Chapter 1

The Great Expansion

Two years since the Tax Cuts and Jobs Act (TCJA) was signed into law, and buttressed by the Administration's probusiness deregulation policy and support for innovative energy infrastructure, the U.S. economy continues expanding at a healthy pace, as predicted by the 2018 and 2019 volumes of the *Economic Report of the President*. As of December 2019, the U.S. economic expansion reached its 127th month, the longest in the Nation's history.

This chapter shows that, despite headwinds from the global economy and the maturing length of the expansion, the U.S. economy remains resilient. As a result, it grew at the fastest rate among the Group of Seven countries in the first three quarters of 2019. During 2019, several macroeconomic indicators—including consumer spending, productivity, and labor shares of income—continued to grow at faster rates than pre-TCJA projections. The labor market also tightened further, even after strong gains in the previous two years. During 2019, the unemployment rate hit a 50-year low and, for the first time on record, job openings exceeded job seekers, which have helped pull potential workers from the sidelines and into the labor force. Wages rose faster than inflation, which ultimately boosted real middle-class incomes. After years of decline, the labor force participation rate stabilized because of increased prime-age participation, which also boosts long-term potential output.

The tepid recovery from the Great Recession prompted economic forecasters in 2016 to project historically modest growth into the future. Many observers concluded that low growth would persist indefinitely. However, the experience of the first three years of the current Administration proves that a prolonged period of low growth was in fact far from inevitable. This increased growth

has coincided with Administration policies favoring lower taxes, substantial deregulation, and pro-innovation energy policy. The CEA forecasts that there is substantial additional room to grow—given the historically strong labor market, the potential for further deregulation, and the supply-side impact of TCJA on long-term growth.

A fter growing briskly in 2017 and 2018, the U.S. economy continued to expand at a healthy pace in 2019. During the year's four quarters, real gross domestic product (GDP) moderated to 2.3 percent at an annual rate, from its 2.5 percent pace in 2018. This growth rate is notable considering the maturing length of the current expansion and that it was achieved despite headwinds from a slowing global economy. As of December, the U.S. economy marked the 127th month and the 42nd consecutive quarter of expansion (figure 1-1), surpassing the longest U.S. expansion, which ended in March 2001 after 120 months or 40 quarters.

The U.S. economy is currently operating with a strong labor market and subdued inflationary pressure. Evidence of the strength of the labor market can be observed across many indicators. The U.S. unemployment rate was 3.5 percent as of December 2019, a 50-year low previously hit in September and November 2019. Nominal average hourly earnings increased 2.9 percent during the 12 months of 2019, but had been at or above 3 percent for the prior 16 consecutive months. The tightness of the labor market and rising demand for workers have continued to pull people from outside of the labor force into the labor market, increasing the labor force participation rate to 63.1 percent for the year as a whole, up 0.2 percentage point from a year earlier. Specifically, the prime-age adult (25–54 years) participation rate increased to 82.5 percent during these 12 months, the fourth year of increases after years of decline since 2008. During the 12 months of 2019, the U.S. economy added 2.1 million nonfarm jobs, averaging 176,000 jobs per month.

Despite the strong labor market, core consumer price inflation was subdued, at 1.6 percent in 2019 (as measured by the price index for core personal consumption expenditures, PCE). Because nominal disposable personal income grew faster than inflation, real disposable personal income grew at a 2.6 percent annual rate during the four quarters of 2019. For the median household, real income rose by $1,834 in the first 10 months of 2019, reaching the highest level on record, at about $66,500 in 2019 dollars (Green and Coder 2019). In addition to rising real income, household wealth surged as stock market valuations rose to new heights in 2019.

An increase in real household income and wealth has supported consumer spending, which constitutes 70 percent of GDP. In the four quarters of

Figure 1-1. Real GDP per Working-Age Population by Expansion Period, 1960–2019

Index (100 = real GDP per working-age population at the quarterly business-cycle trough)
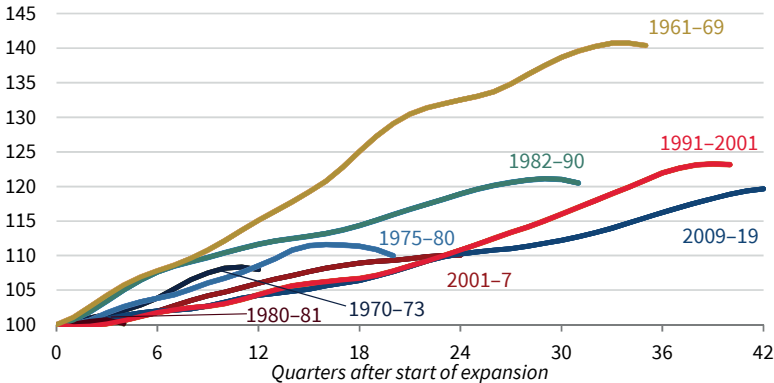
Sources: Bureau of Economic Analysis; National Bureau of Economic Research; Census Bureau; CEA calculations.
Note: The working-age population refers to those age 25–64 years. Series are smoothed using a four-quarter, centered moving average. Quarterly population estimates are interpolated from annual data.

2019, real consumer spending maintained the 2.6 percent pace of 2018, and accounted for nearly 80 percent of real GDP growth. Government purchases have also supported aggregate demand, rising 3.0 percent during 2019, compared with 1.5 percent in 2018.

Although American consumers have sustained the U.S. expansion, a general slowdown in the global economy has restrained U.S. growth. The Group of Seven (G7) countries' economies slowed sharply in the past year; in particular, real GDP growth in Germany and the United Kingdom contracted in 2019:Q2. Major emerging market economies such as China and India also experienced slowdowns. These countries' slowdowns reduced global aggregate demand, which dampened U.S. economic growth.

Despite the headwinds from abroad, the U.S. economy was the fastest-growing in the G7 in the first three quarters of 2019. The United States was one of only two G7 countries (the other being Japan, where projected growth was a moribund 0.9 percent) that did not require the International Monetary Fund to make large downward revisions to its one-year-ahead growth projections for 2019 (IMF 2018, 2019c), whereas the other advanced countries saw large downward revisions.

Moreover, growth in the U.S. economy, for the third consecutive year, exceeded the consensus real GDP growth projection made before the 2016 election, as well as projections made before the 2017 TCJA. Three years ago, a widespread belief among economic forecasters was that subpar growth in the

Figure 1-2. Real GDP Growth Relative to Pre–November 2016 Projections, 2017–19
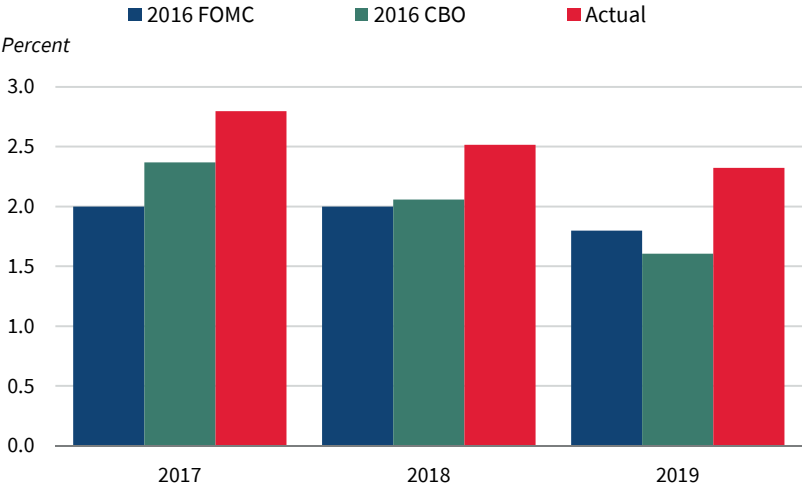

Sources: Congressional Budget Office, August 2016 Baseline Forecast; Federal Open Market Committee, September 2016; Bureau of Economic Analysis; CEA calculations.
Note: FOMC = Federal Open Market Committee; CBO = Congressional Budget Office. Q4-over-Q4 growth rates are used.

U.S. economy will be permanent, with one of the more prominent explanations being secular stagnation.[1] This pessimism was reflected in the modest growth projections by outside forecasters at the time. In 2016, the Federal Open Market Committee (FOMC) forecast real GDP over the four quarters of 2019 to be 1.8 percent, while the Congressional Budget Office (CBO) forecast real GDP growth of just 1.6 percent over the same period (see figure 1-2). The 2.3 percent real GDP growth during 2019 surpassed these forecasts. Similarly, actual real GDP growth in 2017 and 2018 surpassed preelection projections from the FOMC and the CBO. Relative to the 2016 real GDP projections by the Blue Chip panel of private professional forecasters, the annual level of U.S. real GDP in 2019 was 1.2 percent higher (figure 1-3).

Although the strong growth was a surprise relative to pre-2017 forecasts by the FOMC, the CBO, and the Blue Chip consensus panel, it was largely anticipated by the current Administration. In May 2017, the Administration forecasted average annualized growth over the three years 2017–19 to be 2.5 percent; subsequently the Administration revised 2018 and 2019 forecasts up to 3.1 percent, which was deemed optimistic and unrealistic compared with external forecasts. The optimism of the CEA's forecasts was grounded

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[1] Hansen (1939) was the first to put forward this concept, which was popularized by Summers (2013, 2014, 2016) and more recently by Rachel and Summers (2019). Specifically, Summers argued that when neutral real interest rates fall to an abnormally low level because of decreasing propensity to invest but increasing propensity to save, and are below nominal interest rates, the resultant excessive savings would act as a persistent drag on demand and growth.

Figure 1-3. Actual versus Consensus Projections of Real Gross Domestic Product, 2014–19
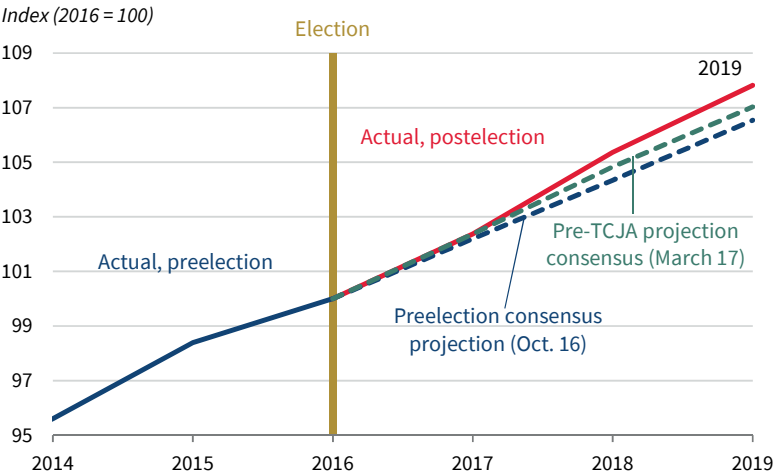
Index (2016 = 100)

Sources: Bureau of Economic Analysis; CEA calculations.
Note: Consensus forecasts from the October 2016 and March 2017 issues of *Blue Chip Economic Indicators* begin with 2017 growth for levels implied by year-over-year forecasts.

in the expectation that the Administration's tax policies and deregulatory policies would have a more positive effect than projected by others. In the 2018 *Economic Report of the President*, the CEA drew on an extensive body of academic literature to predict that tax reform would raise real capital investment and the growth rate of output. In the 2019 *Report*, we reviewed data through 2018:Q3 showing that the U.S. economy's responses along multiple margins were consistent with predictions from that academic literature. Over the 12 quarters through 2019:Q4, the actual average annual growth rate of real GDP was 2.5 percent, slightly outpacing the May 2017 forecast, and an increase compared with the 2.2 percent average annual growth rate over the 26-quarter expansion period from 2009:Q3 through 2016:Q4 (see figure 1-4). As figure 1-5 shows, the average absolute errors of the ex-ante Administration forecasts under the current Administration were the lowest among those of the last five administrations.
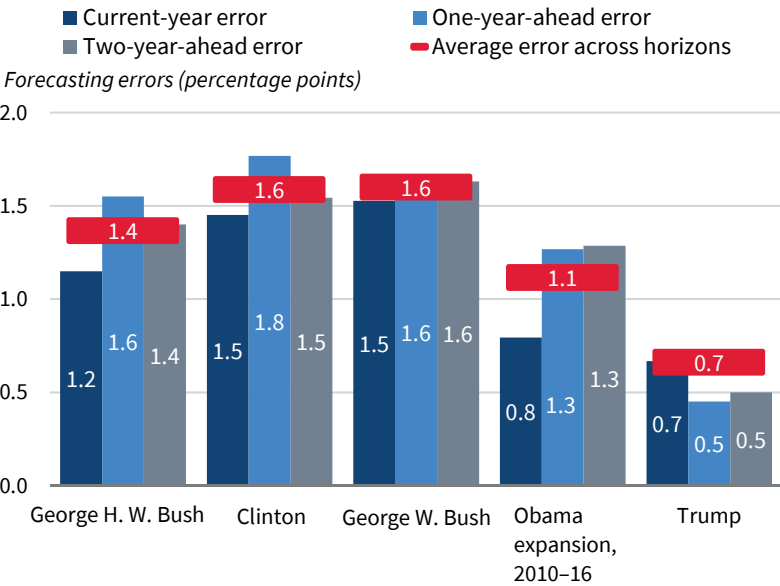
The Trump Administration adopted structural reforms and policies that were designed to support continued U.S. economic growth. The TCJA, which was enacted on December 22, 2017, permanently reduced the statutory corporate tax rate from 35 to 21 percent, sharply lowering the user cost of capital. It also enabled 100 percent expensing of new equipment investment, retroactive to September 27, 2017 (the date of the first draft of the proposed tax legislation that included the 100 percent expensing provision from the House Ways and Means Committee). The international provisions of the TCJA, specifically

Figure 1-4. Length and Depth of U.S. Expansions and Contractions, 1949–2019

Annual growth rate (percent)
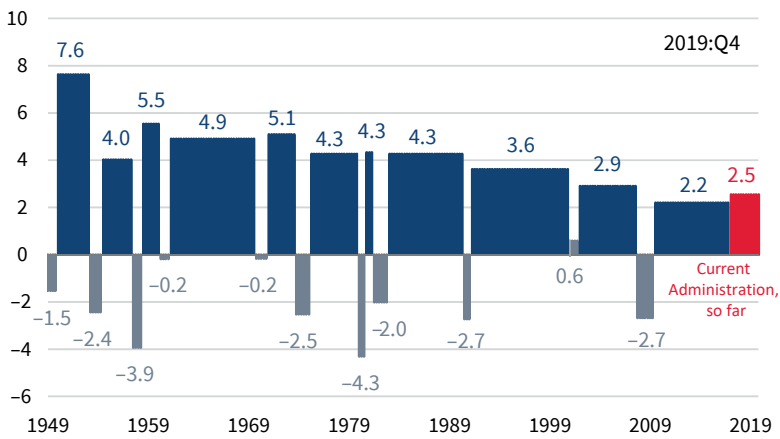
Sources: Bureau of Economic Analysis; National Bureau of Economic Research; CEA calculations.
Note: Values represent the change in real GDP as an annual growth rate for each quarterly expansion and contraction period, as defined by the National Bureau of Economic Research.

Figure 1-5. Average of Absolute Troika Forecasting Errors, by Horizon and Administration

- ■ Current-year error
- ■ One-year-ahead error
- ■ Two-year-ahead error
- ■— Average error across horizons

Forecasting errors (percentage points)

Sources: Federal Reserve Bank of Saint Louis (FRED); CEA calculations.
Note: Budget forecasts and Q4-over-Q4 growth rates were used to evaluate errors.

the change in the tax treatment of earnings from foreign affiliates (CEA 2019b), led to repatriation of past overseas earnings of U.S. multinationals in low-tax jurisdictions, as evidenced by the $1.04 trillion capital inflows from direct investment income on equity from dividends and withdrawals since 2017:Q4. The alterations in the tax treatment of foreign affiliates came in two parts: one for past earnings (a one-time transition tax at a low rate on past earnings held overseas), and one for future foreign-subsidiary earnings (eliminating the tax on normal repatriated dividends).

Businesses responded to the lower user cost of capital and geographical incentives under the TCJA with an increase in domestic investment. This investment led to capital deepening, increasing capital services per unit of labor input, which raised labor productivity, real wages, and U.S. real output. In addition, as discussed in more detail in chapter 3 of this *Report*, the Administration's deregulatory agenda also helped lower prices, from Internet prices to drug prices, and increased real income for American households. The 2018 Bipartisan Budget Act also increased government spending, raising aggregate demand. The combination of these factors lays the foundation for continued prosperity in the future.

As the current record expansion matures beyond the 42nd quarter, some worry that the expansion will "die of old age." But evidence suggests that expansions do not end simply because of their length. A study by Diebold and Rudebusch (1990) was among the first to find that in the postwar period, the probability of an expansion coming to an end was not increasing in the age of the expansion. In a follow-up study, Rudebusch (2016) provided empirical evidence that long expansions during the past 70 years are "no more likely to end than short ones." Australia's economy, which has experienced the longest expansion of any advanced economy in modern history, at 28 years, exemplifies how expansions can continue for decades. Old age does not kill expansions, though bad policies and adverse shocks can lead to recessions.

The remainder of this chapter provides evidence on the strength of different areas of the U.S. economy in the recent past, including: productivity, wages and income, consumer spending, employment, investment, and subdued inflation. The chapter also discusses the impact of the global economic downturn, monetary policy, and domestic factors slowing U.S. growth.

Productivity

Productivity growth is a key driver of long-term real output growth. Labor productivity in the post-TCJA period, 2018:Q1–2019:Q3, increased at an average annual pace of 1.4 percent—in particular, it picked up to 1.9 percent in the three quarters through 2019:Q3, a faster pace than the average growth rate

Figure 1-6. Nonfarm Business Sector Labor Productivity Growth, 2009–19
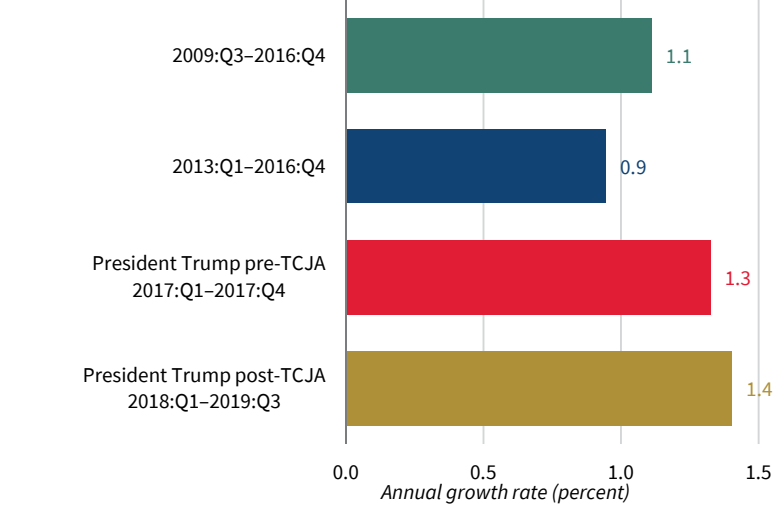
Sources: Bureau of Labor Statistics; CEA calculations.
Note: The annual growth rate is calculated for real output per hour of all persons in the nonfarm business sector.

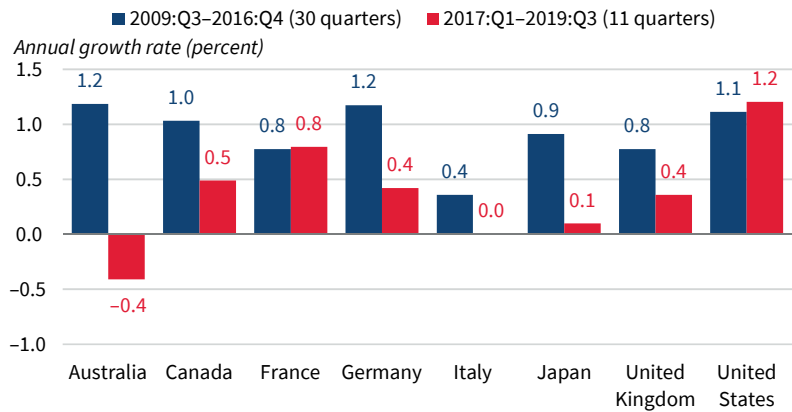of 1.1 percent in the pre-TCJA economic expansion period 2009:Q3–2016:Q4 (figure 1-6).[2]

Academic research suggests at least two channels through which the current Administration's policies can increase labor productivity. The first is through deregulatory actions pursued since the end of 2016 that have increased competition and productivity (CEA 2019a). The second channel is through capital deepening in response to a lower cost of capital under the TCJA. By raising investment, capital services per worker rises and, as a result, so does labor productivity (CEA 2019b). Since the passage of the TCJA, capital services have grown faster than projected by outside forecasters.[3]

Comparing the performance of the U.S. economy with other advanced economies provides another instructive benchmark. Since the start of the current Administration and through 2019:Q3 (the latest quarter available for all G7 countries as of the date of writing), U.S. productivity growth, as measured by output per worker, notably outperformed that of other countries (figure 1-7).

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[2] Comparisons can be made with other subperiods in the past. Excluding the contractionary periods during the Great Recession, labor productivity grew at just a 1.1 percent compound annual rate during the period 2009:Q3–2016:Q4.

[3] Actual capital services grew at an annual rate of 3.2 percent over the two years after passage of the TCJA, compared with 2.9 percent as projected by Macroeconomic Advisers in October 2017, and 3.1 percent projected by Blue Chip Econometric Detail in February 2018. With a slightly different accounting method, the CBO also expected overall capital services to grow at 2.3 percent, compared with the actual annual growth rate of 2.7 percent.

Figure 1-7. Growth in Real GDP per Employed Person among the Advanced Economies, 2009–19

■ 2009:Q3–2016:Q4 (30 quarters) ■ 2017:Q1–2019:Q3 (11 quarters)

Annual growth rate (percent)

Country	2009:Q3–2016:Q4	2017:Q1–2019:Q3
Australia	1.2	−0.4
Canada	1.0	0.5
France	0.8	0.8
Germany	1.2	0.4
Italy	0.4	0.0
Japan	0.9	0.1
United Kingdom	0.8	0.4
United States	1.1	1.2

Sources: Australian Bureau of Statistics; Statistics Canada; Institut national de la statistique et des études économiques; Deutsche Bundesbank; Istituto Nazionale di Statistica; Japan Cabinet Office; U.K. Office for National Statistics; Bureau of Economic Analysis; Bureau of Labor Statistics; Haver Analytics; CEA calculations.
Note: Values represent an annual growth rate calculated over the given quarters. Growth rates are based on real GDP divided by seasonally adjusted employment. Employment includes goverment employees.
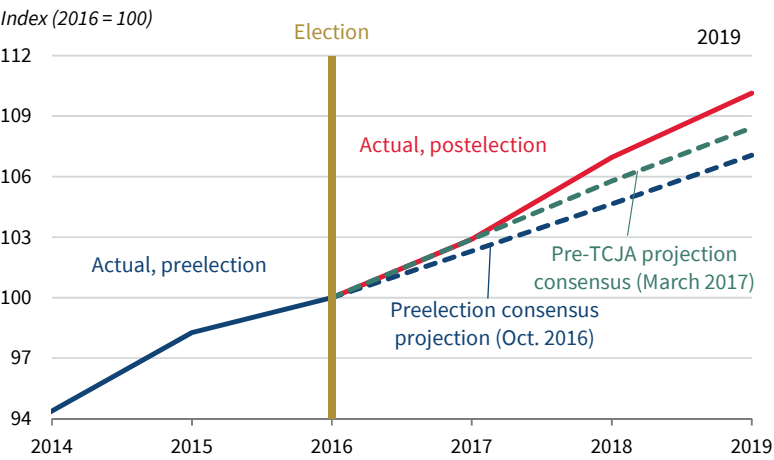
While U.S. labor productivity, as measured by output per employed person for cross-country consistency, grew at a compound annual rate of 1.2 percent during this period, the average growth rate among non-U.S. G7 member countries and Australia was just 0.3 percent.

Another striking observation is that the United States is the only economy among this group of advanced economies to experience an acceleration in labor productivity. As noted in the 2017 *Economic Report of the President*, from 2005 to 2015 all G7 countries experienced a sharp decline in labor productivity growth from the 10 earlier years, due to slowdowns in both capital deepening and total factor productivity (CEA 2017). Figure 1-7 shows the later of these periods, with the inclusion of 2016, when labor productivity growth in the United States was similar to that in the other G7 countries (plus Australia). In the 11 quarters since that period, productivity growth has been flat or falling in all these advanced economies, while productivity growth has risen in the United States.
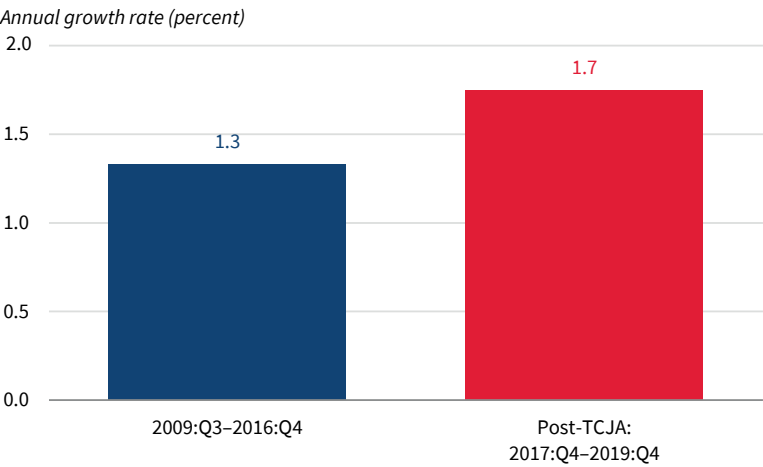
Wages and Income

In traditional economic models, equilibrium in the labor market requires that nominal hourly compensation equals the marginal product of labor. Although real output per unit of labor is a measure of the average instead of the marginal product, the measure is a convenient proxy for the marginal product.

Figure 1-8. Actual versus Consensus Projections for Real Disposable Personal Income, 2014–19

Index (2016 = 100)

Election

2019

112

109

106

103

100

97

94

Actual, postelection

Actual, preelection

Pre-TCJA projection consensus (March 2017)

Preelection consensus projection (Oct. 2016)
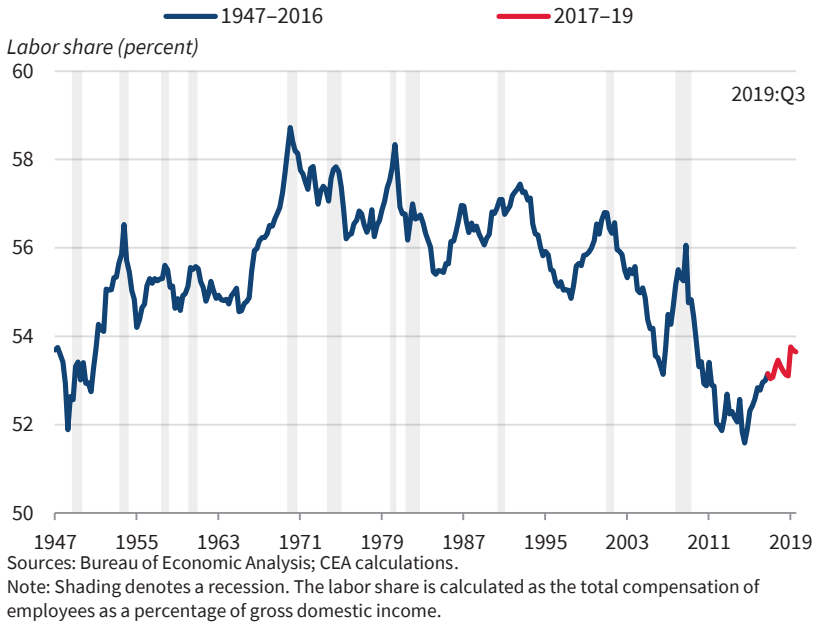
2014   2015   2016   2017   2018   2019

Sources: Bureau of Economic Analysis; CEA calculations.
Note: Consensus forecasts from the October 2016 and March 2017 issues of *Blue Chip Economic Indicators* and begin with 2017 growth for levels implied by year-over-year forecasts.

Figure 1-9. Growth of Real Disposable Personal Income per Household, 2009–19

Annual growth rate (percent)

2.0

1.5

1.0

0.5

0.0

1.3

1.7

2009:Q3–2016:Q4

Post-TCJA: 2017:Q4–2019:Q4

Sources: Bureau of Economic Analysis; Census Bureau; CEA calculations.
Note: Values represent growth at an annual rate over the given quarters. Households are measured from the Census Bureau's housing database as the break-adjusted total number of households.

Figure 1-10. Labor Share of Income, 1947–2019

Sources: Bureau of Economic Analysis; CEA calculations.
Note: Shading denotes a recession. The labor share is calculated as the total compensation of employees as a percentage of gross domestic income.
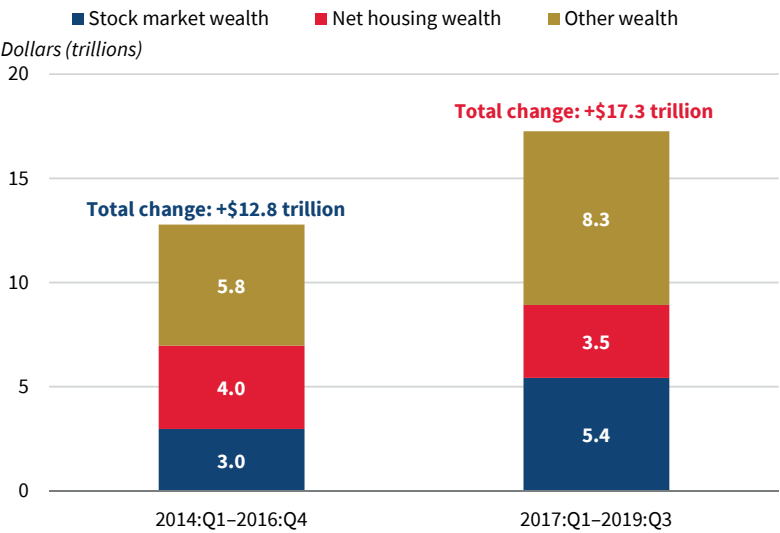
Coincident with the increase in labor productivity growth has been an increase in real average hourly earnings growth, particularly for many disadvantaged groups (see chapter 2 of this *Report*). Real average hourly earnings grew at an annual rate of 1.1 percent during the post-TCJA period and 1.3 percent for nonsupervisory workers, compared with 0.4 percent and 0.5 percent, respectively, in the first seven and a half years of the expansion through 2016:Q4. Real wage growth further picked up for nonsupervisory workers, to 1.4 percent in the four quarters of 2019, as the labor market continued to heat up.

The net tax savings from the TCJA—from a combination of increasing standard deductions, lowering marginal rates, and doubling the child tax credit—is also expected to boost real disposable income. In its pre-TCJA projections (March 2017), the Blue Chip consensus panel forecasted that real disposable personal income would grow at an average of 2.65 percent during 2018 and 2019; in actuality, it grew at a 3.5 percent rate (figure 1-8), well above the consensus forecast and well above the 2.1 percent average annual growth rate over the period 2009:Q3–2016:Q4. A similar pattern is observed on a per-household basis, where real disposable personal income per household grew in the post-TCJA period at an annual average rate of 1.7 percent, outpacing the 1.3 percent of the earlier period (figure 1-9).

As income accelerates, labor's share of gross domestic income (GDI) also continues on an upward trajectory. Measuring labor's share as total employee

Figure 1-11. Cumulative Change in Nominal Household and Nonprofit Wealth, 2014–19

■ Stock market wealth　　■ Net housing wealth　　■ Other wealth

Dollars (trillions)

Total change: +$17.3 trillion

Total change: +$12.8 trillion

	2014:Q1–2016:Q4	2017:Q1–2019:Q3
Other wealth	5.8	8.3
Net housing wealth	4.0	3.5
Stock market wealth	3.0	5.4

Sources: Federal Reserve Board (Financial Accounts of the United States); CEA calculations.

compensation as a percentage of GDI, the series partially retraced a multidecade trend decline through 2014. During the 11 quarters through 2019:Q3, it rose a further 0.5 percentage point, to 53.6 percent (figure 1-10).

While labor's share of GDI and real disposable income growth has increased, total household wealth has also increased. The cumulative change in nominal household and nonprofit-sector wealth, as reported by the Federal Reserve's Financial Accounts of the United States, in the first 11 quarters through 2019:Q3 exceeds the cumulative change in the preceding 11 quarters by over $4 trillion (figure 1-11).

Consumer Spending

A more productive workforce with greater disposable income has bolstered overall economic growth. Consumer spending as a share of nominal gross domestic product averaged 67.9 percent during the 10 years through 2018. Given this sizable share of GDP, changes in consumer spending carry substantial contributions to overall real GDP growth. In 2019, real consumer spending grew by 2.6 percent, maintaining the same pace as in 2018. Since the TCJA's passage, real consumer spending has grown 2.6 percent at an annual rate, higher than the 2.3 percent pace during the 7½ years from 2009:Q3 through 2016:Q4, when real consumer spending contributed 1.6 percentage points to real GDP growth. In the 12 quarters through 2019:Q4, real consumer spending

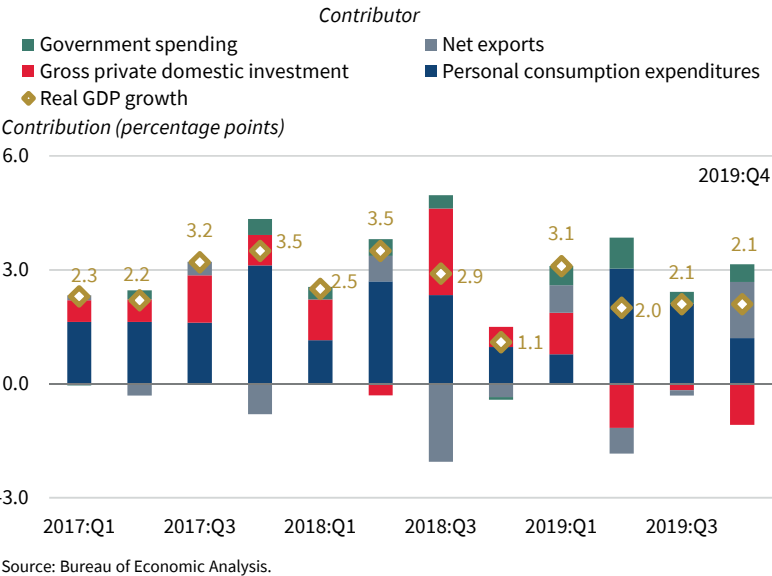**Figure 1-12. Main Contributors to Real GDP Growth, 2017–19**

Contributor

- ■ Government spending
- ■ Net exports
- ■ Gross private domestic investment
- ■ Personal consumption expenditures
- ◆ Real GDP growth

Contribution (percentage points)

Source: Bureau of Economic Analysis.

Figure 1-13. Consumption and Wealth Relative to Disposable Personal Income, 1952–2019

Sources: Federal Reserve; Bureau of Economic Analysis; CEA calculations.
Note: DPI = disposable personal income. Data for 2019:Q4 values are estimated from the latest daily or monthly data. Shading denotes a recession.
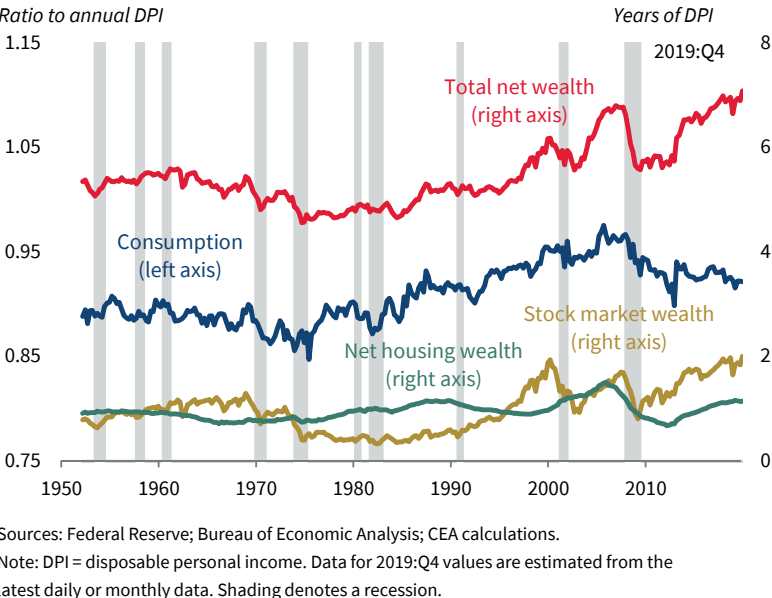
Figure 1-14. Personal Saving Rate, 2000–2019

Percent

Sources: Bureau of Economic Analysis; CEA calculations.
Note: Shading denotes a recession.
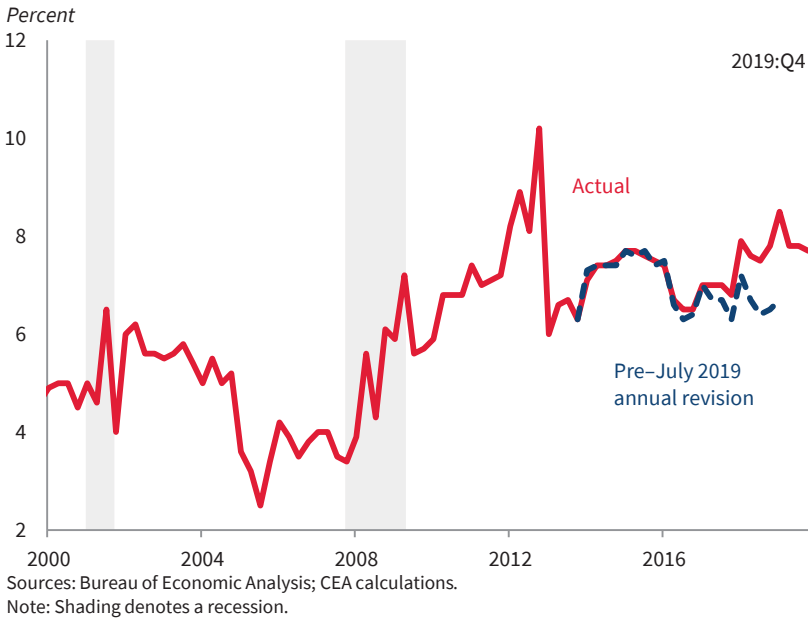
contributed on average 1.9 percentage points to the quarterly real GDP growth rate (figure 1-12).

Gains in household wealth (also known as net worth) have supported the solid growth of real consumer spending during the past three years (figure 1-13), with gains in stock-market wealth and other housing wealth accounting for the increase. Over long-periods, gains in the wealth-to-income ratio are correlated with consumer spending (Poterba 2000; Lettau and Ludvigson 2004). From that point of view, the gains in the wealth-to-income ratio could have supported an even larger increase in consumer spending.

The prospect of future consumer spending supporting overall output growth is strong, given the elevated levels of consumer confidence. The University of Michigan's Index of Consumer Sentiment rose to 97.2 in 2019:Q4—in the middle of the range in which it has fluctuated in the past three years—and is currently 5.4 points above its 2016 level. The Conference Board's version of consumer sentiment fell to 126.5 in 2019:Q4, toward the lower end of the range in which it has fluctuated in the past three years, but is still 26.7 points above 2016. These persistently strong readings for both measures indicate resilient consumer demand, which represents a sizable portion of the U.S. economy, and thus point to its continued support of growth.

Further, personal saving as a share of disposable personal income remains elevated. After notable upward revisions by the Bureau of Economic Analysis in July 2018, as reported in chapter 10 of the 2019 *Economic Report of*

the President, the saving rate was further revised upward in the Bureau's July 2019 annual revision. The personal saving rate during 2019 of 8.0 percent far exceeds the average of the last two decades (figure 1-14). The saving rate has been increasing in the past three years due to the faster increase in personal disposable income relative to the already robust growth in personal outlays. The high saving rate together with elevated levels of household wealth, leave some room for saving to buffer consumer spending against temporary adverse developments in income.

Investment

In the past volumes of the *Economic Report of the President*, the CEA projected that the Tax Cuts and Jobs Act would raise real capital investment on the basis that lowering the user cost of capital would increase the target steady-state flow of capital services; and this projection was based on a substantial body of academic research. Chapter 1 of the 2019 *Economic Report of the President* confirmed these anticipated positive effects with the then–available data up through 2018:Q3. The positive effect of the TCJA on investment was also corroborated by outside studies (Kopp et al. 2019).

During the 9-quarter post-TCJA period, the annual rate of real private nonresidential fixed investment growth averaged 3.4 percent, with growth being faster in the first 4 quarters (6.8 percent) than in the next 5 quarters (0.8 percent).[4] Some moderation of the investment growth rate was anticipated by most models, which predicted that the positive effects on investment and overall economic activity would be front-loaded in 2018 (CEA 2019b; Mertens 2018). In particular, standard neoclassical growth models suggest that during the transition to the new steady state, the rate of growth in fixed investment would initially spike, and would subsequently return to its pre-TCJA trend. Absent other, exogenous shocks, the level would then remain at a higher, post-TCJA level, with the capital-to-output ratio thereby asymptotically approaching its new, higher steady-state level (CEA 2019b).

Figure 1-15 shows that the *level* of investment has been higher throughout the post-TCJA period than the consensus pre-TCJA projections (the March 2017 Blue Chip consensus). In 2018 as a whole, investment was 2.3 percent higher than the consensus projection. In 2019, even with the recent investment slowdown, private nonresidential fixed investment was still 0.8 percent higher than the pre-TCJA consensus projection. Also, compared with other G7 countries, the cumulative increase in investment, or the cumulative addition

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[4] Nine quarters are included in the post-TCJA period because the TCJA's allowance for full expensing of new equipment investment was retroactive to September 27, 2017 (the date of the first draft of the proposed tax legislation that included the full expensing provision from the House Ways and Means Committee).

Figure 1-15. Actual versus Preelection Projections for Nonresidential Private Fixed Investment, 2014–19
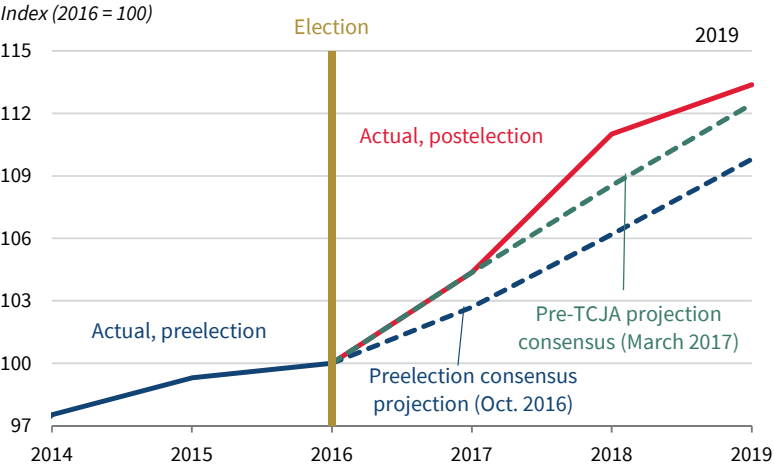
Index (2016 = 100)

Sources: Bureau of Economic Analysis; CEA calculations.
Note: Consensus forecasts from the October 2016 and March 2017 issues of *Blue Chip Economic Indicators* begin with 2017 growth for levels implied by year-over-year forecasts.

Figure 1-16. Cumulative Change in Gross Fixed Private Capital Formation among the Group of Seven Member Countries, 2017:Q4–2019:Q3
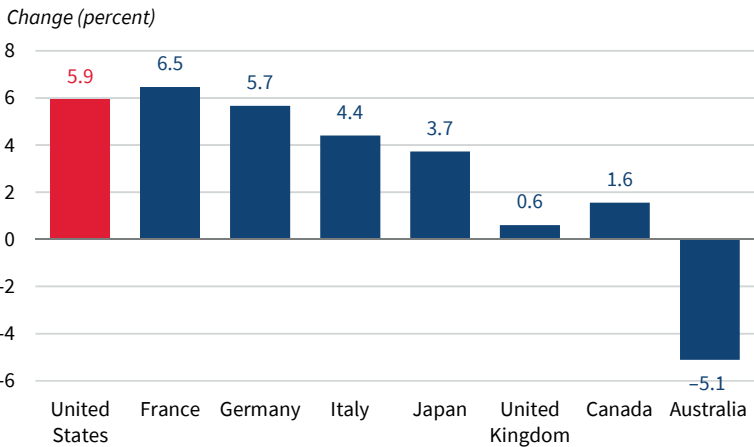
Change (percent)

Sources: Australian Bureau of Statistics; Statistics Canada; Institut national de la statistique et des études économiques; Deutsche Bundesbank; Istituto Nazionale di Statistica; Cabinet Office of Japan; U.K. Office for National Statistics; Bureau of Economic Analysis; CEA calculations.

Figure 1-17. The User Cost of Capital, 2011–19

Index (2017:Q4 = 100)   *Percent*
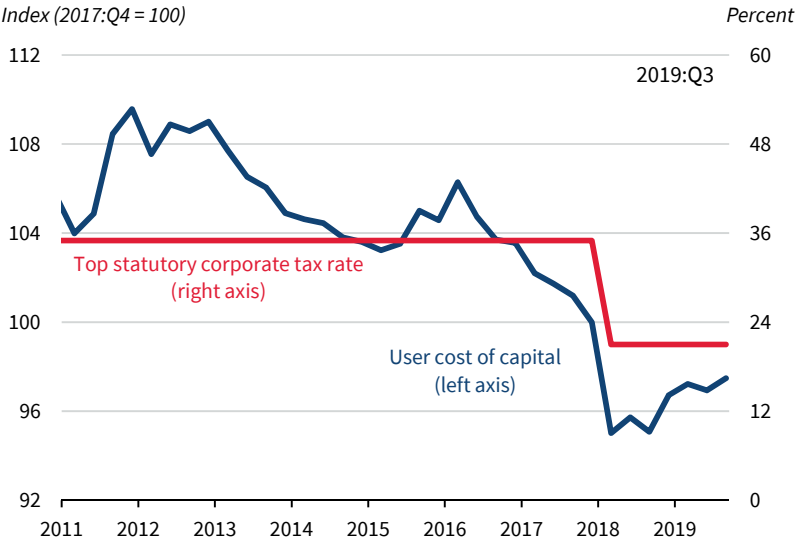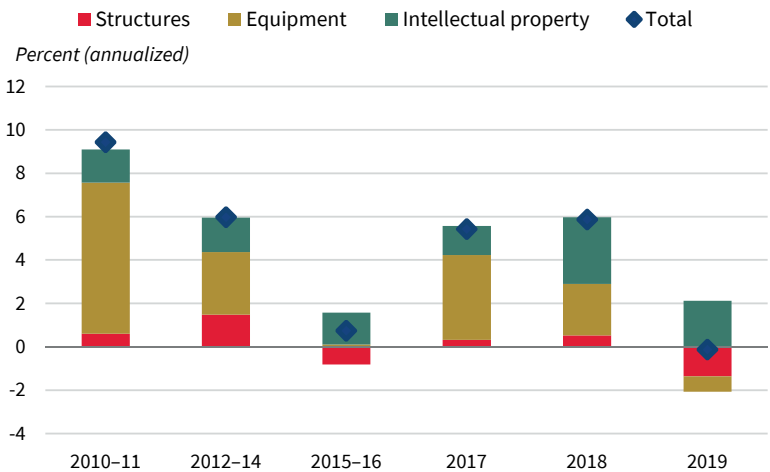
Source: CEA calculations.

to the capital stock, since the TCJA's enactment has been one of the highest (figure 1-16).

Outside the expected slowdown in investment growth, other forces suppressed investment in 2019. One is the increase in the user cost of capital since 2018:Q3. From the CEA's calculations, the user cost of capital is measured by the Shiller cyclically adjusted Standard & Poor's price/earnings ratio, in addition to a function of corporate tax rates and depreciation allowances. As seen in figure 1-17, the user cost of capital fell sharply in 2018:Q1, when the TCJA lowered the top statutory corporate tax rate from 35 percent to 21 percent, but increased over the period 2018:Q4–2019:Q3. A confluence of factors—tighter domestic monetary policy and lower stock market valuations, possibly due to a global growth slowdown—all ultimately led to a tightening of financial conditions in 2018:Q4 and thereafter raised the user cost of capital.

The imprints of weaker global factors on investment can be seen in a decomposition of nonresidential investment growth (figure 1-18). The slowdown in nonresidential investment in 2019 was mainly accounted for by business structures, which shrank 7.0 percent in 2019, and by equipment, which decreased 1.5 percent. Intellectual property products investment, which is less exposed to fluctuations in global conditions, grew at a robust pace of 6.2 percent in 2019.
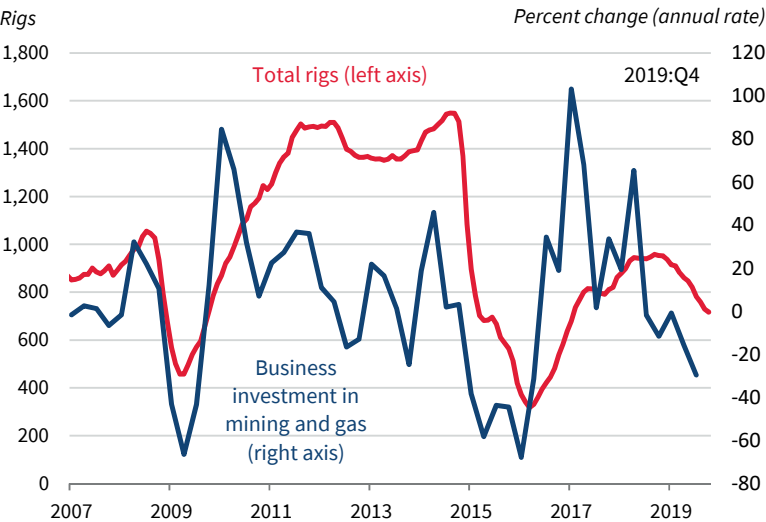
The decline in structures investment was primarily because of a pullback in energy investment. Mining and wells investment fell 16.7 percent in 2019, and were a factor in about 45 percent of the slowdown in structures

Figure 1-18. Average Annual Growth in Real Business Fixed Investment and Component Contributions, 2010–19

■ Structures   ■ Equipment   ■ Intellectual property   ◆ Total

Percent (annualized)

Sources: Bureau of Economic Analysis; CEA calculations.
Note: Average annual growth is measured on a Q4-over-Q4 basis for each year or multiyear period.

Figure 1-19. Real Mining and Drilling Structures Investment versus Oil Rigs Operating in the United States, 2007–19

Rigs   *Percent change (annual rate)*

Total rigs (left axis)   2019:Q4

Business investment in mining and gas (right axis)

Sources: Bureau of Economic Analysis; Baker-Hughes; CEA calculations.

Figure 1-20. Brent Crude Oil Prices versus Oil Rigs Operating in the United States, 2007–19

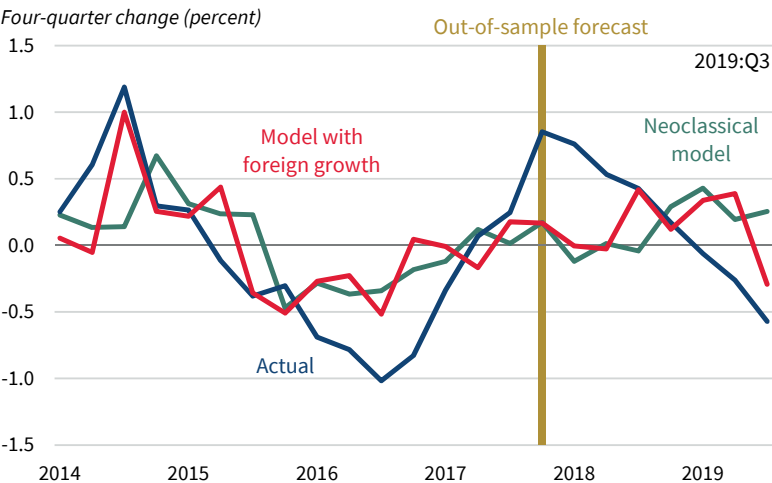Rigs   Dollars per barrel
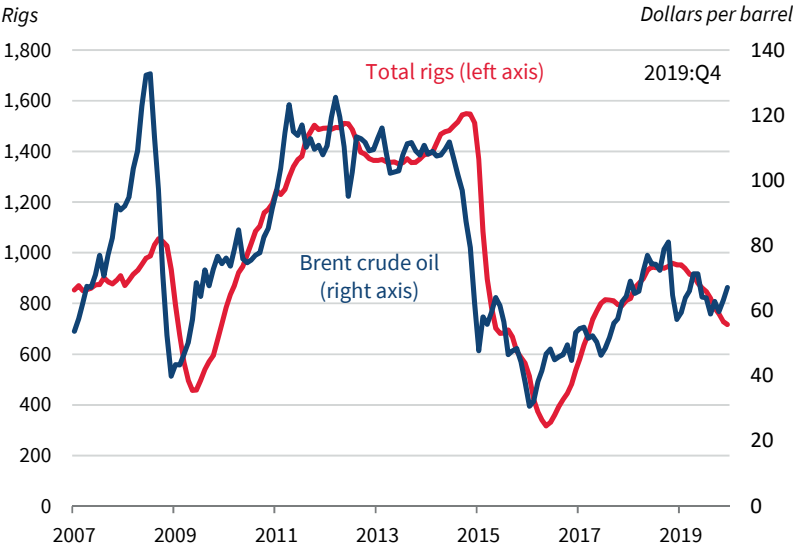
Sources: Bureau of Economic Analysis; Baker-Hughes; CEA calculations.

investment. As seen in figure 1-19, investment in mining and wells started contracting in 2018:Q3, when market concerns about global growth escalated and as oil prices fell to near the breakeven price for shale producers, which is about $50 a barrel. As oil prices approached or fell below the breakeven price for some producers, they responded by slowing drilling or deciding to reduce the large inventory of drilled but not completed wells (figure 1-20). Indeed, the U.S. rig count fell by 236 in December compared with a year earlier.
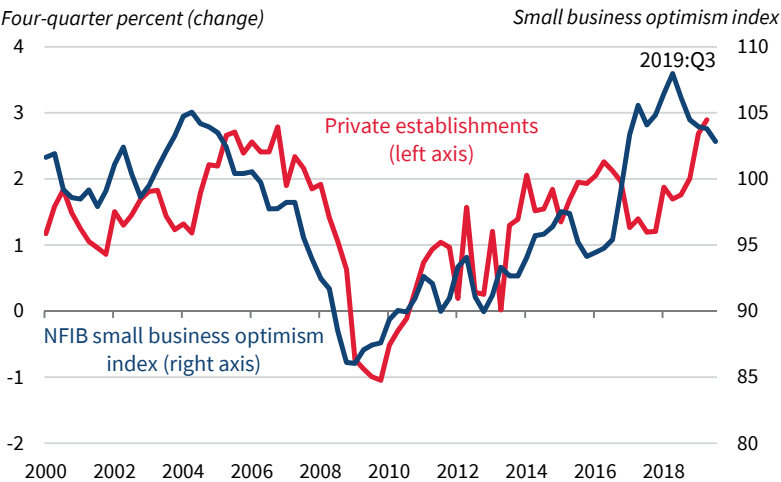
Equipment investment also contracted by 1.5 percent in 2019, compared with 5.0 percent growth in 2018. Investment in equipment turned negative in the first quarter, briefly bounced back in the second quarter, and returned to negative in the third quarter. The two main equipment categories that most exacerbated the slowdown are information processing and transportation. As is discussed in more detail in the "Global Macroeconomic Situation" section of this chapter, the transportation sector experienced a series of negative supply and demand shocks from economies abroad, but by far the largest drag was the decrease in domestic sales at the aircraft supplier Boeing. Confirming the importance of global factors, the CEA finds that an investment accelerator model augmented with foreign growth (proxied by a weighted average of non-U.S. G7 growth) can explain a sizable portion of the recent slowdown in equipment investment (see figure 1-21), compared with a fundamental version of the neoclassical model.

Figure 1-21. Predictions of an Investment Accelerator Model, 2014–19

Four-quarter change (percent)

Out-of-sample forecast

2019:Q3

Model with foreign growth

Neoclassical model

Actual

1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5

2014   2015   2016   2017   2018   2019

Sources: Macroeconomic Advisers; Robert Shiller; Bureau of Economic Analysis; Internal Revenue Service; various national statistical offices; CEA calculations.
Note: Foreign growth is a weighted average of Group of Seven country growth, excluding the United States.

Figure 1-22. The Growth in Number of Private Establishments versus Small Business Optimism, 2000–2019

Four-quarter percent (change)   *Small business optimism index*

2019:Q3

Private establishments (left axis)

NFIB small business optimism index (right axis)

4   110
3   105
2   100
1   95
0   90
-1   85
-2   80

2000   2002   2004   2006   2008   2010   2012   2014   2016   2018

Sources: Bureau of Labor Statistics; National Federation of Independent Business; CEA calculations.
Note: A three-month moving average is used for the index from the National Federation of Independent Business (NFIB). Data for private establishments are only available through 2019:Q2.

The decreases in both structures and equipment investment suggest that the slowdown in growth in the rest of world has constituted a strong headwind to U.S. investment. Indeed, as figure 1-18 shows, the current slowdown in investment is similar to the slowdown in 2015–16, a period that also experienced an investment slowdown precipitated by weakening conditions abroad. A later section of this chapter further explores the international economic developments that are weighing on U.S. growth.

To the extent that changes in business fixed investment predominantly reflect actions of large multinational firms that were responding to fluctuations in global demand conditions, this situation could conceal the developments among smaller firms that are more domestically oriented.[5] One of the TCJA's aims is lowering the business costs of small firms, which tend to be more credit-constrained than large multinational firms. As figure 1-22 shows, this predicted effect of the TCJA is supported by survey data, with 2018 level small business optimism rising to the highest level in almost two decades, and the number of private establishments surging in 2019.

Inflation

Despite a tight labor market, price inflation remains low and stable. Measures of inflation expectations have also been stable. The stability of price inflation and of inflation expectations indicate the economy is not facing supply constraints and has been a key factor in extending the duration of the current expansion.

What is different about the structure of the recent economy that accounts for the coexistence of a tight labor market and low and stable inflation—that is, the flattening of the Phillips curve? Partial explanations include the falling relative price of imports, a different monetary policy regime, and recent deregulatory actions.

Price Inflation

Key measures of price inflation are essentially flat, and are all roughly in the range of 2 percent at an annual rate. The price index for GDP, the aggregate price for everything that is produced in the United States, rose 1.7 percent during the four quarters of 2019, down from 2.0 and 2.3 percent in 2017 and 2018, respectively. Consumer price inflation—as measured by the price of personal consumption expenditures in the National Income and Product Accounts (known as the PCE Price Index)—was only 1.5 percent during the four quarters of 2019. With the exception of the third quarter in 2016, consumer price inflation has generally been below (or equal to) GDP price inflation for each of the past eight years, as shown in figure 1-23.

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[5] A well-documented stylized fact in the international economics literature is that larger firms have a higher propensity to export and import (WTO 2016).

Figure 1-23. Inflation: The GDP Price Index versus PCE Price Index, 2009–19
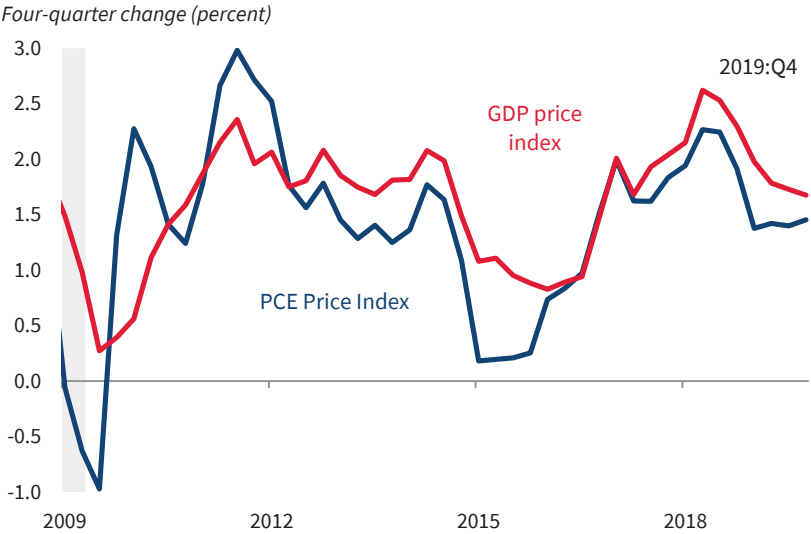
Four-quarter change (percent)

Sources: Bureau of Economic Analysis; CEA calculations.
Note: PCE = personal consumption expenditures. Shading denotes a recession.

Figure 1-24. Import Prices versus GDP Price Index, 1955–2019

Log levels
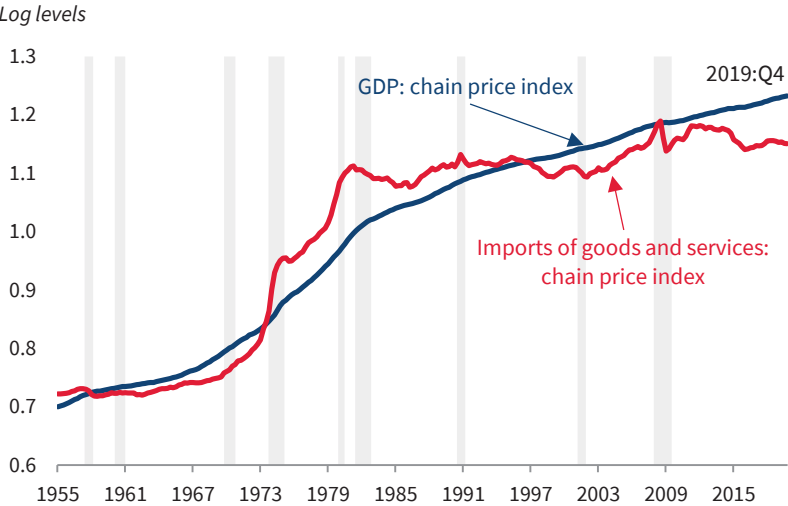
Sources: Bureau of Economic Analysis; CEA calculations.
Note: Import prices are measured by the prices for goods and services from the National Income and Product Accounts. The indices are logged and renormalized. Shading denotes a recession.

One reason that consumer price inflation has been below the pace of GDP price inflation has been the persistent decline in the relative price of imports. During the eight quarters through 2019:Q4, import prices did not increase, while GDP prices (i.e., goods and services produced in the United States) increased at a much faster rate of 2.0 percent, so that the *relative* price of imports fell at a 2.0 percent annual rate. The declining *relative* price of imports has held down consumer price inflation (1.7 percent over eight quarters) by more than it has held down GDP price inflation because imported goods and services are included directly in consumer prices, but influence GDP prices only indirectly through competition.

A situation of declining relative prices of imports has not always been the case, as can be seen in figure 1-24, which shows the log levels of GDP prices and the log levels of import prices. In particular, import prices increased 1.6 percentage points per year faster than GDP prices from 1955 to 1981, increased 1.7 percentage points more slowly from 1981 through 2011, and increased 3.1 percentage points more slowly during the eight years since 2011. As can be seen in figure 1-24, the separation between the log levels of GDP and import prices is currently the largest recorded in the 1955–2019 period.

Different Measures of Inflation: The CPI, Chained CPI, and PCE Price Index and Their Cores

The Consumer Price Index (CPI) tends to increase slightly faster—by about 0.29 percentage point a year, on average—than the PCE Price Index.[6] These two commonly used measures of consumer prices are both important. The CPI tends to overstate a cost-of-living price index, however, largely because it uses a fixed market basket updated every two years, which means that it does not capture real-time substitution by consumers toward goods and services with declining relative prices. Another version of the CPI, known as the chained CPI, corrects for this substitution bias, and as a result also rises about 0.28 percentage point per year less than the official CPI. The chained CPI is now used to index the notches in the new TCJA tax schedules. The PCE Price Index also begins with most of the same CPI components and aggregates with a formula that allows for substitution.

Price indices that exclude the volatile components of food and energy provide a smoother signal of inflation trends than the overall index. The core CPI (which excludes food and energy) increased 2.3 percent during the 12 months of 2019, up only slightly from the 2.2 percent year-earlier pace. The PCE Price Index version of core inflation rose 1.6 percent in 2019, down from the year-earlier pace of 1.9 percent. The 2019 rate of core PCE inflation was below the Federal Reserve's target of 2.0 percent, as was the rate of overall PCE inflation, as shown in figure 1-25.

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[6] Computed from 2002:Q4 to 2018:Q4.

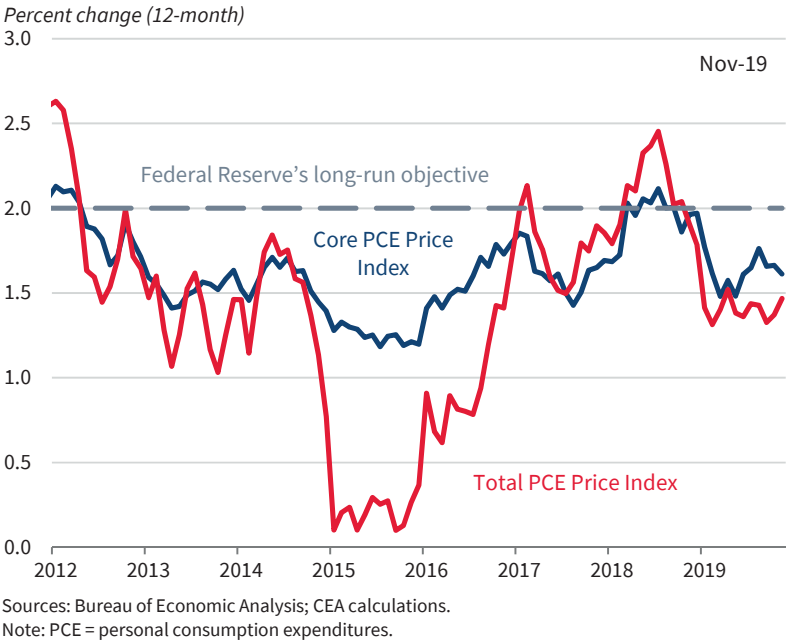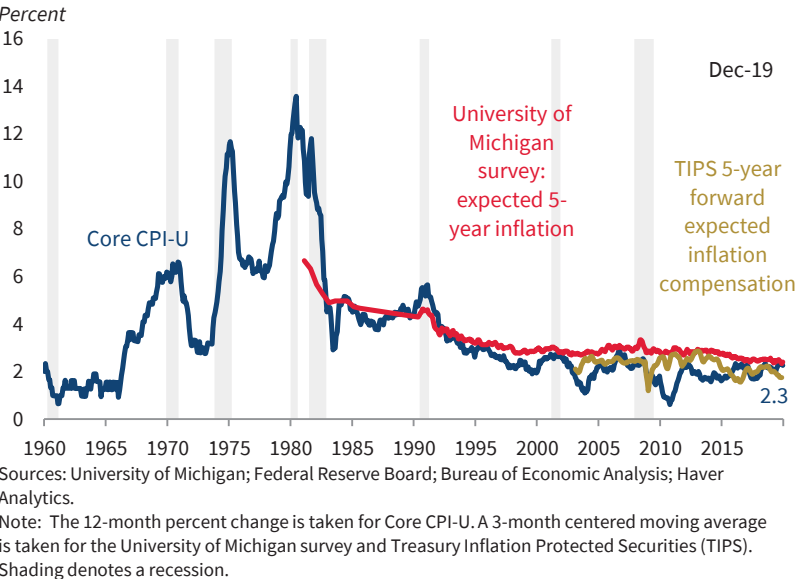**Figure 1-25. Consumer Price Inflation, 2012–19**

Percent change (12-month)

Sources: Bureau of Economic Analysis; CEA calculations.
Note: PCE = personal consumption expenditures.

Figure 1-26. Core CPI Inflation and Inflation Expectations, 1960–2019

Percent

Sources: University of Michigan; Federal Reserve Board; Bureau of Economic Analysis; Haver Analytics.
Note: The 12-month percent change is taken for Core CPI-U. A 3-month centered moving average is taken for the University of Michigan survey and Treasury Inflation Protected Securities (TIPS). Shading denotes a recession.

Measures of inflation *expectations* have also been stable at a rate close to the 2.0 percent Federal Reserve target, as shown in figure 1-26, which graphs two measures: one from the University of Michigan's Survey of Consumers, and one extracted from the market for the Treasury's Inflation Protected Securities.

Buttressed by the stability of core inflation, and of expectations of core inflation, the Administration forecasts rates of increase in the CPI at 2.3 percent and the GDP price index at 2.0 percent during the 11-year Budget forecasting interval.

## Hourly Compensation Inflation, Productivity Growth, and Stable Inflation

Nominal hourly compensation inflation—as measured by the Employment Cost Index for the private sector—increased by 2.7 percent at an annual rate during the 12 months of 2019, down slightly from the 3.0 percent 2018 pace. This 2.7 percent pace edged up from the annual pace of 2.1 percent during the four years through 2016.

Over long periods, wage inflation can exceed price inflation by the rate of labor productivity growth. And over the seven quarters through 2019:Q3, nonfarm labor productivity grew at a 1.4 percent annual rate. As a result, the roughly 3.0 percent rate of annual hourly compensation growth (which suggests unit labor costs rising at 1.6 percent) is compatible with price inflation of 2 percent (or slightly less), without putting upward pressure on the price structure.

The sensitivity of inflation to fluctuations in the unemployment rate has decreased during the past two decades, as shown in the scatter diagram given in figure 1-27, which illustrates a version of the Phillips curve. The vertical axis shows the difference in core PCE inflation relative to a year-earlier survey of inflation expectations. The horizontal axis shows a version of the unemployment rate, one that is demographically adjusted to control for the major fluctuations in the share of young people in the labor force during these past 60 years. (The share of young people in the labor force was exceptionally high in the 1970s, when the baby boom cohorts entered the labor market.)

As can be seen in figure 1-27 by the blue regression line fitted through the early years 1960–2000, an extra percentage point of unemployment lowered the rate of inflation by 0.36 percentage point a year. In contrast, the red regression line fitted on the last 19 years (2000–2018) indicates that an extra percentage point of unemployment lowered the rate of inflation by only 0.08 percentage point. One could argue that this shallow slope estimated during the past 20 years provides the best guide to the future. Or one might argue that the best estimate of the slope is the one covering the entire 60-year sample (0.27 percentage point of inflation per 1 percentage point of unemployment; not shown).

Figure 1–27. Price-Price Phillips Curve Scatter Diagram, 1960–2018

Percent change in core PCE

Fixed-weighted unemployment rate (2017 weights)
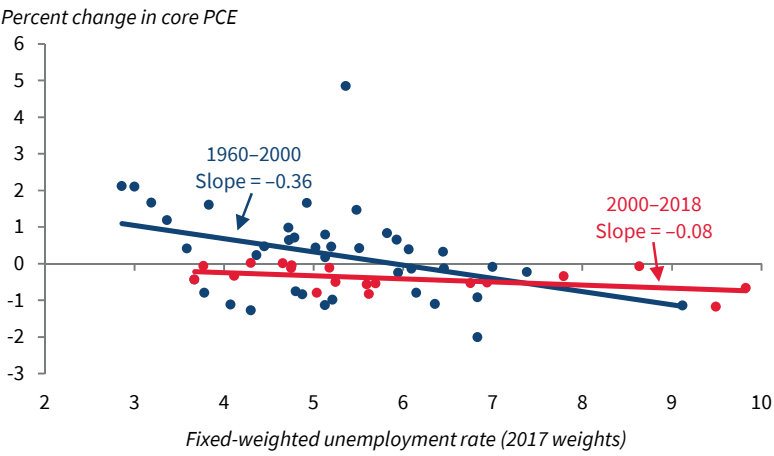
Sources: Federal Reserve Bank of Philadelphia; Bureau of Economic Analysis; Bureau of Labor Statistics; CEA calculations.
Note: PCE = Personal consumption expenditures. Inflation expectations are measured by the Livingston Survey for 1960–70; by the Survey of Professional Forecasters' (SPF) 10-year Consumer Price Index for 1970–90; and by the SPF expectation for 10-year PCE inflation for 1990–2018.

Table 1-1. Effects of Deregulation on Relative Price Increases on the Core CPI, 2006–19

Priced good/service	Ten-year % change in relative prices, Dec. 2006–Dec. 2016, AR	34-month % change since Dec. 2016, AR	Change in trend, p.p.	Relative importance weight in Core CPI	Effect on Core CPI inflation
	(1)	(2)	(3) = (2) – (1)	(4)	(5) = (3) * (4)
Prescription drugs	1.62	−0.96	−2.58	1.711	−0.044
Internet services	−1.83	−2.28	−0.44	0.952	−0.004

Sources: Bureau of Labor Statistics; CEA calculations.
Note: AR = annualized rate; p.p. = percentage point; CPI = Consumer Price Index.

Explanations for the declining slope of the Phillips curve include the influence of import prices in holding down the rate of inflation in recent years (as argued above), the wage and price rigidity that kept inflation from falling below zero during the early years of this recovery (2009–13), the diminishment of the Phillips curve coefficient in a monetary policy regime that effectively targets inflation (Hooper, Mishkin, and Sufi 2019), and the evolution of the input-output structure of the economy toward increasing intermediate inputs (Rubbo 2020). Another possible explanation is the deregulation efforts of the current Administration.

Deregulation and Inflation

As discussed in chapter 3 of this *Report*, estimates suggest that deregulation has lowered the relative price of prescription drugs and Internet services. We calculate that these effects lower total inflation by about 0.05 percentage point a year. The relative price of prescription drugs, in particular, is increasing by 2.6 percentage points a year less that during the 10 years through 2016; see table 1-1. To summarize this analysis, inflation remains low and stable, inflation expectations are well anchored at this low level, and recent estimates of the Phillips curve suggest a diminishing sensitivity of inflation to unemployment rates.

The Global Macroeconomic Situation

As alluded to in previous sections, a major headwind to growth in 2019 was a synchronized slowdown in global growth. In its latest semiannual economic outlook, the International Monetary Fund (IMF 2019c) revised down global growth sharply, by 0.7 percentage point, to what would be the lowest growth rate since the Global Recession, 3 percent—one of the largest one-year downward-revisions in recent years (figure 1-28). Among advanced economies, growth was revised down by 0.4 percentage point, with growth disappointments concentrated in Europe, especially Germany. Emerging market economies also saw a downward revision, of 0.8 percentage point. Amid this global slowdown, the U.S. economy has performed largely as projected by the IMF in October 2018, growing faster than any other G7 country in the first three quarters of 2019 (figure 1-29).

At the heart of the current global slowdown has been a manufacturing downturn. Uncertainty about trade policy is one often-cited culprit in the manufacturing slowdown, particularly uncertainty surrounding the Administration's negotiations toward a bilateral trade agreement with the People's Republic of China on enforceable commitments to remove or lower structural barriers in China (BIS 2019a, 2019b; IMF 2019a, 2019b; OECD 2019a; World Bank 2019a, 2019b). However, other reasons for the global manufacturing slowdown also preceded, or were contemporaneous with, trade policy developments. These reasons make it difficult to isolate the effects of trade policy uncertainty, and possibly result in an upward bias of its effects on the global economy. Other factors weighing on manufacturing include a change in European automobile emission standards in September 2018 that caused a production bottleneck in Europe, especially Germany, and a growth slowdown in China caused by the government's efforts to deleverage the financial system beginning in 2017. The manufacturing sectors of these two countries—two of the world's preeminent manufacturing powerhouses—had begun slowing down before or around the time of the imposition of tariffs on Chinese goods by the current Administration (figure 1-30).

Figure 1-28. IMF Five-Year Real GDP Growth Forecasts for the World, 2012–24
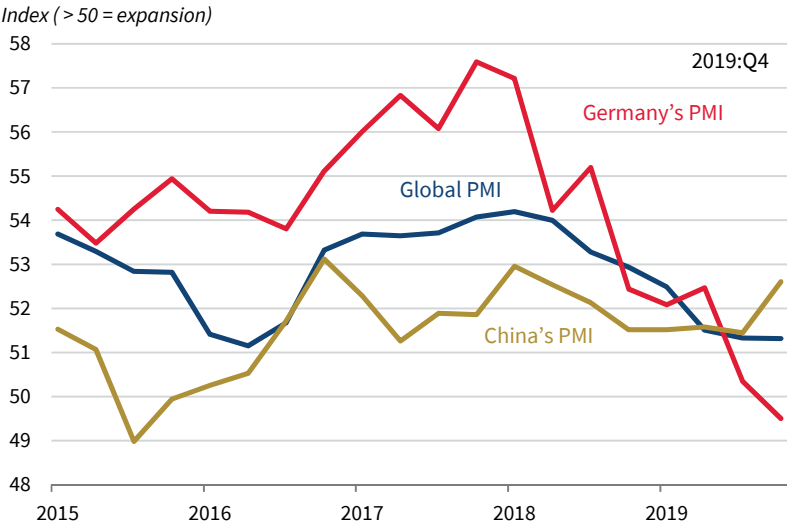
Year-over-year percent change
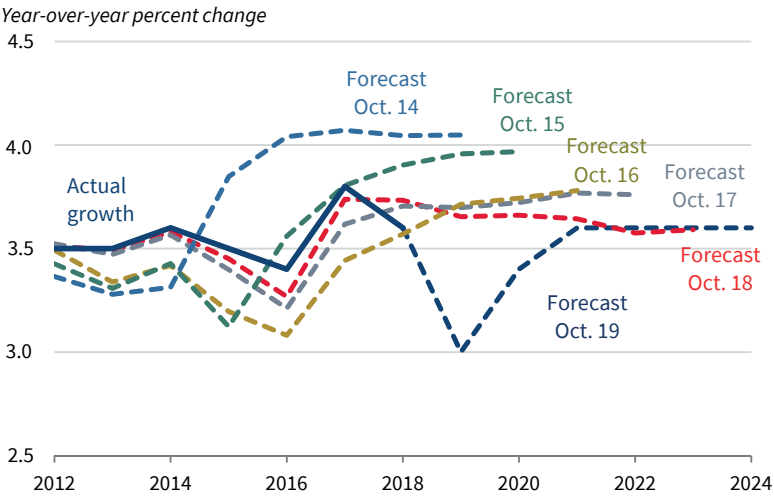
Source: International Monetary Fund.
Note: Each forecast is taken from *World Economic Outlook*, which is published by the IMF in October of each year.

Figure 1-29. Forecast of 2019 Real GDP Growth

■ Oct. 2018 WEO   ■ Oct. 2019 WEO

Year-over-year percent change
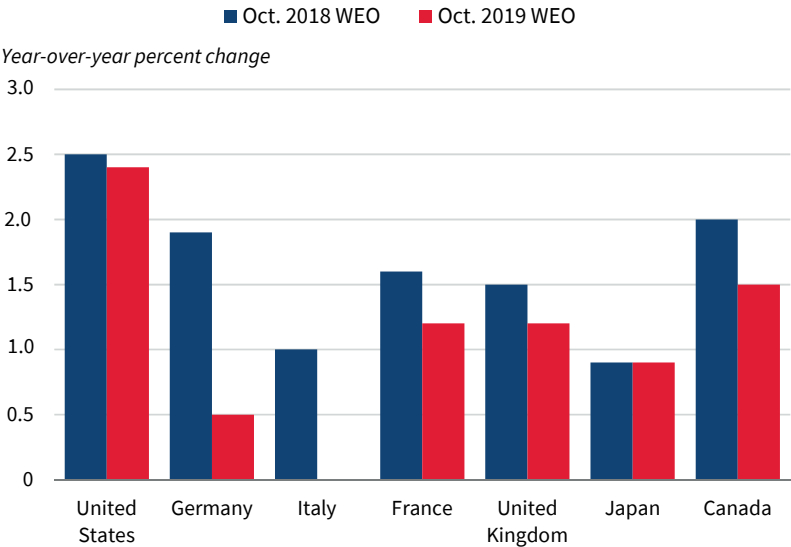
Source: International Monetary Fund.
Note: WEO = *World Economic Outlook*, published annually by the IMF.

Figure 1-30. Composite Output Purchasing Manager's Index (PMI), 2015–19

Index (> 50 = expansion)

Sources: Caixin; IHS Markit; JPMorgan Chase.
Note: Index levels over 50 represent an expansion.

The Administration's efforts to create a more reciprocal environment and rebalance the trading relationship between the United States and China required negotiation over how this new relationship should be shaped. Negotiations have covered a wide range of critical issues, including the ways that U.S. companies are required to transfer proprietary technology as a condition of market access; the numerous tariff and nontariff barriers faced by U.S. businesses in China; and China's other market-distorting practices and policies that have weighed on U.S. and global economic growth, such as industrial subsidies and support for state-owned enterprises.

China's weak protection and enforcement of intellectual property rights is symptomatic of a broader challenge. Chinese firms engage in systematic theft of U.S. intellectual property because the costs are insufficient to incentivize them to do otherwise.[7] Instead of pursuing an enforceable bilateral trade agreement through targeted tariffs, prior Administrations took a multilateral approach that imposed no costs on the offenders and failed to resolve these issues. The Administration first imposed tariffs on imports from China based on

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[7] There is a common misconception that the grievances against China relate exclusively to intellectual property. Although Chinese forced technology transfer and intellectual property theft (discussed at length in the Section 301 investigation) are important, the actions are also designed to address a number of other long-standing trade issues with China: expanding the Chinese market access for services and agriculture, implementing an agreement like the United States–Mexico–Canada Agreement's provision on currency, addressing the many nontariff barriers on U.S. exports to China, and increasing Chinese purchases of U.S. products (White House 2018).

the findings of the Section 301 investigation of China's acts, policies, and prac-
tices related to technology transfer, intellectual property, and innovation. The
Administration then took supplemental action in 2018 and 2019 in response
to China's imposition of retaliatory tariffs and failure to eliminate these unfair
acts, policies, and practices.

These Administration actions have prompted a renegotiation of the trad-
ing relationship between the two countries. Studies that examined the effect
of the tariffs point out that tariffs impose near-term costs on the United States
(Amiti, Redding, and Weinstein 2019a, 2019b; Caldara et al. 2019; Fajgelbaum
et al. 2019).[8] Negotiations over a new agreement necessitate a degree of
uncertainty over how that agreement will be shaped, exacerbating near-term
costs. However, achieving a new trade relationship with China that is balanced
and reciprocal will deliver long-term economic benefits for the United States,
including a reduction in near-term costs.

In January 2020, the Administration finalized a historic and enforceable
agreement on phase one of the trade deal. The trade deal requires structural
reforms and other changes to China's economic and trade policies in the areas
of intellectual property, technology transfer, agriculture, financial services, and
currency and foreign exchange. The ultimate goal is that, with lower market
barriers and further market orientation in China, the global trading system will
operate in a more balanced, reciprocal environment. Global growth, as a result,
would benefit from the increase in trade liberalization.

While trade policy uncertainty has held the spotlight, another underap-
preciated reason for the global manufacturing slump was both supply and
demand problems in the global motor vehicle industry. Supply problems in
the European motor vehicle industry were precipitated by a change in the
European Union's emissions regulations in September 2018, which led to
bottlenecks at testing agencies and production cuts from automobile manu-
facturers to avoid unwanted inventory accumulation. Germany, a global hub
for automobile production, particularly felt the impact of the supply disruption
(Deutsche Bundesbank 2019; IMF 2019b). German automobile production fell
10 percent in 2018 as a whole, and shrank another 9 percent in 2019. Given its
long global value chains and sizable share in global output and global exports,
weaknesses in the automobile sector extend well beyond the industry in
Europe, propagating the shock through upstream industries around the world
like steel, metal, and automobile parts, as well as downstream industries like
services (OECD 2019b).[9]

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[8] Caldara et al. (2019) look at the costs imposed by this trade policy uncertainty and find cumulative
costs of up to 1 percent of GDP after two years. Amiti, Redding, and Weinstein (2019b) examine the
direct impact of implemented tariffs in 2018 and 2019 and find that they impose a net deadweight
loss of 0.4 percent of GDP per year. Fajgelbaum et al. (2019) find that the additional tariffs in 2018
imposed a cost of 0.04 percent on GDP after accounting for tariff revenues and gains to domestic
producers.
[9] The automobile sector accounts for 5 percent of global output and 8 percent of global exports.

Figure 1-31. China's Change in Automobile Sales, 2014–19

Twelve-month change (percent)
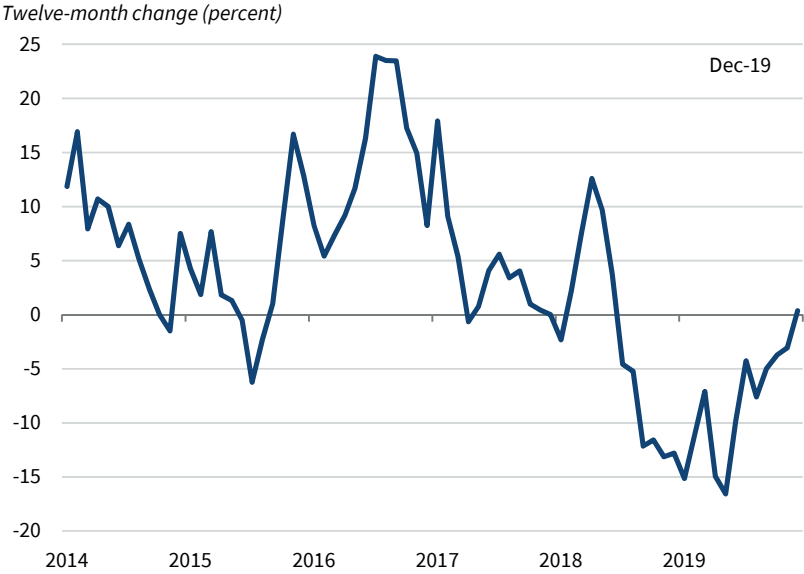
Sources: China Association of Automobile Manufacturers; CEA calculations.

These adverse shocks to the motor vehicle industry were further compounded by a cyclical downturn in automobile demand in China. Efforts by China's authorities to deleverage the shadow-banking sector since 2017 have led to a protracted slowdown in credit growth, including consumer credit. Increasing difficulty in accessing credit, heightened risk aversion among households in a slowing economy, and the termination—in 2019—of consumer tax breaks for automobile purchases in 2017–18 all led to a substantial pullback in Chinese automobile consumption. As a result, China's automobile consumption has contracted in consecutive quarters since mid-2018 (figure 1-31), and has accounted for over half the global contraction of automobile sales. Accordingly, the quantity of German automobile exports, for which China is an important market, have plunged since early 2018, and were 14 percent below the mid-2018 level, as of November 2019 (figure 1-32).

Beyond the problems in the automobile industry and the slowdown in China, country-specific shocks have also exacerbated the global slowdown. In the United Kingdom, uncertainty over Brexit has continued to weigh on growth. After the U.K. Parliament failed to ratify a deal negotiated between Prime Minister Boris Johnson's government and the EU, his government secured an extension of the Brexit deadline to January 2020. With the December 2019 elections in the U.K. securing a large majority for Johnson's party in Parliament, Parliament passed legislation for Britain to leave the European Union with a

Figure 1-32. German Vehicle and Car Engines Exported, 2016–19

Index (June 2018 = 100)
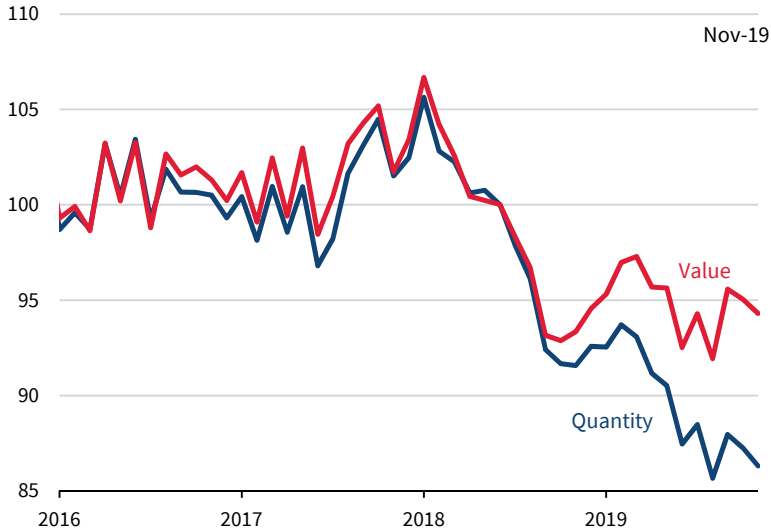
Sources: Federal Statistical Office; Kraftfahrtbundesamt; CEA calculations.

withdrawal agreement on January 31, 2020, after which the U.K. will enter a transitional period and adhere to EU rules until end of 2020.

Japan, after experiencing surprisingly positive growth of 2.3 percent at annual rate in the first half of 2019, saw its growth edge down to a 1.8 percent annual rate in the third quarter, as exports slumped amid weakening global demand, mainly due to a drop in demand from China and a boycott of Japanese goods in South Korea. The long-planned sales tax increase from 8 to 10 percent also came into effect in October, causing consumer spending to plummet.

Emerging market economies, which until 2018 had been an engine of global growth, became a drag in 2019. After months of antigovernment protests, Hong Kong entered its first recession since the global financial crisis.[10] In India, increasing defaults in the shadow-banking sector have resulted in a large pullback of domestic credit growth, causing GDP growth to slow sharply. In Mexico, uncertainty over domestic policies, reinforced by the sudden resignation of Mexico's financial minister, and the slowdown in global trade have impeded growth. Meanwhile, growth remains weak in Brazil, as high public debt levels have constrained the government from using fiscal stimulus to further support the economy in the face of subdued domestic and external demand.

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[10] Hong Kong's real GDP contracted by 1.9 percent at an annual rate in 2019:Q2 and by 12.1 percent in 2019:Q3.

Figure 1-33. Central Bank Policy Rates, 2010–19

Percent
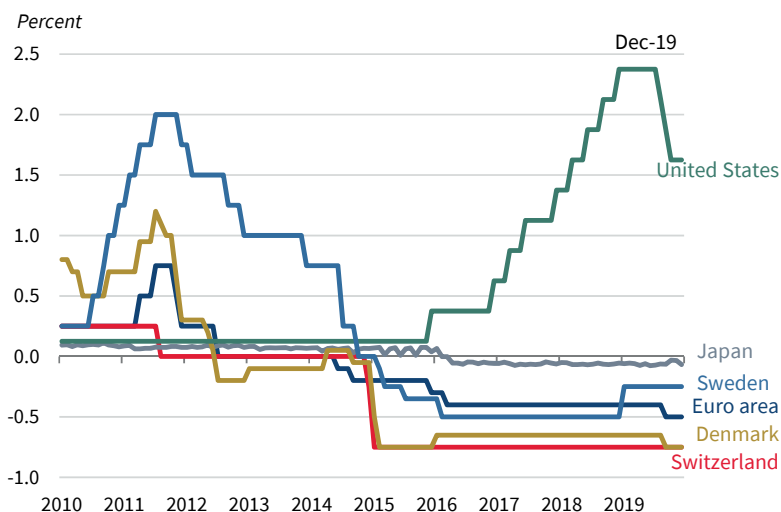
Sources: Swiss National Bank; Sveriges Riksbank; Danmarks Nationalbank; Federal Reserve Board; European Central Bank; Bank of Japan.
Note: For Japan, the effective uncollateralized overnight call rate was used.

The U.S. Dollar and Monetary Policy

Because of the weak international economic outlook, several non-U.S. major economies eased monetary policies throughout 2019. In particular, the European Central Bank announced in September that it would resume its asset purchase program at a pace of €20 billion a month, and it lowered its policy rate by 10 basis points to –0.5 percent. The National Bank of Denmark (a non-euro country) also followed the European Central Bank in lowering its policy rate further into negative territory. Global negative-yielding sovereign debt—mostly issued by European countries—has recently reached a record amount of about $15 trillion.

In contrast, in response to an improved outlook for the U.S. economy, the Federal Reserve began to normalize its balance sheet in December 2015. During the years 2016–18, the Federal Reserve raised its policy rate eight times, while several central banks across Europe (Denmark, the European Central Bank, Sweden, and Switzerland) kept their policy rates negative (figure 1-33). Though the Federal Reserve subsequently reduced rates on three occasions in 2019, U.S. policy rates continued to exceed those of other advanced economies, which induced capital inflows into the United States, and in turn contributed to an appreciation of the dollar through September 2019, before it edging lower during the final three months of the year.

Looking through the fluctuations of 2019, the real and nominal trade-weighted broad dollar was little changed from December to December.

Figure 1-34. Federal Reserve Trade-Weighted Broad Nominal versus Real Dollar, 1973–2019

Index (January 2006 = 100)
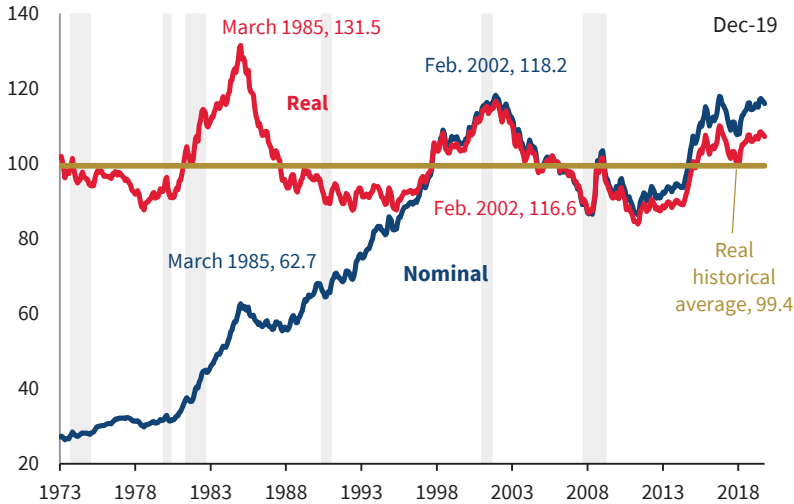
Sources: Federal Reserve Board; CEA calculations.
Note: Shading denotes a recession.

Relative to other major advanced country currencies, the dollar edged up 0.6 percent over the same period in real terms. Curcuru (2017) finds that for every divergence of 1 percentage point in interest rates between the United States and other advanced economies, the real advanced dollar index appreciates 3.4 percent. Applying this elasticity, one finds that the interest rate differential between the United States and the other G7 countries would have predicted a *depreciation* of 2.6 percent in the advanced dollar.[11] As of December, the real level of the broad dollar is 7.8 percent higher than its historical average calculated from 1973 January to the present, though most of the appreciation occurred from the summer of 2014 to 2015 (figure 1-34). The real broad dollar is, however, still below the record highs of 1985 and 2002.

Although higher U.S. interest rates than in other advanced countries would, ceteris paribus, cause some dollar appreciation and reduce U.S. exports, monetary spillovers from abroad also have an offsetting positive economic effect by lowering the longer end of the Treasury yield curve. This effect could be observed in August 2019, when data in Germany and China that were weaker than expected triggered global growth concerns that caused an immediate influx of safe haven flows to the U.S. Treasury market. Market expectations of future easing actions by the European Central Bank then caused an immediate decrease in U.S. 10-year Treasury yields, contributing to the

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[11] Collins and Truman (2019) employed the same methodology for the period July 2014–September 2019, and found that 4.1 percentage points of the 21 percent appreciation in the major dollar over this period was due to the United States / G7 interest rate differential.

inversion of the yield curve at that time. As a result, U.S. mortgage rates came down, which on the whole supported the U.S. housing market and allowed U.S. households to refinance their mortgages, unlocking more disposable income for consumption.

Domestic Headwinds

In addition to international headwinds, four other idiosyncratic domestic factors impeded U.S. growth by almost 0.3 percentage point in 2019: (1) the partial government shutdown for 25 days in January, (2) the grounding of Boeing 737 MAX jets, (3) industrial action at General Motors, and (4) the Midwest's spring flooding.[12]

Boeing. After two fatal accidents of the Boeing 737 MAX in 2018 and 2019, civil aviation authorities around the world (including the United States) grounded the aircraft. The accidents and eventual grounding caused Boeing 737 deliveries to collapse to nearly zero, and production to fall. This drop in production and deliveries lowered GDP because fewer planes were produced, and those produced were placed into inventory instead of being delivered. The CEA estimates that these effects depressed real GDP growth during the four quarters of 2019 by 0.14 percentage point.

GM strikes. In mid-September, the United Auto Workers began a work stoppage that halted production at General Motors for six weeks. The CEA estimates that the strike subtracted at most 0.08 percentage point from GDP growth in the four quarters of 2019; but the effects will be reversed by an equal amount in 2020.

Midwest flooding. Production of corn and soybeans (the Nation's most valuable crops, at about $51 billion and $39 billion in 2018, respectively) fell in 2019 by 4.4 percent and 19.8 percent. Spring flooding—due to excessive rain and snowmelt, which damaged production in the Upper Midwest—may be partly responsible for the decline in production. We estimate that these declines reduced the value of corn and soybean crops (the major crops throughout the Midwest) by $10 billion in 2019, or 0.04 percent of GDP.

Conclusion

This chapter has shown that despite strong headwinds from the global economy and expectations of growth moderating as the current expansion matures, the U.S. economy continued expanding at a healthy pace in the past year. During 2019, consumer spending continued to grow strongly, while the labor share of income continued to increase. The labor market tightened further, even after strong gains in the previous two years. Wages rose faster

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[12] The partial government shutdown affected the 2019 level of real GDP, as well as the 2019 annual average-to-annual average growth rate, but not the 2019 fourth quarter–to–fourth quarter growth rate.

than inflation, which ultimately boosted real middle-class incomes. After years of decline, the stabilization of labor force participation, due to increased prime-age participation, combined with capital deepening to boost potential long-term output.

The tepid recovery from the Great Recession in the years before the Trump Administration prompted economic forecasters to project pessimistic growth into the future, reflecting a widespread belief that the U.S. economy is in the midst of a period of secular stagnation. But the first three years of the current Administration have demonstrated that stagnation is not inevitable. And the Administration's structural reforms—including lower taxes, deregulation, and pro-innovation energy policies—can overcome secular stagnation and have set the stage for continued economic strength.

As the current record expansion matures beyond the 42nd quarter, some worry that the expansion will "die of old age." But academic evidence indicates that expansions do not end simply because of their length. Old age does not kill expansions, though bad policies and exogenous shocks can and do lead to recessions. The United States' historically strong labor market, the potential for further deregulation, and the capital deepening that is having a positive impact on productivity suggest that there is still substantial room to grow in the present U.S. expansion.