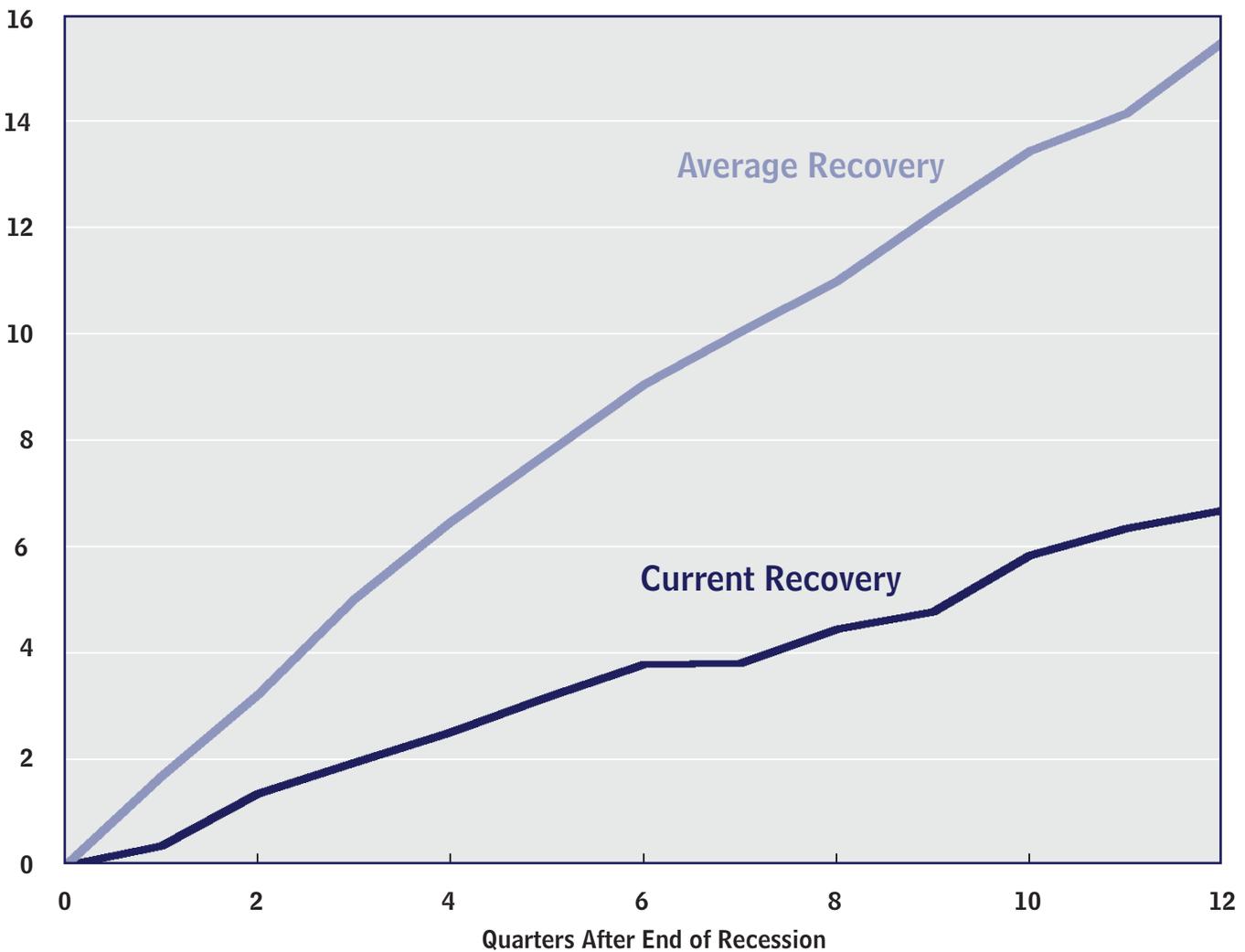


CBO

What Accounts for the Slow Growth of the Economy After the Recession?

Percentage Difference from End of Recession

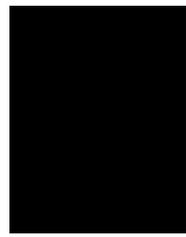


**Inflation-Adjusted Gross Domestic Product
After Recessions**

NOVEMBER 2012

Note

Some figures use white vertical bars to indicate periods of recession. (A recession extends from the peak of a business cycle to its trough.)



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What Accounts for the Slow Growth of the Economy After the Recession?

Summary and Introduction

The U.S. economy has grown slowly since the deep recession in 2008 and 2009, which was triggered by a sharp drop in house prices and a subsequent financial crisis. During the three years following the recession (that is, the third quarter of 2009 through the second quarter of 2012), the economy's output grew at less than half the rate exhibited, on average, during other recoveries in the United States since the end of World War II.¹ All told, between the end of the recession and the second quarter of 2012, the cumulative rate of growth of real (inflation-adjusted) gross domestic product (GDP) was nearly 9 percentage points below the average for previous recoveries. Researchers continue to grapple with understanding the roles that steep declines in house prices and financial crises play in slowing the growth of output.²

In the current recovery, both potential GDP, a measure of the underlying productive capacity of the economy, and the ratio of real GDP to potential GDP have grown unusually slowly. Because potential GDP is an estimate of the amount of real GDP that corresponds to a high rate of use of labor and capital resources, it is not typically affected very much by the up-and-down cycles of the economy; in contrast, because the ratio of real GDP to potential GDP depends on the degree of the economy's use of resources, it captures cyclical variations in real GDP around its potential level. In the first 12 quarters

after the last recession, both potential GDP and the ratio of real GDP to potential GDP grew at less than half the rate that occurred, on average, in the aftermath of other recessions since World War II (see Figure 1). Disaggregating the unusually slow growth in output since the end of the last recession, the Congressional Budget Office's (CBO's) analysis shows that that pace is mostly owing to slow growth in the underlying productive capacity of the economy and to a lesser extent, to slow growth in real output relative to that productive capacity.

Specifically, CBO estimates that about two-thirds of the difference between the growth in real GDP in the current recovery and the average for other recoveries can be

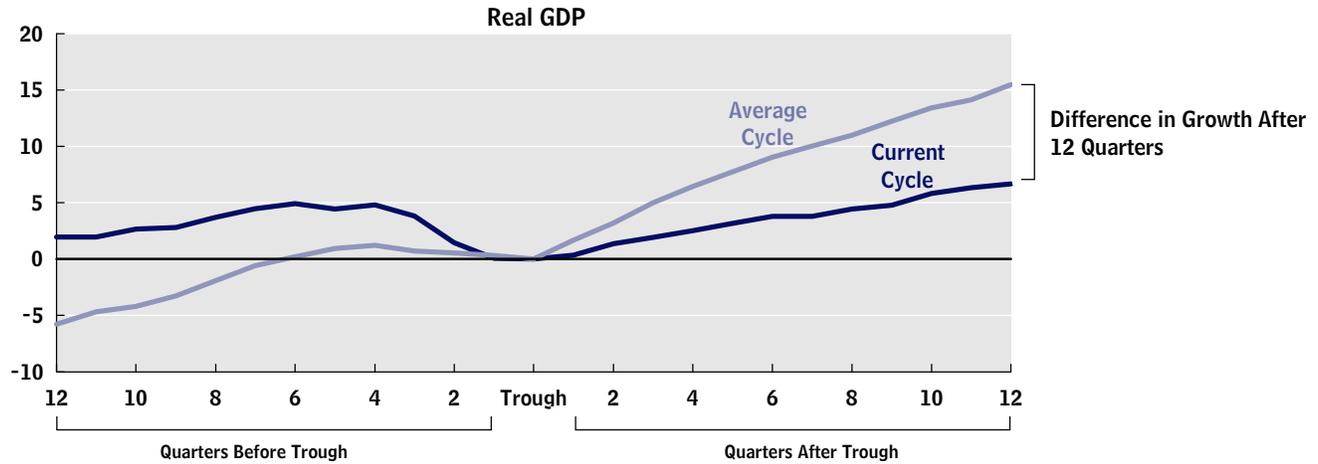
1. In this analysis, a recovery is the period of economic expansion that begins just after the trough of a recession. The analysis excludes two periods of recovery from post-World War II recessions—those following the recessions of August 1957 to April 1958 and January to July 1980—because, in each case, new recessions began before 12 quarters of recovery had elapsed.

2. See, for example, Carmen M. Reinhart and Kenneth S. Rogoff, "The Aftermath of Financial Crises," *American Economic Review*, vol. 99, no. 2 (May 2009), pp. 466–472; Carmen M. Reinhart and Vincent R. Reinhart, "After the Fall," in Federal Reserve Bank of Kansas City, *Macroeconomic Challenges: The Decade Ahead* (proceedings of the 2010 economic policy symposium, Kansas City: Federal Reserve Bank of Kansas City, 2011); Luc Laeven and Fabian Valencia, *Resolution of Banking Crises: The Good, the Bad, and the Ugly*, IMF Working Paper 10/146 (Washington, D.C.: International Monetary Fund, June 2010), www.imf.org/external/pubs/cat/longres.cfm?sk=23971.0; Greg Howard, Robert Martin, and Beth Anne Wilson, *Are Recoveries from Banking and Financial Crises Really So Different?* International Finance Discussion Paper 1037 (Washington, D.C.: Board of Governors of the Federal Reserve System, November 2011), www.federalreserve.gov/pubs/ifdp/2011/1037/default.htm; and Michael D. Bordo and Joseph G. Haubrich, *Deep Recessions, Fast Recoveries, and Financial Crises: Evidence from the American Record*, Working Paper 12-14 (Cleveland: Federal Reserve Bank of Cleveland, June 2012), www.clevelandfed.org/research/research_publication.cfm?id=35.

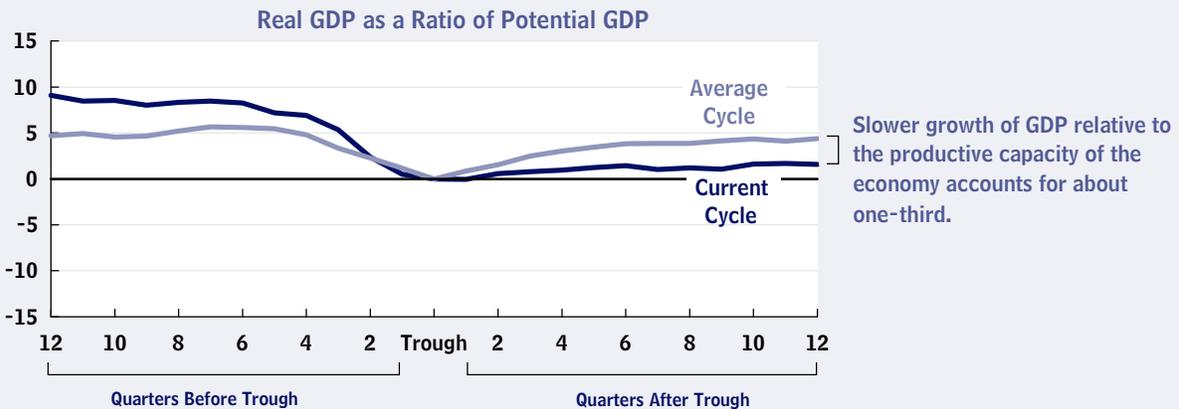
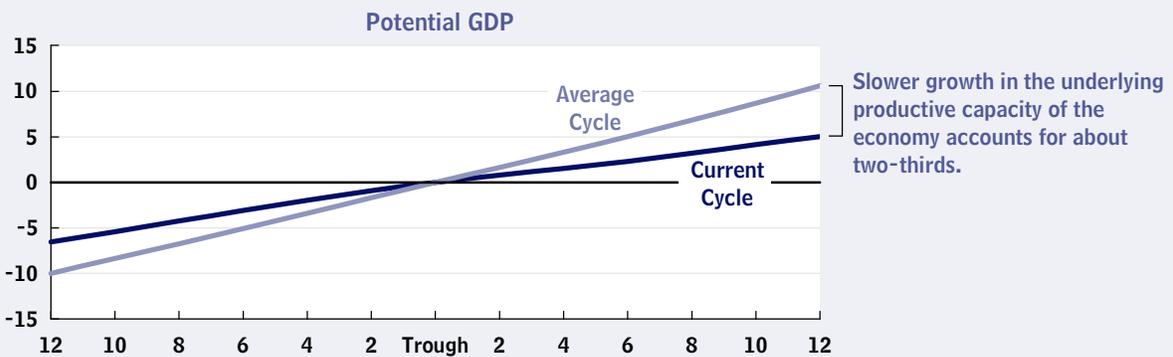
Figure 1.

Gross Domestic Product Before and After Recessions

(Percentage difference from trough)



In broad terms, what explains the difference in the growth of real GDP in the current cycle and the average cycle?



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Notes: Real gross domestic product (GDP) is the total amount of goods and services produced in the United States, adjusted to remove the effects of inflation. Potential GDP is CBO's estimate of the level of GDP that corresponds to a high rate of use of labor and capital, adjusted to remove the effects of inflation.

The average cycle, or the pattern of economic growth before and after a trough, is the average for cycles since 1945 that were not followed by another recession within 12 quarters.

attributed to sluggish growth in potential GDP.³ That sluggish growth reflects weaker performance than occurred on average following other recessions by all three of the major determinants of potential GDP: potential employment (the number of employed workers, adjusted for variations over the business cycle); potential total factor productivity (average real output per unit of combined labor and capital services, adjusted for variations over the business cycle); and the productive services available from the capital stock in the economy. Although some of the sluggishness of potential GDP since the end of the last recession can be traced to unusual factors in the current business cycle, much of it is the result of long-term trends unrelated to the cycle, including the nation's changing demographics.

The remaining one-third of the unusual slowness in the growth of real GDP can be explained by the slow pace of growth in the ratio of real GDP to potential GDP—which in CBO's assessment, is attributable to a shortfall in the overall demand for goods and services in the economy. To identify the causes of that shortfall in demand, CBO analyzed the contribution of each main component of demand. Compared with past recoveries, this recovery has seen especially slow growth in four of those components:

- Purchases of goods and services by state and local governments,
- Purchases of goods and services by the federal government,
- Residential investment (consisting primarily of the construction of new homes, home improvements, and brokers' commissions), and
- Consumer spending.

Among those four components, purchases by state and local governments account for the largest portion of the unusual weakness. In contrast, two other components of

demand—namely, investment by businesses and net exports—grew faster relative to potential GDP in the first 12 quarters of the current recovery than was the case, on average, in past recoveries.

A key underlying reason why the overall demand for goods and services by governments, businesses, and households has increased more slowly than usual in this recovery—and thus why real GDP has increased more slowly relative to potential GDP—has been the limitations faced by the Federal Reserve in providing support to the economy. Most important, because the interest rate that the Federal Reserve generally uses to conduct monetary policy (the federal funds rate) was already low at the start of the recovery, the central bank could not lower it much further even as the gap between real GDP and potential GDP failed to close quickly. Moreover, the economy has been less responsive than usual to low interest rates because of the oversupply of homes, the desire of households to reduce their indebtedness, and credit restraints imposed by lenders, among other reasons.

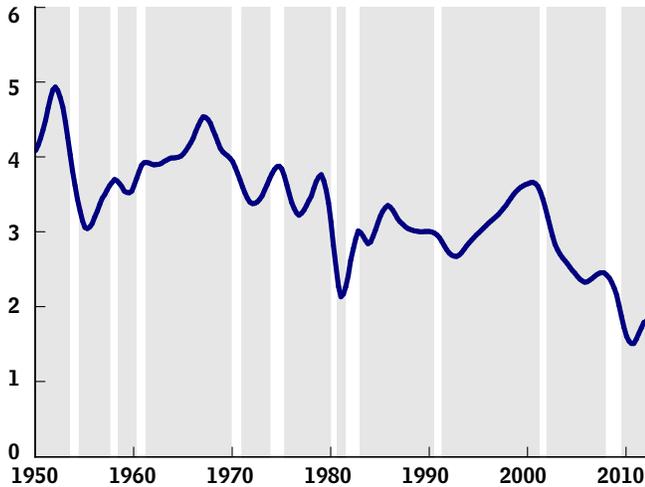
Much of the distress and dislocation associated with the recession and slow recovery stems from the shortfall of real GDP relative to potential GDP. In particular, during the recession and the early part of the recovery, the unemployment rate increased by 5 percentage points as real GDP fell relative to potential GDP, while during the rest of the recovery, the unemployment rate has declined somewhat as real GDP has stabilized (and slightly edged up) relative to potential GDP. In CBO's judgment, the portion of slow growth in real GDP stemming from slow growth in potential GDP did not substantially affect unemployment.⁴

3. A decline in potential GDP reduces real GDP through several channels. For example, if people decide to leave the labor force, which reduces potential GDP, their expected future income decreases, leading them to consume less. Also, lower total factor productivity, which also reduces potential GDP, lowers wages and capital income, leading to less consumer spending and business investment. A lower capital stock, another drag on potential GDP, also lowers wages and capital income.

4. An alternative perspective on the increase in the unemployment rate since before the recession is offered in Casey B. Mulligan, *The Expanding Social Safety Net*, Working Paper 17654 (Cambridge, Mass.: National Bureau of Economic Research, December 2011), www.nber.org/papers/w17654. Mulligan writes that various changes in federal policies since 2007—such as extensions of unemployment insurance—increased the effective tax rate on labor income. As a result, he argues, those policies were primarily responsible for the sharp increase in the unemployment rate during the recession and have slowed the recovery in the labor market since then. See also Casey B. Mulligan, *The Redistribution Recession: How Labor Market Distortions Contracted the Economy* (New York: Oxford University Press, 2012). For an opposing view, see Jesse Rothstein, "The Labor Market Four Years into the Crisis: Assessing Structural Explanations," *Industrial and Labor Relations Review*, vol. 65, no. 3 (March 2012).

Figure 2.**Potential GDP**

(Percentage change from same quarter of previous year)



Source: Congressional Budget Office.

Notes: Potential gross domestic product (GDP) is CBO's estimate of the level of GDP that corresponds to a high rate of use of labor and capital, adjusted to remove the effects of inflation.

Data are quarterly and are plotted through the second quarter of 2012.

Therefore, the bulk of CBO's examination in this report focuses on the cyclical factors that help account for the sluggishness of the growth in real GDP relative to potential GDP, such as weak revenues for state and local governments and overbuilding during the housing boom.

Potential GDP

According to CBO's analysis, the unusually slow growth of output over the 12 quarters following the last recession in large part reflects slower growth in potential output than has occurred on average following other recessions since the end of World War II.⁵ Potential output is determined primarily by three factors: potential employment, potential total factor productivity, and the productive services available from the capital stock in the economy.⁶

5. Consistent with CBO's analysis, economists James H. Stock and Mark W. Watson argue that a decline in the trend component of GDP accounts for much of the slowness in GDP growth in the current recovery compared with growth in recoveries before 1984. See James H. Stock and Mark W. Watson, *Disentangling the Channels of the 2007–2009 Recession*, Working Paper 18094 (Cambridge, Mass.: National Bureau of Economic Research, May 2012), www.nber.org/papers/w18094.

In CBO's assessment, the growth of potential GDP has been trending downward since the late 1960s (see Figure 2). That slowdown initially reflected a reduction in the growth of total factor productivity and then, beginning in the mid-1970s, a reduction in the growth of potential employment.⁷ Since the end of the last recession, the relatively slow growth of potential GDP has reflected slower growth of all three of its major determinants than occurred, on average, following other recessions.

By CBO's estimates, the slower growth of potential employment, as compared with the average during previous recoveries, directly accounts for more than a third of the slowed pace of growth of potential GDP since the end of the last recession. Potential employment grew by 2.3 percent between the second quarter of 2009 and the second quarter of 2012, CBO estimates. That figure is less than half the 5.0 percent average increase during previous post–World War II recoveries, although it is close to the growth following the mild recession in 2001.

That slower growth of potential employment primarily reflects three developments. The most important is that, since about 1980, demographic trends have slowed the growth of the population that is working age and, therefore, the growth of the potential labor force (the labor force that exists at a labor force participation rate adjusted for the effects of fluctuations in aggregate demand). In several earlier recoveries, the baby boomers were entering the labor force; now, they are beginning to retire. Another important development is an end to the long-standing increase in women's participation in the labor force, which had boosted the growth of the labor force in recoveries before 2000. Finally, the number of people

6. Potential output also depends on the average number of hours worked per worker and shifts in the number of workers among sectors of the economy with different levels of productivity. But changes in those factors matter only a little in explaining the unusual slowness in the growth of potential output in this recovery. In addition, potential output depends on the quality of the labor force (including the education and training that workers have received). CBO does not estimate labor quality but includes its impact in the agency's estimate of the growth of total factor productivity. For additional information on potential GDP, see Congressional Budget Office, *CBO's Method for Estimating Potential Output: An Update* (August 2001).

7. See Congressional Budget Office, *An Update to the Budget and Economic Outlook: Fiscal Years 2012 to 2022* (August 2012), p. 39, and *CBO's Labor Force Projections Through 2021* (March 2011).

who would be unemployed if output was at its potential level has risen in the current recovery. An unusually large number of people have had their skills and connection to the workforce erode because they have been out of work for a long time. Some of those people will probably never work again, and it will take more time than usual for the rest to find suitable jobs.

Slower growth of potential total factor productivity, as compared with the average for previous post–World War II recoveries, directly accounts for about one-fifth of the slowed pace of growth of potential GDP since the end of the most recent recession. According to CBO’s estimates, in the nonfarm business sector, which produces roughly three-quarters of the nation’s output, potential total factor productivity grew by 3.6 percent in the three years following the end of the last recession, compared with 4.6 percent, on average, during past recoveries.⁸ Although the growth in potential total factor productivity after the last recession has been stronger than it was, on average, after recessions during the 1970s and 1980s, it has been below the average rate after recessions during the 1950s and 1960s. In CBO’s estimation, the financial crisis and recession reduced the growth of potential total factor productivity in the nonfarm business sector by about 0.2 percentage points during the 12 quarters after the end of the recession.

Slower growth of capital services accounts for more than a third of the slowness in the growth of potential GDP during the recovery. By CBO’s estimates, capital services in the nonfarm business sector grew by 6.4 percent in the first 12 quarters of the current recovery, compared with an average of 11.7 percent in past recoveries. That reduction reflects a much lower amount of net investment (investment minus depreciation) relative to the existing capital stock in this recovery.

That smaller amount of net investment can be attributed, in turn, to several forces. One is the nature and severity of the recession. The ratio of net business investment to GDP fell to unusually low levels during the recession because of weak demand for goods and services and a high cost of capital, and even though that ratio rose rapidly after the recession, it is still low by historical

standards. Moreover, the ongoing housing slump has sharply curtailed growth of the stock of housing capital. A second force restraining investment has been the slower growth of potential employment, which means that smaller increases in the stock of structures, equipment, and software are needed to equip the workforce with the same amount of capital per worker. A third force has been the slower growth of total factor productivity, which reduces growth of the productivity of capital and thereby tends to reduce real investment per worker.

The effects of the recession and slow recovery on potential output will persist over the coming decade. According to CBO’s estimates, the recession and weak recovery will reduce the level of potential GDP in 2022 by about 1½ percent. That effect arises roughly equally from all three determinants of potential GDP.⁹

The Cyclical Variation of GDP Around Potential GDP

The unusually slow growth of real GDP since the end of the last recession also reflects slow growth in the ratio of real GDP to potential GDP—the cyclical variation in real GDP around its potential value. Of the major components of GDP, four have exhibited especially weak growth relative to that in past recoveries:

- Purchases of goods and services by state and local governments,
- Purchases of goods and services by the federal government,
- Residential investment, and
- Consumer spending.

Purchases by state and local governments account for the largest portion of the unusual weakness in growth; each of those other components accounts for a modestly smaller amount of the remaining slowness (see Table 1). In contrast, investment by businesses and net exports grew faster relative to potential GDP in the first 12 quarters of the current recovery than in past recoveries.

8. The growth of potential total factor productivity in sectors other than nonfarm business also has contributed less to the growth of potential GDP in recent years than in the past, according to CBO’s analysis.

9. For a discussion of the impact of the recession on potential output, see Congressional Budget Office, *An Update to the Budget and Economic Outlook: Fiscal Years 2012 to 2022*, Box 2-2, pp. 40–41.

Table 1.**Contributions to the Cyclical Variation in Real GDP, 12 Quarters Following Recessions**

(Percentage difference from trough for components of real GDP as a ratio of potential GDP)

Component	Current Recovery	Average Recovery	Difference	Major Factors Contributing to the Difference
State and Local Governments' Purchases	-1¼	-¼	-1	Slow growth in tax revenues and federal grants
Federal Government's Purchases	-½	¼	-¾	A decline in defense purchases
Residential Investment	0	¾	-¾	Overbuilding during the housing boom; weak household formation
Consumer Spending	1	1¾	-¾	Loss of wealth; a bigger decline in the share of national income going to labor; weak confidence
Business Investment ^a	2¾	2½	¼	Rebound from unusually weak investment during the recession
Net Exports	-½	-1	½	Slow growth in the United States; strong growth in emerging markets
Total	1½	4¼	-2¾	

Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Notes: Real gross domestic product (GDP) is the total amount of goods and services produced in the United States, adjusted to remove the effects of inflation. Potential GDP is CBO's estimate of the level of GDP that corresponds to a high rate of use of labor and capital, adjusted to remove the effects of inflation.

The average recovery is the average after recessions since 1945 that were not followed by another recession within 12 quarters.

Numbers are rounded to the nearest one-quarter of a percentage point and, hence, do not add up to totals.

a. Includes investment in nonresidential structures, equipment, software, and inventories.

Particular factors associated with the nature and circumstances of the recession help to explain why the growth of those four components of output (measured as the contribution to the growth of real GDP as a ratio of potential GDP) was so slow. Falling house prices depressed the growth of property tax revenues, which combined with falling revenues from income and sales taxes to restrain state and local governments' purchases. Federal purchases climbed immediately following the recession, peaking after five quarters, but began falling after that point because of reductions in purchases for national defense. Residential investment was weak because of a glut of vacant homes, created by overbuilding during the housing boom before the recession and the slow formation of new households thereafter. Weakness in the housing market slowed the recovery of consumer spending by retarding a recovery in house prices and, therefore, the value of households' wealth. Also slowing the growth of

consumer spending were the unusually large decline in the share of national income that constitutes returns on labor (in other words, income derived from employment, as opposed to being returns on the ownership of capital) and reduced confidence about future economic activity.

Ranking factors by their importance in slowing the growth of output is difficult. One reason is that the factors had indirect effects on the economy and have affected one another. For example, factors slowing consumer spending indirectly contributed to slower growth in business investment, which slowed hiring and in turn consumer spending. Another reason is that the role of various factors changed as the recovery progressed. For example, according to surveys of bank loan officers, most lenders began easing standards and terms for commercial and industrial loans in mid-2010, so the availability and cost of credit probably became less of a restraining factor

than they were at the start of the recovery.¹⁰ As another example, some temporary factors contributed to slow growth for a few quarters; those factors include increases in prices for energy and food, which reduced consumers' purchasing power, and disruptions in the global supply chain caused by the earthquake and nuclear accident in Japan in 2011. Consequently, the ranking of the importance of the factors depends on the period of interest.

Government Purchases

Relative to the average for past recoveries, purchases by federal, state, and local governments were more restrained in the 12 quarters after the end of the last recession (see Figure 3 on page 10). Government purchases, which contribute directly to GDP, are outlays for goods and services, including compensation of government employees and investment in structures, equipment, and software.¹¹ In contrast, other government spending (such as transfer payments to people) and taxes affect GDP indirectly through their influence on other components of output, such as consumer spending. During and after the recession, federal policymakers enacted a variety of tax and spending measures that aimed to reduce the severity of the recession and aid the recovery (see Box 1). The positive impact of those fiscal policy actions on the level of output was larger late in the recession and early in the recovery than it was later in the recovery.

Purchases by State and Local Governments. Over the first 12 quarters following the last recession, weak growth in purchases by state and local governments slowed the growth of the ratio of real GDP to potential GDP by about 1 percentage point more than the average for previous recoveries (see Table 1 and Figure 3 on page 10). That weak growth in purchases stemmed equally from three sources.

Reductions in employment (of teachers and other personnel) account for a third of that weakness through lower payrolls; 12 quarters after the recession, growth in the

number of workers employed by state and local governments was 12 percentage points lower than during the average recovery (see Figure 4 on page 11). Weakness in state and local governments' purchases of goods and services from other sectors and a relatively slow pace of construction by those governments also each account for about a third of the overall weakness.

Most of the weakness in state and local governments' purchases apart from their spending on construction can be traced to a below-average rebound in tax revenues and the need to balance general-fund budgets, but additional pressure came from below-average growth in federal grants.¹² The American Recovery and Reinvestment Act of 2009 (ARRA) authorized an increase in federal grants to states and localities through 2011; those grants helped support state and local purchases for a while, including in the final months of the recession, by raising the amount of assistance to states and localities above what it would have been otherwise. However, the winding down, beginning in 2011, of payments from that increase in federal grants was most likely a drag on the rate of growth of state and local governments' purchases last year and in the first half of this year.

In contrast, state and local governments' construction spending was probably held back primarily by general budgetary pressures and by tight credit markets early in the recovery, because federal grants for capital projects in the current recovery have been in line with those during previous recoveries since 1959 (the first year for which such data are available).

Purchases by the Federal Government. Over the first 12 quarters following the recession, weak growth in purchases by the federal government slowed the growth of the ratio of real GDP to potential GDP by about three-quarters of a percentage point compared with the average for previous recoveries (see Table 1 and Figure 3 on page 10). Over the first half of that period, those purchases contributed more to economic growth (measured

10. See Board of Governors of the Federal Reserve System, *The July 2012 Senior Loan Officer Opinion Survey on Bank Lending Practices* (August 6, 2012), www.federalreserve.gov/boarddocs/snloansurvey.

11. In the national income and product accounts, maintained by the Department of Commerce's Bureau of Economic Analysis, government purchases are called government consumption expenditures and gross investment.

12. For a discussion of the budgetary pressures faced by local governments, see Congressional Budget Office, *Fiscal Stress Faced by Local Governments* (December 2010). Those budgetary pressures have arisen both from developments during the recession and recovery and from trends in state and local governments' spending and revenues prior to the recession.

Box 1.**The Effects of Recent Fiscal Policy Actions on the Economy**

Federal lawmakers enacted a variety of tax and spending measures aimed at reducing the severity of the recession and spur the recovery. Some of those measures increased federal purchases, particularly in the first six quarters following the recession, when total federal purchases added more to the growth of real (inflation-adjusted) gross domestic product (GDP) than they had on average in previous recoveries. Other measures provided a substantial indirect boost to the economy during the recession and recovery. Those measures included increasing transfers to people (such as unemployment benefits), lowering taxes, and providing support to the financial system. The key fiscal policy actions were these:

- Direct fiscal stimulus came from the Economic Stimulus Act of 2008, which was enacted in February 2008, and the much larger American Recovery and Reinvestment Act of 2009 (ARRA), which was enacted in February 2009. The Economic Stimulus Act provided tax rebates to low- and middle-income taxpayers, tax incentives to stimulate business investment, and an increase in the limits imposed on mortgages eligible for purchase by Fannie Mae and Freddie Mac. ARRA authorized purchases of goods and services by the federal government, transfers to state and local governments (for spending on infrastructure and other purposes), payments to individuals, and temporary tax reductions for individuals and businesses (such as the Making Work Pay tax credit and favorable tax treatment of business investment). The Congressional Budget Office (CBO) estimates that ARRA raised real GDP by between 0.7 percent and 4.1 percent in 2010 and by smaller amounts in 2009 and more recently.¹
- Other laws that were intended to have stimulative effects were ones that extended unemployment insurance benefits (which ARRA did as well); cut the payroll tax paid by employees in 2011 (which was later extended through 2012); provided credits for first-time home buyers (which were extended once by ARRA and again by the Worker, Home-ownership, and Business Assistance Act of 2009); and created the Car Allowance Rebate System (commonly referred to as “Cash for Clunkers”).
- The Troubled Asset Relief Program (TARP) bolstered financial markets and institutions, largely by providing equity capital to banks and other financial firms.²

1. See Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from April 2012 Through June 2012* (August 2012). In estimating the effects of each provision of ARRA, CBO chose, on a judgmental basis, low and high estimates to encompass most economists’ views about the effects of that type of provision. For a more detailed discussion of CBO’s approach to analyzing short-term fiscal policy, see Felix Reichling and Charles Whalen, *Assessing the Short-Term Effects on Output of Changes in Federal Fiscal Policies*, Congressional Budget Office Working Paper 2012-08 (May 2012).
2. The Emergency Economic Stabilization Act of 2008 authorized the Secretary of the Treasury—through the TARP—to purchase or insure troubled financial assets, up to a limit of \$700 billion in assets outstanding at any one time. Authority to make new purchases expired in October 2010. See Congressional Budget Office, *Report on the Troubled Asset Relief Program—October 2012* (October 2012).

Continued

Box 1.**Continued****The Effects of Recent Fiscal Policy Actions on the Economy**

In addition, fiscal stimulus without the need for new legislation came from the effect of the federal government's so-called automatic stabilizers. Those stabilizers arise from the response of the federal tax system and social safety-net programs, such as the Supplemental Nutrition Assistance Program (formerly called the Food Stamp program), regular unemployment insurance benefits, and Medicaid. The stabilizers automatically dampen swings in economic activity, by decreasing tax payments to the government and increasing benefit payments to households when economic activity slows and by having the opposite effect when economic activity picks up. For 2009 through 2011, federal fiscal support from the automatic stabilizers equaled about 2¼ percent to 2¾ percent of potential GDP, CBO estimates.³

3. Similar but smaller automatic changes occur in state and local governments' revenues and spending. However, automatic changes at the state and local levels are blunted by budgetary decisions made to comply with rules for maintaining balanced budgets. Those decisions include cutting state and local spending and increasing tax rates and various fees.

In CBO's assessment, because the economy has been operating significantly below its potential level during the past few years, the boost to economic activity caused by fiscal policy actions was not significantly offset by a shift of resources away from production elsewhere in the economy—which is to say that little crowding out of production occurred. However, when the economy is again operating close to its potential level, the increase in government borrowing that has resulted from the recent fiscal stimulus will tend to reduce the amount of funds available for private investment. Therefore, policies that increase demand when the economy is weak often involve a trade-off between boosting economic output in the short run and reducing output in the long run, unless future policy changes are made to offset the additional accumulation of government debt.⁴

4. For further discussion of such trade-offs, see the statement of Douglas W. Elmendorf, Director, Congressional Budget Office, before the Senate Committee on the Budget, *Policies for Increasing Economic Growth and Employment in 2012 and 2013* (November 15, 2011), pp. 17–22.

by growth of real GDP relative to potential GDP) than they did on average over the same period following other postwar recessions. Since the start of 2011, however, purchases by the federal government have provided less support, primarily as a result of weaker spending on national defense.

As in the analysis of other sectors of the economy, the possibility of indirect effects complicates estimating federal purchases' contribution to the growth of output since the trough of the recession. When an economy is operating near (or above) its potential level, higher government spending can shift resources away from production in other sectors to government-funded projects. That indirect crowding-out effect means that increases in government spending may be offset by declines in purchases and investment elsewhere in the economy. However, by CBO's estimates, that offset has been mod-

est since the recession ended because of an economic environment in which unemployment has been high, a large amount of capital resources has gone unused, and interest rates have remained extraordinarily low.¹³

Residential Investment

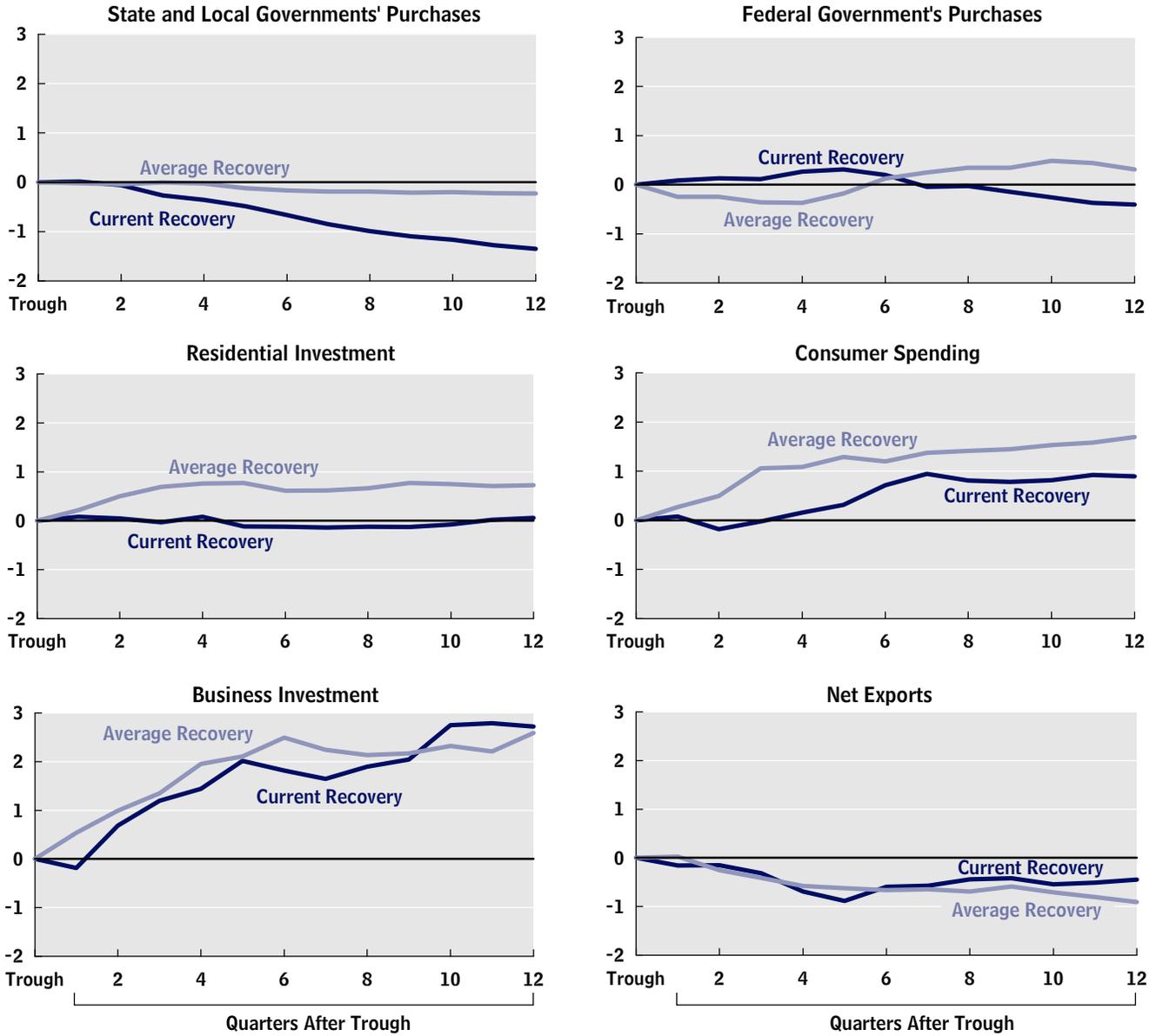
Residential investment typically plays an important positive role in economic recoveries. In the current business cycle, however, it has not contributed to the recovery, reducing the growth of real output relative to potential output by about three-quarters of a percentage point relative to the average in previous recoveries (see Table 1 on page 6 and Figure 3).

13. For a discussion of how CBO estimates the effects of the government's fiscal policies on the economy, see Congressional Budget Office, *The Economic Impact of the President's 2013 Budget* (April 2012), pp. 2–3 and 13–18.

Figure 3.

Contributions to the Cyclical Variation in Real GDP Following Recessions

(Percentage difference from trough for components of real GDP as a ratio of potential GDP)



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

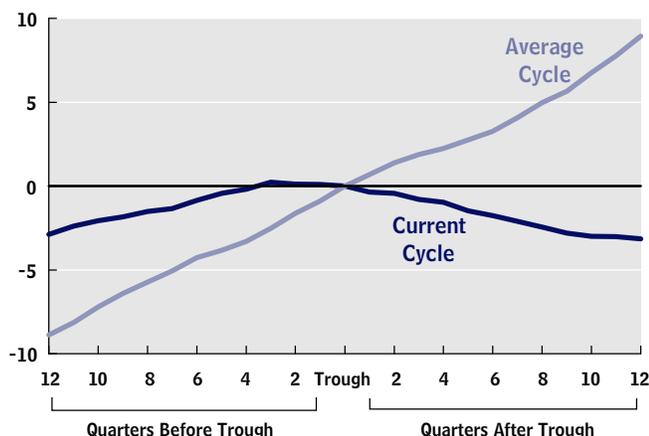
Notes: Real gross domestic product (GDP) is the total amount of goods and services produced in the United States, adjusted to remove the effects of inflation. Potential GDP is CBO's estimate of the level of GDP that corresponds to a high rate of use of labor and capital, adjusted to remove the effects of inflation.

The average recovery is the average after recessions since 1945 that were not followed by another recession within 12 quarters.

Figure 4.

State and Local Government Employment

(Percentage difference from trough)



Sources: Congressional Budget Office; Department of Labor, Bureau of Labor Statistics.

Note: The average cycle, or the pattern of economic growth before and after a trough, is the average for cycles since 1945 that were not followed by another recession within 12 quarters.

According to CBO's analysis, the main reason why residential investment has grown more slowly in the current recovery than in past recoveries has been the extraordinarily large number of vacant housing units (see Figure 5). Even in normal times, the number of vacant housing units is substantial, reflecting the often lengthy process of home sellers finding suitable and interested home buyers, as well as the large number of second homes and seasonal units. But during the past few years, the number of vacant units has far exceeded what is typical, reducing the incentive for building new homes. In addition, the excess has slowed construction by diminishing the boost usually provided by low interest rates. Excess vacant units account for about two-thirds of the slower pace of growth of residential investment during the current recovery relative to past recoveries, according to CBO's estimates, with the remaining one-third attributable to other factors.

Excess Vacant Units. A major cause of excess vacancies was overbuilding during the housing boom, accounting for about half of the total impact of excess vacancies on real GDP in the first 12 quarters of the current recovery compared with past recoveries. Builders constructed an average of nearly 1.9 million housing units every year

from 2002 to the peak of the bubble in 2006, significantly more than the average of less than 1.5 million per year during the previous two decades (as measured by what are termed housing starts). Because vacancies tend to affect homebuilding slowly, the adverse impact of that overbuilding on residential investment continued to grow during the recession and into the recovery. In addition, homebuilding during the recovery was probably slowed by builders' fear that future foreclosures would further increase the number of vacant units.

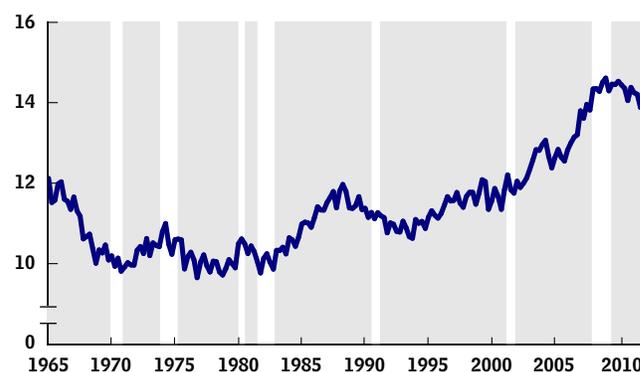
The remaining source of excess vacancies was weak household formation during and after the recession. Much of that phenomenon—of people's unwillingness or inability to set up new households—can be traced to people's low expectations for home prices to appreciate; the high unemployment rate also played a role. But in the past year, household formation has been weaker than can be explained by those factors. Other contributing factors may include uncertainty about future gains in income and access to credit that remains constrained compared with what it was prior to the financial crisis.

Vacancies have affected housing construction in several ways. First is the direct effect: The greater the number of

Figure 5.

Vacant Housing Units

(Percentage of total units)



Sources: Congressional Budget Office; Department of Commerce, Census Bureau.

Notes: Housing units comprise occupied units and vacant units, including units intended for year-round use and seasonal use.

Data are quarterly and are plotted through the second quarter of 2012.

vacant units, the more difficult it is for builders to sell new homes and thus the less incentive they have to build homes. Leading into many past recessions, high mortgage rates and tight lending conditions reduced construction more than they curtailed household formation, resulting in fewer vacant units at the troughs. However, before and during the most recent recession, the number of excess vacant units shot up. Although excess vacancies have diminished since the recession ended, their adverse impact continued to grow until the second half of 2011 and remained nearly the same in early 2012.

Second, not only do excess vacant units directly reduce the incentive to build new homes, but they also dampen the positive impact that improvements in economic factors, such as lower mortgage rates, have on homebuilding. When a new household is formed as a result of improved economic conditions—for example, because lower mortgage rates or a stronger outlook for house prices makes a home look like a better investment—that household can buy either a vacant home or a new home. (The other option, buying an occupied home, just shifts the choice of buying a vacant or new home onto a different household and is therefore not meaningful in an analysis of overall residential investment.) The more vacant homes there are, the more likely that a household formed as a result of improved economic conditions will purchase a vacant home rather than a new home, absorbing what would have been a positive impact on homebuilding.

Third, excess vacancies have probably influenced some of the economic factors that normally affect home buying. For example, excess vacancies probably lowered potential homebuyers' expectations about the appreciation of house prices and hence the demand for homes as investments. In addition, excess vacancies probably worsened lenders' expectations about house prices, which probably, in turn, was one reason (in addition to many others) why lenders tightened standards for mortgages more than for most other types of credit. Between mid-2006 and mid-2010, the net percentage of respondents to the Federal Reserve's Senior Loan Officer Opinion Survey who said that they tightened standards for mortgage loans was closely correlated with the change in excess vacant housing units during the preceding two and one-half years.¹⁴

14. For evidence of tightened standards, see, for example, Board of Governors of the Federal Reserve System, *The July 2010 Senior Loan Officer Opinion Survey on Bank Lending Practices* (August 16, 2010).

Fourth, the high vacancy rate for owner-occupied homes, which tend to be single-family homes, has probably shifted the mix of construction toward lower-value rental units. Roughly one-half as much labor, capital, and materials is required to build a multifamily unit (each unit within a larger building) as a single-family unit. Consequently, for a given number of housing starts, a decrease in the share constituted by single-family units resulting from disproportionately high vacancy rates for owner-occupied homes leads to lower residential investment.¹⁵

Other Factors Affecting Residential Investment. Since the last recession, several economic factors that usually drive housing starts—changes in mortgage rates, expectations about house prices, the level of house prices relative to the trend, and the unemployment rate—have been weaker, on average, than in the three previous recoveries.¹⁶ For example, the relatively modest decline in mortgage rates, given that those rates were already remarkably low when the recession ended, has provided a smaller boost to housing starts than is typical.

Consumer Spending

Unusually modest growth in spending by consumers has slowed the growth of real GDP by roughly as much as spending by the federal government and residential investment have, but by less than spending by state and local governments has. In the first 12 quarters after the end of the recent recession, consumer spending made just a little over half of the contribution (nearly 1 percentage point) to the growth of the ratio of real GDP to potential GDP that it did, on average, in other recoveries since World War II (see Table 1 on page 6 and Figure 3 on page 10).

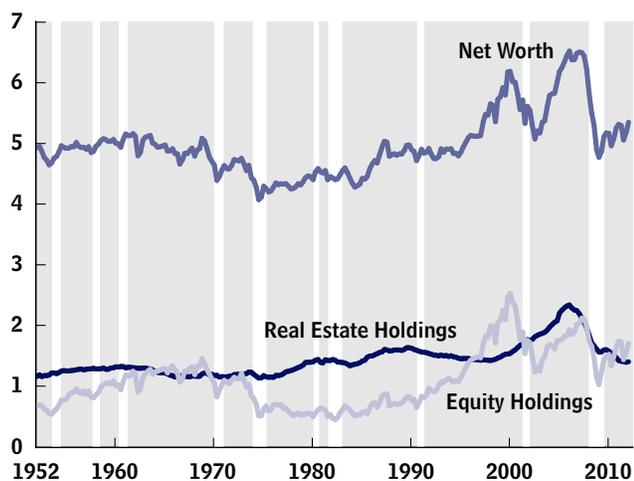
Three main factors, to which CBO assigns roughly equal importance, explain that weak spending: relatively modest improvement in the value of households' wealth (primarily reflecting continued weakness in the value of real estate assets) following an unusually large drop during the recession; a large decline in, and continued low level of, the share of the nation's income going to labor;

15. Housing starts refer to the number of units started, not to the number of buildings started. For example, beginning construction on a 100-unit apartment building counts as 100 starts.

16. The housing market has changed considerably since the late 1970s, so it is difficult to compare the influence of those factors in the current recovery with their effect in all of the recoveries since World War II.

Figure 6. Household Net Worth and Selected Components

(Ratio of disposable personal income)



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis; Federal Reserve.

Notes: [Dates on the x-axis were corrected on Dec. 3, 2012.]

Household net worth comprises total assets minus total liabilities on households' balance sheets as reported in the Federal Reserve's flow-of-funds accounts.

Disposable personal income is the after-tax income of individuals.

Equity holdings of the household sector are the total market value of corporate stocks held either directly or indirectly (in mutual funds and pension plans, for example).

Household real estate holdings are the total owner-occupied real estate owned by households.

Data are quarterly and are plotted through the second quarter of 2012.

and weak confidence and perhaps heightened uncertainty. Other factors also have affected the pattern of consumer spending during the recovery. For example, tighter lending standards have made borrowing and mortgage refinancing more difficult for some households. In addition, the efforts of some households to pay down debt and resist taking on new debt may have surpassed households' typical reactions to changes in wealth and income. At the same time, significant temporary changes in fiscal policy, such as the cut in payroll taxes that began in January 2011, have bolstered consumer spending (see Box 1 on page 8).

Wealth. An important reason for the weakness in consumer spending is that households' wealth (assets minus

liabilities) fell by an unprecedented amount after the housing bubble burst and has grown unusually slowly since then. To rebuild their wealth following those losses, households pulled back on their spending.¹⁷

The wealth (or net worth) of households fell by more than \$16 trillion, or 24 percent, from the third quarter of 2007 to the first quarter of 2009. At the beginning of that period, total wealth was 6.4 times greater than total disposable personal income; by the end of the period, wealth had fallen to 4.8 times income, mainly because of declines in house prices and in the value of corporate equity holdings (see Figure 6).

In the first 12 quarters following the recession, households' total wealth increased by roughly \$10 trillion, or about 20 percent, to a level that was about \$5 trillion below its previous peak. That rebound resulted primarily from gains in the value of corporate stocks and a reduction in households' liabilities. The reduction in liabilities, a process sometimes referred to as deleveraging, mainly reflected a decrease in the amount owed on home mortgages, as borrowers paid down mortgages, took on less new mortgage debt, and in some cases defaulted on their obligations. Despite the growth in households' real wealth during the first 12 quarters following the recession, its increase was smaller than its average increase in past recoveries, slowing the growth of real consumer spending.

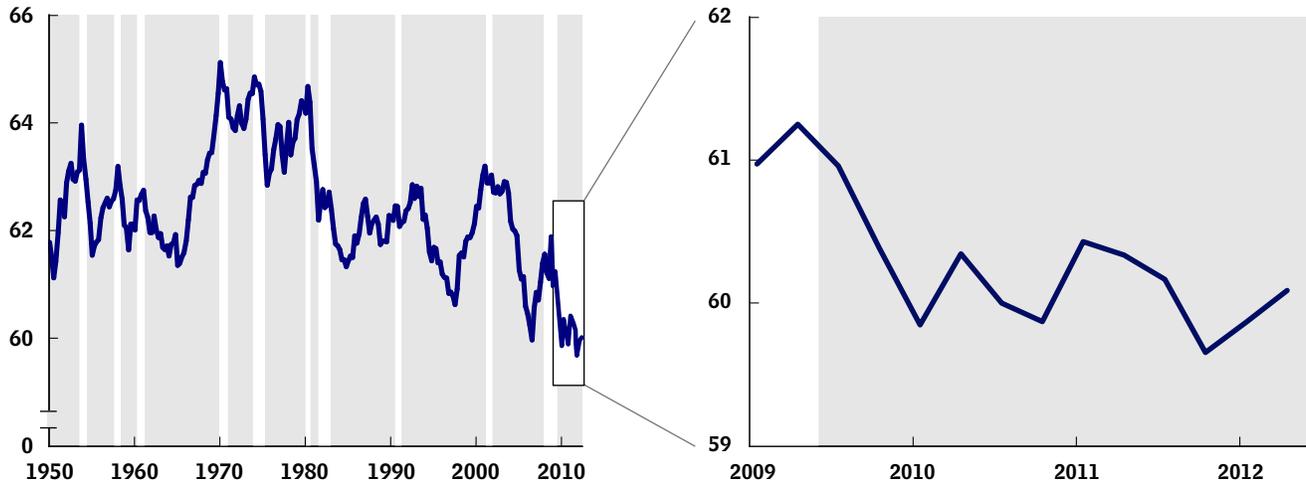
CBO's estimate of the impact of the slow recovery of wealth on consumer spending is based on the view that changes in the value of corporate equities and real estate have similar effects on households' spending, a view that lies roughly in the middle of the views of economists. At one end, some economists suggest that, in the aggregate, households respond more to changes in wealth held in real estate, possibly because real estate wealth is more widely held than corporate equities and because households can use real estate wealth as collateral for borrowing.¹⁸ At the other end, some economists believe that the weakness in house prices may have had little effect on

17. For a discussion of how CBO estimates the effects of changes in housing wealth on consumer spending, see Congressional Budget Office, *Housing Wealth and Consumer Spending* (January 2007).

18. See, for example, Karl Case, John Quigley, and Robert Shiller, "Comparing Wealth Effects: The Stock Market Versus the Housing Market," *Advances in Macroeconomics*, vol. 5, no. 1 (2005), pp. 1–32.

Figure 7.**Labor Income**

(Percentage of gross domestic income)



Sources: Congressional Budget Office; Department of Commerce, Bureau of Economic Analysis.

Notes: Labor income is defined as labor compensation plus 65 percent of proprietors' income.

Gross domestic income is the sum of all income earned in the production of gross domestic product.

Data are quarterly and are plotted through the second quarter of 2012.

consumer spending: Lower house prices mean that the cost of housing is lower, so homeowners may not view the reduced value of their houses as a net loss. And the expectation of lower housing costs for future generations could actually boost some households' spending now.¹⁹ Some researchers also have concluded that changes in real estate prices (and hence wealth) and in consumer spending are both determined largely by a third factor, such as expected growth of income. Under that theory, changes in real estate wealth have no direct effect on spending.²⁰

Labor Income. Another important reason for the slow revival of consumer spending is that labor income as a share of gross domestic income (GDI, which reflects the income earned in the production of GDP) has fallen by a larger amount than in the typical recovery.²¹ Over the first 12 quarters of the average recovery, the labor share of

GDI fell by about 0.3 percentage points. However, in the first 12 quarters of the current recovery, it fell by 1.2 percentage points (see Figure 7). That difference means that a smaller proportion of the growth in value of the economy's output was distributed in the form of wages, salaries, benefits, and proprietors' income during the current recovery than in past recoveries. Instead, capital income in the form of domestic corporate profits, another major component of GDI, rose more rapidly than usual.²²

Among the components of labor income, the growth of real (inflation-adjusted) compensation (wages, salaries, and benefits) of employees in the first 12 quarters following the recession was considerably weaker than the average in past recoveries. A significant part of that weakness reflects the soft labor market, which has held down the

19. See Jonathan Skinner, "Housing Wealth and Aggregate Saving," *Regional Science and Urban Economics*, vol. 19, no. 2 (May 1989), pp. 305–324.

20. See Orazio P. Attanasio and others, "Booms and Busts: Consumption, House Prices and Expectations," *Economica*, vol. 76, no. 301 (2009), pp. 20–50.

21. CBO defines labor income as the sum of employees' compensation and 65 percent of proprietors' income.

22. The effect of the fall in the labor share of GDI on households' aggregate spending was only partially offset by the effect of the increase in wealth resulting from higher capital income, because the owners of that wealth, who tend to be higher-income households, tend to have lower propensities to spend out of changes in their resources.

growth of wages and employment. Increases in energy prices for consumers also played a role in slowing the growth of real compensation. During the recession, those prices fell sharply, but in the following 12 quarters, the price index for consumer energy goods grew much faster than all consumer prices, on average. If energy prices had risen as much as the prices of other goods and services, then, all else being equal, households' real compensation would have risen at an average annual rate of about 1.5 percent over the 12 quarters, rather than at an average annual rate of 1.0 percent. In the typical recovery between 1949 and 2000, energy prices rose more slowly than all consumer prices in the first 12 quarters, on average. Smaller increases in energy prices would have contributed to households' purchasing power and thereby led to a stronger recovery in consumer spending.

Confidence and Uncertainty. Consumers also have restrained their spending because of an unusually high degree of concern about their financial prospects. Since the end of the recession, consumer confidence has been lower than during most other recoveries. Indeed, throughout 2010 and 2011, only about 10 percent of consumers expected to see real gains in their income in the year ahead, matching a level of pessimism last seen in 1980.²³ In addition, persistent weakness in the labor market may well have exacerbated uncertainty and dampened spending for even those households not currently facing unemployment. It is difficult to distinguish the effect of confidence on spending from the effects of households' reduced wealth and the decline in the returns on labor as a share of GDI, but consumer confidence has often appeared lower in the current recovery than can be readily explained by those factors.

Although most of the weakness in consumer confidence probably reflects the weak labor market and poor prospects for future growth of household income, some of the weakness in consumer confidence during the recovery could reflect uncertainty about public policy. For example, although a number of the temporary tax provisions enacted or extended during the recovery provided direct

stimulus to the economy, they may also have added to that uncertainty. Moreover, the future course of U.S. fiscal policy remains particularly uncertain: How policy-makers will deal with the continuing weak economy, the significant amount of fiscal tightening scheduled to occur next year, and the surge in federal debt is currently unclear. Many households also face uncertainty about how they will be affected by implementation of recently enacted federal laws, especially legislation involving financial markets (the Dodd-Frank Wall Street Reform and Consumer Protection Act) and health care (the Affordable Care Act).²⁴ The degree to which uncertainty about public policy has restrained decisions to spend, however, is difficult to determine.²⁵

Other Factors. Changes in wealth, labor income, and confidence explain much of the unusual weakness in consumer spending. But other factors also contributed, particularly early in the recovery, including stricter standards and terms for borrowing by consumers and efforts by households to deleverage that went beyond their typical reactions to changes in wealth and income.

Standards and Terms for Borrowing. At least a small portion of the slow recovery in consumer spending can be attributed to the tightness in standards and terms for borrowing. Responding to unexpectedly large losses (on

23. See Thompson Reuters/University of Michigan, "Political Deadlock Hurts Consumer Spending" (press release, December 22, 2011), http://thomsonreuters.com/news_ideas/press_releases/?itemId=531852, and "Stagnant Incomes Growing Concern" (press release, May 27, 2011), http://thomsonreuters.com/content/press_room/financial/2011_05_27_stagnant_incomes_growing_concern.

24. For further discussion of the possible effects of such legislation on the economy, see the statement of Douglas W. Elmendorf, Director, Congressional Budget Office, before the Senate Committee on the Budget, *Policies for Increasing Economic Growth and Employment in 2012 and 2013* (November 15, 2011), pp. 44–52.

25. One recent paper finds that uncertainty about economic policy (at least uncertainty of the sort generated by widely publicized events such as last year's debate over raising the U.S. debt ceiling) may have had large economic effects. However, interpreting the economic correlations presented in that research requires strong assumptions about how indicators of economic performance and uncertainty are interrelated. See Scott R. Baker, Nicholas Bloom, and Steven Davis, "Measuring Economic Policy Uncertainty" (working paper, Stanford University and the University of Chicago, June 4, 2012), www.policyuncertainty.com/papers.html. For additional analyses, see Mark E. Schweitzer and Scott Shane, "Economic Policy Uncertainty and Small Business Expansion," *Economic Commentary*, Federal Reserve Bank of Cleveland (November 29, 2011), www.clevelandfed.org/research/commentary/2011/2011-24.pdf; and Lawrence Mishel, *Regulatory Uncertainty: A Phony Explanation for Our Jobs Problem*, Briefing Paper 330 (Washington, D.C.: Economic Policy Institute, September 27, 2011), www.epi.org/publication/regulatory-uncertainty-phony-explanation.

mortgages and other consumer and commercial loans) and to the prospect of additional losses in the future, banks made credit less available during the recession and even into the recovery by raising their lending standards and tightening their terms—requiring larger down payments, shorter loan maturities, and higher credit scores—for both mortgage and consumer borrowing. Standards and terms for consumer loans began to ease in mid-2010, but standards for home mortgages remained particularly strict through the second quarter of 2012, especially compared with the unusually lax standards and terms that were in force before the recession.²⁶

Mortgage standards affect not just people purchasing a home but also homeowners looking to refinance. Households might refinance to take advantage of lower interest rates and, if they increase the size of their mortgage, to borrow against their home equity to finance other spending. During the recovery, tighter standards made refinancing more difficult. In addition, households who had a mortgage that was larger than their home's value (in other words, who were “underwater”) faced considerable difficulties in refinancing in order to lower their interest rate and had no home equity to borrow against.²⁷

Deleveraging. A portion of the slow recovery in consumer spending can also be attributed to households' reducing their debt by more than the amount suggested by recent changes in asset prices and income and by spending and borrowing patterns in recent decades.²⁸ Households' debt, defined here as the sum of home mortgage debt plus consumer credit, rose especially rapidly in dollar terms and as a percentage of disposable (after-tax) personal income in the decade leading up to the recession. Since the beginning of the recession, households' debt has

fallen both in dollar terms and as a share of income, even though interest rates on many consumer loans and home mortgages have been much lower than they were before the recession. As discussed above, tightness in credit markets has probably constrained borrowing by households. Some of the decline in households' debt has also been attributable to defaults, particularly on home mortgages.²⁹ Separately from those factors, some households may have been trying to get their debt level back to a historical relationship with their income and level of assets.³⁰ In fact, weak demand for consumer loans and home mortgages during the recovery is consistent with that possibility.³¹ If households are targeting historical levels of debt to income or assets, that sort of deleveraging could continue to hold down spending for some time.

Investment by Businesses

Over the 12 quarters after the recession, real business investment grew somewhat more rapidly than in past recoveries, adding about ¼ percentage point more to growth in the ratio of real GDP to potential GDP than in the average cycle (see Table 1 on page 6 and Figure 3 on page 10). That performance mainly reflects how far nominal business investment had fallen relative to potential GDP during the recession, which means that even brisk growth in investment during the recovery has left the level of net business investment (investment minus depreciation) fairly low relative to potential GDP. Business investment was probably held back during the recovery by unusually subdued business confidence and stricter standards and terms for borrowing; indeed, during the first nine quarters of the recovery, the ratio of real business investment to potential GDP grew more slowly than in the average cycle.

Business Confidence. The recent recession was uncommon in a number of ways, including the magnitude of

26. See Board of Governors of the Federal Reserve System, *The July 2012 Senior Loan Officer Opinion Survey on Bank Lending Practices*.

27. At the end of the second quarter of 2012, more than one-fifth of mortgage borrowers were underwater. See CoreLogic, *Negative Equity Report* (September 12, 2012). For a discussion of policy options, see Mitchell Remy, Deborah Lucas, and Damien Moore, *An Evaluation of Large-Scale Mortgage Refinancing Programs*, Congressional Budget Office Working Paper 2011-04 (September 2011).

28. See, for example, Atif Mian, Kamal Rao, and Amir Sufi, “Household Balances Sheets, Consumption, and the Economic Slump” (working paper, June 2012), <http://ssrn.com/abstract=1961211>.

29. The effect of mortgage defaults on the recovery is uncertain. Although defaults create losses for investors and hinder households' ability to borrow in the future, defaults also can reduce the portion of households' income going to housing costs, which, all else being equal, boosts consumer spending.

30. See Karen Dynan, “Is a Household Debt Overhang Holding Back Consumption?” *Brookings Papers on Economic Activity* (Spring 2012), www.brookings.edu/about/projects/bpea/past-editions.

31. See, for example, Board of Governors of the Federal Reserve System, *The July 2012 Senior Loan Officer Opinion Survey on Bank Lending Practices*.

the decline in GDP, the role of the financial crisis, and the fact that the Federal Reserve lowered short-term interest rates nearly to zero. Consequently, businesses probably had unusually high uncertainty about the sustainability of the upturn, especially early in the recovery, and thus unusually high uncertainty about future demand for their goods and services.

A lack of business confidence could also reflect expectations of changes in government policies or uncertainty about future policies. For example, concerns and questions about each of the following could have affected business confidence: the overall levels of federal taxes and spending that will occur in coming years; the future impact of the significant changes in the health insurance system and in the regulation of the financial system enacted in the past few years; and environmental and other regulations that will be imposed or removed over time. The magnitude of the effects of such factors on business investment is difficult to determine, however.

Stricter Standards and Terms for Borrowing. Difficulties in obtaining financing also have probably restrained business investment to some extent. Banks continued to tighten standards and terms on commercial real estate loans during 2009 and 2010 and eased them very little in 2011. In addition, the decline in home prices, along with stricter credit standards for mortgages than the ones in place before the financial crisis, probably put home equity loans out of reach for many owners of small businesses, who, under other circumstances, tend to borrow against that equity for business purposes.

Nevertheless, stricter standards and terms have probably not played a large role in slowing business investment. Many large and stable corporations have faced few impediments to borrowing and, in fact, have been taking advantage of historically low interest rates to refinance large amounts of debt.³² In addition, since the recession, only a small percentage of respondents to surveys of small businesses have identified credit as their most important

problem; rather, they have been much more concerned about poor sales.³³

Net Exports

Real net exports, measured as a contribution to the ratio of real GDP to potential GDP, fell somewhat less in the first 12 quarters following the most recent recession than in past recoveries, contributing about ½ percentage point more to the growth of output than in the average recovery (see Table 1 on page 6 and Figure 3 on page 10). Both real imports and real exports increased by more than they did in past recoveries; however, the growth in real exports outpaced the growth in real imports. Slower growth of demand in this country for all types of goods and services restrained the growth of imports, while exports were helped by strong growth in emerging markets during the first seven quarters of the recovery.

Since the end of the last recession, net exports could have been even stronger had the Federal Reserve been able to further reduce short-term interest rates. (For a discussion of limitations faced by the Federal Reserve in stimulating economic activity in this recovery, see Box 2.) Lower U.S. interest rates would have reduced the return on U.S. assets relative to foreign assets, weakening the demand for U.S. assets and thus the value of the dollar. A lower value of the dollar would have boosted the competitiveness of U.S. exports in foreign markets and of domestic production against imports. That improved competitiveness would have increased real net exports.

32. Yields on corporate bonds have fallen to a greater extent during the current recovery than during any past postwar recovery. The resulting lower cost of funding new capital has contributed to the recovery in investment. However, if the Federal Reserve had been able to lower short-term rates further, bond yields would also have fallen further, giving more of a boost to investment.

33. See William C. Dunkelberg and Holly Wade, *NFIB Small Business Economic Trends* (Nashville, Tenn.: National Federation of Independent Business Research Foundation, various monthly editions), www.nfib.com/research-foundation/small-business-economic-trends-sbet-archive.

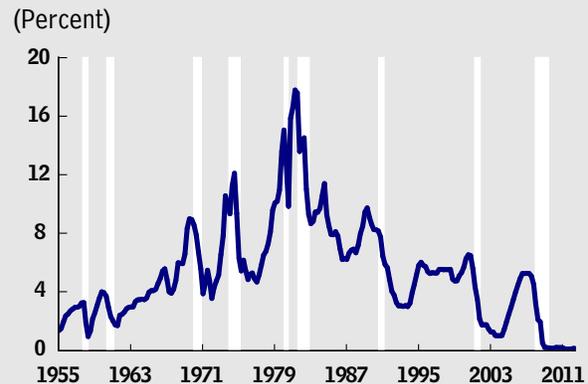
Box 2.**Monetary Policy and the Slow Growth of Output**

An important reason for the slow growth of the U.S. economy relative to its potential during this economic recovery is that the Federal Reserve's ability to lower interest rates to stimulate economic activity has run into the limit that interest rates cannot be lower than zero. Moreover, the economy has been less responsive to a decline in interest rates in this recovery.

Monetary policy has often spurred economic recoveries. The Federal Reserve effectively sets the federal funds rate (the interest rate that financial institutions charge each other for overnight loans of their monetary reserves), which influences the demand for goods and services. The Federal Reserve usually can boost demand by reducing the federal funds rate, which typically lowers other interest rates, increases the prices of assets such as corporate equities, and lowers the exchange rate.

However, the Federal Reserve has been constrained in combating the recent recession. During that recession and early in the subsequent recovery, the historical relationships between the federal funds rate, economic activity, and the rate of inflation generally suggested that the federal funds rate would be less than zero.¹ Because setting interest rates below zero is not possible, the Federal Reserve could only reduce the federal funds rate to near zero, where it has been since late 2008 (see the figure).

1. Analysts often gauge the Federal Reserve's preferred level of the federal funds rate using models that capture the rate's past responses to inflation and unemployment. Such models are widely termed Taylor-rule models (named for their originator, economist John B. Taylor). Most Taylor-rule specifications indicate that, if it had been possible, the Federal Reserve's target federal funds rate would have been well below zero during the recession and would have remained below zero in 2010.

Federal Funds Rate

Sources: Congressional Budget Office; Federal Reserve.

Notes: The federal funds rate is the interest rate that financial institutions charge each other for overnight loans of their monetary reserves. The Federal Reserve uses the federal funds rate to conduct monetary policy.

Data are quarterly and are plotted through the second quarter of 2012.

As a result, the Federal Reserve has used nontraditional policies, including large-scale purchases of securities issued by the Treasury and government-sponsored enterprises, to push down longer-term interest rates on both Treasury borrowing and private-sector borrowing, such as mortgages. Those nontraditional policies noticeably reduced longer-term interest rates, but they have not been powerful enough to spur strong economic growth.²

2. See Joseph Gagnon and others, *Large-Scale Asset Purchases by the Federal Reserve: Did They Work?* Federal Reserve Bank of New York Staff Report 441 (March 2010), www.newyorkfed.org/research/staff_reports/sr441.html; and James D. Hamilton and Jing Cynthia Wu, "The Effectiveness of Alternative Monetary Policy Tools in a Zero Lower Bound Environment," *Journal of Money, Credit, and Banking*, vol. 44, no. 1, supplement (February 2012), pp. 3-46.

Continued

Box 2.**Continued****Monetary Policy and the Slow Growth of Output**

Even if the Federal Reserve had been able to engineer a larger reduction in longer-term interest rates, the economy might still have grown relatively slowly because households and businesses have been less sensitive to, or less able to take advantage of, changes in interest rates than they normally would have been. For example, the excess of vacant homes lowered the response of housing construction to low mortgage interest rates. Moreover, many homeowners have been unable to refinance mortgage loans in order to take advantage of historically low mortgage rates because lenders have generally kept their standards and terms for mortgage loans tight. In addition, to the extent that households are trying to reduce their debt or face constraints on borrowing, they may

respond less to lower interest rates on credit for buying consumer goods and services.

The Federal Reserve's ability to spur economic activity also has been hampered by the stress on U.S. financial markets caused by financial problems in Europe. For example, some U.S. banks have tightened standards on loans to nonfinancial firms that have operations in the United States and significant exposure to European economies.³

3. See, for example, Board of Governors of the Federal Reserve System, *The July 2012 Senior Loan Officer Opinion Survey on Bank Lending Practices* (August 6, 2012), www.federalreserve.gov/boarddocs/snloansurvey.

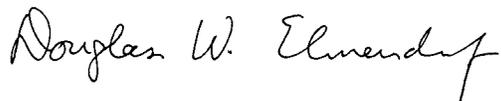
About This Document

Each year, the Congressional Budget Office (CBO) issues a series of reports on the state of the budget and the economy. This study provides background information that helps to explain the economic projections included in those reports. In keeping with CBO's mandate to provide objective, impartial analysis, this study makes no recommendations.

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Douglas W. Elmendorf
Director

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