CHAPTER 2

THE YEAR IN REVIEW AND THE YEARS AHEAD

Following the recession that began in December 2007, the most severe since the Great Depression, the economy is healing and moving in the right direction. By the fourth quarter of 2012, real output was 2.5 percent above the level at its previous business-cycle peak in the fourth quarter of 2007. The economy has added 6.1 million private sector jobs, and 5.5 million jobs overall, since the level of employment hit bottom in February 2010. During the four quarters of 2012, real gross domestic product (GDP) increased at a moderate 1.6 percent rate. Over the 12 months of the year, 2.2 million jobs were added, and the unemployment rate, while still elevated, dropped 0.7 percentage point to 7.8 percent.

The near-term outlook is for further expansion. Consumer spending is rising moderately, as the gradual healing in the labor market lifts income and as households continue to pay off debt and rebuild wealth. A wide array of indicators suggests the housing sector is finally recovering, and the long contraction in the State and local sector appears to be coming to an end. Financial conditions continue to become more supportive; for example, senior loan officers report that banks have become more willing to lend to both small and large businesses.

Although many of the headwinds that have buffeted growth are receding, some remain. Long-term fiscal sustainability requires a path of declining government spending and rising revenue that will exert fiscal drag on the economy. In addition, ongoing congressional deliberations over the appropriate means through which long-term fiscal sustainability will be achieved foster uncertainty that could weigh on consumer and business confidence. Moreover, tepid growth across the global economy—particularly in Europe and Asia—may reduce growth in U.S. exports and slow the rebound in domestic manufacturing activity.

This chapter provides an overview of the economic recovery so far, beginning with a review of notable macroeconomic events of 2012. The

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chapter then turns to a broader discussion of the recovery in historical context. Although the recovery has been slow by historical standards, much—perhaps two-thirds, according to a recent study by the Congressional Budget Office (CBO 2012d)—of the slower growth relative to previous postwar recoveries reflects the long-term demographic shifts discussed in Chapter 4 as well as other long-term structural factors. The remaining one-third reflects unique cyclical factors largely related to the financial crisis, including limitations on the ability of households and small businesses to borrow, which led to associated reductions in consumption and investment; the slow recovery of the housing sector as it works off excess inventories of foreclosed and distressed properties; the contraction of State and local government budgets arising, in part, from the drop in assessed house values and property taxes; softening export demand resulting from slower growth in Asia and Europe; and limitations on conventional monetary policy due to the Federal Reserve's lowering of its main policy rate to zero percent (the "zero lower bound").

As severe as the recent recession was, the drop in real GDP in the United States as a result of the financial crisis of 2007–08 was smaller than both the average decline in other global financial crises over the past 40 years and the contraction in the aftermath of the 1929 stock market crash here in the United States. Furthermore, the recovery since June 2009 has been stronger than in most other developed economies. Active government policies helped the economy avoid an even deeper recession and have played an important role in supporting the recovery. These active policies include the American Recovery and Reinvestment Act (the Recovery Act), the temporary payroll tax cut, the extension of unemployment insurance benefits, and both standard and nonstandard monetary policy conducted by the Federal Reserve.

An Economy in Recovery: Key Events of 2012

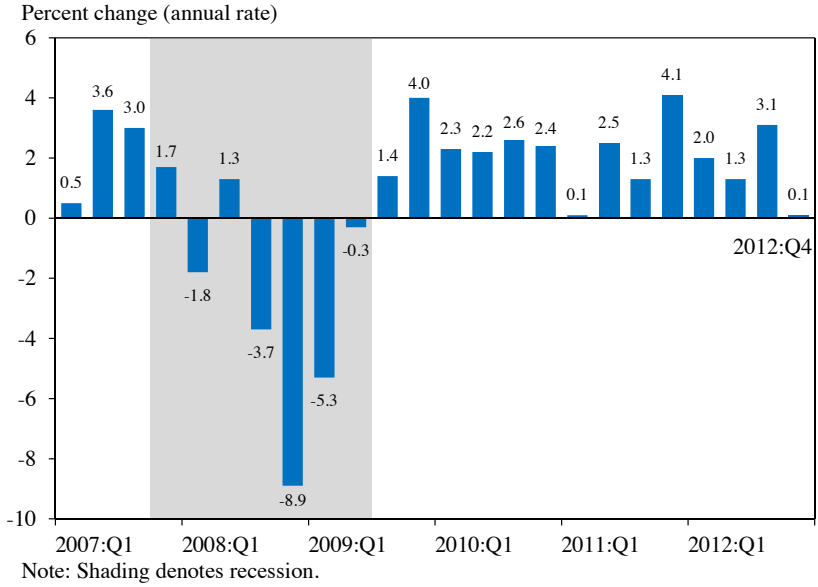
The past year was another challenging one for an economy in the midst of a recovery from a global financial crisis. Concern over European sovereign debt and the ongoing fiscal consolidation in Europe contributed to a contraction in the European economy during the year, and growth among several of our Asian trading partners also slowed. Natural disasters such as the severe drought in the Midwest and Hurricane Sandy in the Northeast impaired economic output over much of the year. Although the economic sanctions against Iran do not appear responsible (Box 2-1), retail gasoline prices fluctuated widely over the course of 2012, which may have intermittently dampened economic activity. The possibility of tax increases

and mandatory spending cuts that had been scheduled to take place at the beginning of 2013 loomed large as the year closed and may have hampered consumer and business sentiment.

Real GDP rose 1.6 percent over the four quarters of 2012, a bit below the pace in 2011 (quarterly figures are shown in Figure 2-1). Growth was uneven (but no more than usual) throughout the course of the year, reflecting, in part, the impact of the drought and Hurricane Sandy, as well as outsized swings in Federal defense outlays and inventory investment. Outside of these factors, business fixed investment and exports slowed notably from 2011. In contrast, personal consumption spending continued to post moderate gains, rising 1.9 percent over the four quarters of 2012, matching the rate of growth recorded in 2011. The fiscal contraction among State and local governments appears to be easing somewhat, and the residential construction sector, which turned a corner in 2011, strengthened further in 2012, growing for seven consecutive quarters for the first time since 2004–05.

The recovery in payroll employment, like that in real output, was uneven. Payrolls expanded briskly at the beginning of the year, but job growth slowed in the spring and early summer before picking up again in the late summer and fall. The fact that the worst months of the crisis occurred during the winter raises the question of whether normal seasonal adjustment procedures contributed volatility to higher frequency indicators, but that

Figure 2-1
Real GDP Growth, 2007–2012



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

Box 2-1: Effectiveness of Iran Sanctions

In cooperation with an international coalition, the United States has established strict economic sanctions against the Islamic Republic of Iran, sanctions described by this Administration and others as "comprehensive and biting." The goal of these sanctions is to persuade the Iranian government to abandon its nuclear weapons program. Since President Obama took office, he has steadily increased unilateral and multilateral pressure on Iran because of its inability to meet its international obligations. As a part of that effort, Congress passed and the President signed the Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010, the National Defense Authorization Act for Fiscal Year 2012, and the Iran Threat Reduction and Syria Human Rights Act of 2012. These laws increased our ability to target the Iranian Central Bank, private banks supporting the Iranian regime, and—importantly—the Iranian petroleum sector. In addition to these efforts with Congress, the President has signed Executive Orders imposing additional sanctions against the Iranian energy and petrochemical sectors. These actions received support from members of the international community, including the European Union and our allies in the Middle East. The United States has also worked to establish multilateral sanctions. For example, the United States collaborated with other members of the United Nations Security Council to adopt Resolution 1929, which called on Iran to end its nuclear program and imposed the broadest multilateral sanctions ever faced by the regime.

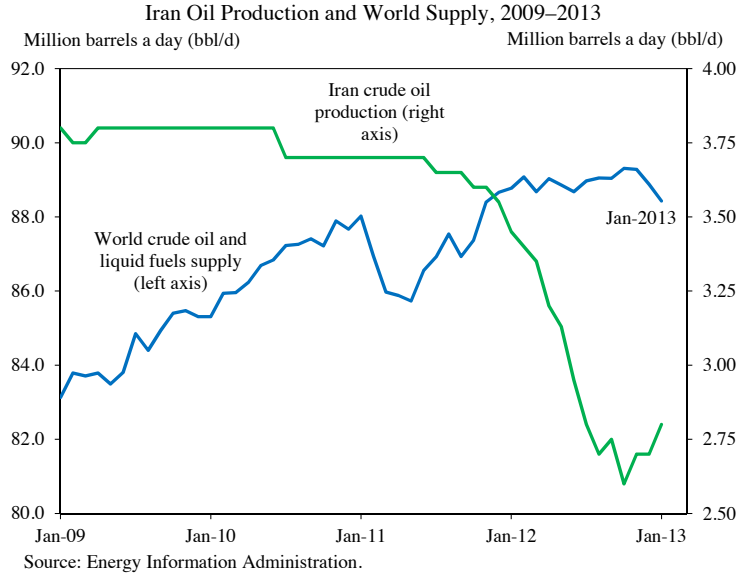
For Iran, the consequences of the sanctions have been severe. Iranian President Mahmoud Ahmadinejad called these sanctions "the most severe and strictest sanctions ever imposed on a country." The value of Iran's currency, the rial, has dropped substantially in 2012. Governments and private firms from around the world have ended business with, and divested from, Iran, as these actions now carry a heavy price. And perhaps most importantly, oil production in Iran has nosedived (see the figure below). According to the U.S. Energy Information Administration (EIA), Iran's crude oil production, which averaged 3.7 million barrels a day in 2011, dropped to approximately 2.7 million barrels a day by the end of 2012, a decline of about 30 percent. That amounts to billions of dollars in lost revenues for the regime.

The effect of these sanctions on the U.S. economy has been minimal. The sanctions do not appear to have increased the price of oil. As shown in the figure above, while Iranian oil production has dropped, world supply has not. The effects of the sanctions are reviewed regularly; for example, Federal agencies, such as the EIA, watch closely for developments in international energy markets. The President and Congress have

structured the implementation of the sanctions to minimize any impact on global energy markets and, by extension, the U.S. economy, and the authorities granted to the executive branch allow us to continue to monitor those effects going forward.

Sanctions do not always prevent or replace war. Indeed, sanctions have sometimes led to war, as shown by Lektzian and Sprecher (2007). Moreover, the fact that Iran's currency has depreciated, its oil production and exports have plunged, and its economy has slowed does not, by itself, fully answer the question: "Are the sanctions working?" The sanctions will have succeeded if and when Iran ends its nuclear program.

Evidence on the effectiveness of sanctions in other settings is mixed. In a widely-cited study, Hufbauer, Shott, and Elliott (1990) find that the rate of success of economic sanctions is low—about 35 percent. Some argue that even 35 percent is an overestimate (Pape 1997). However, Morgan, Bapat, and Krustev (2009) find that adjusting the sample of sanctions to include threats of sanctions in addition to sanctions actually imposed, and limiting the focus to more recent events, increases the success rate from 35 percent to 45 percent. The success rate is even higher when costs borne by the target are severe or when sanctions are multilateral, both of which are the case with Iran. Moreover, Marinov (2005) finds economic sanctions do tend to destabilize the governments they target, that is, they increase the probability of leadership or regime change.



Source: Energy Information Administration.

does not seem to be the case, as discussed in Data Watch 2-1. The unemployment rate, which fell 0.8 percentage point during 2011, fell another 0.7 percentage point during 2012, reaching 7.8 percent by the end of the year. The drop in the jobless rate during 2012 was concentrated in the first and third quarters of the year, with most—roughly 90 percent—of this decline accounted for by employment growth rather than withdrawal from the labor force.

European Crisis and the Slowdown in Global Growth

In 2012, the consequences of the European debt crisis continued to affect the world economy. In many advanced economies, fiscal consolidation, vulnerable financial systems, and market uncertainty have suppressed demand, and world economic growth has suffered as a consequence. While these adverse shocks are, for the most part, external to the United States, the globalized nature of world trade and financial markets means that the United States cannot escape their impact. Likewise, the turmoil in European financial markets led U.S. branches of foreign banks to tighten credit standards for commercial and industrial loans.

Hurricane Sandy and the Drought

Natural disasters cause human suffering and physical destruction. From the perspective of economic activity, their widespread disruptions also lead to lost work and output. Historical experience suggests, however, that over time much of this lost production is recouped. After storms, some of the missed work is made up and sizable additional expenditures are required for cleanup, repairs, and rebuilding. Thus, while hurricanes can have a major impact on regional economies, national trends in economic activity typically have not been affected by calamities such as hurricanes and droughts.

Hurricane Sandy is now estimated to have resulted in $35.8 billion in damages to private fixed assets according to the Commerce Department, which would rank it as the second costliest natural disaster in recent U.S. history after adjusting for inflation, though still well behind Hurricane Katrina in 2005. In addition, power outages that affected 8.2 million customers on October 30, and left 930,000 without power a week later, rendered many workers unable to perform their jobs. The storm also disrupted transportation centers such as seaports, airports, and rail lines, as well as refineries and factories, many of which were restored only gradually.

All told, analysts currently estimate that Hurricane Sandy lowered real GDP growth in the fourth quarter by around 0.2 to 0.5 percentage point at an annual rate. Although indicators such as industrial production, vehicle sales, and jobless claims were adversely affected in October or early

November, they subsequently improved and rebuilding activity is likely to provide some support to economic growth going forward. The region hit by Sandy has ample spare capacity available to be mobilized for storm recovery efforts: in October 2012, just before the storm hit, the unemployment rate was 0.6 percentage point higher in the five states most directly affected by Hurricane Sandy than in the rest of the country. Construction employment, in particular, had declined in the first 10 months of 2012 across these five states while seeming to have stabilized or expanded elsewhere. Supplemental Federal relief for reconstruction after Sandy, which was enacted in January 2013, should provide needed repairs and reconstruction and thereby support short-term economic growth in the region.

As a result of the severe drought in the Midwest that damaged corn and soybean harvests, farm inventory investment subtracted an average of one-fourth of a percentage point from real GDP growth in the second and third quarters of 2012 (for additional discussion, see Chapter 8). In 2013, the initial estimates of quarterly farm output will be based on the Agriculture Department's initial projection of annual farm output, which in turn will be based on an assumption of normal growing conditions. As a result, farm production, as measured in the National Income and Product Accounts, will probably jump up beginning in first quarter of 2013, bringing with it an associated bump up in estimated GDP growth.

Monetary Policy

In 2012, the Federal Open Market Committee (FOMC) continued to provide substantial policy accommodation and announced several new steps, including for the first time linking its forward guidance for the main policy interest rate to a specific level of the unemployment rate.

Between September 2011 and June 2012, the FOMC conducted the first installment of its Maturity Extension Program, widely known as Operation Twist. As first announced, the Fed said it would purchase "by the end of June 2012, $400 billion of Treasury securities with remaining maturities of 6 years to 30 years and…sell an equal amount of Treasury securities with remaining maturities of 3 years or less." According to the FOMC, the objective of this program was to "put downward pressure on longer-term interest rates" and thus provide an additional stimulus for the overall economy. In June 2012, the Committee decided to continue this program at a pace of approximately $45 billion a month, which corresponded to an additional "face value of about $267 billion by the end of December 2012," according to the minutes of the June meeting. Then, in September 2012, the FOMC announced it would further "increase policy accommodation by

Data Watch 2-1: Seasonal Adjustment in Light of the Great Recession

For the purposes of economic analysis, researchers are primarily interested in the longer-term direction of a time series and any deviations from that trend. Seasonal fluctuations in the data arising from summer holidays, seasonal shopping, and so forth can obscure these trends and deviations. As a result, most public sources of economic data endeavor to remove normal seasonal patterns from their high-frequency indicators. Unfortunately, this process of seasonally adjusting economic data is fraught with complexity. Seasonal factors cannot be directly observed and must be estimated using various statistical techniques. Moreover, the seasonal patterns for a particular series may not be constant over time. Thus, the accurate estimation of seasonal patterns is a challenge of great importance to the economics community and policymakers.

A number of analysts have argued that the severity of the Great Recession may have distorted several high-frequency economic indicators. The Great Recession, which lasted from December 2007 through June 2009, was particularly acute during the fall of 2008 and the winter of 2009. Real GDP fell more than 7 percent at an annual rate over the fourth quarter of 2008 and the first quarter of 2009, and total nonfarm payroll employment plunged by more than 4 million jobs from September 2008 to March 2009. Given the severity of the downturn during this period, some commentators have hypothesized that the outsized decline in economic activity may have been inadvertently incorporated into the seasonal factors for several key economic indicators. And as a consequence of this statistical bias in the seasonal adjustment process, these observers have raised concerns that the pace of the current recovery has exhibited an abnormal seasonal pattern in which economic activity has appeared not only substantially stronger than it really is during the fall and winter but also correspondingly weaker during the spring and summer.

A few providers of economic data have acknowledged this concern and noted that unusually sharp swings in certain indicators may not be properly accounted for by standard seasonal adjustment techniques. The Federal Reserve reported that the application of default seasonal adjustment procedures to its monthly industrial production data would have artificially raised output in many industries during the first halves of the years 2008 through 2010, if these distortions not been identified in advance and corrected (Federal Reserve Board of Governors 2011). And the Institute for Supply Management concluded that its typical seasonal adjustment procedures did not adequately identify outlier observations during the recent recession. As a result, it introduced more precise criteria for the detection of outliers as part of the seasonal adjustment of its purchasing manager survey data (Institute for Supply Management

2012). Nevertheless, it is important to emphasize that these particular issues pertain to the use of default seasonal adjustment techniques. In general, statistical agencies approach the seasonal adjustment of economic data idiosyncratically based upon the unique characteristics of each individual time series.

Indeed, detailed studies of a wide range of principal economic indicators suggest that the seasonal adjustment techniques that had already been employed by the Bureau of Labor Statistics (BLS) adequately accounted for the effects of the Great Recession. BLS analysts calculated alternative seasonal factors for total nonfarm payroll employment after manually excluding the sharp declines that were recorded during the downturn (Kropf and Hudson 2012). This counterfactual experiment failed to generate meaningful revisions to the actual published estimates of total nonfarm payroll employment since January 2010. In fact, the BLS analysts concluded that the implementation of these counterfactual seasonal factors would have revised total nonfarm payroll employment upward by a mere 24,000 jobs over the second and third quarters of 2011 (in other words, an average of 4,000 jobs a month) and downward by just 19,000 jobs over the fourth quarter of 2011 and the first quarter of 2012 (or an average of roughly 3,000 jobs a month). BLS analysts also thoroughly investigated the seasonal adjustment of the Current Population Survey data over the course of the recovery (Evans and Tiller 2012). This inquiry showed that alternative assumptions regarding seasonal adjustment did not meaningfully affect estimates of the unemployment rate since 2007.

Macroeconomic Advisers (2012) tested the stability of seasonally adjusted nominal GDP by comparing the official estimates to a proxy series that had been constructed using the source data for the national accounts. Contrary to the hypothesis that inaccuracies in the seasonal adjustment process have been artificially suppressing economic activity during the spring and summer months of the current recovery, this analysis found that seasonal factors had not been subtracting as much from GDP growth during the second and third quarters of each calendar year as they had before the downturn. All told, these analyses provide little evidence to support serious concerns over the soundness of seasonally adjusted high-frequency economic variables.

purchasing additional agency mortgage-backed securities at a pace of $40 billion per month."

The September and June actions together, the Committee said, were intended to increase the Federal Reserve's "holdings of longer-term securities by about $85 billion each month through the end of the year." In December

2012, the Committee announced that it would replace the expiring Maturity Extension Program with a program of purchases of longer-dated Treasuries at a pace of $45 billion a month, thereby further expanding its balance sheet, rather than funding these purchases with the sale of shorter-dated securities, as was the practice under Operation Twist. These purchases, combined with its September 2012 decision to purchase $40 billion a month in agency mortgage-backed securities, kept total purchases of longer-term securities at $85 billion a month.

The nature of the Fed's forward guidance also evolved over the year. The FOMC announced in September 2012 that it would explicitly condition future policy decisions on progress in the labor market and issued additional forward guidance that the Fed's main policy interest rate would likely remain low through mid-2015, an extension from late 2014 as previously announced. In December 2012, the Committee went a step further and announced that it would maintain the "exceptionally low range for the federal funds rate…at least as long as the unemployment rate remains above 6½ percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored." The explicit link to numerical values of economic variables replaced the previous reference to a "mid-2015" reference date that had been introduced in September.

In August 2012, during a speech at the annual Federal Reserve Bank of Kansas City Economic Symposium, Federal Reserve Chairman Ben Bernanke assessed the effectiveness of the balance sheet and forward guidance policies that had been implemented in response to the recession. Bernanke (2012a) surveyed research finding that large-scale asset purchases (LSAPs) had significantly lowered yields on long-term Treasury notes, corporate bonds, and mortgage-backed securities; reduced retail mortgage rates; and also boosted stock prices (see for example, Krishnamurthy and Vissing-Jorgenson 2011). One study by Chung and others (2012) used the Federal Reserve Board's FRB/US model of the economy and found that the early phase of the Fed's LSAPs may have raised the level of real GDP by almost 3 percent and increased private payroll employment by more than 2 million jobs, relative to what otherwise would have occurred. Although Chairman Bernanke cautioned against putting too much weight on the estimates of any particular study, he concluded that "a balanced reading of the evidence supports the conclusion that central bank securities purchases have provided meaningful support to the economic recovery while mitigating deflationary risks."

Fiscal Policy

After months of negotiations, in February 2012 Congress extended both the 2 percentage point cut in the payroll tax and the Emergency Unemployment Compensation program through the end of the year. These temporary measures, which were among the Administration's key economic priorities for 2012, had originally been put in place with the passage of the 2010 Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act. The extension through December 2012 provided critical support to American families trying to weather the various headwinds that threatened the recovery over the course of the year.

The economy faced great uncertainty as the end of calendar year 2012 approached. As a result of the confluence of various policies that had been passed in previous years, the economy faced a "fiscal cliff" of across-the-board tax hikes as the Bush-era tax cuts expired, a sharp reduction of the Alternative Minimum Tax (AMT) exemption amounts to the levels that had been in effect in 2001, the imposition of substantial spending cuts through budget sequestration, and the expiration of a number of other tax provisions. In addition, temporary measures to support the economy, including the extension of unemployment insurance benefits and the payroll tax reduction, were also set to expire. As the end-of-year deadline approached, uncertainty in financial markets ticked up, although not as much as during the August 2011 debt ceiling debate. This uncertainty was partly resolved by the passage of the American Taxpayer Relief Act by the House on January 1, 2013, averting what could have been sharply contractionary policies.[1]

Looking ahead, the American Taxpayer Relief Act—which permanently extends the middle-class tax cuts, indexes the AMT to inflation, and raises rates on the highest-income taxpayers in order to reduce the deficit relative to the previous policy baseline (see Chapter 3)—has removed much of the uncertainty about taxes facing the economy.

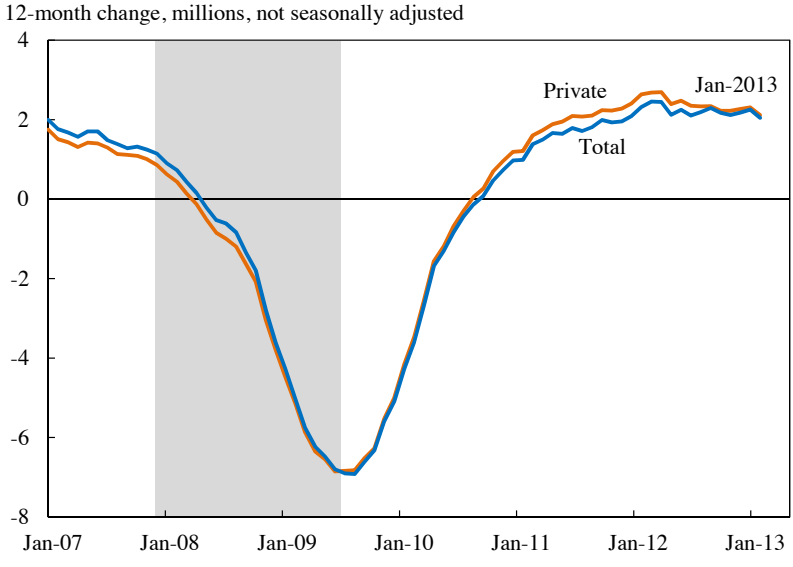
[1] Several studies suggested that going over the full fiscal cliff would likely result in a recession and substantial job losses; see for example CBO (2012a). These studies, including the CBO report, focused on cash flow effects of the fiscal cliff (revenues and spending). A growing body of literature suggests that the uncertainty created by going over the cliff would have further hurt economic activity and employment, although those channels are more difficult to quantify; see for example Bloom (2009).

Labor Market Trends

The labor market continued to heal in 2012. The private sector added 2.2 million jobs, although State and local government employment fell by 32,000, after falling by 286,000 in 2011. Private sector payroll employment has grown in each month since February 2010. Focusing on 12-month changes to abstract from monthly and seasonal volatility, the 12-month change in total nonfarm payroll employment excluding Census hiring has been smooth, hovering around 2 million jobs since the fall of 2011, as shown in Figure 2-2.

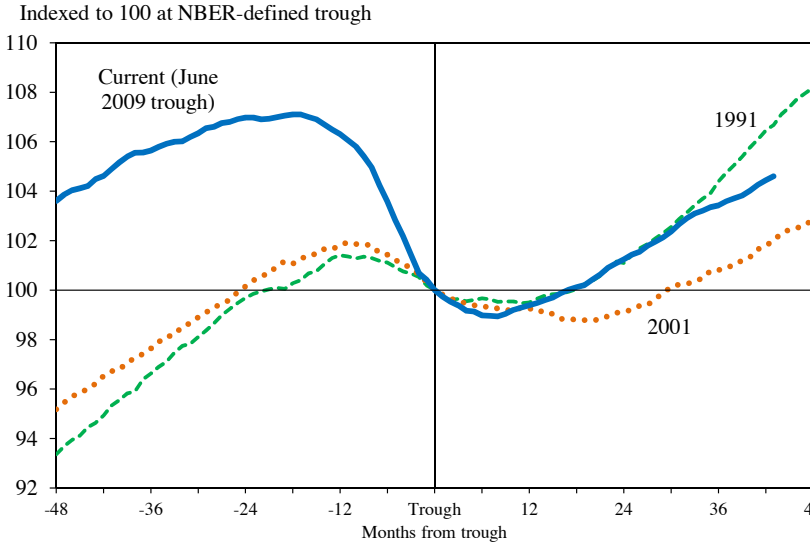
Private-sector job growth during the current recovery has been roughly comparable with that in the 1991 recovery and noticeably faster than in the 2001 recovery, as illustrated in Figure 2-3. As is typical, the recovery in hiring since 2009 lagged the recovery in output. Private nonfarm payrolls in the current recovery began growing 9 months after the business-cycle trough. By comparison, payrolls first began expanding consistently 12 months into the 1990–91 recovery, and sustained private-sector job growth in the 2001 recovery did not begin until 21 months after the official end date of the recession. Thus, although the 2007–09 recession lasted longer and led

Figure 2-2
Nonfarm Payroll Employment, 2007–2013



Note: Shading denotes recession. Total excludes temporary decennial Census workers.
Source: Bureau of Labor Statistics, Current Employment Statistics.

Figure 2-3
Private Nonfarm Employment During Recent Recoveries



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

to deeper job losses than did the recessions of 1990–91 and 2001, recovery in the labor market began somewhat sooner.

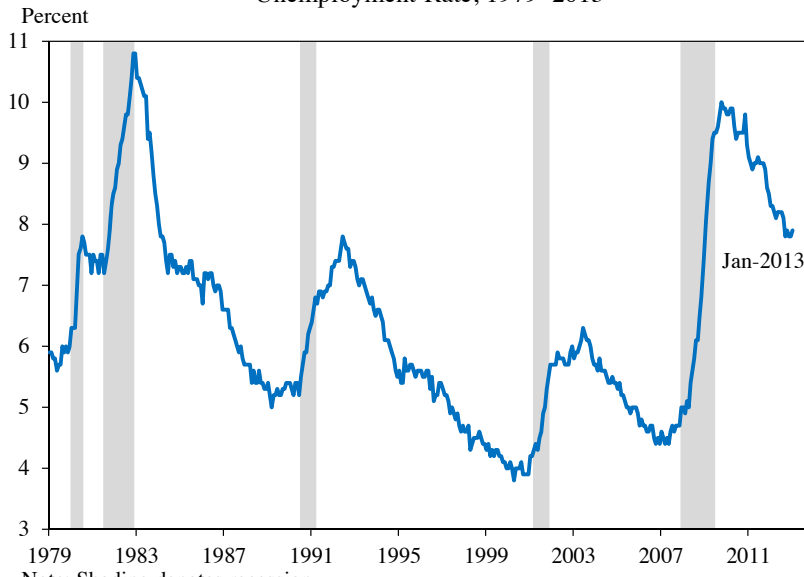
Despite continuing improvements in hiring, the unemployment rate remains elevated, reflecting both the deep losses during the recession and the steady but moderate pace of hiring during the recovery. The unemployment rate has receded from its peak of 10.0 percent in October 2009 to 7.8 percent in December 2012, with 0.7 percentage point of that decline during the 12 months of 2012 (Figure 2-4). Layoffs—as measured by the four-week average of initial claims for unemployment insurance—fell in 2012 (Figure 2-5), and other indicators of labor market adjustment such as the workweek continued to show improvement. By December 2012, the workweek had increased to 34.4 hours, recovering most of the 0.8 hour lost during the recession.[2]

Almost all of the decline in the unemployment rate in 2012 reflects growth in employment rather than labor force withdrawal.[3] Nevertheless, the recession coincided with a sharp drop in the labor force participation

[2] A lengthening of the workweek by 0.1 hour is roughly equivalent, in terms of labor input, to an increase in employment of more than 300,000 jobs.

[3] This calculation reflects an adjustment for updated Census Bureau population estimates that were incorporated into the January 2012 Current Population Survey by the Bureau of Labor Statistics (BLS). In accordance with usual practice, the BLS does not revise the official Current Population Survey estimates for earlier months to reflect the updated population values.

Figure 2-4
Unemployment Rate, 1979–2013



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

Figure 2-5
Initial Unemployment Insurance Claims, 2004–2013

Note: Shading denotes recession. Four-week moving average.
Source: Department of Labor, Employment and Training Administration.

rate, which fell from 66.0 percent in December 2007 to 64.9 percent in February 2010—a period when the economy shed jobs at an average rate of 320,000 a month. Since then, labor force participation has continued to decline, reaching 63.6 percent by December 2012.

To what extent can this sharp drop in the labor force participation rate be attributed to the prolonged slack in the labor market? Answering this question requires distinguishing between cyclical movements arising from the prolonged downturn and the demographic trends of an aging, and thus retiring, workforce. To this end, Table 2-1 provides a decomposition of the labor force participation rate into a trend component and a cyclical component over the current business cycle. The trend, or demographic, component from 2007–12 is estimated by extrapolating a linear trend in the labor force participation rate from the 10 years preceding 2007,[4] and the cyclical component is computed as the difference between the actual labor force participation rate and this trend.

As can be seen in the bottom half of Table 2-1, the labor force participation rate fell by 2.2 percentage points from 2007–12. Of that drop, 1.2 percentage points are attributed to a declining trend caused primarily by the aging of the workforce, while 1.0 percentage point is cyclical. An analogous calculation for 1980–85—the only other postwar period that includes a double-digit unemployment rate—shows that the labor force participation rate rose by 1.0 percentage point over the twin recessions of the early 1980s. But at that time, trend labor force participation was rising by 2.0 percentage points—a consequence primarily of the rising participation of women during that period—so the cyclical component during the early 1980s declined by 0.9 percentage point. Thus, the cyclical component of the change in the labor force participation rate during 2007–12 is close to its value over 1980–85, and so, by this measure, the recession-induced rate of labor force decline differs little from the early 1980s.

Consumption and Saving

Consumer spending, which accounts for approximately 70 percent of GDP, rose moderately in 2012, as credit conditions continued to ease, household liabilities fell relative to income, and the labor market improved. Real household consumption grew 1.9 percent during the four quarters of the year and was supported by an extension of the payroll tax cut, which first went into effect in January 2011 as part of the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act.

[4] Specifically, for each gender and age group, labor force participation rates are projected using the previous 10-year trend, and the trend in the overall participation rate over the subsequent period is computed using actual population weights for each group.

Table 2-1
Labor Force Participation Rates, 1980–1985 and 2007–2012

Years	Labor Force Participation Rate, Percent		
	Year of cycle peak (actual)	Projection for five years ahead	After five years (actual)
1980–1985	63.8	65.7	64.8
2007–2012	65.9	64.6	63.7
	Decomposition of Five-Year Change, Percentage Points		
	Total	Trend	Cycle
1980–1985	1.0	2.0	-0.9
2007–2012	-2.2	-1.2	-1.0

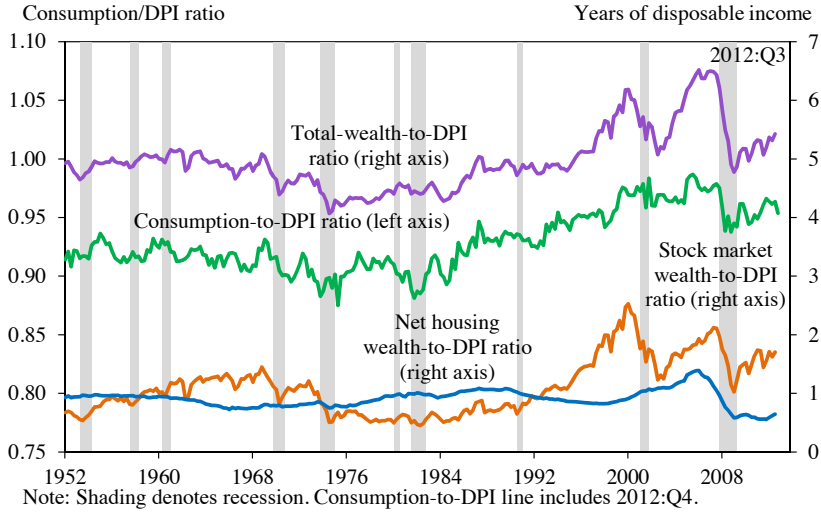
Note: Numbers may not sum due to rounding. Based on annual averages and historically adjusted by the CEA for population controls. The projections for five years ahead are estimated by extrapolating a linear trend in age/gender-specific labor force participation rates from the 10 years preceding 1980 and 2007, respectively.
Source: Bureau of Labor Statistics, Current Population Survey; CEA calculations.

Several key developments in 2012 shaped the contours of consumer spending.

Household Income in 2012. Nominal personal income grew 5.0 percent during the four quarters of 2012, a somewhat faster pace of growth than in 2011. Growth in nominal personal income over the course of the year was largely attributable to gains in employee wages, salaries, and benefits. Real disposable personal income, which is personal income less personal taxes and adjusted for price inflation, rose 3.2 percent over the four quarters of 2012, a substantial improvement over the 2011 increase of 0.3 percent. The pattern partly reflects a moderation in inflation mostly due to a drop in energy price inflation. The expiration of the temporary payroll tax cut will subtract about $120 billion from disposable income in 2013.

Household Wealth and Saving in 2012. Households continued to rebuild their balance sheets in the aftermath of the worst economic downturn since the Great Depression. On balance, the wealth-to-income ratio, depicted in Figure 2-6, rose over the first three quarters of 2012 and has improved considerably since the beginning of 2009. Consumption as a share of disposable income tends to fluctuate with the wealth-to-income ratio. As a rule of thumb, a one dollar drop in wealth reduces annual consumer spending by two to five cents. The decline in the wealth-to-income ratio from the first quarter of 2007 to its low point in the first quarter of 2009 was equivalent to roughly 1.7 years of disposable income. Through the third quarter of 2012, this measure regained the equivalent of nearly 0.7 year of disposable income. This simple framework suggests that the household wealth lost during the recession has not yet been recovered and that this loss of wealth has left the level of consumption roughly 2 to 6 percent below

Figure 2-6
Consumption and Wealth Relative to
Disposable Personal Income (DPI), 1952–2012



Note: Shading denotes recession. Consumption-to-DPI line includes 2012:Q4.
Source: Bureau of Economic Analysis, National Income and Product Accounts; Federal Reserve Board, Z.1; CEA calculations.

what it would have been otherwise. Much of that loss of wealth resulted from the bursting of the housing bubble, and the wealth-to-income ratio now is where it was in the mid-1990s (before the information technology stock price bubble) and early 2000s (before the housing bubble).

The personal saving rate—expressed in the National Income and Product Accounts as personal saving as a share of disposable personal income—averaged 3.9 percent in 2012, a bit lower than the rate observed in 2011. The rate of personal saving jumped during the recession as households sharply curtailed spending in response to the crisis, but overall, the saving rate fell modestly over the course of the recovery and is now at the level it was in the early 2000s.

Household Credit and Deleveraging in 2012. Lending standards for consumers, as reported in the Federal Reserve's Senior Loan Officer Opinion Survey, eased for the third consecutive year. Moreover, driven by a surge in nonrevolving lending categories (such as auto and student loans), consumer credit expanded 5.7 percent at an annual rate over the four quarters of 2012. However, because mortgage credit continued to decline, the overall level of household debt decreased 0.6 percent at an annual rate over the first three quarters of 2012. Household debt has declined every year since 2007, as households continue to deleverage.

Although household debt increased in the period before the financial crisis, the extent to which household leverage has restrained consumer spending during the recovery remains unsettled. Traditional models of consumption imply that, absent borrowing constraints, households consume a fraction of their expected lifetime wealth, which implies that the consumption-wealth ratio fluctuates around its mean (Campbell 1987; Lettau and Ludvigson 2003). This theory and its extensions imply that consumption and saving will adjust to maintain appropriate lifetime savings, so for example a loss in housing wealth will cause consumers to increase saving, as they did during and shortly after the recession, to pay down debts and rebuild retirement savings. But consumers, of course, face borrowing constraints and can be locked into mortgage or debt payment streams that might impose additional, direct limitations on consumption. Dynan (2012) and Mian, Rao, and Sufi (2012) provide evidence that these additional effects of the so-called debt overhang from the collapse in housing have further suppressed consumption during the recovery.

Whether one looks at wealth or leverage, household finances have improved substantially in recent years. From the third quarter of 2007 to the first quarter of 2009, household net worth fell by an estimated $16.1 trillion. By the third quarter of 2012, however, households had added $13.5 trillion, recovering more than 80 percent of wealth lost. Households have also made progress in reducing debt burdens. Total household debt stood at 81.4 percent of GDP in the third quarter of 2012, the lowest since 2003 and down from a peak of nearly 98 percent in 2009. Moreover, payments on mortgage and consumer debt took up about 10.6 percent of household disposable income in the third quarter of 2012, the lowest household debt service ratio since 1993.

Effect of Rising Inequality on Consumption. Some of the recent patterns in aggregate consumption behavior—including the sluggish growth in consumer spending relative to previous recoveries—may reflect the sharp rise in income inequality over the past 30 years. According to CBO (2012c), after-tax incomes of the top 1 percent of households rose by more than 155 percent from 1979 to 2009, while those of median households increased by less than 33 percent. About one-fifth of this increase in inequality is due to the declining share of income that goes to labor (Box 2-2). As discussed in the 2012 *Economic Report of the President*, some research suggests that this rise in inequality may have reduced aggregate demand, because the highest income earners typically spend a lower share of their income—at least over intermediate time horizons—than do other income groups.

Business Fixed Investment

Real business fixed investment grew 4.6 percent during the four quarters of 2012, after rising 10.2 percent in the four quarters of 2011. Both of its principal components—equipment and software investment and nonresidential structures investment—contributed to this slower growth. Investment in equipment and software slowed to 4.6 percent over the four quarters of 2012, down from robust growth of 11.4 percent in 2011. Investment in nonresidential structures increased 4.7 percent, following a 6.9 percent increase in 2011.

Within equipment and software investment, major components such as industrial equipment, transportation equipment, and information-processing equipment all posted notably slower growth in 2012 than in 2011. The relatively stable pace of GDP growth during 2011 and 2012 provided little overall stimulus to equipment investment. The slowing pattern of equipment investment growth may also partially reflect the reduced pace of bonus depreciation, which had been available at a 100 percent rate during 2011 but fell to 50 percent in 2012. (Bonus depreciation encourages investment by allowing firms to write-off equipment purchases immediately, rather than over an extended period). The American Taxpayer Relief Act (ATRA) extended the 50 percent rate through 2013.

Real investment in nonresidential structures grew 4.7 percent during the four quarters of 2012, down from 6.9 percent during 2011. Solid growth in office buildings and electric power plants was partially offset by a decline in petroleum and natural gas drilling, which followed strong growth during the preceding two years.

Despite the slower growth of business investment in 2012, the sector is poised to grow rapidly if demand accelerates because corporations have ample internal funds (Figure 2-7). Corporate profits continued to rise through the first three quarters of 2012, exceeding their pre-recession level, even as a percent of GDP, while corporate dividends remained at roughly pre-recession levels through the first three quarters of the year before spiking in the fourth quarter, before ATRA was passed. As a consequence, corporate cash flow, the sum of undistributed profits and depreciation that represents the internal funds that corporations have available for investment, has remained elevated during the recovery. Cash flow now exceeds investment, an unusual situation insofar as corporations usually have to borrow funds to finance their capital spending plans. A large portion of these investable funds has been channeled to financial investments rather than to new physical capital, as can be seen by the rising level of liquid assets held by nonfinancial corporations. Indeed, as of the third quarter of 2012, nonfinancial corporations held $1.7 trillion of liquid financial assets.

Box 2-2: Why Is the Labor Share Declining?

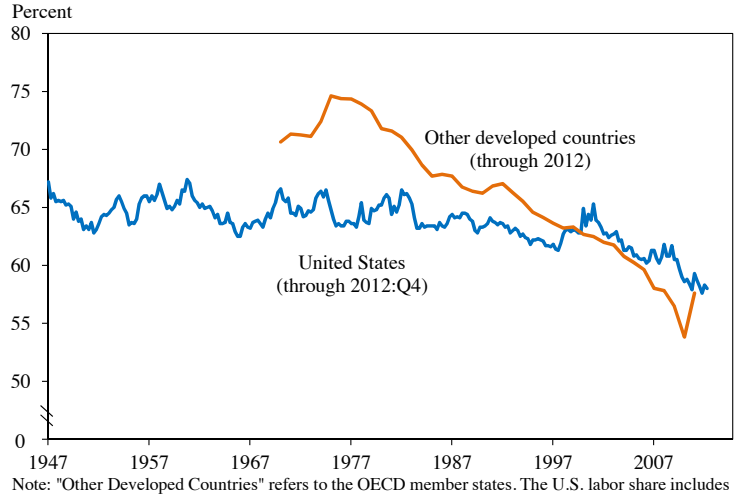
The "labor share" is the fraction of income that is paid to workers in wages, bonuses, and other compensation. Income of self-employed workers is also included in some definitions of labor income, as it is in the figure below. The labor share in the United States was remarkably stable in the post-war period until the early 2000s. Since then, it has dropped 5 percentage points. Because capital income is distributed more unequally than labor income, the decline in the labor share accounts for some, but not all, of the rise in inequality. CBO (2011) has estimated that 21 percent of the increase in inequality from 1979 to 2007 was accounted for by shifts between labor and other sources of income, with the remaining 79 percent accounted for by rising inequality within capital, business, or labor income. Nevertheless, the decline in the labor share has adverse implications for government revenues because wages and salaries are taxed at a higher rate than other major income sources.

The decline in the labor share is widespread across industries and across countries. An examination of the United States shows that the labor share has declined since 2000 in every major private industry except construction, although about half of the decline is attributable to manufacturing. Moreover, for 22 other developed economies (weighted by their GDP converted to dollars at current exchange rates), the labor share fell from 72 percent in 1980 to 60 percent in 2005.

Proposed explanations for the declining labor share in the United States and abroad include changes in technology, increasing globalization, changes in market structure, and the declining negotiating power of labor. Changes in technology can affect the share of income going to labor by changing the nature of the labor needed for production. More specifically, much of the investment made by firms over the past two decades has been in information technology, and some economists have suggested that information technology reduces the need for traditional types of skilled labor (Bound and Johnson 1992; Autor, Katz, and Krueger 1998). According to this argument, the labor share has fallen because traditional middle-skill work is being supplanted by computers, and the marginal product of labor has declined.

Increasing globalization also puts pressure on wages, especially wages in the production of tradable goods that can be produced in emerging market countries and some less-developed countries. These pressures on wages can lead to reductions in the labor share. Changes in market structure and in the negotiating power of labor could also lead to a declining labor share. One such change is the decline in unions and collective bargaining agreements in the United States.

These explanations are neither exhaustive nor mutually exclusive (OECD 2012). Overall, these changes have moved the distribution of income towards a winner-take-all society.



Note: "Other Developed Countries" refers to the OECD member states. The U.S. labor share includes imputed proprietor's income. The OECD labor share excludes the farm, mining, fuel, and real estate sectors, and is aggregated by the CEA on an annual basis for 22 countries using GDP weights at current exchange rates.
Source: Bureau of Labor Statistics, Productivity and Costs; OECD, Annual Indicators.

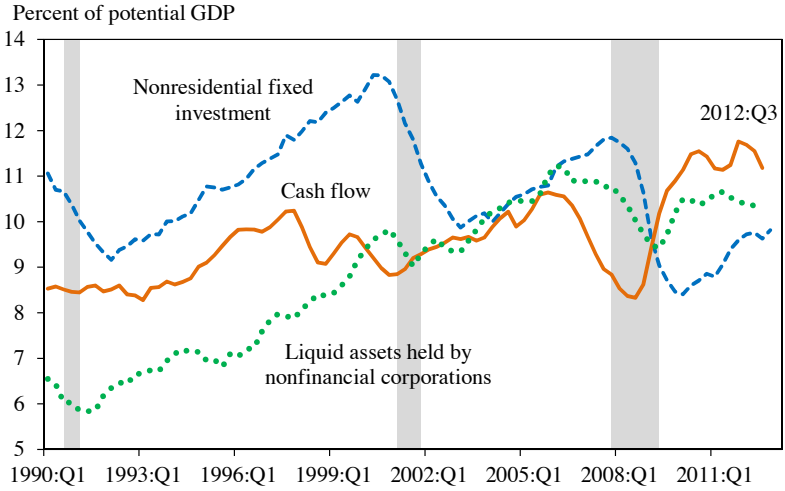
Business Inventories

Inventory investment—measured as the change in inventories from one quarter to the next—is typically an important contributor to the changes in real GDP during recessions and the early stages of recoveries. During the recession, inventories fell but by less than sales, so the ratio of inventories to sales rose; through the first two years of the recovery, inventories rose less rapidly than sales, and by the end of 2011, the inventory-sales ratio had returned to its level of the mid-2000s. With this inventory cycle behind us, real private nonfarm inventory accumulation in 2012 made only a small, slightly positive contribution to real GDP growth. Looking ahead, inventory investment is expected to make only a minor contribution to growth during 2013.

Government Outlays, Consumption, and Investment

The Federal budget deficit during fiscal year (FY) 2012—which ended on September 30, 2012—was $1.1 trillion, about $200 billion less than the

Figure 2-7
Business Fixed Investment and Cash Flow, 1990–2012



Note: Shading denotes recession. Potential GDP is a CBO estimate. Cash flow, from the National Income and Product Accounts, and liquid assets held by nonfinancial corporations are plotted using three-quarter moving averages. Nonresidential fixed investment line includes 2012:Q4.
Source: Bureau of Economic Analysis, National Income and Product Accounts; Federal Reserve Board, Z.1; Congressional Budget Office.

preceding year. As a share of GDP, the deficit fell to 7.0 percent in FY 2012, down from 8.7 percent in FY 2011.

As measured in the Federal unified budget, Federal receipts rose 6.4 percent in FY 2012 compared with the previous year, reflecting a 3.7 percent increase in individual income tax receipts, a 33.8 percent increase in corporate tax receipts, and a 3.2 percent increase in receipts for social insurance. The $61 billion increase in corporate tax receipts accounted for 42 percent of the rise in overall revenues. Current dollar values of individual income taxes and social insurance and retirement receipts have each risen to 97 percent of their FY 2007 levels, while corporate tax receipts were just 65 percent of their previous high.

Federal outlays declined 1.7 percent in nominal dollars in FY 2012 from FY 2011, falling from 24.1 percent of GDP to 22.8 percent of GDP. The decline in spending during the fiscal year reflected several factors, including reduced outlays on unemployment insurance, Medicaid, and defense. Specifically, fewer individuals received unemployment benefits, a temporary increase in Federal aid to states for Medicaid expired, and the number of U.S. Army personnel stationed in Afghanistan and Iraq was reduced.

During the four quarters of calendar year 2012, the National Income and Product Accounts measure of real Federal expenditures on consumption and gross investment (which does not include Federal transfers to

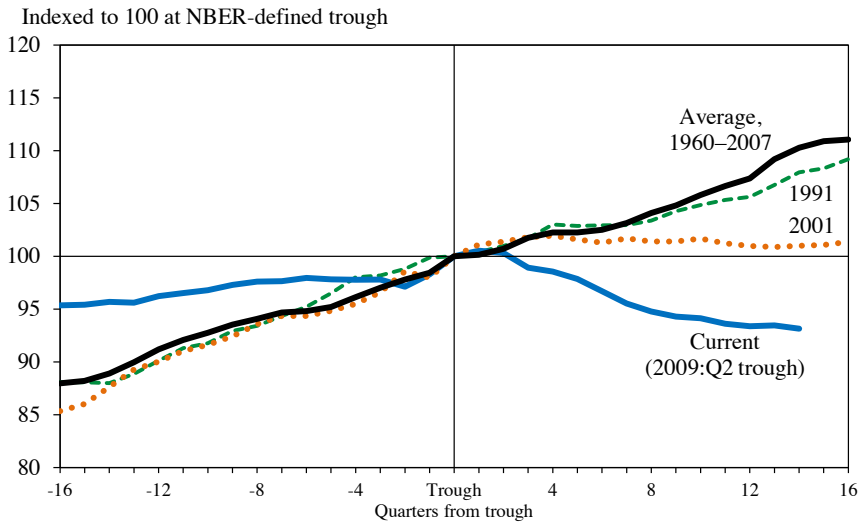
States and individuals) declined 2.8 percent, as a 4.9 percent decline in real defense spending more than offset a 1.5 percent increase in real nondefense spending.

The Federal deficit as a share of GDP fell for the third consecutive fiscal year in 2012. The change in this ratio is one measure of the drag on the economy imposed by fiscal consolidation, and in FY 2012, this drag was 1.7 percentage points (the difference between the deficit-GDP ratio of 8.7 percent in FY 2011 and 7.0 percent in FY 2012). Moreover, the drop in the deficit-to-GDP ratio from 10.1 percent in 2009 to 7.0 percent in 2012 is the largest 3-year decrease since 1949. Looking further ahead, policy changes to be recommended in the FY 2014 Budget will put debt as a share of the economy on a stable path and place the budget in a fiscally sustainable position in the 10-year budget window.

State and Local Governments

Although State and local governments continued to experience fiscal pressure in 2012, the long contraction in the sector finally appears to be coming to an end. State and local consumption and investment (purchases) have shown unprecedented weakness compared with previous recoveries (Figure 2-8). From the end of the recession in mid-2009 to the fourth quarter of 2012, real State and local purchases declined 6.8 percent. By contrast, during the comparable period of each of the six previous recoveries, real State

Figure 2-8
Real State and Local Government Purchases During Recoveries



Note: The 1960-2007 average excludes the 1980 recession due to overlap with the 1981-82 recession.
Source: Bureau of Economic Analysis, National Income and Product Accounts; National Bureau of Economic Research; CEA calculations.

and local purchases posted positive growth, averaging an increase of 10.3 percent over the first three and a half years of the recovery. Nominal State and local government tax receipts increased during the first three quarters of 2012. Federal support from the Recovery Act—which helped support State and local governments during 2009 and 2010—phased out during 2011 and 2012. And while the pace of State and local government job losses eased in 2012, employment in this sector remained 724,000 jobs below its previous peak as of the end of the year, with more than 40 percent of the loss in educational services jobs.

On the revenue side, State and local tax receipts rose at an annual rate of 2.6 percent during the first three quarters of 2012, a bit below the pace during 2011. The slow recovery in State and local tax revenue reflects in part the effect of lower house prices on property tax collections. Historically, property taxes have accounted for about 30 percent of State and local government tax receipts and are critical to local governments, but property tax receipts have edged up slowly in the years after the housing bubble burst. Nationwide, property tax receipts have grown just 11.4 percent over the past five years, only slightly faster than inflation, compared with 36.0 percent growth during the preceding five year period from 2002–07. Moreover, State and local governments are still feeling the effect of the drop in house prices: because property value assessments lag behind market valuations, the effect of house prices on property tax receipts operates with a delay of about three years (Lutz 2008). Although policymakers in some states have increased the tax rate on assessed property values to partially offset declines in those values (Lutz, Molloy, and Shan 2011), local governments have still needed to adjust spending to make up for the lost revenue. Despite these difficulties, the recent upturn in house prices suggests that improvement in State and local government finances is on the horizon. In addition, revenues from sales and income taxes—which make up about 50 to 60 percent of State and local tax receipts—have also continued to recover, with income tax collections up 7.6 percent during the four quarters of 2012, and sales taxes growing 2.2 percent.

Another factor weighing on State and local government revenues has been the phase-out of the Recovery Act. After rising notably in 2009 and 2010, Federal grants-in-aid to State and local governments plunged $82.1 billion in 2011 before stabilizing during 2012. Both the earlier increase and the recent return to a lower level were largely attributable to the Recovery Act, which was designed to offer temporary support to State and local governments. The portion of Federal grants-in-aid to the States from Recovery Act programs stood at just $17.9 billion in 2012, down from a peak of more than $100 billion in 2010.

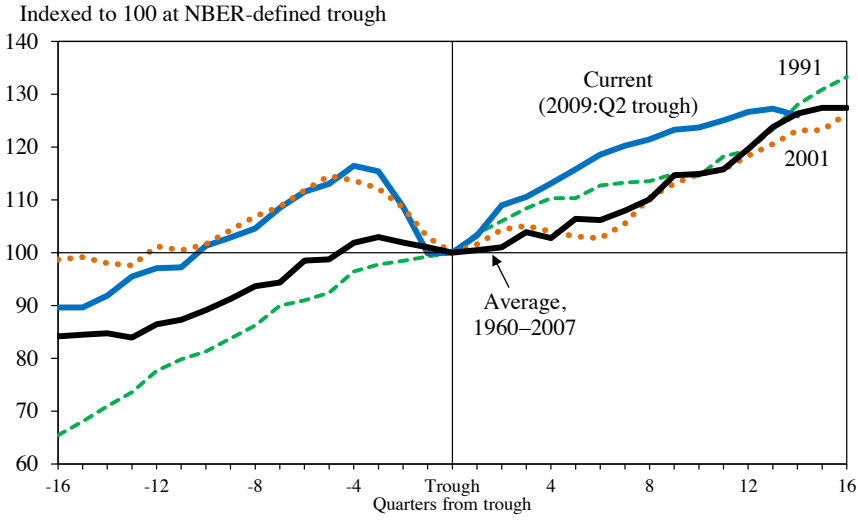
Current State and local government expenditures—which include transfers to individuals as well as government consumption—rose 2.8 percent over the four quarters of 2012, following a 0.2 percent increase in the previous year. A recent CBO report (CBO 2012b) noted that the weakness in State and local government spending relative to previous recoveries could be attributed roughly equally to three different areas: hiring of employees, purchases of goods and services, and construction spending. Despite continued spending restraint across these major components, the operating position of State and local governments deteriorated to an aggregate deficit of $140 billion by the third quarter of 2012, on pace for a fifth consecutive year of operating deficits for the sector.

State and local government employment fell 32,000 during the 12 months of 2012, a much shallower decline than the 286,000 jobs lost in 2011. Nevertheless, employment in the sector remains well below its peak in 2008. To date, the Administration has taken important steps to help State and local governments maintain critical services in public safety and education. In addition to the grants-in-aid components of the Recovery Act, the Administration established a new fund to support teaching jobs and extended the enhanced Federal matching formula for certain social services and medical insurance expenditures. In 2011, the President proposed additional resources for the teacher job fund as part of the American Jobs Act, which also would have supported the modernization of more than 35,000 schools. Although Congress did not enact this proposal, the President remains committed to supporting educators and first responders in his second term.

Real Exports and Imports

Compared with previous recessions, real exports experienced a sharper-than-usual contraction and rebound during 2007–10. This sharp cyclical decline was partly attributable to the synchronized nature of the 2007–09 contraction and recovery across nearly all countries, a collapse and rebound in commodity prices, and foreign consumers' postponement of purchases of U.S. durable goods, which account for a large share of tradable goods (Baldwin 2009). Now, with the recent slowing of world growth, real exports appear to be reverting to their historical trend (Figure 2-9), growing 1.8 percent during the four quarters of 2012, after rising 4.3 percent in 2011 and 8.8 percent in 2010. As discussed in Chapter 7, the recent slowing in export growth appears to have restrained the pace of U.S. manufacturing activity. Continued export growth will depend, in part, on healthy growth of the world economy and on exchange rates. The value of the dollar has been generally increasing since July 2011, in part reflecting increased

Figure 2-9
Real Exports During Recoveries



Note: The 1960-2007 average excludes the 1980 recession due to overlap with the 1981-82 recession.
Source: Bureau of Economic Analysis, National Income and Product Accounts; National Bureau of Economic Research; CEA calculations.

international demand for U.S. Treasury bonds in a time of global financial turmoil and rapidly deteriorating global growth. Changes in the terms of trade have contributed to the weakening demand for U.S. goods abroad.

Real imports grew 0.1 percent during the four quarters of 2012, down from 10.9 percent and 3.5 percent in 2010 and 2011, respectively. A decline in imports of petroleum products offset a moderate rise in imports of nonpetroleum goods. Consistent with Houthakker and Magee (1969), the pattern in real imports parallels, but is sharper than, the general shape of the contraction and rebound in overall U.S. personal consumption spending. Because imports tend to be concentrated more in goods than is overall consumer spending, real imports move more closely with goods consumption—which is cyclically sensitive—than with total consumption. In addition, because business equipment investment includes imported capital goods, real imports track this cyclical series as well.

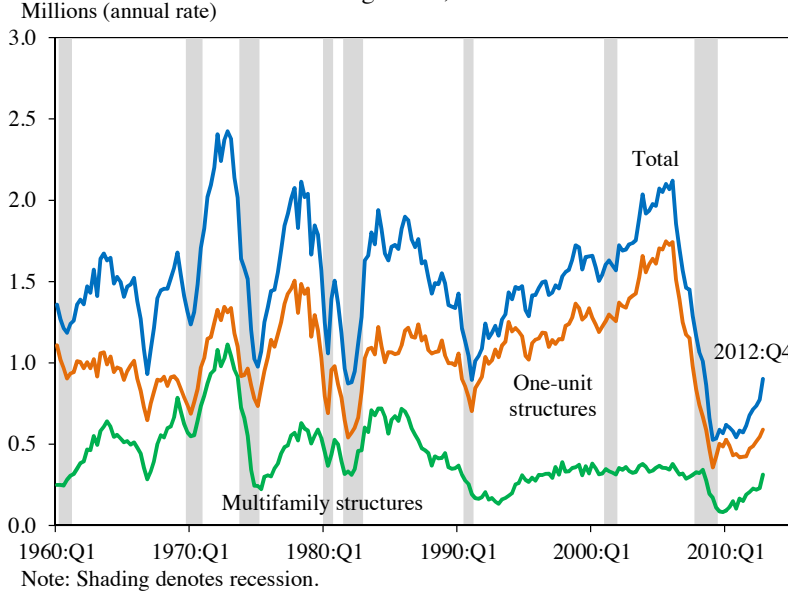
Shrinking exports subtracted from real GDP growth in each quarter of the worst period of the recession from the third quarter of 2008 to the first quarter of 2009, but real exports have added to real GDP in every quarter since, except for in the fourth quarter of 2012.

Housing Markets

Housing activity firmed markedly in 2012 and, although the level of activity remains low by historical standards, the recovery in the sector finally appears to be gaining momentum. On the production side, new housing starts increased to an annual rate of 900,000 units by the fourth quarter of 2012, up from an annual low of 550,000 units in 2009, and 610,000 units in 2011 (Figure 2-10). Demand for housing has also increased, with new and existing home sales reaching their highest levels of the recovery period during 2012. Similarly, inventories of unsold new homes have fallen to their lowest ever recorded level.

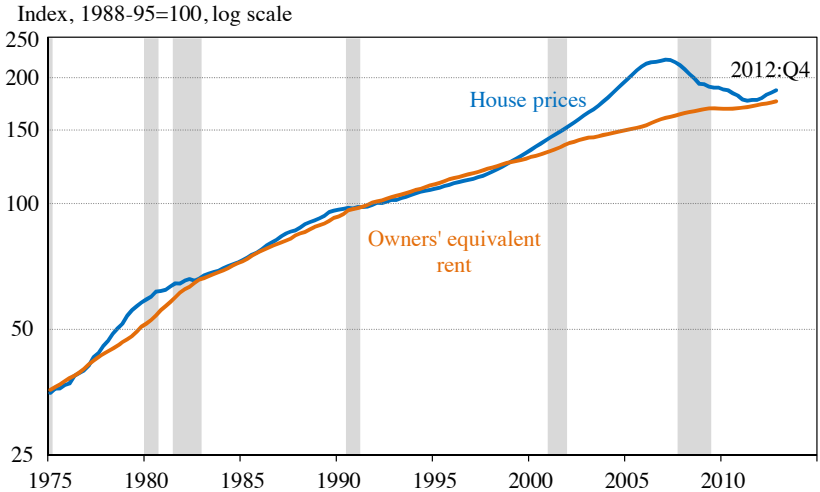
Following large declines from 2007 through 2011, housing prices bottomed out in early 2012, and rose 8.3 percent over the 12 months of the year, according to the CoreLogic home price index. Private sector housing experts expect house prices to appreciate at a 3.0 to 3.5 percent annual pace for the next several years. Because households have a choice between renting and owning a home, the price of new homes should increase in tandem with rental costs, at least over long periods of time. As seen in Figure 2-11, house prices increased to a level above parity with rents during the mid-2000s but descended to a level consistent with rents by the end of 2011.

Figure 2-10
Housing Starts, 1960–2012



Note: Shading denotes recession.
Source: Census Bureau, New Residential Construction.

Figure 2-11
Home Prices and Owners' Equivalent Rent, 1975–2012



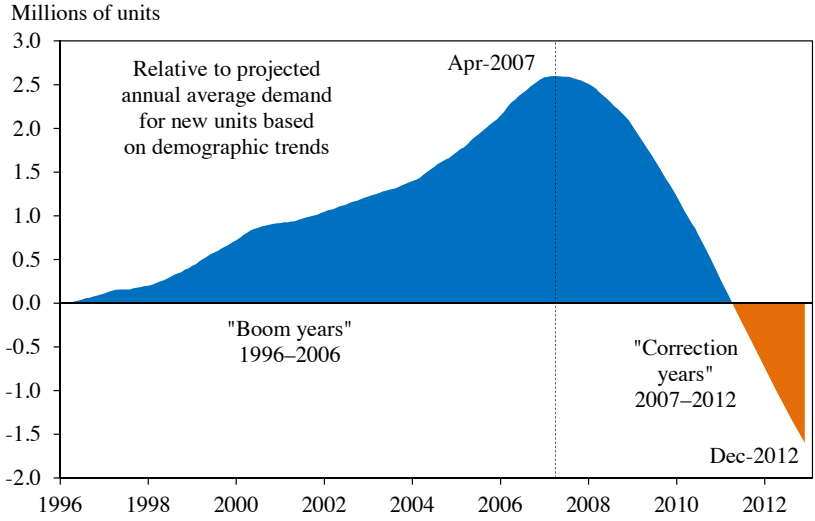
Note: Shading denotes recession. House prices are measured by the Federal Housing Finance Agency's price index (total index before 1991, purchase-only index after 1991). Owners' equivalent rent is measured by the Personal Consumption Expenditures price index for imputed rent of owner-occupied nonfarm housing (before 1983) and the Consumer Price Index for owners' equivalent rent of residence (1983-present).
Source: Federal Housing Finance Agency, House Price Index; Bureau of Economic Analysis, National Income and Product Accounts; Bureau of Labor Statistics, Consumer Price Index; CEA calculations.

In 1998, the Council of Economic Advisers estimated that the pace of construction of new housing units and mobile homes that would be consistent with projected rates of population and household formation would be 1.64 million units a year over the 10 years from 1996 to 2006. Relative to this 1996 estimate, the subsequent 10 years through 2006 saw a period of tremendous overbuilding that led to an excess supply of 2.6 million housing units by 2007 (Figure 2-12). Since then, the very low levels of new construction effectively allowed the underlying demographics of household formation to catch up to the supply of constructed and manufactured homes nationwide by 2011, with some possible overshooting in 2012.

Although construction, sales, and prices are finally rising, progress has been impaired by the substantial stock of vacant homes and homes still in the foreclosure process; therefore, a recovery in housing starts to the annual pace of roughly 1.76 million units suggested by the demographics of household formation will likely still take several years to achieve (Masnick, McCue, and Belsky 2010). Nevertheless, sustained increases in homebuilding should provide a major impetus to economic growth over the medium term.

Several other factors also appear to be restraining the housing recovery. First, although mortgage rates are at historically low levels, approximately 22 percent of current mortgage holders were underwater (that is, the

Figure 2-12
Cumulative Over- and Under-Building of Residential and Manufactured Homes, 1996–2012



Source: Census Bureau, New Residential Construction (completions) and Manufactured Homes Survey (placements); CEA (1998); CEA calculations.

amount owed on their mortgage exceeded the market value of their home) through the third quarter of 2012, impeding their ability to refinance or sell.

Second, although some tightening of lending standards was inevitable in the aftermath of the financial crisis, these standards have not eased by as much as expected this far into the recovery. According to the Federal Reserve Senior Loan Officer Opinion Survey, the net percentage of responding banks that have eased their standards for approving prime residential mortgage loans has been flat since the beginning of 2011, even though demand for prime residential mortgages has increased sharply. According to the April 2012 survey, which included special questions on real estate lending, more than half the lenders reported they were less likely to originate a mortgage to a borrower with a credit score of 680 today than in 2006. All told, the origination of first-lien mortgages to homebuyers now stands at its lowest level since 1995.

As the President emphasized in the State of the Union, moving forward with programs to help homeowners with strong payment histories refinance their homes will provide them with additional liquidity and will spur consumption. In addition, streamlining regulations associated with issuing new mortgages will provide creditworthy potential borrowers the opportunity to purchase homes and will further the recovery of the housing sector.

Financial Markets

Financial market conditions in the United States continued to improve, on net, in 2012, reflecting the ongoing economic recovery and the highly accommodative monetary policies undertaken by the Federal Reserve. The broad, overall improvement in financial conditions is consistent with the performance of the Standard and Poor's (S&P) 500 Composite Index, a measure of U.S. equity prices, which rose 14.4 percent over the 12 months of 2012. Measures of market volatility, such as the Chicago Board Options Exchange Market Volatility Index (also known as the VIX), were also more subdued in 2012 than they were in 2011.

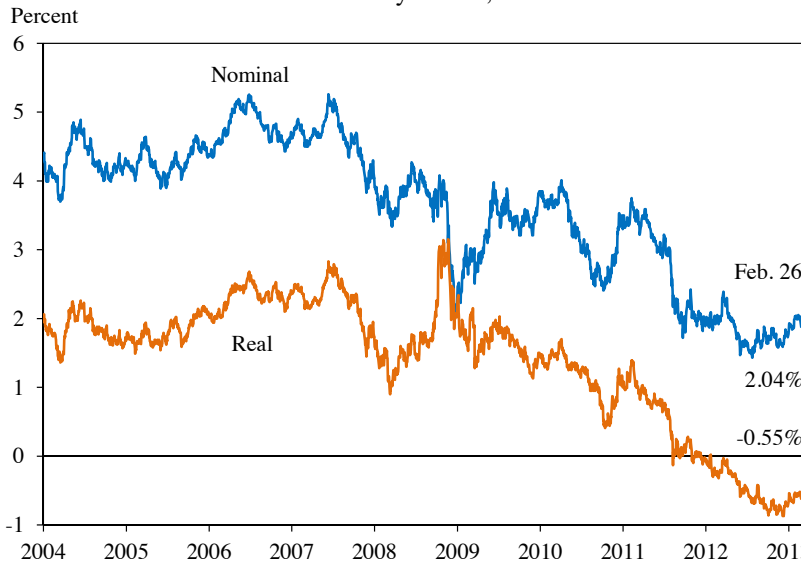
Yields on 10-year Treasury notes averaged 1.7 percent in December 2012, down slightly from 2.0 percent in December 2011. For the year as a whole, the 10-year yield averaged 1.8 percent, the lowest since at least 1953 when the Federal Reserve's constant-maturity series began. Long-term interest rates in the United States were driven even lower than in 2011 by the relative safety of U.S. issues in the presence of concern over sovereign debt issues abroad and by the Federal Reserve System's program to lengthen the maturity of its holdings of U.S. government securities. With these nominal yields falling to historic lows, long-term real interest rates (that is, the nominal yield less expected inflation) also fell. Yields on Treasury Inflation-Protected Securities, an indicator of real rates, averaged negative 0.5 percent in 2012 (Figure 2-13).

Credit standards for commercial and industrial loans, as measured by the Federal Reserve Board's Senior Loan Officer Opinion Survey, have eased since the financial crisis for firms of all sizes, including small firms. Data from the Federal Deposit Insurance Corporation also suggest that the number of loans to small businesses increased in 2012, after having remained depressed through 2011. Nevertheless, the value of small-business commercial and industrial loans remains below its pre-recession level.

Wage and Price Inflation

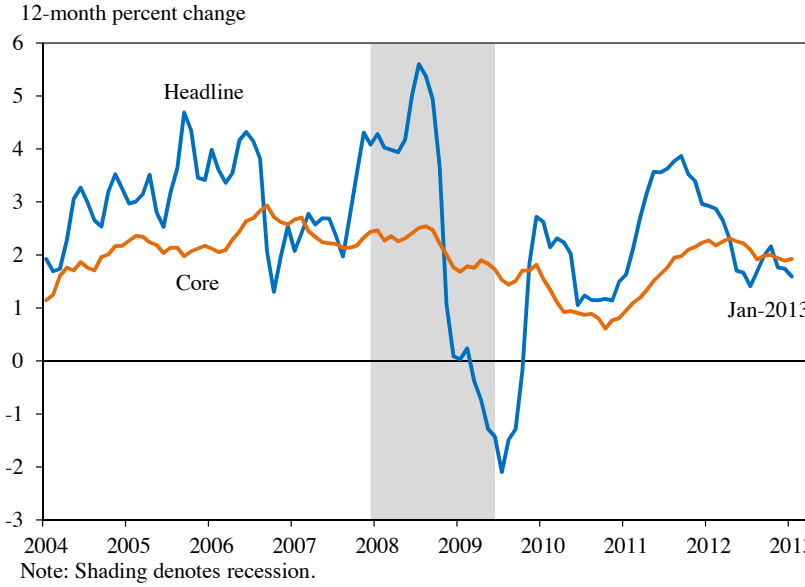
Core consumer price inflation (the consumer price index excluding the volatile components of food and energy) was stable from 2011 to 2012, rising 1.9 percent in 2012, and down slightly from a 2.2 percent year-earlier increase (Figure 2-14). Twelve-month increases in core consumer prices have fluctuated in the fairly narrow range of 0.6 to 2.3 percent during the past three years. This relative stability is striking, given that standard Phillips curve models of inflation would predict sustained disinflationary pressure over this period because of the considerable slack in labor and product markets.

Figure 2-13
10-Year Treasury Yields, 2004–2013



Note: Real yield based on 10-year inflation-indexed securities.
Source: Federal Reserve Board, H.15.

Figure 2-14
Consumer Price Inflation, 2004–2012



Note: Shading denotes recession.
Source: Bureau of Labor Statistics, Consumer Price Index.

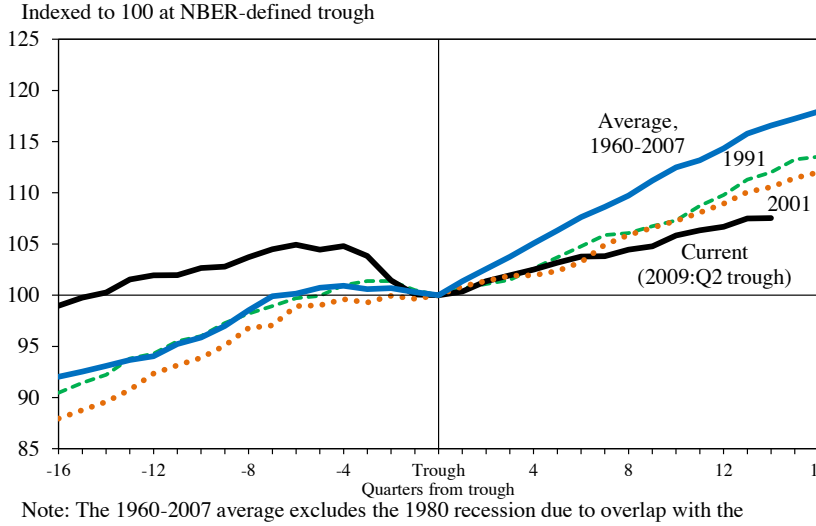
As is usually the case, the overall, or headline, consumer price index, including food and energy prices, fluctuated more in 2012 than did core inflation. Inflation as measured by the overall consumer price index fell from 3.0 percent during the 12 months of 2011 to 1.7 percent in 2012, with the decline stemming from lower rates of food and energy inflation. Energy prices edged up only 0.5 percent during 2012, more than 6 percentage points below their 2011 pace, and food price inflation dropped 2.9 percentage points. Data Watch 2-2 discusses one of the challenges faced by statistical agencies when constructing price indexes based on statistical samples.

The Recovery in Historical Perspective

Following the worst recession since the Great Depression, the recovery that began in the third quarter of 2009 has been a long and difficult one for many Americans. During the recession, 7.5 million jobs were lost, and real GDP fell by 4.7 percent. To date during the subsequent recovery, 4.2 million jobs have been added since June 2009, and real GDP has grown by 7.5 percent. Since the trough in employment in February 2010, the private sector has grown for 35 straight months and added over 6.1 million jobs. Real GDP growth in the United States has exceeded the cumulative growth in the euro area and the United Kingdom (Figure 1-4) as well as in Japan since the fourth quarter of 2007. Nevertheless, U.S. real GDP growth since the end of the recession has been less than the average increase in previous postwar recoveries.

From 1960 to 2007, the U.S. economy had seven recessions, and the average annual rate of growth of real GDP during the 12 quarters following those recessions was 4.2 percent. In contrast, during the 12 quarters following the trough in the second quarter of 2009, the average annual rate of growth of real GDP was 2.2 percent. After three years of recovery, the cumulative growth of real GDP was 6.3 percentage points lower than its average value for the earlier post-1960 recessions. This shortfall is depicted in Figure 2-15, which shows the paths of real GDP for the three most recent business cycles (with cyclical troughs in the first quarter of 1991, the fourth quarter of 2001, and the second quarter of 2009), along with the average path for U.S. business-cycle recoveries from 1960 through 2007. For each of the three most recent cycles, the recovery in real GDP has been slower than the 1960–2007 average. It is worth noting that the most recent recovery has been stronger than the post-2001 recovery if only private demand is considered (that is, excluding government purchases). Still, the fact remains that these three recoveries have been slower than the pre-2007 average.

Figure 2-15
Real GDP During Recoveries



Note: The 1960-2007 average excludes the 1980 recession due to overlap with the 1981-82 recession.
Source: Bureau of Economic Analysis, National Income and Product Accounts; National Bureau of Economic Research; CEA calculations.

The reasons underlying the relatively slow pace of the current recovery have been the subject of considerable research. This research, discussed in more detail below, reaches three main conclusions. First, most—perhaps two-thirds, using a central estimate across studies—of the gap between the 12-quarter growth of GDP after the second quarter of 2009 and the average 12-quarter growth following previous troughs is accounted for primarily by changes in the long-term dynamics of the U.S. labor force and economy, mainly long-term demographic shifts. These demographic changes also help explain why the 1991 and 2001 recoveries were slower than the post-1960 average. Second, much of the remaining one-third of the gap can be attributed to the financial crisis dynamics discussed by Reinhart and Rogoff (2009), Reinhart and Reinhart (2010), Hall (2010), Woodford (2010), and others. This research finds that recoveries following financial crises tend to be slow because of delays in the reemergence of credit and reductions in consumer spending as households pay down debt or rebuild their savings, a process referred to as "deleveraging." Third, some unique factors proved to be particularly important impediments to this recovery, as discussed previously: the limited effectiveness of standard monetary policy caused by the zero lower bound on nominal interest rates; the presence of millions of underwater and foreclosed properties, which has impaired the recovery of the housing market; and the contraction in State and local government

Data Watch 2-2: The Effect of Statistical Sampling on Laspeyres Indexes

The purpose of a price index is to provide a single measure of the overall rate of change in prices for some set of goods and services, for example, all purchases made by consumers. If data on all prices were readily available, the true rate of price increase could be calculated by weighting the relative increases in the prices for every item in the bundle using weights that reflect spending on the items, then combining those weighted price increases to form a price index. Because it is not possible to collect all prices, however, statistical agencies collect a sample of prices and use the sample to construct the price index.

The consequences of using a sample of prices, instead of all prices, can be significant. To be concrete, consider a Laspeyres price index, in which inflation is measured as an arithmetic weighted average of price increases for individual categories of items and the weights are spending shares measured at the beginning of the interval. In practice, each item (for example, apples or a haircut) is sold in an area (such as the Seattle metropolitan region), so the price increase of interest is an item-area price (the increase in the price of apples in Seattle from one month to the next). In reality, there are many item-area prices (one can purchase apples or haircuts at many shops in Seattle), so a sample of item-area prices is taken, and the sampled price increases (the increase in the price of apples at a given store, relative to last month's price at that store) are averaged. Since 1999, the Bureau of Labor Statistics (BLS) has computed this average of the sample of price increases within an item-area using the geometric mean.[1]

If the number of sampled prices for an item-area is large, the geometric mean of sample price changes will be close to the true item-area price. But collecting many item-area prices is expensive, so in many cases only a small number of item-area prices are collected. When computed using a small sample, the sample geometric mean tends to overstate the true geometric mean. The extent of this overstatement—the statistical bias arising from using a small sample—decreases as the number of prices sampled for an item-area increases.

How large is this finite sample bias? As an example, consider a

[1] The geometric mean of two numbers is the square root of their product. Suppose apple prices are sampled at two stores, one of which held prices constant and the other increased apple prices by 20 percent. Then the arithmetic mean relative price is $(1 + 1.2)/2 = 1.10$ (an increase of 10 percent), and the geometric mean is $(1\times1.2)^{1/2} = 1.095$ (an increase of 9.5 percent). The BLS adopted the geometric mean in part because its slightly lower increase captures the effect of shoppers migrating to the store at which apple prices remain constant, so that from the shopper's perspective the overall price increase is in fact less than 10 percent.

Laspeyres price index constructed using equal weights (that is, an index for which all item-areas have the same consumption shares), with many item-areas and with 10 prices randomly sampled per item-area. Suppose that the true item-area price increase is zero and the standard deviation of the price changes (a measure of the dispersion of the price changes) for sampled goods within each item-area is 10 percentage points. Then the bias is small: The geometric mean index for each item-area overstates the price change by only 0.05 percentage point per period, and under the assumptions made here, this translates into an upward bias of 0.05 percentage point in the overall Laspeyres index. But if only 5 items are sampled per item-area, and the standard deviation of the price changes across stores is a bit larger, say, 15 percentage points, then the bias is larger, and the price change is overstated by 0.23 percentage point per period. If this bias can be calculated (as has been done in the simple example laid out here), a technical correction can be made to the Laspeyres index to eliminate the bias. At a technical level, this bias arises because the Laspeyres index is an arithmetic weighted average of the item-area geometric means. Interestingly, if the geometric means for each item-area are aggregated to a national index using a weighted geometric mean, as with a Törnqvist price index, rather than a weighted arithmetic mean, as with the Laspeyres, the small-sample bias is eliminated, and there is no need for a technical bias correction. For further reading on small-sample bias in index numbers, see McClelland and Reinsdorf (1999) and Bradley (2005).

hiring due to sharply eroded property and sales tax bases. Given the deep and prolonged effects of financial crises, the cyclical component of the current recovery would have lagged even further behind the postwar average were it not for Federal fiscal stimulus—notably through the Recovery Act (Box 2-3), the temporary payroll tax cut, and extended unemployment insurance benefits—and for the nonstandard monetary stimulus provided by the Federal Reserve.

Demographics, Productivity, and Long-Term Economic Growth

A useful starting point for analyzing long-term trends in output is to note that GDP is the product of two terms: real GDP per worker times the number of workers. In turn, GDP per worker is the product of real GDP per hour of labor input—that is, labor productivity—times average hours per worker. Although average hours per worker have been declining, the rate of this decline since the mid-1980s has been relatively small. Thus, variation in the long-run growth rate of GDP is, to a first approximation, determined by

Box 2-3: Economic Impacts of the American Recovery and Reinvestment Act

To counter the contraction of aggregate demand in the Great Recession, Congress passed and President Obama signed into law the American Recovery and Reinvestment Act (the Recovery Act) in February 2009. The Recovery Act was a major part of the Federal government's efforts to reinvigorate the economy through direct fiscal stimulus. The Recovery Act authorized an estimated $787 billion for purchases of goods and services by the Federal government, transfers to State and local governments, payments to individuals, and temporary tax reductions for individuals and businesses (based on actual outcomes, the final total exceeded $800 billion).

Numerous studies have examined the success of the Recovery Act in raising employment and stimulating growth. As is the case with policy evaluation generally, the methodological challenge is to compare outcomes from an event that actually happened (implementation of the Recovery Act) to outcomes from a counterfactual event that did not (no Recovery Act). One approach is to use a large macroeconometric model or other statistical techniques to estimate a baseline, non-stimulus forecast that excludes Recovery Act provisions and a stimulus forecast that includes them, and then either compare the two forecasts or compare the actual data to the non-stimulus forecast. Of the studies employing this method, most estimate that the Recovery Act stimulated growth. A Congressional Budget Office study (CBO 2012b) estimated that the Recovery Act boosted the level of GDP by 0.4–1.8 percent in 2009, 0.7–4.1 percent in 2010, 0.4–2.3 percent in 2011, and 0.1–0.8 percent in 2012, with more than 90 percent of the Recovery Act's budgetary impact realized by the end of September 2012. The most recent review by the Council of Economic Advisers (CEA 2013) estimated that the Recovery Act raised the level of GDP as of the third quarter of 2010 by 2.7 percent, which is roughly in the same range estimated by CBO. A report by Blinder and Zandi (2010) estimated that the stimulus raised GDP in 2010 by 3.4 percent. Additional reports by IHS Global Insight and Macroeconomic Advisers provide estimates consistent with these ranges (as reported in CEA 2013). Estimates based on macroeconometric models typically do not include the additional benefits of avoiding very high levels of unemployment, which could be particularly persistent and exhibit so-called hysteresis; see DeLong and Summers (2012) for additional discussion.

A different approach to evaluating the Recovery Act is to use cross-state variation in Recovery Act spending levels to estimate the effects of the spending, and then to extrapolate these effects to the full economy.

Wilson (2012) studied state-level variation in Recovery Act spending to determine its employment effect; he estimated that Recovery Act spending created 2 million jobs in its first year and 3.4 million by March 2011, with substantial gains in the construction, manufacturing, education, and health industries. Conley and Dupor (2012) estimated that the spending components of the Act created between 82,000 and 1.5 million jobs. Other papers that use state-level variation to estimate Recovery Act effects on employment include Chodorow-Reich and others (2012), who investigated the employment effects of the Recovery Act's aid to states through increased Federal Medicaid matching funds, and Feyrer and Sacerdote (2011), who considered both total spending and type of spending; both papers found positive employment effects.

The range of estimates of the effect of the Recovery Act is large, and research on this topic is ongoing. Surveying the literature, however, the evidence suggests that the Recovery Act substantially lessened the impact of the Great Recession by increasing employment and output in the years immediately following the crisis.

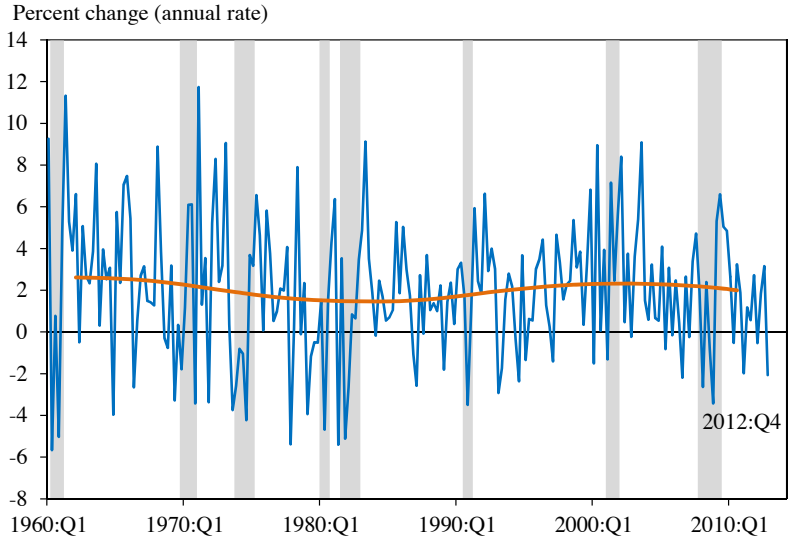
the long-run growth rate of both productivity and the number of workers.[5] The discussion here focuses on the growth of productivity for nonfarm businesses and the growth of overall payroll employment.

Figure 2-16 shows quarterly growth of nonfarm business productivity and its cyclically adjusted long-term mean at an annual rate.[6] According to this mean, annual trend productivity growth fell from 2.6 percent in 1965 to 1.5 percent in 1985, recovered to 2.3 percent in 2005, and then fell to 2.0 percent as of 2010. Despite the considerable uncertainty and difficulty in distinguishing the trend from cyclical components given the severity of the recent recession, this pattern is in line with others in the academic literature. Gordon (2010) found that trend productivity growth declined from 2.75 percent in 1962 to 1.25 percent in 1979, then rebounded to 2.45 percent by 2002. Fernald (2012) divided the period since 1973 into three regimes of average labor productivity growth: 1.5 percent from 1973 to 1997, 3.6 percent from 1997 to 2003, and 1.6 percent from 2003 to 2012. The very strong

[5] Because labor productivity is conventionally measured for the nonfarm business sector, there are additional terms that account for the difference between the growth of GDP per hour and nonfarm business output per hour and between nonfarm business hours and total hours.

[6] The cyclically adjusted long-term mean, or trend, is estimated using regression methods with a cyclical component, specifically two leads and lags of the CBO's unemployment gap, and a flexible trend component. The flexible trend component is estimated by a smooth weighted average using a two-sided 15-year moving window, which is truncated at the ends of the sample.

Figure 2-16
Productivity Growth and Estimated Trend, 1960–2012



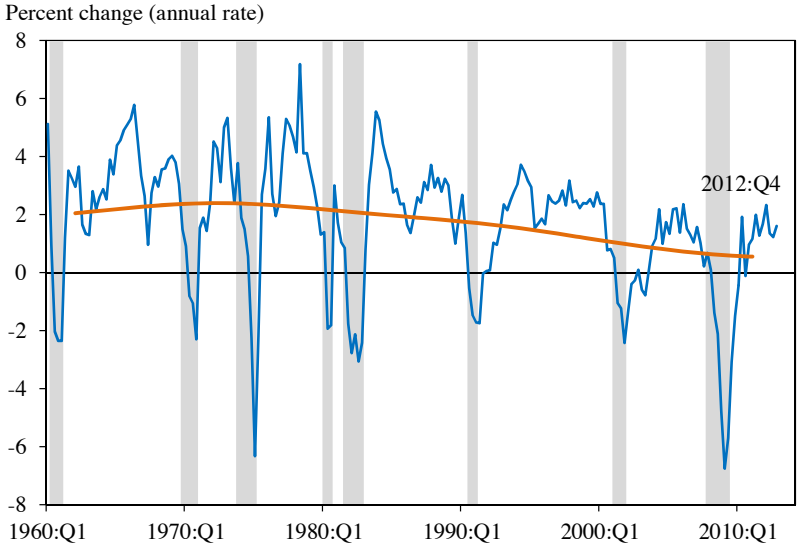
Note: Shading denotes recession. Trend productivity growth was estimated by a smoothed weighted average over a 15-year moving window.
Source: Bureau of Labor Statistics, Productivity and Costs; CEA calculations.

productivity growth of the late 1990s and early 2000s evident in Figure 2-16 appears, in part, to have been transitory.

Figure 2-17 plots the quarterly growth of total payroll employment and its cyclically adjusted long-term mean at an annual rate, and Figure 2-18 plots the quarterly change in employment, measured by the number of jobs; the method for computing the trends in both figures is the same as that used to calculate the trend shown in Figure 2-16. The smoothed mean growth of employment rose from 2.2 percent annually in 1965 to 2.4 percent in 1975 but then declined steadily to 2.0 percent in 1985 and just 0.8 percent in 2005. The trend in the number of jobs added remained high through the 1990s, and in fact more jobs were added in the 1990s than in the 1980s.

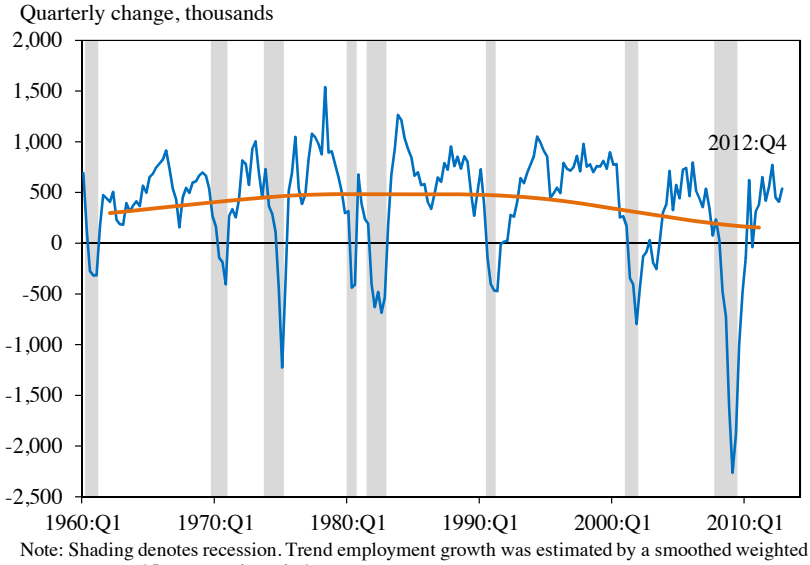
The high growth rate of employment in the 1970s reflected the historic surge of women into the U.S. labor force. The trend decline in employment growth since the late 1990s has been largely associated with demographics, in particular the plateauing of female labor force participation during the late-1990s, the steady multi-decade trend decline in male labor force participation, the downward trend in youth labor force participation, and, starting in the 2000s, the entry of the baby-boom generation into retirement. Demographic trends are discussed in more detail in Chapter 4. Indeed, the implications of demographic trends extend beyond the labor

Figure 2-17
Employment Percent Growth and Estimated Trend, 1960–2012



Note: Shading denotes recession. Trend employment growth was estimated by a smoothed weighted average over a 15-year moving window.
Source: Bureau of Labor Statistics, Current Employment Statistics; CEA calculations.

Figure 2-18
Quarterly Change in Employment and Estimated Trend, 1960–2012



Note: Shading denotes recession. Trend employment growth was estimated by a smoothed weighted average over a 15-year moving window.
Source: Bureau of Labor Statistics, Current Employment Statistics; CEA calculations.

force to include, for example, changes in the patterns of consumption as the population ages (Box 2-4).

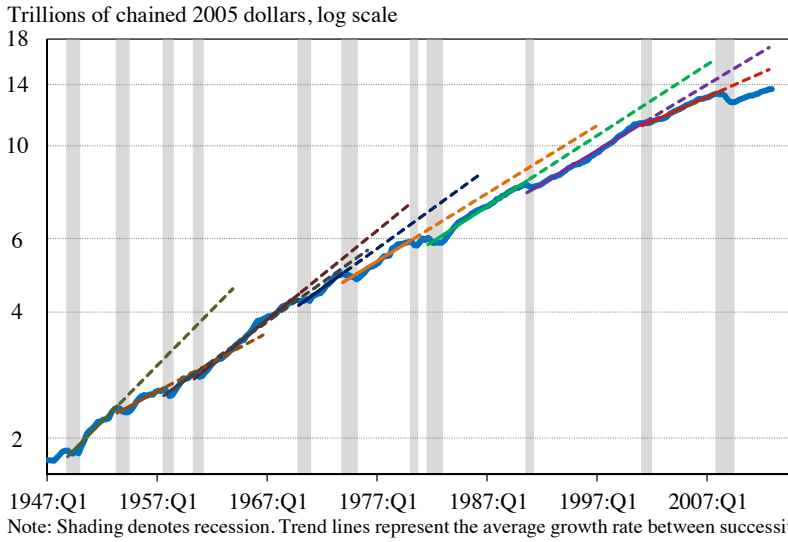
The net effect of the declines in the long-term trends for productivity and employment has been a fairly steady decline in the long-run mean growth rate of GDP over the past 50 years. Indeed, the cyclically adjusted long-term mean growth rate of real GDP fell from 3.7 percent in 1965 to 2.9 percent in 1985 and 2.4 percent in 2005. This steady slowdown is evident in Figure 2-19, in which real GDP is plotted along with trend lines estimated using the quarterly data spanning a full business cycle as dated by the National Bureau of Economic Research (NBER), measured from one business-cycle peak to the next.[7] The slopes of these trend lines are less steep over time; in other words, the trend growth of real GDP has been slowing over this period. Indeed, trend growth has slowed enough that, after every post-1960 recession, real GDP has never attained the previous trend growth line that is implied using data from the preceding business cycle. From this perspective, the slower pace of the current recovery is not unusual or unexpected.

In a November 2012 study of the current recovery, CBO decomposed the growth of real GDP in the 12 quarters following a NBER-dated trough into trend growth plus a cyclical component. It attributed about two-thirds of the difference between the growth in real GDP in the current recovery and the average for other recoveries to slow growth in potential GDP. The CBO study estimated potential real GDP growth—that is, the maximum sustainable rate of growth of real GDP—using a presumed economy-wide production function in which potential GDP varied with the capital stock.

For comparison purposes, the long-term mean growth rate of GDP is computed here using the methodology of Figures 2-16 and 2-17. The results from this analysis are summarized in Table 2-2. As reported earlier, during the first 12 quarters of recoveries from 1960 through 2007, real GDP grew, on average, at an annual rate of 4.2 percent, whereas during the 12 quarters following the trough in the second quarter of 2009, the annual rate of GDP growth was 2.2 percent, or 2.1 percentage points below the 1960–2007 average. The estimated trend growth rate of real GDP since the second quarter of 2009, however, was 2.1 percent, or 1.1 percentage points below the average trend growth during the 1960-2007 recoveries (3.2 percent). Thus, of the 2.1 percentage points of slower-than-average growth in this recovery, fully

[7] The cycle starting with the peak in the first quarter of 1980 lasted only six quarters. Because it is not meaningful to estimate trends using only six quarterly observations, the cycles for the first quarter of 1980 and the third quarter of 1981 are merged for the trend estimates in Figure 2-19.

Figure 2-19
Real Gross Domestic Product and Trends, 1947–2012



Note: Shading denotes recession. Trend lines represent the average growth rate between successive business-cycle peaks.
Source: Bureau of Economic Analysis, National Income and Product Accounts; National Bureau of Economic Research; CEA calculations.

1.1 percentage points, or 53 percent, can be attributed to the overall trend slowdown in real GDP growth over the past 50 years.[8]

The 1991 and 2001 recoveries also exhibited slower than average growth in real GDP (Kliesen 2003; Berger 2011; Bachmann 2011). As can be seen in Table 2-2, the slowdown in trend growth accounted for less than one-fifth of the relatively slower growth in real GDP following the 1991 recession (-0.2 percentage point of the gap of -1.1 percentage points). In contrast, slightly more than one-third of the relatively slower growth following the 2001 recession was attributable to the slowing of long-term real GDP growth (-0.5 percentage point of the gap of -1.3 percentage points).

Stock and Watson (2012) also examined reasons why the current expansion has been slower than previous postwar recoveries. They focused on the first eight quarters of the recovery and estimated that 80 percent of the slower growth in real GDP, relative to the post-1960 average for recoveries, reflected a slowdown in the long-term trend growth rate rather than cyclical factors.

[8] This calculation includes the 12 quarters after all troughs, so that the 1980 and 1982 recoveries overlap. Alternatively, if the 12 quarters following the trough in the fourth quarter of 1982 are dropped, 63 percent of the slower than average growth in real GDP is attributable to a slowdown in trend growth. If instead the 12 quarters following the trough in the third quarter of 1980 are dropped, 47 percent of the slower growth in real GDP is attributable to a slowdown in trend growth.

Box 2-4: Implications of Demographic Trends for Household Consumption

The aging of the U.S. population has two implications for patterns of consumption. First, people purchase different things at different ages; for example, younger households spend more on child care services and clothing, while older households spend relatively more on health care. Second, empirical research suggests that families' total amount of spending changes over time as priorities evolve. Because the age distribution of the population will change over the coming decade as the baby boom generation moves into retirement, these changes in household-level consumption will lead to aggregate changes in the types of goods consumed and, potentially, to changes in the fraction of income spent.

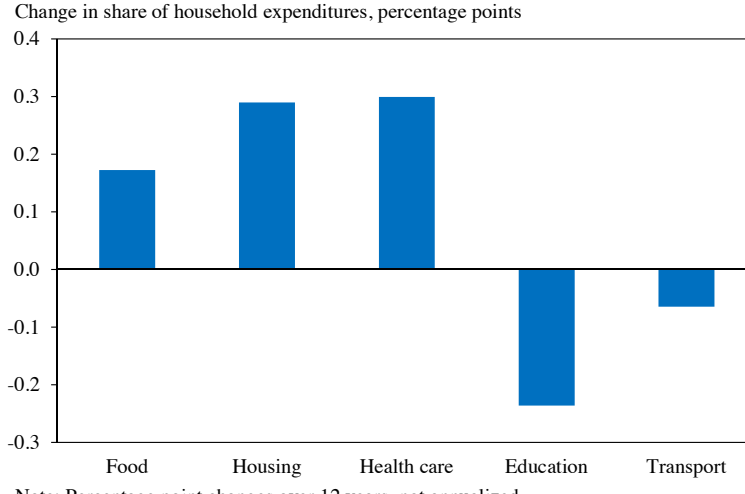
One way to forecast how demographic changes will affect consumption is to use data on a sample of households today to estimate average household consumption within spending categories (clothing, health care, and so on), for each subset of the population defined by age, race, sex, and ethnicity of the household head. Then, one can aggregate these averages using the projected future population for each subset to produce an overall estimate for all households. The Council of Economic Advisers undertook this exercise using consumption data from the Consumer Expenditure Survey and demographic projections from the Census Bureau. As the figure below indicates, demographic changes suggest that a greater share of household income will be spent on health care and housing, and a reduced share on education. In percentage terms, however, these changes are likely to be small.

Households' total consumption also varies over their lifetime. In Milton Friedman's (1957) permanent income hypothesis model of consumption, individuals smooth consumption to match their lifetime income, but doing so requires the ability to borrow against future income, as well as considerable planning and discipline. As an empirical matter, on average, household consumption rises as children grow up and then declines as parents enter into retirement (Attanasio et al 1999; Fernandez-Villaverde and Krueger 2007; Bullard and Feigenbaum 2007).[1] Consistent with this research, CEA projects that the aging population will lead average household consumption to decline over the next decade, with an implied reduction in the growth rate of consumer spending of perhaps 0.1 percentage point a year, relative to a benchmark in which demographics are held constant.

[1] One reason for the decline in consumption upon retirement, at least for some households, is reduced work-related spending such as commuting costs and uniforms, which are counted as consumption expenditures, but such declining work-related expenses do not fully account for this drop.

Many factors other than demographics will also influence future consumer spending. These factors include technological improvements, changes in income and wealth, and changes in the composition of households within demographic groups. In addition, changes in relative prices will affect the composition of spending. For example, if the price of health care increases relative to other areas, and if the demand for health care is insensitive to its price, then the share of spending on health care might be larger than these projections suggest.

Projected Effect of Demographic Change on Share of Household Expenditures, 2011–2023



Note: Percentage point changes over 12 years, not annualized.
Source: Bureau of Labor Statistics, Consumer Expenditure Survey; Department of Commerce, Census Bureau; CEA calculations.

In summary, these estimates of the share of the relatively slower growth in real GDP during this recovery which is attributable to a slowdown in long-term trends range from 53 percent, shown in Table 2-2, to 80 percent according to Stock and Watson (2012). This fairly wide range of estimates reflects both inherent difficulties in calculating trend growth rates and conceptual differences among these approaches.[9] Taken together, however, these studies suggest that most of the relatively slower growth in real GDP during the current recovery—two-thirds, using the CBO (2012d) estimate, which is also the midpoint of these estimates—has been attributable to the slowdown in long-term trend growth, which, in turn, has been driven largely by demographic changes in the U.S. workforce.

Reasons for the Slower Cyclical Component

If two-thirds of the slower growth in real GDP during the current recovery relative to growth in previous postwar recessions is attributable to the slowdown in underlying long-term trends, then the remaining one-third can be attributed to cyclical factors that are specific to this recovery. This section summarizes four complementary attempts to quantify those cyclical factors: the 2012 CBO study discussed above, an analysis undertaken here of the sources of forecast errors during the recovery, work done on this question by the Federal Reserve as reported by Bernanke (2012b) and Yellen (2013), and the study by Stock and Watson (2012).

The CBO (2012d) study approaches the question of why the cyclical part of this recovery has been relatively slow by identifying those components of GDP that have exhibited unusually slow growth relative to their cyclical pattern. In decreasing order of importance, CBO found that the cyclical contributions to GDP of State and local government purchases, Federal government purchases (primarily defense spending), residential investment, and consumer spending were all weaker than their respective historical averages during the first 12 quarters of this recovery. In turn, CBO attributed the weakness in these components to several underlying factors. For instance, the CBO study highlighted the extraordinary weakness in housing markets during the current recovery. CBO associated the sharp

[9] In CBO's framework, the increase in long-term unemployment associated with the recession could result in skill deterioration and thereby a decline in potential GDP growth; this general point is also made by Federal Reserve Chairman Ben Bernanke (Bernanke 2012b). Because such declines in potential GDP are an indirect result of the recession, they may be better understood as cyclical rather than long-term trends. The trend estimates in Table 2-2 and in Stock and Watson (2012) are instead based on long-term weighted moving averages; because the resulting estimates are comparable with CBO's, one can infer that this further distinction of a cyclical change in the growth rate of potential GDP is secondary to the long-term demographic and technological trends that drive the growth slowdown.

Table 2-2
Real GDP Growth During Three Years Following Business Cycle Trough

Business Cycle Trough	(percent change at an annual rate)		
	Total	Trend	Cycle
1991:Q1	3.2	3.0	0.2
2001:Q4	2.9	2.7	0.2
2009:Q2	2.2	2.1	0.1
Average of 7 recoveries, 1960-2007	4.2	3.2	1.1
Difference from Average	Total	Trend	Cycle
1991:Q1	-1.1	-0.2	-0.9
2001:Q4	-1.3	-0.5	-0.8
2009:Q2	-2.1	-1.1	-1.0

Note: Trend growth is based on the 15-year moving average smoothed cyclically adjusted growth rate of real GDP.
Source: Bureau of Economic Analysis, National Income and Product Accounts; National Bureau of Economic Research; CEA calculations.

fall in house prices with reductions in State and local property tax revenues and the persistent glut of vacant and foreclosed homes with the weakness in residential construction. Similarly, CBO noted that, in contrast to previous postwar recoveries, the ability of monetary policy to spur economic activity has been constrained by the zero lower bound on the Federal Reserve's main policy interest rate during this expansion. The CBO analysis also pointed to low consumer confidence and heightened uncertainty as additional factors that have restrained aggregate demand since the second quarter of 2009.

A second approach to the question of why the cyclical component of this recovery has been slower than that of the postwar average is to examine whether the expansion has been hindered by unexpected events and forces. Specifically, this approach contrasts the actual, realized values for each component of GDP from the corresponding estimates that were forecast at the start of the recovery. Whereas CBO's approach identifies which components of GDP grew more slowly than their historical average, the approach used here is to identify the components that grew either more slowly or more rapidly than was forecast, thereby identifying the unexpected, or unforecast, sources of the slow growth.

Implementing this method of forecast error analysis requires a quantitative model of the U.S. economy. The one used here is developed and maintained by Macroeconomic Advisers (MA). This model is used to decompose the Administration's economic forecast for the FY 2011 Budget, which was made in November 2009. The MA model uses quarterly data to forecast hundreds of macroeconomic variables. By partitioning the variables into groups, it is possible to see how the forecast errors for each group contributed to the forecast errors for GDP. The variables were divided into

five categories: international (foreign GDP, exchange rates, oil prices), fiscal (both Federal and State and local), financial and monetary (financial prices, house prices, monetary indicators, credit flows), housing activity, and other.

That Administration forecast overpredicted output growth by a small amount in 2010 and by larger amounts in 2011 and the first half of 2012; in this sense, the recovery was slower than expected. The forecast error decomposition sheds light on the sources of this unexpectedly slow recovery. During the first part of the recovery, the housing sector was weaker than anticipated, and this unexpected weakness more than accounts for the total GDP forecast error in 2010. Early in the recovery, financial and monetary factors buoyed economic activity relative to the forecast, presumably because the forecast did not fully capture the stimulative effect of nonstandard monetary policy, which was unprecedented and thus difficult to incorporate quantitatively into the forecast. Moving farther out in the forecast, however, the outlook for consumption turned overly optimistic, possibly reflecting an underestimation of the degree of deleveraging as households reduced the amount of new debt they took on and paid down existing debt. This shift in the consumption outlook explains a substantial part of the overall forecast error for both 2011 as well as the first half of 2012. Finally, deteriorating international conditions, largely owing to events unfolding in Europe, added further unanticipated drag in 2011 and especially in the first half of 2012.

These results complement Chairman Bernanke's (2012b) and Vice Chair Yellen's (2013) analyses of the relatively slow growth in the cyclical component of GDP during this recovery. In particular, Chairman Bernanke pointed to unexpected headwinds from the prolonged recovery of the housing sector, the lingering effects of the financial crisis, and the fiscal and financial problems in Europe. Yellen also noted the restraint on consumer spending from the large loss of wealth during the recession. Both emphasized the unexpectedly large declines in the State and local government sector. Indeed, Yellen estimates that, once the drag from the State and local government sector is included, the net fiscal stimulus to the economy was less in the current recovery than it was on average for prior postwar recoveries.

Stock and Watson (2012) also addressed the question of why the cyclical component of the recovery has been slower than the postwar average. In contrast to the two approaches discussed above, Stock and Watson focused on the forecasts of eight-quarter GDP growth from the vantage point of the trough. They found that these forecasts predicted slower-than-average cyclical growth during this expansion. These slow growth forecasts stem from the shocks that produced the recession, which they identify as primarily financial factors (such as borrowing constraints) and uncertainty. Thus, the Stock and Watson analysis is consistent with the Reinhart and Rogoff (2009)

view that recoveries following financial recessions typically exhibit slower growth than those following other kinds of recessions. In contrast to Stock and Watson's approach, Hall (2012) used a stylized macroeconomic model to distinguish between the deleveraging effect of cutting back on consumption to rebuild wealth and the liquidity effect of higher borrowing costs, which would arise from tightened lending standards. He concluded that both effects were important during the recession, but that the deleveraging effect was short-lived, whereas the liquidity effect has been more persistent and continues to restrain investment and to contribute to the slow cyclical component of GDP.

Although the CBO analysis, the forecast error decomposition, the analyses by Bernanke and by Yellen, the study by Stock and Watson, and the study by Hall produced different numerical estimates of the causes of the relatively slow recovery, these analyses point to a common understanding of why the cyclical component of the current expansion was slow relative to previous recessions: a financial crisis that led to reductions in the ability of households and small businesses to borrow, spend, and invest; a weak recovery of the housing sector as a result of the excess inventory of vacant, foreclosed, and distressed properties; a decline in State and local spending and employment; monetary policy restrained by the zero lower bound on the Federal Reserve's main policy interest rate; and in more recent stages of the recovery, the detrimental effects of a global slowdown on U.S. economic activity. Against all of these headwinds, the stimulus from Federal fiscal policy actions and aggressive unconventional monetary policy contributed positively to the cyclical component of the recovery.

Outlook for 2013 and Beyond

The Administration's economic forecast was finalized in mid-November 2012, a schedule that is dictated by its role in supporting the Administration's outlook for the FY 2014 Budget, and will be released later this year in conjunction with the Budget.

Consensus-based forecasts—that is, forecasts that combine multiple, survey-based individual forecasts (e.g., the mean or median)—typically outperform the constituent individual private forecasters' forecasts of macroeconomic variables such as GDP and the unemployment rate (Clemen 1989; Aiolfi, Capistrán, and Timmerman 2011). Consensus forecasts are thus worth following. In February 2013 the Blue Chip consensus of professional forecasters projected that real GDP would increase 2.4 percent over the four quarters of 2013, faster than the 1.6 percent gain recorded in 2012. The Philadelphia Federal Reserve Bank's Survey of Professional Forecasters

(SPF) also projected a 2.4 percent increase in 2013. For 2014, the Blue Chip consensus and the SPF consensus forecast that the economy will continue to strengthen and that year-over-year real GDP growth will increase to a 2.8 percent pace.

Looking further ahead, the Survey of Professional Forecasters expects year-over-year growth will pick up to a 2.9 percent pace in 2015 and a 3.0 percent pace in 2016. With these rates of growth, the unemployment rate, which was 7.8 percent during the fourth quarter of 2012, is projected to edge down slowly to 6.3 percent in 2016.

Importantly, most private sector forecasts reflected in the consensus forecast have not incorporated an effect for the across-the-board budget cuts, known as sequestration, which took effect on March 1.[10] These cuts will severely reduce both Federal defense and nondefense discretionary spending, with ripple effects throughout the economy. The Congressional Budget Office (2013) and Macroeconomic Advisers (2013) have estimated that, if sequestration were to remain in effect for the rest of the calendar year, it would reduce real GDP growth by 0.6 percentage point during the four quarters of 2013, relative to its path without the sequester. Moody's Analytics (2013) has estimated a reduction in real GDP growth by 0.5 percentage point.

Additionally, CBO (2013) has estimated that sequestration would lead to the loss of 750,000 lost jobs due to the sequester by the end of 2013 compared with a path without sequestration.[11] From this perspective, by the end of this year sequestration would set back the recovery by four to five months at a time when the unemployment rate remains unacceptably high. As President Obama has stated, "The longer these cuts remain in place, the greater the damage to our economy—a slow grind that will intensify with every passing day."

Conclusion

While much work remains, the economy is healing and moving in the right direction. The permanent extension of middle-class tax cuts and the increase in rates on the highest-income taxpayers through the enactment of the American Taxpayer Relief Act resolved the uncertainty about future tax rates that overshadowed the economy in 2012 and helped move the U.S. budget toward a more sustainable course. Some of the other headwinds that have restrained the economy during the recovery are also easing, most

[10] In February, 77 percent of Blue Chip panelists reported that their forecasts did not reflect the effects of full sequestration.

[11] The Bipartisan Policy Center (2012) estimates that over two years the effect would be 1 million jobs lost compared with the no-sequestration alternative.

notably in the housing sector. While risks remain, these indicators suggest a continued strengthening of the recovery, which in turn provides an increasingly resilient framework for continued progress toward fiscal sustainability and a more durable economy that works for the broad middle class.