CHAPTER 2

THE YEAR IN REVIEW AND THE YEARS AHEAD

The U.S. economy continued to grow in 2016, as the recovery extended into its seventh year with strong gains in employment and real wages, low inflation, and moderate output growth. Robust employment growth and moderate output growth imply low labor productivity growth, an important challenge in the years ahead. Strong employment gains along with rising real wages in 2016 were a continuation of the trends in 2015 that helped contribute to the fastest real median income growth on record and, in conjunction, a falling poverty rate.

Real gross domestic product (GDP) increased at an annual rate of 1.8 percent during the first three quarters of 2016 (the latest data available as this *Report* goes to press), down slightly from the 1.9-percent growth during the four quarters of 2015.[1] During the first three quarters of 2016, real consumer spending, which grew at an annual rate of 2.9 percent, exceeded real GDP growth as personal saving rates fell. Residential investment contributed positively to overall real GDP growth in the last quarter of 2015 and the first quarter of 2016, but subtracted from growth in the second and third quarters of 2016. The weakness in residential investment is surprising given the solid fundamentals: low mortgage interest rates, favorable demographic trends, rising real wages, and rising house prices. Business fixed investment contracted in the last quarter of 2015 and the first quarter of 2016, but has since returned to contributing positively, though weakly, to overall growth. Inventory investment—one of the most volatile components of GDP—subtracted from GDP during the five quarters prior to 2016:Q3, in particular in 2016:Q2, before rebounding in the third quarter. Net exports contributed positively to growth in each of the first three quarters of 2016 after subtracting from growth in in the four quarters of 2014 and 2015. Government

[1] The *2017 Economic Report of the President* only discusses the first three quarters of GDP and employment gains through November. It was finalized in December: only the second estimate of 2016:Q3 GDP and the November employment report had been released. Previous *Economic Reports of the President* were finalized in February.

purchases have been roughly neutral in their effect on overall GDP during the first three quarters of 2016.

The economy added 2.3 million jobs during the 12 months ended in November 2016, extending the streak of consecutive months of positive nonfarm employment growth to 74 months. During the 12 months ended in November 2016, nonfarm job growth has averaged 188,000 a month, a somewhat more moderate pace than during 2014 and 2015, but similar to the strong pace during 2011-13. The unemployment rate was down 0.4 percentage point during the 12 months ended in November to 4.6 percent (Figure 2-1). The labor force participation rate during the 12 months ended in November 2016 averaged 0.14 percentage point higher than its 2015 average as the labor market continued to strengthen. The labor force participation rate had been falling since 2008 due to the aging of the population into retirement, cyclical factors, and other long-term trends, but it has rebounded slightly to its 2014 level as the strengthening labor market offset some demographic trends.

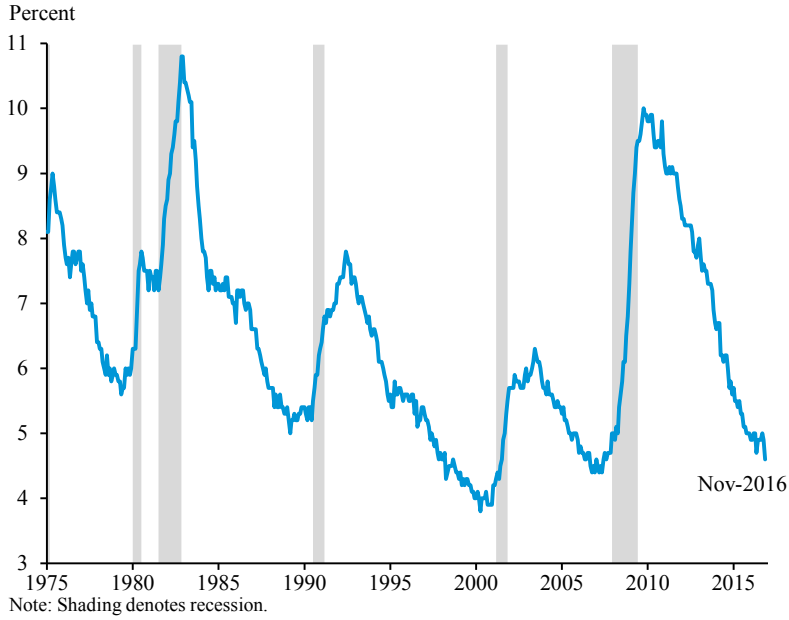
Inflation remained low with consumer price inflation, as measured by the consumer price index (CPI), at only 1.6 percent over the 12 months ended in October 2016. Low energy prices continue to restrain overall inflation. The core CPI, which excludes food and energy, increased 2.1 percent over the 12 months ended in October. Over the same period, core personal consumption expenditure (PCE) inflation increased 1.7 percent, remaining below the Federal Reserve's 2-percent target for overall PCE inflation. Real average hourly earnings of production and nonsupervisory workers rose 0.9 percent over the 12 months ended in October, as nominal wage growth continued to exceed the subdued pace of price inflation, building upon the 2.2-percent gain experienced during 2015 (Figure 2-2). Real median household income increased 5.2 percent in 2015, the fastest growth on record. Households at all income percentiles reported by the Census Bureau saw real gains in income, with the largest gains among households at the bottom of the income distribution.

Challenges remain for 2017 and the longer term, including uncertain prospects for global growth, the low rate of productivity growth, and constraints posed by slowing trend growth in the labor force due to demographic shifts.

The economic recovery that continued in 2016 has been characterized by a robust labor market but modest output growth. The labor market continued to strengthen and, by November 2016, the unemployment rate had fallen to half its peak in October 2009, but the 1.6-percent real output growth during the four quarters ended in 2016:Q3, was slower than its pace in recent years. The dissonance between the robust labor market and moderate output

Figure 2-1

Unemployment Rate, 1975–2016

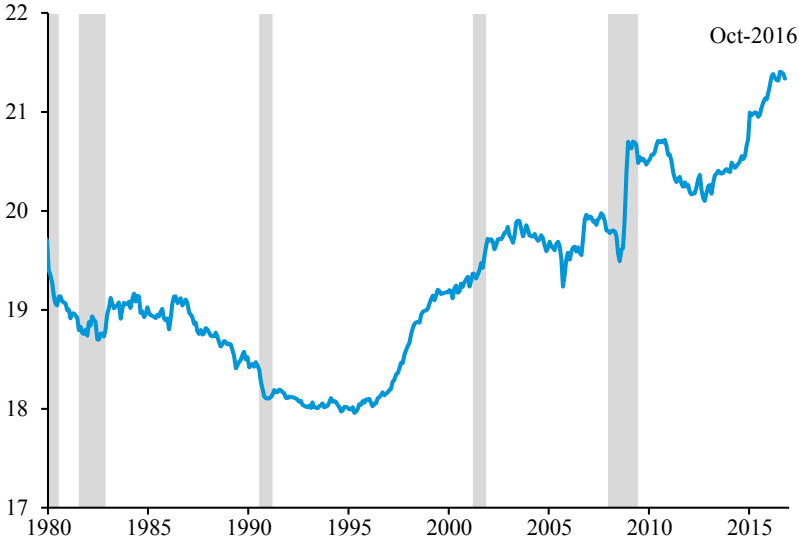


Note: Shading denotes recession.
Source: Bureau of Labor Statistics, Current Population Survey.

Figure 2-2

Real Hourly Wages, 1980–2016

Real Hourly Earnings (2015 Dollars), Private Production and Nonsupervisory Employees



Note: Shading denotes recession. Nominal wages are deflated using the CPI for urban wage earners and clerical workers (CPI-W).
Source: Bureau of Labor Statistics; CEA calculations.

growth reflects slow labor productivity growth during this business cycle relative to its long-term average. Foreign growth showed signs of stabilizing, with the International Monetary Fund (IMF) expecting real output growth over the four quarters of 2016 to be 3.1 percent, the same pace as in 2015 (IMF 2016b). However, the 3.1-percent pace of global growth in 2016 is below the year-earlier expectations (3.6 percent), with slower-than-forecasted growth in both advanced and emerging markets (IMF 2015b). Slow global growth has been a headwind for U.S. exports in recent years (continuing through 2016), especially for U.S. manufacturing, which constitutes 60 percent of U.S. exports, as well as for global trade. However, the outlook is improving in emerging markets with India's growth continuing at a fast pace and with Brazil and Russia likely to return to positive growth in 2017.

The Administration expects real GDP to grow at 2.4 percent during the four quarters of 2017, and 2.2 percent in the long-term, a forecast based on a baseline that assumes enactment of the President's policy proposals. In 2017, consumer spending is expected to continue to support solid growth, along with a pickup in foreign demand. The unemployment rate is projected to fall slightly from its projected fourth-quarter rate of 4.9 percent. Inflation, as measured by the price index for GDP and which was only 1.3 percent during the four quarters through 2016:Q3, is forecasted to creep up gradually to 2 percent, and then to remain at that pace thereafter. The yield on ten-year Treasury notes is projected to edge up from its third quarter level of 1.6 percent toward 3.7 percent in the mid-2020s, partly due to inflation increasing and term premiums returning to more-normal levels.

Policy Developments

Fiscal Policy

Fiscal restraint in the United States continued in fiscal year (FY) 2016 with the Federal Budget deficit (expressed as a share of nominal GDP) rising a moderate 0.7 percentage point to 3.2 percent. The deficit-to-GDP ratio is about equal to the average over the past 40 years, and has fallen by 67 percent since FY 2009. The Federal deficit-to-GDP ratio had declined 1.9 percentage points a year from FY 2012 to FY 2014, but has flattened out in the 2-to-3 percent of GDP range in FY 2015 and FY 2016 under Administration policies.

The President signed three pieces of significant fiscal legislation in 2015. The first was the Bipartisan Budget Act (BBA) of 2015, signed in October, which set discretionary spending limits for the FY 2016 and FY 2017, providing a moderate $80 billion in total sequestration relief, thus

allowing for additional investments in education, job training, research, and health care, as well as postponing reaching the statutory limit on the Federal debt (Somanader 2015). Second, the Fixing America's Surface Transportation (FAST) Act signed into law in December 2015 funded surface transportation including roads, bridges, and rail for five years, authorizing $306 billion in spending—or an increase of roughly 4 percent in highway investment and 7 percent in transit investment in real terms—while increasing predictability of funding (CEA 2016b). Third, the Protecting Americans from Tax Hikes (PATH) Act signed into law in December 2015 ensured that the expansions enacted in 2009 of the Earned Income Tax Credit and Child Tax Credit, and the American Opportunity Tax Credit (which provides a tax credit for students in higher education) are permanent features of the tax code. These tax credits now provide tax cuts of about $1,000 for about 24 million families each year (Leibenluft 2015). The PATH Act also made permanent tax incentives for investment in research and experimentation and small business investment (through expensing capital purchases). In addition, in September 2016, Congress approved a spending bill funding the government through December 9 and provided $1.1 billion in the fight against Zika, as well as additional funding for military infrastructure and housing.

Federal

Over the four quarters ended in 2016:Q3, real Federal purchases grew 1.1 percent. At the Federal level, government purchases—including consumption and gross investment—contributed weakly, but positively, to four-quarter GDP growth (0.1 percentage point), approximately the same as during the four quarters of 2015. This modest contribution is accounted for by decreases in other spending which partly offset the sequester relief under the BBA. On a quarterly basis, real Federal purchases can be volatile (Figure 2-3). Federal purchases picked up in the third quarter after falling in the first two quarters of 2016.

State and Local

After strong contributions to real GDP during the four quarters of 2015, State and local government purchases—consumption plus gross investment—are on track to have a negligible impact in 2016. Real State and local government purchases contracted 0.2 percent in the four-quarters ended in 2016:Q3, after growing 2.5 percent during the four-quarters of 2015 (Figure 2-3).

The State and local share of nominal GDP fell from its historical peak of 13.0 percent in 2009 to 11.0 percent in 2016, a level not seen since the late 1980s, as State and local governments cut their purchases in the face of

budget pressures (Box 2-1).[2] In 2016, State and local government purchases were about 60-percent larger than Federal purchases and three-times larger than Federal nondefense purchases (Figure 2-4). The roughly 90,000 state and local governments employ roughly 13 percent of nonfarm workers, and added about 159 thousand jobs in the twelve months ended November 2016. Changes in State and local purchases can be as important as changes in Federal purchases.

Monetary Policy

In December 2015, the Federal Open Market Committee (FOMC) increased the target range for the federal funds rate by 0.25 percentage point, ending seven years with the effective federal funds rate maintained at a level just above the zero lower bound. The FOMC's decision to tighten monetary policy was based on its judgment that labor markets had improved considerably and that it was reasonably confident that inflation would move up over the medium term to its 2-percent objective. Through the first 11 months of 2016, the FOMC did not raise the target range for the federal funds rate.

As was the case in previous years, the Federal Reserve's realized pace of raising rates in 2016 was below the median forecasted pace of FOMC participants at the close of the previous year. In December 2015, the median of FOMC participant projections was four 25-basis point rate hikes in 2016. In March 2016, the median forecast of the federal funds rate from FOMC participants for the end of 2016 fell to 0.9 percent, implying just two hikes in 2016. Throughout 2016, the FOMC continued to maintain the target range for the federal funds rate at between 0.25 and 0.50 percent, as inflation remained below target, U.S. economic growth was subdued, global growth prospects remained weak, and some financial market turmoil emerged in early 2016. Britain's vote to leave the European Union in June introduced more uncertainty about global growth and financial conditions. Throughout the year, the market-implied federal funds rate for the end of 2016 was below the median forecast of FOMC participants at the time. Importantly, the FOMC emphasized throughout the year that monetary policy is not on a "preset path"[3] and that the projections of FOMC participants are only an indication of what they view as the most likely path of interest rates given beliefs on the future path of the economy.

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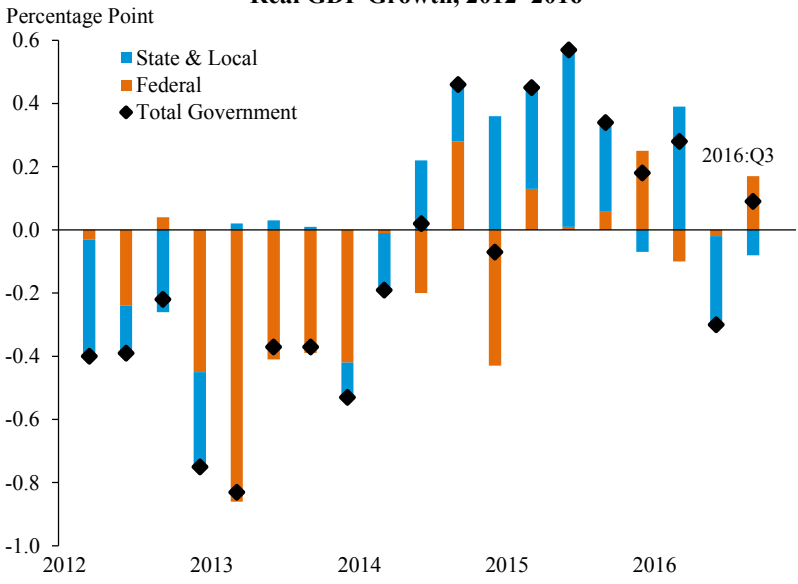
[2] Forty-nine out of fifty states have constitutions or statutes mandating a balanced budget and many local governments have similar provisions (National Conference of State Legislatures 2010). This does not prevent them from running deficits. Many of those balanced budget statutes apply only to the operating budget, while deficits may be allowed on their capital accounts. Also, spending from "rainy day funds" appears as a deficit on the government balance sheet in the national income and product accounts.

[3] See Transcript of Chair Yellen's Press Conference, September 21, 2016 (Yellen 2016a).

Figure 2-3

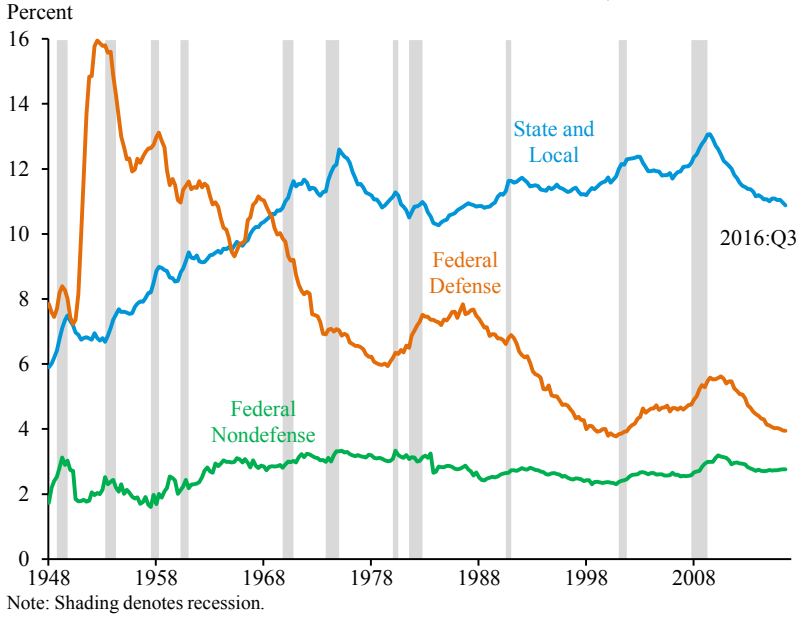
Quarterly Contribution of Government Purchases to Real GDP Growth, 2012–2016



Source: Bureau of Economic Analysis.

Figure 2-4

Government Purchases as Share of Nominal GDP, 1948–2016



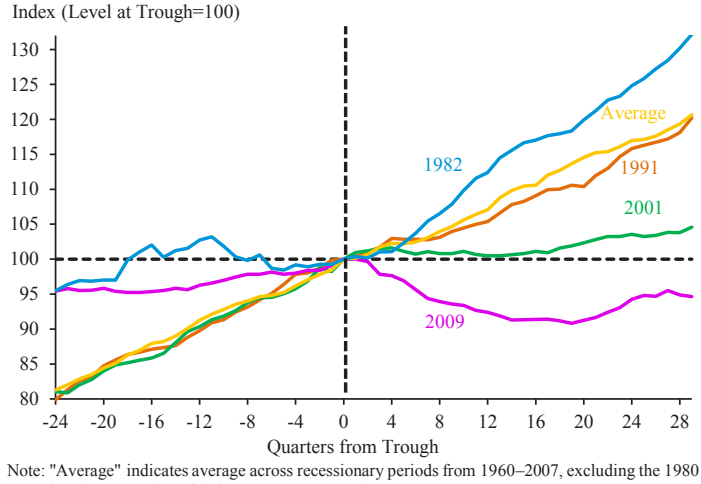
Note: Shading denotes recession.
Source: Bureau of Economic Analysis.

Box 2-1: Challenges in the State and Local Sector

During the current expansion, growth in State and local purchases has been the weakest of any business-cycle recovery in the post-World War II period (Figure 2-i). Although in a typical recovery State and local spending tends to grow quickly and at a similar pace as in the pre-recession period, in the current business cycle, State and local spending sharply contracted and, after seven years, has still not rebounded to its pre-crisis levels. During the four quarters of 2010, State and local purchases subtracted 0.5 percentage point from GDP growth, and then subtracted about another 0.3 percentage point in both 2011 and 2012. Spending in this sector stabilized in 2013, added modestly to GDP growth during the four quarters of 2014 and 2015, and had a negligible impact on GDP during the three quarters of 2016.

Real State and local government consumption expenditures, gross investment (particularly investment in structures), and employment (particularly in the education sector) remain below their pre-crisis levels (Figure 2-ii). Real State and local government consumption expenditures—which consists of spending to produce and provide services to the public, largely public school education—remains 2.8 percent below its peak in 2009:Q3. Real State and local government gross investment—which consists of spending for fixed assets that directly benefit the

Figure 2-i
Real State and Local Government Purchases During Recoveries, 1960–2016



Note: "Average" indicates average across recessionary periods from 1960–2007, excluding the 1980 recession due to overlap with the 1981–1982 recession.
Source: Bureau of Economic Analysis, National Income and Product Accounts; National Bureau of Economic Research; CEA calculations.

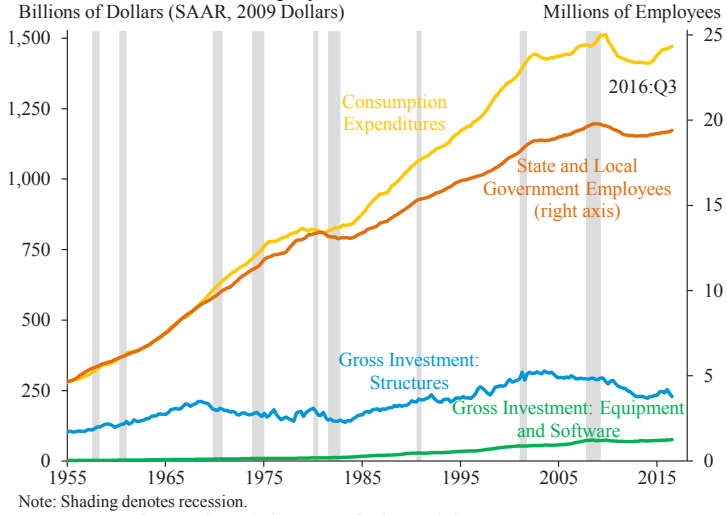
public, largely highway construction and maintenance—remains 17.3 percent below its peak in 2009:Q2.

As of November 2016, the roughly 90,000 State and local governments have added 371 thousand jobs since January 2013. Even so, employment in this sector remains 367 thousand below its previous high in July 2008, with almost half of this net job loss in educational services. The 1.7-percent decline in education employment exceeded the 1.0-percent decline in the school-age population (ages 5 to 19) over the 2008-15 period. This disparity implies a rising student-teacher ratio.

Despite some recovery in 2016, there are still factors likely to restrain State and local spending growth. State and local governments continue to spend more than they collect in revenues, and their aggregate deficit during the first three quarters of 2016 amounted to about 1 percent of GDP. This deficit has shrunk, however, during the recovery (Figure 2-iii). During 2016, State and local expenditures (including transfers and interest payments, as well as purchases) were roughly flat at about 14 percent of GDP, and revenues held at about 13 percent of GDP. Until 1990, State and local governments only ran deficits during recessions. Since then, State and local governments have frequently run deficits.

Unfunded pension obligations—the shortfall between benefits promised to government workers and the savings available to meet those

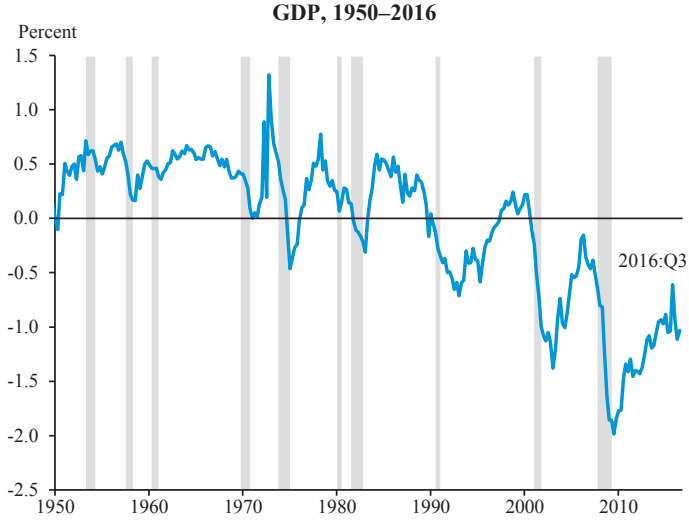
Figure 2-ii
Real State and Local Consumption, Investment, and Employment, 1955–2016



Note: Shading denotes recession.
Source: Bureau of Economic Analysis; Bureau of Labor Statistics.

Figure 2-iii

State and Local Government Surplus as Percent of Nominal GDP, 1950–2016



Note: Shading denotes recession.
Source: Bureau of Economic Analysis.

obligations—place a burden on finances for many State and local governments. Unfunded liabilities, measured on a net-present value basis, equal the difference between liabilities (the amount the governments owe in benefits to current employees who have already accrued benefits they will collect in the future) and assets held in public pension funds, and indicate the amount of benefits accrued for which no money is set aside. The size of these unfunded pension liabilities relative to State and local receipts ballooned immediately after the recession driven by a combination of factors, including underfunding and lower-than-expected investment returns, and remain elevated at a level that was about 80 percent of a year's revenue in the first three quarters of 2016. Assets may fall short of liabilities when governments do not contribute the full annual required contribution (ARC), when they increase benefits retroactively, or when returns on investments are lower than assumed. Additionally, unfunded liabilities can grow if actuaries' assumptions do not hold true. For example, if beneficiaries live longer than anticipated, they will receive more benefits than predicted, even if the government has been paying the ARC consistently. Unfunded liabilities will eventually require the government employer to increase revenue, reduce benefits or other government spending, or do some combination of these.

The size of the Federal Reserve's balance sheet at the end of November 2016 was $4.45 trillion—over five times its size at the end of 2006, largely reflecting several large-scale asset purchase programs (quantitative easing) from 2008 to 2014, which are estimated to have lowered long-term interest rates by about a percentage point (Ihrig et al. 2012; D'Amico et al. 2012; Engen, Laubach, and Reifschneider 2015).[4] Since the conclusion of its large-scale asset purchase program in 2014, however, the Federal Reserve's asset holdings have remained at $4.4 trillion as maturing bonds were replaced with purchases of new issues.

In recent years, FOMC participants have tended to lower their estimates of the longer-run level for the federal funds rate. As of September, the median of FOMC participants' projections of the long-run federal funds rate was 2.9 percent, down from 3.5 percent in December 2015. The downward revisions are consistent with downward trends in long-term interest rates in U.S. and global financial markets.

The natural rate of interest is the real interest rate that should prevail when the economy is producing at its long-run potential level and has attained full employment. Both cyclical factors (such as unconventional monetary policies, fiscal austerity measures, and private sector deleveraging) and structural factors (such as slowing productivity growth, changing demographics) could be contributing to the decline in the natural rate of interest.[5] An interest-rate decline implies that monetary policy may now have less room to provide accommodation during recessions than in the past because it has less room to lower rates.[6] In light of this, some have argued that stabilization policy could benefit from greater use of countercyclical fiscal policy and perhaps changes in the approach to monetary policy such as targeting nominal GDP or adopting a higher inflation target.[7]

[4] See Ihrig et al. (2012) for a discussion of how interest rates paid on excess reserves and overnight reverse repurchase agreement have replaced open market operations—the buying and selling of Treasury securities—as the way in which the Federal Reserve achieves its target policy rate.

[5] See CEA 2015d for a survey on the nature and sources of the decline in long-term interest rates.

[6] Yellen (2016b) has argued that a low equilibrium federal funds rate does not mean that the Federal Reserve's current toolkit will be ineffective. She points out that a recent paper using simulations from a Federal Reserve model finds that forward guidance and asset purchases should be sufficient to combat most recessions "even if the average level of the federal funds rate in the future is only 3 percent."

[7] See Williams (2016), Summers (2014), Yellen (2016b), Fischer (2016), Bernanke (2013), Goodfriend (2016).

Labor Market

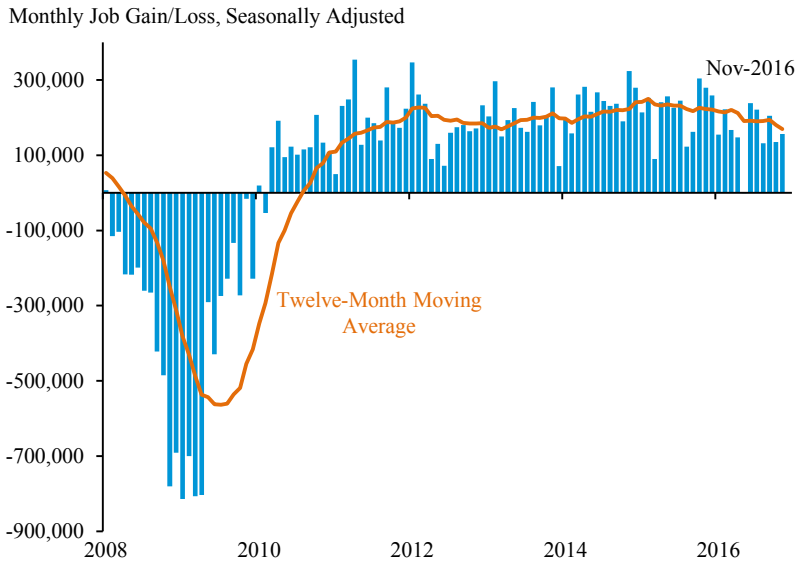
The labor market continued to improve in 2016, with many measures of labor-market performance having recovered to, or near to, their pre-recession levels. From November 2015 to November 2016, the economy added 2.3 million jobs, continuing the longest streak of total job growth on record. American businesses have now added 15.6 million jobs since private-sector job growth turned positive in March 2010, and the unemployment rate has fallen to 4.6 percent, cut by more than half from its peak in October 2009. Moreover, the pace of nominal earnings growth picked up in 2016, with average hourly earnings up at a 2.7 percent annual rate through November 2016. This progress has translated into broad-based gains, but some slack likely remains in the labor market, including a somewhat elevated rate of those who are working part-time but would like to work full time.

Private employment increased by 2.0 million jobs from November 2015 to November 2016, after rising by 2.7 million jobs in 2015 (Figure 2-5). Over the 12 months through November 2016, more than half of private-sector job gains came from "professional and business services" and "education and health services," both of which have been major drivers of job growth in this recovery. These sectors account for a large part of growth despite making up only about 35 percent of private-sector jobs in the economy. Education and health services added 581,000 jobs in the 12 months through November 2016 and professional and business services added 571,000 jobs, consistent with its growth over the course of this recovery.

Despite overall strength, particularly in the services sector, some industries faced specific headwinds that held down growth in 2016. Mining, which includes oil and gas extraction, lost 87,300 jobs in the 12 months through November 2016, largely due to industry cutbacks in the face of the sharp fall in oil prices, and reverted to its employment level at the beginning of the labor market recovery in early 2010 (Box 2-2). Manufacturing also experienced a weak year, losing 54,000 jobs or 0.44 percent, likely reflecting dampened demand for U.S. exports, which are disproportionately composed of manufactured goods, amid slow and declining growth among our trading partners. In fact, after excluding the mining and manufacturing sectors, job growth since 2014 has been at its strongest since the late 1990s.

The labor market's improvement was apparent in the continued decline of the unemployment rate. By November 2016, the unemployment rate had fallen to 4.6 percent, declining an average of 0.9 percentage point a year from 2010 to 2016, and dropping below its pre-recession average

Figure 2-5
Private-Sector Payroll Employment, 2008–2016



Source: Bureau of Labor Statistics, Current Employment Statistics; CEA calculations.

of 5.3 percent earlier than most forecasters expected.[8] As of March 2014, economists generally expected the unemployment rate to remain above 5.0 percent until at least 2020 (Figure 2-6). Many economists have revised down their estimates of the "natural" rate of unemployment as unemployment fell to low levels without an accompanying increase in the inflation rate. Still, given today's low unemployment rate, further declines are expected to moderate during 2017.

Although the overall unemployment rate was below its pre-recession average and mirrored other indicators of labor-market strength in November 2016, some indicators of labor-market slack remained above their pre-recession levels. For example, the long-term unemployment rate, or the share of those unemployed for 27 weeks or more, was 1.2 percent in November 2016, roughly its lowest point since 2008 but above its pre-recession average of 1.0 percent (Figure 2-7). If the long-term unemployment rate continues to fall at the same pace as it has over the past year, it will reach its pre-recession average in 2017. Looking historically across recoveries, the long-term unemployment rate is typically among the last labor-market indicators to return to normal (CEA 2010).

Similarly, the share of the labor force working part-time for economic reasons (those working part-time but who would prefer full-time

[8] Throughout this section, pre-recession average refers to the average from December 2001 to December 2007.

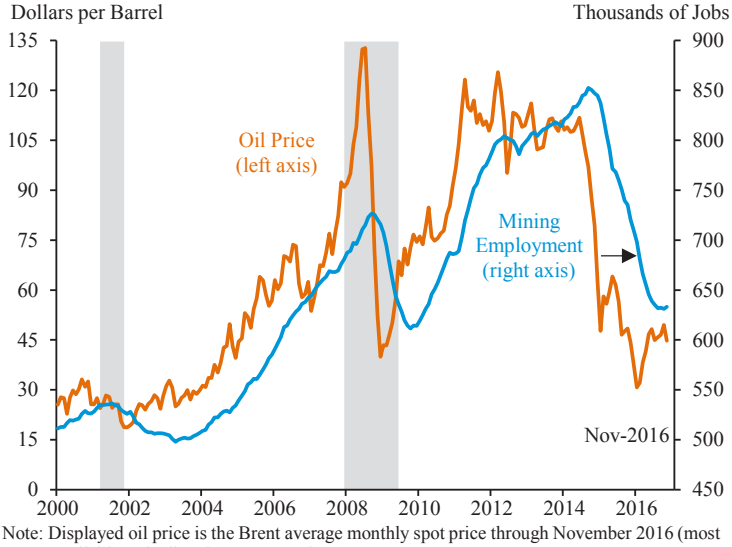
Box 2-2: Oil Prices and Employment in Related Industries

Oil prices were more than 100 dollars-per-barrel as recently as September 2014. While the decline in oil prices has benefitted consumers and the economy overall, it has weighed heavily on mining employment, which includes oil and gas extraction. (See Box 2-1 of the 2016 Report or CEA 2015c for a more in-depth discussion of the impact of oil price declines on spending and production). Employment in the mining industry fell 26 percent from September 2014 to November 2016, though the pace of decline has slowed in recent months as the price of oil has stabilized. Oil and gas workers make up about 60 percent of the mining industry; though, they represent just 0.3 percent of total U.S. nonfarm employment. The level of mining employment is closely correlated with the price of oil, with shifts in employment usually following price changes (Figure 2-iv). Since 2000, mining employment has been most closely correlated with the lagged price of oil, suggesting that the stabilization in oil prices in the 40-50 dollar-per-barrel range since April 2016 may translate into a stabilization of employment in this sector in 2017.

Employment in the mining sector is more directly correlated with the oil and gas rig count—a measure that reflects the rate of drilling for new oil and natural gas—which also tend to lag oil prices. The rig count

Figure 2-iv

Oil Prices and Mining Employment, 2000–2016



Note: Displayed oil price is the Brent average monthly spot price through November 2016 (most recent available). Shading denotes recession.
Source: Energy Information Administration; Bureau of Labor Statistics.

fell 80 percent from September 2014 to May 2016, but has grown since May. The partial rebound in the rig count has moderated the decline in mining employment, which has edged down 0.9 percent from June to November. The Energy Information Agency (EIA) forecasted in November that U.S. natural gas production during 2016 will fall 1.9 percent below its 2015 pace, which would be the first decline in average annual production since 2005 (EIA 2016). However, the EIA expects U.S. natural gas production to increase 3.8 percent in 2017.

employment), while falling steadily, remained above its pre-recession average through November 2016 and could indicate continued underutilization of labor. Between December 2007 and December 2009, the share of the labor force working part-time rose from 15.7 to 18.0 percent, driven by a large rise in the share of people working part-time for economic reasons. As the recovery progressed, the share of the labor force working part-time for economic reasons began to recede and, in 2016, fell a further 0.3 percentage point (Figure 2-8)[9]. As of November, the rate stood at 3.6 percent, 2.4 percentage points below its peak in 2010, but still above its pre-recession average of 3.0 percent.

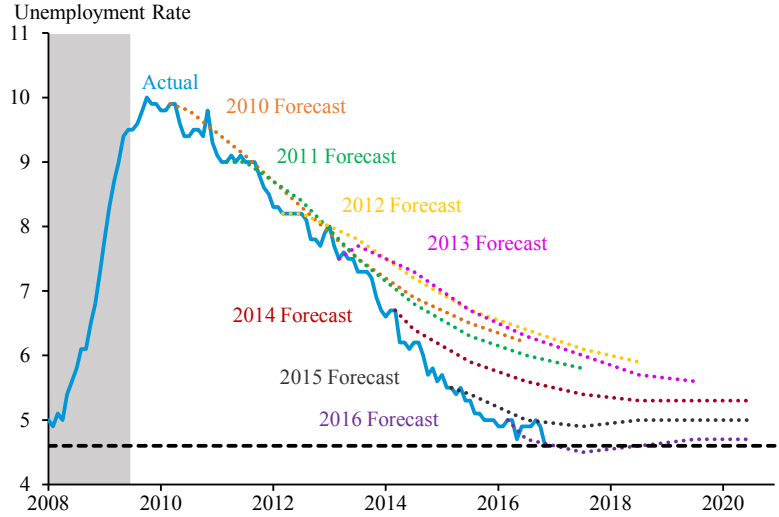
The persistence in the rate of part-time work for economic reasons, especially relative to other measures of slack, is largely responsible for the continued elevation of the U-6 "underemployment" rate. The underemployment rate uses a broader concept of labor market slack than the official unemployment rate (also known as U-3), by including discouraged workers who have given up looking for a job, others who are marginally attached to the labor force, and those employed part-time for economic reasons. In November 2016, the U-6 rate was 9.3 percent, 7.8 percentage points below its recession peak, but still 0.2 percentage points above its pre-recession average. In the 12 months through November 2016, the U-6 rate declined 0.6 percentage point (Figure 2-9).

The labor force participation rate has been roughly stable since October 2013. By CEA estimates, demographic pressure from the aging of

[9] Care must be taken when comparing the share of workers who are part-time for economic reasons before and after the 1994 redesign of the Current Population Survey. CEA used the multiplicative adjustment factors reported by Polivka and Miller (1998) in order to place the pre-1994 estimates of the part-time for economic reasons rate on a comparable basis with post-redesign estimates. For the part-time series for which Polivka and Miller do not report suitable adjustment factors, the pre- and post-redesign series were spliced by multiplying the pre-1994 estimates by the ratio of the January 1994 rate to the December 1993 rate. This procedure generates similar results to the Polivka and Miller factors for series for which multiplicative factors are available.

Figure 2-6

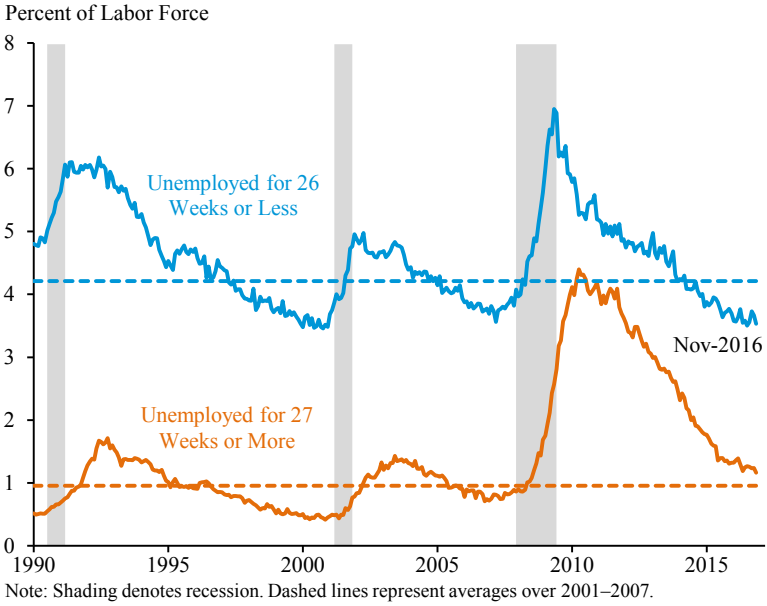
Actual and Consensus Forecast Unemployment Rate, 2008–2020



Note: Annual forecasts are current as of March of the stated year. Black dashed line represents November 2016 value (4.6 percent). Shading denotes recession.
Source: Bureau of Labor Statistics, Current Population Survey; and Blue Chip Forecasts

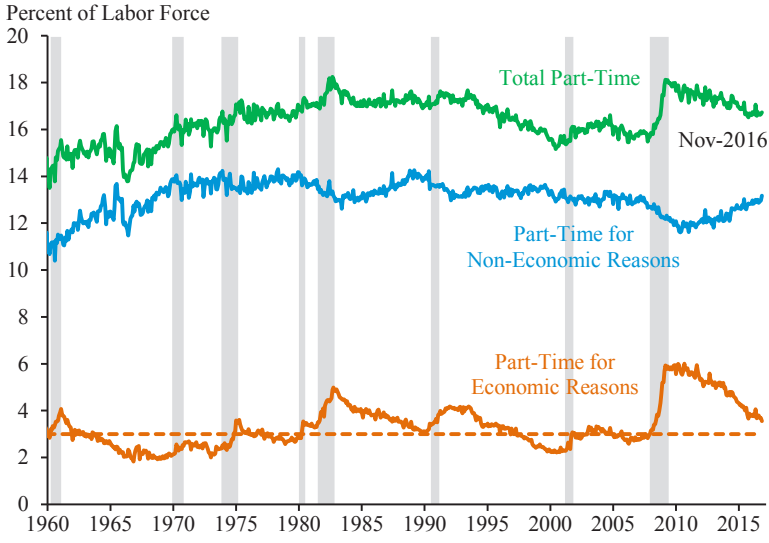
Figure 2-7

Unemployment Rate by Duration, 1990–2016



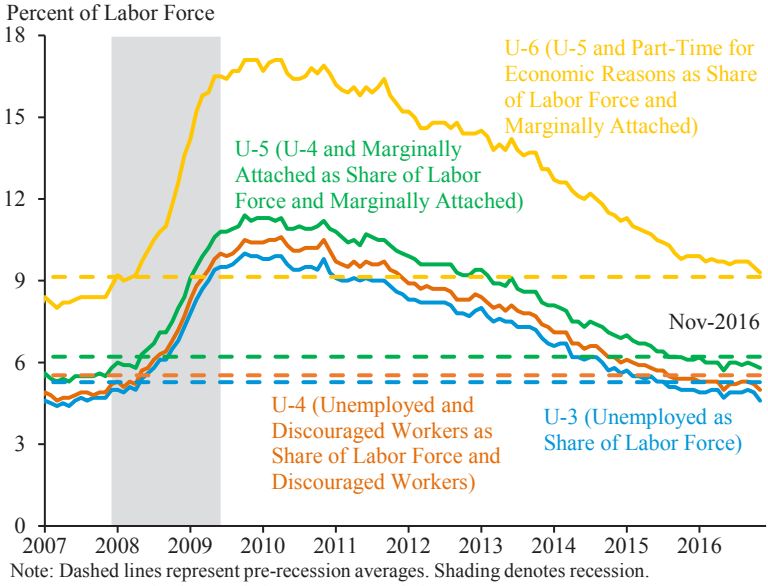
Note: Shading denotes recession. Dashed lines represent averages over 2001–2007.
Source: Bureau of Labor Statistics, Current Population Survey.

Figure 2-8
Rates of Part-Time Work, 1960–2016



Note: Shading denotes recession. Dashed line represents pre-recession average. See footnote 5 for details on comparability over time.
Source: Bureau of Labor Statistics, Current Population Survey; Polivka and Miller (1998); CEA calculations.

Figure 2-9
Alternative Measures of Labor Force Underutilization, 2007–2016



Note: Dashed lines represent pre-recession averages. Shading denotes recession.
Source: Bureau of Labor Statistics, Current Population Survey.

Box 2-3: Male Prime-Age Labor Force Participation[1]

Labor force participation among American men between the ages of 25 and 54, or "prime-age men," has been declining for more than 60 years, from a peak of 98 percent in 1954 to 89 percent today. More recently, over the last 15 years, labor force participation has also declined among prime-age women. These trends have troubling implications not only for overall economic growth, but also for individuals, as prolonged joblessness is linked to worse economic prospects, lower overall well-being and happiness, and higher mortality, as well as negative consequences for families and communities.

The United States has had the second largest decrease in prime-age male participation rates among the Organisation for Economic Cooperation and Development (OECD) countries since 1990. Today, the United States has the third lowest labor force participation rate in that group. Participation has fallen among every birth cohort of prime-age men over time, and the decline has been steeper among less-educated men and among black men. Three classes of explanations for this decline—supply driven, demand driven, and institutional—are explored in turn below.

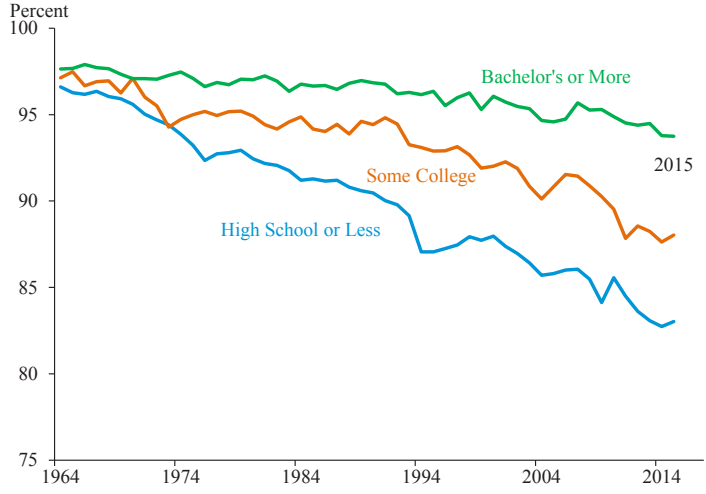
Reductions in labor supply—in other words, prime-age men choosing not to work for a given set of labor market conditions—explain relatively little of the long-run trend. Data show that nonparticipating prime-age men are actually less reliant than in the past on income from spouses or from government assistance. Among prime-age men who are not in the labor force, the share receiving government assistance (excluding Social Security benefits) peaked at about 50 percent in 1975 and has since halved to roughly 25 percent in 2015. In addition, nearly 36 percent of these men lived in poverty in 2014—up from 28 percent in 1968. These patterns cast doubt on the hypothesis that nonparticipation represents a choice enabled by other personal means or income sources.

In contrast, reductions in the demand for labor, especially for lower-skilled men, appear to be an important driver of the decline in prime-age male labor force participation. Consistent with a decline in demand for the labor of less-educated men, the drop in participation has been particularly steep for this group (Figure 2-v) and has coincided with a fall in their wages relative to more-educated men. CEA analysis suggests that when the returns to work for those at the bottom of the wage distribution are particularly low, more prime-age men choose not to participate in the labor force. These relative wage declines are likely due to multiple factors, including a broader evolution of technology,

[1] Analysis in this section is from CEA (2016e). See the report for further discussion on this topic.

Figure 2-v

Prime-Age Male Labor Force Participation by Educational Attainment



Source: Bureau of Labor Statistics, Current Population Survey Annual Social and Economic Supplement; CEA calculations.

automation, and globalization in the U.S. economy and, possibly, also an increase in the wage-setting power of firms (CEA 2016d).

Institutional factors also appear to be important—and may help explain some of the differences in the U.S. experience both over time and compared with other countries. For example, the United States spends only 0.1 percent of GDP on "active labor market policies" such as job-search assistance and job training that help keep unemployed workers connected to the labor force. This is less than nearly every other OECD country and much less than the OECD average of 0.6 percent of GDP. The rapid rise in incarceration may have also played a role, disproportionately affecting low-skilled men and men of color. Although incarcerated men are not counted in the labor force, formerly incarcerated men are in the labor force and they are more likely to experience joblessness after they are released from prison and, in many states, are legally barred from a large number of jobs. For example, according to the American Bar Association, over 1,000 mandatory exclusions bar individuals with records of misdemeanors from professions requiring licenses and nearly 3,000 exclusions barring those with felony records (American Bar Association 2016).

A number of policies proposed by the Administration would help to boost prime-age male labor force participation. These include, but are not limited to, creating new job opportunities for less-educated prime-

age men; reforming unemployment insurance to provide better search assistance and give workers more flexibility to use benefits to integrate into a new job; insuring workers against earnings losses; reforming the U.S. tax system to make participation in the workforce easier; investing in education and reforming the criminal justice and immigration systems; and increasing wages for workers by raising the minimum wage, supporting collective bargaining, and ensuring that workers have a strong voice in the labor market.

the baby-boom cohorts into retirement would have been expected to lower the participation rate by roughly 0.25 percentage point a year, and so this stabilization is consistent with a strengthening economy that has brought people into, and kept people attached to, the workforce. Between 2007 and November 2016, the labor force participation rate fell 3.3 percentage points. CEA analysis finds that nearly three-quarters of this decline was due to the aging of the baby-boom generation into retirement. These demographic-related declines will become steeper in the near term, as the peak of the baby-boom generation retires. Cyclical factors, including the lingering effects of high long-term unemployment rates in the wake of the Great Recession, also played a role in reducing the labor force participation rate and may still be having a small impact. The remaining decline of the labor force participation rate beyond what can be accounted for by demographics likely reflects structural factors, including the longstanding downward trend in participation among prime-age workers, particularly among males but also among females for the past decade-and-a-half (Box 2-3). As demographic shifts and longer-term trends continue to be offset by further cyclical recovery, the participation rate is expected to remain flat in 2017 before resuming its downward trend in 2018.

The Administration has proposed policies to support labor force participation through a range of measures that include promoting more flexible workplaces and paid leave, expanded high-quality pre-school, increased subsidies for child care, and a new proposal for a wage insurance system that would encourage reentry into work. As the recovery in the labor market progresses, the pace of job growth is likely to fall as the unemployment rate begins to plateau, particularly in light of increased retirements of an aging population.

Output

Real GDP grew 1.6 percent over the four quarters ended in 2016:Q3, somewhat below its pace in recent years. Real GDP grew somewhat slower than the 1.8 percent annual rate posted by gross domestic output (GDO)—an average of GDP and gross domestic income that is generally a more accurate measure of output than GDP—during the four quarters through 2016:Q3.[10]

The overall composition of demand during the first three quarters of 2016 shows that most of the growth was accounted for by strong growth in consumer spending, which was partially offset by declines in inventory investment. Contributions from other sectors were generally small. Real consumer spending growth outpaced overall growth, expanding 2.7 percent during the four quarters ended 2016:Q3.

Business fixed investment (non-residential fixed investment) was sluggish, declining 1.4 percent in the four quarters through 2016:Q3. Growth in business investment was hurt by the sharp declines in oil-related investment, which fell 45 percent in the four quarters ended 2016:Q3. Overall, despite weakness in equipment and structures spending, business investment was supported by growth in intellectual property products. Indeed, research and development spending as a share of GDP grew to over 2.6 percent, its highest share since 1992.

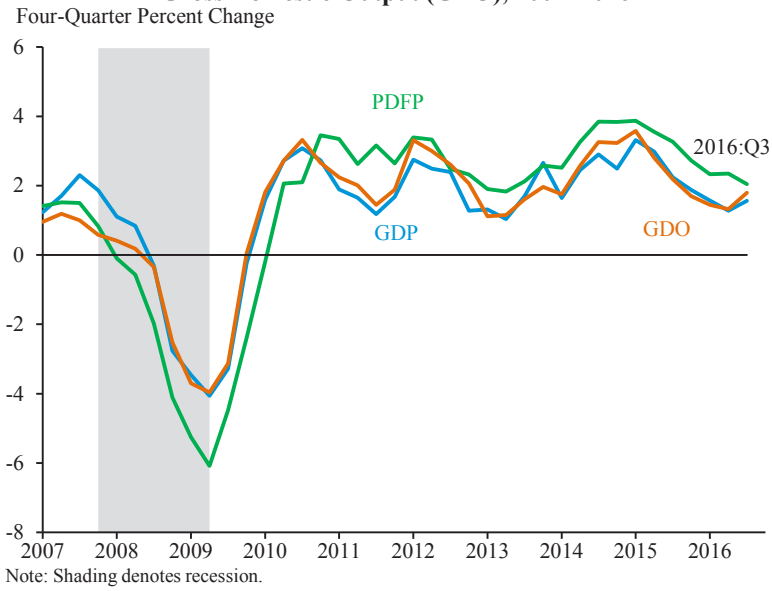
Growth in domestic demand was resilient in 2016, while diminishing foreign growth was a headwind. The aggregate of consumption and private fixed investment, known as private domestic final purchases (PDFP), rose faster than overall output at 2.0 percent in the four quarters ended 2016:Q3 (Figure 2-10). The solid pace of PDFP growth in 2016, which is typically a better predictor of future output growth than GDP growth, suggests that near-term U.S. growth prospects are positive. Nevertheless, CEA expects that the components of real GDP that are not in PDFP, such as net exports, will hold back overall real GDP growth in 2017. Despite weak foreign growth and a strong dollar, net exports contributed positively to growth over the four quarters ended in 2016:Q3.

Consumer Spending

Real consumer spending increased 2.7 percent during the four quarters through 2016:Q3. Stronger growth in real disposable income, due in part to rising nominal wages and to the direct impact of lower oil prices, as well as upbeat consumer sentiment and earlier gains in household wealth

[10] Research has shown that GDO can be especially helpful in predicting future revisions to GDP (CEA 2015a). GDO growth is initially estimated to be faster than GDP growth, GDP growth tends to revise up and vice versa (Box 2-4, CEA 2016a).

Figure 2-10
Real Growth in GDP, Private Domestic Final Purchases (PDFP), and Gross Domestic Output (GDO), 2007–2016



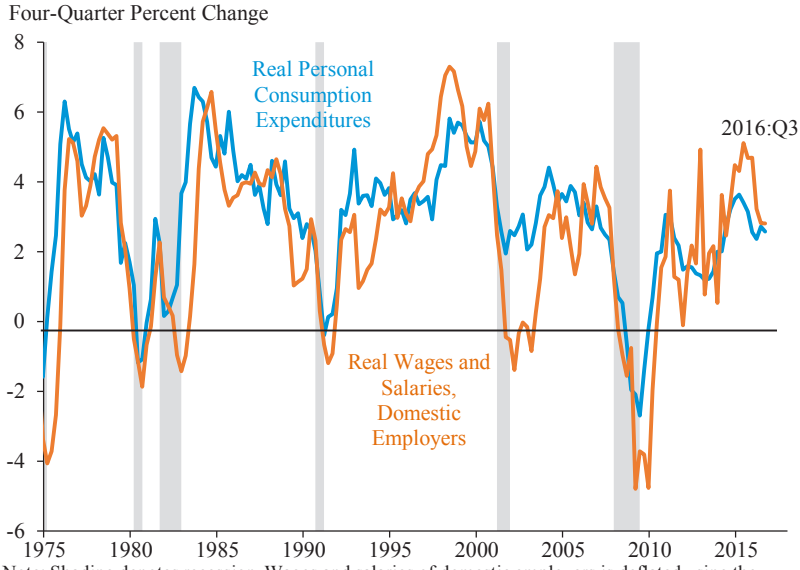
Note: Shading denotes recession.
Source: Bureau of Economic Analysis.

all contributed to the solid pace of consumer spending growth. Low interest rates and improving access to credit, particularly automobile loans, also supported consumer spending. In general, real consumption growth and the wages and salaries component of real income growth tend to track one another well, as has been the case in 2016 (Figure 2-11). Overall, the personal saving rate has been fairly stable at around 5.6 percent of disposable personal income since the beginning of 2013, implying that real consumer spending growth has largely tracked real income growth (Figure 2-12).

During the past four quarters, growth was strong for real household purchases of durable goods (6.1 percent), nondurable (2.1 percent), and services (2.4 percent). Light motor vehicles sold at a 17. 4 million unit annual rate during the 11 months through November, roughly the same pace as the 17.4 million units during 2015, which was the strongest selling pace on record (CEA 2016a). Mirroring the strong selling pace, domestic automakers assembled light motor vehicles at an 11.8 million-unit annual pace during the first 10 months of 2016, while capacity utilization at the automakers was at its highest level since 2000. The inventory-to-sales ratios for domestically produced light motor vehicles were slightly elevated by the end of the third quarter. Consumer sentiment has remained at high levels through 2016, likely due in part to a strong labor market and low inflation. In 2016, the Reuters/University of Michigan's Index of Consumer Sentiment remained

Figure 2-11

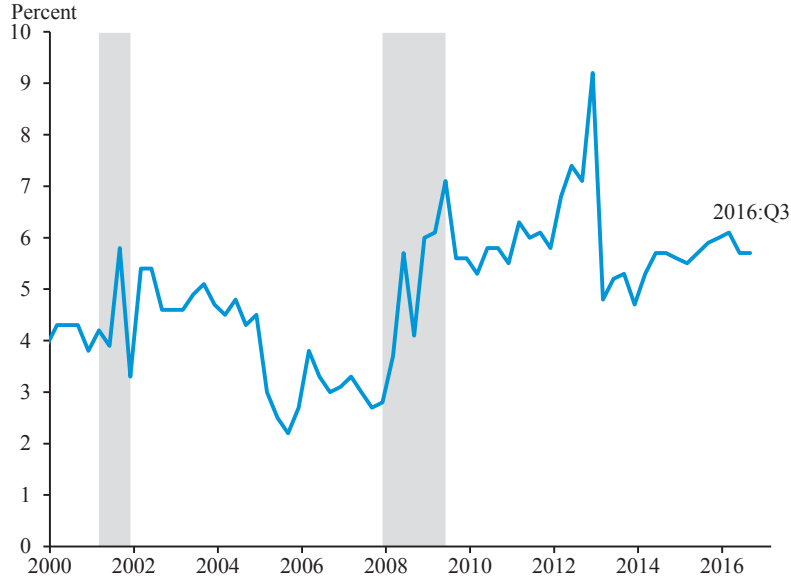
Compensation and Consumer Spending, 1975–2016



Note: Shading denotes recession. Wages and salaries of domestic employers is deflated using the personal consumption expenditure price index.
Source: Bureau of Economic Analysis. CEA calculations.

Figure 2-12

Personal Saving Rate, 2000–2016



Note: Shading denotes recession.
Source: Bureau of Economic Analysis.

Box 2-4: Optimal Weighting for Combining Measures of Economic Activity

The U.S. economy is large, dynamic, and complex; measuring it in real time can be extremely difficult at best. Data on the strength of the economy depend on extensive surveys of households and businesses and administrative data that are necessarily imperfect and incomplete, and the Federal statistical agencies—the Bureau of Economic Analysis (BEA), the Bureau of Labor Statistics (BLS), and the Census Bureau—frequently revise their estimates as newer and better underlying data become available. Given both the uncertainty inherent in any statistical measure and the standard practice of revising estimates, it is often better to look at multiple sources of data when assessing the state of the U.S. economy in real time. For example, as noted in Box 2-4 of the 2016 *Economic Report of the President*, growth in the average of estimates of real gross domestic product (GDP) and real gross domestic income (GDI)—which CEA refers to as real gross domestic output (GDO)—is a better predictor of one-quarter-ahead real GDP growth than are estimates of real GDP growth itself.

However, policymakers must often make decisions in real time, and may not have the ability to wait for multiple rounds of revisions to assess current economic conditions. (See Box 1-1 for a specific example.) As such, they may need to rely on early (incomplete) economic data on employment and output. It is important to note, though, that not all measures contain the same amount of uncertainty: some first-reported estimates come from surveys with large sample sizes and tend to be revised less, while others contain a larger number of statistical assumptions and consequently may undergo more substantial revisions. Consequently, when attempting to understand the current position of the U.S. economy in real time, one should not necessarily weight all current measures equally.

Each month, the BLS reports two estimates of over-the-month changes in employment. The first, known as the "household" estimate, is derived from the Current Population Survey, which samples approximately 60,000 households each month and asks household members about their employment status in the previous month. The second, known as the "establishment" or "payroll" estimate, is derived from a survey of more than 400,000 worksites covering about a third of total nonfarm employment in the United States. Although the establishment survey has a much larger sample size, it suffers both from statistical noise and some systematic errors, especially in recording employment gains at new firms that come into existence and employment losses at old firms that have closed. Moreover, monthly jobs estimates are revised multiple

Table 2-i

Optimal Weighting for Household Employment vs. Payroll Employment

Measure Predicted	Optimal Weight on First-Reported Household	Optimal Weight on First-Reported Payroll	Standard Deviation of Error Using Optimal Weight	Standard Deviation of Error Using Only Payroll
Final Payroll	0.000	1.000	92.303	92.303
State-Space Model	0.084	0.916	135.205	137.826

Note: Data from Jan-1994 to Dec-2014. Excludes data for January in each year.
Source: Bureau of Labor Statistics; CEA calculations.

times following their initial release. In principle, then, both the household and establishment measures of job growth contain some information about the true underlying path of U.S. employment (ignoring some conceptual differences in how employment is defined in each survey).

However, in practice the household survey is so volatile that it contains almost no additional information about monthly changes in employment beyond that contained in the establishment survey. Table 2-i shows the results of CEA analysis of the optimal weighting to put on first-reported employment growth from the household and payroll surveys when attempting to accurately predict "true" monthly employment growth using a weighted average of the two first-reported measures. The difficulty in such an exercise is in defining truth. When using the final-reported figure from the establishment survey—which is based in part on a near-complete census of nonfarm employment in the United States—as the measure of true employment growth, one should optimally put 100 percent of weight on the payroll survey. An alternative is to use a statistical model called a state space model to estimate the truth. This model extracts an unobserved component that is common to, and explains as much as possible of movements in, all variables in the model. When using a state-space model that combines the final-reported household and payroll estimates to derive an estimate of the common movements in employment, one should still place approximately 92 percent of weight on the payroll estimate—with very little difference in error compared with using the payroll survey alone.

More generally, it is possible to combine real-time measures of economic output (GDP, GDI, and their average, GDO) with real-time measures of employment growth to gain a more accurate assessment of broad economic conditions on a quarterly basis. This is particularly important given that quarterly estimates of output growth can see extensive revisions across multiple years as new and more complete data on real economic activity become available to BEA. Table 2-ii repeats the exercise of Table 2-i, this time predicting several final-reported measures

Table 2-ii

Optimal Weighting for Payroll Employment vs. Gross Domestic Output

Measure Predicted	Optimal Weight on 3rd Estimate GDO[1]	Optimal Weight on Preliminary Payroll Employment[2]	Standard Deviation of Error Using Optimal Weight
Final Payroll Employment	0.012	0.988	0.406
Final GDO	0.697	0.303	1.243
State-Space Model	0.000	1.000	0.831
Chicago Fed National Activity Index	0.379	0.621	0.373
Philadelphia Fed Current Economic Activity Index	0.053	0.947	0.543
Conference Board Current Economic Indicators	0.214	0.786	1.176

Note: Data from 1994:Q1 to 2014:Q4. [1] The 3rd estimate GDO is the release of GDO that is published with the 3rd estimate of GDP. [2] Preliminary payroll employment is the release of payroll employment that is published contemporaneous with the 3rd estimate of GDO.
Source: Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve Bank of Chicago; Federal Reserve Bank of Philadelphia; Conference Board; CEA calculations.

of quarterly economic activity: the payroll survey estimate of nonfarm employment growth, growth in real GDO, a state-space model combining payroll employment growth and real GDO growth, and three indexes of economic indicators from the Federal Reserve Bank of Chicago, the Federal Reserve Bank of Philadelphia, and the Conference Board that are designed to measure the state of the economy. In each case, the third estimate of real GDO growth is combined in a weighted average with the payroll-survey estimate of employment growth available at the time of the GDO estimate's release.

Here, too, optimal weighting places a substantial emphasis on the information contained in the early payroll estimates of employment growth. This is particularly true when predicting post-revision employment growth—where early output estimates contribute no information beyond that contained in early payroll estimates—but is true even when assessing output growth. Even when predicting post-revision real GDO growth, one should still place approximately one-third weight on contemporaneous measures of nonfarm employment growth. Optimal weighting for predicting the broader measures of economic activity vary somewhat from index to index, but in all cases more emphasis is placed on early estimates of employment growth than on early estimates of output growth. (CEA (2016f) contains a more extensive table with additional variables and details of these computations.)

No single measure of the economy is perfect, and all measures are subject to measurement error and conceptual challenges. But these

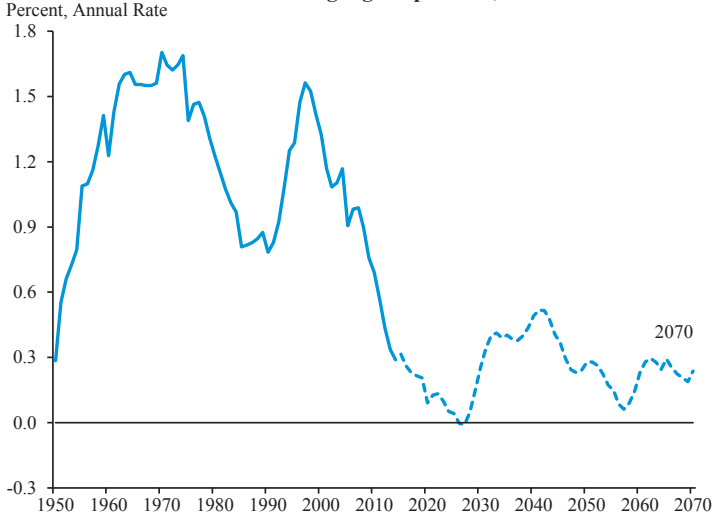
results suggest that, to a first approximation, more emphasis should be placed on contemporaneous estimates of employment growth than on contemporaneous estimates of output growth when attempting to assess the overall current state of the U.S. economy.

Box 2-5: The Economics of Aging

The growth of the working-age population (15-64 year olds) in the United States has been slowing notably, which puts downward pressure on labor force participation, productivity, and real GDP growth. The working-age population grew 1.4 percent at an annual rate in the 1960s through the 1980s, but just 0.6 percent during this recovery. The decline in the growth rate of the working-age population is expected to continue through 2028 (Figure 2-vi). As the working-age population growth rate falls relative to the growth rate of other age groups, it follows that the working-age share of the population should fall as well. Between 2008 and 2015, the share declined from 67.3 percent to 66.3 percent (averaging -0.15 percentage point per year). The working-age share is expected to fall at an increasing rate through 2029, reflecting a growing share of the elderly population (65+). The only age group that is projected to

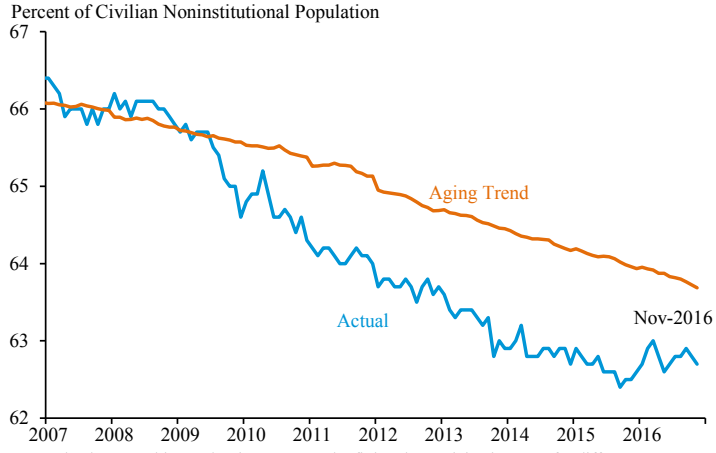
Figure 2-vi

Growth Rate of Working-Age Population, 1950–2070



Source: United Nations World Population Prospects; CEA calculations

Figure 2-vii
Labor Force Participation Rate (LFPR) – Actual vs. Aging Trend, 2007–2016



Note: The demographic trend estimates LFPR by fixing the participation rates for different age groups at their 2007 annual average and updates the LFPR solely based on changes in the distribution of the population across those age groups.
Source: Bureau of Labor Statistics; CEA calculations

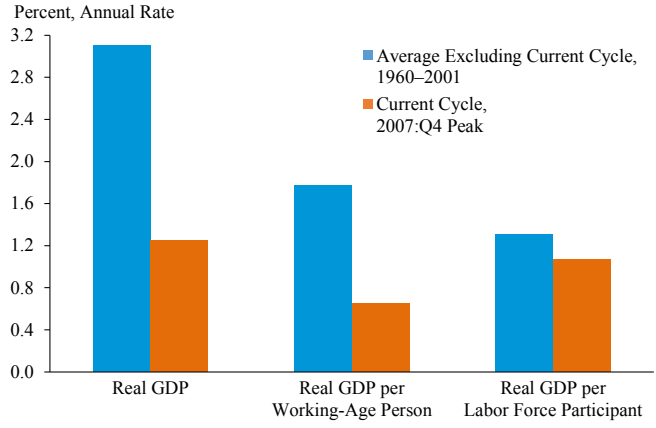
grow as a share of the population over the next 10 years is the 65+ age group.

Much of the recent decline in the labor force participation rate can be explained by the aging of the population. Of the 3.3 percentage points drop in the labor force participation rate between its 2007 average and November 2016, 2.3 percentage points can be explained by a simple demographic trend that only accounts for the aging of the population over this period (Figure 2-vii). Because older workers are less likely to work, the LFPR should decline as the population ages. The remaining 1.0 percentage point gap reflects other long-term trends, such as a declining participation rate among prime-age men (Box 2-3), as well as possibly a cyclical effect from the extraordinarily long duration of unemployment in the aftermath of the recession.

Real GDP has grown more slowly in the current economic recovery than in other cycles, but after taking into account demographic and workforce changes the current recovery looks more typical. Peak to peak, real GDP growth averaged 3.1 percent at an annual rate in prior cycles compared with just 1.2 percent so far this cycle, but comparing across business cycles can be misleading unless one considers demographics. The working-age population (ages 16-64) grew 1.4 percent at an annual rate in the 1960s through the 1980s, but just 0.6 percent during this recovery. In addition, previous recoveries had faster underlying trend

Figure 2-viii

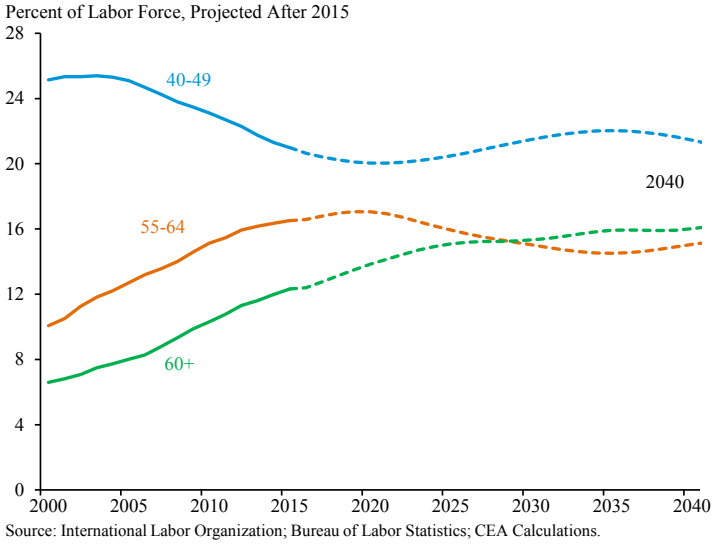
Real GDP, Average and Current Business-Cycle Peak to Peak



Note: Peak start dates: 1960:Q2, 1969:Q4, 1973:Q4, 1980:Q1, 1981:Q3, 1990:Q3, 2001:Q1, 2007:Q4. This Figure supersedes Figure 2-viii in the printed version of the 2017 *Economic Report of the President*, which contained an error.
Source: Bureau of Economic Analysis; National Bureau of Economic Research; Bureau of Labor Statistics; Haver Analytics; CEA calculations.

Figure 2-ix

Actual and Projected Labor Force by Age, 2000–2040



Source: International Labor Organization; Bureau of Labor Statistics; CEA Calculations.

growth in part driven by the rapid shift of women into the labor force. Controlling for the number of people in the labor force, growth in this recovery is quite similar to previous ones (Figure 2-viii).

Beyond the downward pressure on GDP caused by a slower working-age population growth rate, another economic impact of demographic shifts in the United States is that they may have reduced productivity growth. A range of papers finds that higher proportions of certain age groups are correlated with higher productivity growth (Feyrer 2007; Aiyar, Ebeke, and Shao 2016; Maestas, Mullen, and Powell 2016). As the share of these age groups employed in the labor force changes, productivity is affected. In particular, studies find the 40-49 cohort to be correlated with higher productivity (due to a bigger pool of managerial talent) and 55 and older to be less so. Estimates based on these papers suggest that somewhere from 0.2 to 0.8 percentage point of the 1.5 percentage points productivity slowdown from 1995-2005 to 2005-15 could be due to demography. Projections of the composition of the labor force suggest that the drag on productivity from demographics may soon be abating (Figure 2-ix).

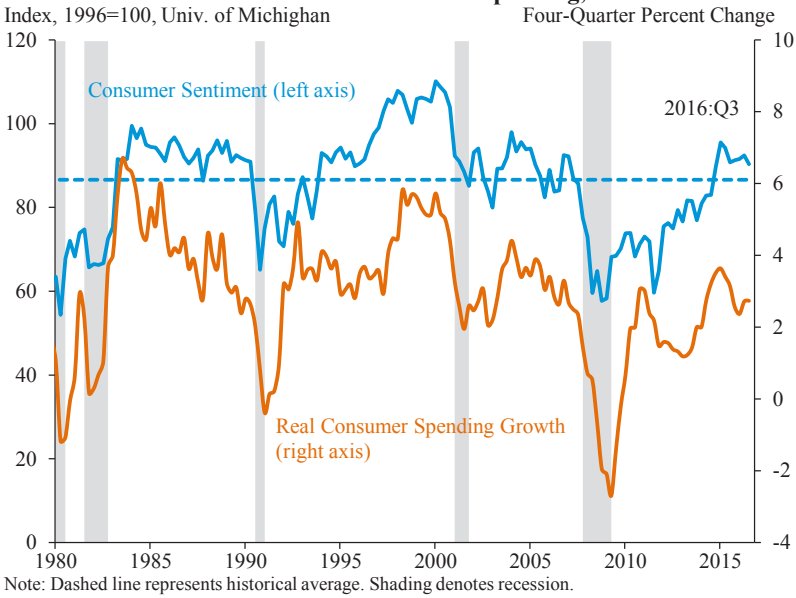
around its pre-recession levels, oscillating between 87 and 95, driving the strong consumption growth (Figure 2-13). The Conference Board index hit its highest level since 2007 in November 2016, although the 2016 average was only somewhat higher than pre-recession levels.

Meanwhile, U.S. household debt relative to income continued to fall (Figure 2-14). Before the financial crisis, household debt relative to income rose dramatically, largely due to net mortgage originations, and then declined sharply after the crisis, a pattern known as "deleveraging." (See Box 2-6 for more on deleveraging.) Charge–offs of delinquent mortgage debt played an important role in lowering household debt, but the decline in new mortgage originations and less consumer borrowing played roles as well (Vidangos 2015). By the end of 2016:Q2, the debt-to-income ratio was at its lowest level since 2002. The level of mortgage debt relative to income continued to decline in 2016, while consumer credit (including credit cards, automobiles, and student loans) relative to income increased slightly.

Moreover, with historically low interest rates, the amount of income required to service these debts has fallen dramatically. Still, it should be noted that estimates based on aggregate data could mask higher debt burdens for some families; that is, the health of personal finances varies substantially across households. Nonetheless, in aggregate, there is evidence of deleveraging as discussed in Box 2-6.

Figure 2-13

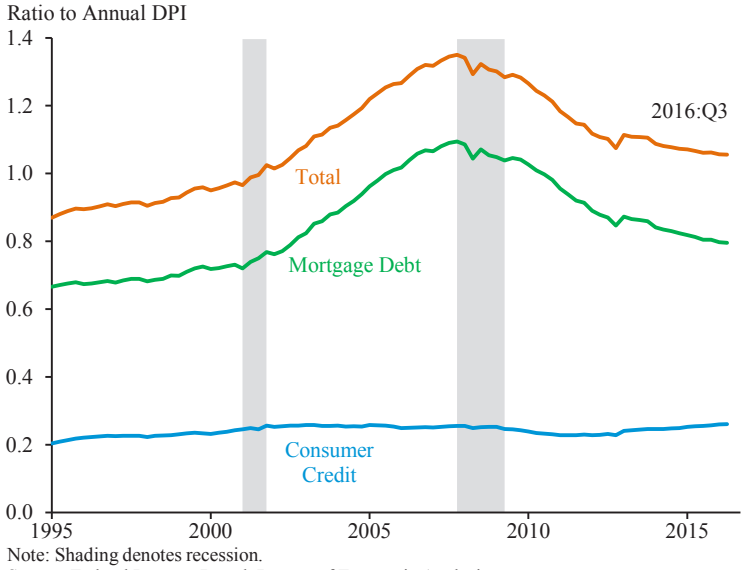
Consumer Sentiment and Consumer Spending, 1980–2016



Note: Dashed line represents historical average. Shading denotes recession.
Source: Bureau of Economic Analysis; University of Michigan.

Figure 2-14

Household Debt Relative to Disposable Personal Income (DPI), 1995–2016



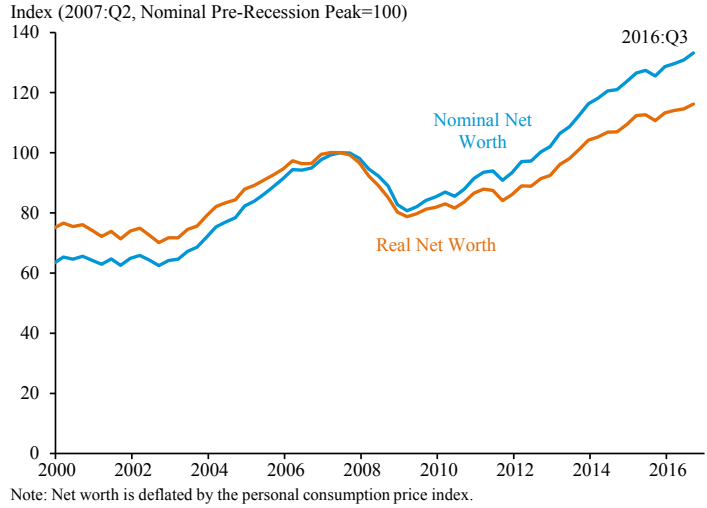
Note: Shading denotes recession.
Source: Federal Reserve Board; Bureau of Economic Analysis.

Box 2-6: Household Deleveraging and Consumption Growth

Household balance sheets have continued to recover from the damage wrought during the recession, helping to support the strong consumption growth seen in recent years. Real household net worth—the difference between the market value of household assets and the value of outstanding liabilities, adjusted for inflation using the price index for personal consumption expenditures—did not regain the pre-crisis high reached in 2007:Q1 until 2013:Q3. Growth has continued and, as of 2016:Q3, real household net worth is 16 percent above the pre-crisis high (Figure 2-x).

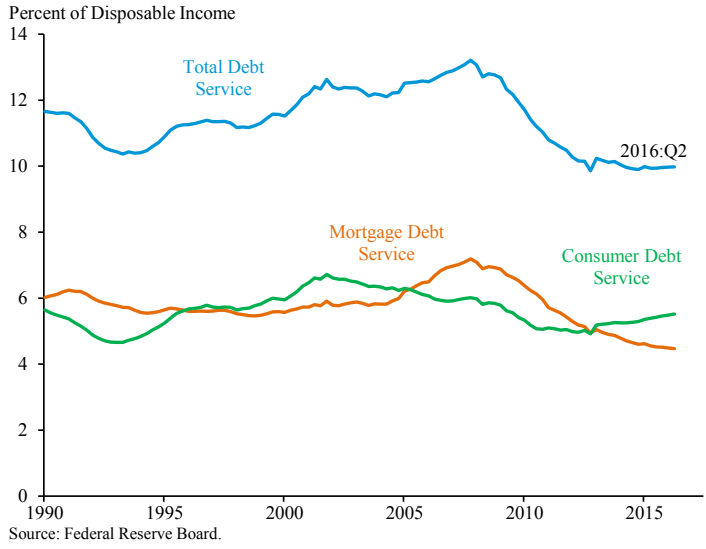
The improvement of household balance sheets reflects a number of positive factors. First, households have increased their saving, with the saving rate moving up to 5.9 percent post-recession compared with the 3.8 percent average from 2001:Q4 to 2007:Q4. Second, the strong stock market growth seen in 2012-14 and substantial (roughly 6 percent a year) increases in house prices during the past four years have increased the value of household assets. Third, mortgage debt—by far the largest component of household liabilities—has fallen substantially, especially relative to income gains since the crisis, far outstripping small increases in other categories of debt. Household debt as a share of disposable income is at 106 percent as of 2016:Q3, far below the 2007:Q4 peak of 135 percent.

Figure 2-x
Household Net Worth, 2000–2016



Note: Net worth is deflated by the personal consumption price index.
Source: Federal Reserve Board; Bureau of Economic Analysis; CEA calculations.

Figure 2-xi
Household Debt Service, 1990–2016



Source: Federal Reserve Board.

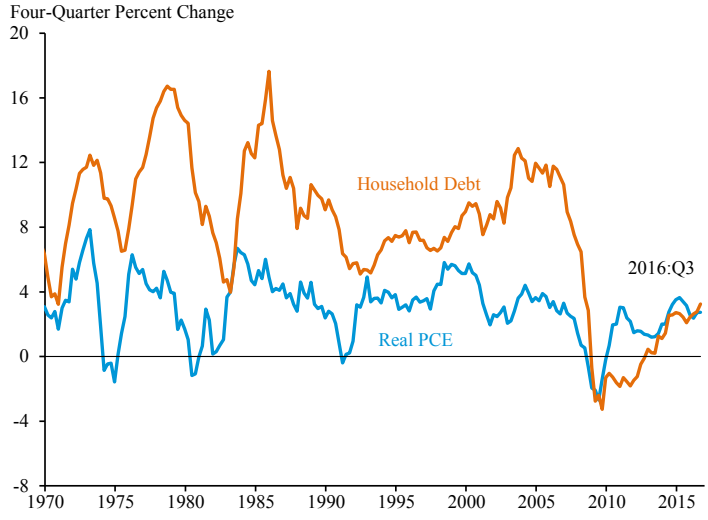
In addition to lower debt balances and strong asset returns, low interest rates have further supported household finances. Debt service costs as a fraction of disposable personal income, which reflects the current burden of carrying debt including interest and principal payments, fell from 13 percent in 2007 to only 10 percent in 2013. This leaves households with more cash to spend. As shown in Figure 2-xi, the debt service-to-income ratio has held steady at this new lower level since 2013, with mortgage expenses continuing to decline while servicing costs for consumer debt—which includes automobile, student, and credit card debt—having increased somewhat.

Strong household balance sheets, together with low debt servicing costs, help to support consumption growth. As shown in Figure 2-xii, though household debt has begun to grow once more it is still growing very slowly—on a four-quarter basis, growth is still lower than in any period between 1971 and 2007. These developments, along with strong growth in employment and wages, have allowed households to increase their consumption. In particular, spending on durable goods—which are more likely to be paid for with borrowing and thus sensitive to balance sheet and interest rate considerations—accounted for 26 percent of personal consumption growth from 2014 through 2016:Q3, despite making up only 11 percent of expenditures. A large portion of this growth in durable goods spending comes from sales of motor vehicles,

which fell sharply in the Great Recessions and were slow to recover until more recently.

Figure 2-xii

Household Debt and Real Consumer Spending Growth, 1970–2016



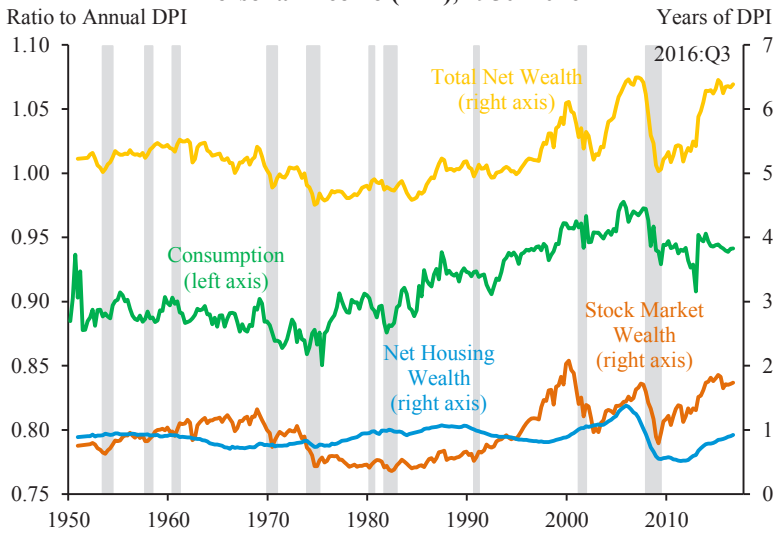
Source: Bureau of Economic Analysis; Federal Reserve Board.

Earlier gains in household net worth (that is, assets less debts, also referred to as household wealth), such as the moderate increases in equity wealth so far in 2016, also supported consumer-spending growth in 2016 (Figure 2-15). The wealth-to-income ratio remained elevated in 2016, following a marked increase during 2013. Changes in net worth have been spread unevenly across households, though, and these disparities may have implications for families and macroeconomic activity.

Housing Markets

The housing market recovery continued in the first quarter of 2016, but residential investment was a drag on economic growth in the second and third quarters. In 2016, sales of newly constructed single-family homes and single-family housing starts, bolstered by strong labor market conditions and low mortgage interest rates, averaged their highest annual level through the first 10 months of a year since 2007. However, growth in new construction slowed from its 2015 pace: total housing starts and permits zig-zagged around their 2015 level. Real residential investment decreased 1.7 percent

Figure 2-15
Consumption and Wealth Relative to Disposable Personal Income (DPI), 1950–2016



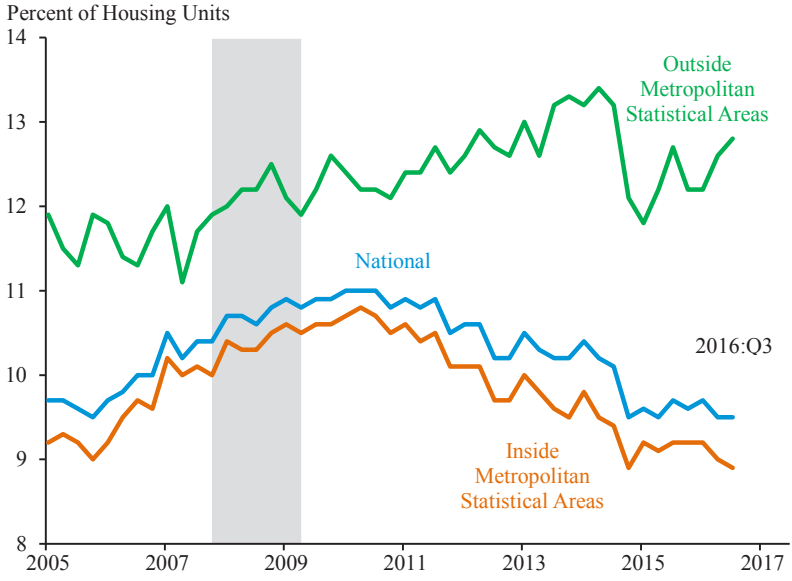
Note: Shading denotes recession.
Source: Bureau of Economic Analysis, National Income and Product Accounts; Federal Reserve Board, Financial Accounts of the United States; CEA calculations.

at an annual rate through the first three quarters of 2016, down from 13.1 percent positive growth in the four quarters of 2015.

While the housing market has continued its recovery since the recession, several structural challenges remain, including a constrained housing supply, low affordability in some areas of the country, and persistently muted household formation for 18-34 year olds. Housing supply is constrained: the inventory of homes available for sale is below its historical average and vacancy rates (for both renter and owner occupied) have fallen to levels that had prevailed before the boom, particularly in metropolitan areas, indicating that there is no longer excess supply (Figure 2-16). Sale volumes of the most affordable new single-family homes, particularly those less than $200 thousand, are lower than before the crisis. The share of young adults living with their parents remains above its long-run historical average, stifling household formation. These challenges may explain why housing starts still seem to be below their long-run steady state level.

House prices continued to rise in 2016, similar to the pace in 2015. National home prices increased between 5.5 and 6.1 percent (depending on the index) during the 12 months ended September 2016 compared with

Figure 2-16
Year-Round Vacant Housing Units, 2005–2016



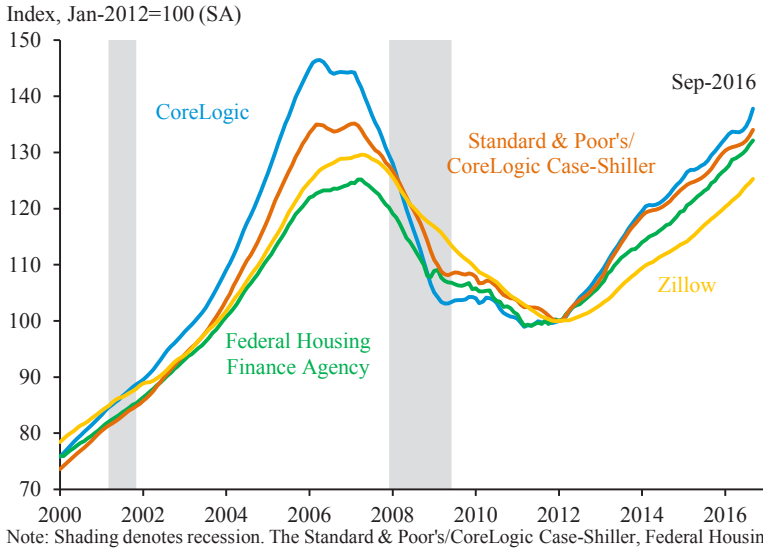
Note: Shading denotes recession. Covers housing units that are vacant all year.
Source: Census Bureau, Housing Vacancy Survey.

4.7-to-6.2 percent in the year earlier period.[11] While price increases are above estimates for long-run steady state house price increases, they are not as rapid as the 6-to-11-percent increase in 2013. Nominal house prices are between 25 and 39 percent above their recessionary trough and between 6 percent below and 6 percent above their pre-recession peak (Figure 2-17). However, in real terms (adjusting for inflation with the CPI), house prices remain roughly 17 percent below their pre-recession peak.

Continued house price increases have improved owners' equity relative to the debt they owe on their houses. Homeowners' equity as of 2016:Q3 equaled slightly more than half of the total value of household real estate (57 percent), 20 percentage points higher than the recessionary trough and near the historical average of roughly 60 percent. Rising home prices since 2012 also helped lift more than 9 million households out of a negative equity position from 2012:Q2 to 2016:Q2, reducing the overall share of single-family homeowners with an underwater mortgage (when mortgage debt exceeds the value of their house) to 12.1 percent in the second quarter, down from 14.4 percent a year earlier. In addition, the number of delinquent home mortgages (when the homeowner misses at least one monthly payment) has fallen to its lowest level since 2007, though the share of mortgages that are

[11] Seasonally-adjusted national home price indexes from Zillow, CoreLogic, FHFA Purchase-Only, and S&P CoreLogic Case-Shiller are used.

Figure 2-17
National House Price Indexes, 2000–2016



Note: Shading denotes recession. The Standard & Poor's/CoreLogic Case-Shiller, Federal Housing Finance Agency, and CoreLogic indexes all adjust for the quality of homes sold but only cover homes that are bought or sold, whereas Zillow reflects prices for all homes on the market. All indexes are seasonally adjusted.
Source: Zillow; CoreLogic; Federal Housing Finance Agency; Standard & Poor's.

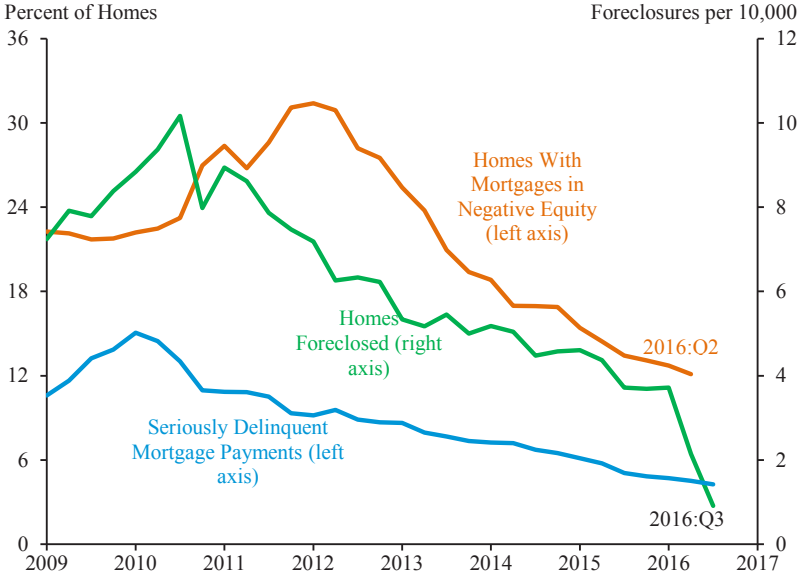
seriously delinquent (payment more than 90 days overdue, with the bank considering the mortgages to be in danger of default) remains somewhat elevated (Figure 2-18). Falling delinquencies support overall economic growth because homeowners with underwater or delinquent mortgages are less likely to spend or relocate in search of better-paying jobs (Ferreira, Gyourko, and Tracy 2012).

Single-family homes were still more affordable in 2016 than the historical average, as rising incomes and low and steady mortgage rates partially offset the effect of rising house prices on the cost of homeownership (Figure 2-19). Nevertheless, affordability decreased somewhat over the past three years because median existing home prices grew roughly 4 percentage points faster than median family incomes on average each year.

The national homeownership rate was 63.5 percent in the third quarter of 2016, much lower than the historical average due to a variety of trends in the housing market. The decline has been concentrated among young households. The homeownership rate of those aged 18-34 was 35.2 percent in 2016:Q3, roughly 8-percentage points lower than its all-time high in 2004. The major reason for this decline is that young adults are waiting longer to get married or form households, and first-time homebuyers are older, on average, than they were in the 1980s. Second, credit availability remains

Figure 2-18

Delinquent and Underwater Mortgages and Foreclosures, 2009–2016



Source: Zillow Real Estate Market Reports; Mortgage Bankers Association.

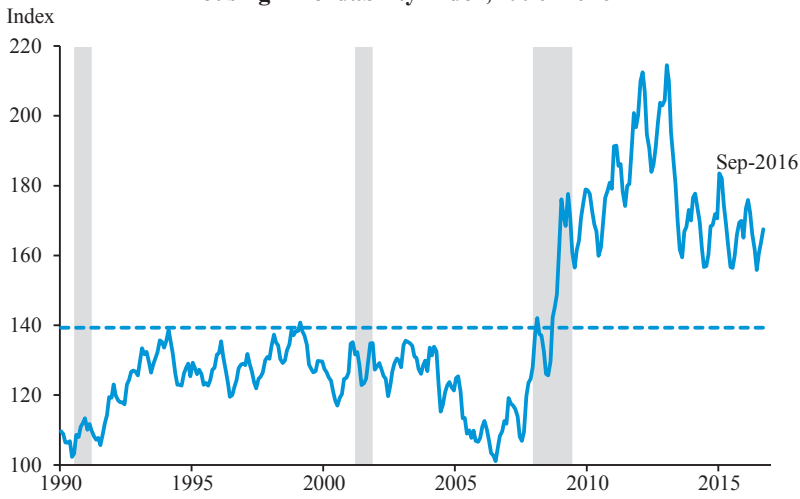
tight for borrowers with credit scores below 620. Third, it can be difficult for prospective buyers, especially those living in urban areas, to save for a down payment.

Overall household formation has showed some tentative signs of picking up in recent years, after having been weak since the recession. The number of households increased by 1.2 million in 2016 after rising 0.7 million in 2015. This uptick in household formation contributed to a 5.5 percent rise in overall housing starts during the first ten months 2016 relative to 2015 as a whole and a solid 9.2 percent rise in single-family housing starts during the first ten months of 2016 relative to 2015 as a whole (Figure 2-20). Nevertheless, starts remained well below the roughly 1.5 million rate that is consistent with long-term demographics and the replacement of the existing housing stock.[12] Further, because the rates of homebuilding have been below that pace since the recession, pent-up demand for housing may play a role in supporting further recovery in the housing market. However, an increase in housing demand, if not accompanied by an increase in housing supply, would not bring about a full recovery in the housing market. The accumulation of State and local barriers to housing development—including

[12] Demographics and historical trends would have predicted 1.2 to 1.4 million new households formed each year requiring housing (Joint Center for Housing Studies 2015). Together with the assumption that about 0.25 percent of the existing homes deteriorate and need to be replaced a given year, yields an underlying trend of roughly 1.5 million housing starts.

Figure 2-19

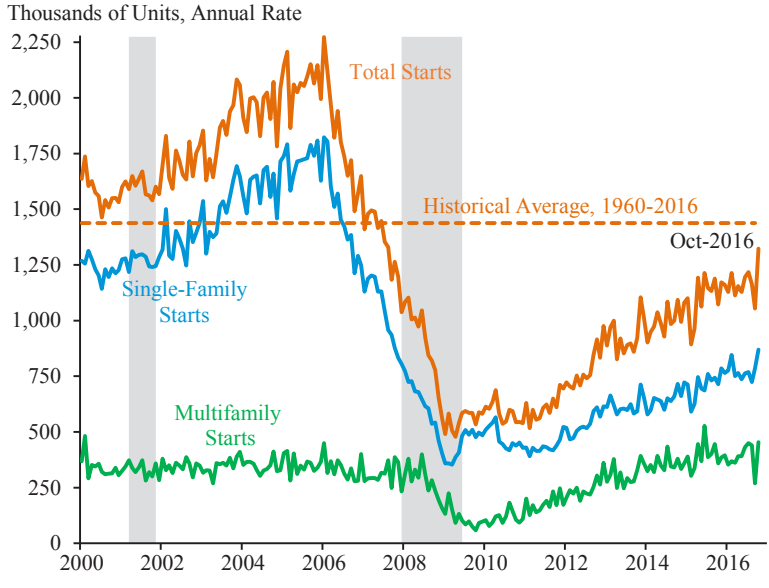
Housing Affordability Index, 1990–2016



Note: Index is 100 when the median income family can exactly qualify for a mortgage on a median-priced home. An index over 100 means that the median income family has more than enough income to qualify for a mortgage on a median-priced home. Dashed line represents average over 1990–2016. Shading denotes recession.
Source: National Association of Realtors.

Figure 2-20

Single-Family and Multifamily Housing Starts, 2000–2016



Note: Shading denotes recession.
Source: Census Bureau.

zoning, other land use regulations, and unnecessarily lengthy development approval processes—have reduced the ability of many housing markets to respond to growing demand (White House 2016). While land use regulations sometimes serve reasonable and legitimate purposes, they can also give extra-normal returns to entrenched interests at the expense of everyone else (see Box 2-6 of the 2016 *Report* for a more in-depth discussion of the constraints on housing supply).

Investment

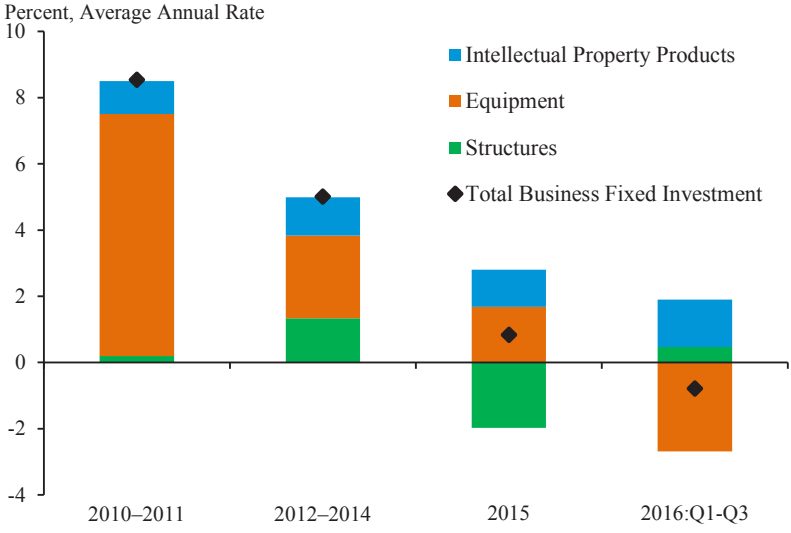
Business Fixed Investment

After being a bright spot early in the recovery, business investment growth has slowed since the end of 2014, and turned negative in 2015:Q4 and 2016:Q1. Real business fixed investment fell 1.4 percent during the four quarters ended in 2016:Q3, a reversal from the average increase of 5.0 percent at an annual rate during the twelve quarters of 2012-14, and much slower that the average of 8.5 percent annual rate increase during the eight quarters of 2010-11. Not all components of investment were weak in 2016. The rate of investment growth remained strong for intellectual property products, which grew 4.5 percent at an annual rate during the first three quarters of 2016, and has now been positive for 13 consecutive quarters. However, the strong gains in intellectual property products were more than offset by larger declines in equipment investment (Figure 2-21). While oil price declines can explain part of the investment decline in 2015, the slowdown in investment growth continued into 2016 and was not simply due to lower oil and gas structures investment, but was due to shrinking overall equipment investment as well. Recent CEA work has found that this broad-based investment slowdown is largely associated with the low rate of output growth both in the United States and globally (Box 2-7).

Slower investment growth is a concern because it limits the productive capacity of the economy. Net investment (gross investment less depreciation) is required to increase the capital stock. In 2009, net investment as a share of the capital stock fell to its lowest level in the post-World War II era and the nominal capital stock even declined. Although net investment has rebounded somewhat in the recovery, its level as a share of the capital stock remains well below the historical average and it declined slightly in 2015 (Figure 2-22).

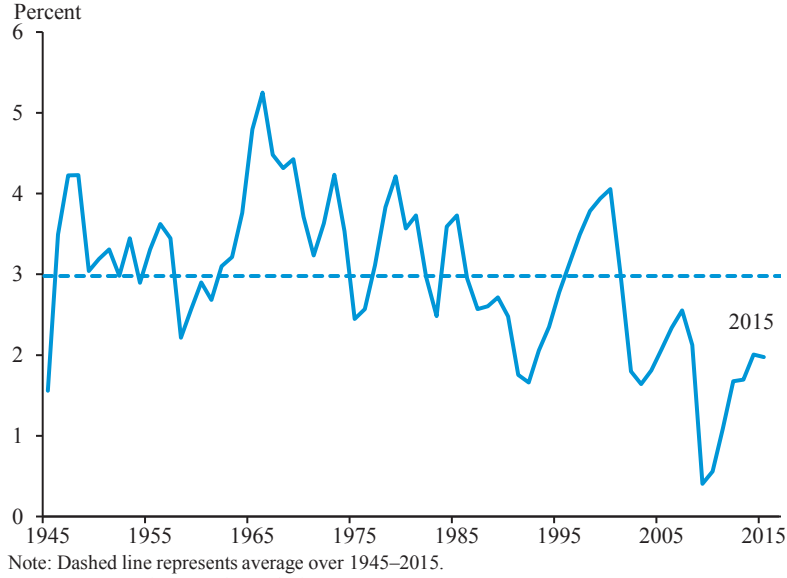
The slowdown in investment has also contributed to the slowdown in labor productivity growth. Investment growth contributes to labor productivity growth most directly through capital deepening—the increase in capital services per hour worked—that had added nearly 1 percentage point

Figure 2-21
Composition of Growth in Real Business Fixed Investment (BFI)



Note: Components may not sum to total due to rounding. Growth rate computed using Q4-to-Q4 changes
Source: Bureau of Economic Analysis; CEA calculations.

Figure 2-22
Net Investment as a Share of the Capital Stock, 1945–2015



Note: Dashed line represents average over 1945–2015.
Source: Bureau of Economic Analysis.

a year to labor productivity growth in the post-war period to 2010. But since 2010, capital deepening has subtracted from productivity growth and contributed slightly more to the slowdown from 1948-2010 to 2010-15 than did the slowdown in total factor productivity growth.

With the sharp fall in output in 2008-09, the amount of capital relative to output rose considerably (Figure 2-23). Even years into the recovery, businesses had access to more capital services than the level of output would typically have required. The excess of capital likely reduced new investment and helped lower capital services growth. Capital services relative to output have now fallen back to trend, a factor supporting future investment. This view is consistent with the usual pattern that historically weaker periods of investment growth are, on average, followed by stronger periods. This historical pattern argues for faster growth in investment spending during 2017 than in the recent past.

The Administration has pursued policies to support investment, including additional funding for public research and development and public infrastructure as well as the Trans-Pacific Partnership, all of which can stimulate private sector investment. In addition, the President has proposed business tax reform that would directly spur private investment (see Box 2-9 and Chapter 5 of the 2015 *Report* for a more in-depth discussion of the economic benefits of business tax reform (CEA 2015b)).

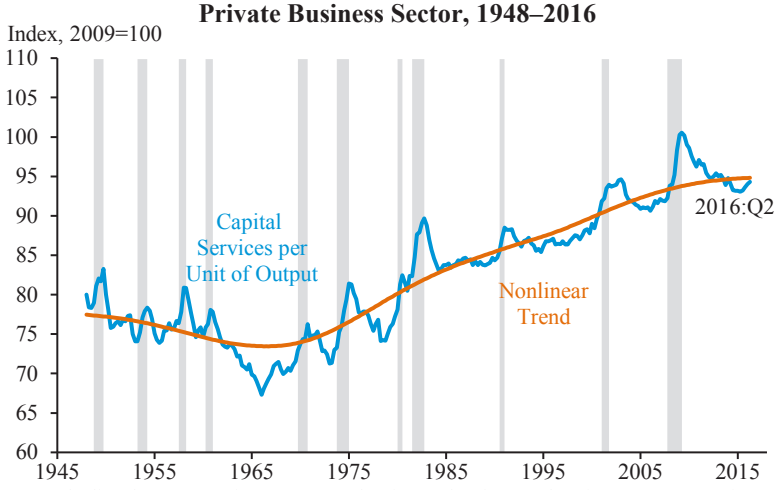
Inventory Investment

Inventory investment continued to weaken during the first half of 2016, a continuation of the pattern during the last three quarters of 2015. The inventory-to-sales ratio in manufacturing and trade had crept up over the past few years, and by 2016:Q1 had reached 1.41 months' supply, substantially above its post-2000 non-recessionary average of 1.32 months' supply (Figure 2-24).Given the higher-than-average ratio, it was not surprising that inventories fell relative to sales in the second and third quarters of 2016. As of September, the latest data available as this *Report* goes to press, the ratio was 1.38, still somewhat elevated relative to recent history.

Real inventory investment—the change in the inventory stock—has subtracted from output growth thus far in 2016, especially in the second quarter. Although inventory investment is volatile, and can greatly affect quarterly GDP growth rates, its contribution to output growth generally averages close to zero over 4- or 8-quarter horizons outside of recessions and their immediate aftermath (Figure 2-25). After inventory-to-sales ratios had risen to relatively high levels in 2015:Q1, though, the change in inventory investment was negative for five consecutive quarters, a string of negative changes that is unusual in non-recessionary conditions. By the second

Figure 2-23

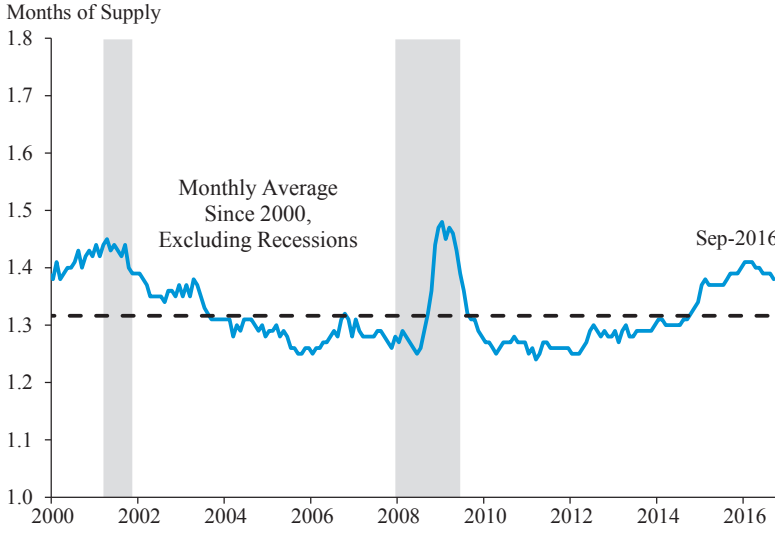
Capital Services per Unit of Real Output, Private Business Sector, 1948–2016



Note: Shading denotes recesion. Post-1964 data interpolated quarterly using Macroeconomic Advisers quarterly data. Pre-1965 data interpolated by moving average. Nonlinear trend is a bi-weight filter using a 60-quarter window. Shading denotes recession.
Source: Bureau of Labor Statistics, Labor Productivity and Costs; Macroeconomic Advisers; CEA calculations.

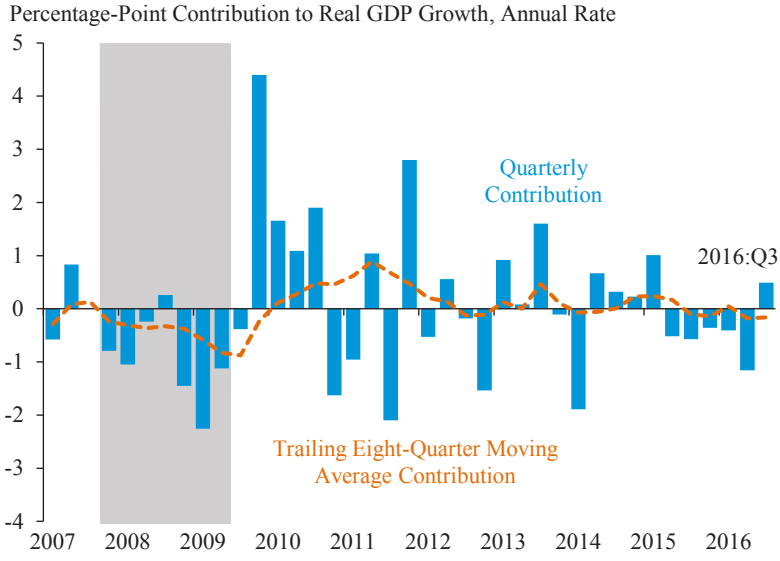
Figure 2-24

Inventory-to-Sales Ratio: Manufacturing and Trade, 2000–2016



Note: Manufacturing and trade inventories at book value. Shading denotes recession.

Figure 2-25
Contribution of Inventory Investment to Real GDP Growth, 2007–2016



Note: Shading denotes recession.
Source: Bureau of Economic Analysis, National Income and Product Accounts; CEA calculations.

quarter, the level of inventory investment itself was negative, and the third quarter's positive contribution of inventory investment to real GDP growth reflects the swing from negative inventory investment in 2016:Q2 to positive inventory investment in 2016:Q3.

Net Exports

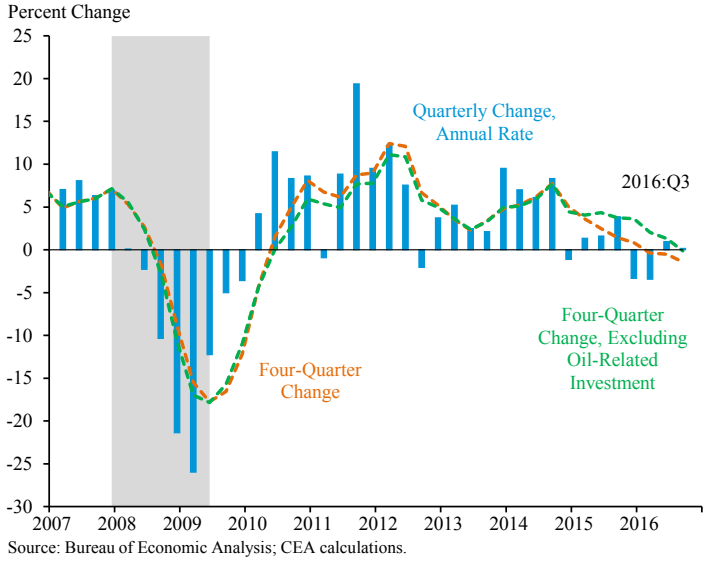
With weak demand in much of the world outside the United States and the stronger dollar that has come with it, U.S. nominal exports of goods and services rose only 0.8 percent over the four quarters ended 2016:Q3. Part of the reason for the weak nominal growth in the past four quarters is the 1.2 percent drop in export prices, as lower oil and commodity prices have meant lower prices for U.S. exports of agricultural goods or oil-related products and falling input costs have other prices. Driven by the strong growth in agricultural exports in the third quarter, real exports rose 2 percent during the four quarters ended 2016:Q3, shown in Figure 2-26. As the Figure shows, real exports tend to trace trade-weighted global growth rates[13], and as global

[13] Trade-weighted global growth is calculated as a weighted average of real GDP growth for 25 foreign economies and the Euro area, using those economies' share of U.S. goods exports as weights.

Box 2-7: Explanations for the Recent Performance of Business Fixed Investment

Business fixed investment comprises business spending on structures and equipment, as well as expenditures on intellectual property products such as software and research and development (R&D). While it constitutes only 12 percent of GDP, business fixed investment affects short-run growth disproportionately, as it accounts for about 20 percent of the quarterly volatility in real GDP growth. Moreover, business fixed investment is crucial to long-run growth because it supports future output (and income) and thereby consumption and is a major contributor to productivity growth. Business fixed investment has weakened since 2014:Q4; for the first time since it began recovering after the recession, its four-quarter growth rate was negative in 2016:Q1 (Figure 2-xiii). Although oil-related investment has dragged on investment growth due to low oil prices, non-oil related investment growth has also slowed over the period. Finding the sources of this broad-based slowdown in investment spending is an ongoing discussion and empirical effort among economists. CEA has found that slow U.S. and global growth provides a partial quantitative explanation for the recent slowdown, while CEA's analysis indicates that other factors such as business confidence, policy uncertainty, or financial conditions do not seem to explain the recent

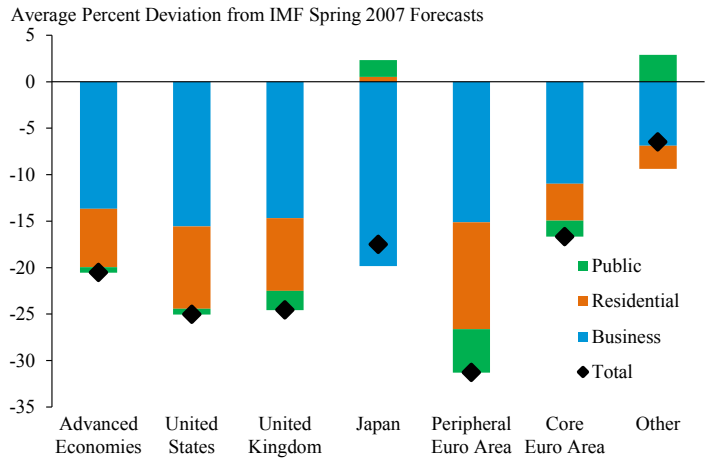
Figure 2-xiii
Real Business Fixed Investment, 2007–2016



Source: Bureau of Economic Analysis; CEA calculations.

Figure 2-xiv

Decomposition of the Investment Slump, 2008–2014



Note: Peripheral Euro Area refers to economies (Greece, Ireland, Italy, Portugal, Spain) with high borrowing spreads during the 2010–2011 sovereign debt crisis.
Source: Consensus Economics; IMF, Fiscal Monitor database; national authorities; IMF staff estimates.

data. While this implies that headwinds to investment are coming from the broader economy, it also suggests that investment spending should rebound if and when consensus forecasts for stronger global growth are realized.

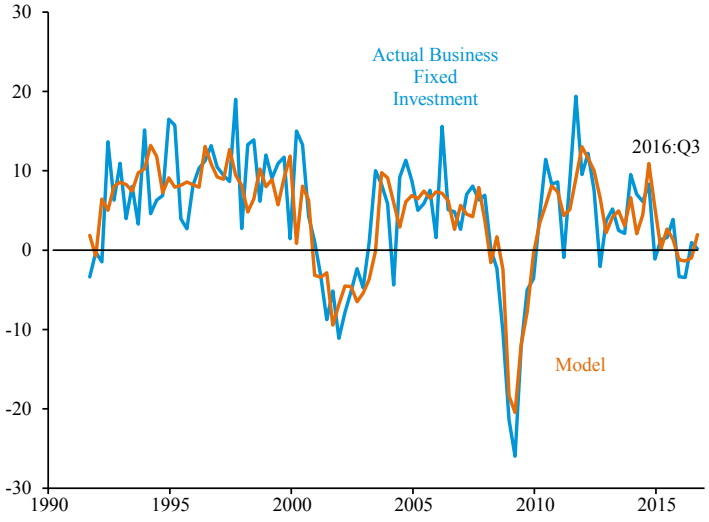
The slowdown in investment in the United States is not an isolated trend; in recent years, investment spending in advanced economies has fallen short of forecasts made by the IMF in the spring of 2007 (Figure 2-xiv). Emerging market economies, which have been accumulating capital at higher rates than advanced economies, have also seen a slowdown. The global nature of the investment slowdown sheds doubt on the theory that any particular factor specific to the United States, such as government policy, is behind the current U.S. investment slowdown.

A standard model that economists employ to explain investment theoretically and empirically is called the "accelerator model." This model assumes that businesses invest if they expect rising demand growth for their products, so rising GDP growth rates will lead to higher investment growth. CEA research has found that this accelerator model explains much of the recent fluctuation in investment, as shown in Figure

Figure 2-xv

Business Fixed Investment - Actual vs. Accelerator Model, 1991–2016

Percent Change, Annual Rate



Source: Bureau of Economic Analysis, CEA calculations

2-xv.[1] The uptick in output growth after the crisis spurred faster investment growth in 2011 but the slowdown in growth in 2015-16 contributed to a slowdown in investment growth more recently, though investment growth is still somewhat weaker than this model would predict over this past year. Importantly, the model shows that changes in global growth—not just domestic growth—affect business investment, consistent with findings from the IMF and the Organisation for Economic Cooperation and Development (OECD) (IMF 2015a; OECD 2015).

Several factors that have historically mattered for investment growth have little explanatory power in the recent slowdown. These include two main financial stress measures, the credit spread (the gap between treasury yields and corporate bond yields that is sometimes seen as a measure of concerns for financial risk in the economy) and an index of tightness of loan conditions. Both of these increased recently, but not enough to have any explanatory power in the investment slowdown. Therefore, constraints on credit or in the financial system cannot explain on their own the slowdown in business investment over the last year and

[1] The standard "accelerator" model assumes that investment growth is a function of the change in the growth of real GDP because firms target a level of the capital stock that moves with the overall level of GDP. The accelerator model can be estimated using first or second differences of the relevant series. CEA ran both specifications – Figure 2-xv shows the results using the model where changes in investment are driven by lags of itself as well as the second difference of US and a foreign trade-weighted GDP aggregate. As Figure 2-xv shows, this specification closely matches investment growth.

a half, consistent with the observation that, even as the financial sector has healed, business investment growth has actually slowed further.

Another possibility is that declining profits have held back investments in the last two years. Real corporate profits rebounded after the recession but have been declining since 2014, leaving fewer funds for internal funding of investment projects. But this theory also does not match the data. Firms still have a high level of profits relative to history, and have been taking the profits they do have and increasing payouts to shareholders instead of investing in structures or equipment. This suggests firms could invest if they wanted to, but do not see adequately attractive uses of investment funds.

While evidence shows that weak global growth explains weak business investment growth, this does not suggest that it is the only explanation. Investment, like any other macroeconomic variable, is affected by both short- and long-run trends. There is evidence to suggest that the recent slowdown is also connected to a longer-run downward trend in investment as a share of GDP over the last few decades. Part of this decline can be attributed to secular shifts in the U.S. economy. U.S. output is increasingly produced by services industries that require less capital. For example, from 2010 to 2015, average investment-to-output ratio for services industries was 15.6 percent, while it was 21.9 percent for all non-service industries.

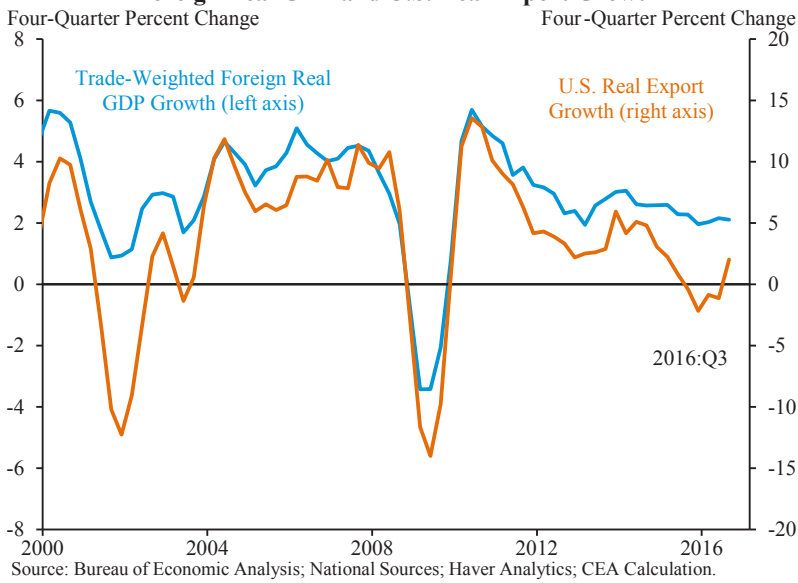
The accelerator model predicts a rebound in investment in the future. A key feature of the model is that investment depends on changes in GDP growth (in other words, the acceleration of GDP). The deceleration in GDP, both in the United States and abroad, has already had its negative impact on investment growth. Moving forward, more normal investment growth should occur if—as expected—world output growth stabilizes. Further, a rebound in global growth should also contribute to a rebound in overall U.S. GDP growth.

growth seems to be stabilizing, real export growth rates have begun to rise as well.

At the same time, real U.S. imports increased just 0.6 percent in the four quarters ended 2016:Q3, slower than did exports. Taken together, Figure 2-27 shows net exports contributed 0.4 percentage point to real GDP growth during the first three quarters of 2016, after subtracting 0.7 percentage point from overall growth during the four quarters of 2015.

Figure 2-26

Foreign Real GDP and U.S. Real Export Growth



Source: Bureau of Economic Analysis; National Sources; Haver Analytics; CEA Calculation.

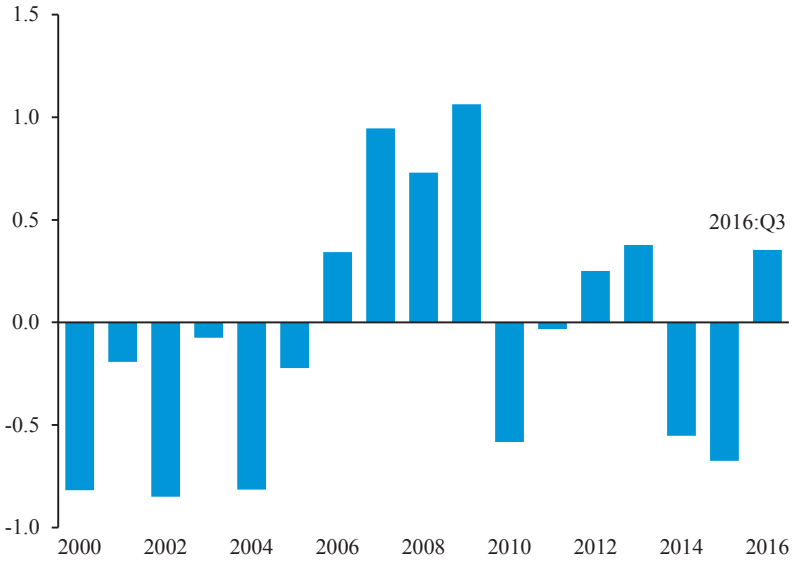
Productivity

Labor productivity, defined as nonfarm output per hour worked, has grown slower in the past decade and in particular over the past few years. Productivity growth slowed first around 2005 and then even more after 2011, averaging just 0.5 percent over the five years ending 2015:Q4—the slowest five years during an expansion in the postwar data and well below its 2.0-percent average since 1953 (Figure 2-28). This low productivity growth reflects rapid growth in employment while GDP has grown more slowly. Over longer periods of time, growth in real output and real wages depend on rising productivity, so this slowdown is a cause for concern.

Similar to trends in business fixed investment, the slowdown in productivity growth is shared across the advanced economies: 34 of the 35 OECD member countries saw slowdowns labor productivity per hour worked from 2005 to 2015 relative to the prior 10-year period.[14] In fact, despite its own slowdown, the United States has had higher productivity growth than any other G-7 economy over the past 10 years (Figure 2-xvi). The sources of the productivity slowdown are shared across advanced economies to some extent, so the approaches to address these problems are

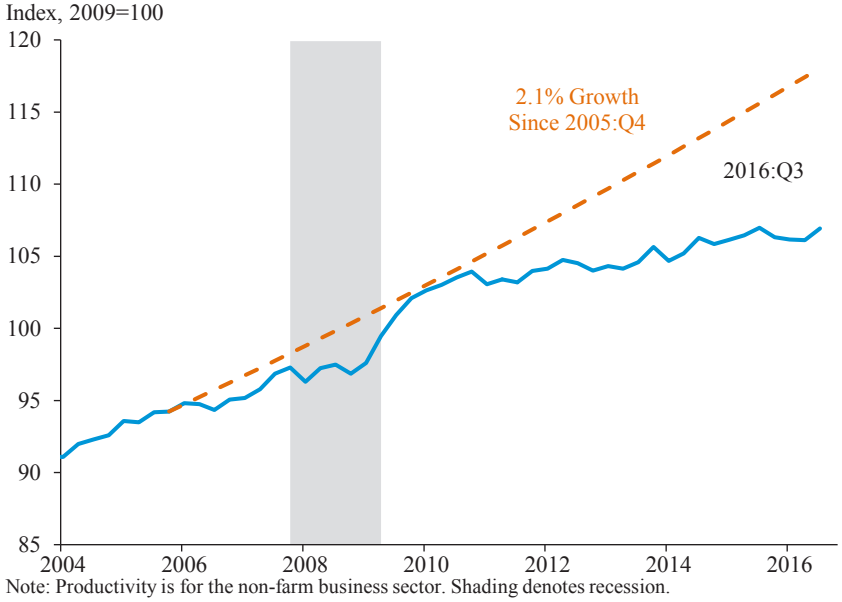
[14] The calculation uses data from The Conference Board: Labor productivity per hour worked in 2015 US$ (converted to 2015 price level with updated 2011 PPPs).

Figure 2-27
Contribution of Net Exports to U.S. Real GDP Growth, 2000–2016



Note: Contributions are computed using Q4-to-Q4 changes.
Source: Bureau of Economic Analysis.

Figure 2-28
Nonfarm Business Productivity, 2004-2016



Note: Productivity is for the non-farm business sector. Shading denotes recession.
Source: Bureau of Labor Statistics.

somewhat generalizable (Box 2-8), but the U.S. productivity slowdown has several of its own specific causes.

A useful way to analyze labor productivity is to decompose its growth into three factors: increased capital services per hour worked (capital deepening), increased skills per worker (labor composition), and increased technology or efficiency (technically termed "total factor productivity" and measured as a residual). While the contribution of all three decreased in the post-recessionary period compared with their long-run averages, the slowdown in capital deepening has been the largest factor subtracting from productivity growth, accounting for more than half the decline in total productivity growth, although the slowdown in total factor productivity (TFP) was substantial as well (Figure 2-29).

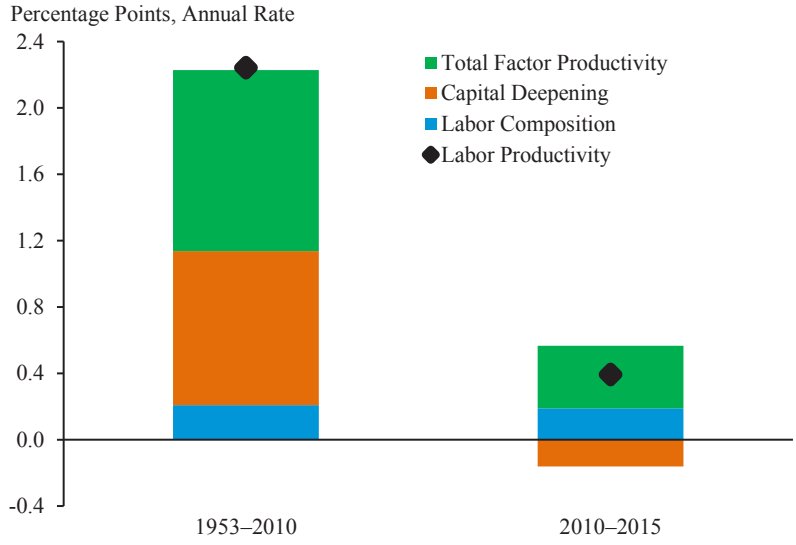
In the period from 1953 to 2010, about 0.92 percentage points (41 percent) of productivity growth was attributable to additional capital services per worker. Even as the recovery was underway during 2010 to 2015, the capital-deepening contribution to labor productivity growth was actually negative; in 2014 and 2015, a worker had less capital services at his or her disposal than five years earlier—the first time this has occurred during any five-year period since the end of World War II (Figure 2-30). These data suggest that net investment (that is, gross investment less depreciation) has not sufficed to grow capital services in line with the increase in hours worked. Indeed, business fixed investment growth has fallen short of IMF forecasts and been weak since 2014 (IMF 2014; IMF 2015a).

Another possible explanation is that we are not measuring productivity correctly in the information-driven economy. Measurement error, however, has probably always been present in the official productivity data and is therefore unlikely to explain much of the recent, productivity slowdown. CEA analysis and recent research suggests that mismeasurement has not grown in such a way to explain such a large slowdown in productivity growth from a 2.1-percent historical average to 0.0 percent during the four quarters ended 2016:Q3 (Box 2-5 in CEA 2016a). Some reasons for skepticism include: (i) productivity growth was high from 1995 to 2005 when many of the potentially underestimated information technology innovations were introduced; (ii) the slowdown in productivity has affected well-measured sectors of the economy too; and (iii) many recent innovations boost consumer surplus and the value of leisure, which GDP was not designed to measure.

Changes in industrial composition can explain some of the decrease. Since 2011, output and employment growth has been higher in lower output-per-hour sectors, such as business services, construction, and hospitality, holding back productivity growth overall. Conversely, as commodity

Figure 2-29

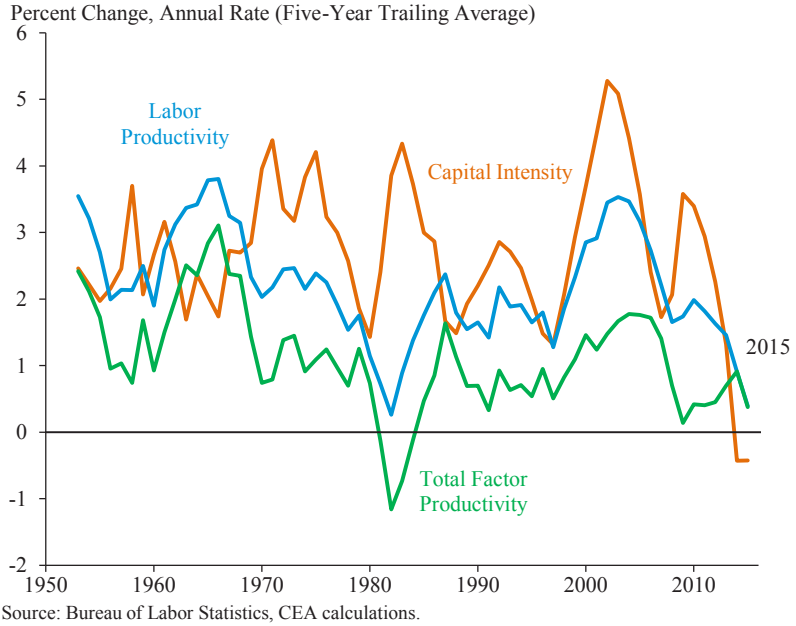
Contributions to Growth of Labor Productivity, 1953–2015



Note: Productivity is measured for the private non-farm business sector.
Source: Bureau of Labor Statistics; CEA calculations.

Figure 2-30

Labor Productivity and Major Components, 1953–2015



Source: Bureau of Labor Statistics, CEA calculations.

prices weakened and the global economy slowed during 2015 and 2016, both the energy-producing sector and manufacturing have struggled. A shrinking role for these capital- and technology-intensive sectors reduces output per hour.

In the labor market, there is some evidence that the improving economy is drawing in workers who have at least temporarily lower productivity, which also reduces measured productivity growth. Newly employed workers tend to receive lower wages, presumably because they are at least temporarily less productive than their more experienced co-workers. Partly for these reasons, it is not unusual for measured productivity growth to be higher early in a business cycle recovery and slower as a business-cycle expansion matures as workers are added back onto payrolls, though this is actually an overall positive development for the economy as long as it moves the economy towards full employment. Since 2011, newly employed workers have made up a larger-than-normal share of the workforce as employment growth has boomed. This has suppressed wage growth by 0.5 to 1.0 percentage point over this period. These newer hires may have lower skills or productivity than otherwise similar workers, or their skills may have eroded during their extended time out of work. Adding relatively more of these below-median-wage workers may have temporarily depressed productivity growth.

Longer-standing declines in the fluidity and dynamism of the economy may also be contributing to slower productivity growth. The entry of new firms has been slowing for decades and, to the extent that these firms drive both investment and productivity growth, their decline is important. A pessimistic view put forward by economist Robert Gordon is that the world economy may have simply run through the best productivity-enhancing innovations such as the steam engine, the telephone, and indoor plumbing while more recent innovations may not have the same impact on output (Gordon 2012). This pessimistic view of our future is not universally held. The world has more educated and connected people than at any time in history. Investment in intellectual property products has been strong throughout the recovery. Spending on the research and development component of investment (R&D) in particular has risen to its highest share of GDP on record, suggesting good prospects for continued innovation remain.

Of the possible explanations, it appears that more cyclical or short-term explanations explain a large portion of the slowdown. In particular, to the degree that the productivity slowdown is caused by an investment bust, that may actually be encouraging for the future outlook. It means we are not out of ideas or permanently mired in secular stagnation, but instead just need to invest more. Not only do we have policy tools to help push in that direction, but to some degree such investment busts have historically

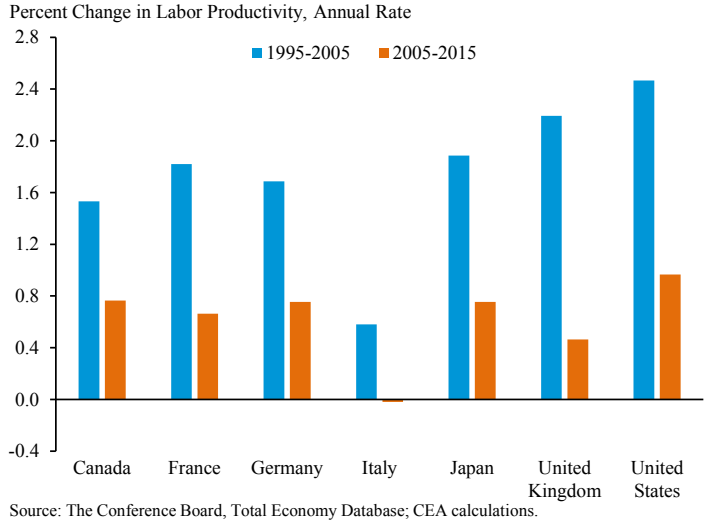
Box 2-8: Productivity Among the Advanced Economies—Explanations and Prospects

The slow productivity growth over the last decade in the United States is hardly an exception within the advanced economies. While there is still substantial heterogeneity across the advanced economies in terms of their cyclical position, there is commonality in terms of their experience with productivity growth. Average annual productivity growth in the advanced economies slowed to 1 percent in the period from 2005 to 2015, down from 2 percent in the previous decade—with productivity slowing in 34 of the 35 OECD member countries, including all of the G-7 economies, with the United States having the fastest productivity growth in the G-7 (Figure 2-xvi).

An economy takes various inputs, such as labor and capital, and produces goods and services. Low labor productivity growth means that labor inputs are growing relatively quickly compared with output, such that growth in output per hour worked is low. This may be due to less capital for each worker or because technology or management are not using these inputs efficiently.

It is unlikely to be a mere coincidence that a substantial shortfall in aggregate demand and a large slowdown in productivity growth have occurred simultaneously. In fact, the causal relationship between the two phenomena likely runs both ways. In the period from 2008 to 2014,

Figure 2-xvi
Labor Productivity Growth Slowdown in the G-7



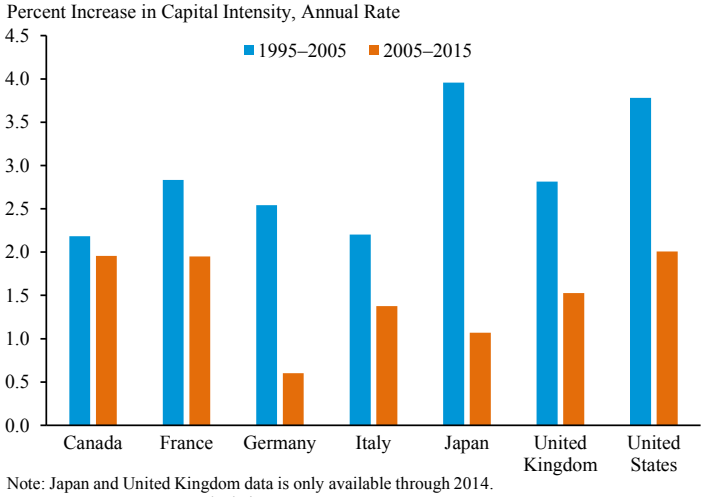
Source: The Conference Board, Total Economy Database; CEA calculations.

inadequate demand has contributed to a large shortfall of investment in both advanced and emerging markets. Moreover, CEA has found that the U.S. investment slowdown in the past 18 months can, in part, be quantitatively explained by slow global growth (Box 2-7).

In the United States, the largest contributor to the decline in labor productivity in the past five years is a reduction in capital deepening. This was not a unique experience, as all of the G-7 countries except Canada saw appreciable slowing in their rates of capital deepening between 1995-2005 and 2005-15 (Figure 2-xvii). As in the United States, the slowdown in capital deepening was even than the slowdown in total factor productivity (TFP) in Germany, Japan, and Italy. In France and the United Kingdom, however, relatively larger slowdowns in TFP growth account for the larger share of the decline in labor productivity (Figure 2-xviii).

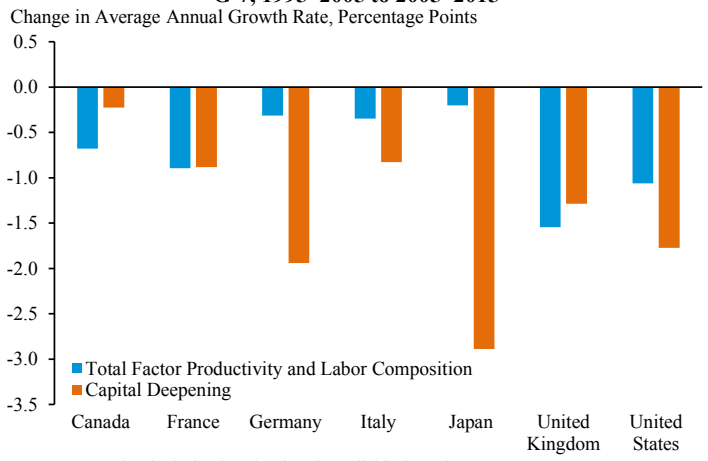
On the supply side, slowing total factor productivity growth has also played a role in all of the G-7 economies. There is some evidence that the slowing began before the crisis, around 2004, as the impulse from the information technology revolution either did not endure or was not well measured.

Figure 2-xvii
Capital Deepening in the G-7



Note: Japan and United Kingdom data is only available through 2014.
Source: OECD.Stat; CEA Calculations.

Figure 2-xviii
Change in Growth in Components of Productivity in the G-7, 1995–2005 to 2005–2015



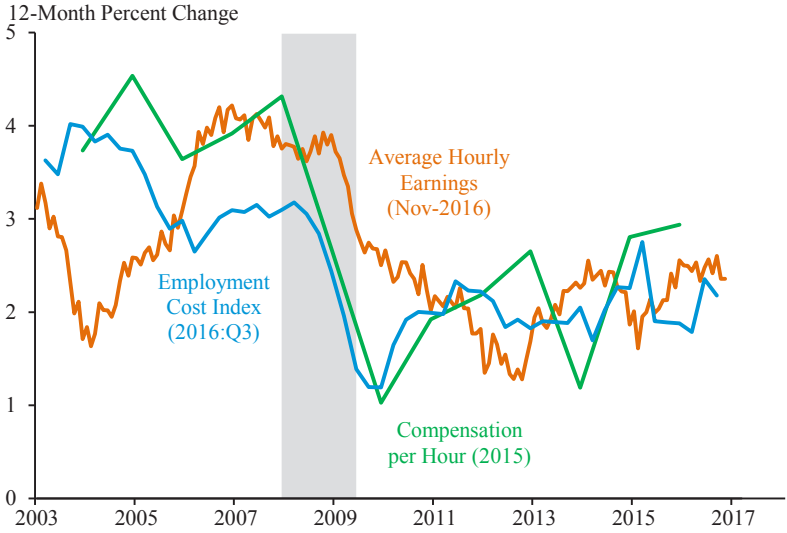
Note: Japan and United Kingdom data is only available through 2014.

been self-correcting as investment tends to be negatively serially correlated, with busts followed by booms and vice versa. Other factors holding down productivity growth—particularly shifting industry composition and new-worker entry—should fade. As the labor market normalizes over the long term, the economy will no longer be adding a disproportionate number of new workers.

Looking forward, a number of the President's proposed policies would contribute to increasing productivity growth. Infrastructure spending would lift public investment, raising effective capital per worker; investing in job training and greater access to higher education would raise labor quality; reforming innovation policy, patent reforms, expanding R&D tax credits, and supporting public R&D spending would all increase total factor productivity. Broader policies would aid as well: the Trans-Pacific Partnership (TPP) trade agreement would help better firms grow and hire more workers, increasing productivity within sectors; immigration reform would increase high-skilled immigration and improve job matching of workers and increase certainty for undocumented workers already here; supportive entrepreneurship policies would help both investment and firm dynamism; business tax reform would encourage domestic investment and innovation; and better competition policy would steer firms away from rent-seeking toward

Figure 2-31

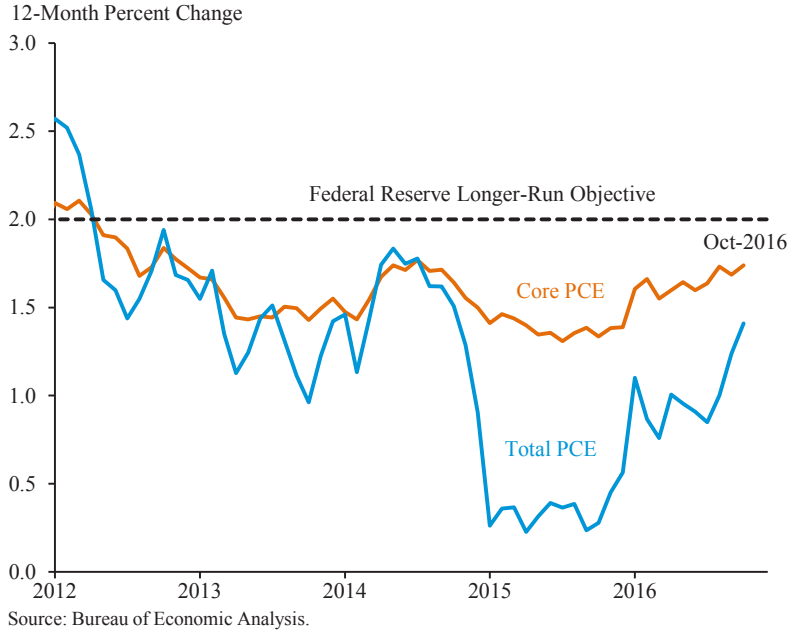
Nominal Wage Inflation Over Past Year, 2003–2016



Note: Compensation per hour refers to the productivity and cost measure for nonfarm business. The Employment Cost Index ialso refers to the nonfarm sector, but uses a different survey. Aver-age hourly earnings refers to production & nonsupervisory workers. Shading denotes recession.
Source: Bureau of Labor Statistics; Department of Labor; Haver Analytics.

Figure 2-32

Consumer Price Inflation, 2012–2016



Source: Bureau of Economic Analysis.

productive innovation. There is no silver bullet for improving productivity growth, but sound policy across a range of initiatives could support it, raising real wages and living standards in the process.

Wage and Price Inflation

Nominal wage inflation has trended up over the course of the recovery as the labor market has continued to strengthen amid robust job growth. Average nominal hourly earnings for private sector production and nonsupervisory employees increased 2.4 percent during the 12–month period ended November 2016, up from 2.3 percent during the year-earlier period. Nominal hourly compensation for private-sector workers, as measured by the employment cost index, increased 2.2 percent during the four quarters through 2016:Q3, up from 1.9 percent in the four quarters of 2015. Alternatively, the more-volatile compensation per hour measure for the non-farm business sector, as measured by the labor productivity and cost dataset, increased 2.2 percent during the four quarters through 2016:Q3, below its 3.1-percent rise during the four quarters of 2015. Taken together, as shown in Figure 2-31, nominal wage inflation has increased with the strong recovery in the labor market. However, the pace remains below the pre-crisis pace.

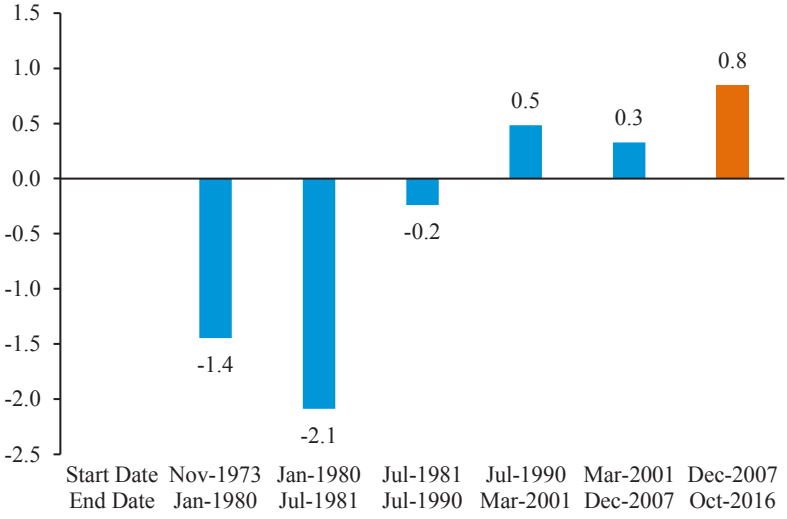
Consumer prices, as measured by the price index for personal consumption expenditures (PCE) and shown in Figure 2-32, increased roughly 1.4 percent over the 12 months ended in October 2016. The growth rate was held down by continued declines in energy prices, leaving overall inflation well below the Federal Reserve's longer-run objective of 2 percent. Core inflation—which excludes energy and food prices and tends to be a better predictor of future inflation than overall inflation—was also less than the 2-percent target, ranging between 1.6 and 1.7 percent thus far in 2016.[15] Lower imported goods prices, as well as the pass through of lower energy costs to non-energy goods, likely weighed on core inflation this year. The speed and degree to which these factors wane are two keys to the inflationary pressures in the economy this year. While inflation has picked up in recent months, nominal earnings have also continued to grow considerably

[15] The Federal Reserve defines its inflation objective in terms of the PCE price index. The consumer price index (CPI) is an alternate measure of prices paid by consumers and is used to index some government transfers, such as Social Security benefits. Largely because of a different method of aggregating the individual components, PCE inflation has averaged about 0.3-percentage point a year less than the CPI inflation since 1979. Recently, though, the gap between core price inflation has been larger across the two indices. During the 12 months ended in October 2016, for example, core CPI prices increased 2.2 percent, more than the 1.7-percent increase in core PCE prices.

Figure 2-33

Real Hourly Wage Growth Over Business Cycles (Cycle Peak to Cycle Peak), 1973–2016

Percent Change, Annual Rate

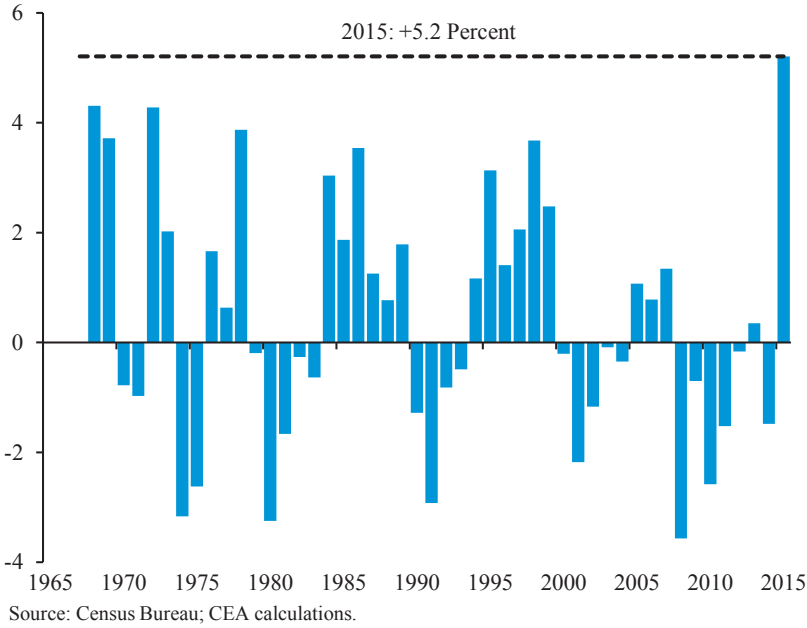


Note: Wages for private production and nonsupervisory workers. Nominal wages are deflated using the CPI for urban wage earners and clerical workers (CPI-W).
Source: National Bureau of Economic Research; Bureau of Labor Statistics; CEA calculations.

Figure 2-34

Change in Real Median Household Income, 1968–2015

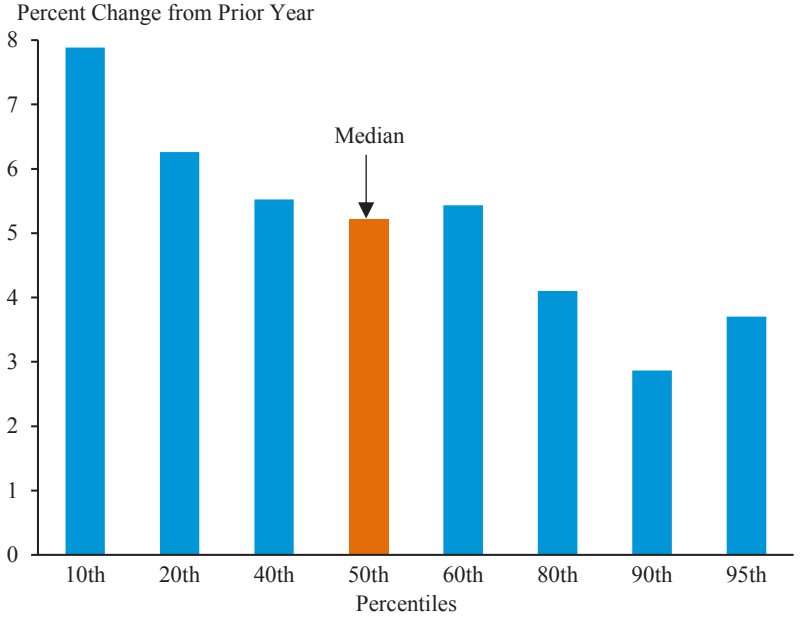
Percent Change from Prior Year



Source: Census Bureau; CEA calculations.

Figure 2-35

Growth in Real Household Income by Percentile, 2014–2015



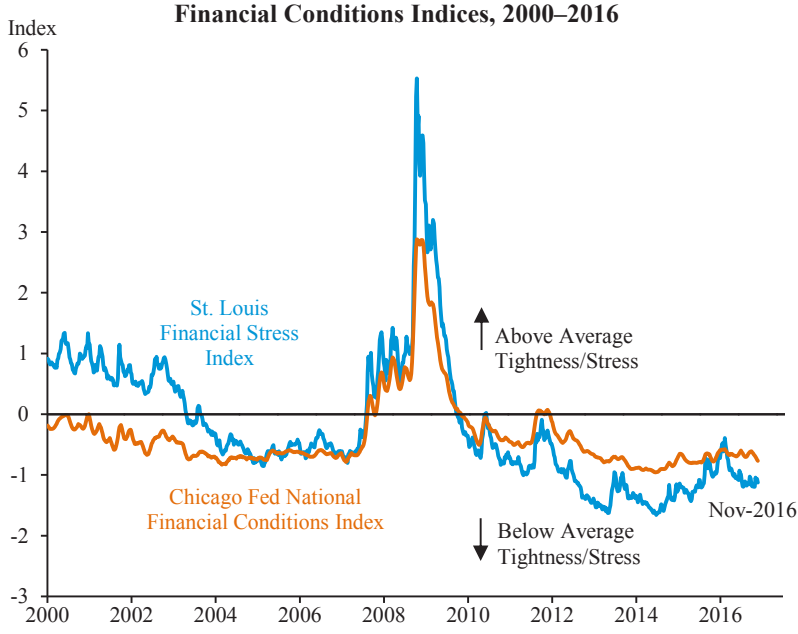
Source: Census Bureau; CEA calculations.

faster than inflation, translating into sustained real wage gains for American workers.

Real average hourly earnings of production and nonsupervisory workers have grown at a relatively high rate in 2016. As of October, real wages of production and nonsupervisory workers have grown at an annual rate of 0.8 percent since the start of the current business cycle in December 2007, which is the fastest real wage growth over a business cycle since the early 1970s (Figure 2-33). From October 2012 to October 2016, the total growth of real wages of private production and nonsupervisory workers was 6.1 percent, exceeding the 2.1-percent total growth from the business cycle peak in 1980 to the business cycle peak in 2007.

The combination of strong employment gains and real wage gains have contributed to rising real household income. Real median household income rose 5.2 percent, to $56,516 in 2015. This was the largest percent increase since records began in 1967. The income gains were broad based: for the first time since 2006, all income percentiles reported by the U.S. Census Bureau experienced gains (Figure 2-34). The largest gains were among households at the bottom of the income distribution; real income growth was the fastest on record for the 10th, 20th, 40th, 50th, and 60th percentiles (Figure 2-35). In addition, all racial and ethnic groups saw

Figure 2-36
Financial Conditions Indices, 2000–2016



Source: Federal Reserve Bank of St. Louis; Federal Reserve Bank of Chicago.

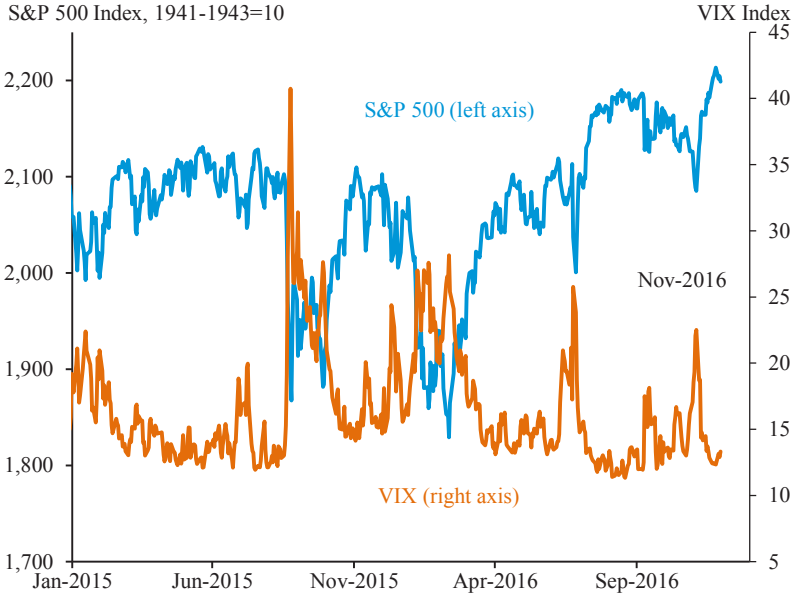
income gains—6.1 percent for Hispanic households, 4.1 percent for African-American households, 3.7 percent for Asian households, and 4.4 percent for non-Hispanic White households.

Financial Markets

U.S. financial markets have been robust so far in 2016, with equity indexes higher, government bond yields slightly higher, credit spreads lower, and oil prices rallying from lows that were touched in January. Equity markets had been broadly down in late 2015. The level of the S&P 500 Index as of November 30 is up 3.2 percent relative to the high reached in mid-2015. Asset prices in 2016 tended to be broadly affected by central bank policy decisions and investor perceptions of domestic and global growth prospects. Financial markets were volatile and equity markets were down early in the year, but have since recovered. In general, investor sentiment has been cautiously optimistic and, as shown in Figure 2-36, financial conditions have been relatively loose. Both rising asset prices and eased financial conditions should continue to support the economic recovery.

Figure 2-37

S&P 500 and VIX, 2015–2016



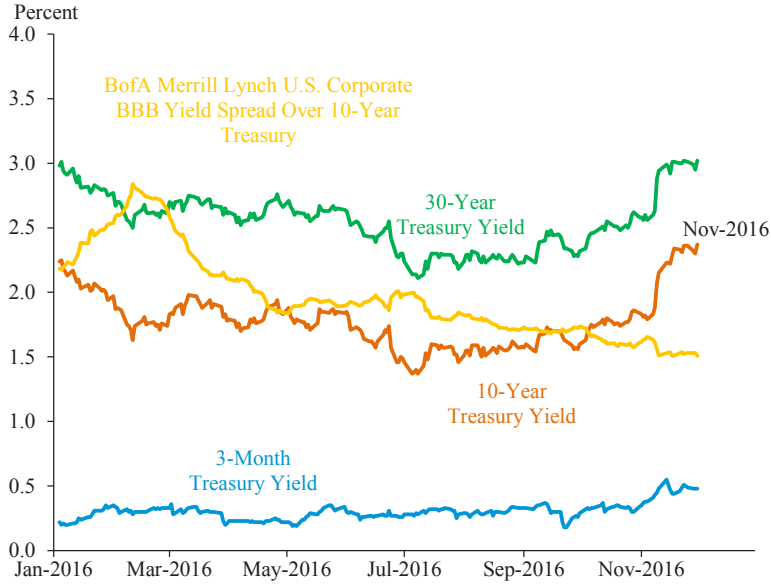
Source: Wall Street Journal.

Equity Markets

The S&P 500 is up 7.6 percent in 2016 as of November 30. The first two months of the year saw steep declines, reflecting investor concern about the health of the global economy. During those episodes of market declines, the Chicago Board of Options Exchange Market Volatility Index (VIX), which reflects investor expectations of future volatility for the S&P 500, spiked to almost 30 in early January and again in early February (VIX levels above 30 are generally considered high). Thereafter, equity markets recovered broadly and investor volatility expectations were generally much lower for the rest of the year.

The United Kingdom's decision to exit the European Union (popularly termed "Brexit") was followed by falling equity prices in markets around the globe, but the spike in volatility was temporary and major U.S. equity indices quickly recovered. The S&P 500 reached a record high in August, before easing back a bit in September and October. The index rose sharply in November, rising 3.4 percent and hitting a new all-time high on November 25. With the exception of early November, the VIX has closed below 20 since shortly after Brexit, as shown in Figure 2-37. As of November 30, 2016, the S&P 500 was 40 percent above its pre-recession peak in 2007.

Figure 2-38
Nominal Long- and Short-Term Interest Rates, 2016



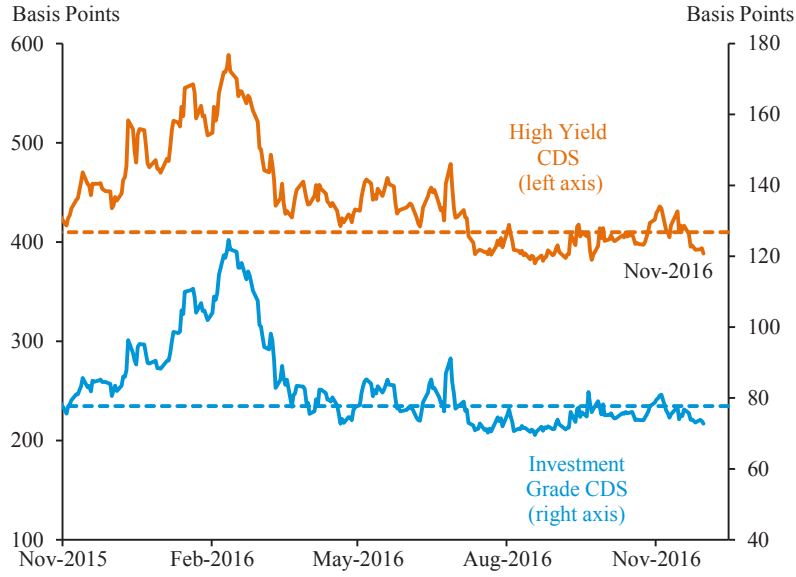
Source: Federal Reserve; Bank of America Merrill Lynch.

Interest Rates and Credit Spreads

During the first half of the year, yields on government and corporate debt generally moved lower, continuing the downward trend of the past few years. However, Treasury yields rose in the second half of the year and spiked upward in November, with the 10-year yield ending the month above its end-of-2015 level. Levels of default risk, as measured by credit default swap (CDS) spreads, spiked in tandem with the equity and oil market volatility near the start of the year but, consistent with equity market volatility, have returned to relatively low levels since. At the same time, consensus forecasts of long-run U.S. interest rates have fallen over 2016. The market-implied expectation for the 10-year Treasury yield 10 years from now fell in the first half of the year but spiked upward in November and, as of November 30, is at its end-of-2015 level.

Long-term government interest rates, or yields on 10-year and 30-year U.S. Treasury notes, declined more than did yields on shorter-term debt during the first half of 2016. The 10-year U.S. Treasury yield fell below 2 percent at the beginning of the year and reached its lowest level on record (1.37 percent) on July 5, but recovered steadily throughout the third quarter and reached 1.84 percent at the end of October (Figure 2-38). In November, the 10-year yield jumped up 53 basis points (bps) to 2.37 percent, a large move shared by the 30-year Treasury yield as well as the government bond

Figure 2-39
CDS Spreads for North American Corporate Debt, 2015–2016

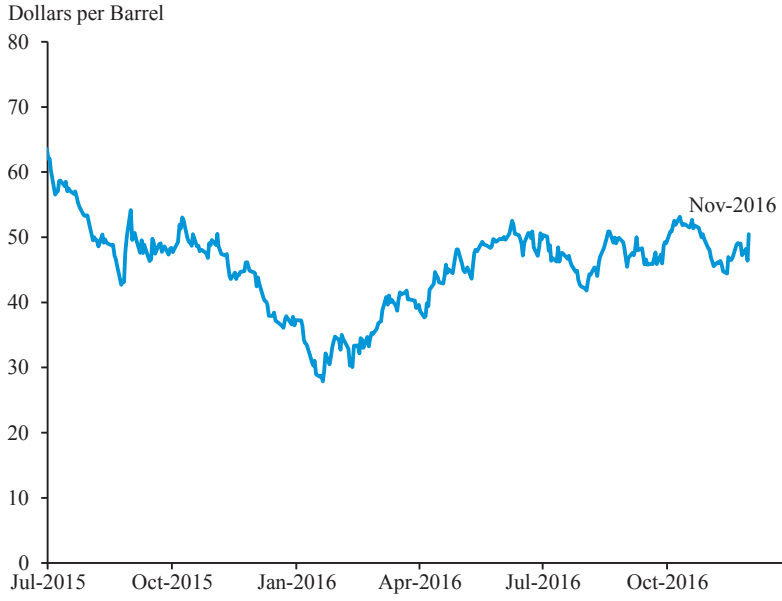


Note: Dotted lines indicate average spreads 2015-2016 year to date.
Source: Markit; Bloomberg.

yields of other advanced economies. Despite the recent upward movements, Treasury yields are still low relative to their long-term averages. Unusually low interest rates are not unique to the United States, as relatively low interest rates were common among G7 economies in 2016.

Average borrowing costs for BBB-rated companies decreased more than 10-year U.S. Treasury yields did in 2016, with the BBB spread over 10-year U.S. Treasuries declining from 2.18 percentage points at the end of 2015 to 1.51 percentage points at the end of November. The BBB spread had widened in late 2015 and peaked at 2.84 percentage points in February before steadily narrowing to 1.61 percentage points by the end of October. In November, the spread decreased another 10 basis points, though both the 10-year Treasury yield and the average BBB yield to maturity rose. As of November 30, the BBB spread is slightly below its average post-recession level of 1.70 percentage points. Narrowing corporate credit spreads relative to Treasury notes mean the market is requiring less compensation for the credit risk of corporate debt. This is consistent with the downward movement of credit default swap (CDS) spreads for corporate debt over the year (Figure 2-39). Because CDS spreads are the cost of insurance against the default of a borrower, falling CDS spreads mean that the market perceives debt defaults as less probable now than at the start of the year. Corporate bond issuance has been proceeding at a robust pace; over the first 10 months

Figure 2-40
Brent Crude Oil Prices, 2015–2016



Source: Bloomberg.

of 2016, corporate bond issuers have issued 1.4 trillion dollars of debt, on par with the pace in 2015.[16] This high rate of debt issuance, however, does not appear to reflect rising business fixed investment (Box 2-7).

North American high-yield CDS spreads increased roughly 80bps in early February due in part to the increasing credit risk of energy producers, some of which defaulted after the price of oil plummeted after the start of the year. As oil prices recovered, industry-average CDS spreads fell, reflecting the improved health of energy firms as well as improved investor sentiment. As of November 30, high-yield and investment grade CDS spreads are below their average 2015-16 levels.

Market estimates for long-term U.S. Treasury rates decreased in the first half of the year along with the current (spot) Treasury rates, signaling that markets may believe that interest rates will remain low over the long-term as well. The 10-year U.S. Treasury rate, 10 years forward, which is a function of the 20-year U.S. Treasury rate and the 10-year U.S. Treasury rate, was 3.6 percent as of November 30, same as the level at the end of 2015, but slightly lower than the 3.7-percent rate projected for 2026 by a consensus of professional forecasters. This forward interest rate may be interpreted

[16] This measure was provided by SIFMA and includes all non-convertible corporate debt, MTNs, and Yankee bonds, but excludes all issues with maturities of one or less and certificates of deposits.

as a market forecast of the 10-year interest rate a decade from today but may diverge from it due to liquidity and maturity risk premia. Some of the gap between the market-implied rate and the consensus forecast may be explained by a lower term premium, global flight-to-safety flows, or divergent expectations about long-term productivity and output growth. Forward rates incorporate risk premia, can be highly volatile, and their movements may reflect transitory developments as opposed to structural changes; as such, they may be poor predictors of future rates. For a more in-depth analysis into the 10-year U.S. Treasury rate, 10 years forward, and the overall shift to lower long-term rates, see the Council of Economic Advisers (2015d) report, "Long-Term Interest Rates: A Survey."

Energy Prices

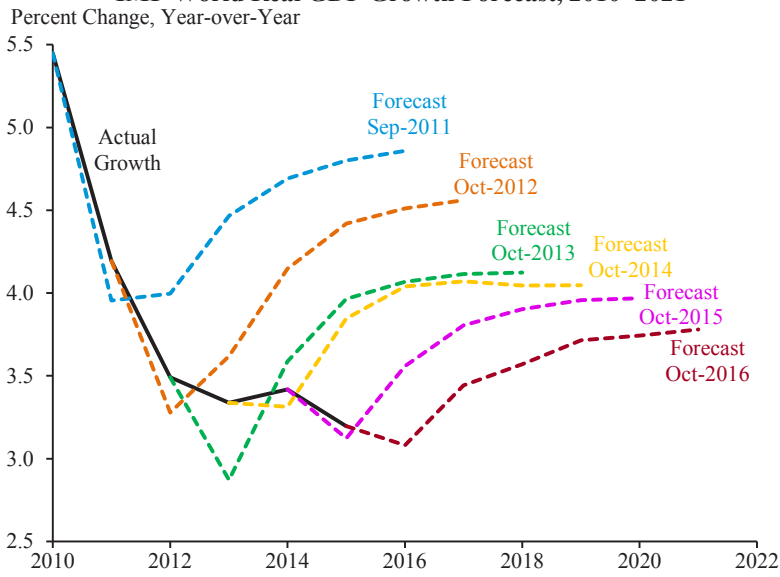
Weakness in oil prices contributed to equity and credit market volatility in the first two months of the year. Brent crude oil closing prices fell to less than $30 a barrel in late January and touched $30 a barrel again in early February on data suggesting slower Chinese growth would depress oil demand, dollar appreciation would restrain price increases, and that excess supply would persist. Oil prices have rallied since then and have mostly hovered between $40 and $50 a barrel since April (Figure 2-40), exceeding $50 in the beginning of November as OPEC members agreed to an output agreement capping production at 32.5 million barrels per day, 3 percent below the 33.64 million barrels per day reported by OPEC members in October.

The Global Macroeconomic Situation

The growth of the global economy in 2016 is expected to be the same as in 2015, but was below the year-earlier expectations of a rebound. Relatively lower growth is both a long-term phenomenon, with advanced economies repeatedly underperforming over the past six years, and the manifestation of short-term developments arising in part from uncertainty in European markets following the Brexit vote as well as recessions and continued risks in selected emerging markets. Downward revisions to growth forecasts occurred amid an environment of weak global demand and investment and disappointing global productivity growth. Compared with forecasts in October 2015, IMF forecasts for four-quarter growth in the October 2016 *World Economic Outlook* reflected downward revisions across both advanced and emerging markets, resulting in a downward revision in the global four-quarter growth forecast for 2016 from 3.6 percent to 3.1 percent (IMF 2015b; IMF 2016b).

Figure 2-41

IMF World Real GDP Growth Forecast, 2010–2021



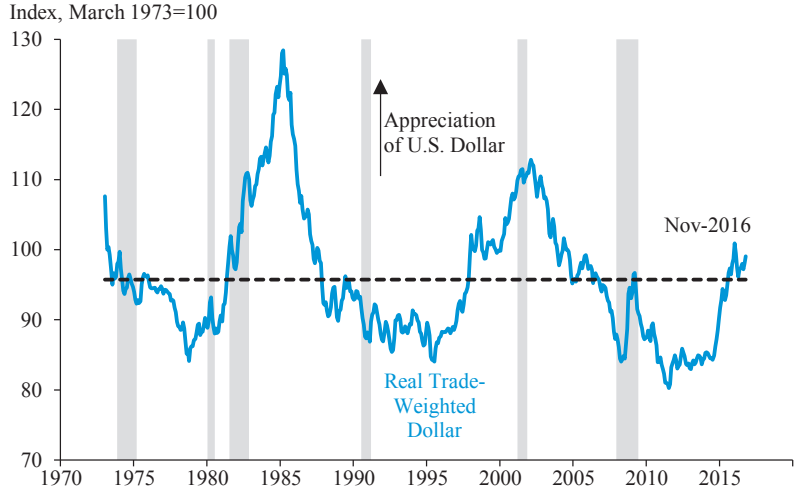
Note: The figure uses year-over-year growth. Q4-over-Q4 forecacasts are not available over extended horizons.

Source: International Monetary Fund (IMF) World Economic Outlook.

Some developments, especially as they relate to advanced economies, were unexpected, but the slow growth seen throughout 2016 was an extension of developments seen in 2015, namely the stabilizing but persistently slowing growth in China, the persistence of low prices for some commodities, and slower working-age population growth in many countries. Despite coming in below expectations, the pace of growth has broadly stabilized with growth projected for the four quarters of 2016 matching the pace over the four quarters of 2015. The weak global growth, particularly among U.S. trading partners, continued to be a headwind to U.S. economic growth in 2016, but the prospect that global growth has stabilized and may pick up could be a promising sign for U.S. growth.

The IMF's projected global growth rate of 3.1 percent during the four quarters of 2016 is well below both the pace earlier in the recovery and pre-crisis (between 4 and 5 percent). This longer-term slowdown was not anticipated in earlier forecasts. Figure 2-41 shows the IMF's forecast for global growth at different times. The solid line represents the actual growth outcomes while the dotted lines show the forecast. At first, as growth slowed, the IMF—along with most other forecasters—expected a near-term pickup in growth to over 4 percent. Since then, medium-term global growth has

Figure 2-42
Real Broad Trade-Weighted Dollar, 1973–2016



Note: This index is a weighted average of the foreign exchange values of the U.S. dollar against major U.S. trading partners. The dotted line represents the 1973-2016 average. Shading denotes recession.
Source: Federal Reserve Board.

consistently fallen short of expectations, as the long-term growth forecasts have flattened and medium-term risks have deepened.

As discussed above, the slowdown in global growth has been a headwind for the U.S. economy, dragging on real export growth. As global growth and the appreciation of the dollar have stabilized, however, real exports have grown 2 percent in the four quarters ended in 2016:Q3. Still, global growth is below expectations and there appears to be room for more growth in many countries. That is why it is critical for economies around the world to coordinate efforts focused on promoting growth, undertaking the necessary steps to expand demand, increase investment, encourage trade, and manage economic and financial developments as appropriate in different contexts.

Global Headwinds and Trade

Starting in July 2014, the dollar entered a period of sustained real appreciation, increasing by 17 percent through December 2015, according to the Federal Reserve's broad real dollar index. Such a major wave of dollar appreciation has occurred only twice before since the dollar began to float freely in 1973 following the collapse of the Bretton Woods fixed exchange rate system. In 2016, the dollar was largely stable for most of the year but appreciated 2.3 percent on a trade-weighted basis in November (Figure 2-42). The limited appreciation of the trade-weighted exchange rate so far in 2016 obscures some larger bilateral moves in the dollar, with appreciation

against the Mexican peso, the Chinese renminbi (RMB) and the British pound partially offset by depreciation with respect to the Canadian dollar and the Japanese yen.

While well above the level that prevailed in the years immediately following the financial crisis, the recent appreciation leaves the dollar close to its 40-year historical average on a real, price-adjusted basis. Among the drivers of the recent dollar appreciation is the strong performance of the U.S. economy against a backdrop of relatively weak growth in the rest of the world. U.S. Federal Reserve policy is at a different juncture than monetary policy in other major economies. The Federal Reserve increased interest rates for the first time since the 2008 financial crisis at its December 2015 meeting. In the first half of 2016, however, both the pace of U.S. growth and of monetary tightening by the Federal Reserve fell behind expectations. FOMC participants consistently marked down both their interest rate and U.S. growth forecasts throughout 2016, while several other advanced economies chose to keep their policy rates unchanged. Although markets expect the Federal Reserve to reduce monetary policy accommodation over the coming year, the European Central Bank (ECB) and the Bank of Japan (BOJ) are in the midst of maintaining or expanding monetary stimulus with the aim of raising inflation from low levels toward their respective 2-percent targets.

The manufacturing sector, in particular, struggles when foreign demand for U.S. exports is low because it is a more export-oriented part of the economy. While manufacturing makes up roughly 12 percent of U.S. value added, it constitutes about one-half of U.S. exports. Within manufacturing, the more export-oriented sectors have struggled most. In the first half of the year, export-intensive manufacturing sectors lagged in terms of both output and employment growth (Figure 2-43).[17]

Weak global demand and subdued investment growth have driven a slowdown in global trade. The IMF notes that the rate of growth in the volume of world trade in goods and services has fallen to less than half its average rate of growth over the preceding three decades. Both the IMF and the OECD note that growth in real world trade has just barely kept up with growth in real global GDP since 2011, whereas it grew on average twice as fast as real global GDP during the two decades before the crisis. Various analysts attribute the slowdown to weak global growth, especially in investment, a decline in the growth of trade in both capital and intermediate goods through the "global value chain," rebalancing in China, the shift across

[17] The CEA defines export share as being the sum of direct export sales and "indirect" export sales, which are the input-cost weighted export sales of downstream users, using the Leontief inverse method in Johnson and Noguera (2012).

Figure 2-43
Employment and Industrial Production Relative to Trend Given High Export Share, 2014–2016

Note: These values represent the average difference between the annualized monthly growth rate for June 2014-June 2016 and the annualized monthly growth rate for 2010-2014:H1, for U.S. manufacturing industries associated with a 15 percent higher total (direct + indirect) export share.
Source: Bureau of Labor Statistics; Federal Reserve; CEA calculations.

many economies toward services, and rising protectionist sentiment. The slowdown in trade may both be associated with, and contribute to, slower future economic growth. This is because both the slowdown in capital deepening through investment, which is more import-intensive than other contributors to aggregate demand, and the end to the rapid expansion of global value-chain activity, partly attributed to China's re-balancing toward consumption and services, may reduce productivity growth.

Developments in 2016

Economic growth in 2016 continued to be subdued in a number of advanced economies, but improved in emerging market and developing economies in aggregate. Though total growth for emerging markets and developing economies as a group continued to improve, it underperformed forecasts made in fall 2015 and was weighed down by continuing contraction and slowing growth in emerging European economies, Latin America and the Caribbean, and Sub-Saharan Africa. Emerging markets had been expected to grow 4.8 percent over the four quarters of 2016, but now look set to grow only 4.3 percent (IMF 2015b; IMF 2016b).

United Kingdom

It has been a turbulent year for the United Kingdom since the June referendum in which voters called for the county to leave the European Union. It remains too early to tell what the economic impact of a 'Brexit' will be for the United Kingdom and the world, as expectations for future growth evolve with the release of new data. The Bank of England originally marked down its forecast for UK growth for 2016 through 2018 in its third quarter inflation report after the referendum; in its fourth quarter inflation report, the bank revised its forecast upward for 2016 and 2017 reflecting positive GDP data in 2016:Q3, but further lowered its forecast for 2018. The central bank acted strongly to support the UK economy at its August policy meeting, lowering its key policy rate and signaling that it stood ready to provide more accommodation if needed. However, the depreciation of the pound since the referendum—it fell as much as 16 percent on a trade-weighted basis, reaching its lowest level since 2010—has sparked inflationary pressures. Citing these developments at its November meeting the bank's policy committee shifted its guidance from an easing to a neutral outlook for monetary policy.

Global equity markets initially plunged after the Brexit vote, though generally rebounded later and recovered their losses. The FTSE 250 Index—made up of the stocks of the largest 250 companies on the London Stock Exchange that are not in the top 100 stocks by market capitalization—dropped 7.5 percent in the immediate aftermath of the vote, but has since recovered these loses. Despite these developments, the real economy has proved to be remarkably resilient in the months after the vote: real GDP growth for 2016:Q3 surprised on the upside, growing at a 2-percent annual rate, similar to the pace over the preceding four quarters and meeting forecasts issued prior to the vote; the harmonized unemployment rate held steady at 4.8 percent through the end of August 2016; consumer confidence was above its long-term average; and purchasing manager surveys of manufacturing and services activity continued to indicate expansion. Growth in industrial production, however, missed expectations, and some economists assert that the negative implications of Brexit have yet to materialize given the estimated two-year exit process once formal negotiations with the European Union begin. Of particular concern is the risk to the UK's financial sector if UK-based firms lose "passporting" rights to operate on an equal footing in the EU single market. In many ways, Brexit's impact is yet to be seen as the true terms of exit are yet to be understood, and the uncertainty involved could weigh on the economy over time.

Euro area

Recovery from the financial and sovereign debt crises in the euro area remains uneven, with new uncertainties creating downward pressure on growth. Unemployment only recently edged down to 9.8 from over 10 percent, and the euro area's real GDP-per-capita has only just recovered its pre-crisis peak in 2016:Q3. The IMF expects the euro area economy as a whole to grow 1.6 percent over the four quarters of 2016, more slowly than its 2-percent growth rate in 2015, reflecting some weakness in domestic demand in the first half of 2016. The unemployment rate in the nations hardest hit by the sovereign debt crisis remains elevated, as high as 20 percent. This persistently slow economic growth and labor market slack, coupled with very low inflation (averaging 0.2 in 2016 for the euro area as a whole, and deflation in Ireland, Italy, and Spain) highlight the need for more supportive policy in Europe, including expansionary fiscal policy. Meanwhile, the euro area's current account surplus has widened since 2012, driven by Germany's growing current account surplus.

Although euro area banks are more resilient to market stress than before the financial crisis, weak profits and concerns about sufficiency of financial capital leaves euro-area banks and the financial sector vulnerable, potentially acting as a drag on growth. Burdened by high levels of legacy non-performing loans, Portuguese and Italian banks in particular are struggling to recapitalize and achieve a sustainable business model. Additionally, declines in investor confidence may signal questions about the capacity of both countries to support its banks, if necessary, given weak growth and high sovereign indebtedness. Similar vulnerabilities are also weighing on some large institutions such that the Euro Stoxx Bank Index—an aggregate of European bank equity prices—has fallen 17.8 percent since the beginning of the year. Slow growth, low interest rates, and what some observers call oversaturation of lenders in some credit markets have compressed profit opportunities.

Japan

Japan has continued to face economic challenges in 2016. Prime Minister Shinzo Abe is promoting a package of structural reforms aimed at jumpstarting growth in the Japanese economy, in addition to campaigning for monetary stimulus and advocating for "flexible" fiscal policy, renewing his signature "Abenomics." After dipping in and out of recession since its 1992 financial crisis, economic growth in 2016 continues to be sluggish, growing 0.8 percent over the four quarters ended in 2016:Q3. Slow growth is due in large part to Japan's declining working-age population. When looking at real GDP per working-age population rather than real GDP,

for example, Japan has grown almost as robustly as the United States over the past 25 years. For this reason, promoting fertility while encouraging women's continued engagement in the labor force is a pillar of the second phase of Abenomics.

Deflationary pressures continue to plague Japan despite expansive monetary policy. In 2016, the Bank of Japan began an experiment using negative interest rates to complement its quantitative easing program. The objective is to put downward pressure on short-term interest rates and raise inflation by reinforcing its commitment to its inflation target and trying to encourage spending over saving. Partly as a result of these policies, the yield curve flattened, with even the 10-year benchmark yield falling below zero. More recently, the bank has announced continued asset purchases and introduced a policy of yield curve control, which sets up an interest rate target of around 0 percent on 10-year Japanese government bonds. The IMF Global Financial Stability report cautions on the increased reliance of Japanese banks on wholesale dollar funding to finance foreign asset purchases, which could make banks more sensitive to disruptions in dollar funding markets.

Emerging Markets

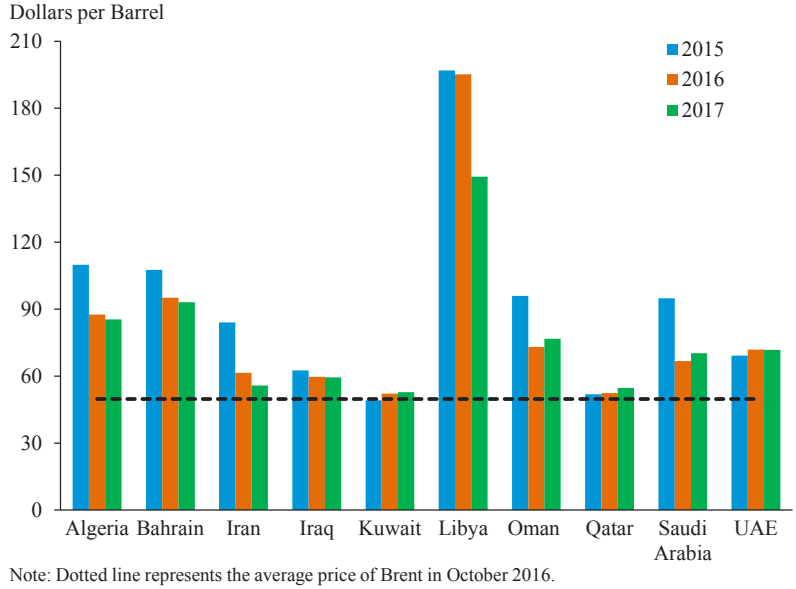
The situation in some emerging markets has improved relative to 2015, but growth in 2016 is still underperforming expectations compared with forecasts made in 2015, while there continues to be uncertainty surrounding major commodity exporters and China. Emerging markets are expected to account for 54 percent of world growth in 2016, compared with 53 percent in 2015, and 60 percent between 2010 and 2014. As a group, their 2016 growth is expected to come in below the 2015 forecast. The IMF estimates that growth will pick up in 2017, as growth in several oil-producing emerging markets, such as Brazil, and Russia (which are expected to recover from recession) compensates for the steady slowdown in China (IMF 2016b).

Oil-Exporting Emerging Markets. The substantial decline in oil prices from mid-2014 through 2016 has put considerable pressure on the economies of many oil exporters, especially those with undiversified economies. Oil sales remain the primary source of government revenues in several oil-exporting countries, so the drop in oil prices from over $100 a barrel in 2014 to between $25-$55 a barrel in 2016 has put tremendous pressure on government budgets. As figure 2-44 demonstrates, the oil price that guarantees a neutral fiscal balance is well above the current price of Brent in many oil-exporting countries.

Beyond the fiscal concerns, in countries where the price of extracting oil is relatively high, the strain of lower prices for oil and other commodities

Figure 2-44

Fiscal Breakeven Oil Prices by Country, 2015–2017



Note: Dotted line represents the average price of Brent in October 2016.
Source: International Monetary Fund (IMF) Middle East and Central Asia Regional Outlook.

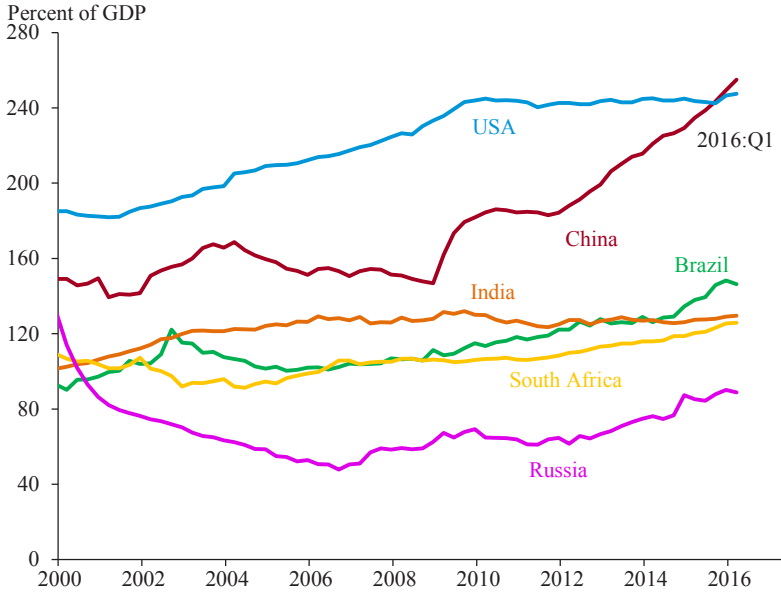
has generated recessions. For example, Brazil's economy continued to contract (partially due to oil prices) and Venezuela's economy collapsed. Unemployment in Brazil in October 2016 was at its highest level since mid-2004, though this may be due to a recent change in its computation. Recent improvements—such as real GDP contracting less than expected in the third quarter, housing prices beginning to stabilize, and the appreciation of the Brazilian real reflecting strengthening financial market sentiment—suggest Brazil's economy may be beginning to recover and see positive growth in 2017. The combination of the commodities price bust, economic sanctions following its annexation of Crimea in 2014, and reduced firm access to international capital markets have caused Russia to enter a recession since late 2014 from which the IMF expects Russia will exit in 2017 (IMF 2016b).

Other Major Emerging Markets. Among other major emerging market economies, growth has been mixed in 2016. India remains one of the fastest-growing countries in the world, with real GDP expanding at 7.3 percent in the four quarters through 2016:Q3. However, countries that typically export to China and the advanced economies have suffered due to the slowdown in those important markets.

Economic growth in China has been on a downward trend since a brief rebound after the global financial crisis. China has been attempting to rebalance from an investment- and export-driven economy to an economy

Figure 2-45

Credit to Nonfinancial Sector (Public and Private), 2000–2016



Source: Bank for International Settlements.

driven more by private consumption. However, more recently, China may be postponing its longer-term goal of rebalancing in order to stabilize growth in the near term after growth fell from 7.2 percent in the four quarters ended in 2014:Q4 to 6.7 percent in the four quarters ended in 2016:Q3. In 2016, credit growth has been rapid, increasing financial risks, with credit to the non-financial sector as a percent of GDP now exceeding that of major emerging market economies (see Figure 2-45), real estate prices hitting record highs, and distressed bank assets rising.

Against this backdrop, the Chinese renminbi (RMB) has been gradually depreciating since mid-2015 against both the dollar and a weighted basket of currencies. Net capital outflows, which had stabilized in the spring and early summer, edged up again in the third quarter and uncertainty about the course of policy in the near term may be putting downward pressure against the RMB. China's current account surplus is well below its recent peak, but has been considerably above levels the IMF assesses to be appropriate, and it still constitutes a substantial portion of the world's current account surpluses. As China's economy grew to 15 percent of global GDP in 2015, targeted industrial policies have made it the world's largest manufacturer and the dominant producer of some key goods in the global marketplace, as well as a major source of demand for an array of goods, magnifying the effects of changes in its domestic economy on global prices and growth. Delays in

adjusting to changing dynamics in the world economy have led to excess capacity in some industries where China is a dominant player. Adjusting to these factors poses additional challenges for policymakers.

Economic growth in India continues at a solid pace of a projected 7.4 percent over the 4 quarters of 2016 (IMF 2016b). Private consumption has been a major driver in economic growth, contributing 4.3 percentage points to its 7.3 percent real GDP growth rate in the four quarters through 2016:Q3. Lower inflation and fiscal consolidation over the past year has created additional policy space for India to stimulate growth should a crisis occur. Macroeconomic risks revolve around inflationary pressure stemming from increasing commodity prices, which could weigh on the current account and fiscal deficit (OECD 2016). Inefficiencies remain in the public sector, with India's poor still lacking health care coverage, educational attainment, and access to financial services (IMF 2016a). Further, inequality in India remains high.

The Outlook

GDP Growth over the Next Three Years

After growing roughly 2.6 percent on average during the four quarters of 2013 and 2014, real GDP growth averaged 1.9 percent during the four quarters of 2015 and 1.8 percent at an annual rate during the first three quarters of 2016. The Administration forecast (finalized on November 9, 2016) projects an acceleration to 2.4-percent growth during the four quarters of 2017. The Administration forecast is the same as the CBO's August 2016 forecast and slightly above the Blue-Chip November consensus forecast of 2.2 percent. All forecasts implicitly or explicitly make assumptions about the future course of economic policy. The Administration's forecast is based on a baseline that assumes enactment of the President's policies, most of which were spelled out in the budget released in February 2016. In contrast, the CBO forecast assumes that current laws are unchanged while the Blue Chip implicitly reflects the expectations that private forecasters have about what policies will actually be enacted in the future.

The Administration's forecast expects that forces that influence investment and government spending point to faster growth in 2017 than in the recent past, while consumer spending will moderate somewhat and international forces will likely be a drag on growth. With a strengthening State and local sector, State and local fiscal actions will likely be somewhat expansionary in 2017.

Meanwhile, core inflation (excluding food and energy) is at 1.7 percent during the 12 months through October and remains below the Federal Reserve target of 2 percent for the PCE price index (the version of the consumer price index in the National Income and Product Accounts), partly due to declining import prices, and below-average capacity utilization. And so, though the unemployment rate is now close to the rate consistent with stable inflation, inflation is likely to remain low and unlikely to impose constraints, at least during the next four quarters. For consumers, continued growth in nominal and real wage gains in 2016—together with strong employment growth—will probably continue to boost spending in 2017. These income gains—following a multiyear period of successful deleveraging—leave consumers in an improved financial position (Box 2-6). Business investment also shows brighter prospects for growth in 2017 than in earlier years as the overhang of excess capital that suppressed investment earlier in this expansion has been reduced. As the economy continues to grow, businesses will need new facilities, equipment, and intellectual property to meet growing demand, and the expected pickup in output growth should support an uptick in investment as well (Box 2-7), though global headwinds will continue to be a concern for this sector.

Although most domestic signals are positive, the United States faces some headwinds from abroad. The available late-2016 indicators suggest that the economies of China, India, Mexico, and our euro-area trading partners are growing more slowly than in 2015, while Canada's growth is accelerating. The trade-weighted average of foreign GDP growth in the four quarters ended in 2016:Q3 has been 2.1 percent, down from the 2.3 percent average growth rate during the preceding four quarters. On the more positive side, forecasts are for a small pickup in global growth in 2017. Overall weak growth abroad not only reduces our exports and slows domestic investment, but also raises risks of adverse financial and other spillovers to the U.S. economy.

The unemployment rate in November 2016 at 4.6 percent differed little from the projected long run unemployment rate that is consistent with stable inflation in the long run, though some broader measures of labor market slack remain somewhat elevated. These facets of the labor market along with the fact that the capacity utilization rate in manufacturing, which was 74.9 percent in October, is below its long-run average (80 percent), suggest that the economy still has a bit of room to grow faster than its potential rate.

The Administration's economic forecast is presented in Table 2-1. When the Administration forecast was finalized in November 2016, real GDP growth during the four quarters of 2016 was projected at 1.9 percent. Real GDP is projected to grow 2.4, 2.3, and 2.2 percent during the four

Table 2-1

Administration Economic Forecast, 2015–2027

	Nominal GDP	Real GDP (Chain-Type)	GDP Price Index (Chain-Type)	Consumer Price Index (CPI-U)	Unemployment Rate (Percent)	Interest Rate, 91-Day Treasury Bills (Percent)	Interest Rate, 10-Year Treasury Notes (Percent)
	Percent Change, Q4-to-Q4				Level, Calendar Year		
2015 (Actual)	3.0	1.9	1.1	0.4	5.3	0.1	2.1
2016	3.4	1.9	1.5	1.5	4.9	0.3	1.8
2017	4.3	2.4	1.8	2.3	4.7	0.6	2.1
2018	4.3	2.3	1.9	2.3	4.7	1.2	2.7
2019	4.2	2.2	2.0	2.3	4.7	1.8	3.1
2020	4.2	2.2	2.0	2.3	4.8	2.3	3.4
2021	4.2	2.2	2.0	2.3	4.8	2.6	3.5
2022	4.2	2.2	2.0	2.3	4.8	2.7	3.6
2023	4.2	2.2	2.0	2.3	4.8	2.8	3.7
2024	4.2	2.2	2.0	2.3	4.8	2.8	3.7
2025	4.3	2.2	2.0	2.3	4.8	2.8	3.7
2026	4.3	2.2	2.0	2.3	4.8	2.8	3.7
2027	4.3	2.2	2.0	2.3	4.8	2.8	3.7

Note: Forecast was based on data available as of November 9, 2016. The interest rate on 91-day T-bills is measured on a secondary-market discount basis.
Source: Forecast was done jointly with the Council of Economic Advisers, the Department of the Treasury, and the Office of Management and Budget.

quarters of 2017, 2018, and 2019, respectively. The growth rates slightly exceed the Administration's estimated rate of potential real GDP growth over the long run of 2.2 percent a year based on the view that some limited slack remains in the economy. As a consequence of growth being slightly above the long-run trend over the next two years, the unemployment rate is likely to temporarily fall from its 4.9 percent rate in 2016:Q3 to 4.6 percent in 2017:Q4. The unemployment rate is expected to return to the administration's estimate of 4.8 percent for the rate of unemployment consistent with stable inflation in 2019:Q4. The price index for GDP, which increased just 1.3 percent during the four quarters through 2016:Q3, is expected to slowly creep up, reaching 2.0 percent in 2019, a rate that is roughly consistent with the Federal Reserve's 2-percent target for the PCE price index.

Nominal interest rates are currently low because of forces that have led to a reduction in expected long-run interest rates and wounds that have not fully healed from the last recession, while monetary policy has

kept rates low across a wide range of debt securities with long maturities. Consistent with the Federal Reserve's forward policy guidance at the time of the forecast, long-term interest rates are projected to rise. Eventually, real interest rates (that is, nominal rates less the projected rate of inflation) are predicted to move toward, but still remain well below, their historical average. These interest-rate paths are close to those projected by the consensus of professional economic forecasters. During the past several years, consensus forecasts for long-term interest rates and long-term economic growth have fallen, reflecting changes in views on productivity, demographics, the term premium, and global saving and investment behavior.

GDP Growth over the Long Term

As discussed earlier, the long-run growth rate of the economy is determined by the growth of its supply-side components, including those governed by demographics and technological change. The growth rate that characterizes the long-run trend in real U.S. GDP—or potential GDP—plays an important role in guiding the Administration's long-run forecast. After a brief period of above-trend growth in 2017 and 2018, real output growth shifts down to its long-term trend rate of 2.2 percent a year. These growth rates are slower than historical averages mostly because of the aging of the baby-boom generation into the retirement years and because of slower growth of the working-age population (Box 2-5).

The long-run potential GDP growth rate is 0.5-percentage point higher than the growth rate that would be expected if current law is unchanged. Specifically, the forecast assumes the President's policies, including substantial investments in transportation infrastructure, business tax reform, universal preschool (and other policies to boost female labor force participation), free community college, reforms to the immigration system, policies to expand cross-border trade, and approximately $2 trillion in deficit reduction (Box 2-9). A different set of policy assumptions would lead to different assumptions for potential GDP growth.

The potential real GDP projections are based on the assumption that the President's full set of policy proposals, which would boost long-run output, are enacted (Box 2-9).

Table 2-2 shows the Administration's forecast for the contribution of each supply-side factor to the growth in potential real GDP: the working-age population; the rate of labor force participation; the employed share of the labor force; the length of the workweek; labor productivity; and the difference between productivity growth for the economy as a whole and the

Box 2-9: Policy Proposals to Raise Output over the Next-Ten Years

The Administration has a wide-ranging and robust economic agenda that, if enacted, would expand the labor force and boost productivity. In line with long-standing precedent, the Administration's economic forecast incorporates the impact of the President's policy proposals. CEA estimates that, in total, these proposals would add over 5 percent to the level of output in 2027. As a result of including policy assumptions, the Administration's forecast for the level of output in 2027 is about 2 percent higher than the forecasts from both the Congressional Budget Office and the Blue Chip consensus panel, as well as about 4 percent higher than the median forecast from the Federal Open Market Committee.

Immigration reform. The policy proposal with the largest effect on output is immigration reform, as embodied in the bipartisan Border Security, Economic Opportunity, and Immigration Modernization Act that passed the U.S. Senate in June 2013. CBO (2013a) estimated that this legislation, if enacted, would raise the level of real GDP by 3.3 percent after 10 years. Immigration reform would benefit the economy by counteracting the effects of an aging native-born population, attracting highly skilled immigrants that engage in innovative or entrepreneurial activities, and enabling better job-matching for currently undocumented workers who are offered a path to citizenship. Much of the overall effect is due to an expanded workforce. However, 0.7 percentage point of the total effect from immigration reform is due to increased total factor productivity, and this is reflected in the Administration's economic forecast.

Policies to expand cross-border trade and investment. The other set of policies with a large effect on output are a number of international agreements that would boost cross-border trade and investment, including the Trans-Pacific Partnership (TPP), the Transatlantic Trade and Investment Partnership (TTIP), an expansion of the Information Technology Agreement (ITA), and a Trade in Services Agreement (TISA). A new study supported by the Peterson Institute for International Economics (Petri and Plummer 2016) finds that TPP could raise U.S. real income by 0.5 percent in 2030. The European Commission (2013) estimates a roughly similar effect of TTIP on the U.S. economy, an increase of 0.4 percent in GDP in 2027. In addition, if TPP does not pass, the United States would also face trade diversion and enjoy less market access compared with other countries such as China. The Regional Comprehensive Economic Partnership, a trade agreement that involves China, Japan, and other fast-growing Asian economies, will provide its member countries with improved market access, putting U.S. exporters at a disadvantage (CEA 2016c).

Investments in surface transportation infrastructure. The Administration recognizes that investments in infrastructure support economic growth by creating jobs, and boosting productivity, and strengthening the manufacturing sector. In December 2015, the bipartisan Fixing America's Surface Transportation Act (H.R. 22), which authorizes $226.3 billion in budget authority for Federal-aid highway programs over five years, was enacted into law. This funding is an important down payment, but the country must further transform our transportation system to achieve a cleaner, safer transportation future. The President's FY 2017 budget calls for $32 billion a year over 10 years to support innovative programs that make our communities more livable and sustainable. The IMF (2014) estimates that, given the current underutilization of resources in many advanced economies, a 1-percent-of-GDP permanent increase in public infrastructure investment could help increase output by as much as 2.5 percent after 10 years.

Policies to boost labor force participation. The Administration has pursued policies that enable all workers to participate in the labor force to their full potential by making it easier for workers to balance career and family responsibilities. The Administration's FY 2017 budget calls to triple the maximum child care tax credit to $3,000 for children younger than 5, while enabling more middle-class families to receive the maximum credit. In addition, every year since 2013, the President has proposed a Federal-State partnership that would provide all 4-year olds from low- and moderate-income families with access to high-quality preschool. Finally, the budget calls to provide technical assistance to help states implement and develop paid parental leave programs. These policies would increase labor force participation and the level of output.

Policies to make college affordable. The Administration is committed to making college affordable. The budget includes $61 billion over 10 years to make the first two years of community college tuition free for responsible students through a Federal-State cost sharing partnership. This plan would increase America's human capital and productivity by enabling 2 million people who would not have enrolled in college to earn an associate's degree.

Business tax reform. President Obama's framework for business tax reform issued in 2012 sets out a series of changes that would strengthen the economy in three main ways. First, by lowering average tax rates, the President's plan would boost investment in the United States. Second, by moving to a more neutral tax system, the proposals would result in a more efficient allocation of capital. And third, to the degree the new system better addresses externalities, for example with a more generous research and development credit, it would also increase

total factor productivity and therefore growth. (See Chapter 5 of the 2015 Report for a discussion of the economic benefits of business tax reform.)

Deficit reduction. CBO's (2013b) analysis of the macroeconomic effects of alternative budgetary paths estimates that a hypothetical $2 trillion in primary deficit reduction over 10 years raises the long-term level of real GDP by 0.5 percent. This effect arises because lower Federal deficits translate into higher national saving, lower interest rates and, in turn, greater private investment. The Administration's FY 2017 budget proposal includes $2.9 trillion in primary deficit reduction relative to the Administration's plausible baseline. Results of CBO's methodology would raise the level of output in 2027 by 0.6 percent.

Other Policies. Numerous other policies—ranging from policies to increase competition to increasing innovation or spurring green energy development might also raise growth over time, but are not explicitly modeled in the budget forecast.

(Note, to be consistent with previous Administration forecasts the portion of growth due to the workforce effects of immigration reform are not incorporated in the forecast or the underlying detail, for example in Table 2.1. Excluding this component, the policies add 3 percent to the level of output in 2027.)

nonfarm business sector. The two columns of Table 2-2 show the average annual growth rate for each factor during a long period of history and over the forecast horizon. The first column shows the long-run average growth rates between the business-cycle peak of 1953 and the latest quarter available when the forecast was finalized (2016:Q3). Many of these variables show substantial fluctuations within business cycles, so that long-period growth rates must be examined to uncover underlying trends. The second column shows average projected growth rates between 2016:Q3 and 2027:Q4; that is, the entire 11¼-year interval covered by the Administration forecast.

The population is projected to grow 1.0 percent a year, on average, over the projection period (line 1, column 2), following the latest projection from the Social Security Administration. Over this same period, the labor force participation rate is projected to decline 0.4 percent a year (line 2, column 2). This projected decline in the labor force participation rate primarily reflects a negative demographic trend deriving from the aging of the baby-boom generation into retirement. During the next couple of years, however, rising labor demand due to the continuing business-cycle recovery is expected to offset some of this downward trend.

The employed share of the labor force—which is equal to one minus the unemployment rate—is expected to remain roughly constant during the

Table 2-2

Supply-Side Components of Actual and Potential Real Output Growth, 1953–2027

	Component	Growth rate[a]	
		History	Forecast
		1953:Q2 to 2016:Q3[b]	2016:Q3 to 2027:Q4
1	Civilian noninstitutional population aged 16+	1.4	1.0
2	Labor force participation rate	0.1	-0.4
3	Employed share of the labor force	-0.0	0.0
4	Ratio of nonfarm business employment to household employment	-0.0	0.0
5	Average weekly hours (nonfarm business)	-0.2	0.0
6	Output per hour (productivity, nonfarm business)[c]	2.0	1.9
7	Ratio of real GDO to nonfarm business output[c]	-0.2	-0.3
8	Sum: Actual real GDO[c]	3.0	2.2
	Memo:		
9	Potential real GDO[d]	3.1	2.2
10	Output per worker differential: GDO vs nonfarm[e]	-0.2	-0.3

[a] All contributions are in percentage points at an annual rate, forecast finalized November 2016. Total may not add up due to rounding.

[b] 1953:Q2 was a business-cycle peak. 2016:Q3 is the latest quarter with available data.

[c] Real GDO and real nonfarm business output are measured as the average of income- and product-side measures.

[d] Computed as (line 8) - 2 * (line 3).

[e] Real output per household-survey worker less nonfarm business output per nonfarm business worker. This can be shown to equal (line 7) - (line 4).

Note: GDO is the average of GDP and GDI. Population, labor force, and household employment have been adjusted for discontinuities in the population series. Nonfarm business employment, and the workweek, come from the Labor Productivity and Costs database maintained by the Bureau of Labor Statistics.

Source: Bureau of Labor Statistics, Current Population Survey, Labor Productivity and Costs; Bureau of Economic Analysis, National Income and Product Accounts; Department of the Treasury; Office of Management and Budget; CEA calculations.

next 11 years because as the 2016:Q3 unemployment rate (4.9 percent) is only slightly higher than the 4.8 percent rate at which the rate of unemployment eventually stabilizes. The workweek is projected to be roughly flat during the forecast period, an improvement relative to its long-term historical trend growth of a 0.2-percent-a-year decline. The workweek is expected to stabilize because some of the demographic forces pushing it down are largely exhausted, and because a longer workweek is projected to compensate for the anticipated decline in the labor force participation rate in what will eventually become an economy with a tight labor supply.

Labor productivity is projected to increase 1.9 percent a year over the entire forecast interval (line 6, column 2), slightly less than the same as the average growth rate from 1953 to 2015 (line 6, column 1). Productivity

tends to grow faster in the nonfarm business sector than for the economy as a whole, because productivity in the government and household sectors of the economy is presumed (by a national-income accounting convention) not to grow (that is, output in those two sectors grows only through the use of more production inputs). The difference in these growth rates is expected to subtract 0.3 percentage point a year during the 11-year projection period, similar to the 0.2-percent-a-year decline during the long-term historical interval (line 10, columns 1 and 2). This productivity differential is equal to the sum of two other growth rates in the table: the ratio of nonfarm business employment to household employment (line 4) and the ratio of real GDP to nonfarm business output (line 7).

Summing the growth rates of all of its components, real GDP is projected to rise at an average 2.2 percent a year over the projection period (line 8, column 2), the same as the annual growth rate for potential real GDP (line 9, column 2). Actual GDP is expected to grow faster than potential GDP only in 2017 and 2018, and by a small margin that is invisible in the long-term averages shown in the table.

As noted earlier, but shown in more detail in this table, real potential GDP (line 9, column 2) is projected to grow more slowly than the long-term historical growth rate of 3.1 percent a year (line 9, column 1), primarily due to the lower projected growth rate of the working-age population and the retirement of the baby-boom cohort.

Upside and Downside Forecast Risks

Like any forecast, the Administration's economic forecast comes with possible errors in either direction, and several are worth enumerating here. One upside risk is from the homebuilding sector, which has some upside potential given the current low level of homebuilding relative to historic trends and its potential for increase. Additionally, labor force participation could continue to grow as it has this year, after decades of decline in participation among prime-age workers (Box 2-3). On the downside, it appears that global growth may remain sluggish and global trade growth has slowed dramatically, which may slow the growth of exports and investment. In addition, financial market developments—either reflecting spillovers from abroad or U.S.-specific issues—also pose downside risks. Over the longer-run, there are some downside risks to the estimate of potential output growth insofar as recent low productivity growth rates might continue.

Conclusion

The economy continued to strengthen during 2016, especially in the labor market with robust employment gains and continued declines in unemployment. Job growth continued to exceed the pace needed to maintain a steady unemployment rate (given that labor force participation is trending down with demographics). That job growth, along with solid wage growth, combined to generate rising household incomes and improving living standards. The American economic recovery has outpaced most of the other advanced economies and left a national economy well-prepared for continued resilience. The United States has domestic strengths, especially in the household sector, that have the potential to support continued solid growth in 2017—but at the same time, we face a set of challenges associated with the slowing global economy.

Looking ahead, some of the most important decisions that we make as a Nation are the structural policies that influence long-term growth and how it is shared. The President's FY 2017 budget set forth a number of policies that could be expected to increase the level or long-term growth rate of potential GDP. As the economy has approached its long-run natural rate of unemployment, it is these long-term structural policies that could lift growth and sustain long-term prosperity for a greater share of Americans.