The Economic Outlook

The Congressional Budget Office estimates that if current laws governing federal taxes and spending generally remain in place, the economy will grow, during the coming decade, at roughly the modest rate observed since the end of the 2007–2009 recession. CBO estimates that the nation's real gross domestic product (GDP)—that is, total output adjusted to remove the effects of inflation—grew by 1.8 percent last year on a fourth-quarter-to-fourth-quarter basis, restrained by weak growth of business and residential investment (see Table 2-1). But CBO expects business investment to strengthen, helping to raise the growth of output to 2.3 percent this year and 1.9 percent in 2018. From 2017 to 2027, CBO estimates that real output will expand at an average rate of 1.9 percent per year.

The projected growth of output will raise employment and virtually eliminate slack—that is, unused productive resources—in the economy over the next two years, in CBO's view. At the end of 2016, actual output was about 1 percent smaller than CBO's estimate of potential (that is, maximum sustainable) output. CBO expects that output gap, which is one measure of slack, to nearly disappear by the end of 2018, after reaching 6 percent during the 2007–2009 recession. Another measure of slack, the shortfall between actual and potential employment, was about 1.6 million people at the end of 2016 and is expected to disappear in 2018. As it does so, CBO expects the unemployment rate to fall from 4.7 percent in the fourth quarter of 2016 to 4.4 percent in the fourth quarter of 2018.

As slack diminishes, CBO expects the rate of inflation to rise and the Federal Reserve to reduce its support of the economy. The rate of inflation, as measured by the price index for personal consumption expenditures (PCE), is projected to rise from 1.5 percent in 2016 to the Federal Reserve's goal of 2 percent by 2018 and to stay there, on average, for the rest of the projection period. CBO expects the Federal Reserve to steadily raise the target for the federal funds rate (the interest rate that financial institutions charge each other for overnight loans of their

monetary reserves) over the next few years. The rising federal funds rate would push up other interest rates in the economy, restraining the overall demand for goods and services and working to prevent inflation from rising above 2 percent.

Unlike CBO's projections for the next two years, its projections for the 2021–2027 period do not reflect its predictions of business-cycle fluctuations. Rather, they are based primarily on projections of underlying trends in such variables as the size of the labor force, the number of hours worked, capital investment, and productivity—that is, trends that those variables follow after the effects of business-cycle fluctuations are removed. Those trends determine CBO's estimate of the economy's potential output.

CBO estimates that potential output over the 2021–2027 period will grow more quickly than it has grown since the 2007–2009 recession, mainly because the agency projects growth in the productivity of the labor force to accelerate nearly to its average over the past 25 years. Nevertheless, the growth of potential output is projected to be slower than its long-term historical average because the working-age population, and hence the labor force, are expected to grow more slowly than they did in the past. Real interest rates are likewise projected to be higher than they were in recent years but lower than they were before the recession.

Many developments, such as unexpected changes in international conditions or in business confidence, could make economic outcomes differ significantly from what CBO has projected, even if the federal tax and spending policies specified in current law remained substantially unchanged. Because of that uncertainty, the agency constructs its projections so that they fall in the middle of the distribution of possible outcomes.

CBO's current economic projections differ in some respects from its last projections, which were published in August 2016. Because it revised its projections of several

Table 2-1.

CBO's Economic Projections for Calendar Years 2017 to 2027

	Actual, 2015	Estimated, 2016[a]	Forecast 2017	Forecast 2018	Projected Annual Average 2019-2020	Projected Annual Average 2021-2027
			Percentage Change From Fourth Quarter to Fourth Quarter			
Gross Domestic Product						
Real[b]	1.9	1.8	2.3	1.9	1.6	1.9
Nominal	3.0	3.5	4.1	3.8	3.5	4.0
Inflation						
PCE price index	0.4	1.5	1.9	2.0	2.0	2.0
Core PCE price index[c]	1.4	1.8	1.9	2.0	2.0	2.0
Consumer price index[d]	0.4	1.8 [e]	2.3	2.3	2.4	2.4
Core consumer price index[c]	2.0	2.2 [e]	2.2	2.3	2.3	2.3
GDP price index	1.1	1.6	1.8	1.9	1.9	2.0
Employment Cost Index[f]	2.1	2.5	3.0	3.2	3.2	3.1
			Fourth-Quarter Level			
Unemployment Rate (Percent)	5.0	4.7 [e]	4.5	4.4	5.0 [g]	4.9 [h]
			Percentage Change From Year to Year			
Gross Domestic Product						
Real[b]	2.6	1.6	2.3	2.0	1.6	1.9
Nominal	3.7	2.9	4.2	3.9	3.5	3.9
Inflation						
PCE price index	0.3	1.1	1.9	2.0	2.0	2.0
Core PCE price index[c]	1.4	1.7	1.8	1.9	2.0	2.0
Consumer price index[d]	0.1	1.3 [e]	2.4	2.3	2.3	2.4
Core consumer price index[c]	1.8	2.2 [e]	2.2	2.3	2.3	2.3
GDP price index	1.1	1.3	1.9	1.9	1.9	2.0
Employment Cost Index[f]	2.3	2.4	2.7	3.1	3.2	3.1
			Annual Average			
Unemployment Rate (Percent)	5.3	4.9 [e]	4.6	4.4	4.7	4.9
Payroll Employment (Monthly change, in thousands)[i]	231	188 [e]	138	94	37	64
Interest Rates (Percent)						
Three-month Treasury bills	0.1	0.3 [e]	0.7	1.1	2.0	2.8
Ten-year Treasury notes	2.1	1.8 [e]	2.3	2.5	3.0	3.6
Tax Bases (Percentage of GDP)						
Wages and salaries	43.5	44.1	44.2	44.3	44.4	44.3
Domestic economic profits	9.4	9.1	8.9	8.4	8.0	7.5

Sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve.

Economic projections for each year from 2017 to 2027 appear in Appendix C.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. Values for 2016 do not reflect the values for GDP and related series released by the Bureau of Economic Analysis since early December 2016.

b. Nominal GDP adjusted to remove the effects of inflation.

c. Excludes prices for food and energy.

d. The consumer price index for all urban consumers.

e. Actual value for 2016.

f. The employment cost index for wages and salaries of workers in private industries.

g. Value for the fourth quarter of 2020.

h. Value for the fourth quarter of 2027.

i. Calculated as the monthly average of the fourth-quarter-to-fourth-quarter change in payroll employment.

factors that determine potential output, the agency now expects real GDP and real potential GDP in 2026 to be modestly lower than projected in August. CBO expects interest rates to be lower in the first half of the projection period than it expected in August.

The economic projections in this report do not differ significantly from those of most other forecasters. They are generally similar to the *Blue Chip* consensus forecast that was published this month and to the latest forecasts by Federal Reserve officials.

Recent Economic Developments

In CBO's assessment, the economy is currently on solid ground. Although growth was weak in the first half of 2016, it picked up in the second half, suggesting that the economy has good momentum at the start of 2017. During the year as a whole, CBO estimates that GDP grew slightly more quickly than potential GDP did, reducing the output gap slightly to 1.0 percent. Similarly, healthy employment growth reduced the shortfall between actual and potential employment by half—to just 1.6 million people by the end of last year. Those reductions in slack, as well as recent increases in inflation toward the Federal Reserve's 2 percent target, prompted the central bank to raise its target for the federal funds rate.

Gross Domestic Product

Driven by consumer spending, real GDP grew by an estimated 1.8 percent from the fourth quarter of 2015 to the fourth quarter of 2016, about as much as it grew the previous year. However, the estimated 2.6 percent growth in the second half of the year was more than twice as fast as the growth in the first half, which had been held down by weak business and residential investment. Government purchases of goods and services made a slight contribution to growth in 2016, as did net exports.

Consumer Spending. CBO estimates that real spending on consumer goods and services grew at an annual average rate of 2.6 percent during the second half of 2016, a rate only slightly slower than the 2.9 percent of the first half of the year. In CBO's assessment, the main factor behind the growth in consumer spending was an increase in labor income, which reflected continuing growth in hours worked, employment, and wages. The recent growth in consumer spending is one indication of substantial momentum in the economy.

Business Investment. Business investment was soft for much of 2016 but began to rebound by year's end. One component of that investment, spending on business equipment, declined during the first three quarters of last year but began to improve in the fourth quarter, according to monthly data on shipments and orders of capital goods released late in 2016. That decline was surprising in light of developments that would normally indicate rising investment, such as growing GDP, but it may be the result of lower business confidence, falling commodity prices, and slow growth of productivity. The first three quarters of 2016 also saw declines in petroleum drilling activity (which is part of business investment in structures), reflecting low oil prices. However, following a recent rise in oil prices, the number of active drilling rigs rose as well, indicating that investment in structures probably rebounded in the fourth quarter.

Residential Investment. Spending on residential investment declined in the second and third quarters of 2016. The main reason was that the value of newly constructed single-family homes declined—though the number of homes under construction increased. However, data on construction, housing starts, permits, and home builders' sentiment late in the year indicate that the housing sector finished 2016 strongly. Furthermore, robust household formation and continuing gains in home prices and rents are good indicators of the sector's underlying momentum, even though mortgage rates began to rise late last year and will probably temper the growth of household formation.[1]

Government Purchases. Real purchases by governments boosted real GDP slightly in 2016, CBO estimates. Federal purchases grew solidly in the third quarter, reversing declines in the first half of the year. But those gains were largely offset by a sharp reduction in purchases by state and local governments, which may reflect a slowdown in state and local tax receipts.

Net Exports. CBO estimates that net exports (that is, exports minus imports) contributed modestly to the growth of real GDP during 2016. Real exports grew slightly more than real imports did, partly because the economy of the United States grew more slowly than did those of its major trading partners, restraining U.S.

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1. Household formation is measured by the change in the number of occupied housing units.

demand for imported goods and services relative to for-
eign demand for U.S. exports. Late in the year, however,
U.S. economic growth strengthened. Also, the dollar
appreciated, and the stronger dollar made U.S. exports
more expensive in foreign markets. Partly as a result,
exports fell and imports rose, suggesting that trade was
not adding to real output by year's end.

The Labor Market

The modest increase in economic output during 2016
was enough to ensure that labor markets kept improving.
Payrolls grew by 180,000 jobs per month, on average.
The labor force participation rate increased slightly in
2016, even though the aging of the population exerted
downward pressure on it.[2] The unemployment rate fell to
4.7 percent in the fourth quarter, down from 5.0 percent
in the fourth quarter of 2015 and from 5.7 percent in the
fourth quarter of 2014. Much of the decline over those
two years stemmed from a drop in long-term unemploy-
ment (that is, unemployment lasting at least 27 consecu-
tive weeks), as some people who had been unemployed
for a long time obtained jobs.[3]

The primary measure that CBO uses to assess the degree
of slack in the labor market is the estimated shortfall
between employment and potential employment. Poten-
tial employment is the number of people employed when
unemployment is at its natural rate—the rate that arises
from all sources except fluctuations in aggregate
demand—and when labor force participation is at its
potential rate. (Aggregate demand is the overall demand
for goods and services in the economy.) CBO estimates
that the employment shortfall shrank from 3.2 million
people at the beginning of last year to 1.6 million people
at the end of the year. That decline reflects an increase in
the labor force participation rate relative to its potential as
well as a drop in the unemployment rate. (For more dis-
cussion of the current amount of slack, see Box 2-1.)

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2. The labor force participation rate is the percentage of people
   in the civilian noninstitutionalized population who are at least
   16 years old and are either working or seeking work.

3. For some evidence on the propensity of the long-term
   unemployed to find jobs, see Rob Dent and others, *How Attached
   to the Labor Market Are the Long-Term Unemployed?* (Federal
   Reserve Bank of New York, November 2014), http://tinyurl.com/
   kt772t8; and Rob Valletta, *Long-Term Unemployment: What Do
   We Know?* FRBSF Economic Letter 2013-03 (Federal Reserve
   Bank of San Francisco, February 2013), http://tinyurl.com/
   mxqty5j.

Tightening labor markets during the past year have
put upward pressure on employees' compensation, as
businesses have had to compete harder to attract workers.
That rise in compensation is indicated, for example, by
the employment cost index (ECI) for workers in private
industry, which measures the average cost of an hour of
labor, including wages, salaries, and benefits. Between the
fourth quarter of 2015 and the fourth quarter of 2016,
the ECI rose by an estimated 2.4 percent, up from a
1.9 percent increase in the previous year.[4]

Inflation

Consumer price inflation rose last year. Specifically, the
PCE price index increased by 1.5 percent between
the fourth quarters of 2015 and 2016, nearing the
Federal Reserve's goal of a 2 percent annual increase. By
contrast, the index rose by just 0.4 percent in 2015, held
down by a large drop in crude oil prices. A different mea-
sure of consumer prices, the consumer price index for all
urban consumers (CPI-U), rose by 1.8 percent last year
after rising by just 0.4 percent in 2015. Inflation in core
consumer prices—that is, prices excluding prices for food
and energy—showed less of a step-up last year: The core
PCE price index grew by 1.8 percent in 2016, up from
1.4 percent in 2015, and the core CPI-U grew by 2.2 per-
cent, up from 2.0 percent in 2015.

The increase in inflation had three main sources: increas-
ing wages, which resulted from tightening labor markets;
robust growth in the prices of many services, especially
for housing and health care; and modestly higher energy
prices. The strong exchange value of the dollar, however,
worked in the opposite direction, suppressing the prices
of many imported goods and services.

Monetary Policy and Financial Markets

Interest rates, the exchange value of the dollar, and stock
prices all increased in the second half of 2016. In CBO's
estimation, those increases resulted partly from recent
economic and financial developments. They probably

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4. An additional indicator of recent acceleration in wage growth
   comes from the Federal Reserve Bank of Atlanta, which measures
   the median change from year to year in the hourly wages recorded
   in the Current Population Survey. That indicator shows average
   wage growth of 3.3 percent in the first half of 2016, compared
   with 3.1 percent in 2015. See Federal Reserve Bank of Atlanta,
   Center for Human Capital Studies, "Wage Growth Tracker,"
   www.frbatlanta.org/chcs/wage-growth-tracker (December 12,
   2016).

Box 2-1.

Current Slack in the Labor Market

A small amount of underused resources, or slack, remains in the labor market. The Congressional Budget Office bases that assessment on its analysis of the employment shortfall, on various other measures of underused labor, and on such indicators as the growth of compensation and rates of hiring and quitting.

The employment shortfall, CBO's primary measure of slack in the labor market, is the difference between actual employment and the agency's estimate of potential (maximum sustainable) employment. Potential employment is what would exist if the unemployment rate equaled its natural rate—that is, the rate that arises from all sources except fluctuations in aggregate demand for goods and services—and if the labor force participation rate equaled its potential rate. Consequently, the employment shortfall has two components: an unemployment component and a participation component. The unemployment component is the difference between the number of jobless people seeking work at the current rate of unemployment and the number who would be jobless at the natural rate of unemployment. The participation component is the difference between the number of people in the current labor force and the number who would be in the labor force at the potential labor force participation rate. CBO estimates that the employment shortfall was about 1.6 million people in the fourth quarter of 2016; the entire shortfall stemmed from a depressed labor force participation rate.

The employment shortfall accounts for the most important sources of slack in the current labor market, but it does not account for all of them. One source of slack that is not accounted for in the employment shortfall is an unusually large percentage of part-time workers who would prefer to work full time. In the fourth quarter of 2016, about 5.7 million workers, or 3.8 percent of all employed workers, were employed part time for economic reasons—that is, because employers were offering them part-time jobs, even though they would have preferred full-time jobs. That 3.8 percent rate was still 0.7 percentage points higher than the rate in the fourth quarter of 2007. But it is hard to determine how much of that 0.7 percentage-point difference represented slack, because part of the increase since 2007 might have been related to structural factors. One such factor is that employment has been shifting to industries that employ a larger fraction of part-time workers, such as service industries. That development may be increasing the share of employees who work fewer hours than they would like.[1]

Another source of slack is the number of people who are marginally attached to the labor force—that is, who are not looking for work now but have looked for it in the past 12 months. That number is larger than it was before the recession—1.8 million people in the fourth quarter of 2016, up from about 1.4 million in the fourth quarter of 2007. Because the elevated number of marginally attached workers is closely related to the depressed rate of labor force participation, it is largely reflected in CBO's measure of the employment shortfall. Marginally attached workers are also included in the U-6 measure of underused labor computed by the Bureau of Labor Statistics, along with the number of unemployed people and the number of people employed part time for economic reasons.[2] In the fourth quarter of 2016, the U-6 measure stood at 9.3 percent, down slightly from 9.9 percent in the fourth quarter of 2015 but higher than the 8.5 percent observed before the recession.

Some measures of the number of hours worked, such as the average number of hours worked per week, could also indicate slack in the labor market. CBO does not use hours to measure slack because the agency forecasts average hours worked per week for only a portion of the economy (the nonfarm business sector). Nonetheless, by the end of 2015, the average number of hours worked per week had largely returned to its prerecession level, and in the nonfarm business sector, it had returned to its usual relationship with potential average hours worked per week. That fact suggests that any cyclical influence on the average number of hours worked per week is not currently a significant source of labor market slack.[3]

Other economic indicators offer mixed signals about the amount of slack remaining in the labor market. The growth of hourly labor compensation increased during 2016—a sign that slack has diminished considerably—but continues to grow more slowly than labor productivity and inflation, indicating that slack still exists. Two other indicators—the rate at which job seekers are hired and the rate at which workers are quitting their jobs, both measured as a fraction of total employment—show little evidence of slack: Both are currently near their prerecession levels.

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1. See Rob Valletta and Catherine van der List, *Involuntary Part-Time Work: Here to Stay?* FRBSF Economic Letter 2015-19 (Federal Reserve Bank of San Francisco, June 2015), http://tinyurl.com/pbywpck.

2. The U-6 measure is the number of unemployed workers, marginally attached workers, and workers employed part time for economic reasons as a percentage of the labor force plus all marginally attached workers. By contrast, the unemployment rate that is generally reported in the news—the U-3 unemployment rate—is the number of unemployed workers as a percentage of the labor force.

3. The percentage of workers who are working part time for economic reasons is above its prerecession level. Yet the average number of weekly hours worked per job has returned to its prerecession level. The apparent contradiction can be reconciled by noting two developments. First, the number of workers who hold multiple jobs is depressed, so the average number of hours worked per worker is lower than it would be otherwise. Second, the increase in the average number of weekly hours worked per job partly reflects an increase in overtime hours, which may have been concentrated in some jobs even as workers in other jobs would have preferred more hours.

also resulted from an abrupt change in financial-market participants' expectations about federal fiscal and regulatory policy following the U.S. Congressional and Presidential elections in November. Because CBO's projections are based on current law, they reflect the assumption that no new fiscal and regulatory policies will be enacted into law and that financial-market participants will ultimately adjust their expectations accordingly.

At its December 2016 meeting, the Federal Open Market Committee, which is the arm of the Federal Reserve that makes monetary policy, slightly reduced its support of economic growth by raising the target range for the federal funds rate by 0.25 percentage points, making it 0.50 percent to 0.75 percent. Short-term interest rates increased in response to that rate hike. For instance, the 3-month Treasury bill rate increased from 0.30 percent at the end of the first half of 2016 to 0.50 percent by the end of the year.

In the second half of 2016, long-term interest rates also rose, and that rise was particularly sharp in the two weeks following the elections. The rate on 10-year Treasury notes, for example, jumped by about 0.4 percentage points during that period, reaching 2.3 percent in late November. All told, the interest rate on 10-year Treasury notes increased from 1.6 percent at the end of the first half of 2016 to 2.5 percent by the end of the year.

Higher interest rates and the prospect of further increases in the next few years contributed to the appreciation of the dollar in the second half of 2016. In general, when interest rates rise, foreign investors increase their demand for dollars to take advantage of the higher rates of return on U.S. securities. The dollar appreciated by 4.2 percent in the second half of the year.[5] Again, much of that increase was concentrated in the two weeks following the elections, when the dollar appreciated by 2.5 percent. The resulting stronger dollar reduced the competitiveness of U.S.-based production—hampering exports, encouraging imports, and thus restraining demand for U.S. goods and services, in CBO's estimation.

Stock prices also increased in the second half of 2016. The Standard & Poor's 500 index, for example, rose by

8 percent. Here as well, gains were concentrated in the period following the elections, when the index rose by 3 percent. The increase in stock prices reduced the cost to businesses of financing investments—which, in CBO's estimation, is likely to lead to an increase in demand for such investments. It also increased household wealth, which will support consumer spending.

The Economic Outlook for 2017 to 2020

CBO expects real GDP to grow by 2.3 percent this year and by 1.9 percent next year on a fourth-quarter-to-fourth-quarter basis. The agency anticipates that most of that growth will come from consumer spending, business investment, and residential investment.

The projected growth of output will virtually eliminate slack in the economy over the next two years, CBO projects. Because GDP is projected to grow faster than potential GDP, the output gap nearly disappears in CBO's forecast (see Figure 2-1). In addition, CBO expects slack in the labor market to disappear over the next two years, as increased demand for workers reduces the unemployment rate and draws more workers into the labor force. The reduced slack will help boost the rate of inflation to the Federal Reserve's target rate of 2 percent, according to CBO's estimate.

CBO expects that monetary policy and the federal tax and spending policies set in current law would remove some support for output growth. Monetary policy's support of economic growth over the next few years wanes in CBO's projections; the Federal Reserve is expected to raise short-term interest rates as the economy nears its potential output, the labor market tightens, and inflation rises. And the federal fiscal policy specified in current law is projected to lower the growth of output modestly over the next few years.

Unlike the projections for 2017 and 2018, CBO's projections for the subsequent two years do not reflect expected cyclical developments in the economy. Rather, they serve as transitions to the values that CBO projects for the 2021–2027 period—which are based on anticipated longer-term economic trends, rather than on predictions of business-cycle fluctuations.

Contributions to the Growth of Real GDP

CBO expects that consumer spending, business investment, and residential investment will drive the growth

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5.   That calculation is based on the broad trade-weighted U.S. dollar exchange rate published by the Board of Governors of the Federal Reserve.

Figure 2-1.

Growth of Real GDP and Real Potential GDP, and the Output Gap

Percent
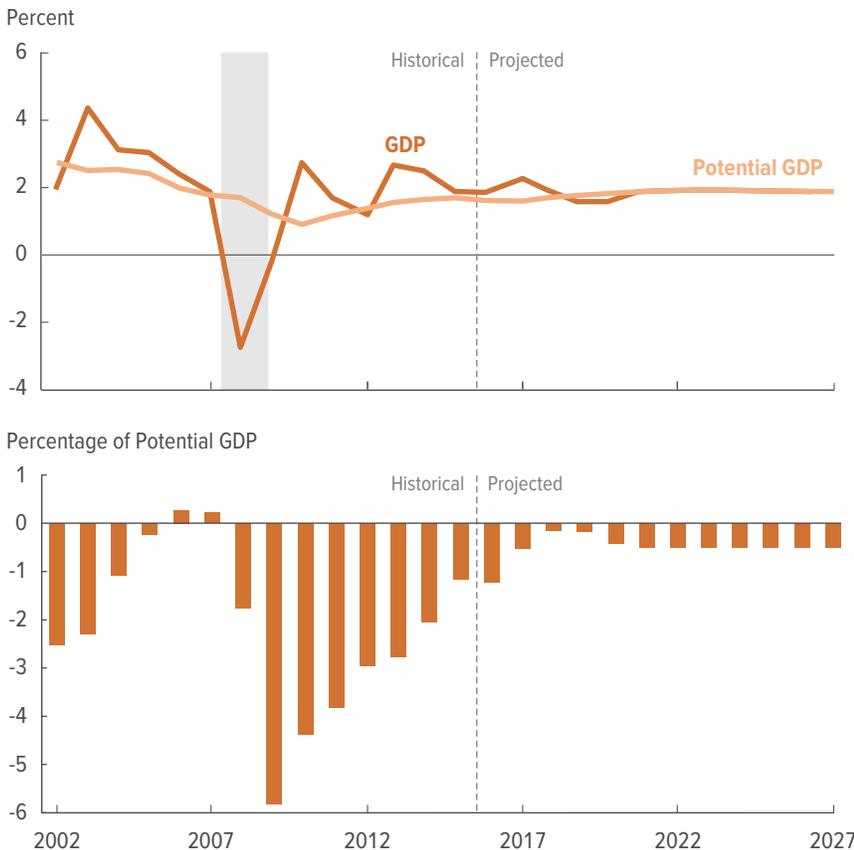
Real GDP growth is expected to be stronger than the **growth of real potential GDP** over the next two years . . .

Percentage of Potential GDP

. . . reducing the **output gap**, or difference between the economy's actual and potential output. CBO projects that the gap will largely disappear by the end of 2018 and then transition to its historical average of roughly –0.5 percent by 2021.

Sources: Congressional Budget Office; Bureau of Economic Analysis.

Real GDP is the output of the economy adjusted to remove the effects of inflation.

The output gap equals the difference between historical or projected GDP and CBO's estimate of potential GDP and is expressed as a percentage of potential GDP. Potential GDP is CBO's estimate of the maximum sustainable output of the economy. When GDP is less than potential GDP, the gap between the two shrinks whenever GDP grows faster than potential GDP.

For real GDP growth and real potential GDP growth, percentage changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next. Values for the output gap are for the fourth quarter of each year.

GDP = gross domestic product.

of real GDP in the short term (see Figure 2-2). Consumer spending, which accounts for over two-thirds of economic output, is expected to provide the largest contribution to economic growth, as it has generally done in the past. However, the pickup in economic growth that CBO projects for 2017 stems largely from faster growth in business fixed investment—particularly investment in equipment and structures. (Business fixed investment also includes investment in intellectual property products.) Total purchases by all levels of government are projected to add to the growth of real GDP through 2020. In contrast, net exports will restrain
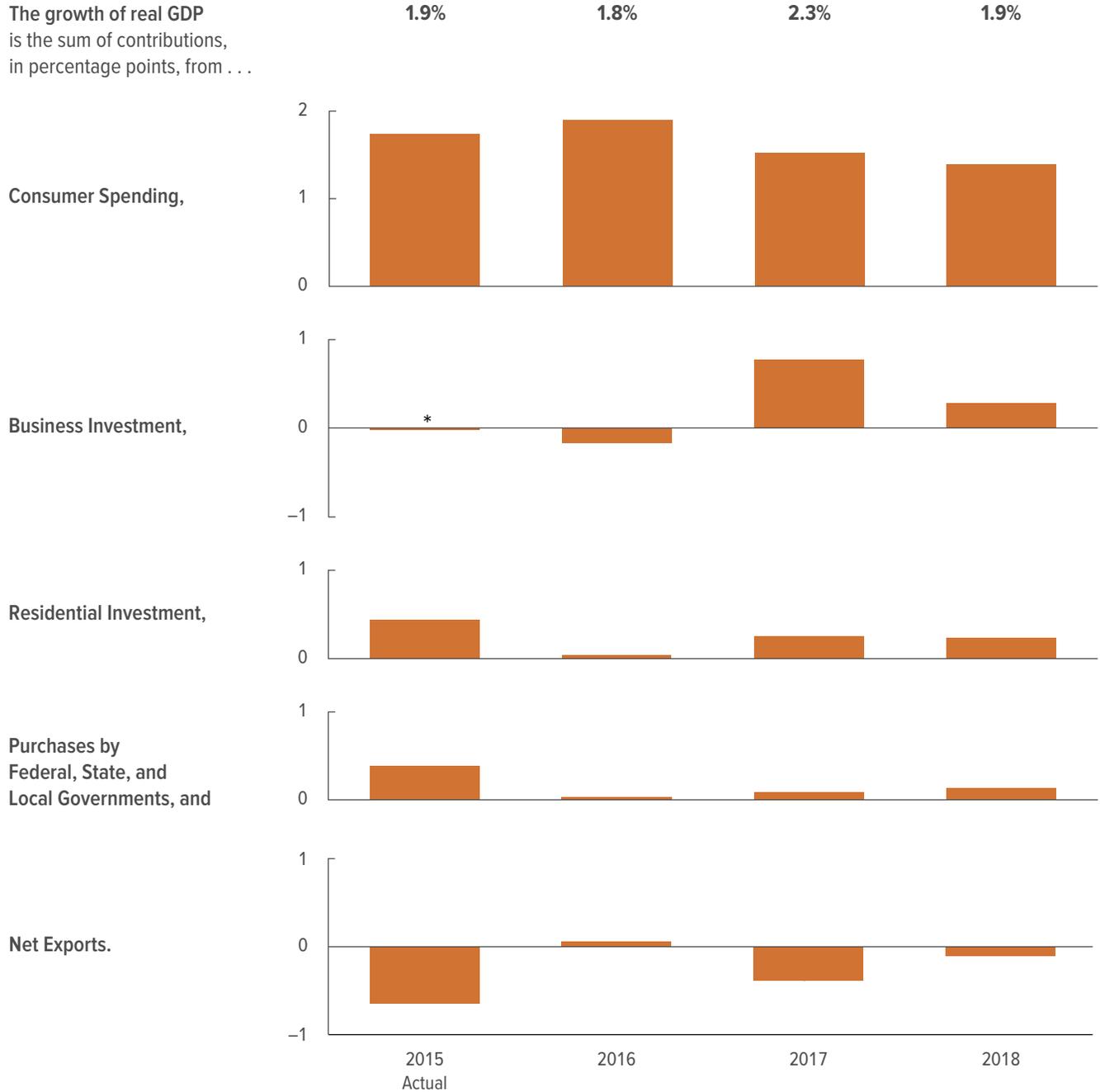
growth this year and to a lesser extent in the following three years, CBO projects.

Consumer Spending. CBO expects growth in consumer spending on goods and services to slow and to approach the expected growth rate of disposable income, which likewise falls in CBO's projections. In those projections, real consumer spending increases by 2.2 percent between the fourth quarters of 2016 and 2017, down from an estimated 2.8 percent in 2016, and at a slower rate next year (see Table 2-2). Meanwhile, growth in real disposable income drops from an estimated 2.5 percent last year to

Figure 2-2.

Projected Contributions to the Growth of Real GDP

The growth of real GDP is the sum of contributions, in percentage points, from . . .

| | 1.9% | 1.8% | 2.3% | 1.9% |

- Consumer Spending,
- Business Investment,
- Residential Investment,
- Purchases by Federal, State, and Local Governments, and
- Net Exports.

2015 Actual   2016   2017   2018

Sources: Congressional Budget Office; Bureau of Economic Analysis.

The values show the contribution of the major components of GDP to the growth rate of real GDP (that is, GDP adjusted to remove the effects of inflation). CBO calculated those components' contributions by weighting their growth rates by their shares of nominal GDP. Consumer spending consists of personal consumption expenditures. Business investment comprises purchases of equipment, nonresidential structures, and intellectual property products, as well as the change in inventories. Residential investment comprises the construction of single-family and multifamily structures, manufactured homes, and dormitories; spending on home improvements; and brokers' commissions and other ownership transfer costs. Purchases by federal, state, and local governments are taken from the national income and product accounts. Net exports are exports minus imports.

Changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next.

GDP = gross domestic product; * = between −0.05 percent and zero.

Table 2-2.

Projected Growth of Real GDP and Its Components

Percent

	Actual, 2015	Estimated, 2016ᵃ	Forecast	
			2017	**2018**
Real GDP	1.9	1.8	2.3	1.9
Components of Real GDP				
Consumer spending	2.6	2.8	2.2	2.0
Business investment	-0.1	-1.3	6.2	2.2
Business fixed investment	0.8	0.2	5.0	2.7
Residential investment	13.1	1.0	6.7	5.9
Purchases by federal, state, and local governments	2.2	0.2	0.5	0.8
Federal	1.7	-0.2	-1.1	-0.4
State and local	2.5	0.4	1.5	1.5
Exports	-2.2	2.0	1.9	1.7
Imports	2.5	1.3	4.3	2.1
Memorandum:				
Net Exports (Change in billions of 2009 dollars)	-112.6	8.0	-75.0	-22.7

Sources: Congressional Budget Office; Bureau of Economic Analysis.

Real GDP is the output of the economy adjusted to remove the effects of inflation. Consumer spending consists of personal consumption expenditures. Business investment comprises business fixed investment—purchases of equipment, nonresidential structures, and intellectual property products—and the change in inventories. Residential investment comprises the construction of single-family and multifamily structures, manufactured homes, and dormitories; spending on home improvements; and brokers' commissions and other ownership transfer costs. Purchases by federal, state, and local governments are taken from the national income and product accounts. Net exports are exports minus imports.

Changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next.

GDP = gross domestic product.

a. Values for 2016 do not reflect the values for GDP and related series released by the Bureau of Economic Analysis since early December 2016.

an average of 2.0 percent during the next two years. Disposable personal income is projected to grow more slowly for several reasons, the most significant of which is that the growth of employees' real compensation is expected to slow as employment gains slow (see Figure 2-3). Also, CBO expects that energy prices will continue to rebound through the end of 2017, reducing some of the extra purchasing power that consumers gained in recent years, and that structural features of the tax code will increase personal tax liabilities.

Several other factors are expected to support consumer spending. One such factor is further increases in housing prices, which will boost households' wealth. Another is further improvements in households' creditworthiness and access to credit. Overall, households' debt and debt-service payments are currently low, as are delinquency rates on consumer loans; such light debt burdens, along with rising employment and disposable income, will give households greater capacity to borrow for major purchases. Partly offsetting those effects are rising interest

rates on mortgage and consumer loans, which restrain consumer spending in CBO's forecast.

Business Investment. CBO projects that real business fixed investment will grow considerably more quickly over the next few years than it did last year. The projected growth is strongest in 2017, at 5.0 percent, and between 1.7 percent and 2.7 percent in each of the following three years. In 2016, real business fixed investment grew by just 0.2 percent, CBO estimates. Inventory investment is expected to boost growth this year but to have little effect on growth thereafter.

Business investment will grow strongly in 2017 for a variety of reasons, CBO anticipates:

■ The number of drilling rigs in operation will probably continue the rebound begun in mid-2016 in response to rising oil prices, boosting investment in mining structures (see Figure 2-3).

Figure 2-3.

Factors Underlying the Projected Contributions to the Growth of Real GDP

Slowing growth in **employees' real compensation**, mostly because of slower employment growth, is projected to constrain consumer spending over the next few years.
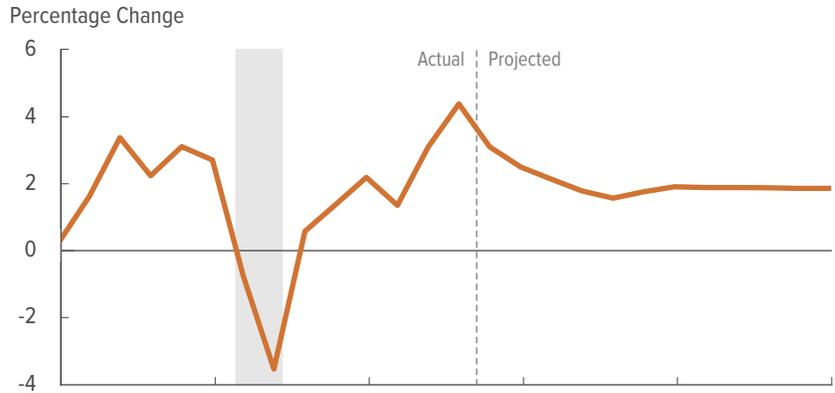
One factor contributing to the faster growth of business investment this year is faster growth in **mining investment**, the result of higher **oil prices**.
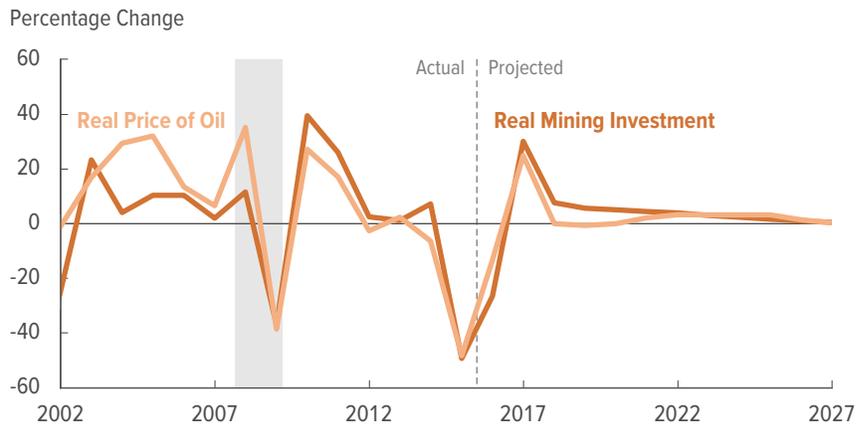
Source: Congressional Budget Office, using data from the Bureau of Economic Analysis, the Census Bureau, and the Federal Reserve.

The total amount of employees' real (inflation-adjusted) compensation is the sum of wages, salaries, and supplements divided by the price index for personal consumption expenditures. Percentage changes in employees' real compensation are measured from the average of one calendar year to the next.

Real mining investment includes real investment in exploration, shafts, wells, and machinery. Percentage changes in that investment are measured from the fourth quarter of one calendar year to the fourth quarter of the next. The real price of oil is the annual average spot price of a barrel of West Texas Intermediate oil divided by the price index for GDP. Percentage changes in the real price of oil are measured from the average of one calendar year to the next.

Continued

■ Both the national office vacancy rate and the national industrial availability rate are near the lows reached during the last business cycle, suggesting a need to boost investment in nonmining structures.[6]

6. The office vacancy rate is the amount of vacant office space for lease divided by the total square footage of office space. The industrial availability rate is the supply of available space in large industrial buildings as a percentage of the total amount of such space.

■ The factors that caused investment in equipment to decline in 2016—among them lower business confidence, falling commodity prices, and slow growth of productivity—will partly abate in 2017, leading to healthy growth.
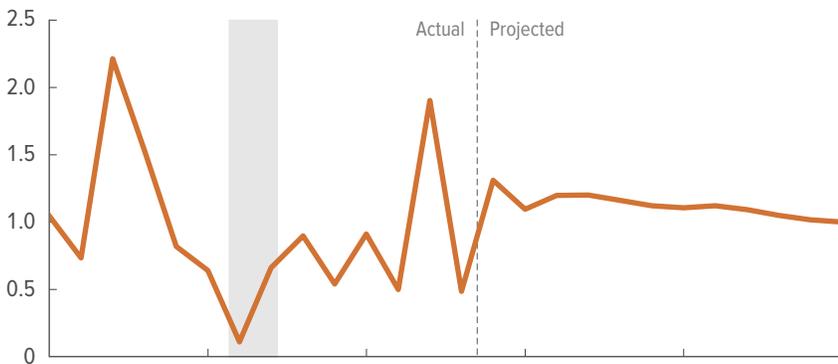
■ Orders for capital goods, a leading indicator of investment in equipment, began to rebound in late 2016.

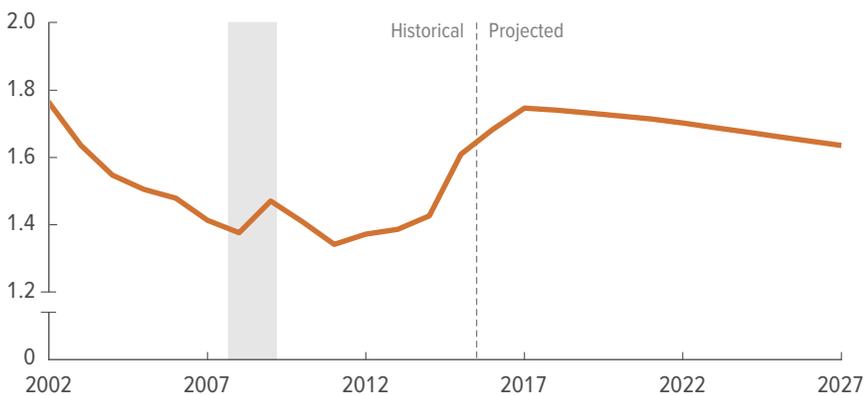**Figure 2-3.**   **Continued**

Factors Underlying the Projected Contributions to the Growth of Real GDP

Millions of Households

Robust **household formation** will support the growth of residential investment over the next few years.

Index, 1970 = 1

A significant increase in the **exchange value of the U.S. dollar** last year and a projected increase this year are expected to contribute to lower net exports over the next few years.

Household formation is the change in the number of occupied housing units from the fourth quarter of the previous year to the fourth quarter of the year indicated.

The measure of the exchange value of the U.S. dollar is an index of the export-weighted average of exchange rates between the dollar and the currencies of the United States' leading trading partners. A higher value indicates a stronger dollar.

Data are calendar year averages.

GDP = gross domestic product.

- Investment in intellectual property products, such as software, will repeat the solid growth posted in 2016.

Investment is projected to grow more slowly after 2017, mainly because oil prices are projected to remain steady and because CBO estimates that the cyclical rebound in investment spending following the 2007–2009 recession will be largely complete. A slower rate of growth in the future will be sufficient to enable businesses to replace depreciated equipment and expand capacity.

Other factors also temper CBO's projections of business investment after this year. Partial-expensing provisions in the tax code, which encourage investment by letting businesses deduct new capital expenses from their taxable income more rapidly than they could otherwise, are

scheduled to gradually expire during the 2018–2020 period. The increase in interest rates anticipated in CBO's forecast will also exert some downward pressure on investment.

Residential Investment. CBO expects that real residential investment—which consists of the construction of new dwellings, improvements of existing dwellings, and brokers' fees and other transaction costs—will grow by 6.7 percent in 2017. Residential investment is projected to grow by 5.0 percent a year over the subsequent three years, on average.

CBO anticipates that the construction of new dwellings will be the primary contributor to the growth of residential investment, mainly because of healthy household

CBO

formation (see Figure 2-3). The number of households increased by an average of about 1.2 million per year from 2014 to 2016, well above the 0.6 million average annual increase of the preceding eight years. The earlier weakness probably stemmed mainly from a sharp tightening of mortgage-lending standards during the 2007–2009 recession and from weak employment growth. Even though lending standards remain tighter than they were before 2007, they have loosened moderately over the past few years. As they continue to loosen and as employment continues to improve, annual household formation will continue at a strong pace from 2017 to 2020, CBO expects, averaging about 1.2 million households per year. Rising mortgage rates will provide a modest drag on housing construction.

CBO anticipates that stronger growth in the demand for housing will put some upward pressure on house prices. Those prices increased by 5.5 percent in 2016 and will increase by about 2.5 percent per year, on average, over the 2017–2020 period, CBO projects. (That projection incorporates an expected increase in the supply of housing units, which will temper the price increases resulting from stronger housing demand.)

Government Purchases. If current laws governing federal taxes and spending generally remained in place, total real purchases of goods and services by federal, state, and local governments would grow by 0.5 percent in 2017, CBO projects. In the following three years, they would grow by an annual average of 0.8 percent.

The 2017 projection is attributable to an estimated increase of 1.5 percent in real state and local purchases, which offsets an estimated decline of 1.1 percent in real federal purchases. From 2018 to 2020, real federal purchases are projected to continue to decline, but more slowly than this year. (That projection incorporates the assumption that the statutory caps on nominal funding for discretionary programs will hold the growth of federal consumption and investment spending to a rate below that of inflation; see Chapter 1 for more discussion of the effect of the caps on projected outlays.)[7] Real state and local purchases are expected to grow at roughly the same pace as in 2017; in CBO's view, state and local governments will increase spending as their tax revenues rebound after a weak year.

Net Exports. CBO expects real net exports to fall from 2017 through 2020.[8] In 2017, CBO anticipates that

real net exports will decline by $61 billion and that real imports will exceed real exports by $612 billion. That gap is expected to widen to $672 billion by 2019 before stabilizing in 2020 and beyond.

CBO's projections of net exports in 2017 and 2018 are strongly influenced by the significant increase in the exchange value of the dollar last year and by the agency's forecast of that exchange value (see Figure 2-3 on page 48).[9] During the second half of 2016 alone, the export-weighted U.S. dollar appreciated by 4.2 percent, partly because investors raised their expectations of future interest rates in the United States. That development boosted the dollar by increasing demand for dollar-denominated assets in relation to demand for assets denominated in other currencies. In CBO's forecast, a similar expectation by investors—that long-term interest rates in the United States will keep rising in relation to those in its trading partners—continues to apply upward pressure to the dollar through 2017. As a result, foreign goods and services become relatively less expensive and U.S. exports relatively more expensive. CBO therefore projects that real net exports will fall in 2017 and 2018.

In later years, CBO expects real net exports to stabilize as the economies of the nation's major trading partners, especially Canada and Mexico, grow more quickly. Stronger economic growth and higher inflation in those nations will encourage their central banks to gradually tighten monetary policies, pushing up interest rates in those countries and reducing the exchange value of the dollar. As a result, net U.S. exports are projected to

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7.   Discretionary spending spans an array of federal activities funded or controlled through annual appropriations. Such spending includes most defense spending as well as outlays for highway programs, elementary and secondary education, housing assistance, international affairs, and the administration of justice, for example. In broad terms, it includes defense and nondefense expenditures for operations and investment but not transfer payments from the government for Social Security, various health care programs (especially Medicare and Medicaid), and other social insurance and pension programs.

8.   Net exports are currently negative: The United States imports more than it exports. A decrease in net exports indicates that imports are increasing more than exports.

9.   CBO's measure of the exchange value of the dollar is an export-weighted average of the exchange rate indexes between the dollar and the currencies of leading U.S. trading partners. An increase in that measure indicates that the dollar is appreciating.

decline less in 2019 and 2020 than in previous years and then to remain relatively flat.

The Labor Market

According to CBO's estimates, the growth of aggregate demand will increase the demand for labor, eliminating the shortfall between actual and potential employment by the end of 2018 (see Figure 2-4).[10] That estimate is the effect of two expected developments. First, the gap between the actual and potential rates of labor force participation is projected to narrow; second, the unemployment rate is projected to fall below its estimated natural rate in 2017 and 2018. Also, increased demand for labor and competition for workers are expected to boost the growth of hourly labor compensation over those two years.

CBO's labor market projections for 2019 and 2020, by contrast, do not reflect expected cyclical developments in the economy. Instead, they serve as transitions to the values that CBO projects for later years, which are based primarily on long-term trends in the supply of labor. Consequently, the unemployment rate is projected to rise slightly so that it reaches its historical relationship with the natural rate of unemployment—increasing slack in the labor market to its average level over past decades.

Employment. CBO projects that nonfarm payroll employment will increase more slowly over the next few years than it has recently—by an average of about 160,000 jobs per month in the first half of 2017, 116,000 jobs per month in the second half of 2017, and 94,000 jobs per month in 2018. One reason that employment growth is projected to slow is that as the employment shortfall shrinks, fewer people without jobs will be available to enter employment. A second reason is the retirement of baby boomers—people born between 1946 and 1964—which will slow the growth of the labor force. CBO's employment projections imply that the number of people employed, measured as a percentage of the population, will increase by about one-quarter of a percentage point—to 60.0 percent—by the end of 2017 and then decline.

Labor Force Participation. CBO expects the labor force participation rate to average 62.8 percent this year and to slowly decline over the rest of the projection period (see Figure 2-5). The rate was 62.8 percent last year, roughly where it has stood, on average, since 2014, and 0.7 percentage points below CBO's estimate of the potential rate. CBO projects that the actual rate will fall to 62.4 percent in 2020. After 2018, the rate would be roughly one-tenth of a percentage point below the potential rate, reflecting CBO's estimate of the long-term relationship between the two.

Several factors have been pushing down the labor force participation rate during the past two decades and are expected to keep doing so during the next 10 years:

■ Members of the baby-boom generation will continue to retire from the labor force in large numbers; this factor is the most important.

■ The lingering effects of the 2007–2009 recession and ensuing weak recovery will continue to hold down participation slightly, in CBO's view. Despite recent declines in long-term unemployment, some of the people who lost jobs in the recession left the labor force and will not return.

■ Federal tax and spending policies are expected to lower participation rates slightly. In particular, under the current-law assumptions that govern its projections, CBO anticipates that people would keep responding to provisions of the Affordable Care Act by reducing the amount of labor that they are willing to supply over the next few years.[11] The structure of the tax code, which pushes some people with rising income into higher tax brackets, would also lower participation rates.

■ Long-term trends involving particular groups of people, such as a growing number of people with disabilities, are projected to push down the overall participation rate slightly.

The long-term factors pushing down the labor force participation rate are expected to be largely offset in 2017

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10. All else being equal, changes in aggregate demand affect businesses' decisions about whether to increase production, invest in equipment, and hire workers, which in turn affect income, demand, and output.

11. For more detail, see Edward Harris and Shannon Mok, *How CBO Estimates the Effects of the Affordable Care Act on the Labor Market*, Working Paper 2015-09 (Congressional Budget Office, December 2015), www.cbo.gov/publication/51065.

Figure 2-4.

The Employment Shortfall

Millions of People
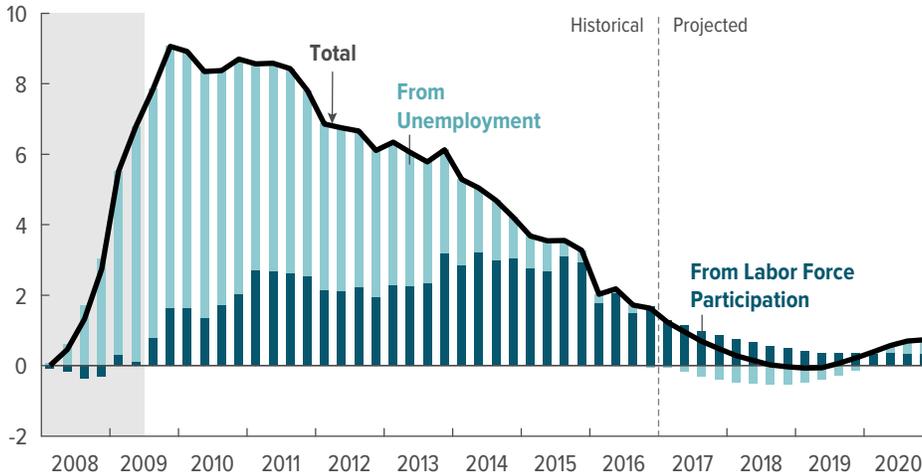
CBO expects the employment shortfall to disappear by the end of 2018.

Source: Congressional Budget Office, using data from the Bureau of Labor Statistics.

The employment shortfall is the sum of two components. The first, the employment shortfall from unemployment, is the number of people who are not employed but would be if the unemployment rate equaled its natural rate (the rate arising from all sources except fluctuations in the overall demand for goods and services). That component is projected to be less than zero this year through 2019, reflecting CBO's estimate that the unemployment rate will be below its natural rate during that period. The second component, the employment shortfall from labor force participation, is the number of people who are not employed but would be if the rate of labor force participation equaled its potential.

and 2018 by continued improvement in hiring, as solid employment growth and rising wages draw some workers back into the labor force and keep others from leaving.

Unemployment. CBO projects that the unemployment rate will fall from 4.7 percent in the fourth quarter of 2016 to 4.5 percent by the end of 2017 and to 4.4 percent by the end of 2018, which would be about 0.3 percentage points below the agency's estimate of the natural rate of unemployment (see Figure 2-6 on page 54). That decline in the unemployment rate reflects a projected increase in demand for labor that would reduce the number of unemployed people. However, the stronger demand for labor would also encourage people to remain in the labor force or rejoin it, making the labor force larger and thus moderating the decline in the unemployment rate. Even though the unemployment rate is expected to be relatively low during 2017, CBO anticipates that some slack will remain in the labor market, because fewer people will be participating in the labor force than would do so if the economy was operating at its potential.

CBO expects the natural rate of unemployment to be 4.7 percent through 2020. That expectation reflects the rate's decline in recent years—which has occurred as

the composition of the workforce has shifted toward older workers, who tend to have lower unemployment rates, and away from less educated workers, who tend to have higher unemployment rates.

Labor Compensation. As slack diminishes and firms must compete harder for a shrinking pool of unemployed or underemployed workers, growth in hourly compensation will rise, in CBO's assessment. CBO estimates that the employment cost index for workers in private industry will grow by more than 3 percent per year, on average, over the next several years, up from the 2 percent average from 2010 through 2015 (see Figure 2-7 on page 55). Other measures of compensation, such as the average hourly earnings of production and nonsupervisory workers in private industries, are similarly expected to grow more quickly than in recent years. CBO's projections of labor compensation also are based on its projections of productivity and inflation.

Inflation
CBO expects prices to rise at a modest pace over the next few years. As measured by the personal consumption expenditures price index, the rate of inflation is projected to rise to 1.9 percent in 2017 and to 2.0 percent by 2018

Figure 2-5.

Labor Force Participation Rates

CBO expects the rate of labor force participation to continue to decline over the next decade as more baby boomers retire.
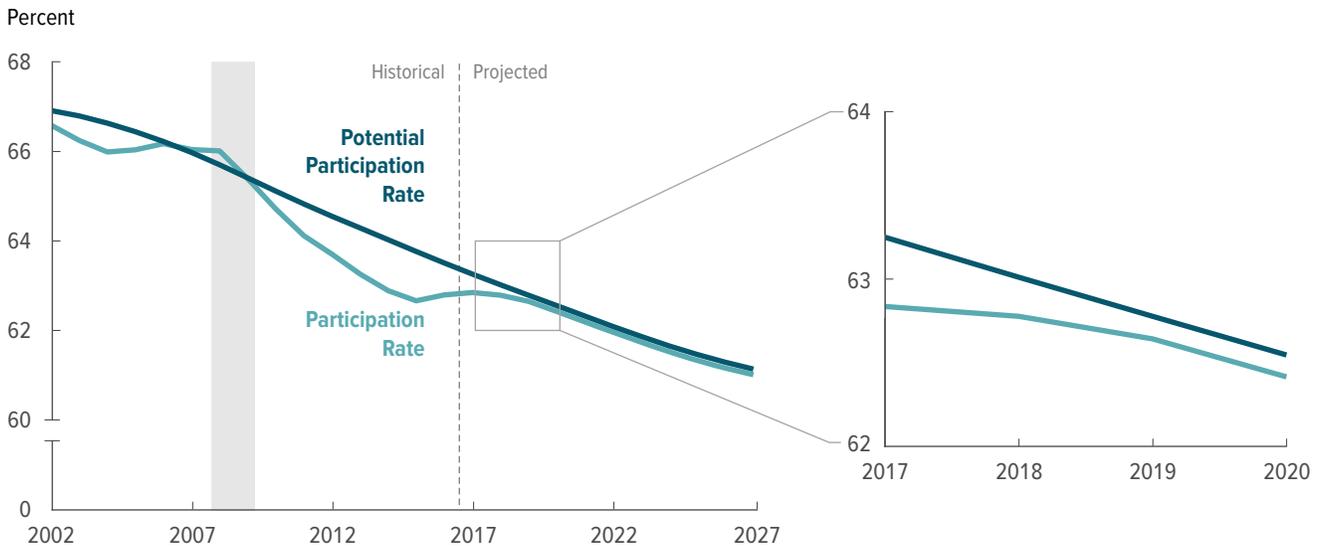
Sources: Congressional Budget Office; Bureau of Labor Statistics.

The participation rate is the percentage of people in the civilian noninstitutionalized population who are at least 16 years old and in the labor force. The labor force consists of people who are employed and people who are unemployed but who are available for work and are actively seeking jobs. The potential participation rate is the participation rate without the effects of the business cycle.

Data are calendar year averages.

(see Figure 2-8 on page 56). That expectation is consistent with the agency's projection of diminishing slack in the economy and with widely held expectations of low and stable inflation. It also reflects CBO's forecast of higher prices for crude oil, which will boost prices for energy goods and services.[12] Working in the opposite direction is the increase in the exchange value of the dollar in 2016, which in the near term will suppress the prices of imported final goods and of goods that use imported inputs.

After 2018, CBO projects PCE inflation to remain at 2.0 percent. That projection reflects CBO's judgment that consumers and businesses expect the Federal Reserve to successfully adjust monetary policy to prevent inflation

from deviating from its target for long. Similarly, in CBO's forecast, core PCE inflation reaches 1.9 percent in 2017 and 2.0 percent in 2018, where it remains thereafter.

The consumer price index for all urban consumers and its core version are expected to increase a little more quickly than their PCE counterparts because they are calculated differently. For example, the PCE price index includes all goods and services consumed in the United States, including those purchased by employers or the federal government, whereas the CPI-U includes only purchases by individual consumers in urban areas.

Monetary Policy and Interest Rates

As slack in the economy keeps diminishing, the Federal Reserve will continue to reduce its support of economic growth, in CBO's view. CBO expects the federal funds rate to rise gradually over the next few years, reaching 1.1 percent in the fourth quarter of 2017 and 2.8 percent by the end of 2020 (see Figure 2-9 on page 57).

CBO projects that interest rates on federal borrowing will also rise gradually over the next few years. The interest

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12. The member nations of the Organization of Petroleum Exporting Countries (OPEC) reached an agreement in November 2016 to reduce oil production, which led to a spike in energy prices at the end of the year. The price impact was incorporated into CBO's economic projections. However, several factors may limit the agreement's effect on oil prices, including a poor record of compliance by OPEC nations when such agreements have been made in the past and higher U.S. production in response to higher prices.

Figure 2-6.

Actual and Natural Unemployment Rates

Percent
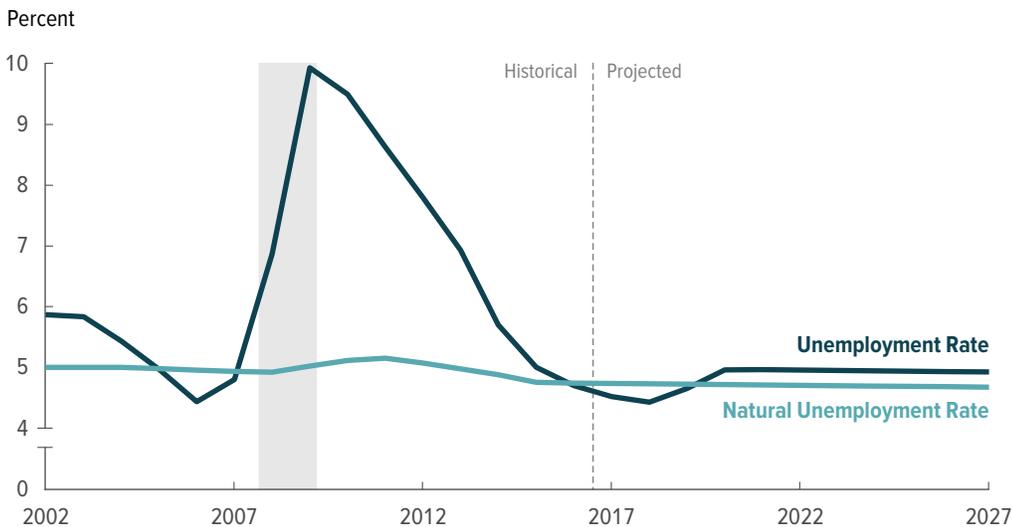
In CBO's projections, the unemployment rate falls below the agency's estimate of its natural rate during the next two years because economic growth boosts employment. In the longer term, those two rates return to their average historical relationship.

Sources: Congressional Budget Office; Bureau of Labor Statistics.

The unemployment rate is a measure of the number of jobless people who are available for work and are actively seeking jobs, expressed as a percentage of the labor force. The natural unemployment rate is the rate of unemployment arising from all sources except fluctuations in the overall demand for goods and services.

Data are fourth-quarter values.

rate on 3-month Treasury bills is projected to rise from 0.4 percent in the fourth quarter of 2016 to 2.5 percent by the end of 2020. Over the same period, the interest rate on 10-year Treasury notes is projected to rise from its average of 2.1 percent in the fourth quarter of 2016 to 3.2 percent in 2020.

The projected increase in the 10-year rate reflects the anticipated increase in the 3-month rate and an expected increase in the term premium—the premium paid to bondholders for the extra risk associated with holding longer-term bonds. The projected rise in both long-term and short-term rates is consistent with CBO's projection that output will grow somewhat faster than potential output for the next two years. Although financial-market participants may currently expect changes in policies that lead to faster output growth, CBO's projection is based on current law. As such, the forecast reflects the assumption that market participants ultimately adjust their expectations.

In addition, various factors—such as investors' heightened concern about relatively weak global economic growth—that pushed the term premium to historically low levels in recent years are expected to dissipate.[13] The

term premium rose after the recent elections, but it remains low. CBO projects that it will continue to rise over the next several years. Still, because the factors that pushed up the term premium are expected to dissipate slowly, CBO expects that the interest rate on 10-year notes will rise more slowly and stabilize slightly later than will the rate on 3-month bills.[14]

Despite CBO's expectation that the 10-year rate will rise, the agency does not expect it to return to the levels seen in the two decades before the 2007–2009 recession. Because of several factors discussed below, interest rates will probably remain low by historical standards throughout the 10-year projection period (see "The Economic Outlook for 2021 to 2027").

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13. In recent years, demand for long-term Treasury securities rose as they increasingly served as a hedge against the prospect of weak growth.

14. In addition, long-term rates have probably been held down by the influence of the Federal Reserve's large portfolio of long-term assets. CBO expects that portfolio to shrink gradually, beginning later this year; that development will put upward pressure on the term premium and the 10-year rate.

Figure 2-7.

Hourly Labor Compensation

Percentage Change
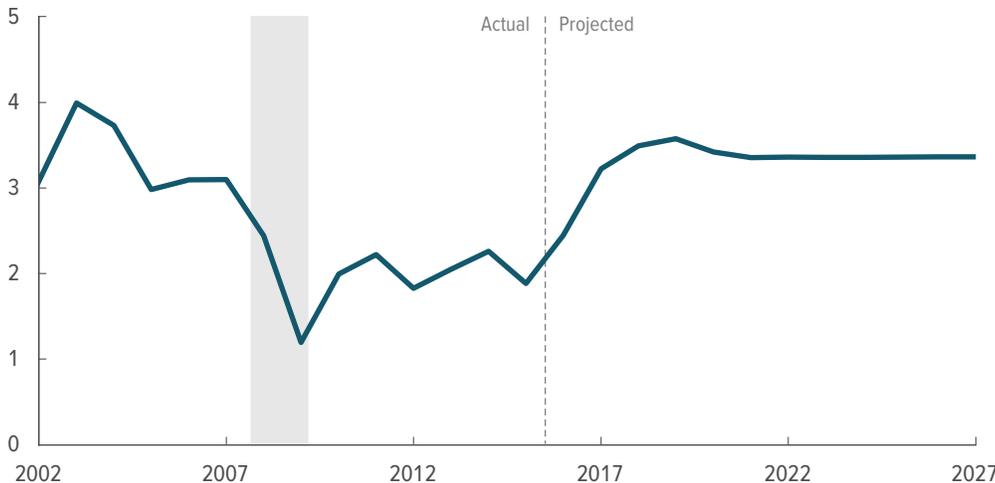
CBO projects that hourly labor compensation will rise more quickly over the next several years than in 2016, spurred by growth in productivity, prices, and the demand for labor (which will reduce slack in the labor market).

Source: Congressional Budget Office, using data from the Bureau of Labor Statistics.

Hourly labor compensation is measured by the employment cost index for the total compensation—wages, salaries, and employers' costs for employees' benefits—of workers in private industry.

Percentage changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Federal Fiscal Policy

Fiscal policy affects aggregate demand not only through government spending on goods and services, which contributes directly to GDP, but also through the federal tax code and federal transfer programs.

If current laws governing fiscal policy remained generally the same, that policy would modestly dampen aggregate demand for goods and services over the next four years. Specifically, four broad developments in fiscal policy that are projected under current law reduce growth in aggregate demand in CBO's projections:[15]

■ Partly because of statutory caps limiting the growth of discretionary spending, the federal government's real purchases of goods and services decline, slightly reducing real GDP growth through 2020.

■ Various provisions of law governing the taxation of investment spending are phased out, reducing businesses' incentive to invest and tempering the

growth of their investment in equipment from 2018 through 2020.

■ As households' income rises, structural features of the tax system increase their average tax rates. That increase in tax liability reduces their disposable (that is, after-tax) income, dampening the growth of consumer spending.

■ The stimulus provided by automatic stabilizers—the automatic decreases in revenues and increases in outlays that occur when the economy weakens—continues to diminish as the economy improves.[16]

The Economic Outlook for 2021 to 2027

CBO's projections of GDP, labor market outcomes, inflation, and interest rates for 2021 to 2027—unlike its projections for 2017 and 2018—are not based on forecasts of cyclical developments in the economy. Rather, they are based on projections of underlying trends in key variables

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15. The effects of those changes are incorporated in CBO's projections, but the agency has not separately quantified the impact of each.

16. For more discussion of automatic stabilizers, see Frank Russek and Kim Kowalewski, *How CBO Estimates Automatic Stabilizers*, Working Paper 2015-07 (Congressional Budget Office, November 2015), www.cbo.gov/publication/51005.

Figure 2-8.

Inflation

Percentage Change in Prices
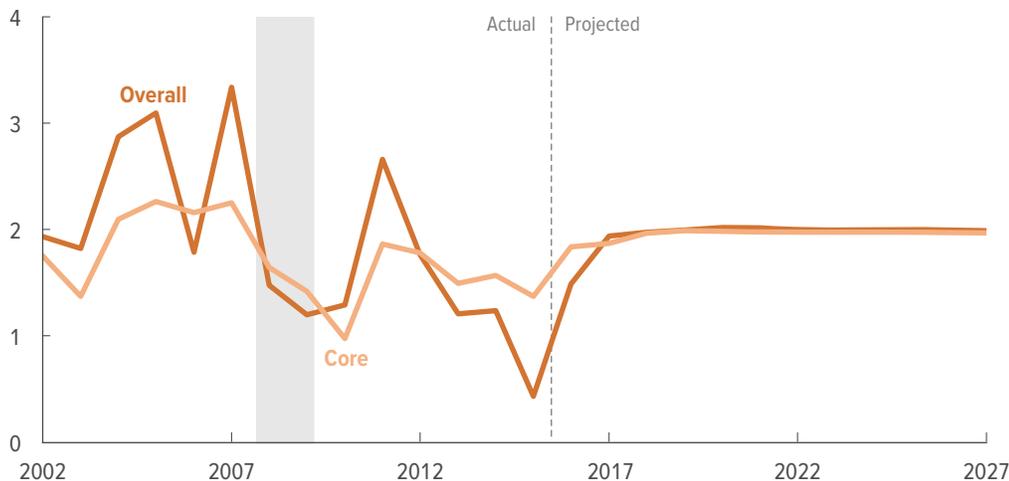
CBO anticipates that over the next two years, as slack in the economy diminishes, inflation will rise to the Federal Reserve's goal of 2 percent.

Source: Congressional Budget Office, using data from the Bureau of Economic Analysis.

The overall inflation rate is based on the price index for personal consumption expenditures; the core rate excludes prices for food and energy.

Percentage changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next.

that determine the growth of potential output, such as the size of the labor force, the number of hours worked, capital investment, and productivity—that is, trends that those variables follow after the effects of business-cycle fluctuations are removed. CBO also considers the effects on those variables of the federal tax and spending policies specified in current law.

CBO's projections for the 2021–2027 period include the following:

■ Actual and potential real GDP will grow at an average rate of 1.9 percent per year. Real GDP will stay one-half of one percent below potential GDP—as it has roughly done, on average, over many years.[17]

■ The unemployment rate will average 4.9 percent, slightly above the estimated natural rate of 4.7 per-cent. That gap is consistent with the projected gap between actual and potential GDP.

■ Both overall inflation and core inflation will average 2.0 percent per year as measured by the PCE price

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17. See Congressional Budget Office, *Why CBO Projects That Actual Output Will Be Below Potential Output on Average* (February 2015), www.cbo.gov/publication/49890.

index and a slightly higher rate as measured by the CPI-U.

■ The interest rates for 3-month Treasury bills and 10-year Treasury notes will average 2.8 percent and 3.6 percent, respectively.

Output and Potential Output

Actual and potential real output are projected to grow more quickly during the 2021–2027 period than they did during the past decade because of faster growth in pro-ductivity and stronger business investment. Nevertheless, slower growth in the nation's supply of labor will keep economic growth weaker than it was during the 1980s, 1990s, and early 2000s.

Growth in Potential Output Compared With Growth Since the Last Recession. CBO expects potential output to grow by 1.9 percent per year, on average, from 2021 to 2027 (see Table 2-3 on page 58). Such growth would be faster than the average of 1.4 percent per year estimated for the 2008–2016 period. The main reason for the pro-jected increase in the rate of growth is that CBO expects the potential productivity of the labor force (the ratio of potential GDP to the potential labor force) to grow more quickly—at an average rate of 1.4 percent per year, which would be substantially faster than the 0.9 percent average

Figure 2-9.

Interest Rates
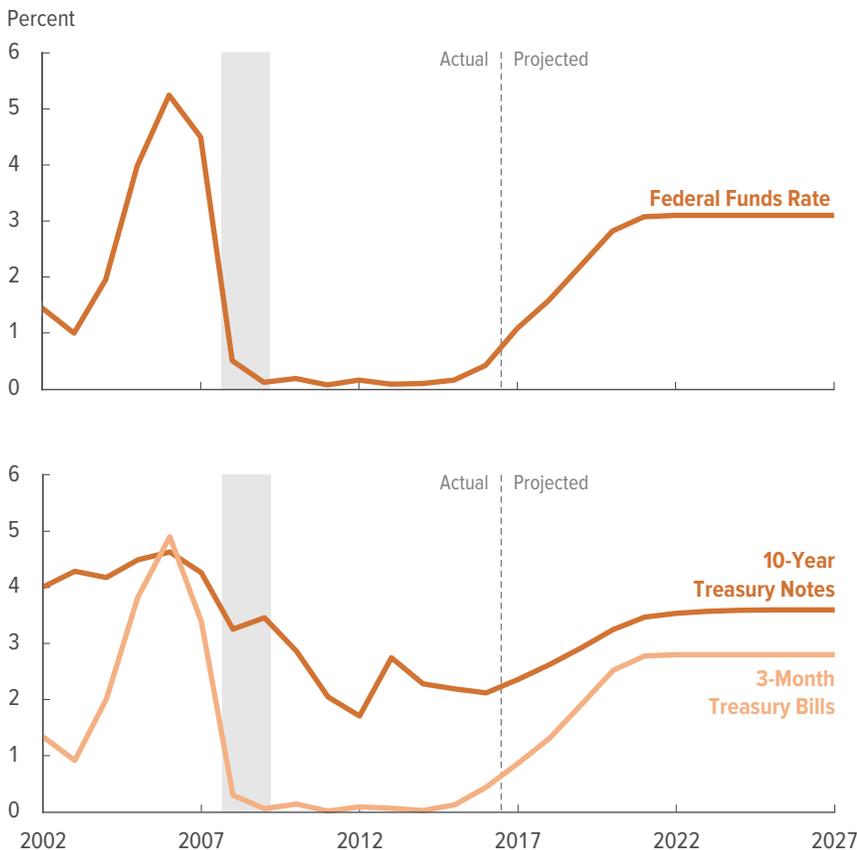
CBO expects the Federal Reserve to continue increasing the federal funds rate through 2021.

In CBO's projections, interest rates on Treasury securities also rise, reflecting continued economic improvement and increases in the federal funds rate.

Sources: Congressional Budget Office; Federal Reserve.

The federal funds rate is the interest rate that financial institutions charge each other for overnight loans of their monetary reserves.

Data are fourth-quarter values.

rate that CBO estimates for the 2008–2016 period. By contrast, CBO anticipates that the potential labor force will grow slightly more slowly than it did from 2008 to 2016, offsetting some of the effect of faster productivity growth on potential output.

In CBO's projections, the faster growth of potential labor force productivity is concentrated in the nonfarm business sector, which accounts for about three-quarters of GDP. (In the agency's analysis, growth in nonfarm business output is composed of growth in hours of labor, in capital services—the flow of services available for production from the stock of capital goods—and in total factor productivity, or TFP, which is the average real output per unit of combined labor and capital services.) In particular, CBO expects growth in potential TFP in the nonfarm business sector to quicken from its unusually slow pace of

0.7 percent per year since 2008 to 1.2 percent during the 2021–2027 period, a rate that is just below its average pace since 1990.[18]

Part of the projected increase in the growth of potential labor force productivity reflects CBO's projection of faster growth in capital services. The growth of capital services in the nonfarm business sector has been

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18. CBO projects that by the end of 2021, growth in potential TFP will gradually return to a rate equal to the weighted average of the growth rates estimated between 1991 and 2015. The projected rate for 2021 through 2027 is slightly slower than the unweighted average for the 1991–2015 period because CBO places more weight on the relatively slow growth of TFP during the recession and recovery than on the faster growth rates of the 1990s and early 2000s.

Table 2-3.

Key Inputs in CBO's Projections of Potential GDP

Percent

	Average Annual Growth							Projected Average Annual Growth		
	1950-1973	1974-1981	1982-1990	1991-2001	2002-2007	2008-2016	Total, 1950-2016	2017-2020	2021-2027	Total, 2017-2027
	Overall Economy									
Potential GDP	4.0	3.2	3.4	3.3	2.4	1.4	3.2	1.7	1.9	1.8
Potential Labor Force	1.6	2.5	1.7	1.2	1.0	0.5	1.4	0.5	0.5	0.5
Potential Labor Force Productivity[a]	2.4	0.6	1.7	2.0	1.4	0.9	1.7	1.2	1.4	1.3
	Nonfarm Business Sector									
Potential Output	4.1	3.5	3.6	3.7	2.6	1.6	3.4	2.0	2.2	2.1
Potential Hours Worked	1.4	2.3	1.7	1.3	0.3	0.4	1.3	0.4	0.4	0.4
Capital Services	3.8	3.8	3.5	3.8	2.7	1.7	3.4	2.2	2.1	2.1
Potential TFP	1.9	0.9	1.3	1.5	1.6	0.7	1.4	0.9	1.2	1.1
Contributions to the Growth of Potential Output (Percentage points)										
Potential hours worked	1.0	1.5	1.1	0.9	0.2	0.3	0.9	0.3	0.3	0.3
Capital input	1.2	1.2	1.2	1.3	1.0	0.6	1.1	0.8	0.7	0.8
Potential TFP	1.9	0.9	1.3	1.5	1.6	0.7	1.4	0.9	1.2	1.1
Total Contributions	4.0	3.7	3.5	3.6	2.7	1.6	3.4	1.9	2.2	2.1
Potential Labor Productivity[b]	2.7	1.2	1.9	2.3	2.4	1.2	2.1	1.6	1.8	1.7

Source: Congressional Budget Office.

Potential GDP is CBO's estimate of the maximum sustainable output of the economy.

The table shows compound annual growth rates over the specified periods calculated using calendar year data.

GDP = gross domestic product; TFP = total factor productivity.

a. The ratio of potential GDP to the potential labor force.

b. The ratio of potential output to potential hours worked in the nonfarm business sector.

restrained since 2008 because of weak investment, which itself has been partly a response both to the cyclical weakness of aggregate demand for goods and services and to the slow growth of TFP. In the longer term, the growth of capital services generally depends on increases in potential TFP and potential hours worked. In CBO's projections, much of the increase in the growth of capital services between the 2008–2016 period and the 2021–2027 period comes from higher potential TFP.

Growth in Potential Output Compared With Growth in Previous Business Cycles. Even though the projected growth rate of potential output over the 2021–2027 period is higher than recent growth rates, it is more than a percentage point lower than the 3.1 percent average annual growth rate between 1981 and 2007. More than

three-quarters of that difference reflects slower growth of the potential labor force, which will result mainly from the ongoing retirement of baby boomers and from a relatively stable labor force participation rate among working-age women. (That rate increased sharply from the 1960s to the mid-1990s.) Also, federal tax and spending policies set in current law are projected to cause some people to work less than they would have in earlier decades. The rest of the difference in the growth rate results from slower projected growth of potential labor force productivity—1.4 percent per year from 2021 to 2027, on average, a lower rate than the 1.7 percent of the 1981–2007 period. That slowdown is attributable mainly to slower projected growth of potential TFP in the nonfarm business sector. But it is also due partly to slower projected growth of nonfarm business capital services,

which, in turn, largely results from slower projected growth of productivity and the labor force.

The Labor Market

CBO projects that gains in payroll employment will average 64,000 jobs per month from 2021 to 2027. That rate of growth reflects the growth of the labor force and changes in the unemployment rate. In turn, labor force growth stems from population growth and changes in the rate of labor force participation. Other important aspects of the labor market are the number of hours worked per employee and the amount of compensation per hour.

Labor Force. The labor force is projected to grow at an average rate of 0.5 percent annually from 2021 to 2027, slightly below its average annual growth rate since 2007. Underlying that projection is population growth of 0.8 percent per year, on average, and a slowly declining rate of labor force participation. Because of that decline in labor force participation, CBO expects the share of the population that is employed to fall to 58.0 percent in 2027. (At the end of 2016, it stood at 59.8 percent.)

CBO projects a potential rate of labor force participation of 61.1 percent in 2027. That rate is about 1¼ percentage points lower than what the agency projects for 2021 and about 4¾ percentage points lower than the estimated rate at the end of 2007. The single largest factor contributing to the decline in the rate is the aging of the population; older people tend to participate less in the labor force than younger ones do. In addition, the structure of the tax code will reduce workers' incentive to supply labor, and declining participation rates by less skilled workers will further reduce the potential participation rate over that period, in CBO's estimation. However, CBO also estimates that many of those declines will be roughly offset by a projected increase in participation arising from a more educated workforce; rates of participation are higher among more educated workers than among less educated ones.

Unemployment. In CBO's projections, the unemployment rate follows its long-term relationship with the natural rate of unemployment. Specifically, the unemployment rate falls from 5.0 percent in the fourth quarter of 2020 to 4.9 percent in the fourth quarter of 2027, staying roughly a quarter of a percentage point higher than the natural rate of 4.7 percent.[19] The natural rate's decline over that period reflects a shift in the composition of the workforce toward older workers, who tend to have

lower unemployment rates, and away from less educated workers, who tend to have higher ones.

Hours Worked. Average weekly hours of production and nonsupervisory work are projected to fall slightly—from 33.5 hours worked in 2021 to 33.3 hours worked in 2027. The decline reflects a long-term downward trend in average weekly hours over the entire postwar period. That downward trend, however, has slowed considerably over the past 25 years, and CBO expects its pace to remain slow.

Compensation. Real compensation per hour in the nonfarm business sector, a measure of labor costs that is closely related to the factors underlying potential output, will grow at an average annual rate of 1.8 percent between 2021 and 2027, CBO projects. That projection is consistent with the agency's projection that the annual growth of labor productivity in that sector will average 1.8 percent over the period, reflecting the close historical relationship between growth in productivity and growth in real compensation. Although that relationship broke down in the early 2000s, when real compensation per hour grew more slowly than productivity, in recent years the two have grown at similar rates, suggesting that the relationship has been largely restored. CBO expects that the relationship will continue in the future.

Inflation

In CBO's projections, inflation as measured by the overall PCE and the core PCE price indexes equals 2.0 percent per year, on average, over the 2021–2027 period. That rate is consistent with the Federal Reserve's longer-run goal and is broadly in line with widely held expectations. As measured by the CPI-U and the core CPI-U, projected inflation is higher during the period, at 2.4 percent and 2.3 percent per year, respectively. The projected difference between inflation as measured by the CPI-U and inflation as measured by the PCE price index is close to the average difference over the past several decades. CBO expects overall inflation to be higher than core inflation from 2021 to 2027 because energy prices are expected to grow slightly faster than prices of other goods and services.

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19. The projected gap of 0.25 percentage points between the unemployment rate and the natural rate corresponds to the projected gap of –0.5 percent between output and potential output.

Interest Rates

CBO projects that the interest rates on 3-month Treasury bills and 10-year Treasury notes will average 2.8 percent and 3.6 percent, respectively, during the 2021–2027 period. The federal funds rate is projected to average 3.1 percent. The projected real interest rate on 10-year Treasury notes—that is, the rate after the effect of expected inflation, as measured by the CPI-U, is removed—averages 1.2 percent between 2021 and 2027. That rate would be well above the current real rate but more than a percentage point below the average real rate between 1990 and 2007. (The 1990–2007 period allows useful comparisons because it featured fairly stable expectations of inflation and no severe economic downturns or financial crises.)

According to CBO's analysis, average real interest rates on Treasury securities will be lower than they used to be for several reasons. CBO expects slower growth of the labor force and slightly slower growth of productivity, both of which will reduce the rate of return on capital. Furthermore, a greater share of total income is expected to go to high-income households, which will increase private saving and make more funds available for borrowing. CBO also expects the demand for Treasury securities relative to the demand for risky assets to be higher than its 1990–2007 average. That relatively higher demand for Treasury securities implies higher prices and therefore lower interest rates. And net inflows of capital from other countries, measured as a percentage of GDP, are also expected to be greater, again making more funds available for borrowing.

CBO expects the term premium to be smaller from 2021 to 2027, on average, than it was before the late 1990s. Over the past two decades, the prices of long-term Treasury securities and of risky assets in the United States have moved in opposite directions. In other words, periods with weaker economic growth and lower returns in the stock market have been associated with increases in the prices of Treasury securities, which was not the case before the late 1990s. As a result, investors trying to protect themselves from adverse economic surprises may be purchasing more long-term Treasury securities than they used to. A related factor is that investors may have increased their demand for financial assets, such as long-term Treasury securities, that can protect them from unexpectedly low inflation. Altogether, that greater demand for long-term Treasury securities will result in a term premium and long-term interest rates that are lower than they were before the late 1990s, CBO anticipates.

Other factors are projected to push real interest rates up from their earlier average, but not by enough to offset the factors pushing rates down. Federal debt is projected to be higher as a percentage of GDP, increasing the supply of Treasury securities. The country's ratio of older people, who will be drawing down their savings, to younger workers in their prime saving years will be higher than it was before; that will decrease saving, thereby making fewer funds available for borrowing. And a larger share of income will come from capital, increasing returns on capital assets with which Treasury securities compete.[20]

In addition to considering those factors, CBO relies on information from financial markets when it projects interest rates over the long term, and incorporating that information has tended to reduce the agency's projections. The current interest rate on long-term Treasury securities is determined in large part by investors' expectations of interest rates on shorter-term securities several years into the future. Current prices in financial markets indicate that investors expect short-term interest rates to rise only gradually and to remain low, possibly because they expect certain forces putting downward pressure on interest rates in the United States to persist over the next decade. One force is weakness in global financial and monetary conditions, which has resulted in a flight to low-risk securities and currencies, especially U.S. Treasury securities. A second force is low interest rates on foreign assets, which push down rates on U.S. assets that can be substituted for them.

Projections of Income for 2017 to 2027

Economic activity and tax revenues depend on aggregate income—the total amount of income in the economy—and on its distribution among various categories, such as labor income, domestic economic profits, proprietors' income, and interest and dividend income. CBO therefore projects income in those categories over the next 10 years, estimating each category's share of gross domestic income (GDI, the income earned in the production of GDP).[21] The categories of income that affect revenues

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20. For a more detailed discussion of the factors affecting future interest rates, see Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), pp. 100–103, www.cbo.gov/publication/51580.

21. In principle, GDI equals GDP because each dollar of production yields a dollar of income; in practice, the two quantities differ because of difficulties in measuring them.

most strongly are labor income (especially wage and salary payments) and domestic economic profits.[22]

In CBO's projections, labor income grows more quickly than other kinds of income for the next few years, increasing its share of GDI from an estimated average of 58.0 percent in 2016 to 59.1 percent in 2020 (see Figure 2-10). That happens because CBO expects dissipating slack in the labor market to improve workers' bargaining power, raise compensation per hour, and reduce the share of income that goes to domestic economic profits. After 2020, however, hourly compensation is projected to grow in line with productivity, stemming further rises in labor's share of GDI. Furthermore, even though labor's share of GDI rises in CBO's projections over the next few years, it does not return to its 1980–2000 average of nearly 60 percent, because some factors that have depressed that share since 2000 are expected to continue during the coming decade. One such factor is globalization, which has tended to move the production of labor-intensive goods and services to countries with lower labor costs. Another factor is technological change, which appears to have increased returns to capital more than returns to labor.

CBO projects that domestic economic profits, which equaled an estimated 8.9 percent of GDI in 2016, will fall to 7.5 percent by 2027. Over the next several years, that decline is expected to occur largely because labor compensation will rise as a share of income but also because corporate interest payments are projected to increase (the result of rising interest rates).

In CBO's projections, GDI grows more slowly than GDP through 2020, but at the same rate thereafter. In the national accounts that track those quantities, total income has persistently exceeded total output by more than 1 percent since 2014, but CBO projects that the discrepancy will become smaller from 2017 to 2020, largely because CBO projects that nonlabor income will grow less rapidly than output—reversing a trend since 2000.

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22. Calculating domestic economic profits involves adjusting estimates of corporations' domestic profits to remove distortions in depreciation allowances caused by tax rules and to exclude the effects of inflation on the value of inventories. Estimates of domestic economic profits exclude certain income of U.S.-based multinational corporations that is derived from foreign sources, most of which does not generate corporate income tax receipts in the United States.

Starting in 2021, GDI is projected to exceed GDP by about one-half of 1 percent, which is the average discrepancy since 2000.

Another measure of overall income, real gross national product (GNP), is projected to grow at an average rate of 1.8 percent per year between 2017 and 2027. Unlike the more commonly cited GDP, GNP includes income that U.S. residents earn abroad and excludes income that foreigners earn in this country. GNP is therefore a better measure than GDP of the resources available to U.S. households.

Some Uncertainties in the Economic Outlook

Even if no significant changes were made to the federal policies specified in current law, economic outcomes would undoubtedly differ from CBO's projections. The agency therefore constructs its 10-year economic projections so that they fall in the middle of the distribution of possible outcomes, given the fiscal policy embodied in current law and the available economic data. The economy will inevitably fluctuate over the projection period, but CBO expects periods of weak and strong economic growth to balance out, on average, in a way that is consistent with its projections.

It is possible, however, that periods of weak and strong economic growth will not balance out, particularly during a given 10 years. If a prolonged period of weaker-than-projected growth was not offset by a period of stronger-than-projected growth, CBO's projections of growth over the entire 10-year period would probably turn out to be too high; so would its projections of interest rates and inflation, in all likelihood. Similarly, if a prolonged period of stronger-than-projected growth was not offset by a period of weaker-than-projected growth, CBO's 10-year projections of growth, interest rates, and inflation would probably turn out to be too low.

CBO's projections for 2017 to 2020 and its projections for 2021 to 2027 are uncertain for different reasons.

Uncertainty From 2017 to 2020

Over the next five years, many developments—such as unforeseen changes in the labor market, the housing market, business confidence, or international conditions—could make economic growth and other variables differ from what CBO has projected. On the one hand, the agency's current forecast of employment and output for

Figure 2-10.

Labor Income

Percentage of Gross Domestic Income
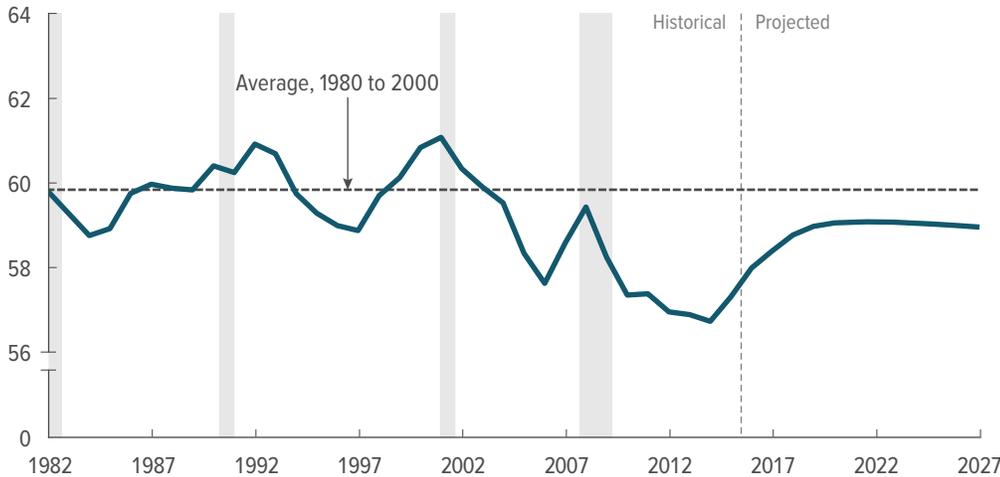
CBO expects labor's share of income to rise in the near term. But it is expected to remain below its 1980–2000 average because of factors that have depressed it since 2000, such as globalization and technological change.

Source: Congressional Budget Office, using data from the Bureau of Economic Analysis.

Labor income is the sum of employees' compensation and CBO's estimate of proprietors' income that is attributable to labor. Gross domestic income is all income earned in the production of gross domestic product. For further discussion of labor's share of gross domestic income, see Congressional Budget Office, *How CBO Projects Income* (July 2013), www.cbo.gov/publication/44433.

Data are calendar year averages.

the 2017–2020 period may be too pessimistic. For example, firms might respond to the expected increase in aggregate demand for goods and services with more robust hiring and investment than CBO anticipates. If so, the unemployment rate could fall more sharply and inflationary pressures could rise more quickly than CBO projects. Or a greater-than-expected easing of mortgage lending standards could support more rapid growth of the number of households and residential investment than CBO anticipates, accelerating the housing market's recovery and further boosting house prices. Households' increased wealth could then buttress consumer spending, raising GDP. In addition, CBO's forecast of economic growth in 2019 and 2020 reflects a transition to the long-run trends that the agency projects. If the transition period extended beyond 2020, economic growth would be faster, on average, from 2017 to 2020.

On the other hand, CBO's forecast for 2017 to 2020 may be too optimistic. For example, if the increased tightness of labor markets does not lead to increases in hourly wages and benefits, household income and consumer spending could grow more slowly than CBO anticipates. A sharp decline in the rate of economic growth in China could weaken the U.S. economy by

disrupting the international financial system and reducing global economic growth; so could an increase in uncertainty in the United Kingdom and the European Union as a result of the former's vote to leave the latter.

In addition, there is a possibility that the economy will enter a recession in the next few years because of those developments or others. The current economic expansion has lasted more than 7 years—longer than the average expansion (about 5 years) of the previous 11 business cycles, a sequence that began in 1945. The duration of economic expansions has varied greatly—the longest expansion since 1945 lasted 10 years, the shortest only 1—and an expansion's longevity alone is typically not what makes it end. Recessions are usually preceded by imbalances in key sectors of the economy, such as housing, or by rapidly rising wages. At present, CBO and many other forecasters do not anticipate such imbalances in the near future.

To roughly quantify the degree of uncertainty in its projections for the next four years, CBO analyzed its past forecast errors for the growth rate of real GDP and inflation. In CBO's view, there is approximately a two-thirds chance that the average annual growth rate of real GDP

Figure 2-11.

The Uncertainty of CBO's Projection of Real GDP

Trillions of 2009 Dollars
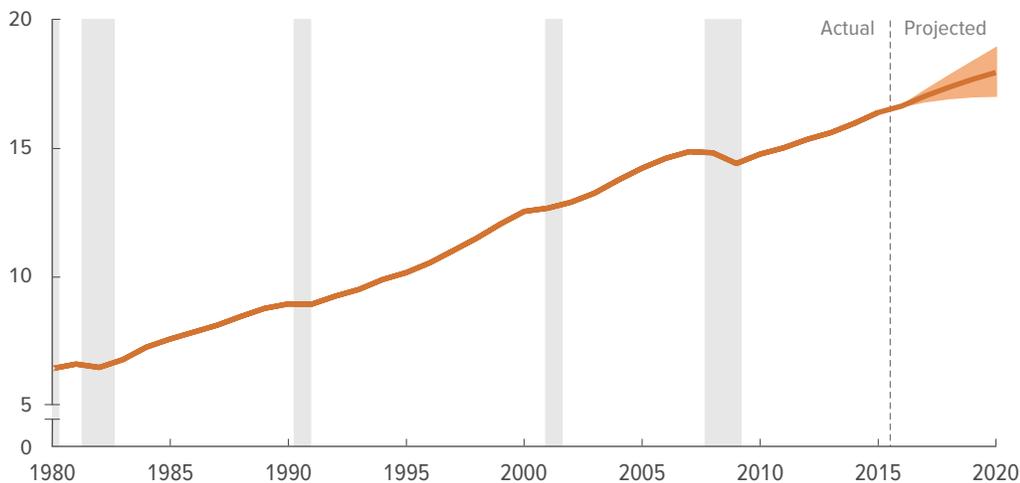
In CBO's baseline projections, real GDP grows at an average annual rate of 1.9 percent over the 2017–2020 period—but there is a roughly two-thirds chance that the growth will be between 0.5 percent and 3.3 percent.

Sources: Congressional Budget Office; Bureau of Economic Analysis.

The shaded area around CBO's baseline projection of real GDP (that is, nominal GDP adjusted to remove the effects of inflation) is one way of illustrating the uncertainty of that projection. The area is based on the errors in CBO's one-year through four-year projections from 1976 through 2015 of the average annual growth rate of real GDP.

Data are calendar year averages.

GDP = gross domestic product.

will be between 0.5 percent and 3.3 percent over the next four years. That is, there is a two-thirds chance that real GDP in 2020 will be within roughly $1 trillion of the projected value of $18 trillion (in 2009 dollars; see Figure 2-11). Similarly, CBO's forecast errors for inflation (as measured by the CPI-U) suggest that there is a roughly two-thirds chance that the average annual rate of inflation will fall between 1.7 percent and 3.0 percent over the next four years.[23]

Uncertainty From 2021 to 2027

The factors that will determine the economy's output later in the coming decade are also uncertain. For example, if the labor force grew more quickly than expected—

say, because older workers chose to stay in the labor force longer than expected—the economy could grow considerably more quickly than it does in CBO's projections. The natural rate of unemployment could be lower than expected, or productivity could grow more rapidly; those developments would likewise make the economy grow more quickly. By contrast, the economy could grow more slowly than expected—for instance, if the growth rate of labor productivity did not increase from its postrecession level, as it does in CBO's projections.

The recent rise in income inequality adds to uncertainty about the growth of output. Economists' findings about how income inequality generally affects economic growth have been mixed: Some studies conclude that it raises growth, others that it slows growth, and still others that it has no effect. In fact, the cause and the effect may be the reverse: Economic growth could be directly increasing or decreasing income inequality. When a study concludes that a clear relationship exists between inequality and growth, that conclusion usually depends on factors specific to the time and place being studied. Economists continue to examine the issue, and CBO will update its analysis if research yields a more definitive conclusion. In

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23. The root-mean-square error of CBO's four-year-ahead projections of the annual average growth rate of real GDP since 1976 is 1.4 percentage points. The root-mean-square error of CBO's four-year-ahead projections of the annual average rate of inflation since 1983—that is, after an extraordinary rise and fall in the rate of inflation during the late 1970s and early 1980s—is 0.6 percentage points. For more on the inherent uncertainty underlying economic forecasts, see Congressional Budget Office, *CBO's Economic Forecasting Record: 2015 Update* (February 2015), www.cbo.gov/publication/49891.

Table 2-4.

Comparison of CBO's Current and Previous Economic Projections for Calendar Years 2016 to 2026

	2016[a]	2017	2018	Annual Average 2016-2020	Annual Average 2021-2026	Total, 2016-2026
			Percentage Change From Fourth Quarter to Fourth Quarter			
Real GDP[b]						
January 2017	1.8	2.3	1.9	1.8	1.9	1.9
August 2016	2.0	2.4	2.1	1.9	2.0	2.0
Nominal GDP						
January 2017	3.5	4.1	3.8	3.7	4.0	3.8
August 2016	3.5	4.3	3.9	3.8	4.0	3.9
PCE Price Index						
January 2017	1.5	1.9	2.0	1.9	2.0	1.9
August 2016	1.5	2.0	2.0	1.9	2.0	1.9
Core PCE Price Index[c]						
January 2017	1.8	1.9	2.0	1.9	2.0	2.0
August 2016	1.8	1.9	2.0	1.9	2.0	2.0
Consumer Price Index[d]						
January 2017	1.8 [e]	2.3	2.3	2.2	2.4	2.3
August 2016	1.8	2.3	2.3	2.2	2.4	2.3
Core Consumer Price Index[c]						
January 2017	2.2 [e]	2.2	2.3	2.3	2.3	2.3
August 2016	2.3	2.2	2.3	2.3	2.3	2.3
GDP Price Index						
January 2017	1.6	1.8	1.9	1.8	2.0	1.9
August 2016	1.5	1.8	1.8	1.8	2.0	1.9
Employment Cost Index[f]						
January 2017	2.5	3.0	3.2	3.0	3.1	3.1
August 2016	2.8	3.1	3.3	3.1	3.1	3.1
Real Potential GDP						
January 2017	1.6	1.6	1.7	1.7	1.9	1.8
August 2016	1.5	1.6	1.7	1.7	2.0	1.8

the meantime, CBO's projections include effects of income inequality only implicitly—that is, to whatever extent past changes in inequality have affected economic growth.

Comparison With CBO's August 2016 Projections

CBO's current economic projections differ from those that it issued in August 2016 in a number of ways (see Table 2-4). For one thing, real GDP and potential GDP are now expected to grow more slowly during the next 10 years, and both are now projected to be 0.8 percent lower in 2026, the last year of CBO's previous projection. Nominal GDP also is expected to be slightly lower in 2026 than was projected in August. Other changes to the projections are more modest: The unemployment rate is

slightly higher this year and slightly lower next year, interest rates are lower in the first half of the projection period, and the labor force is larger throughout the projection period.

Revisions to Projected Output

CBO's projection of economic output is lower than it was in August because of changes in CBO's analytical methods and because of data that became available between early July and early December 2016. The largest revision was to the agency's estimate of potential output, which is now lower in each year of the 2016–2026 period. Estimated potential output in 2016 is now lower by about 0.4 percent than it was in August; in 2026, it is about 0.8 percent lower.

Table 2-4.   Continued

Comparison of CBO's Current and Previous Economic Projections for Calendar Years 2016 to 2026

				Annual Average		
	2016[a]	**2017**	**2018**	**2016-2020**	**2021-2026**	**Total, 2016-2026**
				Annual Average		
Unemployment Rate (Percent)						
January 2017	4.9 [e]	4.6	4.4	4.7	4.9	4.8
August 2016	4.8	4.5	4.6	4.7	4.9	4.8
Interest Rates (Percent)						
Three-month Treasury bills						
January 2017	0.3 [e]	0.7	1.1	1.2	2.8	2.1
August 2016	0.3	0.7	1.4	1.5	2.8	2.2
Ten-year Treasury notes						
January 2017	1.8 [e]	2.3	2.5	2.5	3.5	3.1
August 2016	1.8	2.3	2.8	2.7	3.6	3.2
Tax Bases (Percentage of GDP)						
Wages and salaries						
January 2017	44.1	44.2	44.3	44.3	44.3	44.3
August 2016	44.3	44.4	44.4	44.3	44.3	44.3
Domestic economic profits						
January 2017	9.1	8.9	8.4	8.5	7.5	7.9
August 2016	8.7	8.4	8.2	8.2	7.3	7.7

Sources: Congressional Budget Office; Bureau of Labor Statistics; Federal Reserve.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. Values for 2016 do not reflect the values for GDP and related series released by the Bureau of Economic Analysis since early December 2016.

b. Nominal GDP adjusted to remove the effects of inflation.

c. Excludes prices for food and energy.

d. The consumer price index for all urban consumers.

e. Actual value for 2016.

f. The employment cost index for wages and salaries of workers in private industries.

The main reason that CBO reduced its projection of potential output was that it lowered its estimate of potential TFP in the nonfarm business sector, both in recent history and throughout the projection period. CBO also lowered its projection of capital services, which grow about one-tenth of a percentage point more slowly in the current projection than in the August projection. The resulting downward revisions to potential output were partially offset by an upward revision to the size of the potential labor force, which resulted from the net effect of changed projections of both labor force participation and the population (see "Revisions to Labor Market Projections" on page 66).

The downward revision to CBO's estimate of historical potential TFP in the nonfarm business sector—which is now estimated to have been about 0.7 percent lower in

2016 than the agency thought previously—results partly from the inclusion of new data but mainly from two changes that CBO has made to its method of estimation. The most significant change is to the way the agency accounts for business-cycle effects in estimating potential TFP; it attributes less of the slow growth of TFP since 2007 to cyclical weakness and more to underlying trends, resulting in a lower estimate of growth in potential TFP during the 2000s. The second methodological change involves the way CBO accounts for the acceleration of TFP growth in the late 1990s and early 2000s. CBO now estimates that more of that acceleration reflected stronger potential TFP growth, a change that slightly boosts projected potential TFP growth and offsets part of the downward adjustment that results from the first change. Together, those two changes lower CBO's estimates of the recent growth of potential TFP and of its current level, as

well as modestly lower the projected growth rate of potential TFP during the 2017–2026 period.

Growth of capital services has been revised downward, mostly because of a reassessment of the forecast for investment in business equipment. Real private investment in such equipment was weaker in 2016 than CBO expected in August, declining by an estimated 3.6 percent rather than by 0.3 percent. That unexpected weakness led CBO to reassess the near-term outlook for investment in equipment. Although the agency's medium-term projection for that investment (which is independent of business-cycle effects) has not changed since August, the near-term projection is weaker, because CBO now expects growth in aggregate demand to provide a smaller boost. In addition, CBO reduced its projection of the growth of the population, which resulted in lower projections of real residential investment in every year from 2017 to 2027.

Largely as a result of downward revisions to projected growth of exports, residential investment, and business fixed investment, CBO anticipates that output will grow more slowly in the near term than it projected in August. The agency currently projects that real GDP will grow at an annual rate of 2.1 percent, on average, during 2017 and 2018; in August, the projection was 2.2 percent.

CBO's projection of nominal GDP is slightly higher in the near term and slightly lower in the later years of the projection period than it was in August. The upward revision in the near term reflects revisions to historical data—which were released after CBO's August forecast was complete and which revealed that nominal GDP and inflation measured by the GDP price index were higher during the 2013–2016 period than had previously been estimated. However, CBO's projection of growth in nominal GDP from 2017 to 2026 is lower than it was in August, largely because CBO projects that real GDP growth will be slower. As a result, CBO's projection of nominal GDP is about 0.4 percent lower in 2026 than it was in August.

Revisions to Labor Market Projections
Over the next decade, CBO estimates, more people will be working than the agency estimated in August. That change results from an upward revision to the projected labor force participation rate, partially offset by a downward revision to the projected size of the population. Revisions to the projected unemployment rate have smaller effects on projected employment.

For the next two years, CBO projects, the labor force participation rate will be about three-tenths of a percentage point higher than projected in August. That upward revision reflects recently released data showing that participation last year was greater than CBO estimated in August; CBO expects that improvement to persist.

After 2018, CBO projects, the labor force participation rate will be roughly 1 percentage point higher than projected in August, a change that is due to an upward revision to the potential labor force participation rate over that period. That increase, in turn, results from two factors. First, CBO revised upward the projected average level of educational attainment, because recent data showed that a larger portion of the population received bachelor's degrees in 2016 than CBO had anticipated. Since more educated workers participate at higher rates than less educated ones do, a higher average level of educational attainment increases the participation rate. Second, CBO revised upward its projection of the future participation rates of the young people who entered the labor force during and after the most recent recession, expecting their rates to be closer to those of previous cohorts at similar ages. The upward revisions to the projected rate of labor force participation boost CBO's projection of the potential labor force—that is, the number of people who would be employed or seeking work if the economy was producing its maximum sustainable amount of output.

The effects on the labor force of the upward revisions to the rate of labor force participation are partially offset by downward revisions to the projected growth of the civilian noninstitutional population. Specifically, CBO now expects the population in 2027 to be 1.1 percent (or 3.2 million people) smaller than projected in August. That revision arises primarily because the agency has significantly reduced its projection of net immigration—and in particular its projection of the flow of unauthorized immigrants—to better reflect historical trends. Although unauthorized immigration is very difficult to measure, the best estimates suggest that there has been roughly no increase in the number of unauthorized immigrants since 2005; the number had increased substantially in earlier years.[24]

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24. Jeffrey S. Passel and D'Vera Cohn, *Overall Number of U.S. Unauthorized Immigrants Holds Steady Since 2009* (Pew Research Center, September 2016), http://tinyurl.com/j45zwo5.

Figure 2-12.

Comparison of CBO's Economic Projections With Those From the *Blue Chip* Survey

CBO's projections are generally within the middle two-thirds of the range of forecasts from the *Blue Chip* survey.

Percent
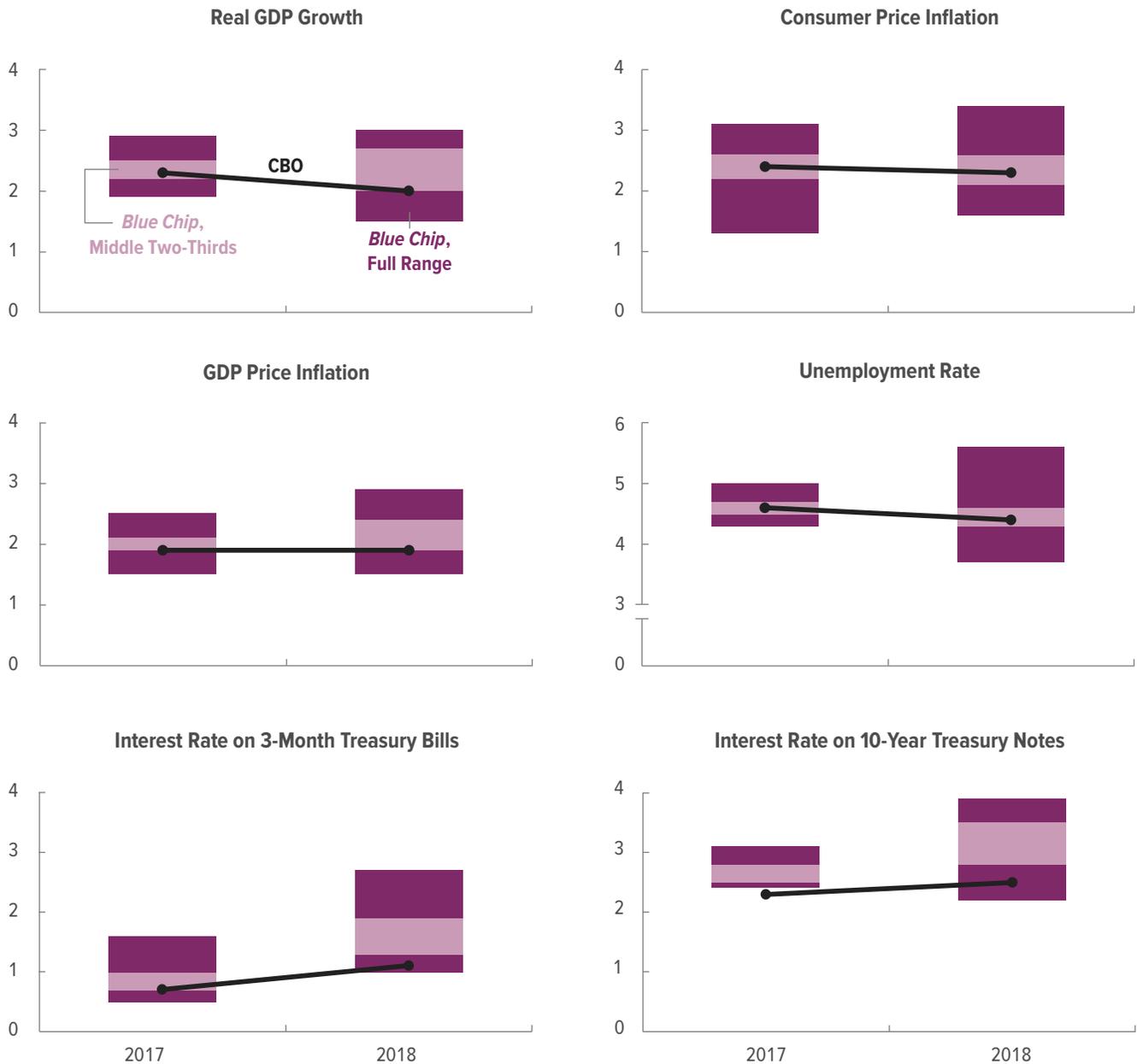
Sources: Congressional Budget Office; Wolters Kluwer, *Blue Chip Economic Indicators* (January 10, 2017).

The full range of forecasts from the *Blue Chip* is based on the highest and lowest of the roughly 50 forecasts. The middle two-thirds of that range omits the top one-sixth of the forecasts and the bottom one-sixth.

Real GDP is the output of the economy adjusted to remove the effects of inflation. Consumer price inflation is calculated with the consumer price index for all urban consumers. Real GDP growth and inflation rates are measured from the average of one calendar year to the next.

The unemployment rate is a measure of the number of jobless people who are available for work and are actively seeking jobs, expressed as a percentage of the labor force. The unemployment rate and interest rates are calendar year averages.
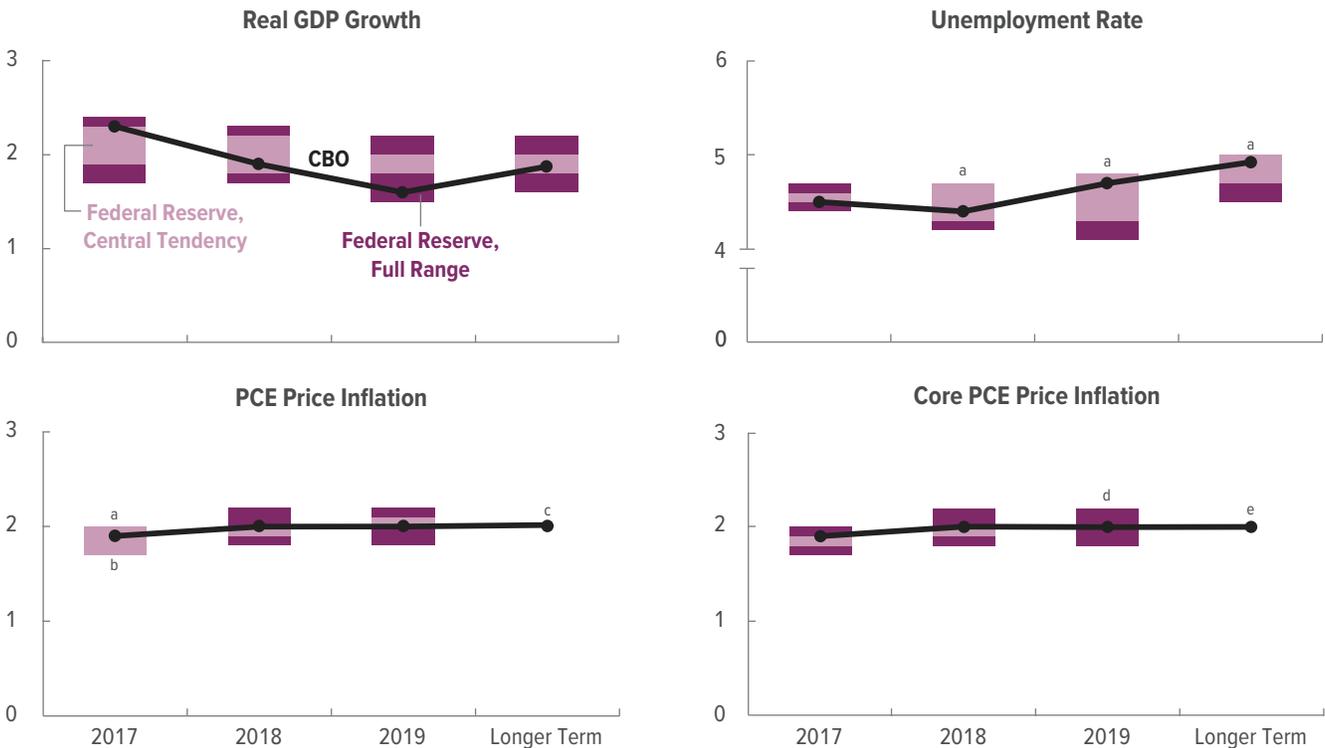
GDP = gross domestic product.

Figure 2-13.

Comparison of CBO's Economic Projections With Those by Federal Reserve Officials

CBO's projections are generally within the central tendency—roughly speaking, the middle two-thirds—of the range of forecasts by Federal Reserve officials.

Percent

Sources: Congressional Budget Office; Board of Governors of the Federal Reserve System, "Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents Under Their Individual Assessments of Projected Appropriate Monetary Policy, December 2016" (December 14, 2016), http://go.usa.gov/x9Y5T (PDF, 110 KB).

The full range of forecasts from the Federal Reserve is based on the highest and lowest of the 17 projections by the Board of Governors and the president of each Federal Reserve Bank. The central tendency is that range without the 3 highest and 3 lowest projections—roughly speaking, the middle two-thirds of the range.

For CBO, longer-term projections are values for 2027. For the Federal Reserve, longer-term projections are described as the value at which each variable would settle under appropriate monetary policy and in the absence of further shocks to the economy.

Real GDP is the output of the economy adjusted to remove the effects of inflation.

The unemployment rate is a measure of the number of jobless people who are available for work and are actively seeking jobs, expressed as a percentage of the labor force.

The core PCE price index excludes prices for food and energy.

Real GDP growth and inflation rates are measured from the fourth quarter of one calendar year to the fourth quarter of the next. The unemployment rate is a fourth-quarter value.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. The upper ends of the full range and central tendency are equal.

b. The lower ends of the full range and central tendency are equal.

c. For PCE price inflation in the longer term, the range and central tendency equal 2 percent.

d. The central tendency equals 2 percent.

e. The Federal Reserve does not indicate a range or central tendency for core PCE price inflation in the longer term.

CBO's current projection of the unemployment rate in 2017 is slightly higher than it was in August, largely because of the upward revision to projected labor force participation. Even though the unemployment rate's decline has recently paused, the underlying momentum of the labor market is putting downward pressure on that rate, in CBO's assessment. To incorporate the recent pause into the projection while taking into account that underlying momentum, CBO pushed back the projected point at which the unemployment rate will bottom out by roughly one year: The rate is now expected to reach 4.4 percent in the middle of 2018, rather than in the middle of 2017, as CBO projected in August.

Revisions to Projected Interest Rates

CBO anticipates that interest rates will rise more slowly over the next several years than it projected in August. The slower projected increase of short-term interest rates partly reflects the fact that CBO now projects a slower pace of Federal Reserve rate hikes, in light of recent data that point to slower domestic and foreign economic growth than was expected in August. Federal Reserve officials and private-sector forecasters have similarly lowered their projections of the federal funds rate in the near term since August, despite the increase in interest rates in late 2016. Long-term rates are also expected to be lower over the next five years—partly reflecting the expected slower increase in short-term rates and partly reflecting CBO's expectation that the factors suppressing the term premium will dissipate more slowly than previously thought.

Comparison With Other Economic Projections

CBO's projections of the growth of real GDP, the unemployment rate, inflation, and interest rates in 2017 and 2018 are generally very similar to the *Blue Chip* consensus—the average of roughly 50 forecasts by private-sector

economists that was published in the January 2017 *Blue Chip Economic Indicators* (see Figure 2-12 on page 67). The exceptions are CBO's projections of interest rates: The projection of the interest rate on 3-month Treasury bills is at the bottom of, or slightly below, the middle two-thirds of the *Blue Chip* forecasts in 2017 and 2018, and the projection of the rate on 10-year Treasury notes is slightly below the range of *Blue Chip* forecasts in 2017 and slightly below the middle two-thirds of the *Blue Chip* forecasts in 2018.

CBO projects slightly faster growth of real output over the coming year than do most of the Federal Reserve officials whose forecasts were reported at the December 2016 meeting of the Federal Open Market Committee (see Figure 2-13). The Federal Reserve reports three sets of forecasts: a median, a range, and a central tendency. The median is calculated from forecasts made by the members of the Board of Governors of the Federal Reserve System and the presidents of the Federal Reserve Banks. The range is based on the highest and lowest of those forecasts. The central tendency is the range without the three highest and three lowest projections. CBO's projections of the growth of real GDP are within the full range in each of the periods projected by the Federal Reserve (2017, 2018, 2019, and the longer term) and within the central tendency in 2017, 2018, and the longer term. CBO's projections of the unemployment rate and inflation are within the central tendency in each of the periods projected.

CBO's projections differ from those of the other forecasters at least partly because they are based on current law, whereas the other forecasters are probably assuming that changes in law will take place. The differences may also reflect differences in the economic news available when the forecasts were completed and differences in the economic and statistical models used.