



C H A P T E R 1

EIGHT YEARS OF RECOVERY AND REINVESTMENT

As the 2017 *Economic Report of the President* goes to press, the United States is eight years removed from the onset of the worst economic crisis since the Great Depression. Over the two terms of the Obama Administration, the U.S. economy has made a remarkable recovery from the Great Recession. After peaking at 10.0 percent in October 2009, the unemployment rate has been cut by more than half to 4.6 percent as of November 2016, below its pre-recession average. Real gross domestic product (GDP) per capita recovered fully to its pre-crisis peak in the fourth quarter of 2013, faster than what would have been expected after such a severe financial crisis based on historical precedents. As of the third quarter of 2016, the U.S. economy was 11.5 percent larger than at its peak before the crisis. As of November 2016, the economy has added 14.8 million jobs over 74 months, the longest streak of total job growth on record. Since private-sector job growth turned positive in March 2010, U.S. businesses have added 15.6 million jobs. Real wage growth has been faster in the current business cycle than in any since the early 1970s. Meanwhile, from 2014 to 2015, median real household income grew by 5.2 percent, the fastest annual growth on record, and the United States saw its largest one-year drop in the poverty rate since the 1960s.

Other indicators at the end of 2016 also show substantial progress. Rising home prices have helped bring millions of homeowners back from negative equity. Real, or inflation-adjusted, household net worth exceeds its pre-recession peak by 16 percent. Since 2008, the United States has tripled the amount of energy harnessed from wind and increased solar generation thirtyfold. The United States is less reliant on foreign oil than it has been in nearly three decades. Since the Affordable Care Act (ACA) became law in 2010, health care prices have risen at the slowest rate in 50 years. Measured as a share of the economy, the Federal budget deficit has been cut by about two-thirds since 2009.

The forceful response of the Federal Government to the crisis in 2008 and 2009 helped stave off a potential second Great Depression, setting the U.S. economy on track to rebuild, reinvest, and recover. Recovery from the crisis alone, though, was never the President’s sole aim. The Administration has also addressed the structural barriers to sustained, shared prosperity that middle-class families had faced for decades—rising health care costs, limited access to higher education, slow growth in incomes, high levels of inequality, a reliance on oil and other sources of carbon pollution, and more—so that the U.S. economy would work for all Americans. Thanks to these policy efforts, eight years later, the American economy is stronger, more resilient, and better positioned for the 21st century than ever before.

The 2017 *Economic Report of the President* reviews the economic record of the Obama Administration, focusing both on how its policies have promoted economic growth that is robust and widely shared and on the challenges the U.S. economy still faces in the years ahead.

THE RECOVERY IN REVIEW

Across a broad range of macroeconomic measures, the U.S. economy has made remarkable progress in the eight years since one of the most tumultuous and uncertain periods in its history.

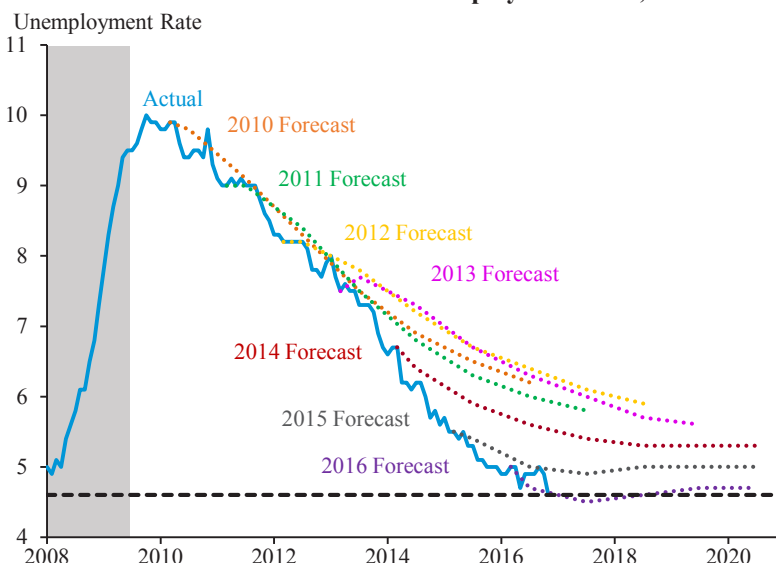
Employment and Wages

The Great Recession was well underway when President Obama took office in January 2009. In that month, the unemployment rate stood at 7.8 percent, already elevated from its average of 5.3 percent in the 2001-07 expansion period. The unemployment rate would continue to increase until it peaked at 10.0 percent in October 2009. The long-term unemployment rate—the share of the labor force unemployed for 27 weeks or more—rose to an all-time high of 4.4 percent, as did the share of Americans working part-time for economic reasons (that is, those working part-time who would prefer a full-time position), which doubled to 6.0 percent from its pre-recession average.

From its peak, the unemployment rate recovered to its pre-recession average in mid-2015 and continued to fall, standing at 4.6 percent as of November 2016. This rapid decline came far more quickly than most economists predicted: as recently as March 2014, private forecasters expected the unemployment rate to remain above 5.0 percent until at least 2020 (Figure 1-1). All but one of the broader measures of labor underutilization published by the Bureau of Labor Statistics (BLS) have recovered fully to their respective pre-recession averages. Further, the labor force participation rate, which

Figure 1-1

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.

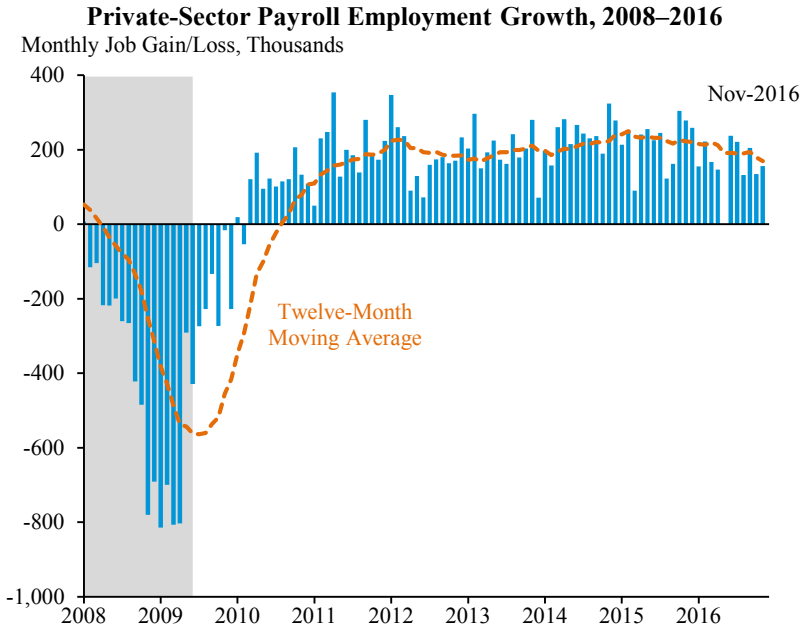
Source: Bureau of Labor Statistics, Current Population Survey; Blue Chip Economic Indicators.

has been subject to downward pressure due to the aging of the U.S. population, has been broadly stable since the end of 2013, as the strengthening labor market recovery has led workers to enter (or reenter) the workforce, offsetting downward pressure from demographic trends.

Total nonfarm employment peaked in January 2008 before falling by 8.7 million jobs, or 6.3 percent, to its trough in February 2010; over the same period, private-sector employment fell by 8.8 million jobs, or 7.6 percent. In the first quarter of 2009 alone, total job losses averaged 772,000 a month, larger than the populations of a number of U.S. States. While job losses were broad-based across industries, several sectors were particularly hard-hit. From January 2008 to February 2010, employment in the manufacturing sector declined by 16.6 percent, while employment in the construction sector declined by 26.4 percent.

Nonfarm job growth turned consistently positive beginning in October 2010. Since then, the U.S. economy has added jobs for 74 straight months, the longest streak of total job growth on record; over this period, nonfarm employment growth has averaged 199,000 jobs a month. Total nonfarm employment recovered to its pre-recession peak in 2014—the best year for job creation since the 1990s—and, as of November 2016, exceeded its pre-recession peak by 6.7 million jobs. Since private-sector job growth

Figure 1-2



Note: Shading denotes recession.

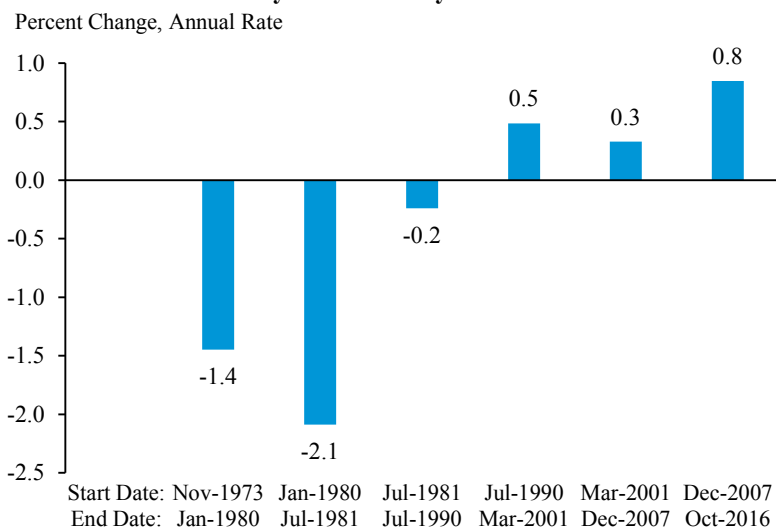
Source: Bureau of Labor Statistics, Current Employment Statistics; CEA calculations.

turned positive in March 2010, U.S. businesses have added 15.6 million jobs (Figure 1-2). The manufacturing sector has added over 800,000 jobs since February 2010, the industry’s fastest growth since the 1990s (see Box 1-2). And since June 2009, when Chrysler and General Motors (GM) emerged from bankruptcy, the automobile industry (manufacturing and retail) has added nearly 700,000 jobs, the industry’s strongest growth on record.

As the labor market has strengthened, the recovery has translated into real wage gains for American workers. Due to both an acceleration in nominal wage growth and low inflation, since the end of 2012 private production and nonsupervisory workers, who comprise about 80 percent of private-sector employment, have seen their real hourly earnings increase by 5.3 percent, more than the total cumulative real wage gains for these workers from 1980 to 2007. Overall, real hourly wage growth since the business cycle peak in December 2007 has averaged 0.8 percent a year for these workers, the fastest growth of any business cycle (measured peak-to-peak) since the 1970s (Figure 1-3).

The combination of robust employment growth and accelerating real wage growth has translated into strong growth in household incomes. From 2014 to 2015, real median household income grew 5.2 percent, or \$2,800, the fastest growth on record. Moreover, these income gains have been widely

Figure 1-3
**Real Hourly Wage Growth Over Business Cycles,
 Cycle Peak to Cycle Peak**



Note: Wages for private production and nonsupervisory workers.
 Source: National Bureau of Economic Research; Bureau of Labor Statistics, Real Earnings;
 CEA calculations.

shared: households at the bottom and middle of the income distribution saw faster real income gains from 2014 to 2015 than did households at the top of the income distribution.

While the labor market has made major improvements, some challenges still remain. The share of employees working part-time for economic reasons, and, accordingly, the broadest measure of underemployment, the U-6 rate (of which this share is a component), remain modestly elevated relative to their respective pre-recession averages. As discussed below, labor force participation, particularly for many workers in their prime working years, has been declining for decades, a key challenge for the U.S. labor market in the years ahead. And while real wage growth has picked up in recent years, more work remains to reverse decades of limited income growth for many middle-class families.

Output and Economic Growth

Like employment, economic output contracted sharply in the Great Recession. Real GDP peaked in the fourth quarter of 2007 before falling rapidly over the following year. In the fourth quarter of 2008 alone, real GDP contracted at an annualized rate of 8.2 percent. As discussed in Box 1-1, this drop was more severe than initially estimated: the first estimate of GDP

growth in the fourth quarter of 2008 was a contraction of 3.8 percent. All told, real GDP fell 4.2 percent, from its peak in the fourth quarter of 2007 to its trough in the second quarter of 2009. Since the U.S. population continued to grow over this period, real GDP per capita fell by an even greater amount, 5.5 percent.

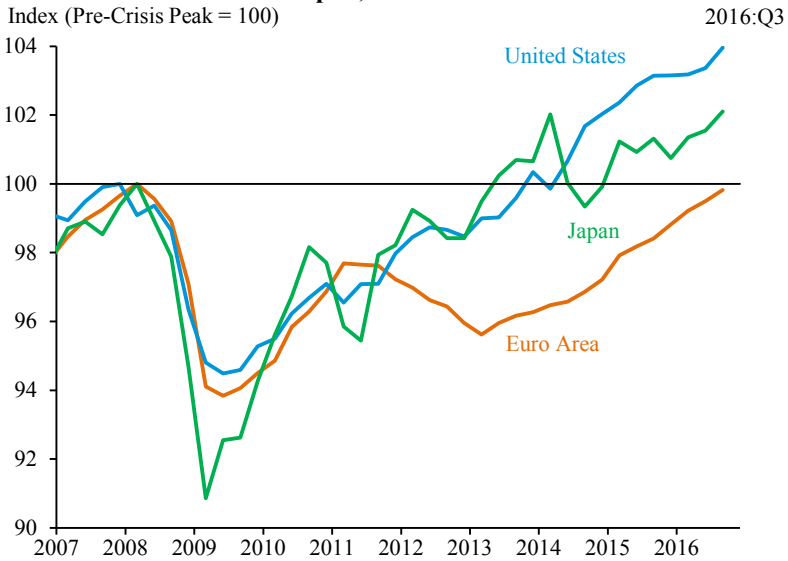
By the fourth quarter of 2013, per-capita real GDP had fully recovered to its pre-recession peak, and by the third quarter of 2016, per-capita GDP exceeded its pre-crisis peak by 4 percent. This rebound occurred much more quickly than in most other advanced economies, many of which also experienced systemic financial crises in 2007–08. For example, Japan, which recovered relatively quickly, has seen growth level off in recent years, and while the euro area economy has improved noticeably over the last two years, the area is on the verge of missing nearly an entire decade of growth, as it still has not attained 2008 levels of income per capita (Figure 1-4). Not only has the U.S. economy outperformed those of other advanced economies in the current global business cycle, but the recovery from the Great Recession compares favorably with historical recoveries in countries experiencing systemic financial crises (Reinhart and Rogoff 2014). Still, a number of trends—including demographic changes resulting in slower workforce growth and a slowdown in productivity growth—have presented headwinds to U.S. output growth over the recovery.

Equity Markets, House Prices, Household Wealth, and Other Measures

The collapse of the housing bubble and the financial crisis of 2007–08 manifested in steep declines in both house and equity prices. From their peak in February 2007 to their trough in January 2012, house prices (as measured by the S&P CoreLogic Case-Shiller Home Price Index) fell by 26 percent. The S&P 500 index, meanwhile, fell by more than half between August 2007 and March 2009. These steep declines in asset prices caused stark drops in overall household wealth: real household net worth—the assets of U.S. households minus their liabilities, net of inflation—fell 21 percent from its peak in 2007 to its trough in 2009.

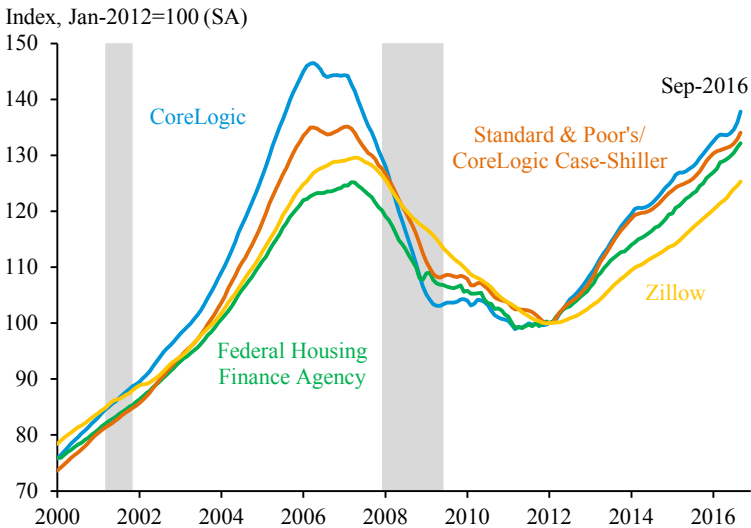
By the end of 2016, the landscape was much improved. From March 2009 to November 2016, the S&P 500 index increased 186 percent. Since their January 2012 trough, home prices have increased 34 percent as of September 2016, and have nearly recovered to their February 2007 nominal peak (Figure 1-5). As of the second quarter of 2016, rising home prices since the end of 2012 have helped to lift almost 7.9 million households out of negative equity, and the number of homes in foreclosure has declined dramatically. The combination of rising employment and wages, rebounding asset prices,

Figure 1-4
Real GDP per Capita: Euro Area, United States, and Japan, 2007–2016



Note: Population data for euro area are quarterly interpolations of annual data.
 Source: National sources via Haver Analytics; CEA calculations.

Figure 1-5
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.

and diligent efforts to pay down debts has left American households with their strongest net worth position on record: as of the third quarter of 2016, real household net worth exceeded its pre-recession peak by 16 percent.

Other indicators show a similar pattern of strong progress. Since the ACA was signed into law in 2010, health care prices have risen at the slowest pace in 50 years. Since 2008, the United States has tripled the amount of energy harnessed from wind and has increased solar generation thirtyfold. Today, the United States is less reliant on foreign oil than it has been in nearly three decades. The Federal budget deficit in fiscal year (FY) 2016 was 3.2 percent of GDP, about a third of the 9.8 percent of GDP deficit recorded in 2009 and equal to the average over the last 40 years.

THE CRISIS AND THE RESPONSE

After eight years of recovery, it is easy to forget how close the U.S. economy came to an outright depression during the crisis. Indeed, by a number of macroeconomic measures, the first year of the Great Recession in the United States saw larger declines than at the outset of the Great Depression in 1929-30. However, the forceful policy response by the Federal Government—including the efforts of the Bush Administration, the Obama Administration, the Federal Reserve, Congress, and others—combined with the resilience of American businesses and families and coordination with our international partners to help stave off a second Great Depression.

A Once-in-a-Lifetime Crisis

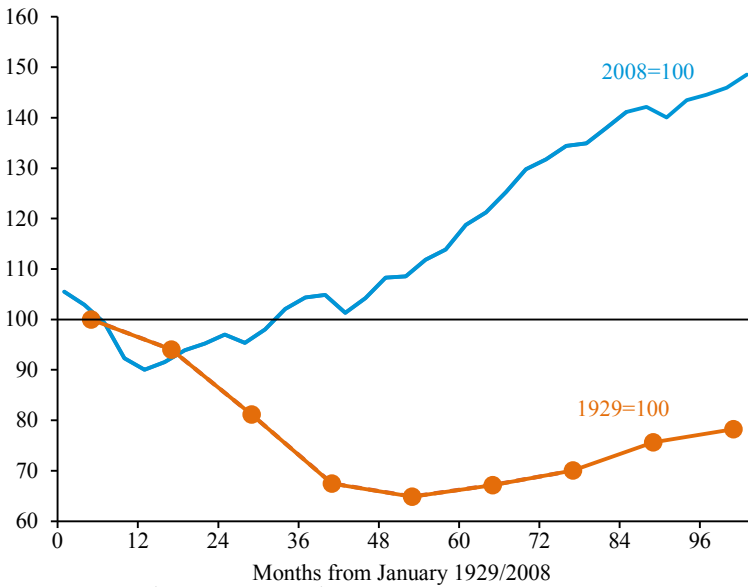
In the run-up to the 2007-09 recession, the country experienced a dramatic escalation in home prices, fueled in part by lax mortgage underwriting standards and a financial system that channeled too much funding into housing. The rapid increase in home prices came to an abrupt halt in late 2006. Home prices stopped rising and then started falling rapidly within a year. Millions of homeowners found themselves “underwater”—that is, their mortgage loan balances exceeded the value of their homes—and many were unable to make scheduled mortgage payments.

Fallout from the housing crisis quickly spread to the broader economy through a complex web of opaque financial instruments tied to housing and questionable business practices of some financial firms, including excessive leverage and an overreliance on short-term debt (Financial Crisis Inquiry Report 2011). Investors pulled back from risky assets and, during one fateful week in September 2008, the investment bank Lehman Brothers went out of business, a prominent money market fund “broke the buck” (meaning that depositors could no longer count on getting their money back in its entirety,

Figure 1-6

Household Net Worth in the Great Depression and Great Recession

Index, 1929/2008=100



Note: Orange markers represent annual averages.

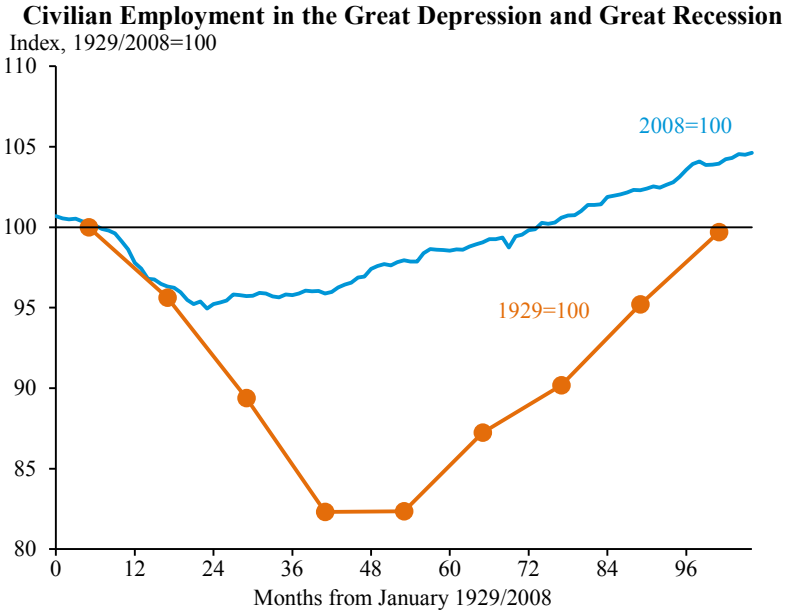
Source: Federal Reserve Board of Governors; Mishkin (1978).

an almost unprecedented event), and the large insurance firm American International Group (AIG) teetered on the edge of bankruptcy until the U.S. Government provided \$85 billion in financial support.

The dramatic fall of asset prices—due to both the collapse of the housing bubble and the resulting financial turmoil—was, by many measures, deeper than at the outset of the Great Depression in 1929-30. Home prices in the United States fell 5.6 percent between 2008 and 2009, outpacing the 4.3-percent decline from 1929 to 1930. Between 2008 and 2009, the S&P 500 Index declined 23 percent on an annual average basis, exceeding the 1929-30 decline of 19 percent. As a result of these steep declines in asset prices, nominal household net worth declined by a total of \$13 trillion, or 19 percent of total U.S. household wealth, from its peak in 2007 to its trough in 2009. The decline in wealth in the early stages of the Great Recession was far larger than the reduction experienced at the onset of the Great Depression (Figure 1-6).

Faced with a drop in demand for their goods and services and extraordinary uncertainty about their economic futures, businesses stopped hiring and laid off workers: employment declined 4 percent from 2008 to 2009, nearly the same rate as from 1929 to 1930 (Figure 1-7). Businesses also

Figure 1-7



Note: Civilian employment of those ages 16 and older for 2008 series; ages 14 and older for 1929 series. Orange markers represent annual averages.
 Source: Bureau of Labor Statistics,; CEA calculations.

shelved investment plans and consumers cut back on spending. The financial crisis also had wide-ranging effects abroad, and global trade suffered a much more drastic fall between 2008 and 2009 than during the first year of the Great Depression (Figure 1-8). In short, as the Obama Administration began, the United States faced an economic crisis of historic proportions.

The Policy Response

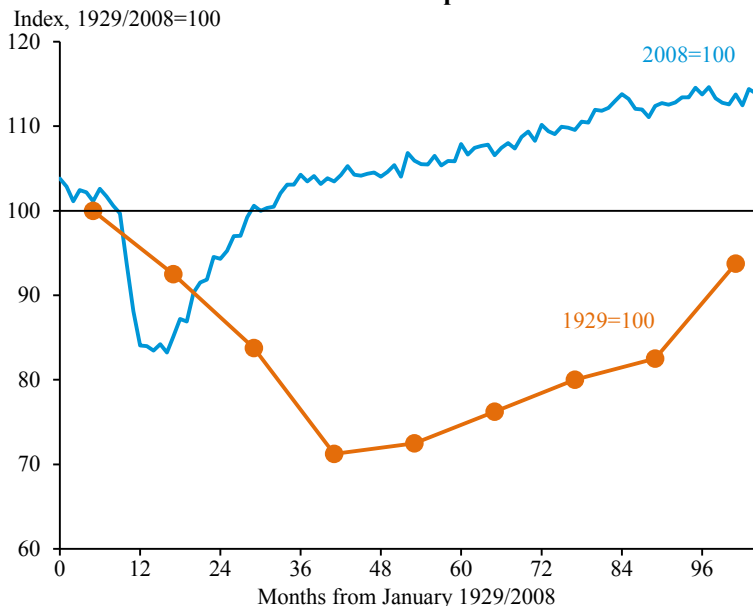
The short-term policy response in the United States to the global financial crisis in 2008-09 was aggressive, swift, and—by the preponderance of evidence from many private-sector, academic, and government analyses—effective. It included a combination of aggressive aggregate demand management driven by expansionary fiscal and monetary policy and short-term financial stability measures that prevented the risks of the crisis from compounding further.

Fiscal Policy

The fiscal response began in early 2008, well before the height of the financial crisis, as the economy began to slide into recession. Congress and the Bush Administration enacted the Economic Stimulus Act in February 2008, cutting taxes for low- and middle-income households while providing

Figure 1-8

Global Trade Flows in the Great Depression and Great Recession



Note: Orange markers represent annual averages.
 Source: CPB World Trade Monitor; Statistical Office of the United Nations; CEA calculations.

tax incentives to encourage business investment. The value of the cuts in the Act totaled \$124 billion over 11 years, with nearly all of the cuts concentrated in FY 2008. The Act was designed to counteract a short recession by providing brief, temporary support to consumer spending—including electronic payments to households that began less than three months after passage of the Act—but it was insufficient to reverse the emerging distress and, by design, did not have long-lasting effects.

In December 2008, then-President-elect Obama proposed an outline of what would become the American Recovery and Reinvestment Act of 2009, also known as the Recovery Act or “ARRA.” The Recovery Act was the first bill introduced in the House of Representatives just days after the President’s inauguration, and the President signed it into law less than a month after he took office. As the name of the Act suggests, the intention was for the bill to both generate recovery from the crisis and to be an important investment in the future of the economy.

Several principles guided the new Administration’s fiscal policy. First, the fiscal effort was to be implemented quickly. Second, it should be large, given the scope of the economic problem. Finally, it should be a sustained effort that would not only provide immediate fiscal support over the first two years, but would also provide smaller levels of temporary support

Box 1-1: Revisions to Crisis-Era Data

Policymakers face a number of challenges in assessing the state of the economy in real time. First, macroeconomic indicators are only available on a lagged basis, since it takes time for the Federal statistical agencies—such as the Census Bureau, the Bureau of Economic Analysis (BEA), and the Bureau of Labor Statistics (BLS)—to collect and analyze the data underlying their estimates. Initial estimates of gross domestic product (GDP) for a given quarter, for example, are released several weeks after that quarter ends. Second, more timely data generally tend to be incomplete and can only present a partial snapshot of the economy. Third, and perhaps most importantly, though subsequent revisions to macroeconomic data—particularly estimates of employment and output—often do not receive the same attention as initial estimates, they can often be large and economically meaningful, especially around turning points in the business cycle (when extrapolations and assumptions underlying some initial estimates can turn out badly wrong).

These challenges confronted the Obama Administration in determining the response to the 2008 crisis. When President Obama took office on January 20, 2009, BEA had not yet released its advance estimate of GDP growth in the fourth quarter of 2008, a critical measure for understanding how much the financial crisis had affected real economic activity. Yet what data were available at that point showed an economy facing a substantial and protracted decline in economic output, and the incoming Administration had proposed the contours of what would become the American Recovery and Reinvestment Act in December 2008. When BEA released its advance estimate of GDP growth for the fourth quarter of 2008 in late January 2009—a contraction of 3.8 percent at an annual rate, the largest quarterly decline since 1982—it confirmed the need for a vigorous response from the Federal Government.

Table 1-i
Revisions to Crisis-Era Output Data

Estimate Date	Real GDP Growth, 2008:Q4 (Percent, Annual Rate)
January 2009 (Advance Estimate)	-3.8
February 2009 (Second Estimate)	-6.2
March 2009 (Third Estimate)	-6.3
July 2009	-5.4
July 2010	-6.8
July 2011	-8.9
July 2013	-8.3
July 2014	-8.2

Source: Bureau of Economic Analysis, National Income and Product Accounts.

Subsequent revisions to fourth-quarter GDP growth, however, have revealed that early estimates greatly *underestimated* the extent of output losses in the immediate aftermath of the financial crisis. As shown in Table 1-i, BEA’s most recent estimate is that real GDP decreased by 8.2 percent at an annual rate in the fourth quarter of 2008, the largest one-quarter drop since 1958.

Labor market data show a similar pattern, with initial estimates of job losses in the fourth quarter of 2008 subsequently revised further downward, as shown in Table 1-ii. In January 2009, contemporary estimates of nonfarm employment losses from September to December 2008 totaled 1.5 million jobs. As of 2016, BLS estimates that 1.9 million Americans lost their jobs during those months.

All told, subsequent revisions to crisis-era data have revealed that the state of the U.S. economy in early 2009 was even worse than initial data indicated. The revisions have also helped to confirm both the historic nature of the economic downturn that policymakers faced in the early months of 2009 and the role that policy played in helping to avert a second Great Depression.

Table 1-ii
Revisions to Crisis-Era Employment Data

Estimate Date	Change in Total Nonfarm Employment, September 2008 to December 2008 (Thousands)
January 2009	-1,531
February 2009	-1,554
March 2009	-1,658
February 2010	-1,955
February 2011	-1,930
February 2012	-1,953
February 2013	-1,952
February 2014	-1,936
February 2015	-1,937

Source: Bureau of Labor Statistics, Current Employment Statistics.

thereafter. The new approach would require a mix of policy instruments such as tax cuts and other temporary assistance that put cash in the hands of households who needed it immediately and who were likely to spend it, boosting aggregate demand. Other measures provided States with funding to continue providing necessary services and to help them avoid cutting their own budgets drastically in the face of fiscal shortfalls. Additional components, such as investments in infrastructure and innovation, would be more lagged but would be more likely to have larger cumulative counter-cyclical impacts and greater longer-run benefits. In all cases, however, the

measures would end and would not have long-term impacts on the Federal Government's primary budget deficit.

To ensure that the fiscal stimulus would be as effective as possible, the Recovery Act utilized a variety of spending, tax, and incentive channels. Recovery Act policies were fairly evenly distributed across individual tax cuts and business tax incentives (29 percent), aid to directly impacted individuals and State fiscal relief (34 percent), and public investments in infrastructure, education, job training, energy, and health information technology (37 percent).

When passed, the Congressional Budget Office (CBO) estimated that the Recovery Act would cost \$787 billion, though that estimate would increase as the full impact of the recession became apparent (CBO 2009). The most recent CBO estimate shows that the fiscal support from the Recovery Act will total \$836 billion through 2019 (CBO 2015). Between calendar years 2009 and 2012, the period for which the Recovery Act had the largest impact, the Act provided a total fiscal impulse of approximately \$700 billion.¹

Importantly, while the Recovery Act provided a considerable short-term boost to aggregate demand, its investments were targeted for their long-term growth potential, helping ensure that the United States climbed out of the crisis stronger than before. The provisions of the Recovery Act were tailored to deepen the United States' stock of private physical capital (through business tax incentives), public physical capital (through investments in transportation infrastructure), human capital (through extensive education investments), and intellectual capital (through research and development investments).

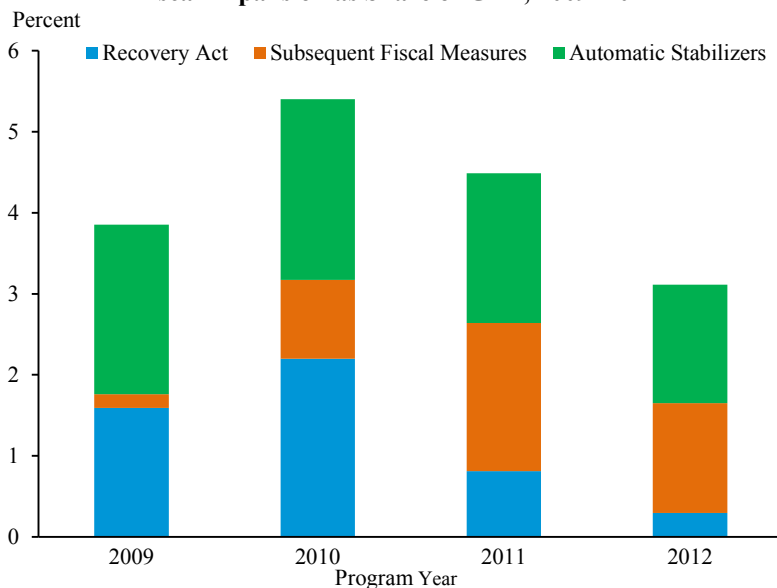
More than a dozen subsequent fiscal measures extended certain Recovery Act provisions and introduced additional countercyclical policies, such as the temporary payroll tax cut in effect during 2011 and 2012. In total, discretionary fiscal stimulus from 2009 through 2012 totaled \$1.4 trillion and averaged around 2 percent of GDP. Together with automatic stabilizers, the total fiscal stimulus over these four years averaged 4 percent of GDP (Figure 1-9). The initial U.S. fiscal response exceeded the response by the euro area or Japan, one of the reasons the United States recovered sooner and more strongly (Furman 2016a).

Monetary Policy

The Federal Reserve's independent decision to take a vigorous approach to monetary stabilization was another major driver of the United

¹ This figure excludes a routine set of patches for the Alternative Minimum Tax (AMT). This part of the Recovery Act, a continuation of a longstanding practice, is best thought of as ongoing fiscal policy, not as a temporary fiscal impulse designed specifically to counter the effects of an economic recession.

Figure 1-9
Fiscal Expansion as Share of GDP, 2009–2012



Source: Congressional Budget Office (2016); Bureau of Economic Analysis, National Income and Product Accounts; CEA calculations.

States’ recovery. The traditional tool of monetary policy—the Federal Funds target rate—was reduced to nearly zero by the end of 2008, after which the Federal Reserve turned to a program of unconventional policy in an effort to reduce long-term interest rates. The Federal Reserve used two principal mechanisms to achieve this end: forward guidance, by which it provided an indication of its plan for the future path of short-term interest rates, and asset purchases (commonly known as “quantitative easing”). As part of its forward guidance, the Federal Reserve assured market participants that it would maintain its near-zero interest rate policy for an extended period of time. As part of its quantitative easing program, the Federal Reserve purchased long-term debt instruments, including mortgage-backed securities and U.S. Treasury bonds, expanding its balance sheet from \$900 billion to \$4.5 trillion between 2008 and 2014. In contrast, the European Central Bank initially did not cut rates to zero, raised rates in 2011, and did not undertake nearly as large a balance sheet expansion as the Federal Reserve.

Stabilizing Financial Markets

In addition to expansionary fiscal and monetary policy, the Bush and Obama Administrations and the Federal Reserve implemented a package of short-term measures to stabilize financial markets. In late 2008, the Treasury

Department established a temporary guarantee program for money market mutual funds while the Federal Deposit Insurance Corporation (FDIC) expanded its guarantee on bank deposits and debt to avoid runs on banks and other financial institutions. The Bush Administration also proposed, and Congress approved, the Troubled Asset Relief Program (TARP), providing up to \$700 billion to stabilize troubled banks. Meanwhile, the Federal Reserve instituted a number of programs designed to provide liquidity to borrowers, investors, and financial market participants. These early policy responses helped stem a plunge in consumer confidence, credit flows, and corporate balance sheets that could have been much worse.

Within three weeks of President Obama taking office, the new Administration released its Financial Stability Plan. Building on the initial action of the Bush Administration, the plan included a host of new measures designed to continue to shore up financial markets and increase credit flows. Ultimately, over 700 banks received capital through TARP, and the Obama Administration also expanded the use of TARP funds to help millions of families affected by the housing crisis, restructure the automobile industry, and support small businesses. It is important to note, however, that TARP gave the Federal Government authority to recoup any returns on asset purchases or equity investments made under the program. To date, the Federal Government has collected 103 percent of the \$412.1 billion spent on investment programs, as well as an additional \$17.5 billion from Treasury's equity stake in AIG, for a total return of about \$28 billion.

In addition to expanding and effectively managing the TARP program, the Administration established comprehensive stress tests of the Nation's 19 largest financial institutions to reduce uncertainty regarding their solvency, stabilize the financial system, and ensure the banks were able to continue lending. By using TARP funding as a backstop for firms unable to raise necessary capital, the Administration moved the financial system rapidly toward a better-capitalized system where financial institutions and investors knew that institutions were solvent, so normal financial activity could resume.

Rescuing the Automobile Sector

In addition to stabilizing the financial market, the Administration provided substantial support to automobile companies to keep them from failing during the Great Recession. At the height of the financial crisis, capital markets would have been unable to oversee the orderly restructuring of the automobile companies necessary to preserve their viable assets. The ensuing job losses and the concentrated, severe impact on specific communities would also have resulted in large economic hardship as well as

substantial costs to the Federal Government for Medicaid, unemployment insurance, and other social assistance programs. In these circumstances, the Federal Government took extraordinary steps to avoid the unmanaged bankruptcy of the largest automobile manufacturers, failures that likely would have cascaded through supply chains, threatening even more firms.

The Administration guided two of America's largest automobile manufacturers—GM and Chrysler—through a targeted bankruptcy and comprehensive restructuring. In the spring of 2009, the Administration's Auto Task Force worked with these two firms to produce plans for viability. For both companies, a quick, targeted bankruptcy was judged to be the most efficient and successful way to restructure. Chrysler filed for bankruptcy on April 30, 2009; GM, on June 1. In addition to concessions by all stakeholders, including workers, retirees, creditors, and suppliers, the Federal Government invested funds to bring about an orderly restructuring. By the end of 2013, the Federal Government had disposed of all of its investments in Chrysler and GM. To date, American taxpayers have recovered \$71 billion of the \$80 billion invested in the automobile industry, and the Federal Government continues to receive proceeds from the bankruptcy liquidations of Old Chrysler and Old GM.

Supporting the Housing Market

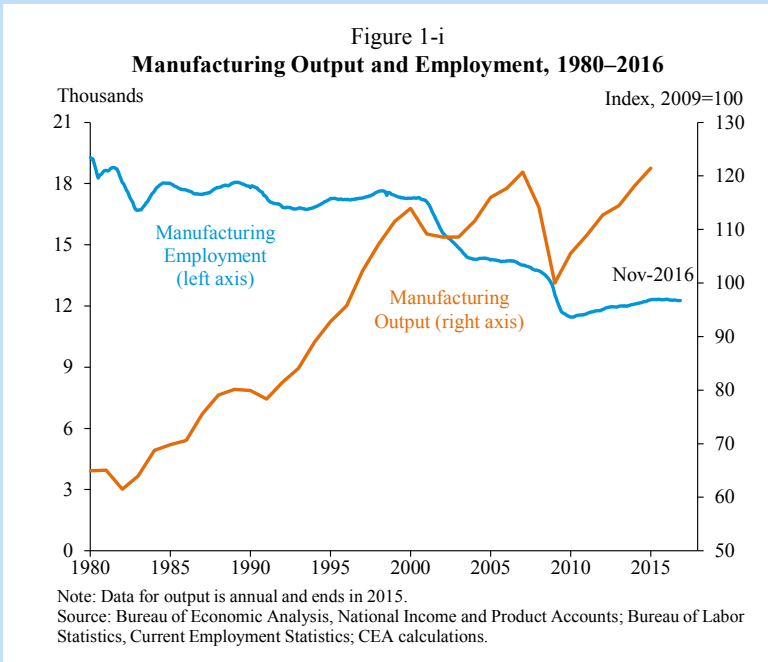
The loss in household wealth from the collapse in housing prices was a significant factor slowing the economy in the recession, and financial products linked to real estate valuations were central to many aspects of the global financial crisis. The short-term policy response did not lose sight of this key fact. By establishing the Home Affordable Refinance Program (HARP), the Obama Administration helped more than 3 million borrowers refinance their loans and save hundreds of dollars each month. The Administration also eliminated additional barriers to refinancing and proposed reforms so that all responsible borrowers with loans insured by Fannie Mae and Freddie Mac would have access to simple, low-cost refinancing.

In addition to helping millions of Americans refinance, the Administration created the Home Affordable Mortgage Program (HAMP) to provide millions of homeowners who are behind on their payments an opportunity to modify their mortgages in order to reduce their monthly payments and avoid foreclosure. The Administration also provided over \$7 billion in targeted support to the hardest-hit communities who experienced the sharpest declines in home prices. These funds were intended to help manage vacant and foreclosed properties that bring down local home values, support unemployed and underwater homeowners, and convert foreclosed properties into rentals.

Box 1-2: The Manufacturing Sector

A robust manufacturing sector acts as a galvanizing force for America's economic well-being, as it is linked to productivity growth, innovative capacity, and high-quality jobs. The average worker employed in the domestic manufacturing sector earns an hourly wage that is 2 to 9 percent higher than the overall average worker (Nicholson and Powers 2015). Further, the manufacturing sector houses a great deal of innovation, accounting for nearly 80 percent of private-sector research and development (R&D) and the vast majority of patents issued in the United States. The high-quality jobs and innovative capacity of the manufacturing industry, supported by the Administration, serve as investments in a strong macroeconomy and broad-based growth. In the last two decades of the 20th century, manufacturing employment followed a slight downward trend, while manufacturing output rose quickly (Figure 1-i). However, throughout the first decade of the 21st century, employment fell sharply. By the time that the Great Recession hit, the manufacturing sector had already lost 3.5 million jobs relative to January 2000. By the beginning of 2010, the sector had shed another 2.3 million jobs.

Given the importance of the manufacturing sector to the U.S. economy, the Obama Administration made revitalizing domestic performance in this sector a central component of its economic agenda and



worked to promote innovation and invest in manufacturing workforce skills.

The Administration's commitment to manufacturing was manifested in its decision to save the automobile industry. The President made the crucial, early decision to not only rescue, but to also restructure and rebuild American automobile manufacturing and its many connected industries. Yet, support for manufacturing went beyond this rescue. Creating the Manufacturing USA initiative in 2012 marked another significant action taken to support manufacturing. The Federal Government has committed over \$600 million—which has been matched by over \$1.3 billion in non-Federal investment—to fund the development of world-leading manufacturing capabilities with technologies such as 3D printing, integrated photonics, and smart sensors. In the four years since its establishment, Manufacturing USA has grown from one institute with 65 members to a network of nine institutes and over 1,300 members.

Further, the Administration has taken steps to reinvest in our manufacturing workforce to prepare it for a more competitive, global economy. First, the Administration awarded nearly \$2 billion in Trade Adjustment Assistance Community College Career Training grants to help community colleges expand and improve programs that prepare workers for high-paying, high-skill occupations. To date, nearly 300,000 participants have enrolled in retraining programs through these grants, and 160,000 credentials have been awarded. Second, the Administration has prioritized apprenticeships. Research shows that apprenticeships tend to lead to high-paying jobs and provide a strong return on investment for employers. Recent Department of Labor data indicate that after completing her programs, the average registered apprentice earns a starting wage above \$60,000, and 89 percent of registered apprenticeship program completers enter employment after exiting. To these ends, the Administration has allocated \$265 million toward grants aimed at expanding apprenticeships in the United States. Since 2014, active apprenticeships have increased 31 percent, with an estimated 20,000 new apprentices in the manufacturing industry.

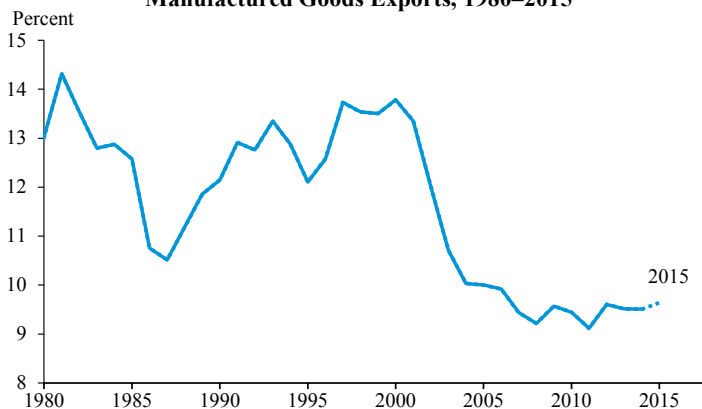
Ultimately, U.S. manufacturing output since the Great Recession has recovered at twice the pace of the overall economy since the third quarter of 2009. This marks the longest period in which manufacturing has outpaced U.S. economic output in 50 years. Contrary to the pattern in all other U.S. expansions since 1982, the current expansion has seen an increase in manufacturing output as a share of U.S. value-added. Notably, the U.S. manufacturing sector's job growth since the Great Recession is a marked departure from last decade, when the sector

struggled to recover the jobs lost in the 2001 recession. Since February 2010, U.S. manufacturing has added over 800,000 new jobs.

Following the strong manufacturing recovery in the expansion after the Great Recession, the manufacturing sector has seen lackluster output and employment growth since 2014. The sector is inextricably tied to the global economy, and as global demand has slowed and energy-related capital expenditure has fallen, U.S. manufacturing has suffered. Global economic output, as one of the key drivers of export demand, is particularly important to manufacturing, as it is a far more trade-exposed sector than other parts of the economy. For example, while manufacturing represents roughly 12 percent of value added in the economy, manufactured exports have maintained a share of more than 60 percent of U.S. exports. Real exports rebounded swiftly after the crisis, helping the manufacturing sector. But recently, real exports of goods and services have fallen slightly, tied in large part to slower foreign GDP growth and a strong U.S. dollar. Moreover, recent declines in energy prices have affected many manufacturing industries that serve as significant upstream suppliers for the energy sector, such as steel manufacturers that supply oil producers.

Yet, even despite these headwinds, manufacturing job growth over the last two years is comparable with its *best* two years in the previous

Figure 1-ii
**U.S. Manufactured Goods Exports as a Share of World
Manufactured Goods Exports, 1980–2015**



Note: Data for 2015 are preliminary CEA estimates based on scaled World Bank WDI data. Manufactured exports are defined by SITC sections 5, 6, 7, and 8 (which includes iron and steel, chemicals, machinery and transport vehicles, and textiles), but exclude division 68 (non-ferrous metals) and group 891 (arms and ammunition). This differs from the Census definition of manufacturing, which is based on NAICS codes 31-33.

Source: World Trade Organization; IMF International Financial Statistics; Eurostat Comext; World Bank.

expansion, a period of low production and negative employment growth in the sector. Further, the underlying structure of the sector is robust. One clear piece of evidence regarding the continued resilience of the U.S. manufacturing industry is that the United States has stabilized its market share in global manufacturing exports (Figure 1-ii). This stabilization is all the more notable given that the U.S. share of world manufacturing exports fell precipitously in the first half of the 2000s. These are signs that the headwinds that the U.S. manufacturing sector is facing are likely temporary and will subside as the underlying strength of the sector continues to support the U.S. macroeconomy.

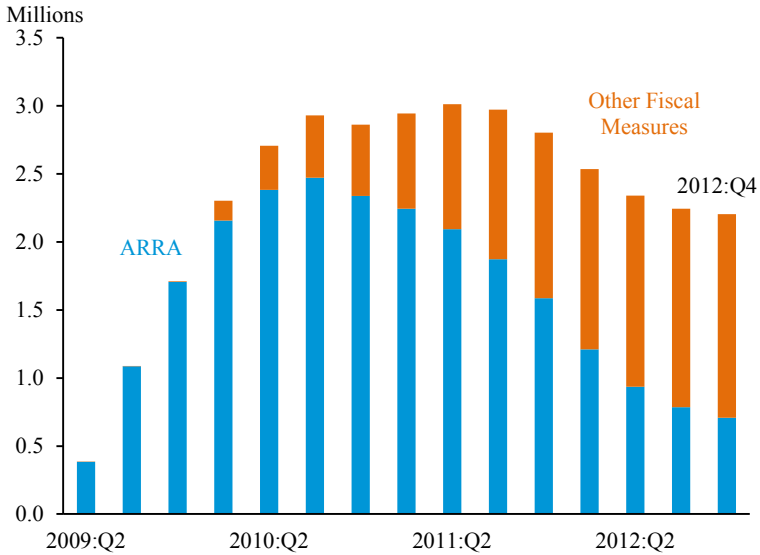
The Impact of the Policy Response

A number of studies adopting a wide range of approaches to measuring the effect of the Recovery Act and subsequent fiscal measures find a large positive impact on output and employment (CEA 2014). Overall, CEA estimates that the Recovery Act saved or created about 6 million job-years (where a job-year is the equivalent of one full-time job for one year) through 2012 and raised the level of GDP by between 2 and 2.5 percent in FY 2010 and part of FY 2011. Combining effects of the Recovery Act and additional countercyclical fiscal legislation that followed, CEA estimates that the cumulative gain in employment was about 9 million job-years through the end of 2012 (Figure 1-10a). The cumulative boost to GDP from 2009 to 2012 was equivalent to about 9.5 percent of the level of GDP in the fourth quarter of 2008 (Figure 1-10b).

CEA's results are consistent with outside estimates, including those from CBO and academic researchers. These include studies that focus on portions of the Recovery Act that provided relief to States in ways that were not tied to current conditions (Feyrer and Sacerdote 2011; Chodorow-Reich et al. 2012), as well as those taking a broader view of the Federal policy response to the crisis and recession. Blinder and Zandi (2015) find that in the absence of policy actions by the Bush and Obama Administrations, Congress, and the Federal Reserve, the peak-to-trough decline in real GDP would have been nearly 14 percent (instead of 4 percent), the unemployment rate would have risen to nearly 16 percent (instead of 10 percent), and real output would have contracted for 13 quarters (instead of six).²

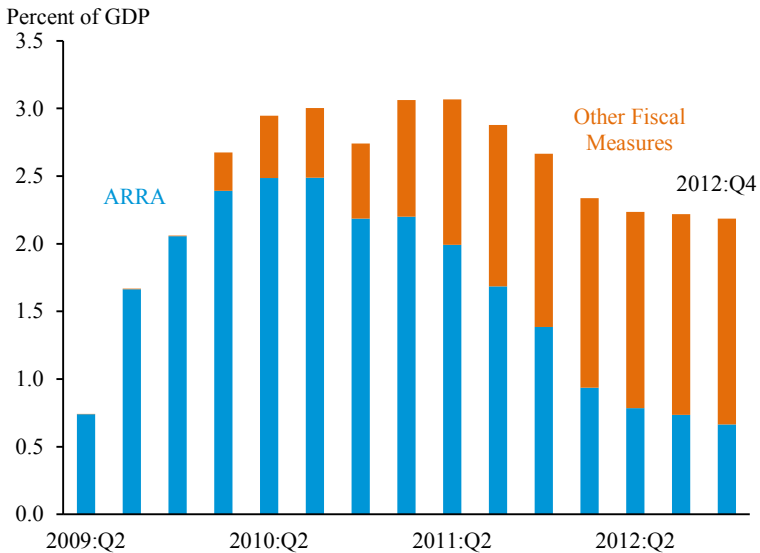
² For a more comprehensive discussion of methods of estimating the impact of the Recovery Act and subsequent fiscal measures, see Chapter 3 of the 2014 *Economic Report of the President*.

Figure 1-10a
Quarterly Effect of the Recovery Act and Subsequent Fiscal Measures on Employment, 2009–2012



Source: Bureau of Economic Analysis, National Income and Product Accounts; Congressional Budget Office; CEA calculations.

Figure 1-10b
Quarterly Effect of the Recovery Act and Subsequent Fiscal Measures on GDP, 2009–2012



Source: Bureau of Economic Analysis, National Income and Product Accounts; Congressional Budget Office; CEA calculations.

THE 2017 *ECONOMIC REPORT OF THE PRESIDENT*: PROMOTING STRONGER, MORE INCLUSIVE, AND MORE SUSTAINABLE GROWTH

The response of the Federal Government to the crisis averted a sharper and more prolonged downturn and put the U.S. economy back on a path to growth. Even so, a number of decades-long trends that preceded the crisis—rising inequality, insufficient health insurance coverage, high health care costs, and growing costs for higher education—still remained, preventing middle-class Americans from seeing gains in their incomes, economic security, and standards of living. Addressing these barriers to inclusive growth has been the cornerstone of the Obama Administration’s economic policy, which has been focused not only on returning the U.S. economy back to stability, but on setting it on a firmer path to sustained growth that is broadly shared among all American families.

The Administration’s reforms—and their effects on the U.S. economy and American families—are the main topic of this year’s *Economic Report of the President*. Following a summary of macroeconomic developments in the last year (Chapter 2), each subsequent chapter focuses on a different aspect of the Obama Administration’s economic record, describing the great strides that the Nation has made in building a stronger foundation for future prosperity.

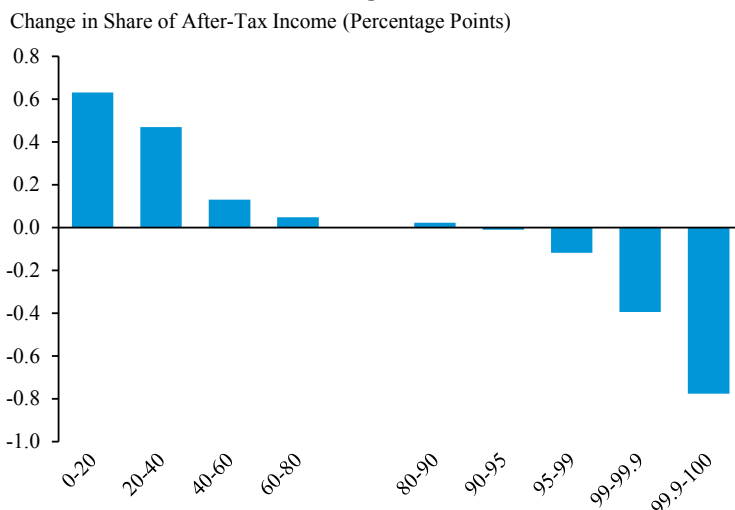
Chapter 3: Reducing Inequality

The legislation President Obama fought for and signed into law represents a historic accomplishment in reducing inequality. The Administration has achieved its most substantial and immediate success in this respect in three areas: restoring economic growth, expanding health insurance coverage, and enacting a fairer tax code.

The policy response to the Great Recession served a dual role in reducing inequality. It reduced inequality in after-tax incomes directly through progressive tax and spending policies, such as temporary tax cuts for working and middle-class families and extensions of unemployment insurance, and it reduced wage inequality indirectly by boosting employment. By reducing unemployment, these policies offset roughly half of the increase in wage inequality that would otherwise have occurred if more workers lost their jobs and saw their wages fall to zero.

In addition to providing substantial gains in health insurance coverage (see below), the ACA also led to a large reduction in inequality in after-tax incomes. Meanwhile, progressive changes in tax policy have increased

Figure 1-11
**Change in Share of After-Tax Income by Income Percentile: Changes
 in Tax Policy Since 2009
 and ACA Coverage Provisions, 2017**



Source: U.S. Treasury, Office of Tax Analysis.

tax rates for the highest-income Americans and increased the generosity of tax credits for working families, reducing inequality in after-tax incomes.

Together, changes in tax policy and the ACA coverage provisions will increase the share of after-tax income received by the bottom quintile of households in 2017 by 0.6 percentage point, or 18 percent—equivalent to more than a decade of average income gains—and the share received by the second quintile by 0.5 percentage point, or 6 percent. At the same time, they will reduce the share received by the top 1 percent by 1.2 percentage points, or 7 percent (Figure 1-11). These changes will increase average tax rates for the top 0.1 percent of families, a group projected to have average pre-tax incomes over \$8 million, by nearly 7 percentage points.

The impacts of these policies are large relative to previous Federal policy actions. Tax changes enacted since 2009 have boosted the share of after-tax income received by the bottom 99 percent of families by more than the tax changes of any previous administration since at least 1960. President Obama has overseen the largest increase in Federal investment to reduce inequality since the Great Society programs of the Johnson Administration. However, while these accomplishments are historically large, they have offset only a fraction of the decades-long increase in inequality, and much more work remains to be done.

Chapter 4: Reforming the Health Care System

The Obama Administration has made dramatic progress in ensuring that all Americans have access to affordable, high-quality health care by expanding and improving health insurance coverage and reforming the health care delivery system.

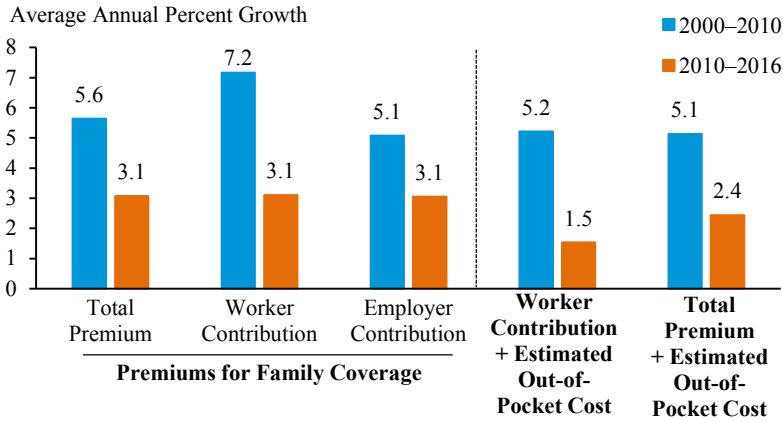
In his first month in office, President Obama signed legislation improving the Children's Health Insurance Program (CHIP). Slightly more than a year later, the President signed into law the ACA, which reformed the individual health insurance market to ensure that all Americans, including people with pre-existing health conditions, could find affordable, high-quality coverage; provided generous financial support to States that expand their Medicaid programs to cover more low-income Americans; and allowed young adults to remain on a parent's plan until age 26, among other reforms. The ACA also improved financial security and access to care for those already insured, including by ensuring that everyone with private insurance has an annual limit on out-of-pocket spending and closing the Medicare Part D coverage gap.

Together, these actions have led to a historic expansion of health insurance coverage. Because of the ACA, an estimated 20 million additional adults now have health insurance. In addition, thanks in large part to the ACA and improvements to CHIP, the uninsured rate among children has fallen by almost half since the President took office, providing health insurance to more than 3 million additional children. As of 2016, the uninsured rate stands at its lowest level ever. Evidence demonstrates that broader insurance coverage is improving access to care, health, and financial security for the newly insured, while reducing the burden of uncompensated care for the health care system as a whole, without the adverse effects on the labor market that critics of the ACA had predicted.

The ACA and related legislation have also implemented comprehensive reforms to make the health care delivery system more efficient and improve the quality of care. The ACA achieved significant near-term savings by better aligning payments to medical providers and private insurers in Medicare with the costs of providing services. The law also began a long-term process of deploying alternative payment models (APMs) that, unlike existing fee-for-service payment systems, reward providers who deliver efficient, high-quality care, rather than just a high quantity of services. As of early 2016, more than 30 percent of traditional Medicare payments were associated with APMs, up from virtually none in 2010. The tools provided by the ACA, enhanced by the bipartisan physician payment reform legislation enacted in 2015, will enable further progress in deploying APMs in the years ahead.

Figure 1-12

Growth in Real Costs for Employer-Based Family Coverage, 2000–2016



Note: Out-of-pocket costs were estimated by first using the Medical Expenditure Panel Survey to estimate the out-of-pocket share in employer coverage for 2000–2014 and then applying that amount to the premium for each year to infer out-of-pocket spending. The out-of-pocket share for 2015 and 2016 was assumed to match 2014. Inflation adjustments use the GDP price index. GDP price index for 2016 is a CBO projection.
 Source: Kaiser Family Foundation/Health Research and Educational Trust Employer Health Benefits Survey; Medical Expenditure Panel Survey, Household Component; CEA calculations.

Health care costs have grown exceptionally slowly since the ACA became law. Prices of health care goods and services have grown at a slower rate under the ACA than during any comparable period since these data began in 1959, and recent years have also seen exceptionally slow growth in per-enrollee spending in both public programs and private insurance. The reforms implemented in the ACA have made an important contribution to these trends. CBO estimates imply that the ACA has reduced the growth rate of per-beneficiary Medicare spending by 1.3 percentage points per year from 2010 through 2016, and “spillover” effects of these reforms have subtracted an estimated 0.6 to 0.9 percentage points per year from the growth rate of per-enrollee private insurance spending over the same period. Moreover, there is reason to believe that the ACA has had systemic effects on trends in costs and quality that go beyond these estimates.

Because of slow growth in costs in employer coverage, illustrated in Figure 1-12, the average costs for a family with employer-based coverage in 2016 were \$4,400 below where they would have been had costs grown at their pace over the decade before the ACA became law. Similarly, the premium and cost sharing amounts incurred by the typical beneficiary enrolled in traditional Medicare in 2016 are about \$700 below 2009 projections, even before accounting for reductions in cost sharing for prescription drugs due

to the ACA and other factors. The ACA and the accompanying slow growth in health costs have also driven dramatic improvements in the Nation's long-term fiscal outlook, while at the same time adding 11 years to the life of the Medicare Trust Fund.

In parallel, the ACA's reforms have helped drive major improvements in health care quality. Since 2010, the rate at which patients are harmed while seeking hospital care has fallen by 21 percent, which is estimated to have led to approximately 125,000 avoided deaths through 2015. Payment incentives created in the ACA have also driven a substantial decline in the rate at which patients return to hospital after discharge, corresponding to an estimated 565,000 avoided readmissions from April 2010 through May 2015.

Chapter 5: Investing in Higher Education

The Obama Administration made great strides to help students make more effective investments in higher education. To help expand college opportunity, the President doubled investments in higher education affordability through Pell Grants and the American Opportunity Tax Credit (AOTC). To help more students choose a college that provides a worthwhile investment, the Administration provided more comprehensive and accessible information about college costs and outcomes through the College Scorecard, simplified the Free Application for Federal Student Aid (FAFSA), and protected students from low-quality schools through a package of important consumer protection regulations including the landmark Gainful Employment regulations. To help borrowers manage debt after college, income-driven repayment options like the President's Pay as You Earn (PAYE) plan have allowed borrowers to cap their monthly student loan payments at as little as 10 percent of discretionary income to better align the timing of student loan payments with the timing of earnings benefits from attending college (Figure 1-13).

Moreover, Administration efforts to improve PreK-12 outcomes have helped to better prepare students for success in college and in their careers. The wide-ranging set of policies have included increasing funding for educators in the Recovery Act; expanding funding for high-quality early education programs; improving the research evidence base with Investing in Innovation (i3) grants and better data systems; closing gaps in opportunity with School Improvement Grants and other programs at disadvantaged schools; and encouraging excellence for all students with higher standards and stronger teaching.

The benefits of some of these policies are already evident, while many more will be realized over the coming decades. For example, CEA analysis finds that the Pell Grant expansions since 2008-09 enabled at least 250,000

Box 1-3: The Administration's Record in the Technology Sector

The technological advancements of the 21st century, like cloud computing, personalized medicine, and advanced materials, not only improve our daily lives, but also have the potential to increase productivity growth, one of the most important factors in raising standards of living and incomes. The Obama Administration has been dedicated to laying the groundwork for technology to improve the lives of all Americans. It has created and updated essential infrastructure for providing more equitable access to technology and worked to modernize America's institutions so that they support, rather than inhibit, innovation. The Administration has also placed a large emphasis on preparing Americans for the 21st century economy. (For a discussion of the economic impact of a number of these policies, see Chapter 5 of the 2014 *Economic Report of the President* and Chapter 5 of the 2016 *Economic Report of the President*.)

The Administration has worked to ensure that the technological infrastructure is in place, and the rules of the road are set, so that all Americans can benefit from technology. The American Recovery and Reinvestment Act provided funding to deploy or upgrade more than 114,000 miles of new broadband infrastructure, consistent with the President's goal of enhancing consumer welfare, civic participation, education, entrepreneurial activity, and economic growth through greater access to broadband. The Recovery Act financed additional broadband projects totaling \$2.9 billion, bringing high-speed Internet access to 260,000 more rural households, 17,500 businesses, and 1,900 community facilities. Indeed, average home Internet speed in the United States has tripled over the past four years.

In addition, the Administration has taken unprecedented action to free up spectrum—the airwaves that carry our wireless communications—with Presidential Memoranda directing the Department of Commerce, through the National Telecommunication and Information Administration, to collaborate with the Federal Communications Commission (FCC) to make available 500 MHz of spectrum for mobile broadband use by 2020 and to accelerate spectrum sharing efforts. The Nation is halfway to the 500 MHz goal, thanks to the hard work of nearly two dozen Federal agencies to free up spectrum for auction and innovative new plans to share the airwaves. The FCC's 2015 spectrum auction was its most successful ever, raising more than \$40 billion in revenue for the Federal Government while spurring the deployment of faster wireless and mobile broadband. Thanks in large part to these efforts, we have achieved the President's 2011 State of the Union goal that more

than 98 percent of Americans should have access to fast 4G/LTE mobile broadband.

Further, the President supported FCC rules to protect net neutrality—the concept that Internet providers must treat all Internet traffic equally. By putting into effect strong net neutrality rules, the FCC has helped ensure that the Internet remains open, fair, and free.

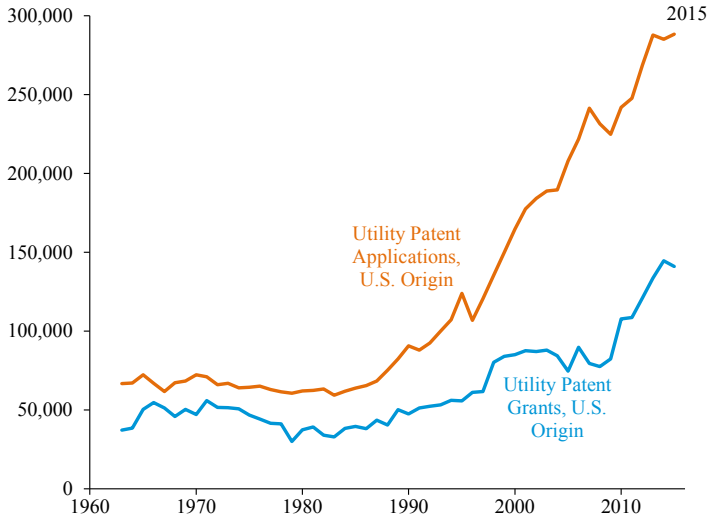
In addition to updating physical infrastructure, the Administration set about making sure that America’s institutions better support innovation. For example, the Administration recognized that the U.S. patent system needed to be updated to address the needs of America’s entrepreneurs. From excessive wait times, to decreasing patent quality, to overly aggressive Patent Assertion Entities, the patent system was doing more to stifle innovation than promote it. The America Invents Act (AIA) of 2011 helped reform the patent system, leading to a 20 percent reduction in patent wait times from 2011 to 2016 and establishing a tribunal-based process for patent disputes, leading to an increase in patent quality. These reforms help ensure that all entrepreneurs will have fair and easy access to the patent system and increased incentives to innovate, supporting a roughly 30 percent increase in U.S. patents granted from 2011 to 2015 (Figure 1-iii).

Finally, President Obama prioritized education and training to ensure that everyone is able to fully enjoy the benefits of today’s technological progress. Over half a million of today’s open jobs are in technology fields such as software development and cybersecurity—many of which did not even exist a decade ago. The average salary in a job that requires technology skills is 50 percent more than the average private-sector job. For this reason, the Administration has prioritized investing in America’s youngest generation so that they have the necessary skills to succeed in science, technology, engineering, and math (STEM) fields.

The U.S. technology sector has thrived since 2009, with rapidly growing new sectors like the “app economy,” rising valuations and venture capital for technology firms, robust growth in technology employment, and the positioning of major U.S. technology firms as global leaders. And technology employment and investment are not limited to the computer hardware, software, and Internet industries. Advanced manufacturing, health care, and many other industries increasingly employ software engineers and data specialists, and have seen parallel improvements. These successes are due to the innovation and skills of American businesses and workers, and the Administration has worked to ensure that government has played its role to enable these successes.

Administration efforts have secured more than \$1 billion in private investment in STEM education and, since 2008, STEM degrees as a

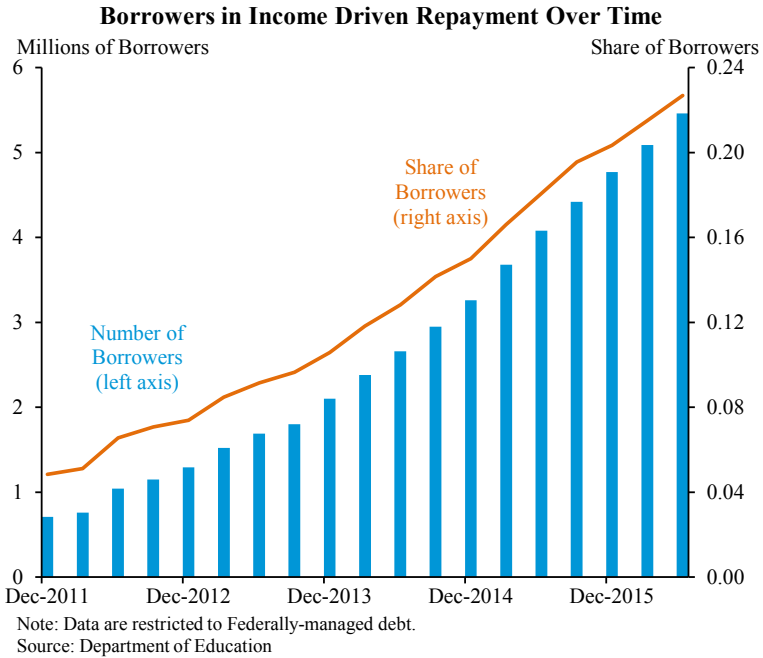
Figure 1-iii
Utility Patent Applications and Grants, 1963–2015



Source: United States Patent and Trademark Office.

share of total degrees awarded have grown 12.4 percent overall, and 20.3 percent for women. More than 100,000 engineers are graduating from American schools every year, a new record, and the Nation is 30 percent of the way to achieving the President’s goal of training 100,000 new STEM educators. Further, the Administration has helped workers get the skills and training they need for jobs in the 21st century. The TechHire initiative—which works to expand local tech sectors by providing training assistance through grants and public-private partnerships and has now been rolled out to 50 communities with 600 employers participating—is actively drawing on people from all backgrounds, including young adults who are disconnected from school and work, the long-term unemployed, and those living in rural areas where access to technology training is scarce. In support of TechHire, the Department of Labor awarded 39 grants—totaling \$150 million—for programs in 25 States and Washington, DC to support innovative ways to get more than 18,000 participants on the fastest paths to well-paying jobs in in-demand sectors such as information technology (IT), healthcare, advanced manufacturing, and financial services.

Figure 1-13



students to access or complete a college degree in 2014-15, leading to an additional \$20 billion in aggregate earnings. This represents a nearly two-to-one return on the investment. While more work remains, these policies taken together represent a significant step forward in building an educational system that supports and encourages all Americans who wish to invest in an affordable, high-quality college education to do so.

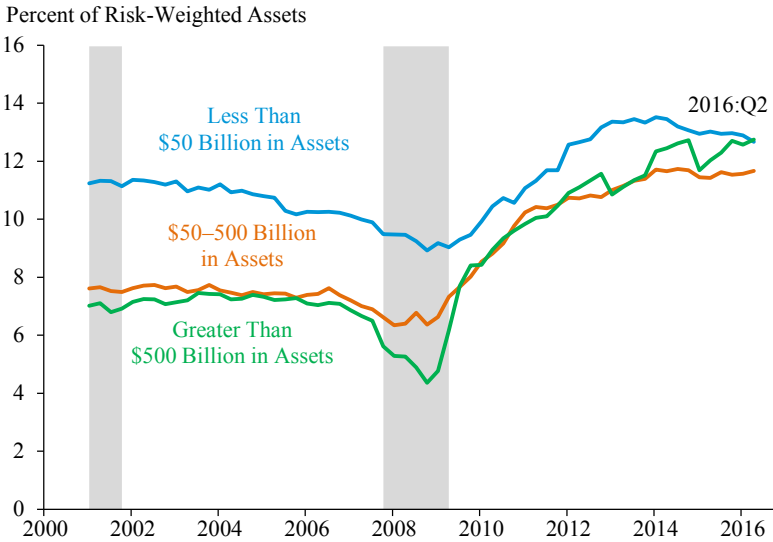
Chapter 6: Strengthening the Financial System

The 2007-08 financial crisis revealed a number of fault lines in the U.S. financial system. Many banks were inadequately capitalized, did not have enough liquidity, and took too many risks. Many non-bank financial firms faced the same risks as banks, but lacked the same regulatory supervision or protection against runs. In addition, gaps in the regulatory architecture meant that financial regulators lacked a holistic view of the risks in the system.

Responding quickly, the Obama Administration, Congress, and Federal regulators addressed these failures by adopting necessary reforms to the financial system. Financial reform included measures aimed to improve the safety and soundness of individual financial institutions by not only increasing their capital and liquidity but also decreasing risky behavior.

Figure 1-14

Tier 1 Common Equity Ratios for U.S. Banks by Bank Size, 2001–2016



Note: Shading denotes recession. Includes data for U.S. bank holding companies (BHCs) and "stand-alone" banks not controlled by a BHC, but not savings bank holding companies, branches and agencies of foreign banks, or nonbanks that are not held by a U.S. BHC.
 Source: Federal Reserve Bank of New York; Haver Analytics.

These reforms should increase the banking sector’s ability to absorb shocks arising from financial and economic stress. Other reforms included measures aimed at reducing systemic risk in the financial system by bringing more of the financial system under a regulatory umbrella, improving financial regulatory coordination, and ensuring that individual financial institutions can fail without derailing the system. Also included were specific measures designed to increase transparency and accountability in financial markets in addition to providing additional consumer and investor protections.

Financial reform has helped make the financial system more secure by requiring financial firms to have less unstable funding, more liquid assets, higher capital levels (Figure 1-14), and reduced risk-taking. The recovering economy and implementation of financial reform have been accompanied by strong performance of a wide variety of financial market indicators. Not only have financial markets recovered from the losses suffered during the crisis, but banks are healthier and stronger, regulators are on the lookout for systemic risk, once-opaque derivatives markets are safer and more transparent, credit ratings agencies are subject to more effective oversight and increased transparency, and investor protections have been strengthened. The recovery of markets—particularly those that serve a core role in the economy, such as equity and housing markets—is also an indicator of the

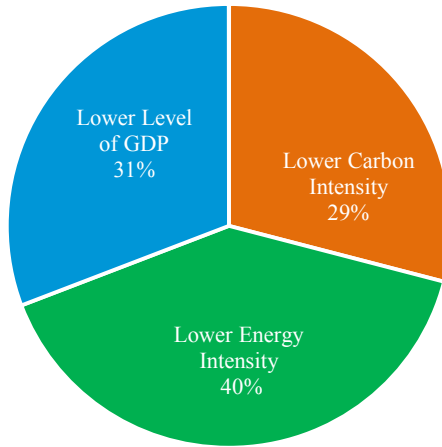
success of the financial rescue and reform efforts in this Administration. Banks and other financial institutions now face different rules designed to make them safer and less of a threat to the overall system. In many ways, these longer-run reforms have reshaped and ensured greater resilience in the financial regulatory system of the United States.

Chapter 7: Addressing Climate Change

The Obama Administration has also demonstrated a commitment to fighting climate change through a diverse set of policy approaches. In 2009, the Administration made a historic investment of more than \$90 billion in clean energy in the Recovery Act, helping to spur both a dramatic increase in clean energy capacity and advances in clean energy technology. The President's 2013 Climate Action Plan mapped out a new framework for the transformation to a more energy-efficient economy with lower greenhouse gas emissions. Related policies and initiatives included the first-ever Federal greenhouse gas pollution standards for power plants, light-duty cars and trucks, and commercial trucks, buses, and vans; investments in research and development to support innovative clean energy technologies; enhanced incentives for renewable energy and improvements in the energy efficiency of homes and appliances; and stronger international cooperation to drive down greenhouse gas emissions and limit increases in global temperatures. The Administration has worked to ensure that environmental regulations are undertaken in an efficient and cost-effective manner, as documented by rigorous regulatory impact analysis.

The Administration's policies have supported a considerable shift toward clean energy resources. From 2008 to 2015, energy intensity, energy consumed per dollar of real GDP, fell by 11 percent; carbon intensity, the amount of carbon dioxide emitted per unit of energy consumed, declined by 8 percent; and, as a result, carbon dioxide emitted per dollar of GDP declined by 18 percent. In fact, U.S. carbon dioxide emissions from the energy sector fell by 9.5 percent from 2008 to 2015, and in the first six months of 2016 they were at their lowest level in 25 years. This encouraging drop in carbon intensity was not anticipated, even as recently as 2010, and was driven both by an increase in renewable energy and increased use of cleaner fossil fuels like natural gas. CEA analysis shows that more than two-thirds of the decline in emissions relative to 2008 can be attributed to decreased energy intensity (40 percent) and carbon intensity (29 percent), with the remaining 31 percent of the emissions decline due to the lower-than-expected level of GDP after unanticipated shocks such as the Great Recession (Figure 1-15).

Figure 1-15
Decomposition of Total CO₂ Emission Reductions, 2008–2015



Source: Bureau of Economic Analysis, National Income and Product Accounts; Energy Information Administration, Monthly Energy Review (August 2016) and Annual Energy Outlook (2008); CEA Calculations.

Box 1-4: Administration Actions in the International Economy

The Obama Administration moved on several international fronts to promote America's prosperity and security. These include: global policy leadership and cooperation; expanding opportunities for U.S. businesses, farmers, entrepreneurs, and consumers through trade; and, advocating for more inclusive global economic growth, development and health, including in the most vulnerable areas of the world.

Global economic cooperation. Elevating the G-20 to be the premier forum for international economic cooperation was a critical part of the Obama Administration's economic strategy. The elevation of the G-20 has advanced the goal of a more representative and inclusive global economic governance, allowing leaders representing approximately 85 percent of global economic output to work together towards the shared objective of strong, sustainable, balanced, and inclusive global growth. The G-20 in turn worked to launch reforms that modernized and strengthened the international financial architecture, including historic recapitalization and reform across multilateral development banks and commitment to reform of the quota and governance system of the International Monetary Fund (IMF). Taken together, these steps have

reinforced U.S. leadership in the rules-based global economic system that has prevailed since the end of World War II.

Within months of taking office, in April 2009, the President joined the second-ever summit meeting of the G-20 leaders. At that time, the global economy was shrinking for the first time in half a century as the world dealt with the financial crisis and its aftershocks. Together, the G-20 countries mobilized trillions of dollars in fiscal stimulus and expanded the resources of the IMF and Multilateral Development Banks by \$1 trillion. The G-20 created the Financial Stability Board, which has helped to coordinate the G-20's financial reform agenda and to put in place international policies to end "too-big-to-fail." This has made the global economy better able to weather financial shocks and to prevent these shocks from causing broader economic damage on Main Street and across borders. The G-20 countries agreed to refrain from beggar-thy-neighbor competitive devaluation of currencies and to take actions against tax havens and profit shifting. By 2016, both the U.S. and global economies are substantially stronger than they were—though more work remains to be done.

In addition to immediate crisis response, the G-20 is taking steps to build a framework for strong, sustainable, balanced, and inclusive growth in the long term. These have included commitments to increase female labor force participation, phasing-out of fossil fuel subsidies, implementing strategies to create jobs and boost investment, and commitments to promote sustainable development. In 2010, the Obama Administration hosted the first meeting of G-20 labor and employment ministers in Washington and committed to spur action to create quality jobs, lift living standards, and promote broadly shared prosperity. Since then, G-20 member nations have committed to bring more women into the labor force, reduce income inequality, address youth unemployment, and invest in workforce sustainable development, including through quality apprenticeships and other measures. They have also improved financial transparency and made significant progress to address corruption around the world.

Expanding opportunities for U.S. businesses, farmers, entrepreneurs, and consumers through trade. The United States has initiated and strengthened high-standards trade agreements with countries across the world, seeking to open foreign markets to U.S. goods and services and ensure a level playing field for workers and businesses. At the same time, U.S. consumers enjoy opportunities to shop from the world, expanding their choices and stretching their budgets further.

- Free Trade Agreements (FTAs) with Korea, Panama, and Colombia were signed, approved by Congress, and entered into force in

2012. From 2009 to 2015, U.S. export growth was substantially higher to FTA partners than to non-FTA partners.

- President Obama called for global free trade in environmental goods in his Climate Action Plan in 2013 and, the following year, the Administration commenced negotiations on the Environmental Goods Agreement with a group of countries that accounts for more than 85 percent of global trade in environmental goods.

- The Obama Administration lifted sanctions on Cuba and Myanmar (formerly known as Burma), laying the path for increased economic engagement and U.S. investment.

- The Trans-Pacific Partnership (TPP) agreement would eliminate over 18,000 tariffs, establish the highest labor and environmental standards of any trade agreement in history, enhance opportunities for small and medium enterprises, promote Internet-based commerce, protect American workers and businesses from unfair competition from foreign state-owned enterprises, and strengthen transparency and anti-corruption.

Global development and health. President Obama has also worked intensively to elevate global development as a central pillar of our national security policy, on par with diplomacy and defense, as articulated in Presidential Policy Directive 6 on U.S. Global Development Policy. In 2015, the United States joined the rest of the world in adopting the 2030 Agenda for Sustainable Development, which sets out an ambitious global development vision and priorities for the next 15 years that strive to end extreme poverty and to prioritize policies and investments that have long-term, transformative impact. The Administration has harnessed donor assistance, domestic resource mobilization, and private-sector capital to promote the development agenda in health, livelihoods, food security, and energy.

Programs building domestic resources have taken a variety of forms. The Addis Tax Initiative, launched by the United States in July 2015, is an example of how the Administration has worked to help developing countries mobilize and effectively use their own domestic resources for sustainable development. In a similar vein, the U.S. Government's Feed the Future program helped over 9 million smallholder farmers, food producers, and rural families adopt innovations and new practices to improve domestic agricultural productivity in 2015 alone. Also in 2015, the President and the First Lady launched Let Girls Learn to address the challenges preventing adolescent girls from obtaining a quality education and to empower them to reach their full potential, building crucial human capital in vulnerable communities. In 2011, President Obama joined with seven other heads of state to launch the Open Government

Partnership (OGP), a global partnership between governments and civil society to advance transparency and accountability, bolster citizen engagement, and leverage new technologies to strengthen governance.

The Administration also has promoted new public- and private-sector efforts to harness cutting-edge technologies, including to accelerate research and scale innovations to support sustainable development. In 2015 alone, USAID maintained over 360 active public-private partnerships that, over their active lifetimes, have leveraged over \$5.9 billion from the private sector and other partners. Through FY 2014, the Overseas Private Investment Corporation (OPIC) supported more than \$35 billion in private investment in developing and emerging markets. The Administration's Power Africa initiative has successfully built a broad coalition of more than 130 bilateral, multilateral, and private-sector partners who have collectively committed to invest more than \$52 billion in the energy sector in sub-Saharan Africa, where two-thirds of the population lack access to electricity.

The Administration also has fought aggressively for global health by building on successful existing programs and launching new initiatives. President Obama built on the President's Emergency Program for AIDS Relief (PEPFAR) launched by President George W. Bush, bringing the prospect of an AIDS-free generation within sight. Over the past 15 years, investments in the President's Malaria Initiative, the Global Fund to Fight AIDS, Tuberculosis, and Malaria, and other partnerships have averted an estimated 6.2 million malaria deaths. In addition, the Obama Administration has challenged the world to end preventable child and maternal deaths, and, since 2008, efforts by USAID have helped save the lives of 4.6 million children and 200,000 mothers.

FOUR CONTINUED STRUCTURAL CHALLENGES: PRODUCTIVITY, INEQUALITY, PARTICIPATION, AND SUSTAINABILITY

The Obama Administration has taken great strides in addressing many structural barriers to inclusive growth over the last eight years, working to ensure both that growth is stronger in the future and that the benefits of this growth are more widely shared among American households. However, these efforts have only started to address the structural obstacles to future prosperity for middle-class families. Many of these barriers have been decades in the making, and many are shared across a wide range of advanced economies. Addressing four of these structural challenges—boosting productivity growth, combatting rising inequality, raising labor force

participation, and building a resilient economy that does not grow today at the expense of the future—will be critical in the years ahead.

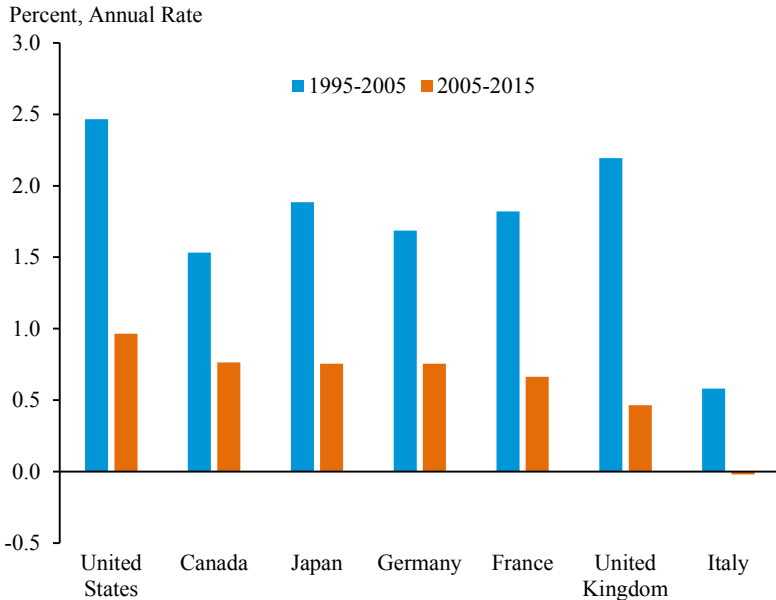
Productivity Growth

The single most important determinant of living standards, across countries and over time, is labor productivity—the amount of output a worker can produce in an hour of work. The evolution of labor productivity growth in the United States since World War II can be roughly partitioned into four regimes. Labor productivity in the nonfarm business sector rose by an average of 2.8 percent a year between 1948 and 1973. Beginning in the early 1970s, though, productivity growth slowed sharply, averaging only 1.4 percent annually between 1973 and 1995. Productivity growth did not rebound meaningfully until the mid-1990s, when information technology advanced at a startling rate. Productivity growth surged, rising 3.0 percent at an annual rate between 1995 and 2005 in the nonfarm business sector. However, from 2005 to 2015, labor productivity growth averaged just 1.3 percent a year, due to slowdowns in both capital deepening and in growth in total factor productivity (a measure of how much output can be produced from a given combination of labor and capital, with increases largely representing advancements in technology, management, and institutions).

The recent slowdown in productivity growth has also been seen in other advanced economies. Average annual productivity growth in advanced economies slowed to less than 1 percent from 2005 to 2015, roughly half the rate of the previous decade—with productivity slowing in 30 of 31 advanced economies, including all of the G-7 economies, as shown in Figure 1-16. Despite its sharp slowdown, the United States has had the strongest record in terms of productivity growth in the last decade among the G-7 economies.

Productivity growth is critical to the long-run health of the U.S. economy because it is a necessary component of both potential GDP growth and real increases in household incomes, and thus living standards. A range of policies can help boost labor productivity growth. These include increasing public investment in infrastructure; providing greater funding for research and development; reforming the business tax code to better incentivize innovation and investment; promoting high-skilled immigration; continuing to improve education and worker training; and expanding trade, which can boost innovation through the spread of ideas across borders, greater specialization in innovative activities, access to larger markets by high-productivity firms, and expanded competition.

Figure 1-16
Labor Productivity Growth, G-7 Countries



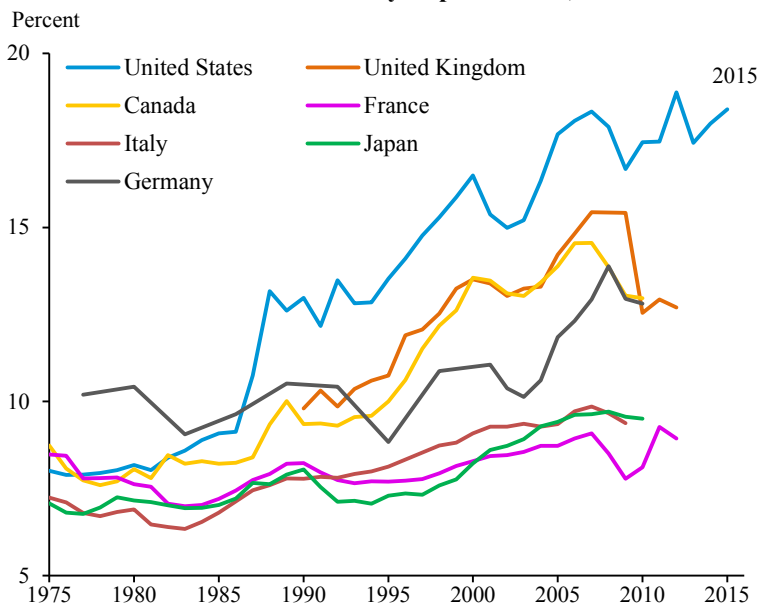
Source: Conference Board, Total Economy Database; CEA calculations.

Income Inequality

In the long run, productivity growth is the most important factor in increasing earnings. But income growth for households across much of the distribution also depends on the degree to which economic gains are shared, or, in other words, on the degree of income inequality. Here, too, the trend among advanced economies has been unfortunately similar, with the majority seeing increased inequality in recent decades. However, the United States has the highest levels of inequality, and has seen a faster increase in inequality, than any of the G-7 economies, as shown in Figure 1-17.

As discussed in Chapter 1 of the 2016 *Economic Report of the President*, traditional economic explanations of inequality are grounded in competitive markets, wherein workers receive wages commensurate with their productivity. According to this explanation, a combination of skill-biased technological change, a slowdown in the increase in educational attainment, and globalization have increased the demand for highly skilled workers at the same time that their relative supply has not kept pace—resulting in higher wages for these workers and greater inequality. However, a growing body of evidence has pointed to economic rents as a potential additional source of inequality. Rents occur whenever capital owners or workers receive more income than they would require to undertake their production or work.

Figure 1-17
Share of Income Earned by Top 1 Percent, 1975–2015



Source: World Wealth and Income Database.

Rents could play a role in rising inequality either to the degree that the division of rents is becoming increasingly unequal or to the degree that they are increasing and being captured by capital or by high earners (Furman and Orszag 2015).

Despite the historic progress in rolling back rising inequality over the last eight years described above, more work remains to combat high levels of inequality in the United States in both pre-tax-and-transfer and after-tax-and-transfer incomes. Policies like expanded access to quality education, increasing the minimum wage, providing greater support for collective bargaining and other forms of worker voice, and reforming barriers to mobility like occupational licensing requirements and land-use restrictions to reduce rents can all play a role in reducing inequality. Meanwhile, making the fiscal system more progressive by, for example, expanding tax credits for low-income workers financed by higher tax rates on high-income households would reduce inequality in after-tax incomes. A growing body of evidence has also found that a more progressive fiscal system does not just increase after-tax incomes for low- and moderate-income households; when fiscal transfers (such as programs for health, nutrition, cash assistance, and housing support) are focused on children, they can also increase future earnings and educational outcomes (Furman and Ruffini 2015).

Labor Force Participation

Household incomes also depend on the labor force participation rate: the share of the adult population working or actively in search of work. In recent years, the participation rate has faced substantial downward pressure from the aging of the U.S. population as members of the baby-boom generation begin to retire. This demographic trend implies a decrease in the overall participation rate of about a quarter of a percentage point a year. However, the participation rate has been broadly stable since the end of 2013, as the strong recovery of the U.S. labor market has pulled workers into the labor force and offset the downward pressure from the aging of the population.

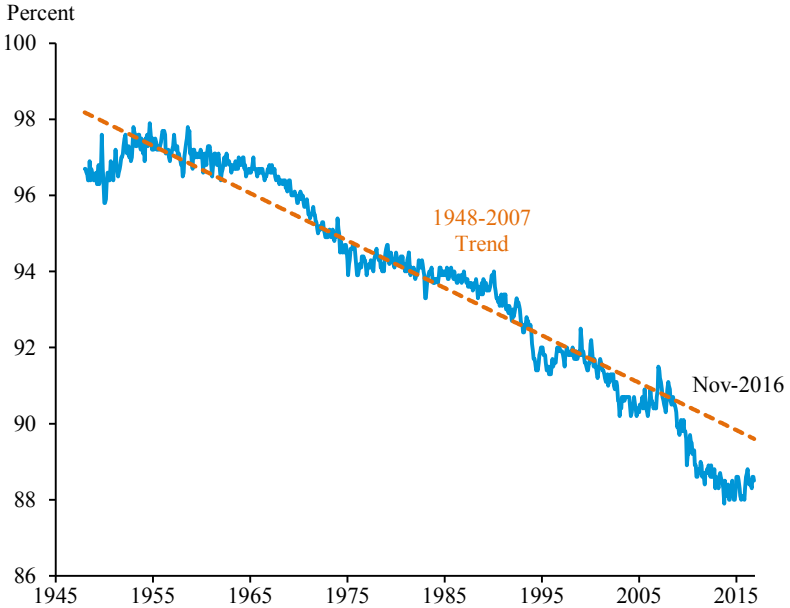
But the United States faces an additional long-run challenge of declining participation among “prime-age” workers, those between the ages of 25 and 54. This troubling pattern in labor force participation goes back for more than a half-century for men and about a decade and a half for women. In 1953, 3 percent of prime-age men did not participate in the labor force. In November 2016, the fraction stood at 12 percent (Figure 1-18a). Nonparticipation has been even higher in recent years for men with less educational attainment: in 2015, 17 percent of prime-age men with a high school degree or less did not participate in the workforce. Meanwhile, 25 percent of prime-age women do not participate in the labor force today, compared to 23 percent in 1999 (Figure 1-18b). Over the second half of the 20th century, the decline in prime-age male labor force participation was largely obscured in aggregate data by rising female participation and favorable demographics. But as the trend for prime-age women plateaued and then reversed, the impact of declining prime-age participation on the overall labor force participation rate has been far clearer in recent years. (For an expanded discussion of the decline in prime-age labor force participation, see Box 2-3.)

The reduced participation rate for prime-age workers in the United States presents a number of challenges, both for these workers’ long-term employment prospects and well-being and for the U.S. macroeconomy. Policies to help boost participation include strengthening the “connective tissue” in the U.S. labor markets by, for example, modernizing the unemployment insurance system and expanding wage insurance; promoting work by expanding tax credits for low-income workers and raising the minimum wage; and increasing workplace flexibility by increasing access to paid leave and affordable child care.

Economic Sustainability

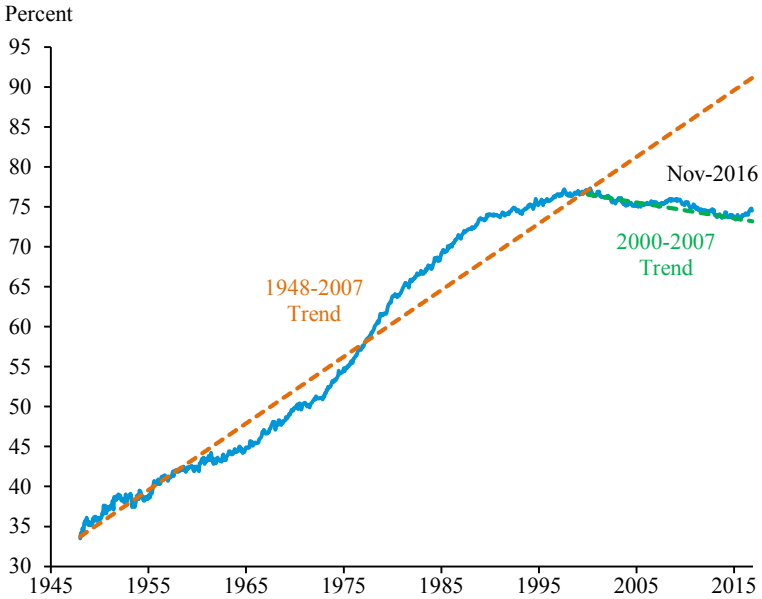
Even as work remains to boost productivity growth and labor force participation and to combat rising inequality, the Nation must take a

Figure 1-18a
Prime-Age Male Labor Force Participation Rate, 1948–2016



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

Figure 1-18b
Prime-Age Female Labor Force Participation Rate, 1948–2016



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

number of steps to ensure that economic growth is sustainable and does not come at the expense of future prosperity.

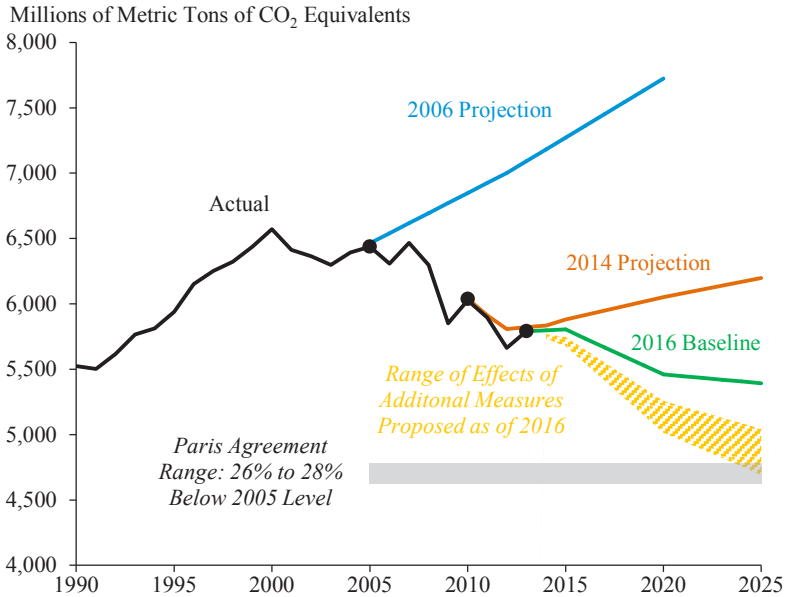
Given the current strong position of the U.S. economy in the business cycle, steps should be taken to protect against future recessions, helping to ensure that just as we avoided a second Great Depression, we are able to avoid a second Great Recession. In particular, modifying the design of automatic stabilizers like unemployment insurance such that they are automatically expanded or extended during downturns would provide better countercyclical support for the economy during recessions (CEA and DOL 2014; Furman 2016b). Moreover, as demonstrated by the Obama Administration's efforts, it is possible to combine short-run fiscal expansion with medium- and long-run fiscal consolidation to maintain fiscal discipline. Further curbs to the growth of entitlement costs that build on the ACA's progress in reducing health care costs, as well as limiting tax breaks for those at the top of the income distribution, can also help address our long-term fiscal challenges without sacrificing investments in growth and opportunity.

Finally, sustainable economic growth also requires addressing both the short- and long-run effects of climate change, which presents large risks not just to our environment but also to economic growth and fiscal sustainability. As discussed above, the Administration has taken ambitious steps to reduce carbon emissions and move toward a clean energy economy, including agreeing to reduce net emissions to between 26 and 28 percent of their 2005 level by 2025 in the historic Paris Agreement (Figure 1-19). But more work remains to ensure that the effects of manmade climate change do not endanger future prosperity. As President Obama has acknowledged, even as the Paris accord has established an enduring framework for confronting the climate crisis, its ambitious goals are not sufficient. More will need to be done to invent new technologies, generate energy from low-carbon sources, and reduce the energy and carbon intensity of our economy so that damage from climate change does not undermine the economy and living standards in the future. As the last eight years have demonstrated, efficient policies tailored to fight climate change can be implemented in ways that support, and do not hinder, economic growth.

CONCLUSION

The actions undertaken by the Obama Administration in the midst of the crisis not only helped prevent a second Great Depression, they set the U.S. economy on a path to becoming stronger, more resilient, and better positioned to face the economic challenges of the 21st century. In the pages that follow, the 2017 *Economic Report of the President* reviews the efforts of

Figure 1-19
U.S. Net Emissions, 1990–2025



Note: Projections for 2014 and 2016 shown are the "high-sequestration" scenario for each year.
 Source: Department of State (2016).

the Obama Administration to ensure economic growth that is both robust and broadly shared among all American families. As the Nation emerges from the shadow of the Great Recession, promoting inclusive, sustainable growth will remain the key objective in the years ahead. While several structural challenges for shared growth remain, the experience of the past eight years shows that, by acting decisively and by choosing the right policies, the United States can build a stronger and more prosperous economy for generations to come.