta.

reflecting both the rise in crude oil prices and an upward adjustment to our forecast of gasoline price margins.

- In contrast, PCE food prices declined in September by somewhat more than we were anticipating. Agricultural prices for both crops and meat have continued to decline, reflecting record U.S. production of corn, soybeans, poultry, and pork. We now expect consumer food prices to decrease 1¼ percent in the second half of this year, nearly 1 percentage point more of a decline than in the September Tealbook.
- Core import prices are estimated to have increased at an annual rate of 1¾ percent in the third quarter, a slight downward revision relative to the September Tealbook but nevertheless the largest increase in over two years. We expect core import prices to rise at a moderate ¾ percent pace through the remainder of the forecast, held down by projected dollar appreciation.
- Recent readings on longer-term inflation expectations have remained relatively stable on balance. The median of inflation expectations over the next 5 to 10 years from the preliminary Michigan survey moved down to 2.4 percent in early October, which, if maintained in the final report, would represent a new historical low. In contrast, expected PCE price inflation over the next 10 years from the Federal Reserve Bank of Philadelphia’s Survey of Professional Forecasters remained at 2 percent in the third quarter. The 3-year-ahead measure of inflation expectations in the Federal Reserve Bank of New York’s Survey of Consumer Expectations was 2.6 percent in September, close to its average over the first half of the year but below its level in preceding years. The TIPS-based measure of 5-year-forward inflation compensation, while still low at 1.6 percent, has moved up since the time of the September Tealbook.

Beyond the near term, we continue to project a gradual rise in inflation toward the FOMC’s objective of 2 percent. Given the cumulative surprise in the inflation data so far this year, we decided to adjust up our forecast of core PCE price inflation in 2017 by 0.1 percentage point to 1.7 percent. Core PCE price inflation is then projected to move up to 1.9 percent by 2019, primarily reflecting the waning restraint from earlier declines in energy and import prices along with a further tightening in resource utilization. With consumer food and energy prices projected to rise roughly in line with core prices after

this year, we expect total PCE price inflation to run close to core inflation over the next few years and to reach 1.9 percent in 2019.

- Since the December 2015 Tealbook, our core inflation projection for 2016 has been revised up 0.3 percentage point, with both market and nonmarket prices coming in higher than we expected. (See the exhibit “Sources of Inflation Forecast Revisions since the December 2015 Tealbook” for additional information on revisions to our inflation forecast this year.)

Hourly labor compensation growth is projected to gradually pick up from 2½ percent this year to 3¼ percent in 2019, as the labor market tightens further. Incoming data led to an upward revision of ¼ percentage point in the rate of compensation growth this year relative to the September Tealbook. Over the medium term, compensation growth is revised down slightly, reflecting the somewhat smaller projected decline in the unemployment rate.

- Average hourly earnings of all employees in September rose a little faster than we had expected, boosting the 12-month change to 2.6 percent. In general, this measure of wage growth has been trending up in recent quarters relative to its 2 percent range from 2012 to late 2014.
- The Federal Reserve Bank of Atlanta’s Wage Growth Tracker, a measure of hourly wage growth that is constructed from Current Population Survey data and that is more pro-cyclical than average hourly earnings, has moved up from around 3 percent to 3½ percent over the past year and a half but remains below pre-recession levels.

THE LONG-TERM OUTLOOK

- The natural rate of unemployment remains at 5.0 percent, and potential GDP increases at about its long-run value of 1.7 percent per year starting in 2020.
- We expect that the Federal Reserve’s holdings of securities will continue to put downward pressure on longer-term interest rates, though to a diminishing extent over time. The SOMA portfolio is projected to have returned to a normal size by the end of 2021.

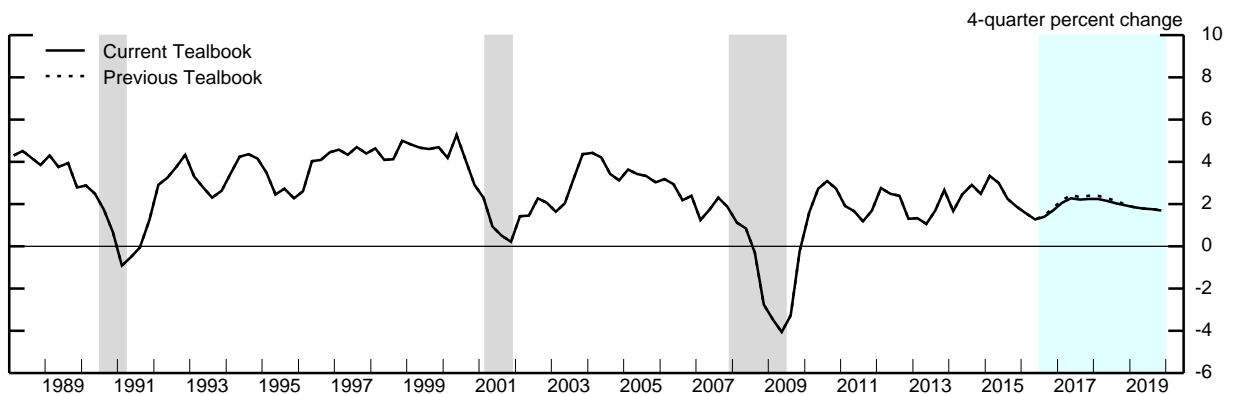
- With output running above its potential and inflation at the Committee’s 2 percent objective, the nominal federal funds rate is about $\frac{1}{2}$ percentage point above its long-run value of $2\frac{3}{4}$ percent in 2020 and 2021 and then moves back toward its long-run value thereafter.
- As monetary policy continues to tighten, real GDP growth steps down to 1.5 percent in 2020 and 1.3 percent in 2021. The unemployment rate is 4.5 percent in 2020 and rises gradually toward its assumed natural rate in subsequent years.
- PCE price inflation reaches the Committee’s long-run objective of 2 percent in 2020.

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

| Measure | 2015 | 2016 | | 2016 | 2017 | 2018 | 2019 |
|--|------------|------------|------------|------------|------------|------------|------------|
| | | H1 | H2 | | | | |
| Real GDP | 1.9 | 1.1 | 2.3 | 1.7 | 2.2 | 1.9 | 1.7 |
| Previous Tealbook | 1.9 | 1.1 | 2.5 | 1.8 | 2.4 | 2.0 | 1.7 |
| Final sales | 2.0 | 1.9 | 2.1 | 2.0 | 2.2 | 1.9 | 1.7 |
| Previous Tealbook | 2.0 | 1.9 | 2.3 | 2.1 | 2.3 | 2.0 | 1.7 |
| Personal consumption expenditures | 2.6 | 2.9 | 2.2 | 2.6 | 2.5 | 2.4 | 2.4 |
| Previous Tealbook | 2.6 | 3.0 | 2.6 | 2.8 | 2.7 | 2.5 | 2.3 |
| Residential investment | 13.1 | -.3 | -3.1 | -1.7 | 7.7 | 4.8 | 2.4 |
| Previous Tealbook | 13.1 | -.3 | -3.1 | -1.7 | 7.5 | 4.6 | 2.4 |
| Nonresidential structures | -8.8 | -1.0 | 3.5 | 1.2 | .9 | -.2 | -1.0 |
| Previous Tealbook | -8.8 | -1.0 | 2.5 | .7 | .1 | -.3 | -1.1 |
| Equipment and intangibles | 3.8 | -1.3 | 3.7 | 1.2 | 3.1 | 2.8 | 1.9 |
| Previous Tealbook | 3.8 | -2.0 | 4.0 | 1.0 | 3.4 | 2.9 | 1.9 |
| Federal purchases | 1.7 | -.9 | 2.9 | 1.0 | 1.6 | -.5 | -.4 |
| Previous Tealbook | 1.7 | -.9 | 3.0 | 1.0 | 1.6 | -.5 | -.4 |
| State and local purchases | 2.5 | .5 | .7 | .6 | 1.4 | 1.2 | 1.2 |
| Previous Tealbook | 2.5 | .6 | 1.7 | 1.2 | 1.4 | 1.2 | 1.2 |
| Exports | -2.2 | .5 | 4.0 | 2.3 | 1.5 | 2.8 | 2.7 |
| Previous Tealbook | -2.2 | .5 | 2.0 | 1.2 | 2.0 | 3.1 | 2.8 |
| Imports | 2.5 | -.2 | 3.5 | 1.6 | 4.2 | 4.2 | 4.0 |
| Previous Tealbook | 2.5 | -.2 | 3.5 | 1.6 | 4.4 | 4.1 | 4.0 |
| Contributions to change in real GDP (percentage points) | | | | | | | |
| Inventory change | -.1 | -.8 | .2 | -.3 | .0 | .0 | .0 |
| Previous Tealbook | -.1 | -.8 | .3 | -.3 | .1 | .0 | .0 |
| Net exports | -.7 | .1 | .0 | .0 | -.4 | -.3 | -.3 |
| Previous Tealbook | -.7 | .1 | -.3 | -.1 | -.4 | -.2 | -.3 |

Real GDP

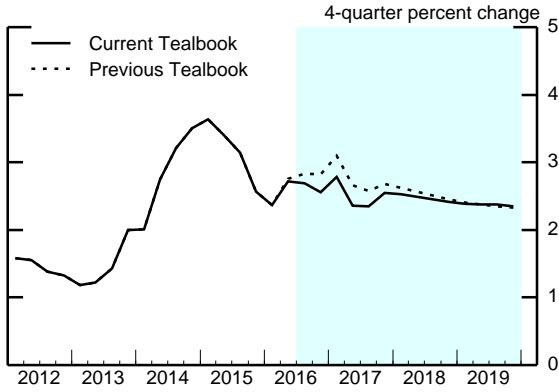


Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

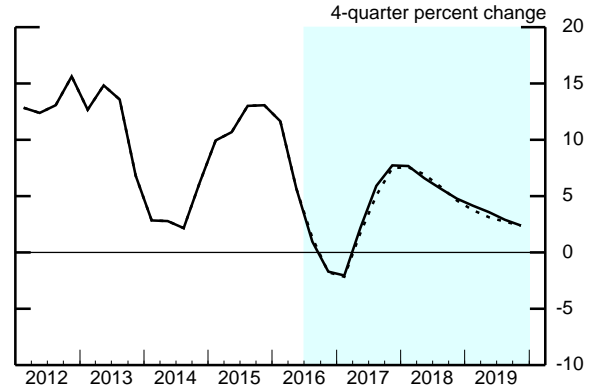
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Components of Final Demand

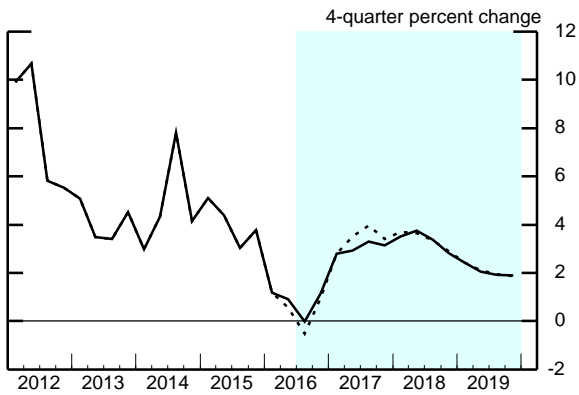
Personal Consumption Expenditures



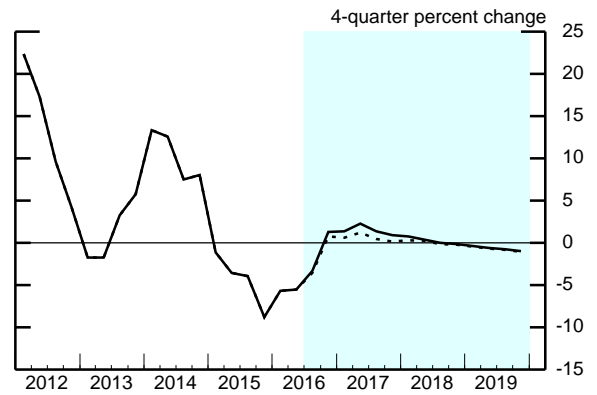
Residential Investment



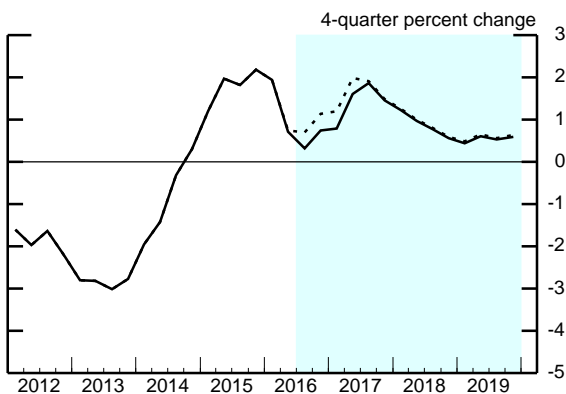
Equipment and Intangibles



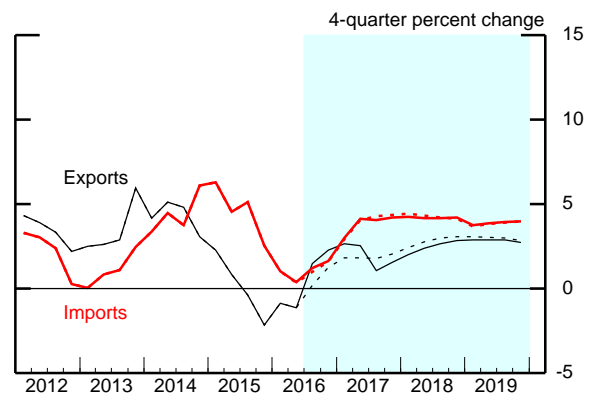
Nonresidential Structures



Government Consumption and Investment



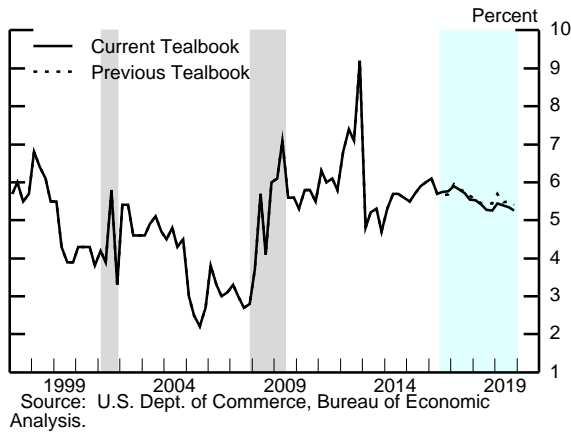
Exports and Imports



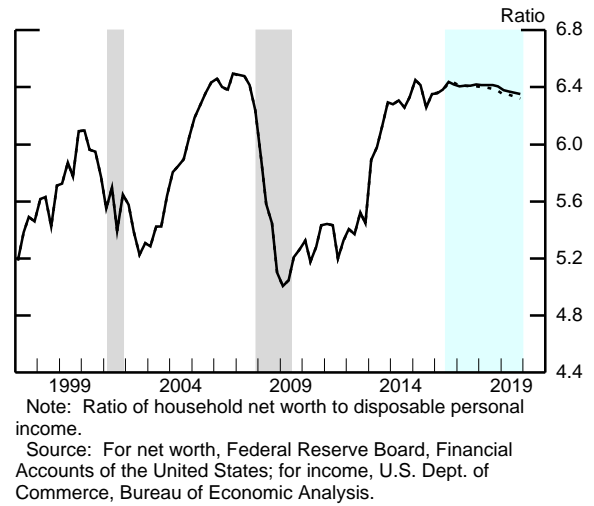
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Aspects of the Medium-Term Projection

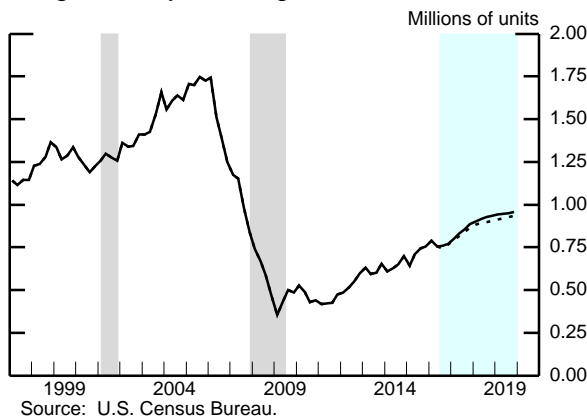
Personal Saving Rate



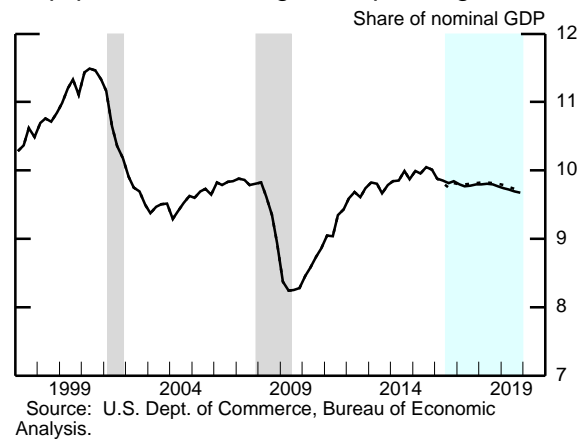
Wealth-to-Income Ratio



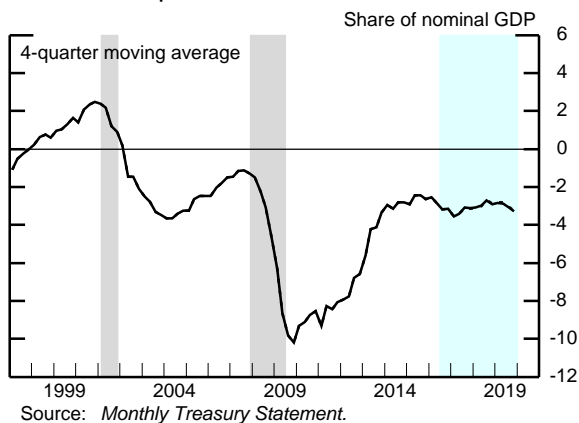
Single-Family Housing Starts



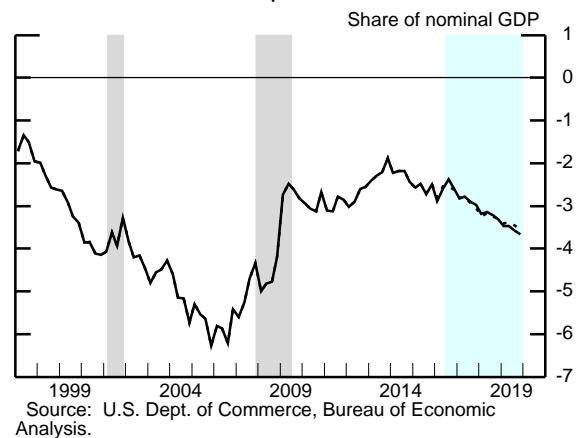
Equipment and Intangibles Spending



Federal Surplus/Deficit



Current Account Surplus/Deficit



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

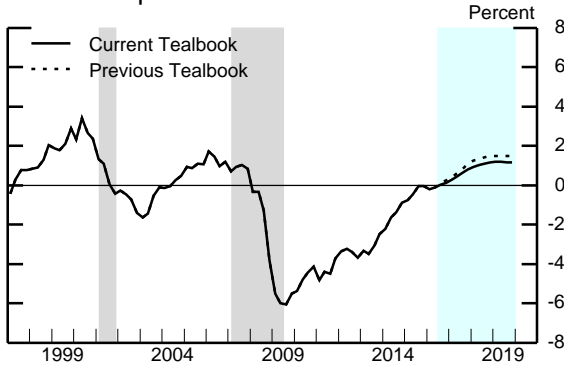
Decomposition of Potential GDP
(Percent change, Q4 to Q4, except as noted)

| Measure | 1974-95 | 1996-2000 | 2001-07 | 2008-10 | 2011-15 | 2016 | 2017 | 2018 | 2019 |
|--|---------|-----------|---------|---------|---------|------|------|------|------|
| Potential real GDP | 3.1 | 3.4 | 2.6 | 1.6 | 1.1 | 1.5 | 1.5 | 1.6 | 1.7 |
| Previous Tealbook | 3.1 | 3.4 | 2.6 | 1.6 | 1.1 | 1.5 | 1.5 | 1.6 | 1.7 |
| <i>Selected contributions¹</i> | | | | | | | | | |
| Structural labor productivity ² | 1.6 | 2.9 | 2.8 | 1.4 | .8 | 1.0 | 1.1 | 1.1 | 1.2 |
| Previous Tealbook | 1.6 | 2.9 | 2.8 | 1.4 | .8 | 1.0 | 1.1 | 1.1 | 1.2 |
| Capital deepening | .7 | 1.5 | 1.0 | .3 | .5 | .5 | .5 | .4 | .4 |
| Multifactor productivity | .7 | 1.0 | 1.5 | .9 | .0 | .3 | .4 | .5 | .7 |
| Structural hours | 1.6 | 1.2 | .8 | .1 | .6 | .6 | .4 | .3 | .3 |
| Previous Tealbook | 1.6 | 1.2 | .8 | .1 | .6 | .5 | .4 | .3 | .3 |
| Labor force participation | .4 | -.1 | -.2 | -.5 | -.6 | -.5 | -.5 | -.5 | -.5 |
| Previous Tealbook | .4 | -.1 | -.2 | -.5 | -.6 | -.5 | -.5 | -.5 | -.5 |
| Memo: | | | | | | | | | |
| GDP gap ³ | -1.9 | 2.4 | .8 | -4.2 | .0 | .1 | .8 | 1.2 | 1.2 |
| Previous Tealbook | -1.9 | 2.4 | .8 | -4.2 | .0 | .2 | 1.1 | 1.5 | 1.5 |

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.

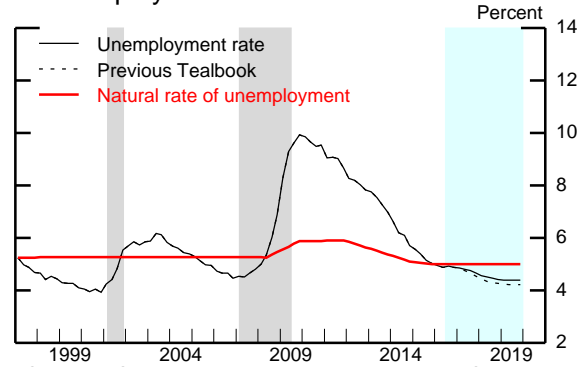
1. Percentage points.
2. Total business sector.
3. Percent difference between actual and potential GDP in the final quarter of the period indicated. A negative number indicates that the economy is operating below potential.

GDP Gap



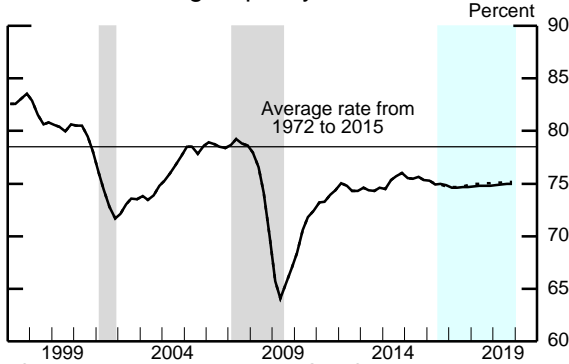
Note: The GDP gap is the percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.
Source: U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

Unemployment Rate



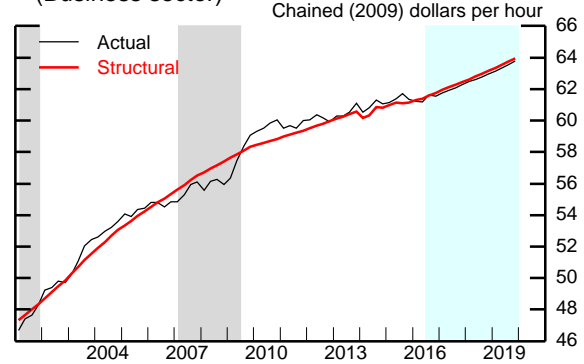
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

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 | 2015 | 2016 | | 2016 | 2017 | 2018 | 2019 |
|---|------|------|------|------|------|------|------|
| | | H1 | H2 | | | | |
| Output per hour, business ¹ | .5 | -.5 | 1.3 | .4 | 1.1 | 1.1 | 1.2 |
| Previous Tealbook | .5 | -.8 | 1.6 | .4 | 1.1 | 1.1 | 1.2 |
| Nonfarm payroll employment ² | 229 | 171 | 183 | 177 | 168 | 132 | 100 |
| Previous Tealbook | 229 | 171 | 192 | 182 | 186 | 145 | 107 |
| Private employment ² | 221 | 155 | 169 | 162 | 156 | 120 | 88 |
| Previous Tealbook | 221 | 155 | 169 | 162 | 174 | 133 | 95 |
| Labor force participation rate ³ | 62.5 | 62.7 | 62.8 | 62.8 | 62.6 | 62.2 | 61.9 |
| Previous Tealbook | 62.5 | 62.7 | 62.7 | 62.7 | 62.5 | 62.2 | 61.9 |
| Civilian unemployment rate ³ | 5.0 | 4.9 | 4.9 | 4.9 | 4.6 | 4.4 | 4.4 |
| Previous Tealbook | 5.0 | 4.9 | 4.9 | 4.9 | 4.5 | 4.3 | 4.2 |

- 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

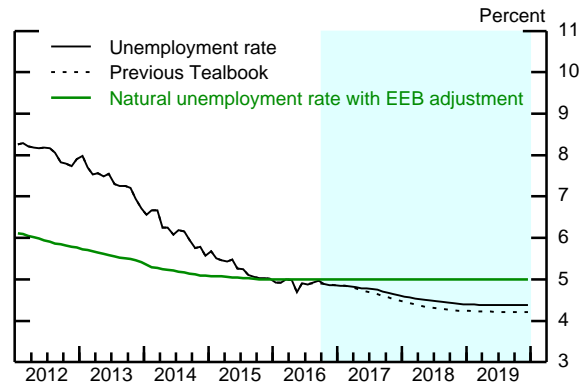
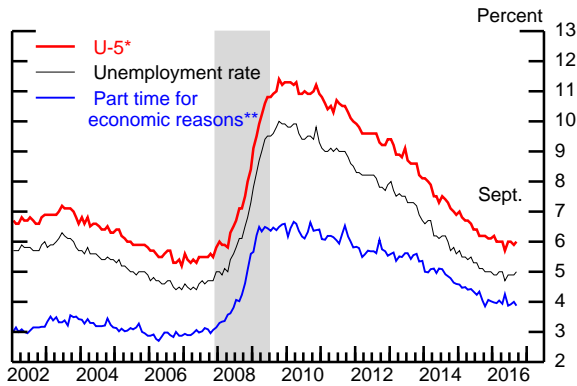
(Percent change at annual rate from final quarter of preceding period)

| Measure | 2015 | 2016 | | 2016 | 2017 | 2018 | 2019 |
|---|-------|-------|------|------|------|------|------|
| | | H1 | H2 | | | | |
| PCE chain-weighted price index | .4 | 1.1 | 1.8 | 1.5 | 1.7 | 1.8 | 1.9 |
| Previous Tealbook | .4 | 1.1 | 1.2 | 1.2 | 1.6 | 1.8 | 1.9 |
| Food and beverages | .3 | -1.7 | -1.2 | -1.5 | 1.7 | 2.2 | 2.2 |
| Previous Tealbook | .3 | -1.7 | -.3 | -1.0 | 1.7 | 2.2 | 2.2 |
| Energy | -15.8 | -10.5 | 13.2 | .7 | 2.2 | 1.5 | 1.2 |
| Previous Tealbook | -15.8 | -10.5 | 2.2 | -4.3 | 2.6 | 2.0 | 1.7 |
| Excluding food and energy | 1.4 | 1.9 | 1.6 | 1.7 | 1.7 | 1.8 | 1.9 |
| Previous Tealbook | 1.4 | 1.9 | 1.3 | 1.6 | 1.6 | 1.8 | 1.9 |
| Prices of core goods imports ¹ | -3.3 | -.9 | .9 | .0 | .7 | .8 | .7 |
| Previous Tealbook | -3.3 | -.9 | 1.5 | .3 | .8 | .8 | .8 |

- 1. Core goods imports exclude computers, semiconductors, oil, and natural gas.
- Source: U.S. Department of Commerce, Bureau of Economic Analysis.

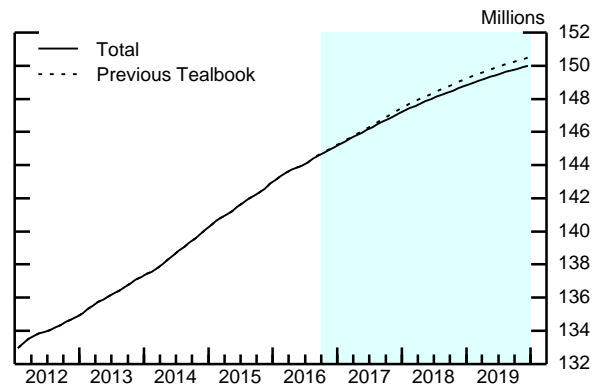
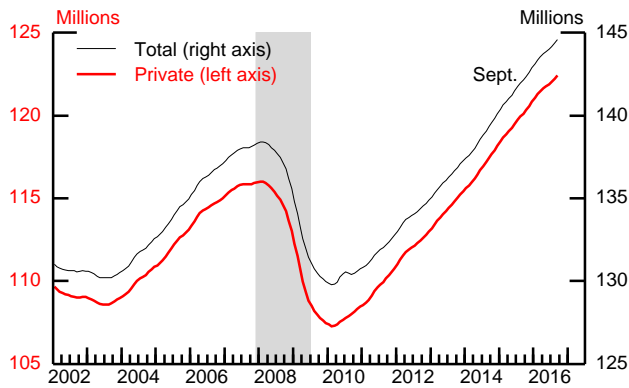
Labor Market Developments and Outlook (1)

Measures of Labor Underutilization



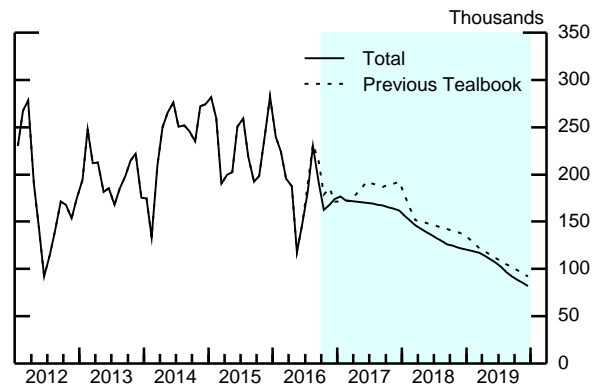
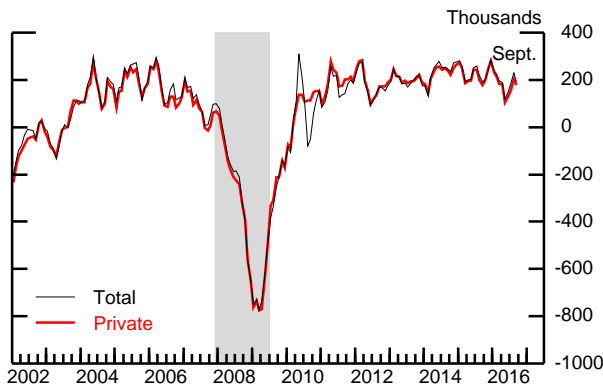
* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.
 ** Percent of Current Population Survey employment.
 EEB Extended and emergency unemployment benefits.
 Source: U.S. Department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

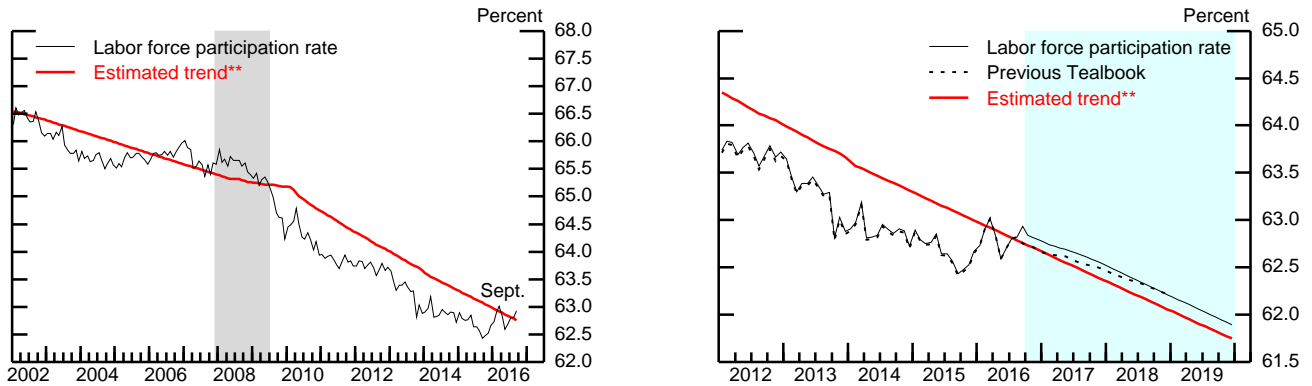


* 3-month moving averages.
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

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*

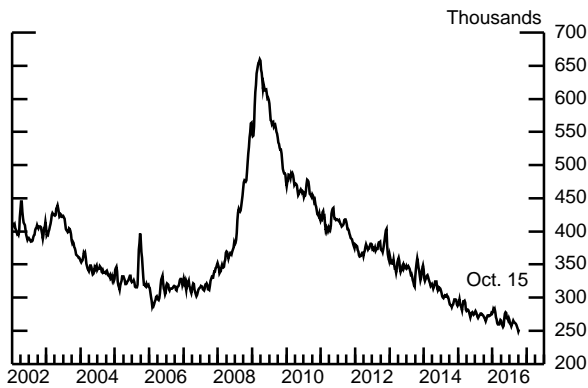


* Published data adjusted by staff to account for changes in population weights.

** Includes staff estimate of the effect of extended and emergency unemployment benefits.

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

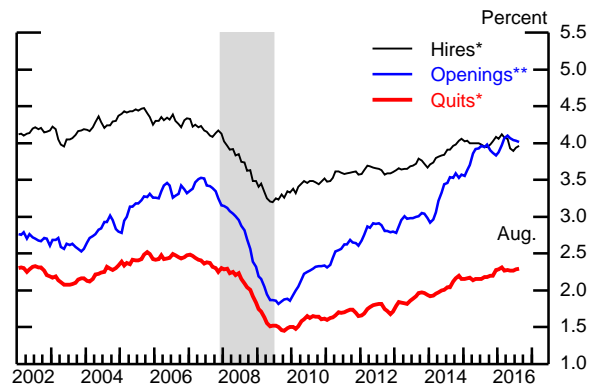
Initial Unemployment Insurance Claims*



* 4-week moving average.

Source: U.S. Department of Labor, Employment and Training Administration.

Private Hires, Quits, and Job Openings

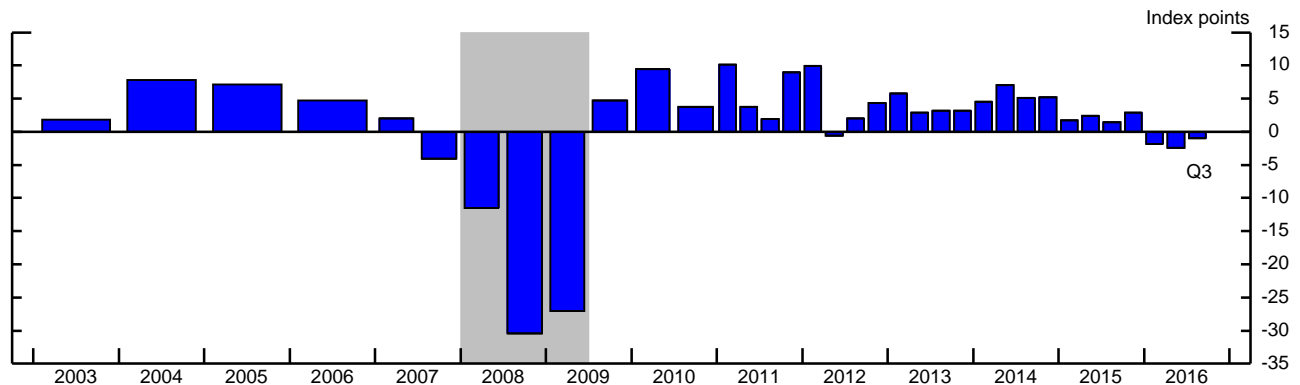


* Percent of private nonfarm payroll employment, 3-month moving average.

** 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



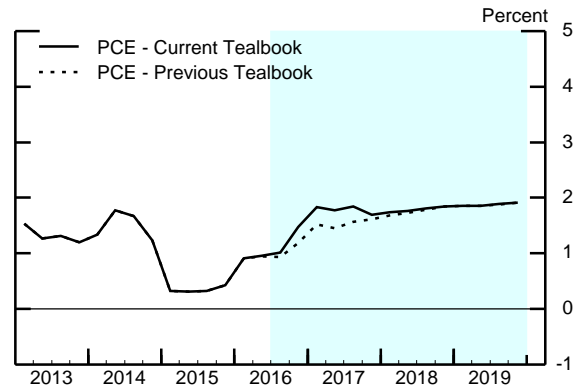
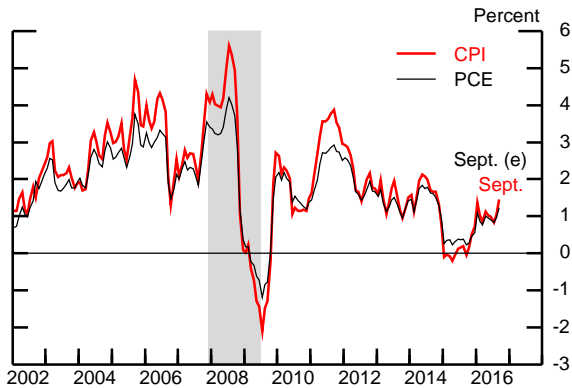
Source: Labor market conditions index estimated by staff.

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)

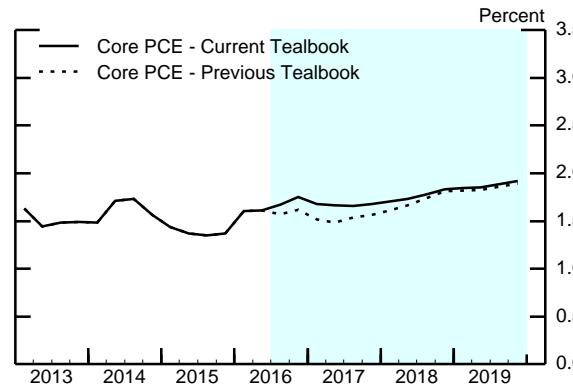
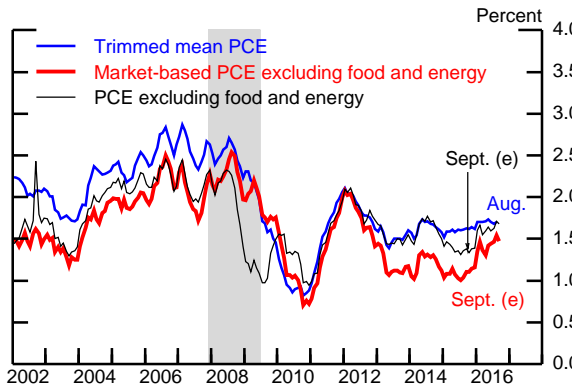
(Percent change from year-earlier period)

Headline Consumer Price Inflation



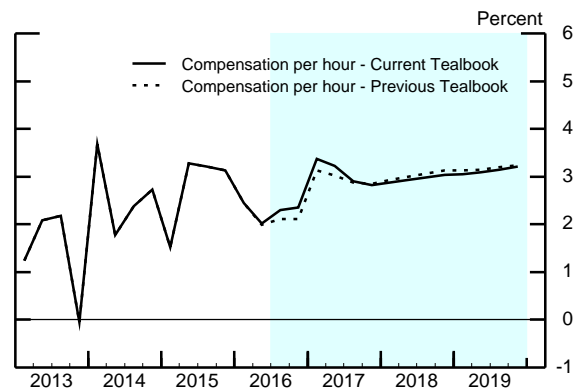
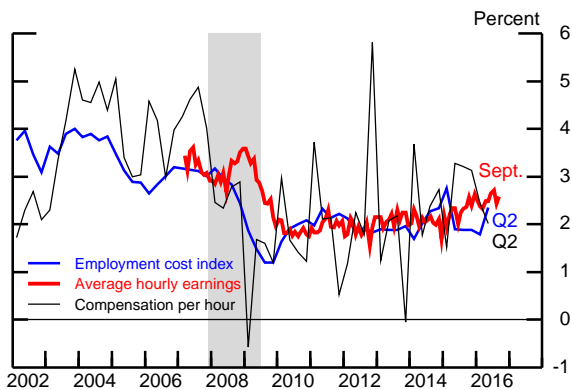
Note: PCE prices from July to September 2016 are staff estimates (e).
Source: For CPI, U.S. Department of Labor, Bureau of Labor Statistics; for PCE, U.S. Department of Commerce, Bureau of Economic Analysis.

Measures of Underlying PCE Price Inflation



Note: Core PCE prices from July to September 2016 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



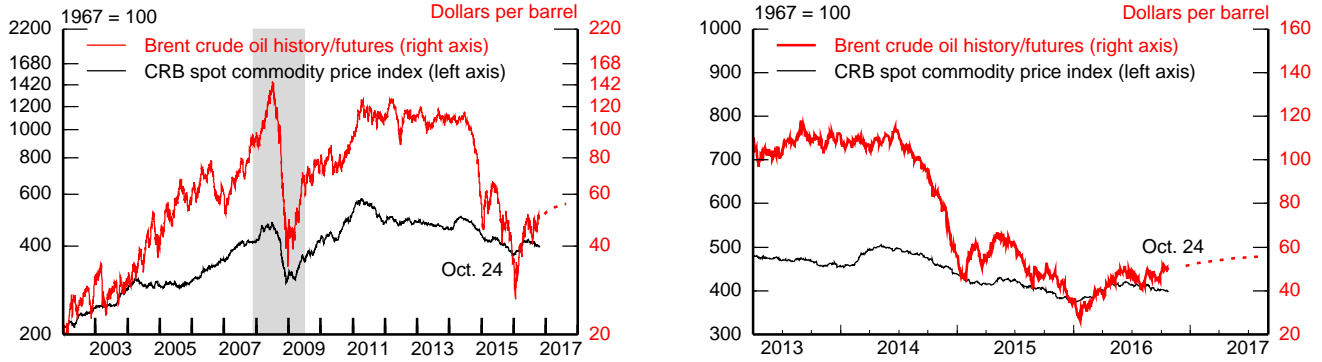
Note: Compensation per hour is for the business sector. Average hourly earnings are for the private nonfarm sector. The employment cost index is for the private sector.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

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)

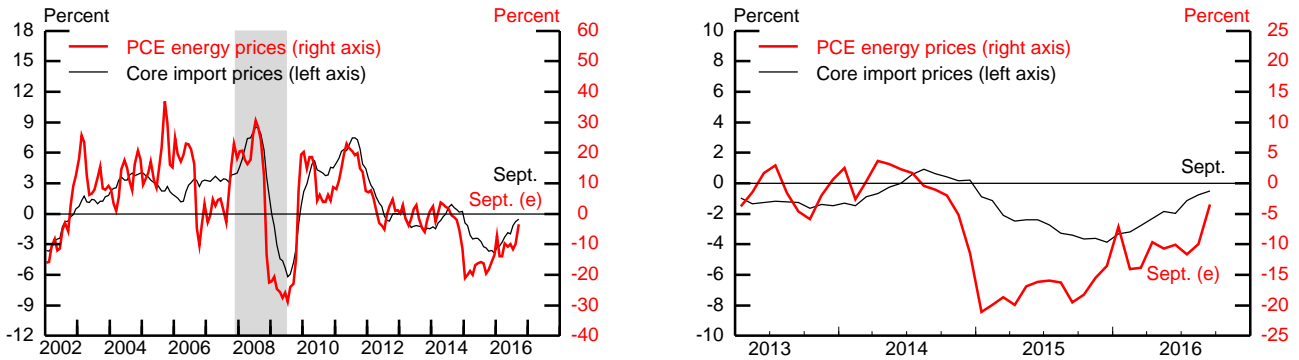
(Percent change from year-earlier period, except as noted)

Commodity and Oil Price Levels



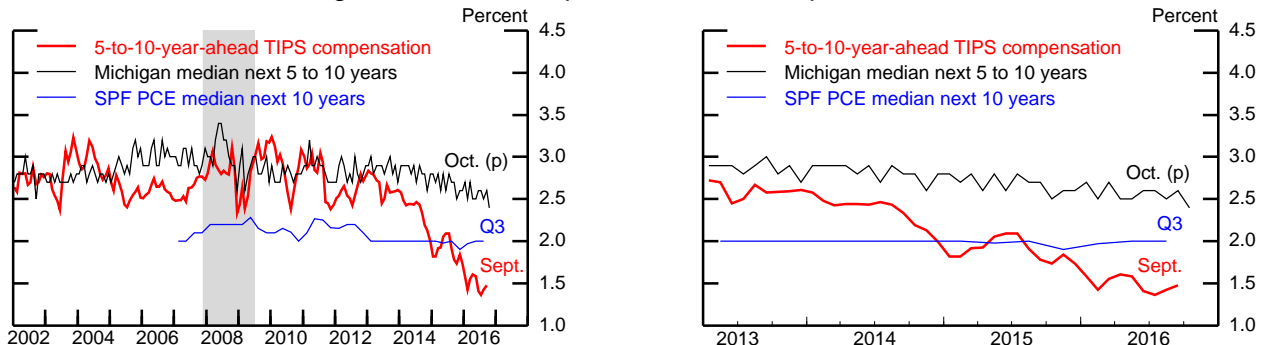
Note: Futures prices (dotted lines) are the latest observations on monthly futures contracts.
 Source: For oil prices, U.S. Department of Energy, Energy Information Agency; for commodity prices, Commodity Research Bureau (CRB).

Energy and Import Price Inflation



(e) Estimate.
 Source: For core import prices, U.S. Dept. of Labor, Bureau of Labor Statistics; for PCE, U.S. Dept. of Commerce, Bureau of Economic Analysis.

Long-Term Inflation Expectations and Compensation



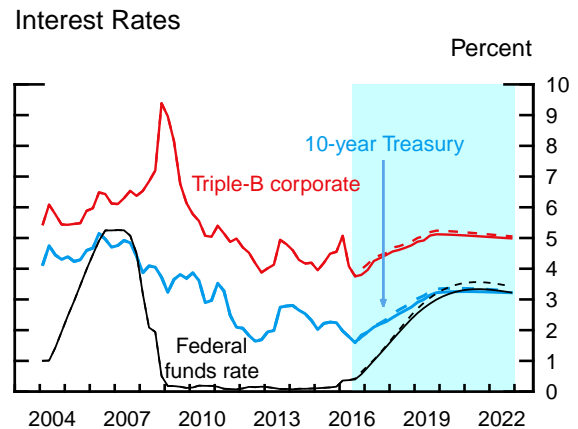
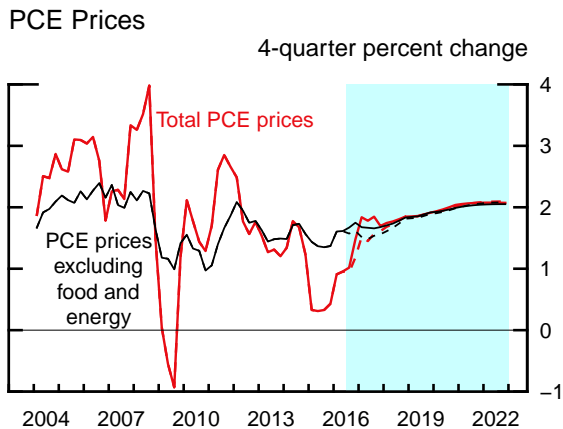
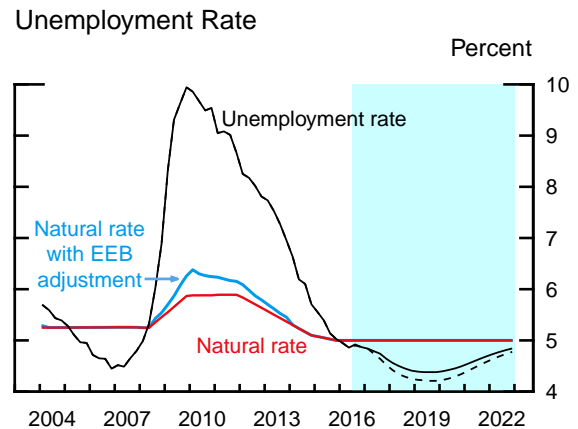
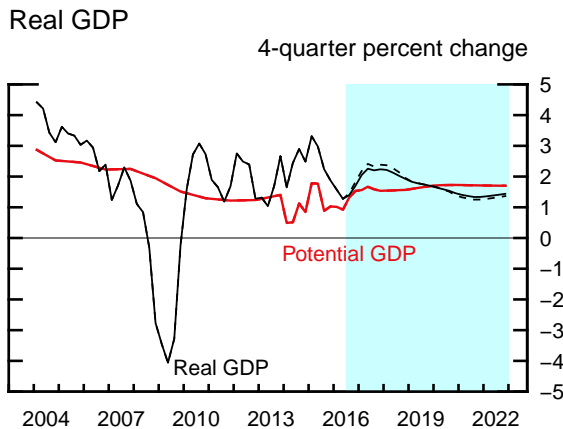
Note: Based on a comparison of an estimated TIPS (Treasury Inflation-Protected Securities) yield curve with an estimated nominal off-the-run Treasury yield curve, with an adjustment for the indexation-lag effect.
 (p) Preliminary.
 SPF Survey of Professional Forecasters.
 Source: For Michigan, University of Michigan Surveys of Consumers; for SPF, Federal Reserve Bank of Philadelphia; for TIPS, Federal Reserve Board staff calculations.

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

The Long-Term Outlook
(Percent change, Q4 to Q4, except as noted)

| Measure | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Longer run |
|---|------|------|------|------|------|------|------------|
| Real GDP | 1.7 | 2.2 | 1.9 | 1.7 | 1.5 | 1.3 | 1.7 |
| Previous Tealbook | 1.8 | 2.4 | 2.0 | 1.7 | 1.4 | 1.3 | 1.7 |
| Civilian unemployment rate ¹ | 4.9 | 4.6 | 4.4 | 4.4 | 4.5 | 4.7 | 5.0 |
| Previous Tealbook | 4.9 | 4.5 | 4.3 | 4.2 | 4.3 | 4.6 | 5.0 |
| PCE prices, total | 1.5 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.0 |
| Previous Tealbook | 1.2 | 1.6 | 1.8 | 1.9 | 2.0 | 2.1 | 2.0 |
| Core PCE prices | 1.7 | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 | 2.0 |
| Previous Tealbook | 1.6 | 1.6 | 1.8 | 1.9 | 2.0 | 2.1 | 2.0 |
| Federal funds rate ¹ | .56 | 1.46 | 2.36 | 2.99 | 3.29 | 3.33 | 2.75 |
| Previous Tealbook | .64 | 1.50 | 2.49 | 3.19 | 3.52 | 3.55 | 2.75 |
| 10-year Treasury yield ¹ | 1.8 | 2.3 | 2.8 | 3.2 | 3.3 | 3.2 | 3.2 |
| Previous Tealbook | 1.8 | 2.4 | 2.9 | 3.3 | 3.4 | 3.3 | 3.2 |

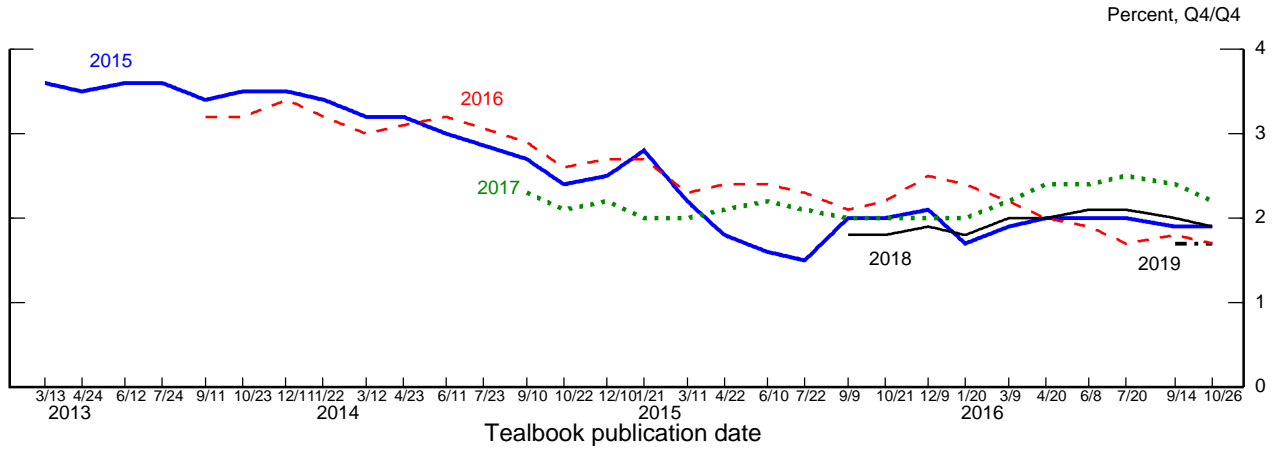
1. Percent, average for the final quarter of the period.



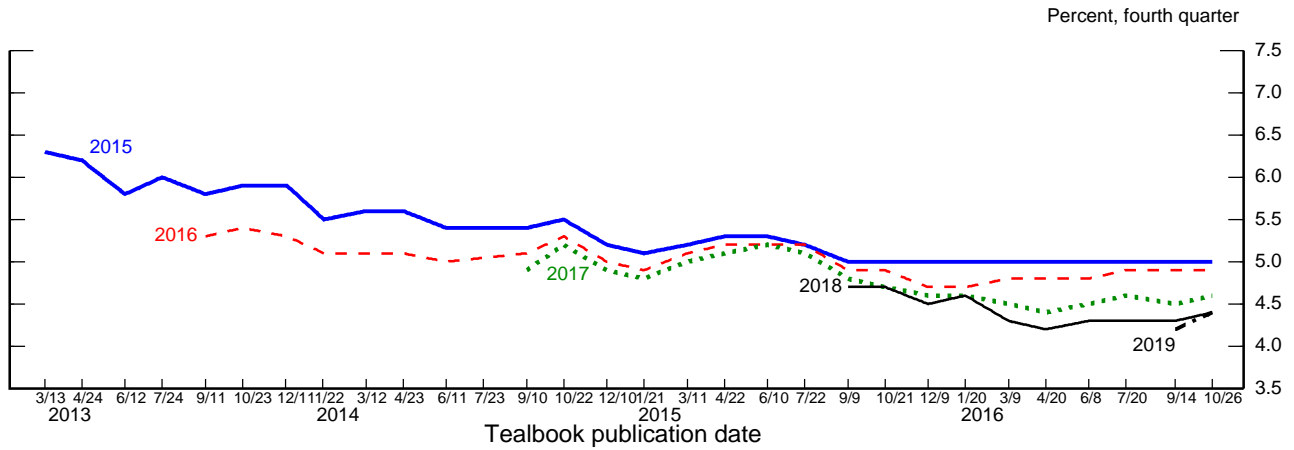
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

Evolution of the Staff Forecast

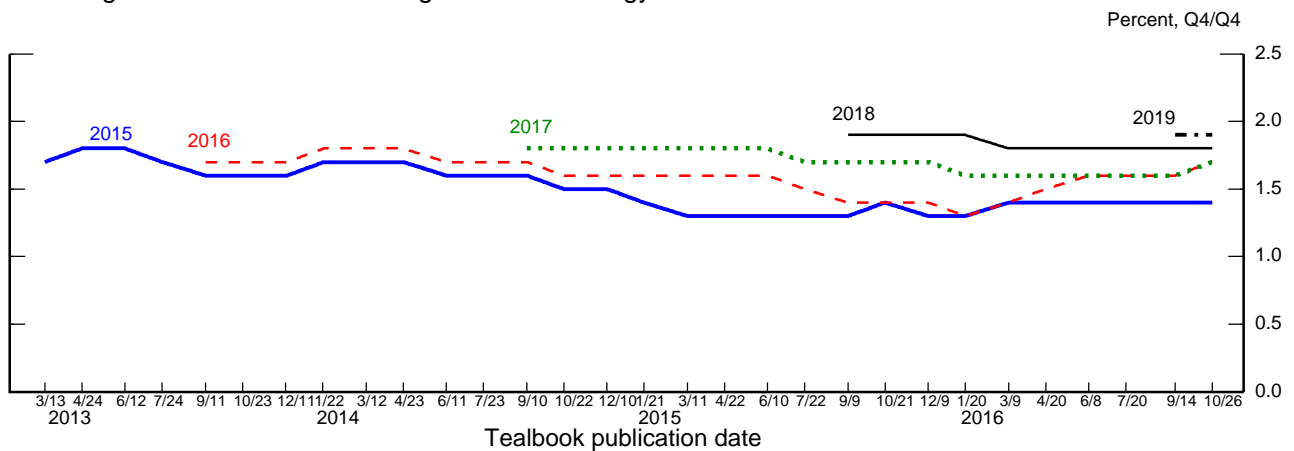
Change in Real GDP



Unemployment Rate



Change in PCE Prices excluding Food and Energy



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International Economic Developments and Outlook

Recent data point to a bounceback in foreign real GDP growth to an estimated 2½ percent in the third quarter, up from just below 1 percent in the second. Indicators in Canada and Mexico, where the second-quarter dip was concentrated, strengthened notably. Foreign growth should remain at about this near-trend pace over the remainder of the forecast period, supported by continuing highly accommodative monetary policies in the advanced foreign economies (AFEs) and a shallow recovery in South America. The overall foreign outlook is slightly weaker in the current quarter and the next, relative to the September Tealbook, as a result of softer data in some emerging market economies (EMEs) as well as markdowns in Canada and the United Kingdom.

Given the mild pace of economic activity, inflation in most AFEs is expected to remain below central bank targets. The United Kingdom is a prominent exception, where the sharp depreciation of the pound has already begun to pass through into consumer prices and should push inflation well above the Bank of England's (BOE's) target in 2017. More broadly, the recent rise in oil prices will boost AFE inflation in the current quarter and next. Thereafter, the whittling away of resource slack should keep AFE inflation at just above 1½ percent for the remainder of the forecast period. In the EMEs, inflation has also been lifted by higher energy prices, notably in Mexico, and by the fading effects of previous declines in food prices in China. We expect EME inflation to settle at around 3 percent.

With inflation low and growth subdued, we continue to assume that monetary policy in the AFEs and some emerging Asian economies will remain highly accommodative through 2019. Such stances have raised some concerns in AFEs about the limits to asset purchases and the costs to financial sectors of very flat yield curves. To address these concerns and in recognition of low inflation and inflation expectations, the Bank of Japan (BOJ) announced a number of new policies at its September meeting, including a target for 10-year government bond yields and its intention to overshoot its 2 percent inflation target. (For further details, see the box “The Bank of Japan's New Policy Framework” in this section of the Tealbook.)

Over the intermeeting period, we saw renewed focus on risks emanating from Europe. First, harder negotiating stances taken by British and European officials on

The Bank of Japan's New Policy Framework

At its September meeting, the Bank of Japan (BOJ) introduced “Quantitative and Qualitative Monetary Easing (QQE) with Yield Curve Control.” Under this new framework, the BOJ commits to overshooting its inflation target by expanding the monetary base until total inflation exceeds 2 percent for some time. In addition, the BOJ intends to control the yield curve by targeting short- and long-term interest rates. The BOJ introduced a new target for the yield on 10-year Japanese government bonds (JGBs) at “around zero percent,” which it indicated could be adjusted at future policy meetings, and kept the deposit rate at negative 0.1 percent. To facilitate yield curve control, the BOJ introduced two new tools: long-term discount window credit for a period of up to 10 years and fixed-rate purchase operations that allow the BOJ to buy unlimited amounts of JGBs at a specified rate. In addition, the BOJ removed its target for the average remaining maturity of its JGB purchases (which had been “about 7 to 12 years”), and Governor Kuroda indicated flexibility in the size of total future purchases. In its monthly purchase plan for October, the BOJ slightly reduced purchases of JGBs with maturities over 5 years while leaving unchanged purchases of shorter-term JGBs. This shortening of average maturities and reduction in total purchases was likely an attempt to reduce downward pressure on the long end of the yield curve.

This new policy is the most recent of several adjustments to the BOJ's monetary policy framework since Prime Minister Abe was elected in December 2012 with a promise to end deflation. Figure 1 shows that inflation expectations and actual inflation rose after the BOJ announced an inflation target of 2 percent in January 2013 and initiated QQE in April 2013. However, inflation fell back, in part because of lower oil prices, and inflation expectations moved lower as well despite an expansion of asset purchases under QQE in October 2014. The introduction of a negative policy rate in January 2016 contributed to a further flattening of the yield curve, raising concerns that the reduced profitability of banks, insurance companies, and pension funds could impair the transmission of monetary stimulus (figure 2).

The new framework has several potentially attractive features. First, it may allow the BOJ to keep long-term yields very low with a smaller overall quantity of asset purchases and also to shift the composition of its purchases toward shorter-maturity assets; these elements are desirable given ongoing concerns that the scale of BOJ purchases may exhaust the supply of eligible long-maturity JGBs. Second, the yield curve control may induce a somewhat more upward-sloping yielding curve while still delivering a commensurate degree of economic stimulus and thus pose less risk to the health of the financial sector. Third, the overshooting commitment may succeed in boosting inflation expectations through forward-looking channels, which could help raise inflation directly (to the extent the Phillips curve depends on inflation expectations) and indirectly through the stimulative effect of lower real interest rates on activity.

The BOJ's new framework also presents challenges. By targeting the 10-year bond yield, the BOJ is giving up control over the size of its balance sheet. If there is sharp upward pressure on long-term yields—for example, if market participants anticipate a change in the BOJ's target rate—the BOJ could be forced to purchase long-term JGBs at a much more rapid rate. In contrast, if the recent downward pressure on 10-year yields grows, the BOJ may have to slow purchases well below its current pace, in which case it will need to communicate clearly so that this action is not misinterpreted as a removal of stimulus. Finally, there is uncertainty over the BOJ's commitment to overshooting its target and how long it will maintain highly expansionary policy even as inflation rises.

Looking ahead, we expect the BOJ to return to a wait-and-see approach as it assesses the effect on inflation expectations of the overshooting commitment and of dissipating temporary factors that have held inflation down. As such, we see the BOJ keeping short-term interest rates at negative 0.1 percent for the foreseeable future. We also expect the BOJ to maintain the 10-year JGB yield at 0 percent by shifting its JGB purchases to shorter maturities and potentially slowing or quickening its total purchases, as needed. Although we project that inflation will rise to only 1¼ percent during the forecast period, we expect the BOJ to forgo substantial further easing and to instead maintain its current highly accommodative stance and reiterate its aspirations for higher inflation.

All told, the market response has been minimal, consistent with little change in the stance of BOJ policy. The yen has depreciated modestly, market-based inflation expectations have barely moved, and markets expect only slight further cuts to the deposit rate. Although 10-year bond yields are little changed at around negative 5 basis points, actual and implied volatility of 10-year yields have declined notably, suggesting some confidence in the BOJ’s ability to control long-term bond yields. The overall muted response of markets to the new framework may reflect skepticism over the BOJ’s ability to raise inflation in the absence of substantial new easing measures as well as doubts about the credibility of the BOJ’s commitment to overshoot its 2 percent inflation target.

Int'l Econ Devel & Outlook

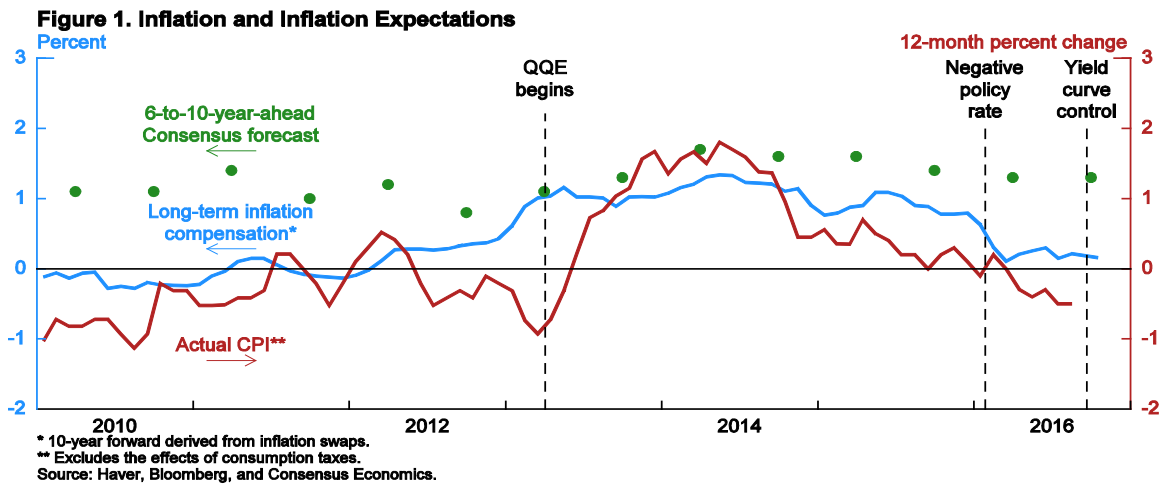
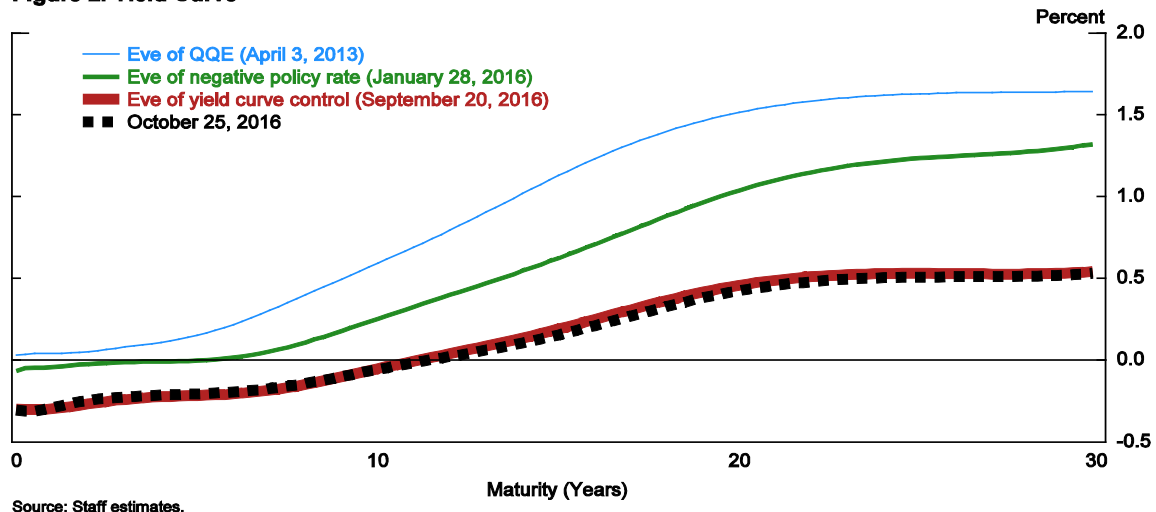


Figure 2. Yield Curve



Brexit point to rockier talks and, ultimately, less economic integration in any U.K.–EU deal. As such, we have lowered the outlook for the United Kingdom slightly despite a sharp depreciation of the pound. Second, attention has turned again to the low profitability and poor capitalization of Europe’s banking sector, which increases the risk of restraining the economic recovery and leaves institutions vulnerable to shocks. A failure of a large and systemically important European bank could trigger financial distress with pronounced international spillovers, a risk we explore in the “Banking Crisis in Europe” scenario in the Risks and Uncertainty section.

Other risks to the global economy that we have highlighted in the past also remain a source of concern. Although Chinese growth has been resilient, risks to financial stability remain significant. And, as discussed in the “Stronger Dollar and EME Turbulence” scenario in the Risks and Uncertainty section, U.S. monetary policy tightening could still prove destabilizing for EMEs, weighing on global growth and leading to a more sizable appreciation of the dollar than in our baseline projection.

ADVANCED FOREIGN ECONOMIES

- **United Kingdom.** Recent indicators suggest that U.K. growth slowed from 2.7 percent in the second quarter to just above 1½ percent in the third quarter amid signs of falling construction output. In recent weeks, U.K. and European officials adopted more-confrontational stances regarding the future U.K.–EU relationship. Of note, Prime Minister May suggested that restoring U.K. sovereignty would be a higher priority than maintaining full access to the EU single market. As a result, the likelihood of a “harder” Brexit—involving a bumpier transition in the near term and less economic integration over the long term—increased. The associated drag on growth will only be partly offset by the weaker pound and slightly less contractionary fiscal policy. As a result, we marked down the growth outlook a touch for most of the forecast period. Thus, growth slows further to 1 percent in the fourth quarter before picking up to 1¾ percent by late 2018, supported by accommodative monetary policy, a depreciated currency, and a gradual resolution of uncertainty about the Brexit process. The depreciation of the pound has led to a pickup in inflation, which we expect to peak at 3½ percent in the current quarter. The BOE has said it will look through this surge, and we assume it will keep its policy rate unchanged through the forecast period and purchase a total of £70 billion in assets, as announced in August.

- ***Euro Area.*** Data on industrial production through August and other more-recent indicators suggest that real GDP growth remained near 1¼ percent in the third quarter. Going forward, we continue to project that accommodative monetary policy and slightly expansionary fiscal policy will support a gradual pickup in growth. However, we also expect deep-seated weaknesses in the banking sector and elevated anti-EU sentiment to trigger bouts of uncertainty and volatility, which will likely weigh on the recovery. All told, we see GDP growth increasing to 1¾ percent in 2017 and remaining near this pace through 2019. With inflation lingering near 1½ percent throughout the forecast period, we believe that the European Central Bank will continue to purchase assets through the end of 2017—beginning to taper a few months before that time—and will keep policy rates at their current levels until late 2019.
- ***Canada.*** Monthly GDP for July and oil production through August suggest that real GDP grew 3½ percent in the third quarter after contracting 1.6 percent the quarter before. Going forward, however, survey indicators, such as September’s manufacturing PMI, point to a moderation in growth. Thus, we project GDP growth to average a bit more than 2 percent through mid-2017, supported by a weak Canadian dollar and accommodative monetary and fiscal policies, before settling at its potential pace of 1¾ percent by mid-2018. This projection is slightly weaker than in the September Tealbook, as the government enacted new macroprudential measures to cool an overheated housing market, including more restrictive qualifications for mortgage insurance (for high loan-to-value, or LTV, borrowers) and for portfolio insurance (for banks with low-LTV mortgages) as well as the closure of a tax loophole for foreign buyers. Even so, with the output gap gradually closing, we continue to anticipate that the Bank of Canada (BOC) will begin increasing its policy rate in late 2017.

As part of its agreement with the government, reviewed every five years, to renew its 2 percent inflation target for headline inflation, the BOC also replaced its operational measure of core inflation with three new measures. These measures are a trimmed mean, a “weighted median,” and a “common component” (derived from a factor model), which are similar to the measures produced by the Dallas, Cleveland, and New York Federal Reserve Banks, respectively. The BOC felt that its old core measure was no longer an accurate measure of underlying

inflation and thought it was more appropriate to look at several measures to gauge inflationary pressures.

- **Japan.** As in the previous Tealbook, we estimate real GDP growth edged up to 1 percent in the third quarter as the economy recovered from the disruptions caused by an earthquake in April. With the manufacturing PMI modestly expansionary, we expect growth to slow to $\frac{3}{4}$ percent in the fourth quarter and to remain near that pace over the next couple of years. As noted earlier, the BOJ introduced a new policy framework at its September meeting. As explained further in the box in this section of the Tealbook, our assessment is that this decision did not fundamentally alter the prospective path of monetary policy. We assume the BOJ will purchase assets and keep its policy rates at their current levels through the end of the forecast period. Inflation is projected to increase from negative $\frac{1}{2}$ percent in the third quarter to $\frac{1}{2}$ percent in 2017, reflecting higher oil prices and a weaker yen, and to reach $\frac{1}{4}$ percent by 2019. Our outlooks for both growth and inflation are little changed.

EMERGING MARKET ECONOMIES

- **China.** Real GDP growth edged down to 6.8 percent in the third quarter, as we expected, after expanding at a 7.1 percent rate in the second. In the face of rapid credit growth and rising house prices, the authorities are increasingly focusing less on macroeconomic stimulus and more on addressing financial stability concerns. These concerns, which have been highlighted in recent speeches by senior Chinese officials, have led to a coordinated introduction of macroprudential policies to rein in credit and cool the housing market. The drag from the external sector has diminished in recent quarters, and we expect the depreciating RMB to support a positive contribution of net exports in the near term. All told, we maintain our September Tealbook forecast of growth continuing to moderate, in line with potential growth, to $5\frac{1}{2}$ percent by the end of 2019. Falling food prices pushed down inflation to an estimated 1.4 percent in the third quarter. We expect inflation to rebound as food prices normalize, settling at around $2\frac{1}{2}$ percent by early next year.
- **Other Emerging Asia.** Growth in the region is estimated to have slowed to 3 percent in the third quarter after rebounding to $3\frac{1}{2}$ percent in the second. This moderation partly reflects some expected payback for outsized second-quarter

growth in Hong Kong. Additionally, indicators for activity in the third quarter were weaker than expected, especially Singaporean GDP. In Korea, a temporary labor strike and the ongoing corporate restructuring in the shipping industry slowed down growth in the third quarter. All told, we expect the region's growth to remain near 3 percent in the current quarter before edging up to a near-trend pace of 3½ percent by mid-2017. Relative to the September Tealbook projection, this outlook is down ½ percentage point in the near term and ¼ percentage point thereafter.

- **Mexico.** We estimate that Mexican real GDP growth increased to 2¼ percent in the third quarter, in line with the rebound in U.S. manufacturing production, from a disappointing ¾ percent decline in GDP in the second. Exports picked up through August, and PMIs increased through September. Household demand also firmed in the three months ending in July amid rapid credit growth and improving labor market conditions. We see growth moving up to 2¾ percent by the end of the forecast period, with the effects of the peso's depreciation—which is about 30 percent lower in real effective terms since mid-2014—and energy-sector reforms more than offsetting a substantial fiscal drag. Headline inflation jumped to 3.8 percent in the third quarter from about 2 percent in the second, reflecting, in part, the pass-through from the peso depreciation and increases in gasoline prices. In late September, the Bank of Mexico hiked its policy rate 50 basis points to 4.75 percent, citing concerns that currency depreciation would fuel inflationary pressures.
- **Brazil.** Brazil's recession appears to have deepened more than we expected, and we have increased the pace of contraction of real GDP in the third quarter to 2 percent. Monthly GDP, industrial production, and retail sales all declined through August amid rising unemployment and still-low consumer confidence. We now see the economy bottoming out in the fourth quarter rather than in the third, with a slow recovery thereafter led by rising investment on the back of improving business confidence. However, tight fiscal and monetary policies will continue to weigh on activity. The central bank lowered its rate 25 basis points to 14 percent amid signs that inflationary pressures are abating; however, we expect further policy rate cuts to be very gradual. Headline inflation declined to 8½ percent (on a 12-month basis) in September from double-digit levels earlier this year and should fall further to 4½ percent by 2019.

The Foreign GDP Outlook

Real GDP*

Percent change, annual rate

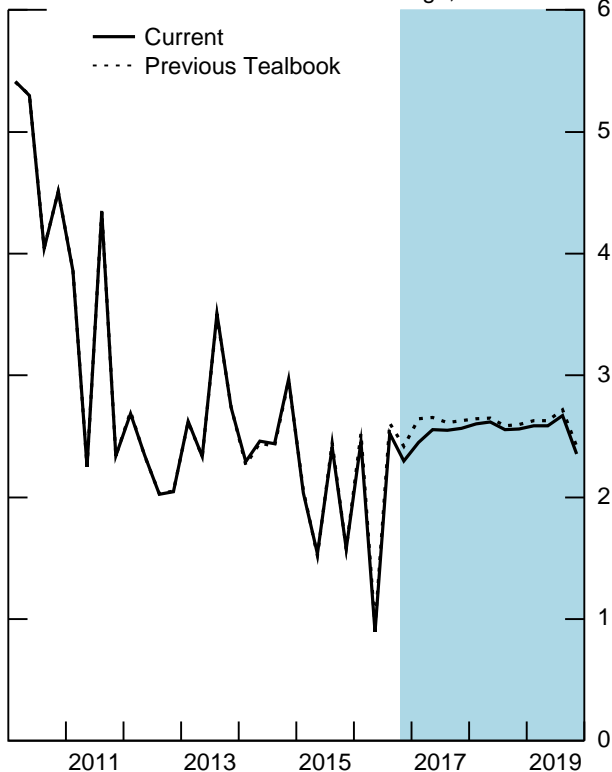
| | 2016 | | | 2017 | | | 2018 | 2019 |
|--------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | H1 | Q3 | Q4 | Q1 | Q2 | H2 | | |
| 1. Total Foreign | 1.7 | 2.5 | 2.3 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 |
| <i>Previous Tealbook</i> | 1.7 | 2.6 | 2.4 | 2.6 | 2.7 | 2.6 | 2.6 | 2.6 |
| 2. Advanced Foreign Economies | 1.2 | 2.3 | 1.7 | 1.8 | 1.9 | 1.8 | 1.8 | 1.6 |
| <i>Previous Tealbook</i> | 1.2 | 2.3 | 1.7 | 1.9 | 2.0 | 1.8 | 1.8 | 1.6 |
| 3. Canada | 0.4 | 3.5 | 2.1 | 2.4 | 2.3 | 2.0 | 1.9 | 1.7 |
| 4. Euro Area | 1.6 | 1.3 | 1.4 | 1.4 | 1.7 | 1.7 | 1.8 | 1.8 |
| 5. Japan | 1.4 | 1.0 | 0.8 | 0.9 | 0.8 | 0.7 | 0.8 | 0.0 |
| 6. United Kingdom | 2.2 | 1.6 | 1.1 | 1.1 | 1.2 | 1.4 | 1.7 | 1.7 |
| 7. Emerging Market Economies | 2.2 | 2.8 | 2.9 | 3.0 | 3.2 | 3.3 | 3.4 | 3.5 |
| <i>Previous Tealbook</i> | 2.3 | 2.9 | 3.1 | 3.3 | 3.3 | 3.4 | 3.4 | 3.5 |
| 8. China | 6.8 | 6.8 | 6.4 | 6.2 | 6.1 | 6.0 | 5.8 | 5.6 |
| 9. Emerging Asia ex. China | 3.0 | 3.0 | 3.1 | 3.3 | 3.6 | 3.7 | 3.6 | 3.4 |
| 10. Mexico | 0.6 | 2.2 | 2.2 | 2.0 | 2.2 | 2.3 | 2.4 | 2.7 |
| 11. Brazil | -2.0 | -2.0 | -0.5 | 1.1 | 1.5 | 1.9 | 2.1 | 2.2 |

* GDP aggregates weighted by shares of U.S. merchandise exports. September Tealbook updated to reflect new country weights.

Int'l Econ Devel & Outlook

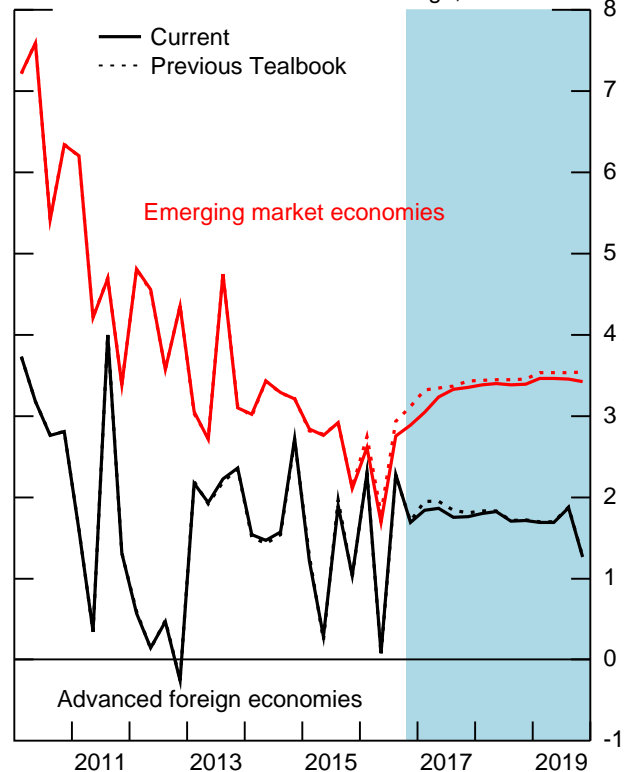
Total Foreign GDP

Percent change, annual rate



Foreign GDP

Percent change, annual rate



The Foreign Inflation Outlook

Consumer Prices*

Percent change, annual rate

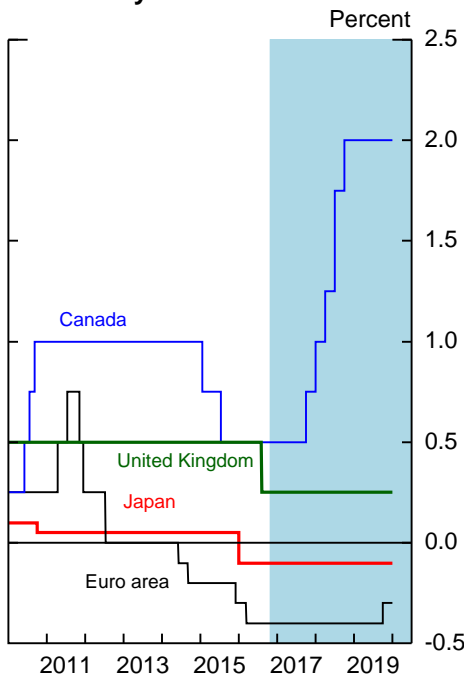
| | 2016 | | | 2017 | | | 2018 | 2019 |
|--------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | H1 | Q3 | Q4 | Q1 | Q2 | H2 | | |
| 1. Total Foreign | 1.8 | 1.7 | 2.5 | 2.5 | 2.4 | 2.4 | 2.5 | 2.6 |
| <i>Previous Tealbook</i> | 1.8 | 1.9 | 2.5 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 |
| 2. Advanced Foreign Economies | 0.4 | 0.8 | 1.6 | 1.6 | 1.6 | 1.5 | 1.6 | 1.9 |
| <i>Previous Tealbook</i> | 0.4 | 1.3 | 1.4 | 1.5 | 1.5 | 1.5 | 1.6 | 1.8 |
| 3. Canada | 1.6 | 0.9 | 2.2 | 2.3 | 2.3 | 2.0 | 2.0 | 2.0 |
| 4. Euro Area | -0.1 | 1.2 | 1.6 | 1.6 | 1.3 | 1.4 | 1.4 | 1.5 |
| 5. Japan | -0.5 | -0.5 | 0.0 | 0.3 | 0.5 | 0.6 | 0.9 | 2.4 |
| 6. United Kingdom | 0.4 | 2.1 | 3.4 | 3.2 | 2.8 | 2.3 | 2.1 | 1.9 |
| 7. Emerging Market Economies | 2.8 | 2.3 | 3.1 | 3.1 | 3.0 | 3.1 | 3.1 | 3.1 |
| <i>Previous Tealbook</i> | 2.7 | 2.4 | 3.3 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 |
| 8. China | 2.7 | 1.4 | 2.9 | 2.7 | 2.5 | 2.5 | 2.5 | 2.5 |
| 9. Emerging Asia ex. China | 1.6 | 1.1 | 2.0 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 |
| 10. Mexico | 2.5 | 3.8 | 3.9 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| 11. Brazil | 9.6 | 6.5 | 4.5 | 5.5 | 5.4 | 5.2 | 4.9 | 4.5 |

* CPI aggregates weighted by shares of U.S. non-oil imports. September Tealbook updated to reflect new country weights.

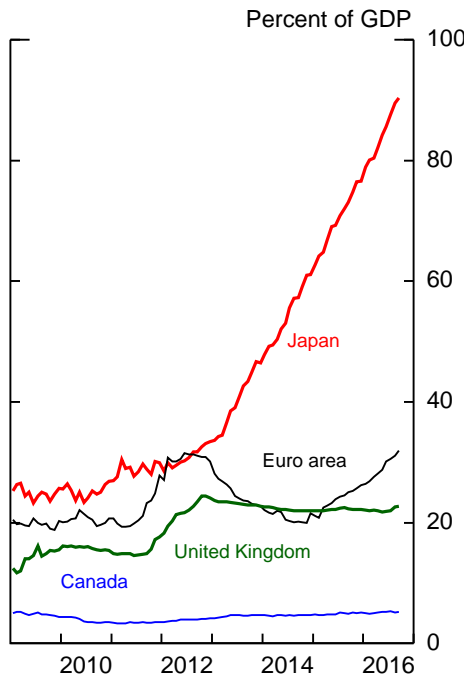
Int'l Econ Devel & Outlook

Foreign Monetary Policy

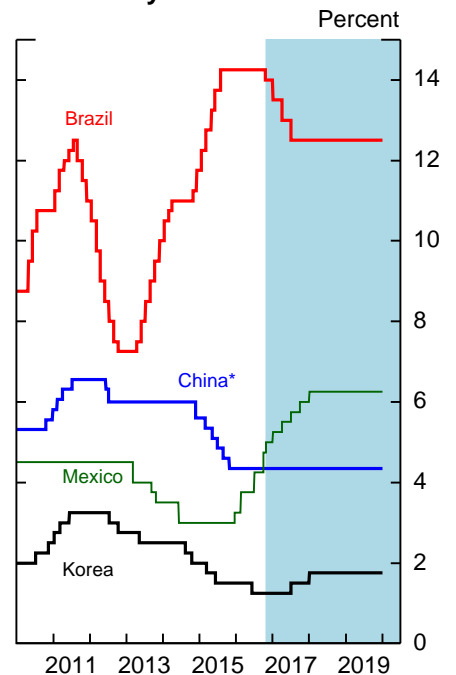
AFE Policy Rates



AFE Central Bank Balance Sheets



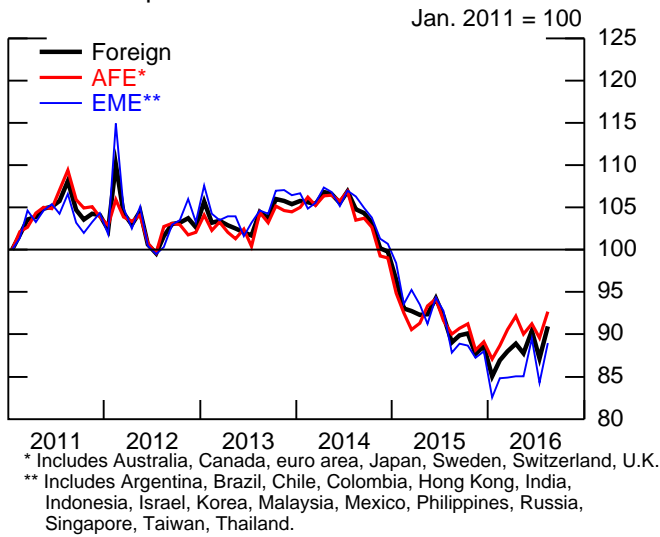
EME Policy Rates



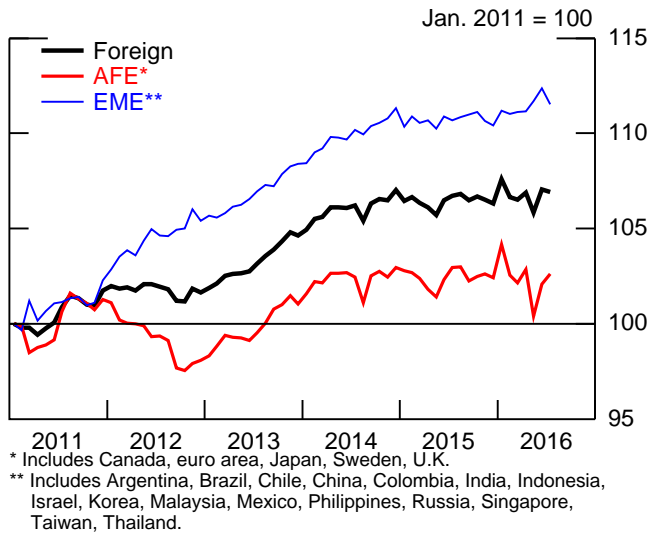
* 1-year benchmark lending rate.

Recent Foreign Indicators

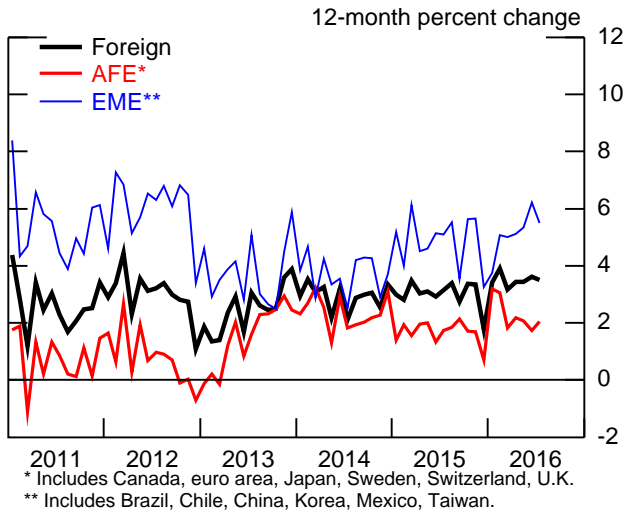
Nominal Exports



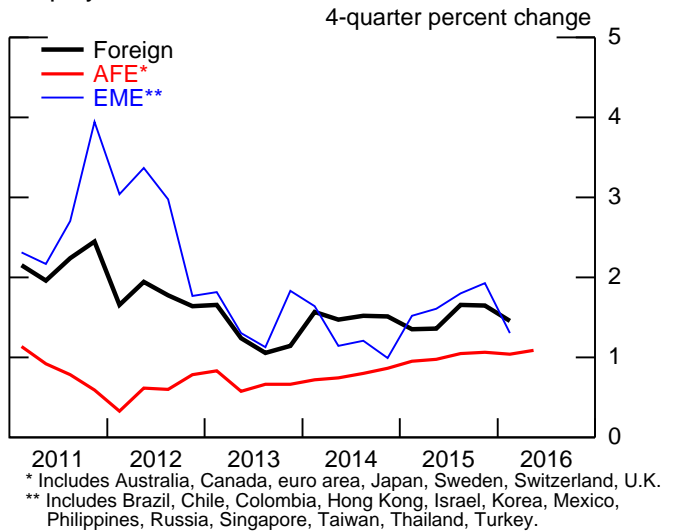
Industrial Production



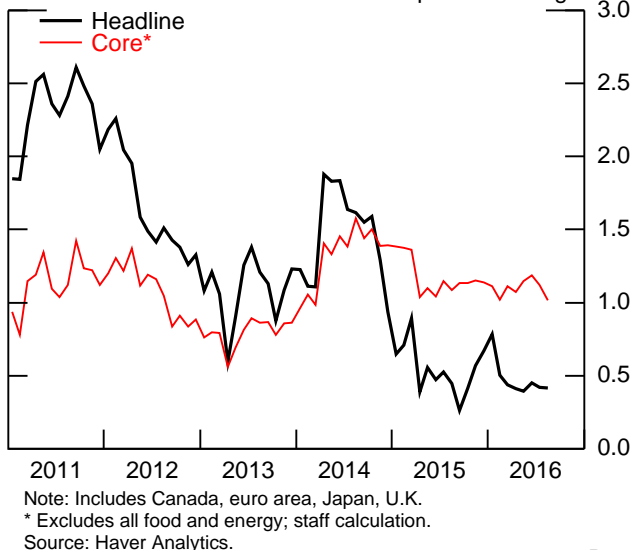
Retail Sales



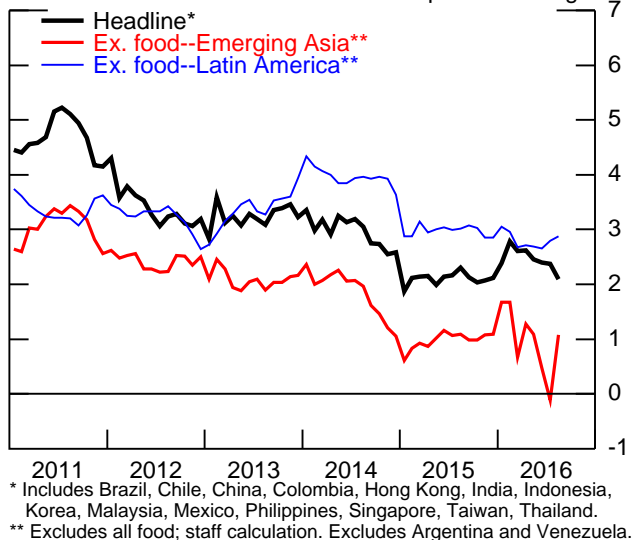
Employment



Consumer Prices: Advanced Foreign Economies

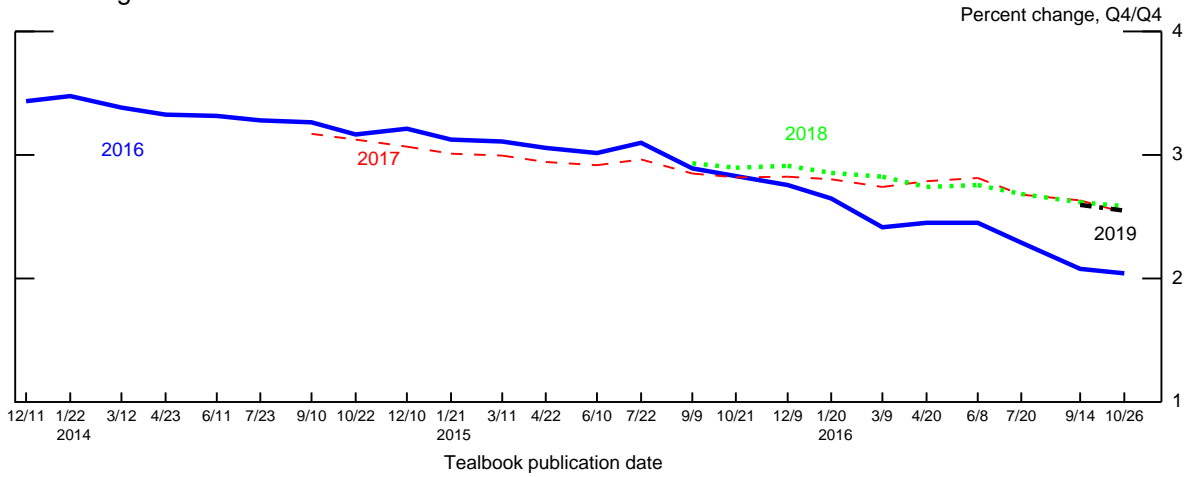


Consumer Prices: Emerging Market Economies

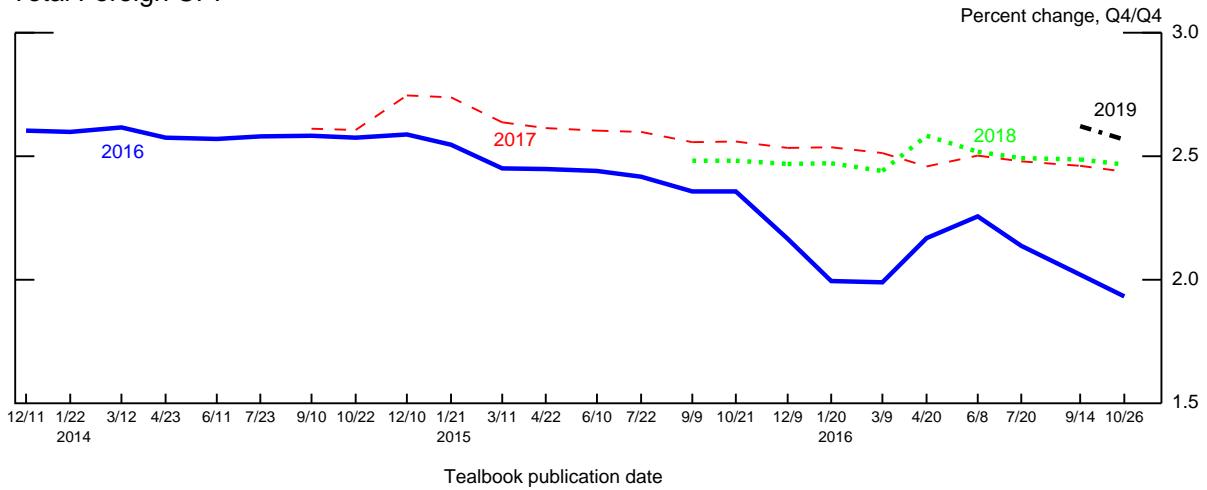


Evolution of Staff's International Forecast

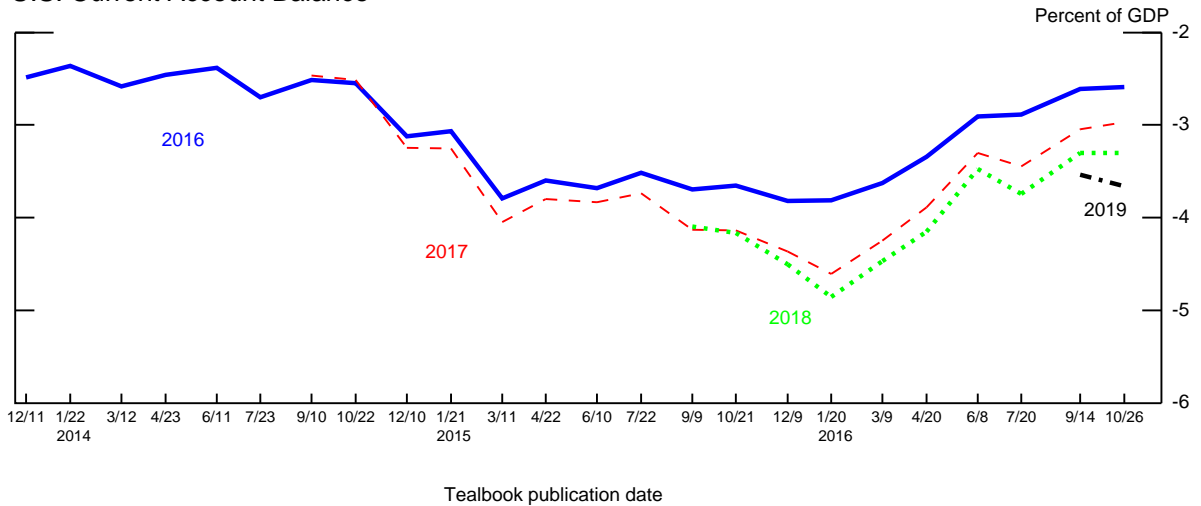
Total Foreign GDP



Total Foreign CPI



U.S. Current Account Balance



Int'l Econ Devel & Outlook

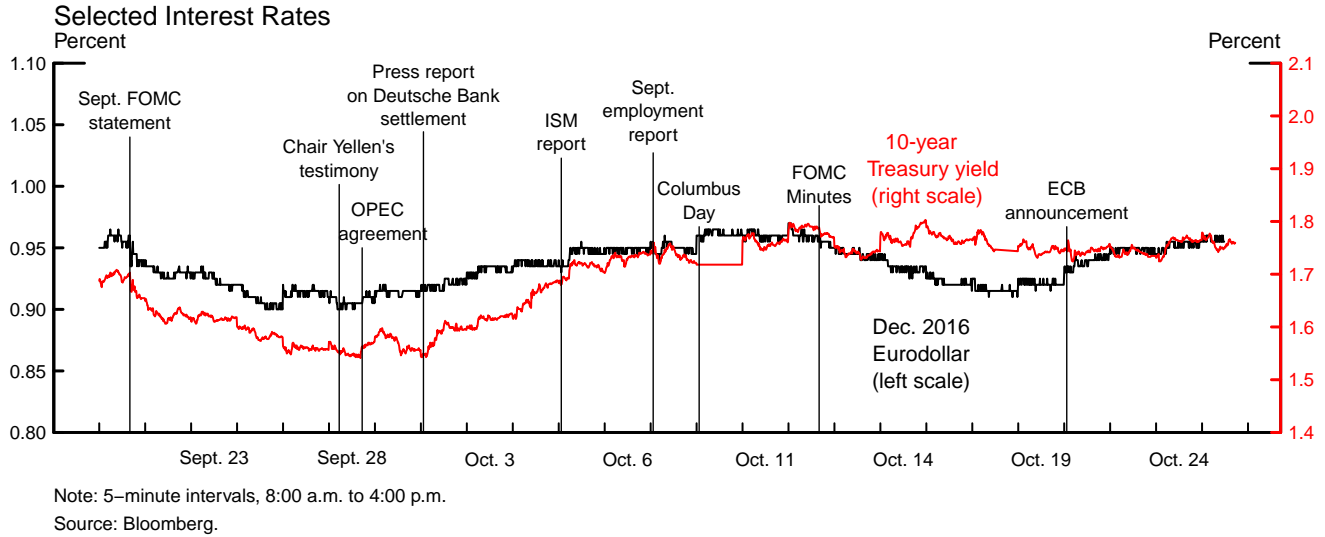
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Financial Developments

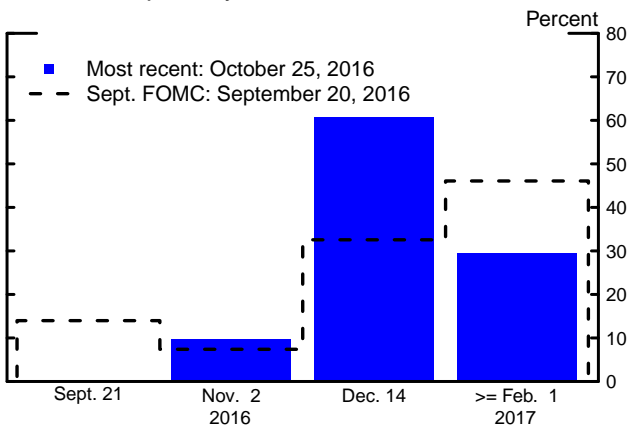
Domestic financial markets have been relatively calm since the September FOMC meeting. U.S. economic data releases and Federal Reserve communications were generally interpreted as in line with market expectations, and foreign macroeconomic data continue to support expectations of modest growth. Based on a straight read of market quotes, the implied probability of an increase in the target range of the federal funds rate before the end of the year rose modestly to about 70 percent. The nominal Treasury yield curve moved up a touch on net.

- Yields on 2-, 5-, and 10-year nominal Treasury securities edged up, on net, by 6, 8, and 7 basis points, respectively.
- Five-year TIPS-based inflation compensation rose 24 basis points, and the five-year, five-year-forward measure moved up 16 basis points.
- The federal funds rate path implied by a straight read of market quotes steepened slightly on balance.
- Nonfinancial corporate bond spreads narrowed a bit, and broad equity indexes were little changed amid mostly low option-implied volatility (VIX).
- Although broad U.S. equity price indexes were about flat, foreign equity indexes moved higher while the broad dollar appreciated ½ percent.
- No market disruptions were observed around the October 14 compliance deadline for money market fund (MMF) reform, though flows out of prime funds and into government funds continued. Prime funds' weighted-average maturity increased after the compliance day but remains low compared with historical averages.
- Financing conditions for nonfinancial firms and households remained accommodative on balance. The credit quality of nonfinancial corporations showed signs of stabilization.

Policy Expectations and Treasury Yields

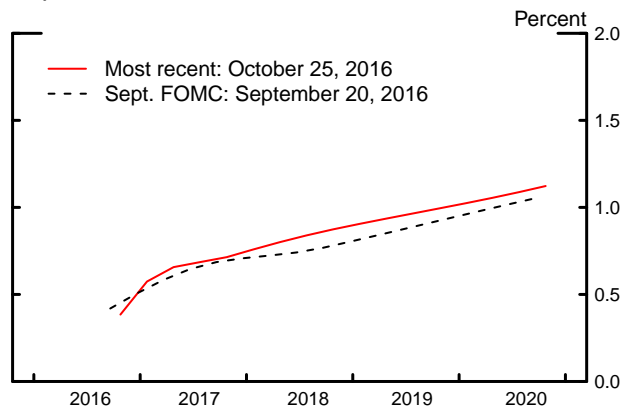


Probability Distribution of the Timing of Next Rate Increase Implied by Federal Funds Futures



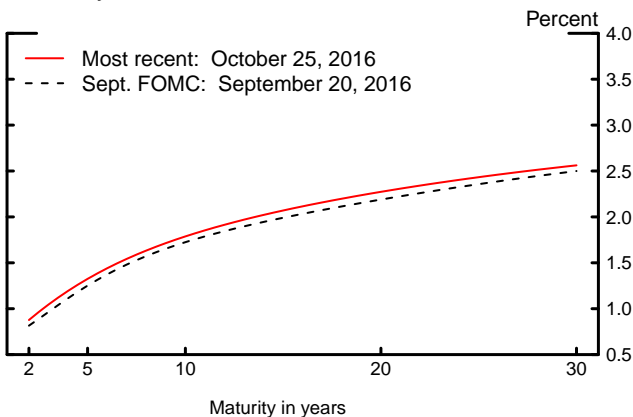
Note: Implied by federal funds futures. Assumes that investors expect the federal funds rate to trade at the expected rate implied by futures contracts until the next FOMC meeting.
Source: CME Group; Federal Reserve Board staff estimates.

Implied Federal Funds Rate



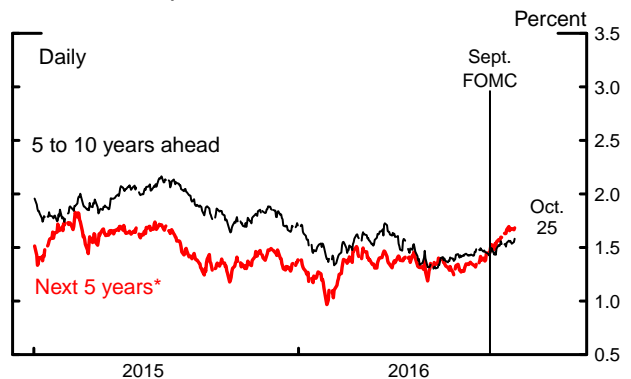
Note: Path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.
Source: Bloomberg; Federal Reserve Board staff estimates.

Treasury Yield Curve



Note: Smoothed yield curve estimated from off-the-run Treasury coupon securities. Yields shown are those on notional par Treasury securities with semiannual coupons.
Source: Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

Inflation Compensation



Note: Estimates based on smoothed nominal and inflation-indexed Treasury yield curves.
* Adjusted for lagged indexation of Treasury Inflation-Protected Securities (carry effect).
Source: Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

POLICY EXPECTATIONS AND ASSET MARKET DEVELOPMENTS

Domestic Developments

Domestic U.S. economic data releases were generally interpreted as in line with market expectations. While the September employment report was reportedly slightly below expectations, it was generally not considered weak, and some other data releases during the period—in particular, the September ISM surveys—were viewed as above expectations. Communications immediately following the September meeting, notably the Summary of Economic Projections, were interpreted as slightly more accommodative than expected, while later Federal Reserve communications were seen as in line with expectations.

The expected path of policy appeared to steepen slightly, on net, over the intermeeting period. Based on a straight read of market quotes, the implied probability of an increase in the target range of the federal funds rate before the end of the year rose modestly to about 70 percent. Respondents to the Desk’s November surveys of primary dealers and market participants assigned a probability of about 60 percent to a rate hike by the end of this year. The most likely path of the target federal funds rate in 2017 and 2018 was little changed for the median respondent relative to the September survey. Both primary dealers and investors generally do not expect a rate hike to occur at the November meeting.

Nominal Treasury yields have edged up since the September FOMC meeting, with yields on 2-, 5-, and 10-year Treasury securities rising 6, 8, and 7 basis points, respectively.¹ Yields declined early in the period following the September FOMC communications and amid concerns about Deutsche Bank, but they subsequently increased as markets calmed on domestic economic news and the relaxation of some of the Deutsche Bank concerns.

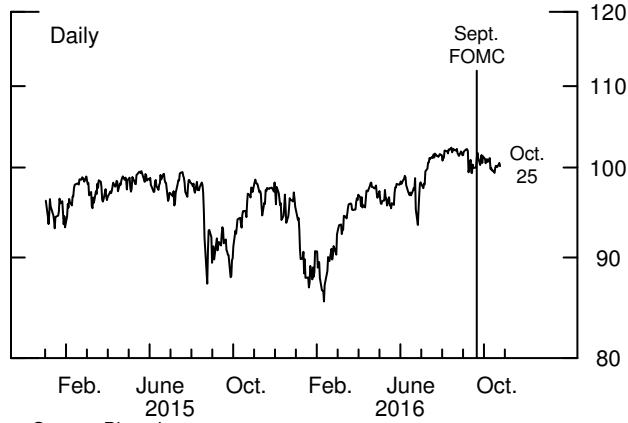
Nominal yields were also pushed up a bit by an increase in inflation compensation. Five-to-ten-year TIPS-based forward inflation compensation rose 16 basis points over the intermeeting period and has now moved up about 28 basis points from its low immediately following the United Kingdom’s Brexit vote in June. Measures of

¹ Since the September FOMC meeting, the Treasury has auctioned \$170 billion of Treasury nominal fixed-rate securities, \$16 billion of Treasury Inflation-Protected Securities, and \$13 billion of 2-year Floating Rate Notes.

Domestic Asset Markets

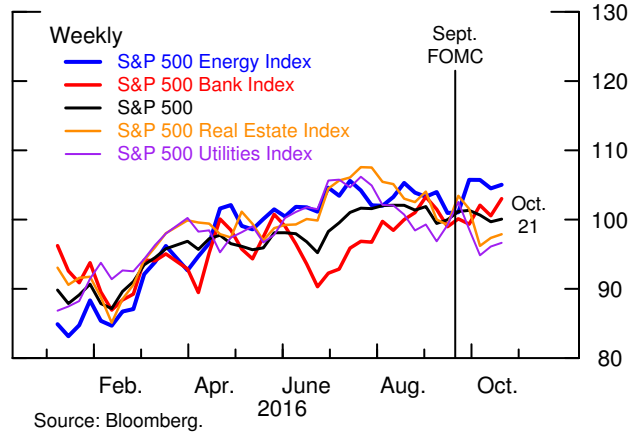
S&P 500 Stock Price Index

Log scale; Sept. 20, 2016 = 100



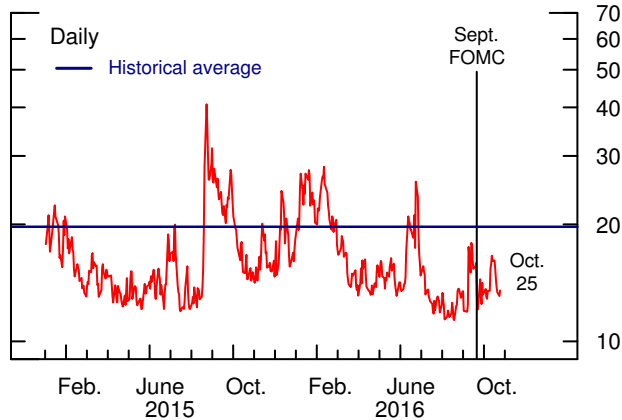
S&P 500 Sectors

Sept. 20, 2016 = 100



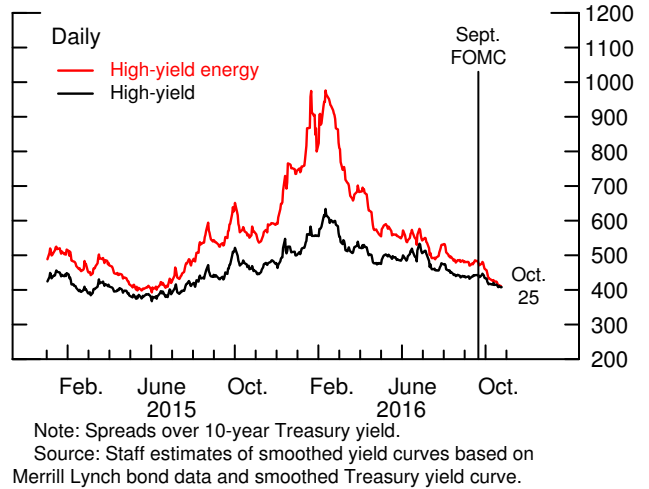
Implied Volatility on S&P 500 (VIX)

Log scale, percent



10-Year Corporate Bond Spreads

Basis points



inflation compensation based on inflation swaps increased by similar amounts. The recent increase in far-forward inflation compensation appears attributable to a combination of factors, including the recent rise in oil prices and a decline in investors' concerns about the risk of very low inflation outcomes, as implied by quotes on inflation caps and floors.

The S&P 500 stock price index was little changed, on net, since the September FOMC meeting. Energy was among the best-performing sectors over the period, consistent with rising oil prices. Stock prices of sectors that benefit from low interest rates, such as real estate and utilities, underperformed the broader market. Realized and implied volatilities in equity markets remained relatively low.

Over the intermeeting period, spreads of yields on nonfinancial investment- and speculative-grade corporate bonds over those of comparable-maturity Treasury securities declined a bit, with both spreads now standing around their median levels during economic expansions over the past two decades. The narrowing in credit spreads mainly reflected tightening in spreads for bonds issued by firms in the energy sector.

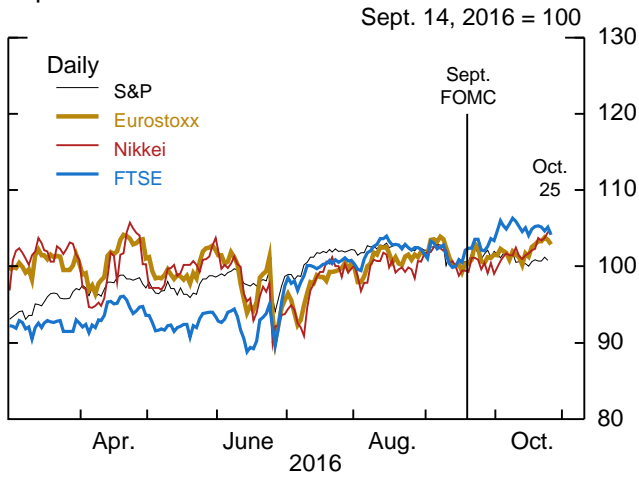
Foreign Developments

Since the September FOMC meeting, foreign macroeconomic data came in generally in line with market expectations. Foreign equity indexes moved moderately higher, while credit spreads were little changed. That said, markets were occasionally affected by news about the upcoming negotiations between the United Kingdom and the EU surrounding the U.K. exit and by continued concerns about the European banking sector, particularly Deutsche Bank. Although market sentiment toward the European banks improved over the period, significant risks remain.

In the United Kingdom, the pound depreciated by roughly 6 percent, and 10-year gilt yields increased along with inflation compensation. These moves were driven by indications that a tougher negotiating stance would be taken by British and European officials, increasing the odds of a U.K.–EU deal with much less economic integration than at present, a so-called hard Brexit; the rise in yields may also have reflected Prime Minister May's remarks on the side effects of quantitative easing and the greater possibility of near-term U.K. fiscal expansion. In the other advanced foreign economies (AFEs), interest rates were little changed, on net, having declined early in the period following the FOMC meeting but later recovering as rising oil prices boosted the

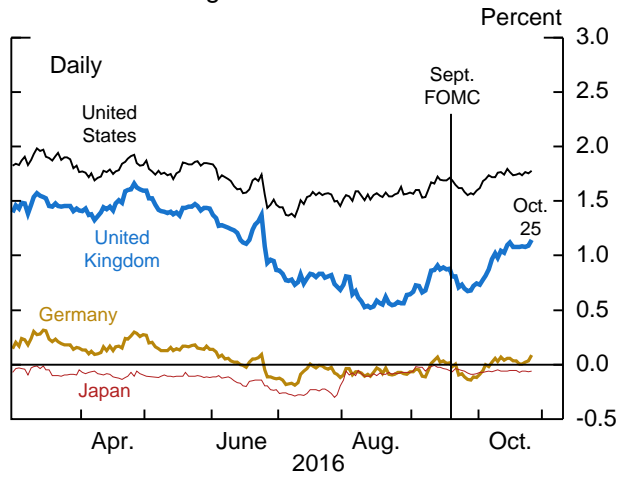
Foreign Developments

Equities



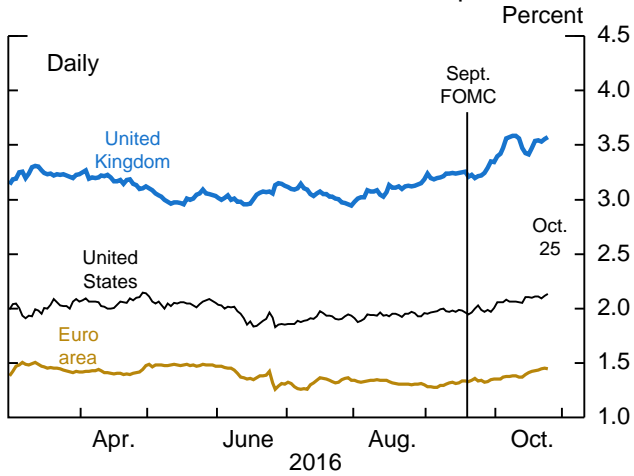
Source: Bloomberg.

10-Year Sovereign Yields



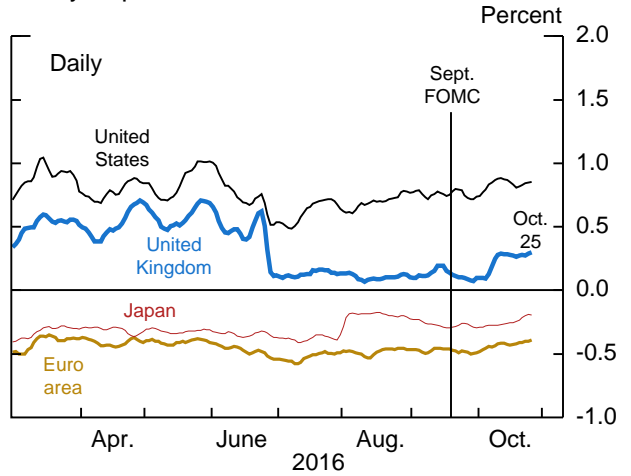
Source: Bloomberg.

5-Year, 5-Year-Forward Inflation Compensation



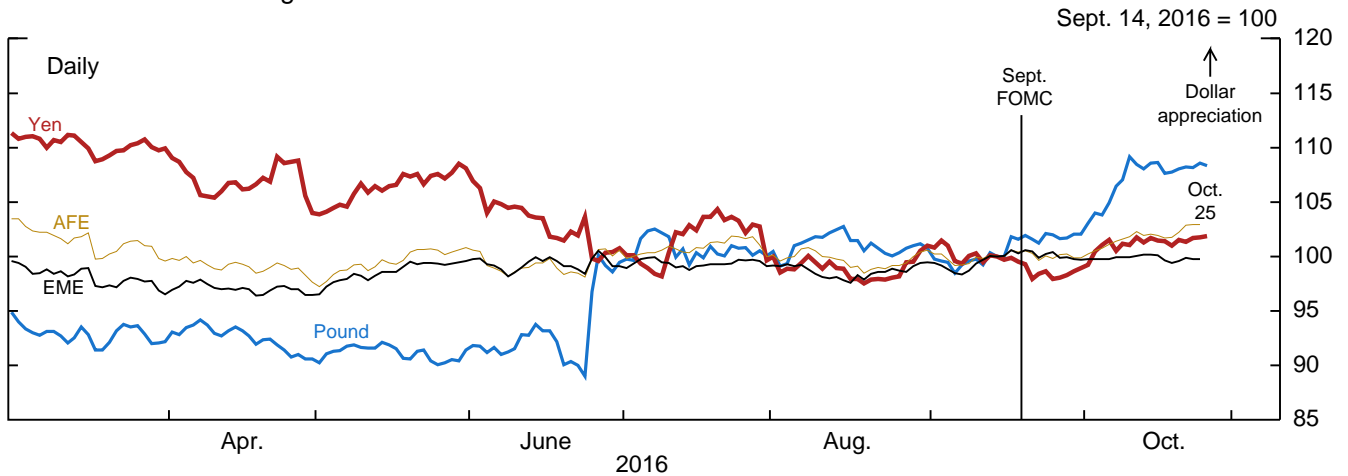
Note: Based on inflation swaps.
Source: Bloomberg.

Policy Expectations



Note: 3-day moving average of 1-month OIS rates, 24 months ahead.
Source: Bloomberg.

Dollar Bilateral Exchange Rates



Source: Federal Reserve Board; Bloomberg.

inflation outlook. The ECB left its policy rates unchanged at its October meeting but acknowledged that an abrupt end to asset purchases is unlikely, and it signaled that further changes to the asset purchase program could be announced at its December meeting. At its September 21 meeting, the Bank of Japan announced that it would seek to stabilize the 10-year yield around zero percent, and that it would seek to conduct policy so as to push inflation above the 2 percent inflation target. Japanese sovereign yields were little changed, on net, but measures of implied volatility for longer-term interest rates declined.

In addition to the sharp move against the pound, the dollar also appreciated by 2 to 3 percent against most other AFE currencies. Although these moves were in line with a relative increase in U.S. policy expectations, the magnitude of the change in exchange rates was somewhat outsized. In contrast, the dollar fell against many commodity currencies, including the Mexican peso and Russian ruble. On balance, the broad index of the dollar rose $\frac{1}{2}$ percent over the period.

SHORT-TERM FUNDING MARKETS, FEDERAL RESERVE OPERATIONS, AND BANKING-SECTOR DEVELOPMENTS

The compliance deadline for the recent MMF reforms was October 14.² In the weeks leading up to the deadline, institutional prime MMFs continued to experience significant outflows, while government MMFs attracted similarly sized inflows. However, these flows slowed significantly in the days just prior to the compliance day and have since remained subdued (see the box “The Effect of Money Market Fund Reform over the Past Year” for a longer-term retrospective).

The outflows from institutional prime funds continued, on balance, to lead to lower overall outstanding amounts of commercial paper, negotiable certificates of deposit, and large time deposits overall during the intermeeting period. While government funds appear to be the largest recipients of the outflows from prime funds, core deposits at banks also increased.

Measures of the liquidity of institutional prime funds, which had increased substantially ahead of the compliance deadline, have since declined. In particular, the

² The reform is intended to reduce money funds’ susceptibility to destabilizing runs by requiring institutional prime funds and tax-exempt funds to trade shares at floating net asset values and by allowing nongovernment funds to impose liquidity and redemption fees.

The Effect of Money Market Fund Reform over the Past Year

As a direct result of recent money market fund (MMF) reforms, the MMF industry has seen a transfer of more than \$1 trillion from prime funds to government funds and other entities over the past year, while total MMF assets under management (AUM) have declined only slightly.¹ Overall, the transition has been smooth with no market stresses, as market participants were able to efficiently absorb the flow of cash. This analysis provides additional details regarding changes in MMF holdings. It also discusses related changes in the funding costs and structure of U.S. branches and agencies of foreign banks (FBOs) over the past year.

Prime funds responded to the significant decline in their AUM by reducing holdings of all major asset classes. As shown in figure 1, negotiable certificates of deposit (CDs) and unsecured commercial paper (CP) fell \$340 billion and \$212 billion, respectively, over the past year. These reductions were coincident with a rise in rates on CD and CP with maturities over 30 days.

Prime funds also substantially reduced their lending in the Eurodollar market (included in the “other instruments” category in figure 1). Figure 2 highlights that FBOs are the main borrowers of Eurodollars from prime funds; their borrowing dropped \$120 billion, as MMFs reduced their supply in the Eurodollar market compared with a year ago.² Over this period, rates in the Eurodollar market have crept up marginally.

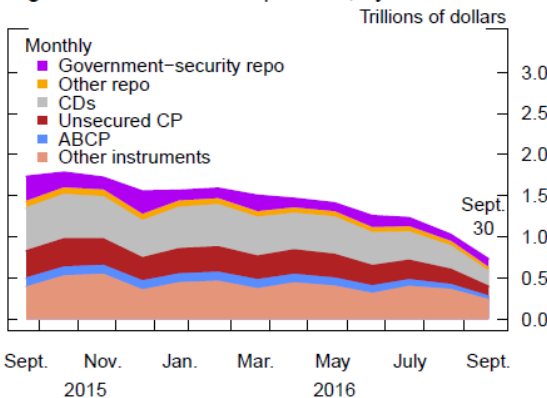
Government funds responded to the significant increase in their AUM by expanding holdings of all eligible assets, as shown in figure 3. In particular, their holdings of agency debt have more than doubled, and holdings of Treasury bills have risen \$274 billion. Still, rates on these instruments have traded at their usual spreads to the IOER (interest on excess reserves) rate, as Treasury bill issuance has increased significantly. Government fund holdings of agency repos and Treasury repos are also higher. Finally, in recent weeks, daily take-up by government funds at the ON RRP (overnight reverse repurchase agreement facility) has been moderately elevated compared with typical 2016 levels, perhaps reflecting the large inflow of cash that has not yet been invested in higher-yielding money market instruments.

¹ Detailed MMF data are through September 30, 2016, as the data are only available with a monthly lag. Prime funds saw an additional \$288 billion of outflows through October 14, 2016.

² As lending by non-MMF entities remained steady in both the Eurodollar and federal funds markets, this observation suggests that the reduced volumes in the Eurodollar market were the result of less supply from prime funds rather than less demand from FBOs. Lenders in the federal funds market are primarily federal home loan banks that were not affected by the MMF reform. Thus, there was no supply shock in this market.

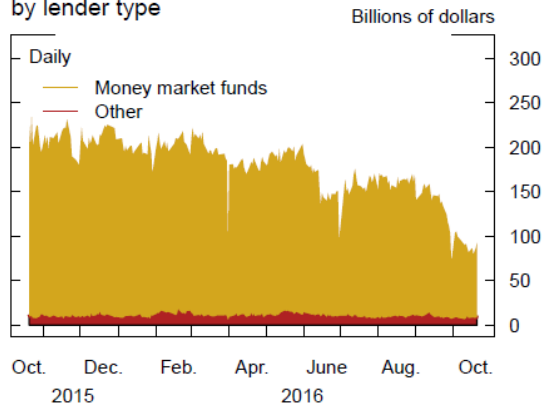
Collectively, FBOs experienced significant shifts in funding costs and liabilities as a result of MMF reform. Higher longer-term CD and financial CP rates increased FBO funding costs. In addition, outstanding large time deposits at FBOs decreased \$172 billion and financial CP issuance slowed considerably. And, as mentioned previously, FBOs borrowed fewer funds in the Eurodollar market. Reflecting, in part, these contractions in liabilities, FBO reserve balances dropped roughly \$360 billion over the past year (figure 4).³

Figure 1: Prime MMF exposures, by instrument



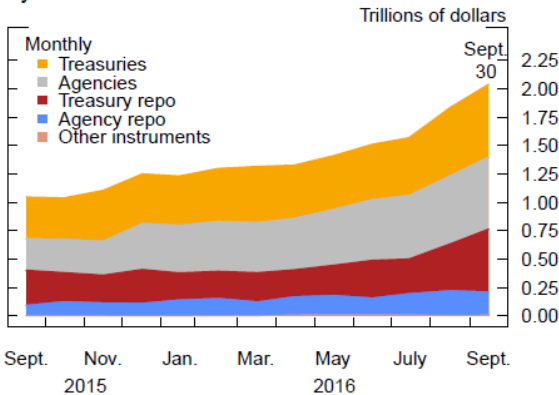
Note: Repo is repurchase agreement, CD is certificate of deposit, CP is commercial paper, and ABCP is asset-backed commercial paper.
Source: SEC, form N-MFP, Monthly Schedule of Portfolio Holdings of Money Market Funds.

Figure 2: FBO overnight Eurodollar volumes, by lender type



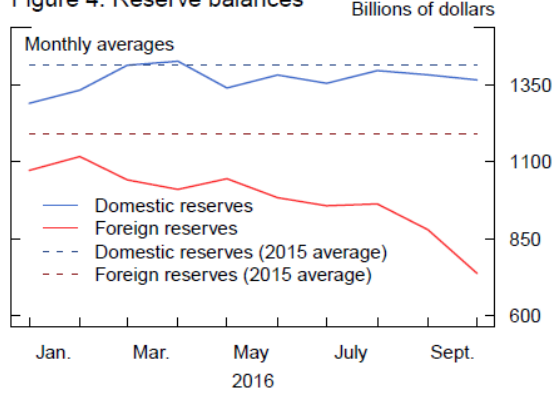
Note: Money market funds are included in the financial non-depository institution category, per the FR 2420 instructions. FBO is a foreign banking organization.
Source: Federal Reserve Board, Form FR 2420, Report of Selected Money Market Rates.

Figure 3: Government MMF exposures, by instrument



Note: Repo is repurchase agreement
Source: SEC, form N-MFP, Monthly Schedule of Portfolio Holdings of Money Market Funds.

Figure 4: Reserve balances

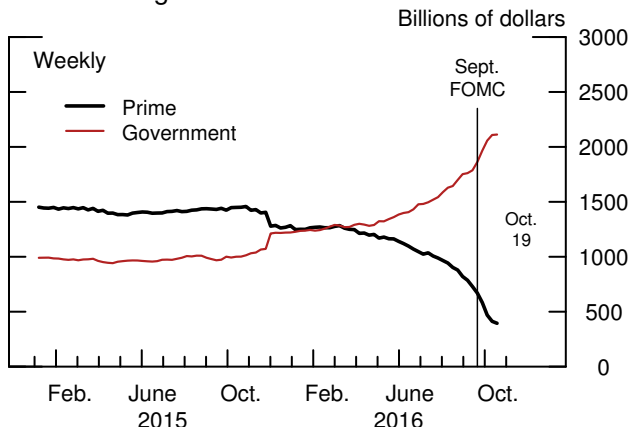


Source: Federal Reserve Board, internal Federal Reserve accounting records.

³ Over the same period, domestic banks' outstanding large time deposits, borrowing in unsecured overnight money markets, and reserve balances were little changed.

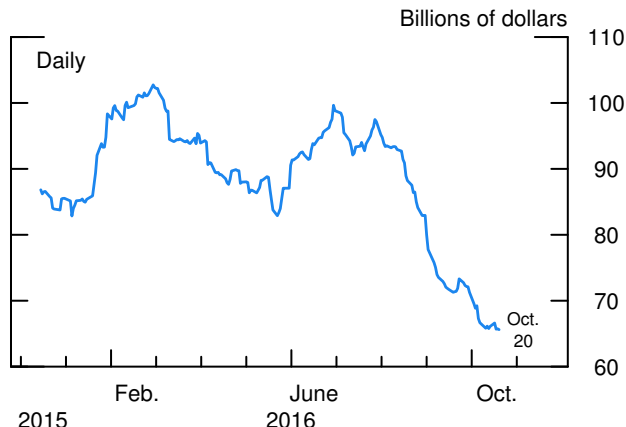
Short-Term Funding and Banking Developments

Prime and Government MMF Assets under Management



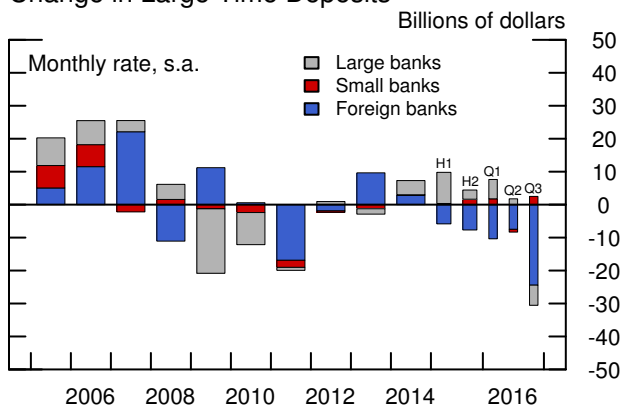
Note: Based on money market fund (MMF) conversions tracker updated through October 19, 2016. Conversions include fund closures.
Source: Calculations by the Federal Reserve Board based on data from the Investment Company Institute.

Outstanding Negotiable CDs at Domestic LISC Banks



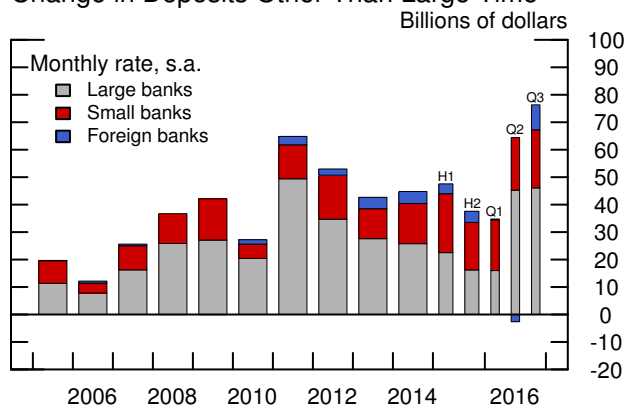
Note: CD is certificate of deposit; LISC is Large Institution Supervision Coordinating Committee.
Source: Federal Reserve Board, Form FR 2052a, Complex Institution Liquidity Monitoring Report.

Change in Large Time Deposits



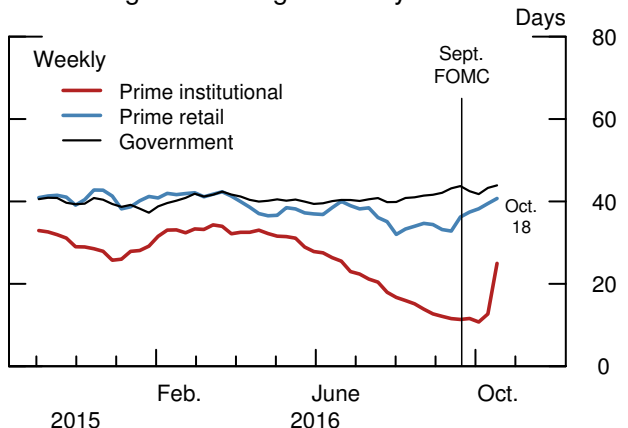
Note: Yearly rates are Q4 to Q4; half-years are based on Q4 and Q2 average levels; quarterly and monthly annual rates use corresponding average levels. Large banks are defined as the largest 25 banks by assets.
Source: Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

Change in Deposits Other Than Large Time



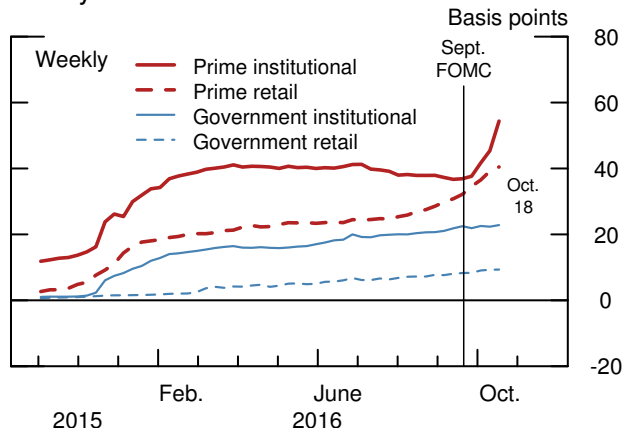
Note: Yearly rates are Q4 to Q4; half-years are based on Q4 and Q2 average levels; quarterly and monthly annual rates use corresponding average levels. Large banks are defined as the largest 25 banks by assets.
Source: Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

MMF Weighted-Average Maturity



Note: All statistics are computed on an asset-weighted basis. MMF is money market fund.
Source: iMoneyNet.

Money Market Fund Net Yields

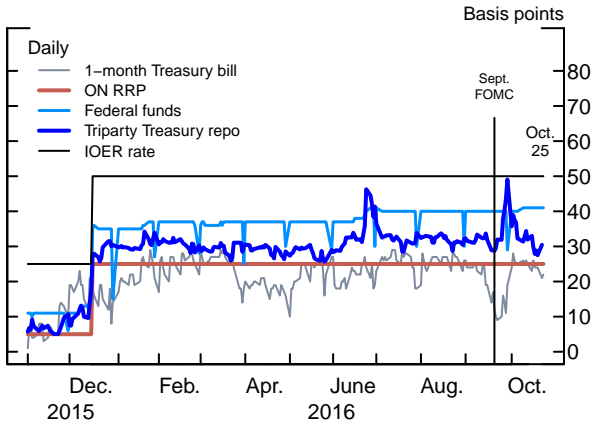


Note: Net yield is the annualized average yield, net of expense ratio, earned over the past 7 days without reinvesting dividends.
Source: iMoneyNet.

Financial Developments

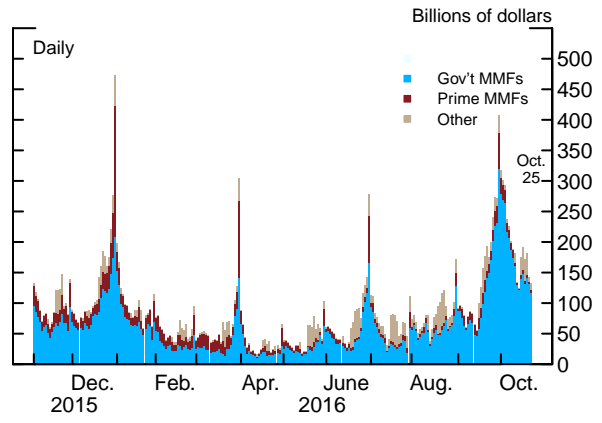
Short-Term Funding Markets and Federal Reserve Operations

Selected Money Market Rates



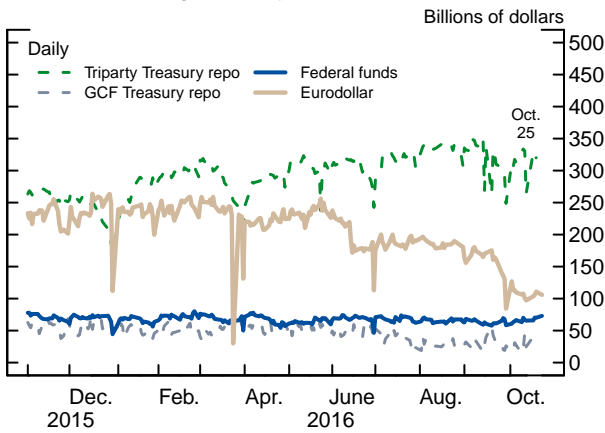
Note: Triparty Treasury repo (repurchase agreement) data as of October 24, 2016. ON RRP is overnight reverse repurchase agreement; IOER is interest on excess reserves.
Source: Federal Reserve Bank of New York; Federal Reserve Board.

ON RRP Take-Up, by Type



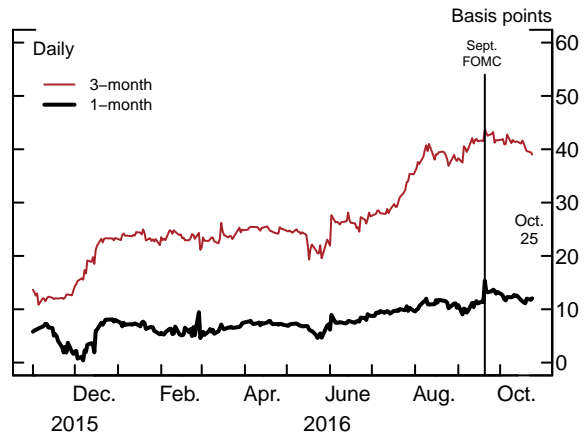
Note: ON RRP is overnight reverse repurchase agreement; MMFs are money market funds.
Source: Federal Reserve Bank of New York.

Selected Overnight Money Market Volumes



Note: Triparty Treasury repo (repurchase agreement) data as of October 24, 2016. GCF is General Collateral Finance.
Source: For federal funds and Eurodollar, Federal Reserve Board, Form FR 2420, Report of Selected Money Market Rates; for triparty Treasury repo and GCF Treasury repo, Federal Reserve Bank of New York.

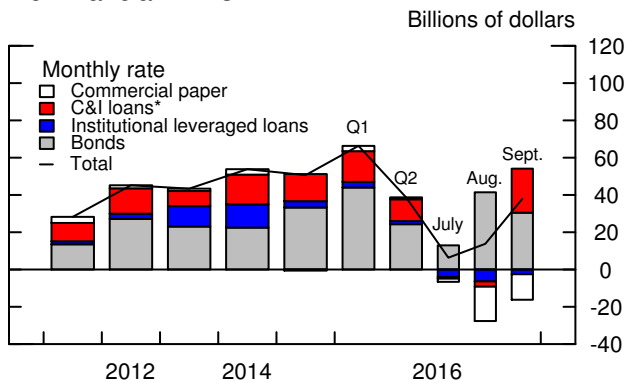
LIBOR–OIS Spreads



Note: LIBOR is London interbank offered rate; OIS is overnight index swap.
Source: Bloomberg.

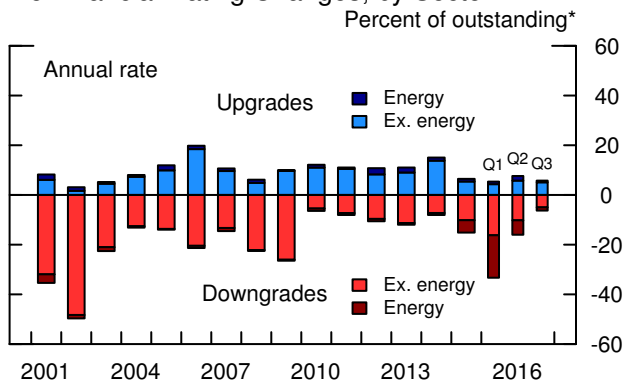
Business and Municipal Finance

Selected Components of Net Debt Financing, Nonfinancial Firms



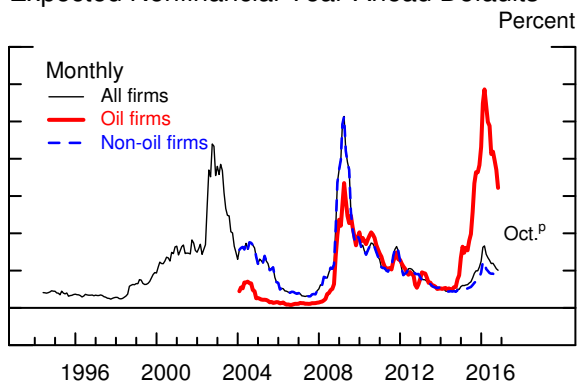
Note: C&I is commercial and industrial.
 * Period-end basis, seasonally adjusted.
 Source: Depository Trust & Clearing Corporation; Mergent Fixed Income Securities Database; Federal Reserve Board; Thomson Reuters LPC.

Nonfinancial Rating Changes, by Sector



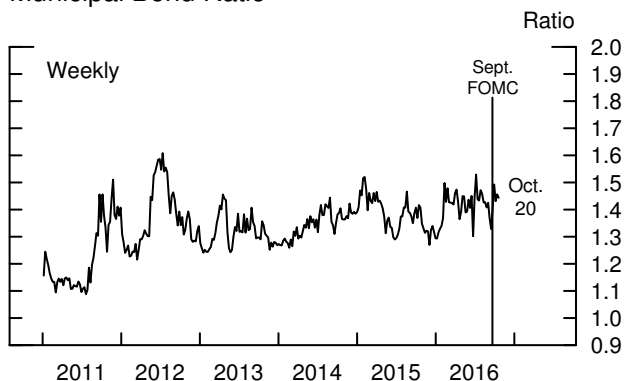
* Computed as a percent of nonfinancial bonds outstanding.
 Source: Staff calculations using Moody's ratings from Mergent Fixed Income Securities Database.

Expected Nonfinancial Year-Ahead Defaults



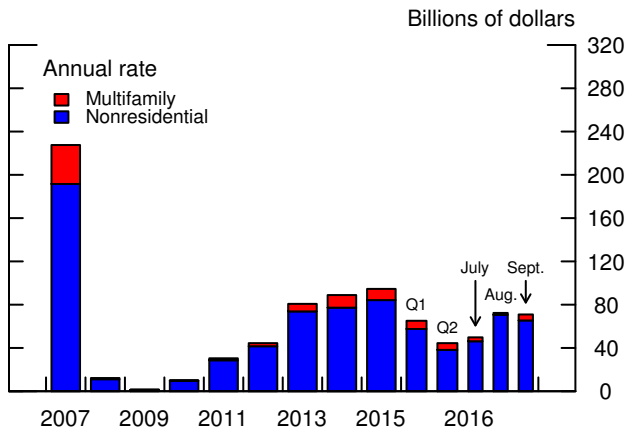
Note: Firm-level estimates of default weighted by firm liabilities as a percent of total liabilities, excluding defaulted firms.
 p Preliminary.
 Source: Calculated using firm-level data from Moody's KMV.

Municipal Bond Ratio



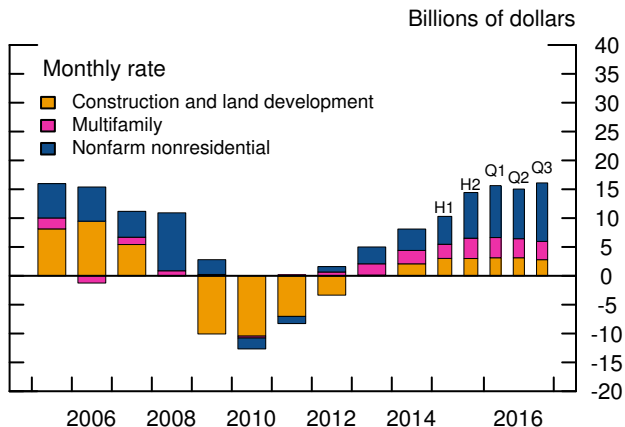
Note: Bond Buyer general obligation 20-year index over 20-year Treasury yields.
 Source: Bond Buyer; Merrill Lynch.

CMBS Issuance



Note: Multifamily excludes agency issuance.
 Source: Consumer Mortgage Alert.

Commercial Real Estate Loans



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

Financial Developments

weighted-average maturity of prime fund assets jumped from a low of 11 days prior to October 14 to 25 days, although this level remains below its average of about 40 days in recent years. As a share of prime funds' total assets, liquid assets also moved notably lower. The average net yield for such funds has risen sharply, driven in part by lower account fees and the reduced liquidity levels.

Looking more broadly at money markets, the effective federal funds rate and Eurodollar rate continued to average about 40 basis points over the intermeeting period, while the overnight triparty repo rate for Treasury collateral stayed above the ON RRP offer rate of 25 basis points. Four-week Treasury bill yields declined to a low of 9 basis points, likely a result of the inflows to government funds that sought to invest additional cash in shorter-term Treasury securities. More recently, however, the four-week bill yield has returned to levels more in line with other money market interest rates.

Some of the rise in the total assets of government funds over the intermeeting period appeared to contribute to a moderately elevated ON RRP take-up of about \$177 billion, on average, excluding September quarter-end.³ Take-up reached \$413 billion on quarter-end and fell a bit more slowly than after previous quarter-ends. Eurodollar volumes fell substantially in the weeks preceding the MMF reform compliance deadline and have remained at this lower level as prime money funds pulled back from lending in this market. Despite these volume changes, there has been little effect on overnight money market rates, though three-month LIBOR–OIS spreads remained elevated.

FINANCING CONDITIONS FOR BUSINESSES, MUNICIPALITIES, AND HOUSEHOLDS

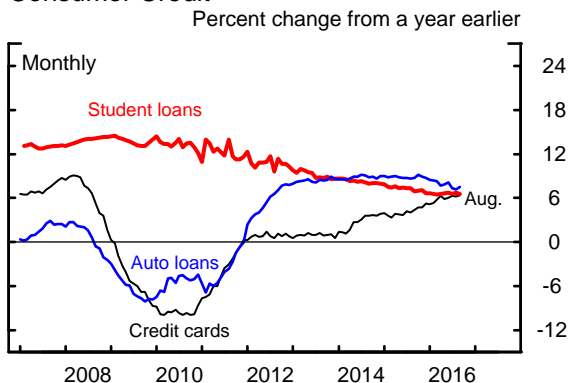
Business and Municipal Finance

Since the September FOMC meeting, financing conditions for nonfinancial firms remained generally accommodative. Gross issuance of corporate bonds was robust in September amid strong global demand and low yields. Commercial and industrial (C&I) loan growth slowed overall in the third quarter but picked up in September. Respondents

³ The Desk reinvested \$14 billion of maturing Treasury securities, purchased \$47 billion of 15- and 30-year MBS under the reinvestment program. On October 5 and 6, the Desk conducted four small-value, agency MBS coupon swaps to test operational readiness.

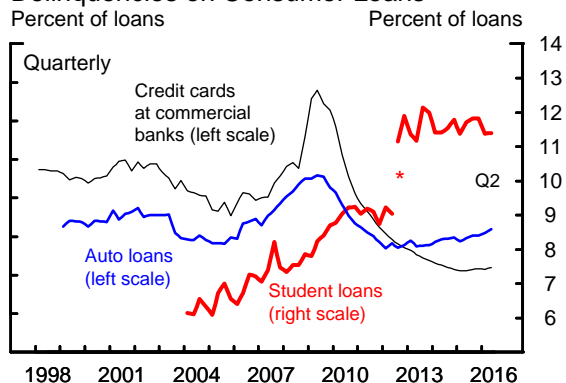
Household Finance

Consumer Credit



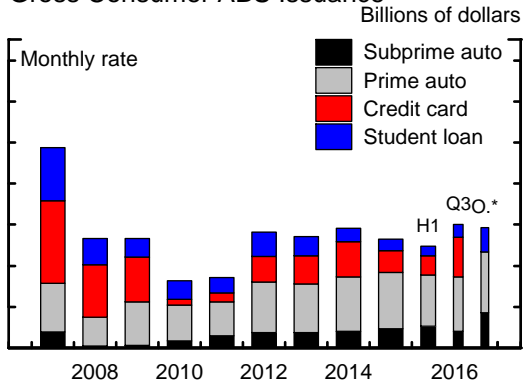
Note: The data are not seasonally adjusted.
Source: Federal Reserve Board.

Delinquencies on Consumer Loans



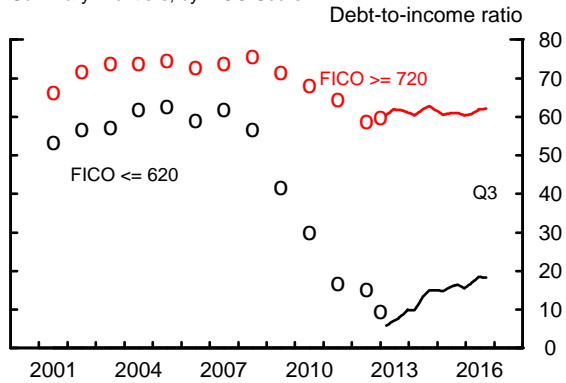
Note: For credit cards and auto loans, percent of loans 30 or more days past due, excluding severe derogatory loans. For student loans, percent of loans 90 or more days past due, including severe derogatory loans. The data for credit cards and auto loans are seasonally adjusted.
* Denotes change in methodology.
Source: Call Reports; Federal Reserve Bank of New York Consumer Credit Panel/Equifax.

Gross Consumer ABS Issuance



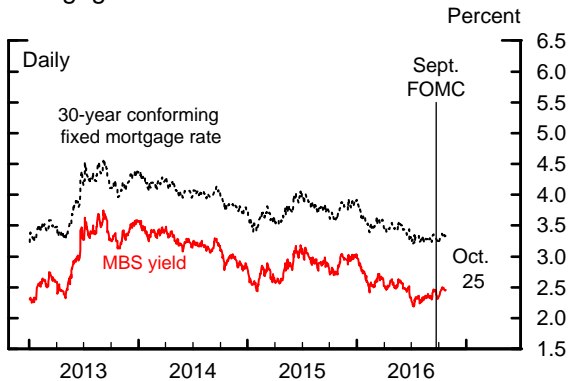
* Month to date.
Source: Inside MBS & ABS; Merrill Lynch; Bloomberg.

Summary Frontiers, by FICO Score



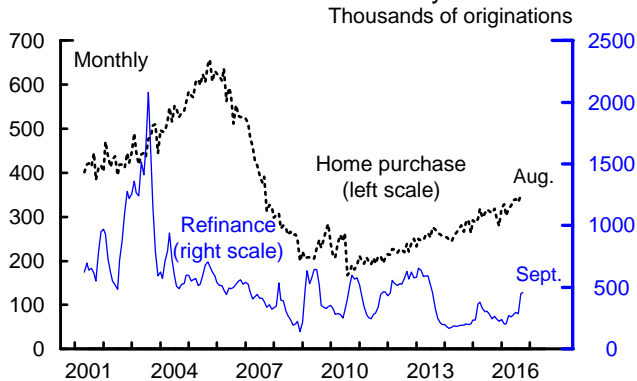
Note: Summary frontier is a weighted average of the individual frontiers associated with each loan-to-value ratio, property location, and FICO group.
Source: For frontiers shown with circles, McDash and CoreLogic; for frontiers shown with solid lines, Optimal Blue.

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.

Purchase and Refinance Activity



Note: The data are seasonally adjusted by Federal Reserve Board staff.
Source: For values prior to 2016, data reported under the Home Mortgage Disclosure Act of 1975; for values in 2016, staff estimates.

Financial Developments

to the October SLOOS indicated that, on net, standards and demand for C&I loans remained unchanged in the third quarter.

Equity issuance was robust in September, with mature corporations issuing equity through seasoned offerings at a somewhat faster pace than that observed over the past few years and issuance through initial public offerings picking up from August's low level.

About 25 percent of firms in the S&P 500 index have reported third-quarter earnings. Based on these reports and estimates implied from Wall Street analyst forecasts for the rest of the firms in the index, earnings per share appear to have continued to rebound in the third quarter and are now projected to come in a bit higher than year-earlier levels. The rebound in earnings appears to reflect improvements across a wide range of industries, including the energy sector. Year-ahead earnings projections by Wall Street analysts for S&P 500 companies were revised little, on balance, over the intermeeting period.

The credit quality of nonfinancial corporations, which had deteriorated some over the past few quarters, showed signs of stabilization. The volume of corporate bond upgrades was only slightly outpaced by that of downgrades in September. Both the six-month trailing bond default rate and the KMV expected year-ahead default measure edged down, although they remained elevated compared with their ranges in recent years.

Credit conditions in municipal bond markets also remained accommodative, and gross issuance of municipal bonds was brisk. Yields on general obligation bonds edged up, on balance, leaving their ratios to comparable-maturity Treasury securities somewhat higher than their levels at the time of the September FOMC meeting. There were no signs of deteriorations in the credit quality of state and local governments.

Financing conditions for commercial real estate (CRE) also remained largely accommodative but have shown some signs of tightening. CMBS issuance in the third quarter picked up relative to its pace in the first half of the year, and spreads on CMBS were little changed over the intermeeting period. Growth in CRE loans on banks' books continued to be strong in the third quarter. However, significant numbers of banks again reported in the October SLOOS that they had tightened lending standards on CRE loans (see the box "Banks' Commercial Real Estate Lending Standards and Loan Growth" for a discussion of this trend).

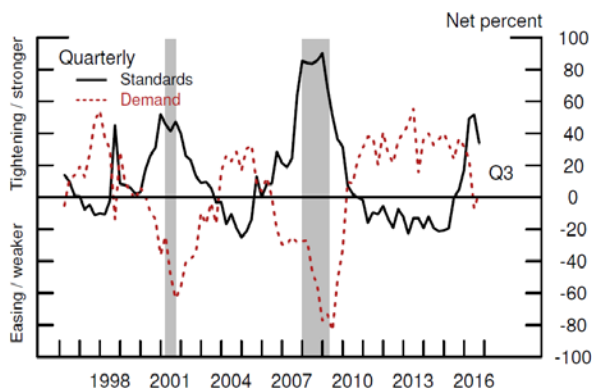
Banks' Commercial Real Estate Lending Standards and Loan Growth

Commercial banks indicated in the most recent Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) that they had tightened their lending standards across all major categories of commercial real estate (CRE) loans during the third quarter on net (black line in figure 1). This quarter is the fourth consecutive one in which survey respondents have indicated a tightening of their CRE lending standards following several years of reported easing. At the same time, growth of banks' CRE loans has continued at a robust pace (figure 2). Here we examine the question of whether the recent tightening of banks' CRE lending standards will eventually translate to lower aggregate CRE loan growth at banks. The answer depends importantly on two factors: the evolution of the demand for CRE loans (as measured by the red line in figure 1) and the size of the banks that engaged in tightening their CRE lending standards.

First, we find in both aggregate and bank-level regressions that banks' assessments of their lending standards and loan demand, as reported in the SLOOS, are each significant predictors of future loan growth.¹ While the third-quarter SLOOS results displayed in figure 1 suggest that demand for CRE loans remained unchanged and that banks, on net, tightened their CRE lending standards, we should expect, based on the statistical relationships among these data series, to see continued CRE loan growth at banks over the next several quarters.

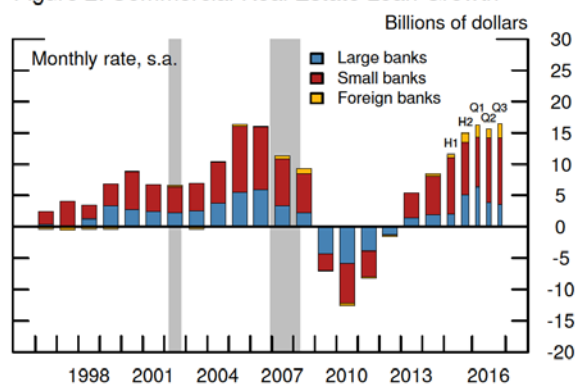
Second, we consider how bank size may affect a translation from survey-based tightening of CRE lending standards to lower aggregate CRE loan growth. Unlike commercial and industrial lending, in which the majority of loans that are made and held on banks' balance sheets are held by large banks, the majority of CRE loans that are made and held directly

Figure 1: Changes in Standards and Demand for Commercial Real Estate Loans



Note: Bank responses are weighted by the outstanding amount of commercial real estate loans on its balance sheet at the end of the prior quarter. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
Source: Senior Loan Officer Opinion Survey, staff calculations.

Figure 2: Commercial Real Estate Loan Growth



Note: Large banks are defined as the largest 25 banks by assets. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
Source: Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

¹ In particular, lagged net tightening and net demand SLOOS measures partially explain aggregate movements in outstanding loans at banks. Bank-level regressions show that individual banks' responses to standards and demand questions in the SLOOS are also predictive of growth in CRE loan originations.

on banks’ balance sheets are held by smaller banks (defined as those outside the top 25 domestic banks by total assets). In addition, while the SLOOS surveys up to 80 domestic commercial banks each quarter, large banks are disproportionately represented in the survey panel.² Thus, the net tightening in CRE lending standards observed in the SLOOS panel of banks may be more reflective of changes in standards at large banks than at smaller banks. In this case, the growth in banks’ aggregate CRE loans may not slow as quickly in the wake of a tightening in CRE lending standards—as reported in the SLOOS—as the growth in large banks’ CRE loans.

Indeed, as shown in the table below, thus far in 2016, large banks have disproportionately reported tightening their CRE lending standards on all three major categories of CRE loans relative to small banks, on average, and have also reportedly experienced relatively weaker demand for such loans. Two interesting questions, which we do not explore here, are the following: (1) What factors caused large banks to disproportionately tighten CRE lending standards relative to smaller banks so far in 2016? and (2) What factors are continuing to drive stronger loan demand at smaller banks?

The reportedly more widespread tightening in CRE lending standards at large banks in 2016 has, in fact, been accompanied by a gradual slowing in loan growth at such banks over this same period, as can be seen by the blue portion of the bars in figure 2. In contrast, CRE loan growth at smaller banks, as measured by the red portion of the bars in figure 2, has remained brisk.

In sum, the reported tightening of CRE lending standards by banks in the SLOOS over the past several quarters and the continued strong aggregate growth in CRE loans at banks are consistent with continued reports of strengthening demand for CRE loans at smaller banks and lower net fractions of small banks reporting tightening of their CRE lending standards compared with large banks so far this year.

Changes in Commercial Real Estate Loan Standards and Demand by Bank Type, 2015 Q1 to 2016 Q3

| Loan Type | 2015:Q1-Q4 | | 2016:Q1-Q3 | |
|---|-------------|-------------|-------------|-------------|
| | Large banks | Small banks | Large banks | Small banks |
| <i>Net fraction of banks reporting tightening standards</i> | | | | |
| Nonfarm nonresidential | -.08 | .01 | .22 | .14 |
| Multifamily | .04 | .09 | .46 | .38 |
| Construction and land development | .01 | .05 | .35 | .24 |
| <i>Net fraction of banks reporting stronger demand</i> | | | | |
| Nonfarm nonresidential | .23 | .12 | .03 | .13 |
| Multifamily | .14 | .16 | .03 | .09 |
| Construction and land development | .20 | .17 | -.01 | .21 |

Note: Large banks are those that participate in the Comprehensive Capital Analysis and Review (CCAR). Net fraction is defined as the fraction reporting tightening standards (stronger demand) minus the fraction reporting easing standards (weaker demand).
Source: Senior Loan Officer Opinion Survey.

² The SLOOS panel was recently expanded to include many additional smaller institutions in order to improve the survey’s coverage of such institutions. Nonetheless, the survey is predominantly focused on large institutions.



Household Finance

Financing conditions in consumer credit markets were little changed and remained accommodative on balance. Consumer loan balances increased at a year-over-year rate of about 6.7 percent through August, reflecting steady growth in both revolving and nonrevolving consumer credit. However, credit card lending standards remained tight for subprime consumers. Indeed, respondents to the October SLOOS indicated that they became less likely over the past quarter to approve credit cards for borrowers with below-prime credit scores. In contrast, auto credit remained broadly available to subprime consumers.

Consumer credit quality has largely been stable. Delinquencies of credit card loans in securitized pools changed little in August and remained near historical lows. Auto loan delinquencies have crept upward.

ABS spreads for credit card and auto loans, which have been narrowing off and on since late March, were little changed, on balance, in recent weeks. ABS issuance picked up somewhat in the third quarter from the levels seen earlier this year.

Financing conditions in the residential mortgage market were little changed over the intermeeting period and remained accommodative. Interest rates on 30-year fixed mortgages edged up but remained at a low level of about 3.3 percent. Several large banks indicated in the October SLOOS that lending standards on GSE-eligible home-purchase loans continue to ease, though standards on most other types of home-purchase loans reportedly remained unchanged on net. Spurred by mortgage rates that were at the lower end of their range over the past few years, refinancing activity climbed in August and inched up further in September, reaching its highest level since 2013.

Risks and Uncertainty

ASSESSMENT OF RISKS

We continue to view the uncertainty around our projections for real GDP growth and the unemployment rate as broadly in line with the average over the past 20 years (the benchmark used by the FOMC). We have maintained our assumption that the risks to our GDP projection are tilted to the downside, importantly because both monetary and fiscal policy appear to be better positioned to offset large positive shocks than substantial adverse ones. Foreign developments and prospects also pose downside risks to the U.S. economy. For example, the Chinese economy continues to face the possibility of a hard landing, many corporations in emerging market economies (EMEs) are highly leveraged and sensitive to global financial conditions, and Europe remains rife with political and economic risk. Moreover, in the event of an economic downturn, foreign authorities would likely face similar constraints in providing policy stimulus as in the United States. We view the risks around our unemployment rate projection as aligned with those for GDP and, therefore, as skewed to the upside.

With regard to inflation, we do not view the current level of uncertainty as unusually high. We see important risks to inflation on both the upside and the downside, and we view those risks as roughly balanced—a change from previous Tealbooks, when we viewed the risks as weighted somewhat to the downside. Some survey-based measures of longer-term inflation expectations are near historically low levels, and the realization of the downside risks to economies abroad could put upward pressure on the foreign exchange value of the dollar, thereby depressing U.S. import prices and inflation. However, this year's inflation data have been somewhat firmer than we had expected, suggesting that upside risks may be greater than we had previously thought. One such risk is the possibility that, with the economy projected to be operating above its long-run potential, inflation may increase more than the staff expects, consistent with the predictions of models that emphasize nonlinear effects of economic slack on inflation.

Our view of the risks to the economic outlook is informed by the staff's quarterly quantitative surveillance assessment, which judges the vulnerabilities in the U.S. financial system as moderate. This assessment reflects strong capital and liquidity buffers at U.S. banks and, according to the somewhat limited available data, moderate leverage at nonbank financial institutions. Additionally, the recent implementation of

Alternative Scenarios

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

| Measure and scenario | 2016 | | 2017 | 2018 | 2019 | 2020-21 |
|---------------------------------------|------|-----|------|------|------|---------|
| | H1 | H2 | | | | |
| <i>Real GDP</i> | | | | | | |
| Extended Tealbook baseline | 1.1 | 2.3 | 2.2 | 1.9 | 1.7 | 1.4 |
| Positive hysteresis | 1.1 | 2.3 | 2.3 | 2.2 | 2.2 | 1.9 |
| Higher labor costs | 1.1 | 2.3 | 1.7 | 1.2 | 1.4 | 1.4 |
| Brighter expectations | 1.1 | 2.3 | 3.5 | 2.0 | 1.4 | 1.2 |
| Lower equilibrium funds rate | 1.1 | 2.3 | 1.9 | 1.7 | 1.6 | 1.5 |
| Banking crisis in Europe | 1.1 | 2.1 | 1.4 | 1.5 | 1.9 | 1.7 |
| Stronger dollar and EME turbulence | 1.1 | 2.2 | 1.5 | 1.5 | 1.8 | 1.6 |
| <i>Unemployment rate¹</i> | | | | | | |
| Extended Tealbook baseline | 4.9 | 4.9 | 4.6 | 4.4 | 4.4 | 4.7 |
| Positive hysteresis | 4.9 | 4.9 | 4.7 | 4.4 | 4.2 | 4.2 |
| Higher labor costs | 4.9 | 4.9 | 4.6 | 4.5 | 4.6 | 5.0 |
| Brighter expectations | 4.9 | 4.9 | 4.0 | 3.8 | 4.0 | 4.4 |
| Lower equilibrium funds rate | 4.9 | 4.9 | 4.8 | 4.6 | 4.6 | 4.9 |
| Banking crisis in Europe | 4.9 | 4.9 | 5.0 | 5.0 | 4.9 | 5.0 |
| Stronger dollar and EME turbulence | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 5.1 |
| <i>Total PCE prices</i> | | | | | | |
| Extended Tealbook baseline | 1.1 | 1.8 | 1.7 | 1.8 | 1.9 | 2.1 |
| Positive hysteresis | 1.1 | 1.8 | 1.7 | 1.9 | 2.0 | 2.1 |
| Higher labor costs | 1.1 | 1.8 | 1.9 | 2.3 | 2.5 | 2.6 |
| Brighter expectations | 1.1 | 1.8 | 1.8 | 2.0 | 2.0 | 2.1 |
| Lower equilibrium funds rate | 1.1 | 1.8 | 1.7 | 1.8 | 1.9 | 2.0 |
| Banking crisis in Europe | 1.1 | 1.6 | .9 | 1.4 | 1.7 | 2.0 |
| Stronger dollar and EME turbulence | 1.1 | 1.6 | 1.0 | 1.5 | 1.7 | 1.9 |
| <i>Core PCE prices</i> | | | | | | |
| Extended Tealbook baseline | 1.9 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 |
| Positive hysteresis | 1.9 | 1.6 | 1.7 | 1.9 | 2.0 | 2.0 |
| Higher labor costs | 1.9 | 1.6 | 1.9 | 2.3 | 2.5 | 2.6 |
| Brighter expectations | 1.9 | 1.6 | 1.8 | 2.0 | 2.0 | 2.1 |
| Lower equilibrium funds rate | 1.9 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 |
| Banking crisis in Europe | 1.9 | 1.5 | 1.2 | 1.4 | 1.7 | 1.9 |
| Stronger dollar and EME turbulence | 1.9 | 1.5 | 1.1 | 1.5 | 1.7 | 1.9 |
| <i>Federal funds rate¹</i> | | | | | | |
| Extended Tealbook baseline | .4 | .6 | 1.5 | 2.4 | 3.0 | 3.3 |
| Positive hysteresis | .4 | .6 | 1.5 | 2.3 | 3.0 | 3.3 |
| Higher labor costs | .4 | .6 | 1.6 | 2.7 | 3.4 | 3.7 |
| Brighter expectations | .4 | .6 | 1.9 | 3.2 | 3.9 | 4.0 |
| Lower equilibrium funds rate | .4 | .6 | 1.3 | 2.0 | 2.4 | 2.4 |
| Banking crisis in Europe | .4 | .5 | 1.0 | 1.4 | 1.9 | 2.7 |
| Stronger dollar and EME turbulence | .4 | .6 | 1.0 | 1.5 | 2.1 | 2.6 |

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

money market fund reform has reduced the risk of investor runs on such funds. Although leverage in the corporate sector is elevated, the pace of borrowing by the private nonfinancial sector as a whole remains moderate. Notably, borrowing by households remains far below levels experienced late in the previous decade. Valuations across a range of asset markets appear moderate, albeit only when evaluated relative to Treasury yields. As a result, the possibility that long-term interest rates could rise more rapidly than expected poses a downside risk to prices of a wide range of risky assets. Finally, the European banking sector remains weak, and an intensification of strains, particularly at a large institution, could lead to disruptions and a tightening in financial conditions abroad with significant implications for the U.S. economic outlook.

ALTERNATIVE SCENARIOS

To illustrate some of the risks to the outlook, we construct several alternatives to the baseline projection using simulations of staff models. The first two scenarios explore possible risks to the forecast from a tight labor market. In the first scenario, running the economy “hot” for a while leads to persistent positive effects on the productive capacity of the economy. By contrast, in the second scenario, the tight labor market results in inflation notably above the FOMC’s 2 percent objective. The third scenario illustrates the effects of a more positive outlook for consumer confidence and household spending than in the baseline. In the fourth scenario, aggregate demand is persistently weaker, consistent with a substantially lower long-run equilibrium real interest rate. The fifth scenario considers the effect of a banking crisis in Europe, and the sixth and final scenario analyzes the case where U.S. policy normalization leads to a much stronger appreciation of the dollar and financial turbulence in the EMEs.

The first, second, and fourth scenarios are simulated in the FRB/US model, while the third scenario uses the EDO model. The fifth and sixth scenarios are run in the multicountry SIGMA model. In all of the scenarios, the federal funds rate is governed by the same inertial policy rule as in the baseline, including the adjustments to the intercept in the near term. In all cases, we assume that the size and composition of the SOMA portfolio follow the baseline paths.

Positive Hysteresis

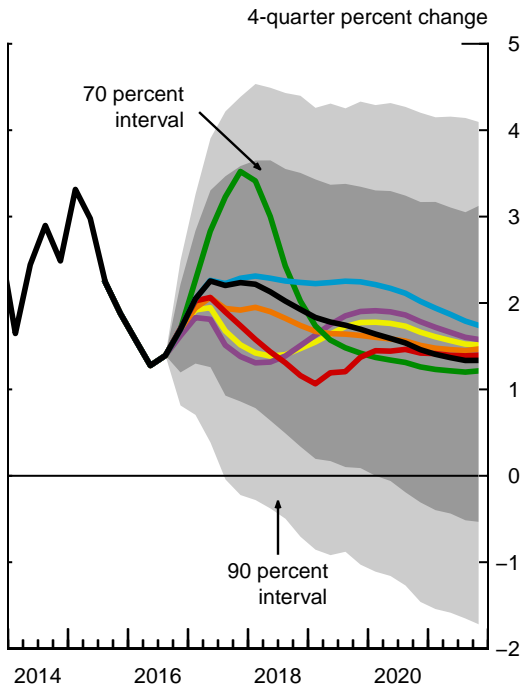
In the staff baseline projection, the unemployment rate remains below its assumed natural rate of 5 percent for a number of years. This extended period of labor market

Forecast Confidence Intervals and Alternative Scenarios

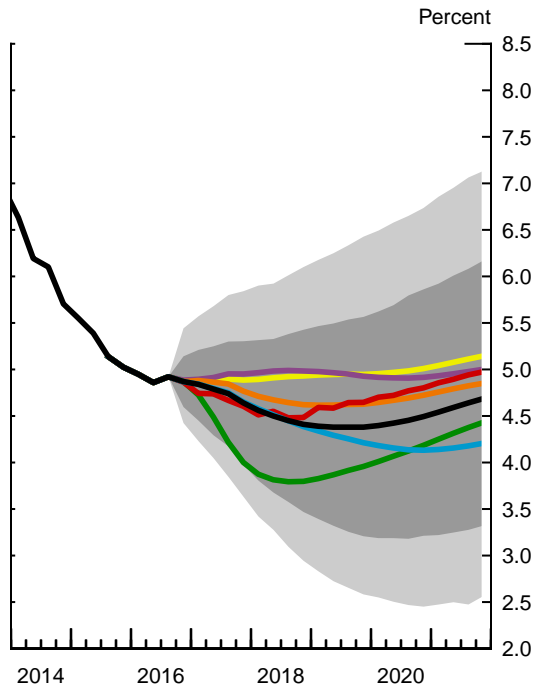
Confidence Intervals Based on FRB/US Stochastic Simulations

- Extended Tealbook baseline
- Brighter expectations
- Banking crisis in Europe
- Positive hysteresis
- Lower equilibrium funds rate
- Stronger dollar and EME turbulence
- Higher labor costs

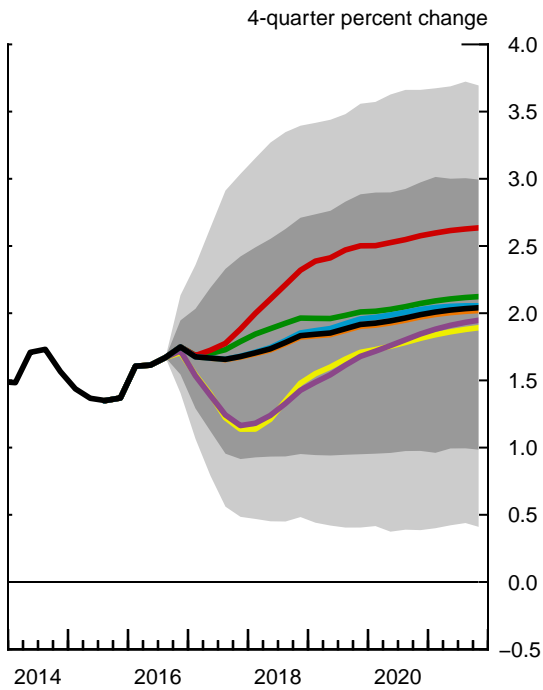
Real GDP



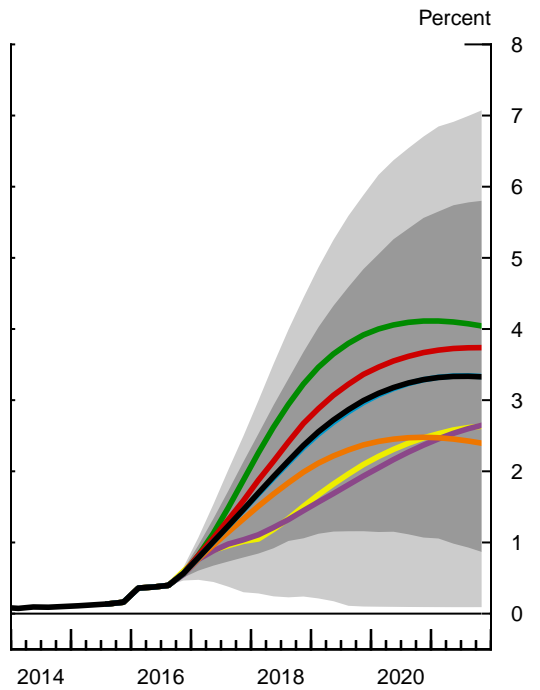
Unemployment Rate



PCE Prices excluding Food and Energy



Federal Funds Rate



tightness may have persistent positive effects on the productive capacity of the economy—a phenomenon referred to as “positive hysteresis.” In this scenario, we assume that by running the economy hot for a while, exits from the labor force are held down and additional workers are drawn into the labor force, resulting in an increase in the trend labor force participation rate that accumulates to 1 percentage point above the baseline by the end of 2021. Furthermore, we assume that the experience workers gain through greater employment reduces the natural rate of unemployment $\frac{1}{2}$ percentage point below the baseline by the end of 2021.¹

In this scenario, potential output rises, on average, about $\frac{1}{2}$ percentage point more per year over the projection period than in the baseline. This additional room to grow allows real GDP to also increase about $\frac{1}{2}$ percentage point per year more than in the baseline. As a result, the output gap is about unchanged. The unemployment rate follows a lower trajectory and is almost $\frac{1}{2}$ percentage point below the baseline by 2021. With inflation and the output gap roughly at the baseline, the federal funds rate is little changed.²

Higher Labor Costs

In the Tealbook projection, the extended period of undershooting of the natural rate of unemployment is not projected to result in substantial inflationary pressure, consistent with the subdued response of prices to economic activity seen in recent years. However, it is possible that inflation will rise more than we have assumed in the baseline, which could happen if wages prove more sensitive to a tight labor market than to a slack market. Furthermore, the projected improvements in the labor market might be accompanied by continued weak productivity growth if those workers who find jobs in a hot labor market are relatively less productive than those who find jobs in more normal conditions.

This scenario considers the possibility that labor costs grow at a faster rate than in the baseline as labor market conditions tighten further in the medium term. In particular,

¹ We modeled this alternative scenario by augmenting the usual specifications in FRB/US for the natural rate of unemployment and the trend labor force participation rate with endogenous hysteresis-generating components.

² If we instead assumed that policymakers learn only slowly about the improvement in potential output, the federal funds rate would follow a steeper trajectory than shown in this scenario, reaching almost $3\frac{3}{4}$ percent at the end of 2021. In that case, real GDP growth would be $\frac{1}{4}$ percentage point lower, on average, between 2019 and 2021 than in this scenario, with the unemployment rate $\frac{1}{4}$ percentage point above this scenario at the end of 2021. Inflation would still remain close to the baseline.

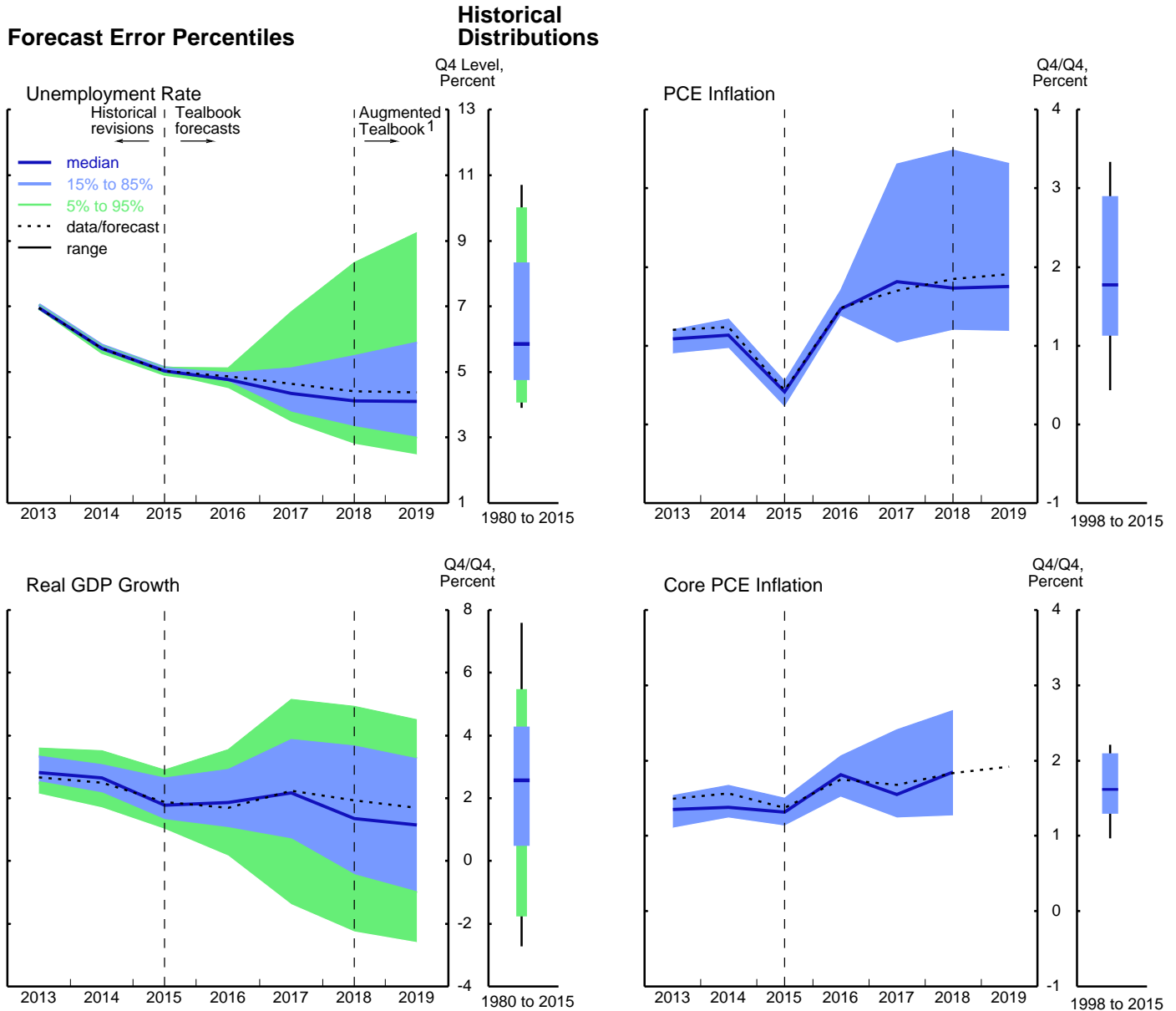
Selected Tealbook Projections and 70 Percent Confidence Intervals Derived from Historical Tealbook Forecast Errors and FRB/US Simulations

| Measure | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---------|---------|---------|----------|---------|---------|
| <i>Real GDP</i> | | | | | | |
| <i>(percent change, Q4 to Q4)</i> | | | | | | |
| Projection | 1.7 | 2.2 | 1.9 | 1.7 | 1.5 | 1.3 |
| Confidence interval | | | | | | |
| Tealbook forecast errors | 1.0–2.9 | .7–3.9 | -.5–3.7 | -1.0–3.3 | ... | ... |
| FRB/US stochastic simulations | 1.2–2.2 | .9–3.6 | .3–3.5 | .1–3.3 | -.3–3.2 | -.5–3.1 |
| <i>Civilian unemployment rate</i> | | | | | | |
| <i>(percent, Q4)</i> | | | | | | |
| Projection | 4.9 | 4.6 | 4.4 | 4.4 | 4.5 | 4.7 |
| Confidence interval | | | | | | |
| Tealbook forecast errors | 4.7–5.0 | 3.7–5.1 | 3.3–5.5 | 3.0–5.9 | ... | ... |
| FRB/US stochastic simulations | 4.6–5.1 | 4.0–5.3 | 3.5–5.4 | 3.2–5.6 | 3.2–5.9 | 3.3–6.2 |
| <i>PCE prices, total</i> | | | | | | |
| <i>(percent change, Q4 to Q4)</i> | | | | | | |
| Projection | 1.5 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 |
| Confidence interval | | | | | | |
| Tealbook forecast errors | 1.4–1.7 | 1.0–3.3 | 1.2–3.5 | 1.2–3.3 | ... | ... |
| FRB/US stochastic simulations | 1.2–1.7 | .8–2.5 | .9–2.8 | .9–3.0 | .9–3.1 | .9–3.2 |
| <i>PCE prices excluding food and energy</i> | | | | | | |
| <i>(percent change, Q4 to Q4)</i> | | | | | | |
| Projection | 1.7 | 1.7 | 1.8 | 1.9 | 2.0 | 2.0 |
| Confidence interval | | | | | | |
| Tealbook forecast errors | 1.5–2.1 | 1.2–2.4 | 1.3–2.7 | ... | ... | ... |
| FRB/US stochastic simulations | 1.5–1.9 | .9–2.4 | 1.0–2.7 | 1.0–2.9 | 1.0–3.0 | 1.0–3.0 |
| <i>Federal funds rate</i> | | | | | | |
| <i>(percent, Q4)</i> | | | | | | |
| Projection | .6 | 1.5 | 2.4 | 3.0 | 3.3 | 3.3 |
| Confidence interval | | | | | | |
| FRB/US stochastic simulations | .5–.6 | .8–2.1 | 1.1–3.7 | 1.2–4.8 | 1.1–5.6 | .9–5.8 |

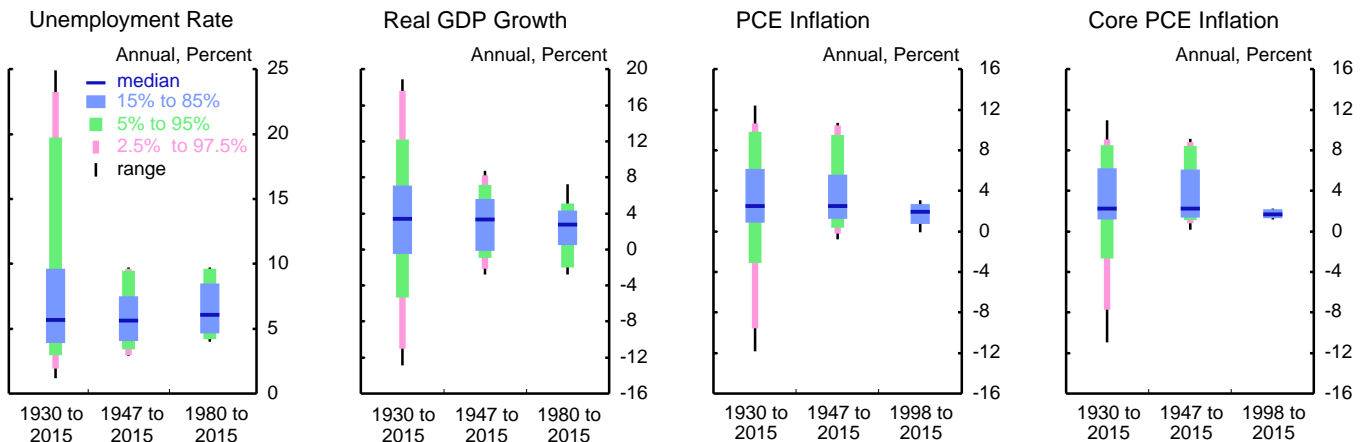
Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2015 set of model equation residuals. Intervals derived from Tealbook forecast errors are based on projections made from 1980 to 2015 for real GDP and unemployment and from 1998 to 2015 for PCE prices. The intervals for real GDP, unemployment, and total PCE prices are extended into 2019 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



Note: See the technical note in the appendix for more information on this exhibit.

1. Augmented Tealbook prediction intervals use 2- and 3-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2019.



we assume that hourly labor compensation rises $\frac{1}{2}$ percentage point per year faster during the projection period. We also assume that the pickup in labor productivity growth projected by the staff between 2017 and 2018 is not realized, and growth remains at the same subdued pace seen in recent years.

In the FRB/US model, the resulting higher labor costs pass through to prices, and PCE price inflation reaches 2.6 percent by 2021. Real GDP rises about $1\frac{1}{2}$ percent, on average, from 2017 through 2019, compared with 2 percent in the baseline projection, because of the weaker path of labor productivity. As a result of higher inflation, the federal funds rate rises more steeply, reaching $3\frac{3}{4}$ percent at the end of 2021. The unemployment rate is $\frac{1}{4}$ percentage point higher than the baseline, on average, between 2019 and 2021.

Brighter Expectations

Although many indicators of investment and production have recently been weak, the labor market has continued to improve. Moreover, consumer confidence has remained upbeat, and there are signs of wage acceleration, which could support households' income expectations and further boost consumer confidence.

In this scenario, we assume that these conditions lead to a further improvement in the sentiment of firms and households, boosting consumer spending growth and spurring additional business investment.³ As a result, real GDP rises $2\frac{3}{4}$ percent per year, on average, in 2017 and 2018, compared with 2 percent in the baseline projection. The unemployment rate falls steeply, bottoming out at a touch above $3\frac{3}{4}$ percent by the end of 2018; it then edges up over the remainder of the forecast period but stays lower than in the baseline. With resource utilization running tight, inflation is a little higher than in the baseline, reaching 2 percent by the end of 2019. The federal funds rate rises more steeply, reaching 4 percent at the beginning of 2020.

Lower Long-Run Equilibrium Federal Funds Rate

Aggregate demand has been weak during the recent recovery, reflecting both domestic and global factors. In the baseline, these factors are expected to dissipate, causing the equilibrium real federal funds rate to rise over time. However, some observers have argued that the factors depressing demand are essentially permanent.

³ We generate this scenario by applying a one standard deviation positive shock to the model's main driver of aggregate demand, spread over the first three quarters of 2017.

Accordingly, this scenario assumes persistently weaker domestic aggregate demand over the next decade than in the baseline, consistent with a long-run equilibrium real federal funds rate of zero.⁴ We assume that policymakers only gradually recognize the lower trajectory of the equilibrium interest rate over the projection period.

In the longer run, monetary policy fully responds to the lower equilibrium real federal funds rate. By 2021, the federal funds rate is almost 1 percentage point lower than in the baseline and the unemployment rate has nearly returned to the baseline. In the short run, however, the federal funds rate does not fall enough to fully offset the weaker aggregate demand both because the policy rule is very inertial and because policymakers are assumed to recognize the lower long-run equilibrium interest rate only gradually. As a result, output expands more slowly than in the baseline, and the path for the unemployment rate is slightly higher. Real GDP growth through 2017 and 2018 is $\frac{1}{4}$ percentage point lower than in the baseline projection; the unemployment rate is about $\frac{1}{4}$ percentage point higher in 2017 and 2018. With resource utilization only slightly weaker, inflation remains close to the baseline.⁵

Banking Crisis in Europe

Europe's banking sector has many underlying vulnerabilities, including tepid earnings prospects, weak capital positions, and a high level of nonperforming loans. Accordingly, we think there is some chance that a major European bank will experience a severe deterioration in its liquidity and capital conditions, requiring the bank to be resolved and restructured. Although it is possible that this scenario could have relatively muted spillovers, the resolution of a systemically important European bank could precipitate a loss in confidence in Europe's banking system more generally and in the authorities' abilities to address these problems. In this scenario, we consider the possibility that a resolution of a major European bank leads to a banking crisis that produces sizable adverse financial spillovers to both the United States and the rest of the world.

⁴ This very low level of the long-run equilibrium real federal funds rate is consistent with the estimates in Thomas Laubach and John C. Williams (2016), "Measuring the Natural Rate of Interest Redux," Finance and Economics Discussion Series 2016-011 (Washington: Board of Governors of the Federal Reserve System, February), <http://dx.doi.org/10.17016/FEDS.2016.011>.

⁵ If we instead assumed that policymakers immediately recognized the lower long-run equilibrium federal funds rate, the federal funds rate would be almost $\frac{1}{4}$ percentage point lower and real GDP growth almost a tenth higher, on average, per year relative to this scenario over the projection period; the unemployment rate would return to the baseline by the end of 2021.

Specifically, this scenario assumes that financial conditions in Europe tighten significantly and that household and business confidence decline amid rising unemployment and heightened disinflationary pressures. European corporate borrowing spreads rise over 100 basis points, and household borrowing spreads also rise noticeably. With little scope for the ECB to reduce long-term sovereign yields, Europe falls into a recession, with GDP bottoming out at about 4 percent below the baseline by the end of 2018. The crisis has adverse spillovers to the United States: U.S. corporate bond spreads rise about 50 basis points, while flight-to-safety flows cause the trade-weighted dollar to appreciate 5 percent. Financial conditions tighten even more in the EMEs, and their currencies depreciate substantially.

Weaker foreign activity and the stronger dollar cause U.S. real net exports to fall relative to the baseline. U.S. domestic demand also declines relative to the baseline as a result of lower confidence and weaker financial conditions. All told, U.S. real GDP only grows about 1½ percent in 2017 and 2018. The U.S. unemployment rate runs at about 5 percent in 2017 and 2018, ½ percentage point higher than in the baseline. Lower resource utilization and falling import prices reduce U.S. core inflation to slightly above 1 percent by 2017. The federal funds rate follows a shallower path, reaching only 1½ percent at the end of 2018, compared with about 2½ percent in the baseline.

Stronger Dollar and EME Turbulence

The staff baseline projects that the dollar will appreciate about 5 percent over the forecast period as the federal funds rate rises somewhat faster than markets currently appear to expect. However, ongoing U.S. policy normalization could well cause a much larger and more persistent appreciation of the dollar, especially if higher U.S. interest rates generate financial turbulence in vulnerable EMEs. In this scenario, we assume that the broad real dollar appreciates an additional 10 percent by the end of next year above its baseline path and that EME corporate borrowing spreads rise substantially—about 100 basis points—in the face of persistent capital outflows from EMEs.⁶ All told, foreign GDP growth runs about ¾ percentage point below the baseline in 2017, notwithstanding the sizable depreciation of foreign currencies.

The stronger dollar and weaker foreign growth depress U.S. real net exports. Consequently, U.S. real GDP growth moderates to 1½ percent in 2017, about

⁶ The increase in EME corporate spreads is similar to what happened to those spreads following the “taper tantrum” in the spring of 2013.

$\frac{3}{4}$ percentage point less than in the baseline. Lower import prices and weaker economic activity cause core PCE price inflation to be only slightly above 1 percent in 2017. The federal funds rate follows a shallower path than in the baseline, moving up to about $1\frac{1}{2}$ percent by the end of 2018, 1 percentage point less than in the baseline.

Assessment of Key Macroeconomic Risks (1)

Probability of Inflation Events

(4 quarters ahead)

| 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 | .08 | .12 | .08 | .01 |
| Previous Tealbook | .05 | .07 | .05 | .01 |
| <i>Less than 1 percent</i> | | | | |
| Current Tealbook | .13 | .09 | .04 | .42 |
| Previous Tealbook | .23 | .15 | .08 | .46 |

Probability of Unemployment Events

(4 quarters ahead)

| Probability that the unemployment rate will ... | Staff | FRB/US | EDO | BVAR |
|---|-------|--------|-----|------|
| <i>Increase by 1 percentage point</i> | | | | |
| Current Tealbook | .04 | .02 | .16 | .02 |
| Previous Tealbook | .03 | .01 | .14 | .02 |
| <i>Decrease by 1 percentage point</i> | | | | |
| Current Tealbook | .07 | .15 | .13 | .13 |
| Previous Tealbook | .10 | .32 | .15 | .16 |

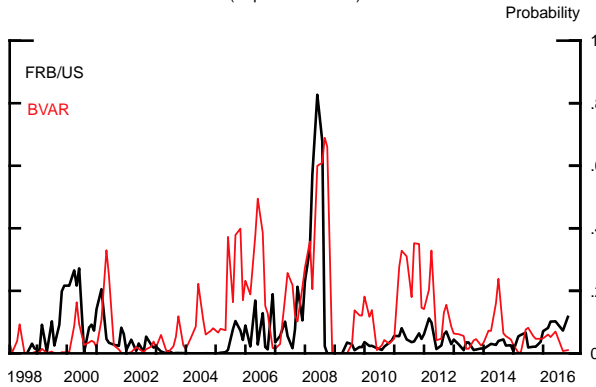
Probability of Near-Term Recession

| Probability that real GDP declines in the next two quarters | Staff | FRB/US | EDO | BVAR | Factor Model |
|---|-------|--------|-----|------|--------------|
| Current Tealbook | .02 | .01 | .05 | .03 | .07 |
| Previous Tealbook | .02 | .01 | .04 | .02 | .01 |

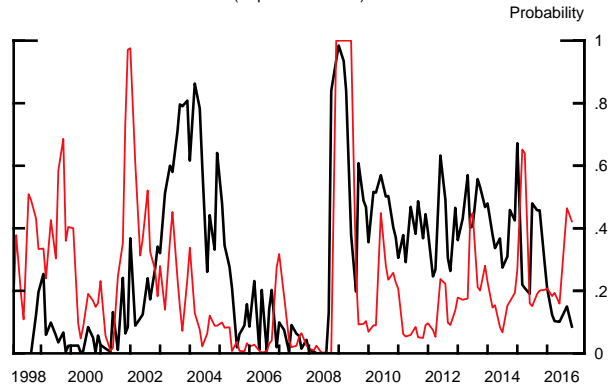
Note: “Staff” represents stochastic simulations in FRB/US around the staff baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook 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)

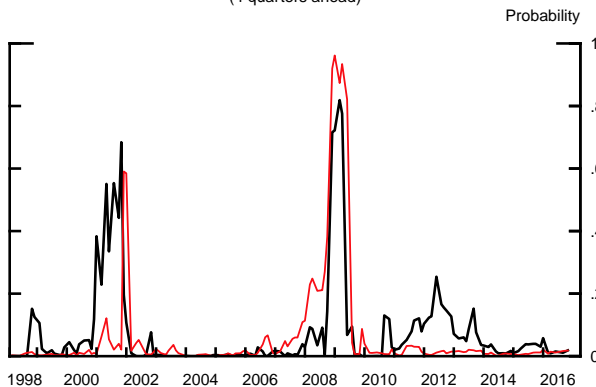
Probability that Total PCE Inflation Is above 3 Percent
(4 quarters ahead)



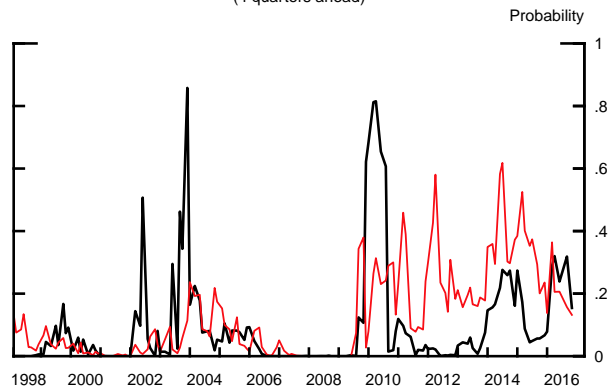
Probability that Total PCE Inflation Is below 1 Percent
(4 quarters ahead)



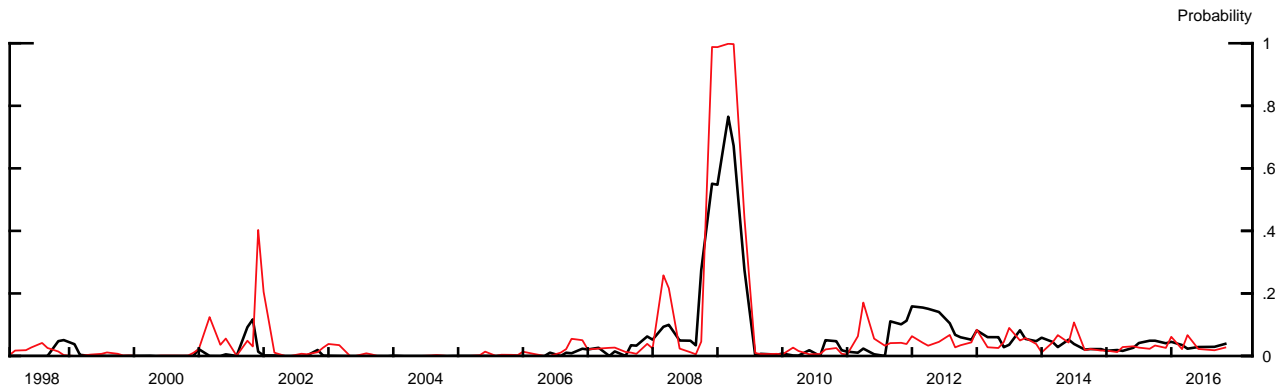
Probability that the Unemployment Rate Increases 1 ppt
(4 quarters ahead)



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

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 1946.¹

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.

¹ 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 ¹ | |
|---------------------------------|-------------|----------|----------|----------|-----------------|----------|----------------------|----------|--------------------------------|----------|
| | 09/14/16 | 10/25/16 | 09/14/16 | 10/25/16 | 09/14/16 | 10/25/16 | 09/14/16 | 10/25/16 | 09/14/16 | 10/25/16 |
| <i>Quarterly</i> | | | | | | | | | | |
| 2016:Q1 | 1.3 | 1.3 | .8 | .8 | .3 | .3 | 2.1 | 2.1 | 4.9 | 4.9 |
| 2016:Q2 | 3.8 | 3.7 | 1.4 | 1.4 | 2.0 | 2.0 | 1.8 | 1.8 | 4.9 | 4.9 |
| 2016:Q3 | 3.9 | 3.8 | 2.7 | 2.5 | 1.1 | 1.4 | 1.3 | 1.6 | 4.9 | 4.9 |
| 2016:Q4 | 3.8 | 4.3 | 2.4 | 2.1 | 1.4 | 2.2 | 1.4 | 1.5 | 4.9 | 4.9 |
| 2017:Q1 | 4.2 | 4.1 | 2.3 | 2.2 | 1.6 | 1.7 | 1.7 | 1.8 | 4.8 | 4.8 |
| 2017:Q2 | 4.2 | 4.1 | 2.3 | 2.2 | 1.7 | 1.8 | 1.6 | 1.8 | 4.7 | 4.8 |
| 2017:Q3 | 4.1 | 4.1 | 2.4 | 2.2 | 1.6 | 1.7 | 1.5 | 1.6 | 4.6 | 4.7 |
| 2017:Q4 | 4.3 | 4.0 | 2.6 | 2.2 | 1.5 | 1.6 | 1.5 | 1.6 | 4.5 | 4.6 |
| 2018:Q1 | 4.3 | 4.2 | 2.2 | 2.2 | 1.9 | 1.9 | 1.9 | 1.9 | 4.4 | 4.6 |
| 2018:Q2 | 4.0 | 3.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 4.3 | 4.5 |
| 2018:Q3 | 3.8 | 3.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 4.3 | 4.5 |
| 2018:Q4 | 3.8 | 3.8 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 4.3 | 4.4 |
| <i>Two-quarter²</i> | | | | | | | | | | |
| 2016:Q2 | 2.6 | 2.5 | 1.1 | 1.1 | 1.1 | 1.1 | 1.9 | 1.9 | -1 | -1 |
| 2016:Q4 | 3.8 | 4.1 | 2.5 | 2.3 | 1.2 | 1.8 | 1.3 | 1.6 | .0 | .0 |
| 2017:Q2 | 4.2 | 4.1 | 2.3 | 2.2 | 1.7 | 1.7 | 1.7 | 1.8 | -2 | -1 |
| 2017:Q4 | 4.2 | 4.0 | 2.5 | 2.2 | 1.6 | 1.6 | 1.5 | 1.6 | -2 | -2 |
| 2018:Q2 | 4.1 | 4.1 | 2.1 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | -2 | -1 |
| 2018:Q4 | 3.8 | 3.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | .0 | -1 |
| <i>Four-quarter³</i> | | | | | | | | | | |
| 2015:Q4 | 3.0 | 3.0 | 1.9 | 1.9 | .4 | .4 | 1.4 | 1.4 | -7 | -7 |
| 2016:Q4 | 3.2 | 3.3 | 1.8 | 1.7 | 1.2 | 1.5 | 1.6 | 1.7 | -1 | -1 |
| 2017:Q4 | 4.2 | 4.1 | 2.4 | 2.2 | 1.6 | 1.7 | 1.6 | 1.7 | -4 | -3 |
| 2018:Q4 | 4.0 | 3.9 | 2.0 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | -2 | -2 |
| 2019:Q4 | 3.8 | 3.7 | 1.7 | 1.7 | 1.9 | 1.9 | 1.9 | 1.9 | -1 | .0 |
| <i>Annual</i> | | | | | | | | | | |
| 2015 | 3.7 | 3.7 | 2.6 | 2.6 | .3 | .3 | 1.4 | 1.4 | 5.3 | 5.3 |
| 2016 | 2.8 | 2.8 | 1.5 | 1.5 | 1.0 | 1.1 | 1.6 | 1.7 | 4.9 | 4.9 |
| 2017 | 4.1 | 4.1 | 2.3 | 2.2 | 1.5 | 1.8 | 1.5 | 1.7 | 4.7 | 4.8 |
| 2018 | 4.1 | 4.0 | 2.2 | 2.1 | 1.8 | 1.8 | 1.7 | 1.8 | 4.3 | 4.5 |
| 2019 | 3.8 | 3.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 4.2 | 4.4 |

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 | 2016 | | | | 2017 | | | | 2018 | | | | 2016 ¹ | 2017 ¹ | 2018 ¹ | 2019 ¹ |
|--|------|------|------|--|------|------|------|------|------|------|------|------|-------------------|-------------------|-------------------|-------------------|
| | Q2 | Q3 | Q4 | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | |
| | | | | | | | | | | | | | | | | |
| Real GDP | 1.4 | 2.5 | 2.1 | | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 1.9 | 1.8 | 1.8 | 1.7 | 2.2 | 1.9 | 1.7 |
| <i>Previous Tealbook</i> | 1.4 | 2.7 | 2.4 | | 2.3 | 2.3 | 2.4 | 2.6 | 2.2 | 1.9 | 1.8 | 1.9 | 1.7 | 2.4 | 2.0 | 1.7 |
| Final sales | 2.6 | 2.2 | 1.9 | | 1.9 | 2.1 | 2.3 | 2.5 | 2.5 | 1.9 | 1.9 | 1.9 | 2.0 | 2.2 | 1.9 | 1.7 |
| <i>Previous Tealbook</i> | 2.6 | 2.2 | 2.3 | | 2.2 | 2.3 | 2.3 | 2.5 | 2.1 | 2.0 | 1.9 | 1.9 | 2.1 | 2.3 | 2.0 | 1.7 |
| Priv. dom. final purch. | 3.2 | 2.2 | 2.1 | | 2.6 | 2.8 | 2.9 | 2.9 | 2.7 | 2.6 | 2.4 | 2.3 | 2.2 | 2.8 | 2.5 | 2.2 |
| <i>Previous Tealbook</i> | 3.2 | 2.5 | 2.5 | | 2.8 | 2.9 | 2.9 | 3.0 | 2.8 | 2.6 | 2.4 | 2.3 | 2.2 | 2.9 | 2.5 | 2.2 |
| Personal cons. expend. | 4.3 | 2.6 | 1.8 | | 2.5 | 2.6 | 2.5 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.4 | 2.4 |
| <i>Previous Tealbook</i> | 4.4 | 3.0 | 2.2 | | 2.7 | 2.7 | 2.7 | 2.7 | 2.5 | 2.5 | 2.4 | 2.4 | 2.8 | 2.7 | 2.5 | 2.3 |
| Durables | 9.8 | 11.4 | 1.9 | | 3.0 | 4.9 | 4.6 | 5.3 | 4.7 | 4.5 | 4.1 | 3.7 | 5.5 | 4.5 | 4.2 | 1.8 |
| Nondurables | 5.7 | -1.3 | 1.5 | | 2.8 | 2.2 | 2.1 | 2.4 | 2.7 | 2.6 | 2.6 | 2.6 | 2.0 | 2.4 | 2.6 | 2.4 |
| Services | 3.0 | 2.5 | 1.8 | | 2.4 | 2.3 | 2.3 | 2.2 | 2.1 | 2.0 | 2.1 | 2.1 | 2.3 | 2.3 | 2.1 | 2.4 |
| Residential investment | -7.7 | -6.3 | .3 | | 6.2 | 9.1 | 8.3 | 7.3 | 5.9 | 4.8 | 4.8 | 3.7 | -1.7 | 7.7 | 4.8 | 2.4 |
| <i>Previous Tealbook</i> | -7.8 | -5.0 | -1.3 | | 6.0 | 7.6 | 8.1 | 8.3 | 6.2 | 5.0 | 4.0 | 3.2 | -1.7 | 7.5 | 4.6 | 2.4 |
| Nonres. priv. fixed invest. | 1.0 | 3.0 | 4.3 | | 1.7 | 2.2 | 3.3 | 3.4 | 2.7 | 2.7 | 1.8 | 1.5 | 1.2 | 2.6 | 2.2 | 1.3 |
| <i>Previous Tealbook</i> | -1 | 2.3 | 5.1 | | 2.0 | 2.7 | 3.0 | 3.1 | 3.0 | 2.5 | 1.8 | 1.7 | .9 | 2.7 | 2.2 | 1.2 |
| Equipment & intangibles | 1.8 | 2.5 | 4.9 | | 2.0 | 2.4 | 4.0 | 4.3 | 3.4 | 3.4 | 2.4 | 2.1 | 1.2 | 3.1 | 2.8 | 1.9 |
| <i>Previous Tealbook</i> | .4 | 1.8 | 6.3 | | 2.8 | 3.3 | 3.6 | 4.0 | 3.8 | 3.1 | 2.4 | 2.2 | 1.0 | 3.4 | 2.9 | 1.9 |
| Nonres. structures | -2.1 | 5.0 | 2.1 | | .5 | 1.6 | 1.2 | .2 | .2 | .0 | -.4 | -.5 | 1.2 | .9 | -.2 | -1.0 |
| <i>Previous Tealbook</i> | -2.2 | 4.1 | 1.0 | | -.6 | .3 | .9 | -.1 | .1 | -.1 | -.5 | -.5 | .7 | .1 | -.3 | -1.1 |
| Net exports ² | -558 | -548 | -563 | | -590 | -616 | -634 | -643 | -663 | -680 | -694 | -700 | -559 | -621 | -684 | -734 |
| <i>Previous Tealbook</i> ² | -558 | -570 | -583 | | -606 | -628 | -648 | -657 | -675 | -689 | -701 | -707 | -569 | -635 | -693 | -739 |
| Exports | 1.8 | 7.8 | .3 | | .8 | 1.3 | 1.7 | 2.3 | 2.6 | 2.8 | 2.9 | 3.0 | 2.3 | 1.5 | 2.8 | 2.7 |
| Imports | .2 | 4.5 | 2.5 | | 4.8 | 4.8 | 4.1 | 3.1 | 4.9 | 4.5 | 4.2 | 3.2 | 1.6 | 4.2 | 4.2 | 4.0 |
| Gov't. cons. & invest. | -1.7 | .3 | 2.7 | | 1.8 | 1.6 | 1.3 | 1.1 | .9 | .6 | .5 | .2 | .7 | 1.4 | .5 | .6 |
| <i>Previous Tealbook</i> | -1.5 | 1.7 | 2.8 | | 1.8 | 1.6 | 1.4 | 1.1 | .9 | .6 | .5 | .3 | 1.1 | 1.5 | .6 | .6 |
| Federal | -.4 | 2.9 | 2.9 | | 2.5 | 1.9 | 1.3 | .7 | .4 | -.3 | -.6 | -1.3 | 1.0 | 1.6 | -.5 | -.4 |
| Defense | -3.2 | 2.2 | 2.4 | | 2.2 | 1.8 | 1.0 | .8 | .2 | -.2 | -.5 | -1.4 | -.5 | 1.4 | -.5 | -.2 |
| Nondefense | 3.8 | 3.9 | 3.5 | | 2.9 | 2.2 | 1.8 | .5 | .6 | -.5 | -.7 | -1.1 | 3.0 | 1.8 | -.4 | -6 |
| State & local | -2.5 | -1.2 | 2.7 | | 1.4 | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | .6 | 1.4 | 1.2 | 1.2 |
| Change in priv. inventories ² | -9 | -4 | 3 | | 18 | 23 | 20 | 10 | 17 | 15 | 12 | 9 | 8 | 18 | 13 | 6 |
| <i>Previous Tealbook</i> ² | -11 | 10 | 11 | | 15 | 17 | 19 | 21 | 23 | 20 | 16 | 13 | 13 | 18 | 18 | 9 |

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 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|------|------|------|------|------|------|------|------|------|------|
| Real GDP | 2.7 | 1.7 | 1.3 | 2.7 | 2.5 | 1.9 | 1.7 | 2.2 | 1.9 | 1.7 |
| <i>Previous Tealbook</i> | 2.7 | 1.7 | 1.3 | 2.7 | 2.5 | 1.9 | 1.8 | 2.4 | 2.0 | 1.7 |
| Final sales | 2.0 | 1.5 | 1.7 | 2.0 | 2.7 | 2.0 | 2.0 | 2.2 | 1.9 | 1.7 |
| <i>Previous Tealbook</i> | 2.0 | 1.5 | 1.7 | 2.0 | 2.7 | 2.0 | 2.1 | 2.3 | 2.0 | 1.7 |
| Priv. dom. final purch. | 3.5 | 2.6 | 2.3 | 2.6 | 3.8 | 2.7 | 2.2 | 2.8 | 2.5 | 2.2 |
| <i>Previous Tealbook</i> | 3.5 | 2.6 | 2.3 | 2.6 | 3.8 | 2.7 | 2.3 | 2.9 | 2.5 | 2.2 |
| Personal cons. expend. | 3.1 | 1.5 | 1.3 | 2.0 | 3.5 | 2.6 | 2.6 | 2.5 | 2.4 | 2.4 |
| <i>Previous Tealbook</i> | 3.1 | 1.5 | 1.3 | 2.0 | 3.5 | 2.6 | 2.8 | 2.7 | 2.5 | 2.3 |
| Durables | 9.3 | 4.8 | 7.2 | 5.2 | 8.6 | 5.5 | 5.5 | 4.5 | 4.2 | 1.8 |
| Nondurables | 3.3 | .4 | .8 | 2.6 | 2.8 | 2.3 | 2.0 | 2.4 | 2.6 | 2.4 |
| Services | 2.0 | 1.4 | .6 | 1.3 | 2.9 | 2.2 | 2.3 | 2.3 | 2.1 | 2.4 |
| Residential investment | -5.2 | 6.0 | 15.7 | 6.8 | 6.2 | 13.1 | -1.7 | 7.7 | 4.8 | 2.4 |
| <i>Previous Tealbook</i> | -5.2 | 6.0 | 15.7 | 6.8 | 6.2 | 13.1 | -1.7 | 7.5 | 4.6 | 2.4 |
| Nonres. priv. fixed invest. | 8.1 | 9.0 | 5.2 | 4.8 | 5.0 | .8 | 1.2 | 2.6 | 2.2 | 1.3 |
| <i>Previous Tealbook</i> | 8.1 | 9.0 | 5.2 | 4.8 | 5.0 | .8 | .9 | 2.7 | 2.2 | 1.2 |
| Equipment & intangibles | 12.0 | 9.2 | 5.5 | 4.5 | 4.1 | 3.8 | 1.2 | 3.1 | 2.8 | 1.9 |
| <i>Previous Tealbook</i> | 12.0 | 9.2 | 5.5 | 4.5 | 4.1 | 3.8 | 1.0 | 3.4 | 2.9 | 1.9 |
| Nonres. structures | -4.0 | 8.0 | 4.1 | 5.8 | 8.0 | -8.8 | 1.2 | .9 | -2 | -1.0 |
| <i>Previous Tealbook</i> | -4.0 | 8.0 | 4.1 | 5.8 | 8.0 | -8.8 | .7 | .1 | -.3 | -1.1 |
| Net exports ¹ | -459 | -459 | -447 | -405 | -426 | -540 | -559 | -621 | -684 | -734 |
| <i>Previous Tealbook¹</i> | -459 | -459 | -447 | -405 | -426 | -540 | -569 | -635 | -693 | -739 |
| Exports | 10.1 | 4.2 | 2.2 | 5.9 | 3.1 | -2.2 | 2.3 | 1.5 | 2.8 | 2.7 |
| Imports | 12.0 | 3.5 | .3 | 2.5 | 6.1 | 2.5 | 1.6 | 4.2 | 4.2 | 4.0 |
| Gov't. cons. & invest. | -1.1 | -3.0 | -2.2 | -2.8 | .3 | 2.2 | .7 | 1.4 | .5 | .6 |
| <i>Previous Tealbook</i> | -1.1 | -3.0 | -2.2 | -2.8 | .3 | 2.2 | 1.1 | 1.5 | .6 | .6 |
| Federal | 3.2 | -4.0 | -2.1 | -6.7 | -1.3 | 1.7 | 1.0 | 1.6 | -5 | -4 |
| Defense | 2.0 | -4.1 | -3.9 | -7.1 | -4.1 | .6 | -.5 | 1.4 | -.5 | -2 |
| Nondefense | 5.5 | -3.9 | 1.0 | -6.0 | 3.4 | 3.4 | 3.0 | 1.8 | -4 | -6 |
| State & local | -4.0 | -2.3 | -2.3 | -1 | 1.3 | 2.5 | .6 | 1.4 | 1.2 | 1.2 |
| Change in priv. inventories ¹ | 58 | 38 | 55 | 79 | 58 | 84 | 8 | 18 | 13 | 6 |
| <i>Previous Tealbook¹</i> | 58 | 38 | 55 | 79 | 58 | 84 | 13 | 18 | 18 | 9 |

1. Billions of chained (2009) dollars.

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

| Item | 2016 | | | | 2017 | | | | 2018 | | | | 2016 ¹ | 2017 ¹ | 2018 ¹ | 2019 ¹ |
|---|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|-------------------|-------------------|-------------------|-------------------|
| | Q2 | Q3 | Q4 | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | |
| | | | | | | | | | | | | | | | | |
| Real GDP <i>Previous Tealbook</i> | 1.4 | 2.5 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 1.9 | 1.8 | 1.8 | 1.7 | 2.2 | 1.9 | 1.7 |
| | 1.4 | 2.7 | 2.4 | 2.3 | 2.3 | 2.4 | 2.6 | 2.2 | 2.2 | 1.9 | 1.8 | 1.9 | 1.8 | 2.4 | 2.0 | 1.7 |
| Final sales <i>Previous Tealbook</i> | 2.6 | 2.2 | 1.9 | 1.9 | 2.1 | 2.3 | 2.5 | 2.5 | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.2 | 1.9 | 1.7 |
| | 2.6 | 2.2 | 2.3 | 2.2 | 2.3 | 2.3 | 2.5 | 2.5 | 2.1 | 2.0 | 1.9 | 1.9 | 2.1 | 2.3 | 2.0 | 1.7 |
| Priv. dom. final purch. <i>Previous Tealbook</i> | 2.7 | 1.9 | 1.8 | 2.2 | 2.4 | 2.5 | 2.4 | 2.4 | 2.3 | 2.2 | 2.1 | 2.0 | 1.8 | 2.4 | 2.1 | 1.9 |
| | 2.7 | 2.2 | 2.1 | 2.3 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.5 | 2.1 | 1.9 |
| Personal cons. expend. <i>Previous Tealbook</i> | 2.9 | 1.8 | 1.2 | 1.7 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.7 | 1.8 | 1.7 | 1.6 |
| | 3.0 | 2.1 | 1.5 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.9 | 1.8 | 1.7 | 1.6 |
| Durables | .7 | .8 | .1 | .2 | .4 | .3 | .4 | .4 | .3 | .3 | .3 | .3 | .4 | .3 | .3 | .1 |
| Nondurables | .8 | -2 | .2 | .4 | .3 | .3 | .4 | .4 | .4 | .4 | .4 | .4 | .3 | .3 | .4 | .4 |
| Services | 1.4 | 1.1 | .8 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.0 | 1.1 |
| Residential investment <i>Previous Tealbook</i> | -3 | -2 | .0 | .2 | .3 | .3 | .3 | .3 | .2 | .2 | .2 | .1 | -1 | .3 | .2 | .1 |
| | -3 | -2 | .0 | .2 | .3 | .3 | .3 | .3 | .2 | .2 | .2 | .1 | -1 | .3 | .2 | .1 |
| Nonres. priv. fixed invest. <i>Previous Tealbook</i> | .1 | .4 | .5 | .2 | .3 | .4 | .4 | .4 | .3 | .3 | .2 | .2 | .1 | .3 | .3 | .2 |
| | .0 | .3 | .6 | .3 | .3 | .4 | .4 | .4 | .4 | .3 | .2 | .2 | .1 | .3 | .3 | .2 |
| Equipment & intangibles <i>Previous Tealbook</i> | .2 | .2 | .5 | .2 | .2 | .4 | .4 | .4 | .3 | .3 | .2 | .2 | .1 | .3 | .3 | .2 |
| | .0 | .2 | .6 | .3 | .3 | .3 | .4 | .4 | .4 | .3 | .2 | .2 | .1 | .3 | .3 | .2 |
| Nonres. structures <i>Previous Tealbook</i> | -1 | .1 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| | -1 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| Net exports <i>Previous Tealbook</i> | .2 | .3 | -3 | -6 | -5 | -4 | -2 | -2 | -4 | -3 | -3 | -1 | .0 | -4 | -3 | -3 |
| | .2 | -2 | -3 | -5 | -5 | -4 | -2 | -2 | -4 | -3 | -2 | -1 | -1 | -4 | -2 | -3 |
| Exports | .2 | .9 | .0 | .1 | .2 | .2 | .3 | .3 | .3 | .3 | .3 | .4 | .3 | .2 | .3 | .3 |
| Imports | .0 | -6 | -4 | -7 | -7 | -6 | -5 | -5 | -7 | -7 | -6 | -5 | -2 | -6 | -6 | -6 |
| Gov't. cons. & invest. <i>Previous Tealbook</i> | -3 | .1 | .5 | .3 | .3 | .2 | .2 | .2 | .2 | .1 | .1 | .0 | .1 | .3 | .1 | .1 |
| | -3 | .3 | .5 | .3 | .3 | .2 | .2 | .2 | .2 | .1 | .1 | .0 | .2 | .3 | .1 | .1 |
| Federal | .0 | .2 | .2 | .2 | .1 | .1 | .0 | .0 | .0 | .0 | .0 | -1 | .1 | .1 | .0 | .0 |
| Defense | -1 | .1 | .1 | .1 | .1 | .1 | .0 | .0 | .0 | .0 | .0 | -1 | .0 | .1 | .0 | .0 |
| Nondefense | .1 | .1 | .1 | .1 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .1 | .1 | .0 | .0 |
| State & local | -3 | -1 | .3 | .2 | .1 | .1 | .1 | .1 | .2 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| Change in priv. inventories <i>Previous Tealbook</i> | -1.2 | .2 | .2 | .3 | .1 | -1 | -2 | -2 | .3 | -1 | -1 | -1 | -3 | .0 | .0 | .0 |
| | -1.2 | .5 | .0 | .1 | .0 | .0 | .1 | .1 | .1 | -1 | -1 | -1 | -3 | .1 | .0 | .0 |

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 | 2016 | | | | 2017 | | | | 2018 | | | | 2016 ¹ | 2017 ¹ | 2018 ¹ | 2019 ¹ |
|--|--------------|--------------|-------------|--|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|-------------------|-------------------|-------------------|
| | Q2 | Q3 | Q4 | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | |
| | | | | | | | | | | | | | | | | |
| GDP chain-wt. price index <i>Previous Tealbook</i> | 2.3 2.3 | 1.3 1.2 | 2.2 1.4 | | 1.8 1.9 | 1.8 1.8 | 1.8 1.7 | 1.7 1.7 | 2.0 2.1 | 2.0 2.0 | 1.9 1.9 | 1.9 1.9 | 1.6 1.3 | 1.8 1.8 | 2.0 2.0 | 2.0 2.0 |
| PCE chain-wt. price index <i>Previous Tealbook</i> | 2.0 2.0 | 1.4 1.1 | 2.2 1.4 | | 1.7 1.6 | 1.8 1.7 | 1.7 1.6 | 1.6 1.5 | 1.9 1.9 | 1.9 1.9 | 1.8 1.8 | 1.8 1.8 | 1.5 1.2 | 1.7 1.6 | 1.8 1.8 | 1.9 1.9 |
| Energy <i>Previous Tealbook</i> | 15.5 15.5 | 2.3 2.1 | 25.4 2.4 | | 1.4 .8 | 3.1 4.3 | 2.3 3.0 | 1.9 2.3 | 2.0 2.4 | 1.6 2.2 | 1.2 1.7 | 1.3 1.6 | .7 -4.3 | 2.2 2.6 | 1.5 2.0 | 1.2 1.7 |
| Food <i>Previous Tealbook</i> | -1.8 -1.8 | -2.1 -1.5 | -.2 .9 | | 1.2 1.5 | 1.4 1.4 | 1.9 1.9 | 2.1 2.1 | 2.2 2.2 | 2.2 2.2 | 2.2 2.2 | 2.2 2.2 | -1.5 -1.0 | 1.7 1.7 | 2.2 2.2 | 2.2 2.2 |
| Ex. food & energy <i>Previous Tealbook</i> | 1.8 1.8 | 1.6 1.3 | 1.5 1.4 | | 1.8 1.7 | 1.8 1.6 | 1.6 1.5 | 1.6 1.5 | 1.9 1.9 | 1.9 1.9 | 1.8 1.8 | 1.8 1.8 | 1.7 1.6 | 1.7 1.6 | 1.8 1.8 | 1.9 1.9 |
| Ex. food & energy, market based <i>Previous Tealbook</i> | 1.6 1.6 | 1.5 1.2 | 1.3 1.2 | | 1.6 1.6 | 1.7 1.6 | 1.5 1.4 | 1.5 1.4 | 1.8 1.8 | 1.8 1.8 | 1.7 1.7 | 1.7 1.7 | 1.5 1.5 | 1.6 1.5 | 1.8 1.8 | 1.9 1.9 |
| CPI <i>Previous Tealbook</i> | 2.5 2.5 | 1.6 1.6 | 3.2 2.1 | | 2.2 2.1 | 2.3 2.3 | 2.3 2.2 | 2.2 2.2 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 1.7 1.5 | 2.3 2.2 | 2.3 2.3 | 2.3 2.3 |
| Ex. food & energy <i>Previous Tealbook</i> | 2.1 2.1 | 1.9 1.9 | 2.1 2.2 | | 2.4 2.2 | 2.3 2.2 | 2.3 2.2 | 2.2 2.2 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.2 2.2 | 2.3 2.2 | 2.3 2.3 | 2.4 2.3 |
| ECI, hourly compensation ² <i>Previous Tealbook</i> ² | 2.3 2.3 | 2.1 2.1 | 2.2 2.2 | | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.4 2.4 | 2.4 2.4 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.3 2.3 | 2.4 2.4 | 2.4 2.4 |
| Business sector | | | | | | | | | | | | | | | | |
| Output per hour <i>Previous Tealbook</i> | -.4 -.8 | 3.0 2.4 | -.4 .7 | | 1.2 1.1 | 1.1 1.0 | 1.1 1.0 | 1.1 1.2 | 1.3 1.2 | .9 .9 | 1.1 1.0 | 1.3 1.3 | .4 .4 | 1.1 1.1 | 1.1 1.1 | 1.2 1.2 |
| Compensation per hour <i>Previous Tealbook</i> | 3.4 3.3 | 4.1 3.4 | 3.1 2.9 | | 2.9 2.9 | 2.8 2.8 | 2.8 2.8 | 2.8 2.8 | 3.1 3.2 | 3.0 3.1 | 3.0 3.1 | 3.0 3.1 | 2.4 2.1 | 2.8 2.9 | 3.0 3.1 | 3.2 3.2 |
| Unit labor costs <i>Previous Tealbook</i> | 3.8 4.2 | 1.1 1.0 | 3.5 2.2 | | 1.7 1.8 | 1.6 1.8 | 1.7 1.8 | 1.6 1.6 | 1.8 2.0 | 2.0 2.1 | 1.9 2.1 | 1.7 1.8 | 2.0 1.7 | 1.7 1.8 | 1.9 2.0 | 1.9 2.0 |
| Core goods imports chain-wt. price index ³ <i>Previous Tealbook</i> ³ | .5 .5 | 1.7 2.4 | .1 .6 | | .4 .9 | .8 .8 | .8 .8 | .8 .8 | .8 .8 | .8 .8 | .8 .7 | .8 .7 | .0 .3 | .7 .8 | .8 .8 | .7 .8 |

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 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|------------|--------------|------------|--------------|--------------|----------------|--------------|------------|------------|------------|
| GDP chain-wt. price index <i>Previous Tealbook</i> | 1.8 1.8 | 1.9 1.9 | 1.9 1.9 | 1.6 1.6 | 1.5 1.5 | 1.1 1.1 | 1.6 1.3 | 1.8 1.8 | 2.0 2.0 | 2.0 2.0 |
| PCE chain-wt. price index <i>Previous Tealbook</i> | 1.3 1.3 | 2.7 2.7 | 1.8 1.8 | 1.2 1.2 | 1.2 1.2 | .4 .4 | 1.5 1.2 | 1.7 1.6 | 1.8 1.8 | 1.9 1.9 |
| Energy <i>Previous Tealbook</i> | 6.4 6.4 | 12.0 12.0 | 2.3 2.3 | -2.5 -2.5 | -6.2 -6.2 | -15.8 -15.8 | .7 -4.3 | 2.2 2.6 | 1.5 2.0 | 1.2 1.7 |
| Food <i>Previous Tealbook</i> | 1.3 1.3 | 5.1 5.1 | 1.2 1.2 | .7 .7 | 2.7 2.7 | .3 .3 | -1.5 -1.0 | 1.7 1.7 | 2.2 2.2 | 2.2 2.2 |
| Ex. food & energy <i>Previous Tealbook</i> | 1.0 1.0 | 1.9 1.9 | 1.8 1.8 | 1.5 1.5 | 1.6 1.6 | 1.4 1.4 | 1.7 1.6 | 1.7 1.6 | 1.8 1.8 | 1.9 1.9 |
| Ex. food & energy, market based <i>Previous Tealbook</i> | .7 .7 | 1.9 1.9 | 1.5 1.5 | 1.1 1.1 | 1.2 1.2 | 1.1 1.1 | 1.5 1.5 | 1.6 1.5 | 1.8 1.8 | 1.9 1.9 |
| CPI <i>Previous Tealbook</i> | 1.2 1.2 | 3.3 3.3 | 1.9 1.9 | 1.2 1.2 | 1.2 1.2 | .4 .4 | 1.7 1.5 | 2.3 2.2 | 2.3 2.3 | 2.3 2.3 |
| Ex. food & energy <i>Previous Tealbook</i> | .6 .6 | 2.2 2.2 | 1.9 1.9 | 1.7 1.7 | 1.7 1.7 | 2.0 2.0 | 2.2 2.2 | 2.3 2.2 | 2.3 2.3 | 2.4 2.3 |
| ECI, hourly compensation ¹ <i>Previous Tealbook</i> ¹ | 2.1 2.1 | 2.2 2.2 | 1.8 1.8 | 2.0 2.0 | 2.3 2.3 | 1.9 1.9 | 2.3 2.3 | 2.3 2.3 | 2.4 2.4 | 2.4 2.4 |
| Business sector Output per hour <i>Previous Tealbook</i> | 1.6 1.6 | .0 .0 | -2 -2 | 2.0 2.0 | -1 -1 | .5 .5 | .4 .4 | 1.1 1.1 | 1.1 1.1 | 1.2 1.2 |
| Compensation per hour <i>Previous Tealbook</i> | 1.2 1.2 | .5 .5 | 5.8 5.8 | .0 .0 | 2.7 2.7 | 3.1 3.1 | 2.4 2.1 | 2.8 2.9 | 3.0 3.1 | 3.2 3.2 |
| Unit labor costs <i>Previous Tealbook</i> | -4 -4 | .6 .6 | 6.0 6.0 | -2.0 -2.0 | 2.8 2.8 | 2.6 2.6 | 2.0 1.7 | 1.7 1.8 | 1.9 2.0 | 1.9 2.0 |
| Core goods imports chain-wt. price index ² <i>Previous Tealbook</i> ² | 2.3 2.3 | 4.3 4.3 | .1 .1 | -1.5 -1.5 | .5 .5 | -3.3 -3.3 | .0 .3 | .7 .8 | .8 .8 | .7 .8 |

1. Private-industry workers.

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

Other Macroeconomic Indicators

| Item | 2016 | | | | 2017 | | | | 2018 | | | | 2016 ¹ | 2017 ¹ | 2018 ¹ | 2019 ¹ |
|---|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|-------------------|-------------------|-------------------|-------------------|
| | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | | |
| | <i>Employment and production</i> | .5 | .6 | .5 | .5 | .5 | .5 | .5 | .5 | .4 | .4 | .4 | | | | |
| Nonfarm payroll employment ² | 4.9 | 4.9 | 4.9 | 4.8 | 4.8 | 4.7 | 4.6 | 4.6 | 4.5 | 4.5 | 4.4 | 4.9 | 4.6 | 4.4 | 4.4 | |
| Unemployment rate ³ | 4.9 | 4.9 | 4.9 | 4.8 | 4.7 | 4.6 | 4.5 | 4.5 | 4.3 | 4.3 | 4.3 | 4.9 | 4.5 | 4.3 | 4.2 | |
| <i>Previous Tealbook³</i> | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | |
| Natural rate of unemployment ³ | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | |
| <i>Previous Tealbook³</i> | 59.7 | 59.8 | 59.8 | 59.7 | 59.7 | 59.7 | 59.7 | 59.7 | 59.6 | 59.5 | 59.5 | 59.8 | 59.7 | 59.5 | 59.2 | |
| Employment-to-Population Ratio ³ | 59.7 | 59.6 | 59.6 | 59.5 | 59.4 | 59.4 | 59.3 | 59.3 | 59.1 | 59.1 | 59.0 | 59.6 | 59.3 | 59.0 | 58.7 | |
| Employment-to-Population Trend ³ | -1 | .0 | .1 | .3 | .5 | .6 | .8 | .8 | 1.0 | 1.1 | 1.2 | .1 | .8 | 1.2 | 1.2 | |
| GDP gap ⁴ | -1 | .1 | .2 | .4 | .6 | .8 | 1.1 | 1.1 | 1.3 | 1.4 | 1.5 | .2 | 1.1 | 1.5 | 1.5 | |
| <i>Previous Tealbook⁴</i> | -8 | 1.8 | -1.0 | .3 | .9 | 1.1 | 1.4 | 1.4 | 1.1 | 1.1 | 1.0 | -4 | .9 | 1.1 | .9 | |
| Industrial production ⁵ | -7 | 1.9 | -9 | .7 | .9 | .8 | 1.5 | 1.5 | 1.1 | 1.1 | 1.0 | -4 | 1.0 | 1.2 | .9 | |
| <i>Previous Tealbook⁵</i> | -1.2 | .9 | .2 | -4 | .8 | 1.0 | 1.1 | 1.1 | 1.0 | 1.0 | .9 | .1 | .6 | 1.0 | .9 | |
| Manufacturing industr. prod. ⁵ | -1.0 | .5 | -3 | .4 | 1.1 | 1.2 | 1.4 | 1.4 | 1.1 | 1.1 | .9 | -1 | 1.0 | 1.1 | .9 | |
| <i>Previous Tealbook⁵</i> | 74.9 | 75.0 | 74.8 | 74.6 | 74.6 | 74.6 | 74.7 | 74.7 | 74.8 | 74.8 | 74.8 | 74.8 | 74.7 | 74.8 | 75.0 | |
| Capacity utilization rate - mfg. ³ | 75.0 | 74.9 | 74.7 | 74.6 | 74.7 | 74.8 | 74.9 | 74.9 | 75.0 | 75.0 | 75.1 | 74.7 | 74.9 | 75.1 | 75.1 | |
| <i>Previous Tealbook³</i> | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 1.2 | 1.3 | 1.4 | 1.4 | |
| Housing starts ⁶ | 17.1 | 17.5 | 17.3 | 17.1 | 17.0 | 16.9 | 16.8 | 16.8 | 16.7 | 16.7 | 16.6 | 17.3 | 16.9 | 16.7 | 16.5 | |
| Light motor vehicle sales ⁶ | 3.7 | 3.8 | 4.3 | 4.1 | 4.1 | 4.1 | 4.0 | 4.0 | 3.9 | 3.8 | 3.8 | 3.3 | 4.1 | 3.9 | 3.7 | |
| <i>Income and saving</i> | 2.1 | 2.8 | 1.7 | 3.2 | 2.2 | 2.2 | 1.9 | 1.9 | 2.0 | 1.9 | 2.4 | 2.2 | 2.4 | 2.2 | 2.4 | |
| Nominal GDP ⁵ | 2.3 | 2.9 | 2.2 | 3.9 | 2.1 | 2.5 | 2.2 | 2.2 | 2.1 | 2.4 | 2.5 | 2.4 | 2.7 | 2.3 | 2.3 | |
| Real disposable pers. income ⁵ | 5.7 | 5.7 | 5.8 | 5.9 | 5.8 | 5.7 | 5.5 | 5.5 | 5.4 | 5.3 | 5.3 | 5.8 | 5.5 | 5.3 | 5.3 | |
| <i>Previous Tealbook⁵</i> | 5.7 | 5.7 | 5.7 | 5.9 | 5.8 | 5.8 | 5.6 | 5.6 | 5.4 | 5.4 | 5.4 | 5.7 | 5.6 | 5.4 | 5.4 | |
| Personal saving rate ³ | -2.4 | 7.6 | 9.0 | 3.2 | 5.7 | 4.3 | 3.5 | 3.5 | 3.4 | 2.4 | 1.9 | 6.9 | 4.2 | 3.5 | 2.6 | |
| <i>Previous Tealbook³</i> | 10.8 | 10.9 | 11.1 | 11.0 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.0 | 11.1 | 11.1 | 11.0 | 11.0 | |
| Corporate profits ⁷ | 17.9 | 18.1 | 18.2 | 18.1 | 18.2 | 18.2 | 18.1 | 18.1 | 18.1 | 18.0 | 17.9 | 18.2 | 18.1 | 17.9 | 17.5 | |
| Profit share of GNP ³ | 2.8 | 3.2 | 3.3 | 3.2 | 3.3 | 3.3 | 3.3 | 3.3 | 3.2 | 3.1 | 3.0 | 3.3 | 3.3 | 3.0 | 2.4 | |
| Gross national saving rate ³ | | | | | | | | | | | | | | | | |
| Net national saving rate ³ | | | | | | | | | | | | | | | | |

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.

5. Annual values are for the fourth quarter of the year indicated.

6. Level, millions; annual values are annual averages.

7. Percent change, annual rate, with inventory valuation and capital consumption adjustments.

Greensheets

Other Macroeconomic Indicators

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

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|------|------|------|------|------|-------|------|------|------|------|
| <i>Employment and production</i> | | | | | | | | | | |
| Nonfarm payroll employment ¹ | .8 | 2.0 | 2.1 | 2.4 | 2.8 | 2.8 | 2.2 | 2.0 | 1.6 | 1.2 |
| Unemployment rate ² | 9.5 | 8.7 | 7.8 | 7.0 | 5.7 | 5.0 | 4.9 | 4.6 | 4.4 | 4.4 |
| <i>Previous Tealbook²</i> | 9.5 | 8.7 | 7.8 | 7.0 | 5.7 | 5.0 | 4.9 | 4.5 | 4.3 | 4.2 |
| Natural rate of unemployment ² | 5.9 | 5.9 | 5.6 | 5.4 | 5.1 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| <i>Previous Tealbook²</i> | 5.9 | 5.9 | 5.6 | 5.4 | 5.1 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Employment-to-Population Ratio ² | 58.3 | 58.5 | 58.7 | 58.5 | 59.2 | 59.4 | 59.8 | 59.7 | 59.5 | 59.2 |
| Employment-to-Population Trend ² | 61.1 | 60.7 | 60.3 | 60.2 | 60.1 | 59.9 | 59.6 | 59.3 | 59.0 | 58.7 |
| GDP gap ³ | -4.2 | -3.7 | -3.7 | -2.5 | -9 | .0 | .1 | .8 | 1.2 | 1.2 |
| <i>Previous Tealbook³</i> | -4.2 | -3.7 | -3.7 | -2.5 | -9 | .0 | .2 | 1.1 | 1.5 | 1.5 |
| Industrial production ⁴ | 5.9 | 2.6 | 2.3 | 2.0 | 3.5 | -1.6 | -4 | .9 | 1.1 | .9 |
| <i>Previous Tealbook⁴</i> | 5.9 | 2.6 | 2.3 | 2.0 | 3.5 | -1.6 | -4 | 1.0 | 1.2 | .9 |
| Manufacturing industr. prod. ⁴ | 5.9 | 2.5 | 1.7 | .8 | 2.0 | .0 | .1 | .6 | 1.0 | .9 |
| <i>Previous Tealbook⁴</i> | 5.9 | 2.5 | 1.7 | .8 | 2.0 | .0 | -1 | 1.0 | 1.1 | .9 |
| Capacity utilization rate - mfg. ² | 72.4 | 74.4 | 74.3 | 74.6 | 76.0 | 75.4 | 74.8 | 74.7 | 74.8 | 75.0 |
| <i>Previous Tealbook²</i> | 72.4 | 74.4 | 74.3 | 74.6 | 76.0 | 75.4 | 74.7 | 74.9 | 75.1 | 75.1 |
| Housing starts ⁵ | .6 | .6 | .8 | .9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 |
| Light motor vehicle sales ⁵ | 11.6 | 12.7 | 14.4 | 15.5 | 16.5 | 17.4 | 17.3 | 16.9 | 16.7 | 16.5 |
| <i>Income and saving</i> | | | | | | | | | | |
| Nominal GDP ⁴ | 4.6 | 3.6 | 3.2 | 4.3 | 4.1 | 3.0 | 3.3 | 4.1 | 3.9 | 3.7 |
| Real disposable pers. income ⁴ | 2.6 | 1.7 | 5.1 | -2.8 | 4.5 | 3.0 | 2.2 | 2.4 | 2.2 | 2.4 |
| <i>Previous Tealbook⁴</i> | 2.6 | 1.7 | 5.1 | -2.8 | 4.5 | 3.0 | 2.4 | 2.7 | 2.3 | 2.3 |
| Personal saving rate ² | 5.5 | 5.8 | 9.2 | 4.7 | 5.6 | 6.0 | 5.8 | 5.5 | 5.3 | 5.3 |
| <i>Previous Tealbook²</i> | 5.5 | 5.8 | 9.2 | 4.7 | 5.6 | 6.0 | 5.7 | 5.6 | 5.4 | 5.4 |
| Corporate profits ⁶ | 18.0 | 6.8 | .6 | 4.7 | 6.6 | -11.2 | 6.9 | 4.2 | 3.5 | 2.6 |
| Profit share of GNP ² | 12.0 | 12.3 | 12.0 | 12.0 | 12.4 | 10.7 | 11.1 | 11.1 | 11.0 | 11.0 |
| Gross national saving rate ² | 15.2 | 16.1 | 18.0 | 18.2 | 19.2 | 18.8 | 18.2 | 18.1 | 17.9 | 17.5 |
| Net national saving rate ² | -3 | .8 | 2.9 | 3.1 | 4.3 | 3.9 | 3.3 | 3.3 | 3.0 | 2.4 |

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.

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

| Item | Fiscal year | | | | 2016 | | | | 2017 | | | | 2018 | | | |
|--|-------------|--------|--------|--------|----------------------------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 2016 | 2017 | 2018 | 2019 | Q1 ^a | Q2 ^a | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| | | | | | Not seasonally adjusted | | | | | | | | | | | |
| Unified budget | | | | | Seasonally adjusted annual rates | | | | | | | | | | | |
| Receipts | 3,267 | 3,409 | 3,595 | 3,759 | 711 | 993 | 798 | 772 | 725 | 1,069 | 843 | 803 | 765 | 1,140 | 887 | 851 |
| Outlays | 3,854 | 3,998 | 4,131 | 4,396 | 956 | 932 | 984 | 982 | 1,054 | 988 | 974 | 1,023 | 1,099 | 1,044 | 965 | 1,116 |
| Surplus/deficit | -587 | -589 | -536 | -637 | -245 | 61 | -187 | -210 | -329 | 81 | -131 | -220 | -334 | 96 | -78 | -265 |
| <i>Previous Tealbook</i> | -583 | -595 | -535 | -630 | -245 | 61 | -183 | -213 | -331 | 81 | -132 | -222 | -334 | 98 | -77 | -265 |
| Means of financing: | | | | | | | | | | | | | | | | |
| Borrowing | 1,052 | 746 | 657 | 757 | 251 | 8 | 241 | 314 | 308 | -39 | 163 | 255 | 356 | -63 | 109 | 295 |
| Cash decrease | -155 | -21 | -1 | 0 | 20 | -50 | 10 | -58 | 51 | -12 | -2 | -5 | 8 | -3 | -1 | -0 |
| Other ¹ | -310 | -136 | -120 | -120 | -25 | -18 | -65 | -46 | -30 | -30 | -30 | -30 | -30 | -30 | -30 | -30 |
| Cash operating balance, end of period | 354 | 375 | 375 | 375 | 314 | 364 | 354 | 412 | 361 | 372 | 375 | 380 | 372 | 375 | 375 | 375 |
| NIPA federal sector | | | | | | | | | | | | | | | | |
| Receipts | 3,468 | 3,547 | 3,735 | 3,873 | 3,442 | 3,473 | 3,440 | 3,494 | 3,525 | 3,564 | 3,606 | 3,642 | 3,726 | 3,768 | 3,804 | 3,837 |
| Expenditures | 4,125 | 4,308 | 4,501 | 4,726 | 4,111 | 4,137 | 4,194 | 4,228 | 4,302 | 4,328 | 4,375 | 4,398 | 4,500 | 4,534 | 4,571 | 4,616 |
| Consumption expenditures | 974 | 1,010 | 1,034 | 1,041 | 969 | 975 | 984 | 993 | 1,009 | 1,016 | 1,022 | 1,027 | 1,034 | 1,036 | 1,038 | 1,038 |
| Defense | 588 | 600 | 610 | 612 | 587 | 586 | 590 | 593 | 600 | 602 | 604 | 606 | 610 | 611 | 611 | 611 |
| Nondefense | 386 | 410 | 424 | 429 | 382 | 389 | 394 | 400 | 409 | 413 | 417 | 421 | 423 | 425 | 427 | 427 |
| Other spending | 3,151 | 3,298 | 3,467 | 3,685 | 3,142 | 3,163 | 3,210 | 3,235 | 3,293 | 3,312 | 3,354 | 3,372 | 3,466 | 3,498 | 3,533 | 3,578 |
| Current account surplus | -657 | -761 | -766 | -853 | -668 | -664 | -754 | -734 | -777 | -764 | -769 | -757 | -774 | -766 | -767 | -780 |
| Gross investment | 266 | 275 | 282 | 286 | 265 | 265 | 267 | 271 | 274 | 277 | 280 | 281 | 283 | 283 | 284 | 283 |
| Gross saving less gross investment ² | -652 | -765 | -776 | -866 | -662 | -658 | -750 | -733 | -780 | -769 | -777 | -765 | -784 | -777 | -778 | -790 |
| Fiscal indicators | | | | | | | | | | | | | | | | |
| High-employment (HEB) surplus/deficit ³ | -659.9 | -792.9 | -850.3 | -963.4 | -664.9 | -665.4 | -762.0 | -749.2 | -798.9 | -801.6 | -821.9 | -824.2 | -853.7 | -857.5 | -865.8 | -885.7 |
| Change in HEB, percent of potential GDP | .6 | .6 | .2 | .4 | .6 | .0 | .5 | -.1 | .2 | .0 | .1 | .0 | .1 | .0 | .0 | .1 |
| Fiscal impetus (FI), percent of GDP ⁴ | .3 | .3 | .1 | .1 | .5 | -.1 | .2 | .7 | .4 | .4 | .3 | .3 | .2 | .1 | .1 | .1 |
| <i>Previous Tealbook</i> | .4 | .4 | .1 | .2 | .5 | -.1 | .5 | .7 | .4 | .4 | .4 | .3 | .2 | .1 | .1 | .1 |
| Federal purchases | .1 | .1 | .0 | .0 | -.1 | .0 | .2 | .2 | .2 | .1 | .1 | .0 | .0 | .0 | .0 | -.1 |
| State and local purchases | .1 | .1 | .1 | .1 | .4 | -.3 | -.1 | .3 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| Taxes and transfers | .2 | .1 | .0 | .0 | .2 | .2 | .2 | .2 | .1 | .1 | .1 | .1 | .0 | .0 | .0 | .0 |

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 | 2016 | | | | 2017 | | | | 2018 | | | |
|------------------------------------|------|------|------|-----|------|-----|-----|-----|------|-----|-----|-----|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Real GDP¹ | | | | | | | | | | | | |
| Total foreign | 2.5 | .9 | 2.5 | 2.3 | 2.5 | 2.6 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| <i>Previous Tealbook</i> | 2.5 | .9 | 2.6 | 2.4 | 2.6 | 2.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Advanced foreign economies | 2.3 | .1 | 2.3 | 1.7 | 1.8 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 |
| Canada | 2.5 | -1.6 | 3.5 | 2.1 | 2.4 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 1.7 | 1.7 |
| Japan | 2.1 | .7 | 1.0 | .8 | .9 | .8 | .7 | .7 | .8 | .8 | .7 | .7 |
| United Kingdom | 1.7 | 2.7 | 1.6 | 1.1 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.6 | 1.7 | 1.7 |
| Euro area | 2.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.7 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 1.8 |
| Germany | 2.9 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.6 | 1.5 | 1.5 |
| Emerging market economies | 2.6 | 1.7 | 2.8 | 2.9 | 3.0 | 3.2 | 3.3 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Asia | 4.0 | 4.9 | 4.5 | 4.4 | 4.4 | 4.6 | 4.6 | 4.6 | 4.5 | 4.5 | 4.4 | 4.4 |
| Korea | 2.1 | 3.2 | 2.8 | 2.5 | 2.8 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| China | 6.5 | 7.1 | 6.8 | 6.4 | 6.2 | 6.1 | 6.0 | 6.0 | 5.9 | 5.9 | 5.8 | 5.8 |
| Latin America | 1.1 | -1.4 | 1.4 | 1.7 | 1.9 | 2.1 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 |
| Mexico | 2.0 | -7 | 2.2 | 2.2 | 2.0 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 |
| Brazil | -1.7 | -2.2 | -2.0 | -5 | 1.1 | 1.5 | 1.8 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 |
| Consumer prices² | | | | | | | | | | | | |
| Total foreign | 1.5 | 2.0 | 1.7 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 |
| <i>Previous Tealbook</i> | 1.5 | 2.1 | 2.0 | 2.5 | 2.5 | 2.5 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Advanced foreign economies | -3 | 1.2 | .8 | 1.6 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 |
| Canada | .9 | 2.3 | .9 | 2.2 | 2.3 | 2.3 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Japan | -5 | -5 | -5 | .0 | .3 | .5 | .6 | .7 | .8 | .9 | 1.0 | 1.1 |
| United Kingdom | .0 | .8 | 2.1 | 3.4 | 3.2 | 2.8 | 2.5 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 |
| Euro area | -1.3 | 1.2 | 1.2 | 1.6 | 1.6 | 1.3 | 1.4 | 1.4 | 1.4 | 1.4 | 1.5 | 1.5 |
| Germany | -1.2 | 1.2 | 1.2 | 1.7 | 1.8 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 | 1.8 |
| Emerging market economies | 2.9 | 2.6 | 2.3 | 3.1 | 3.1 | 3.0 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 |
| Asia | 2.3 | 2.3 | 1.3 | 2.6 | 2.7 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 |
| Korea | .0 | .8 | .7 | 2.2 | 2.2 | 2.4 | 2.4 | 2.4 | 2.8 | 3.0 | 3.0 | 3.0 |
| China | 3.1 | 2.3 | 1.4 | 2.9 | 2.7 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Latin America | 4.4 | 3.6 | 4.7 | 4.5 | 4.0 | 4.0 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 | 3.8 |
| Mexico | 2.9 | 2.1 | 3.8 | 3.9 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Brazil | 11.8 | 7.5 | 6.5 | 4.5 | 5.5 | 5.4 | 5.2 | 5.2 | 5.0 | 4.9 | 4.9 | 4.7 |

¹ Foreign GDP aggregates calculated using shares of U.S. exports.

² 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----- | | | | | | | | | |
|------------------------------------|---------------------|------|------|------|------|------|------|------|------|--|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | |
| Real GDP¹ | | | | | | | | | | |
| Total foreign | 3.2 | 2.3 | 2.8 | 2.5 | 1.9 | 2.0 | 2.5 | 2.6 | 2.6 | |
| <i>Previous Tealbook</i> | 3.2 | 2.3 | 2.8 | 2.5 | 1.8 | 2.1 | 2.6 | 2.6 | 2.6 | |
| Advanced foreign economies | 1.8 | .2 | 2.2 | 1.8 | 1.1 | 1.6 | 1.8 | 1.8 | 1.6 | |
| Canada | 3.1 | .7 | 3.1 | 2.4 | .3 | 1.6 | 2.2 | 1.9 | 1.7 | |
| Japan | .3 | .0 | 2.1 | -.9 | .8 | 1.2 | .8 | .8 | .0 | |
| United Kingdom | 1.3 | 1.3 | 2.4 | 3.5 | 1.7 | 1.8 | 1.3 | 1.7 | 1.7 | |
| Euro area | .5 | -1.1 | .7 | 1.3 | 2.0 | 1.5 | 1.6 | 1.8 | 1.8 | |
| Germany | 2.4 | .2 | 1.6 | 1.6 | 1.3 | 2.0 | 1.7 | 1.5 | 1.5 | |
| Emerging market economies | 4.6 | 4.3 | 3.4 | 3.2 | 2.7 | 2.5 | 3.2 | 3.4 | 3.5 | |
| Asia | 5.1 | 5.7 | 5.3 | 4.9 | 4.4 | 4.4 | 4.5 | 4.5 | 4.3 | |
| Korea | 2.9 | 2.1 | 3.5 | 2.7 | 3.1 | 2.6 | 2.9 | 3.0 | 2.8 | |
| China | 8.7 | 8.0 | 7.6 | 7.1 | 6.8 | 6.7 | 6.1 | 5.8 | 5.6 | |
| Latin America | 4.1 | 3.4 | 1.5 | 1.8 | 1.3 | .7 | 2.2 | 2.4 | 2.7 | |
| Mexico | 4.2 | 3.4 | 1.1 | 2.6 | 2.4 | 1.4 | 2.2 | 2.4 | 2.7 | |
| Brazil | 2.6 | 2.6 | 2.5 | -.7 | -5.9 | -1.6 | 1.6 | 2.1 | 2.2 | |
| Consumer prices² | | | | | | | | | | |
| Total foreign | 3.4 | 2.3 | 2.4 | 2.0 | 1.4 | 1.9 | 2.4 | 2.5 | 2.6 | |
| <i>Previous Tealbook</i> | 3.4 | 2.3 | 2.4 | 2.0 | 1.5 | 2.0 | 2.5 | 2.5 | 2.6 | |
| Advanced foreign economies | 2.2 | 1.3 | 1.0 | 1.1 | .5 | .8 | 1.6 | 1.6 | 1.9 | |
| Canada | 2.7 | 1.0 | 1.0 | 1.9 | 1.3 | 1.6 | 2.2 | 2.0 | 2.0 | |
| Japan | -.3 | -.2 | 1.4 | 2.5 | .3 | -.4 | .5 | .9 | 2.4 | |
| United Kingdom | 4.6 | 2.6 | 2.1 | .9 | .1 | 1.6 | 2.7 | 2.1 | 1.9 | |
| Euro area | 2.9 | 2.3 | .8 | .2 | .2 | .7 | 1.4 | 1.4 | 1.5 | |
| Germany | 2.6 | 1.9 | 1.4 | .4 | .2 | .7 | 1.6 | 1.6 | 1.8 | |
| Emerging market economies | 4.3 | 3.1 | 3.4 | 2.7 | 2.1 | 2.7 | 3.1 | 3.1 | 3.1 | |
| Asia | 4.4 | 2.6 | 3.1 | 1.8 | 1.5 | 2.1 | 2.7 | 2.8 | 2.9 | |
| Korea | 3.9 | 1.7 | 1.1 | 1.0 | 1.1 | .9 | 2.4 | 3.0 | 3.0 | |
| China | 4.6 | 2.0 | 2.9 | 1.5 | 1.5 | 2.4 | 2.6 | 2.5 | 2.5 | |
| Latin America | 4.1 | 4.4 | 4.1 | 4.9 | 3.4 | 4.3 | 4.0 | 3.9 | 3.6 | |
| Mexico | 3.5 | 4.1 | 3.6 | 4.2 | 2.3 | 3.1 | 3.2 | 3.2 | 3.2 | |
| Brazil | 6.7 | 5.6 | 5.8 | 6.5 | 10.4 | 7.6 | 5.3 | 4.9 | 4.5 | |

¹ Foreign GDP aggregates calculated using shares of U.S. exports.

² Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

U.S. Current Account

Quarterly Data

| | 2016 | | | | 2017 | | | | 2018 | | | |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| U.S. current account balance | -527.4 | -479.5 | -441.2 | -487.9 | -537.8 | -535.1 | -561.3 | -582.3 | -629.6 | -628.5 | -648.9 | -671.5 |
| <i>Previous Tealbook</i> | -512.1 | -468.1 | -473.9 | -491.4 | -532.5 | -535.9 | -568.8 | -596.8 | -641.1 | -632.9 | -654.1 | -673.3 |
| Current account as percent of GDP | -2.9 | -2.6 | -2.4 | -2.6 | -2.8 | -2.8 | -2.9 | -3.0 | -3.2 | -3.1 | -3.2 | -3.3 |
| <i>Previous Tealbook</i> | -2.8 | -2.5 | -2.5 | -2.6 | -2.8 | -2.8 | -2.9 | -3.0 | -3.2 | -3.2 | -3.2 | -3.3 |
| Net goods & services | -500.9 | -501.0 | -487.4 | -510.1 | -551.4 | -566.2 | -582.3 | -599.3 | -626.8 | -629.2 | -638.9 | -652.2 |
| Investment income, net | 147.0 | 183.1 | 210.3 | 185.0 | 185.4 | 191.9 | 188.0 | 180.0 | 169.0 | 161.5 | 156.9 | 143.6 |
| Direct, net | 219.6 | 253.0 | 271.0 | 255.0 | 264.9 | 282.5 | 292.1 | 298.7 | 303.1 | 311.9 | 325.2 | 330.3 |
| Portfolio, net | -72.6 | -69.8 | -60.8 | -69.9 | -79.6 | -90.6 | -104.2 | -118.8 | -134.1 | -150.4 | -168.3 | -186.7 |
| Other income and transfers, net | -173.5 | -161.7 | -164.1 | -162.9 | -171.8 | -160.8 | -166.9 | -162.9 | -171.8 | -160.8 | -166.9 | -162.9 |

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

Annual Data

| | 2011-2019 | | | | | | | | | | |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|--|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | | |
| U.S. current account balance | -460.4 | -446.5 | -366.4 | -392.1 | -463.0 | -484.0 | -554.1 | -644.6 | -738.1 | | |
| <i>Previous Tealbook</i> | -460.4 | -446.5 | -366.4 | -392.1 | -463.0 | -486.4 | -558.5 | -650.3 | -718.8 | | |
| Current account as percent of GDP | -3.0 | -2.8 | -2.2 | -2.3 | -2.6 | -2.6 | -2.9 | -3.2 | -3.5 | | |
| <i>Previous Tealbook</i> | -3.0 | -2.8 | -2.2 | -2.3 | -2.6 | -2.6 | -2.9 | -3.2 | -3.4 | | |
| Net goods & services | -548.6 | -536.8 | -461.9 | -490.2 | -500.4 | -499.8 | -574.8 | -636.8 | -682.4 | | |
| Investment income, net | 229.0 | 224.4 | 228.4 | 234.3 | 193.4 | 181.4 | 186.3 | 157.7 | 109.8 | | |
| Direct, net | 298.6 | 293.8 | 296.3 | 289.0 | 265.4 | 249.7 | 284.6 | 317.6 | 342.3 | | |
| Portfolio, net | -69.5 | -69.4 | -67.9 | -54.8 | -72.0 | -68.3 | -98.3 | -159.9 | -232.5 | | |
| Other income and transfers, net | -140.8 | -134.2 | -132.9 | -136.1 | -156.0 | -165.5 | -165.6 | -165.6 | -165.6 | | |

Billions of dollars

Abbreviations

| | |
|-----------------|--|
| ABS | asset-backed securities |
| AFE | advanced foreign economy |
| BOC | Bank of Canada |
| BOE | Bank of England |
| BOJ | Bank of Japan |
| C&I | commercial and industrial |
| CMBS | commercial mortgage-backed securities |
| CRE | commercial real estate |
| Desk | Open Market Desk |
| ECB | European Central Bank |
| EME | emerging market economy |
| EU | European Union |
| FOMC | Federal Open Market Committee; also, the Committee |
| GDP | gross domestic product |
| GSE | government-sponsored enterprise |
| ISM | Institute for Supply Management |
| LIBOR | London interbank offered rate |
| LMCI | labor market conditions index |
| Michigan survey | University of Michigan Surveys of Consumers |
| MMF | money market fund |
| OIS | overnight index swap |
| ON RRP | overnight reverse repurchase agreement |
| OPEC | Organization of the Petroleum Exporting Countries |
| PCE | personal consumption expenditures |
| PDFP | private domestic final purchases |
| PMI | purchasing managers index |
| RMB | renminbi |
| repo | repurchase agreement |

| | |
|-------|--|
| SLOOS | Senior Loan Officer Opinion Survey on Bank Lending Practices |
| SOMA | System Open Market Account |
| S&P | Standard & Poor's |
| TIPS | Treasury Inflation-Protected Securities |