

2. ECONOMIC ASSUMPTIONS AND INTERACTIONS WITH THE BUDGET

This chapter presents the economic forecast on which the 2015 Budget projections are based.¹ When the President took office in January 2009, the economy was in the midst of an historic economic crisis. The first order of business for the new Administration was to arrest the rapid decline in economic activity that threatened to plunge the country into a second Great Depression. The President and the Congress took unprecedented actions to restore demand, stabilize financial markets, and put people back to work. These steps included passage of the American Recovery and Reinvestment Act (ARRA), signed by the President just 28 days after taking office. They also included the Financial Stability Plan, announced in February 2009, which encompassed wide-ranging measures to strengthen the banking system, increase consumer and business lending, and stem foreclosures and support the housing market. These and a host of other actions walked the economy back from the brink. The economy bottomed out in June 2009 and gradually started to recover in late 2009.² Further measures to aid the recovery were taken in December 2010, such as temporarily cutting payroll taxes and continuing extended unemployment insurance. At the start of 2013, the American Taxpayer Relief Act of 2012 (ATRA) prevented income tax increases on the vast majority of taxpayers and provided greater certainty for the years ahead.

Over the past 18 quarters, through the fourth quarter of 2013, real Gross Domestic Product (GDP) has grown at an average annual rate of 2.4 percent, and since February 2010, 8.5 million jobs have been added in the private sector. Meanwhile, the unemployment rate has fallen from its October 2009 peak of 10.0 percent to 6.6 percent in January.

The recovery is projected to gain momentum in 2014 and to strengthen further in 2015. However, even with healthy economic growth, unemployment is expected to be higher than is consistent with full employment for a few more years. The Administration is projecting unemployment to continue to decline until it stabilizes at 5.4 percent in 2018. This chapter contains several sections:

- The first section reviews recent economic performance.
- The second section discusses the Administration's economic projections.
- The third section compares the Administration's to other forecasts and to the Administration's projection in last year's Budget.

- The fourth section describes how changes in assumptions about key economic variables result in changes in receipts, outlays, and the deficit.
- The fifth section presents information on forecast errors for growth, inflation, and interest rates and how these forecast errors compare to those in forecasts made by the Congressional Budget Office (CBO) and the private-sector Blue Chip Consensus forecast.
- The sixth section presents alternatives to the current Administration forecast—based on both more optimistic and less optimistic assumptions with respect to real economic growth and unemployment—and describes the resulting effects on the deficit.
- The seventh section shows a probabilistic range of budget outcomes based on past errors in projecting the deficit.
- The last section discusses the relationship between structural and cyclical deficits, showing how much of the actual deficit is related to the economic cycle (e.g., the recent recession) and how much would persist even if the economy were at full employment.

Recent Economic Performance

The accumulated stresses from a contracting housing market and the resulting strains on financial markets brought the 2001-2007 expansion to an end in December 2007. In its early stages, the 2008-2009 recession was relatively mild, but financial conditions worsened sharply in the fall of 2008, and from that point forward the recession became much more severe. Before it ended, real GDP had fallen further and the downturn had lasted longer than any previous post-World War II recession. The recovery began in the third quarter of 2009, with real growth averaging 2.4 percent since that point, including 2.7 percent for the most recent four quarters. Looking ahead, the likely strength of the recovery is one of the key issues for the forecast.

Housing Markets Show Further Strength.—The housing market has shown clear signs of recovery, after its collapse in 2007 and 2008 which was a major cause of the financial crisis and recession. In 2006-2007, housing prices peaked, and from 2007 through 2008, housing prices fell sharply according to all available measures.³ During the downturn, as house prices fell, investment in housing plummeted, reducing the annualized rate of

¹ In the Budget, economic performance is discussed in terms of calendar years. Budget figures are discussed in terms of fiscal years.

² The dating of U.S. business cycles is done by the National Bureau of Economic Research, a private institution that has supported economic research on business cycles and other topics for many decades.

³ There are several measures of national housing prices. Two respected measures that attempt to correct for variations in housing quality are the S&P/Case-Shiller Home Price Index and the Federal Housing Finance Agency (FHFA) Purchase-Only House Price Index. The Case-Shiller index peaked in 2006, while the FHFA index peaked in 2007.

real GDP growth by an average of 1 percentage point per quarter. Housing prices started to rise again in 2012, with a cumulative gain of 17 percent over the last seven quarters, according to the Case-Shiller index. Residential investment began to increase steadily in the second quarter of 2011, and has risen at an annual rate of about 15 percent during 2012 and 2013.

In April 2009, housing starts fell to an annual rate of just 478,000 units, the lowest level ever recorded for this series, which dates from 1959. Housing starts rose modestly over the next two years, and increased to over 900,000 units over the 12 months through December 2013. Typically, about 1.65 million starts a year are needed to accommodate the needs of an expanding population with an increasing number of households, and to replace older units, indicating potential for a substantial housing rebound. Although a large overhang of vacant homes must be reduced before a robust housing recovery can become firmly established, there are indications that this is gradually happening with reduced vacancies and fewer foreclosures. The Administration forecast assumes a continued recovery in housing activity that adds to real GDP growth over the forecast horizon, especially over the next three years.

Deleveraging has Slowed Consumption, but it May be Near an End.—Between the first quarter of 2007 and the first quarter of 2009, the real net worth of American households declined by \$15 trillion at 2009 prices (19 percent) – the equivalent of one year’s GDP. A precipitous decline in the stock market, along with falling house prices over this period, were the main reasons for the drop in household wealth. Since then, real household wealth, including financial assets, has risen substantially and now exceeds its previous peak. Most of this is accounted for by the rise in equity prices. The turnaround in housing prices has raised residential wealth, although it remains below well below its previous peak level.⁴

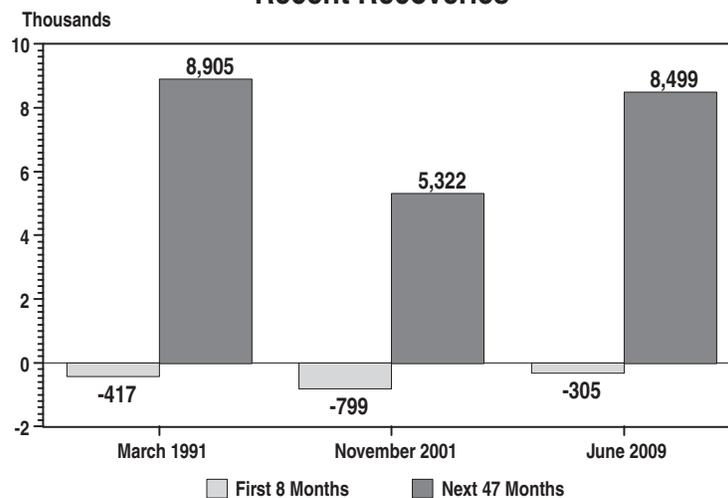
⁴ Real wealth is computed by deflating household net worth from the Flow-of-Funds Accounts by the Chained Price Index for Personal Consumption Expenditures. Data are available through 2013:Q3.

Americans reacted to this massive loss of wealth by saving more. The personal saving rate had been declining since the 1980s, and it reached a low point of 2 percent in mid-2005. It remained low, averaging only about 3 percent through the end of 2007, but since then, as wealth has declined, the saving rate has increased to an average of 5-1/2 percent between 2008 and 2012, declining somewhat to 4-1/2 percent last year. A sudden increase in the desire to save implies a corresponding reduction in consumer demand, and a fall-off in consumption had a negative effect on the economy during the recession of 2008 and early 2009. During that period, real consumer spending fell at an annual rate of almost 2 percent. Since then, real consumer spending has recovered, although it has increased only 1.9 percent over the past four quarters.

Rebound in Business Investment.—Business fixed investment fell sharply during the 2008-2009 contraction. It rose rapidly in 2010 through 2013, and real investment at the end of 2013 exceeded its pre-recession levels for the first time. The cost of capital is low and American corporations at the end of 2013 held substantial levels of cash reserves, which could provide funding for future investments as the economy continues to recover. The main constraint on business investment is poor sales expectations, which have been dampened by the slow pace of recovery. However, if consumption picks up, businesses are in a good position to expand investment. Nevertheless, the pace of future growth could prove to be uneven, as investment tends to be volatile.

Steady Progress in the Labor Market.—The unemployment rate peaked in 2009 at 10 percent. Private employment has grown for the past 47 straight months and the unemployment rate has declined to 6.6 percent. However, it remains above the level of unemployment consistent with nonaccelerating inflation, estimated at about 5.4 percent. Also, the rate of long-term unemployment (those out of work for more than 6 months) remains high. Unemployment has had devastating effects on American families, and the recovery will not be fully real for most Americans until the job market strengthens further. The

Chart 2-1. Private Job Gains and Losses During Recent Recoveries



positive job growth has far exceeded the job gains in the recovery following the 2001 recession, and is only slightly less than equivalent in comparison to the expansion in the 1990s (see Chart 2-1).

Domestic Energy Boom.—In the last five years, there has been a dramatic increase in domestic energy production. The United States is now one of the world's largest producers of oil and gas. Domestic production of crude oil rose above imports in October for the first time since 1995. This broad-based energy boom supports jobs directly in production and distribution, as well as indirectly by making the United States more attractive as a location

for manufacturing by multi-national firms in energy-intensive industries.

Fiscal Drag has Peaked.—Fiscal policy restraint has substantially slowed the expansion over the past two years, but fiscal drag will be a much smaller factor in 2014 as the reduction in Federal Government expenditures will be less than in 2013. In addition, tax increases took place in early 2013 which will not be repeated this year. And State and local level purchases has shifted to being a slightly positive factor for GDP growth. Therefore, private sector demand will not be offset by the Government as it was over the last several quarters, during which it reduced real GDP growth by over a percentage point. CBO

Table 2-1. ECONOMIC ASSUMPTIONS¹

(Calendar years; dollar amounts in billions)

	Actual 2012	Projections											
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Gross Domestic Product (GDP):													
Levels, dollar amounts in billions:													
Current dollars	16,245	16,768	17,544	18,454	19,432	20,460	21,459	22,445	23,454	24,484	25,551	26,664	27,826
Real, chained (2009) dollars	15,471	15,736	16,218	16,763	17,323	17,884	18,389	18,855	19,315	19,766	20,221	20,686	21,162
Chained price index (2009 = 100), annual average	105.0	106.5	108.1	110.1	112.1	114.4	116.7	119.0	121.4	123.8	126.3	128.9	131.5
Percent change, fourth quarter over fourth quarter:													
Current dollars	3.8	3.6	5.0	5.2	5.3	5.3	4.7	4.6	4.5	4.4	4.4	4.4	4.4
Real, chained (2009) dollars	2.0	2.3	3.3	3.4	3.3	3.2	2.6	2.5	2.4	2.3	2.3	2.3	2.3
Chained price index (2009 = 100)	1.8	1.3	1.6	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Percent change, year over year:													
Current dollars	4.6	3.2	4.6	5.2	5.3	5.3	4.9	4.6	4.5	4.4	4.4	4.4	4.4
Real, chained (2009) dollars	2.8	1.7	3.1	3.4	3.3	3.2	2.8	2.5	2.4	2.3	2.3	2.3	2.3
Chained price index (2009 = 100)	1.7	1.4	1.6	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Incomes, billions of current dollars:													
Domestic Corporate Profits	1,591	1,693	1,844	2,036	2,175	2,204	2,127	2,025	1,981	1,944	1,896	1,852	1,802
Employee Compensation	8,612	8,837	9,189	9,630	10,137	10,695	11,274	11,846	12,427	13,026	13,638	14,290	14,965
Wages and salaries	6,927	7,116	7,402	7,754	8,173	8,648	9,124	9,592	10,059	10,536	11,028	11,552	12,066
Other taxable income ²	3,725	3,948	4,125	4,336	4,615	4,974	5,359	5,709	6,012	6,302	6,582	6,854	7,134
Consumer Price Index (all urban):³													
Level (1982–84 = 100), annual average	229.6	232.9	236.6	241.3	246.5	252.0	257.7	263.5	269.5	275.6	281.8	288.2	294.7
Percent change, fourth quarter over fourth quarter	1.9	1.1	1.9	2.0	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Percent change, year over year	2.1	1.4	1.6	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Unemployment rate, civilian, percent:													
Fourth quarter level	7.8	7.2	6.7	6.2	5.8	5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Annual average	8.1	7.5	6.9	6.4	6.0	5.6	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Federal pay raises, January, percent:													
Military ⁴	1.6	1.7	1.0	1.0	NA								
Civilian ⁵	0.0	0.0	1.0	1.0	NA								
Interest rates, percent:													
91-day Treasury bills ⁶	0.1	0.1	0.1	0.3	1.2	2.3	3.2	3.6	3.7	3.7	3.7	3.7	3.7
10-year Treasury notes	1.8	2.3	3.0	3.5	4.0	4.3	4.6	4.7	4.9	5.0	5.1	5.1	5.1

NA = Not Available

¹ Based on information available as of mid-November 2013.

² Rent, interest, dividend, and proprietors' income components of personal income.

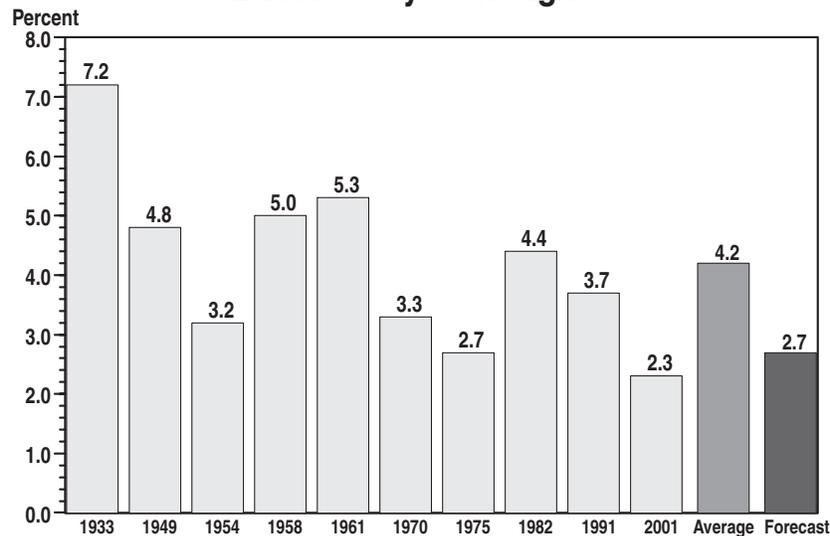
³ Seasonally adjusted CPI for all urban consumers.

⁴ Percentages apply to basic pay only; percentages to be proposed for years after 2014 have not yet been determined.

⁵ Overall average increase, including locality pay adjustments. Percentages to be proposed for years after 2015 have not yet been determined.

⁶ Average rate, secondary market (bank discount basis).

Chart 2-2. Seven-Year Average Growth Following Business Cycle Troughs



has estimated that changes in fiscal policy restrained output growth in 2013 by about 1-1/2 percentage points, and the drag this year should only be about 1/4 percentage point under current law.

Economic Projections

The economic projections underlying the 2015 Budget estimates are summarized in Table 2-1. The assumptions are based on information available as of mid-November 2013. This section discusses the Administration's projections, and the next section compares these projections with those of the Federal Reserve's Open Market Committee (FOMC), the CBO, and the Blue Chip Consensus of private forecasters.

Real GDP.—Real GDP grew 2.7 percent during the four quarters of 2013. The Administration projects the economic recovery that began in mid-2009 will continue with real GDP growing at an average annual rate of 3.3 percent over the next four years. This economic forecast, as always, is based on the assumption that the Administration's budget proposals are enacted in full, including a proposal for investment in infrastructure, research, and other priorities to boost the economy and help lay a foundation for long-term growth. The Budget also assumes that the deep cuts in defense and nondefense discretionary spending which began with the across-the-board sequester in March 2013, and which were partially alleviated by the Congress in the recent bipartisan budget agreement, are replaced by the closure of tax loopholes and mandatory spending reductions. Real GDP growth is projected to ease to 2.5 percent by 2019, and to grow at a steady 2.3 percent rate for the final years of the forecast. The slight drop off in the last few years is due to demographic factors that lower the labor force participation rate as the baby boom generation retires.

As shown in Chart 2-2, the Administration's projections for real GDP growth over the first seven years of the

recovery (history plus projected) reflect the depth and severity of the preceding recession. Recent recoveries have been somewhat weaker than average, but the last two expansions were preceded by mild recessions with relatively little pent-up demand when conditions improved. Because of the depth of the most recent recession, there was much more room for a rebound in spending and production than was true either in 1991 or 2001. On the other hand, lingering effects from the credit crisis and other special factors limited the pace of the recovery in the first stages of the expansion, while less favorable demographics also slowed growth relative to previous recoveries.

The U.S. economy has substantial room for growth, although there are factors that could continue to limit that growth in the years ahead. On the positive side, the unemployment rate has fallen since the recession trough and further progress is expected in 2014-15, particularly if the President's Budget proposals are adopted. As noted previously, the sharp fiscal restraint that was implemented to bring down the deficit has peaked, with much smaller restraint projected over the next couple of years. Monetary policy likely will continue to support growth as the Federal Reserve Open Market Committee's January directive states that "...it likely will be appropriate to maintain the current target range for the federal funds rate well past the time that the unemployment rate declines below 6-1/2 percent, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal." However, financial markets here and in Europe have been troubled by weak economic growth, the sustainability of fiscal policy in some European countries, and sovereign debt concerns. The drag from a slowdown in European or emerging markets could hamper the growth of the U.S. economy.

Long-Term Growth.—The Administration's forecast does not attempt to project cyclical developments beyond the next few years. The long-run projection for real economic growth and unemployment assumes that they will

maintain trend values in the years following the return to full employment. Real GDP, reflecting the slower growth in productivity outside the nonfarm business sector, grows at a rate of 2.3 percent in the final years of the projection. That is markedly slower than the average growth rate of real GDP since 1947 of 3.2 percent per year. In the 21st Century, real GDP growth in the United States is likely to be permanently slower than it was in earlier eras because of a slowdown in labor force growth initially due to the retirement of the post-World War II baby boom generation, and later due to a decline in the growth of the working-age population. These projections do not include the effects of immigration reform, which has the potential to attenuate this slowdown in labor force growth.

Unemployment.—In January 2014, the overall unemployment rate was 6.6 percent. In line with the increased growth in the economy projected after 2013, the unemployment rate is expected to decline to 5.4 percent by 2018 and to continue at that level during the period of trend growth during the last few years of the forecast.

Inflation.—The Consumer Price Index for all urban consumers (CPI-U) rose by 1.5 percent for the 12 months ending in December 2013. Over the previous 12 months it had risen by 1.8 percent. The decline in inflation in 2013 was due mainly to lower energy price inflation. The “core” CPI, excluding both food and energy, was up 1.7 percent in 2013, down slightly from the 1.9 percent during 2012.

Weak demand continues to hold down prices for many goods and services, and continued high unemployment together with other measures of economic slack are expected to result in a relatively low inflation rate. As the economy recovers and the unemployment rate declines, the rate of inflation should remain near the Federal Reserve’s target of around 2 percent per year. With the recovery path assumed in the Administration forecast, the risk of outright deflation appears minimal. The Administration projects that the rate of change in the CPI-U will average 2.3 percent and that the GDP price index will increase at a 2.0 percent annual rate in the long run.

Interest Rates.—Interest rates on Treasury securities fell sharply in late 2008, as both short-term and long-term rates declined to their lowest levels in decades. Since then, Treasury rates have fluctuated, but they have not returned to the levels before the financial crisis. The Federal Reserve’s policy of purchasing long-term Treasury securities has helped to hold down long-term rates, but market expectations changed somewhat last summer when speculation grew that the FOMC would start to reduce its quantitative easing, which happened a few months later in December. During 2013, the 10-year rate increased sharply by over 1 percentage point to 2.8 percent in the fourth quarter, although short-term rates stayed near zero. In the Administration projections, interest rates are expected to rise, but only gradually as financial concerns are alleviated and the economy recovers from recession. The 91-day Treasury bill rate is projected to remain near zero into 2015 consistent with the Federal Reserve’s announced intentions, and then to rise to 3.7 percent by 2020. The 10-year rate continues to rise moderately in 2014 and reaches 5.1 percent by 2021. After

adjusting for inflation, the projected real interest rates in the last few years of the projection are close to their historical averages.

Income Shares.—The share of labor compensation was extremely low by historical standards in 2013 at 52.7 percent of GDP. It is expected to fall to 52.2 percent of GDP by 2015. As the economy grows faster in the middle years of the forecast period, and as employment increases as a result, compensation is projected to rise, reaching 53.8 percent of GDP in 2024. In the expansion that ended in 2007, hourly labor compensation tended to lag behind the growth in productivity, and that has also been true for the surge in productivity growth in 2009-2010. The share of wages and salaries is expected to rise from 42.4 percent of GDP in 2013 to 43.4 percent in 2024. The share of domestic corporate profits is expected to rise from 10.1 percent of GDP in 2013 to 11.2 percent in 2016, after which it will decline to 6.5 percent in 2024.

Changes in Economic Assumptions from Last Year’s Budget.—The 2015 Budget forecast reflects economic developments over the past year, but some of the forecast values are similar to those of the 2014 Budget, especially in the long run (see Table 2–2). The previous Budget anticipated more rapid growth in 2013-2017 than the current Budget, and assumed a slightly higher rate of potential GDP growth in the long run. The projection for the long-term unemployment rate has remained unchanged, but the forecast starts from a lower level, reflecting the sharper-than-expected decline in unemployment in 2013. Projected interest rates are higher in the medium term, reflecting the actual rise in long-term interest rates during 2013, but are little changed in the long term. As in last year’s projections, inflation is also projected to return to its long-run average consistent with Federal Reserve policy, now estimated at 0.1 percentage point higher than last year at 2.3 percent for the CPI-U and 2.0 percent for the GDP price index.

Comparison with Other Forecasts

Table 2–3 compares the economic assumptions for the 2014 Budget with projections by CBO, the Blue Chip Consensus—an average of about 50 private-sector economic forecasts—and, for some variables, the Federal Reserve Open Market Committee. These other forecasts differ from the Administration’s projections, but the differences are relatively small compared with the margin of error in all economic forecasts. Like the Administration’s forecast, the other forecasts project that real GDP will continue to grow as the economy returns to a normal level of unemployment. The forecasts also agree that inflation will be low while outright deflation is avoided, and that interest rates will eventually rise to more normal levels.

There are some conceptual differences between the Administration forecast and the other economic forecasts. The Administration forecast assumes that the President’s Budget proposals will be enacted, providing important support for economic growth. The 50 or so private forecasters in the Blue Chip Consensus make differing policy assumptions, but it is safe to assume that they do not

Table 2-2. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 2014 AND 2015 BUDGETS

(Calendar years; dollar amounts in billions)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Nominal GDP:											
2014 Budget Assumptions ¹	16,955	17,836	18,815	19,861	20,953	22,017	23,023	24,029	25,061	26,133	27,249
2015 Budget Assumptions	16,768	17,544	18,454	19,432	20,460	21,459	22,445	23,454	24,484	25,551	26,664
Real GDP (2009 dollars):											
2014 Budget Assumptions ¹	15,836	16,349	16,926	17,535	18,155	18,722	19,213	19,680	20,146	20,615	21,096
2015 Budget Assumptions	15,736	16,218	16,763	17,323	17,884	18,389	18,855	19,315	19,766	20,221	20,686
Real GDP (percent change):²											
2014 Budget Assumptions	2.3	3.2	3.5	3.6	3.5	3.1	2.6	2.4	2.4	2.3	2.3
2015 Budget Assumptions	1.7	3.1	3.4	3.3	3.2	2.8	2.5	2.4	2.3	2.3	2.3
GDP Price Index (percent change):²											
2014 Budget Assumptions	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
2015 Budget Assumptions	1.4	1.6	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Consumer Price Index (all-urban; percent change):²											
2014 Budget Assumptions	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
2015 Budget Assumptions	1.4	1.6	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3
Civilian Unemployment Rate (percent):³											
2014 Budget Assumptions	7.7	7.2	6.7	6.2	5.7	5.5	5.4	5.4	5.4	5.4	5.4
2015 Budget Assumptions	7.5	6.9	6.4	6.0	5.6	5.4	5.4	5.4	5.4	5.4	5.4
91-day Treasury bill rate (percent):³											
2014 Budget Assumptions	0.1	0.2	0.4	1.3	2.3	3.2	3.6	3.7	3.7	3.7	3.7
2015 Budget Assumptions	0.1	0.1	0.3	1.2	2.3	3.2	3.6	3.7	3.7	3.7	3.7
10-year Treasury note rate (percent):³											
2014 Budget Assumptions	2.0	2.6	3.1	3.7	4.1	4.4	4.6	4.8	5.0	5.0	5.0
2015 Budget Assumptions	2.3	3.0	3.5	4.0	4.3	4.6	4.7	4.9	5.0	5.1	5.1

¹ Adjusted for July 2013 NIPA revisions.² Calendar year over calendar year.³ Calendar year average.

generally assume full enactment of the Administration's budget proposals. CBO is required in making its projections to assume that current law will continue, resulting in scheduled reductions in discretionary spending relative to the original BCA caps

The Administration projections were completed in mid-November. The nearly four-month lag between that date and the Budget release is due in part because the budget process requires lead time to complete the estimates for agency programs that are incorporated in the Budget. In addition, the appropriation bills for 2014 were not completed until mid-January, stretching out the time needed to complete the 2015 Budget. Forecasts made at different dates will differ if economic news between the two dates alters the economic outlook. The Blue Chip Consensus for 2014-2024 in this table was the latest available, from early February for projections through 2015 and from October for long-term projections. The CBO forecast is from its February 2014 report on the budget outlook, but the economic assumptions were locked in early December. The FOMC members' central tendencies of their forecasts are from December 2013.

Real GDP Growth.—In 2014-16, the Administration expects more growth than Blue Chip and CBO, partly because the forecast assumes that all of the Budget pro-

posals will be enacted. Other forecasters make different assumptions. In 2014, the Administration expects growth to increase, while most other forecasters also look for an increase but to a lesser degree.

The Administration projects that still high levels of unemployment imply a few years of higher-than-normal growth as employment increases and real GDP makes up the lost ground. In the Blue Chip projections, real GDP growth exceeds its long-run average only briefly in the 11-year forecast period. CBO anticipates a stronger recovery than Blue Chip between 2015 and 2017—close to the Administration's projection—but projects a sharper decline in growth in the later years than the Administration, Blue Chip, or the FOMC. CBO assumes slower growth in productivity and potential GDP in the long-term and also assumes that actual GDP will remain below potential after the economy has completed its cyclical recovery. The high end of the FOMC's projections are about the same as the Administration's.

All economic forecasts are subject to error, and looking back, past forecast errors are generally much larger than the forecast differences discussed above. As discussed in a section later in this chapter, past forecast errors among the Administration, CBO, and the Blue Chip have been roughly similar.

Table 2-3. COMPARISON OF ECONOMIC ASSUMPTIONS
(Calendar years)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Nominal GDP:												
2015 Budget	16,768	17,544	18,454	19,432	20,460	21,459	22,445	23,454	24,484	25,551	26,664	27,826
CBO	16,769	17,472	18,357	19,329	20,281	21,180	22,097	23,035	23,998	25,000	26,036	27,095
Blue Chip	16,803	17,565	18,429	19,348	20,295	21,268	22,265	23,285	24,341	25,443	26,594	27,804
Real GDP (year-over-year):												
2015 Budget	1.7	3.1	3.4	3.3	3.2	2.8	2.5	2.4	2.3	2.3	2.3	2.3
CBO	1.7	2.7	3.3	3.4	3.0	2.4	2.3	2.2	2.2	2.1	2.1	2.0
Blue Chip	1.9	2.9	3.0	2.9	2.7	2.6	2.5	2.4	2.4	2.4	2.4	2.4
Real GDP (fourth-quarter-over-fourth-quarter):												
2015 Budget	2.3	3.3	3.4	3.3	3.2	2.6	2.5	2.4	2.3	2.3	2.3	2.3
CBO	2.1	3.1	3.4	3.4	2.7	2.4	2.3	2.2	2.2	2.1	2.1	2.0
Blue Chip	2.7	2.7	3.0	2.8	2.7	2.6	2.5	2.4	2.4	2.4	2.4	2.4
Federal Reserve Central Tendency	2.2 - 2.3	2.8 - 3.2	3.0 - 3.4	2.5 - 3.2								
GDP Price Index:¹												
2015 Budget	1.4	1.6	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
CBO	1.4	1.5	1.7	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Blue Chip	1.4	1.6	1.9	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Consumer Price Index (CPI-U):¹												
2015 Budget	1.4	1.6	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3
CBO	1.5	1.7	2.0	2.1	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Blue Chip	1.5	1.6	2.0	2.2	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3
Unemployment Rate:²												
2015 Budget	7.5	6.9	6.4	6.0	5.6	5.4	5.4	5.4	5.4	5.4	5.4	5.4
CBO	7.4	6.8	6.5	6.1	5.9	5.8	5.7	5.7	5.6	5.6	5.5	5.5
Blue Chip	7.4	6.6	6.1	6.1	5.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Federal Reserve Central Tendency ³	7.0 - 7.1	6.3 - 6.6	5.8 - 6.1	5.3 - 5.8								
Interest Rates:²												
91-Day Treasury Bills (discount basis):												
2015 Budget	0.1	0.1	0.3	1.2	2.3	3.2	3.6	3.7	3.7	3.7	3.7	3.7
CBO	0.1	0.2	0.4	1.8	3.3	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Blue Chip	0.1	0.1	0.5	2.0	3.0	3.4	3.5	3.6	3.6	3.6	3.6	3.6
10-Year Treasury Notes:												
2015 Budget	2.3	3.0	3.5	4.0	4.3	4.6	4.7	4.9	5.0	5.1	5.1	5.1
CBO	2.4	3.1	3.7	4.3	4.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Blue Chip	2.4	3.1	3.7	4.2	4.6	4.7	4.8	4.7	4.7	4.7	4.7	4.7

NA = Not Available

Sources: Administration; CBO, The Budget and Economic Outlook: Fiscal Years 2014 to 2024 October 2013 and February 2014 Blue Chip Economic Indicators, Aspen Publishers, Inc.; Federal Reserve Open Market Committee, December 18, 2013.

¹ Year-over-year percent change.

² Annual averages, percent.

³ Average of 4th quarter values.

Unemployment, Inflation, and Interest Rates.— The Administration forecasts unemployment falling steadily over the next few years to a level of 5.4 percent. In the long run, the FOMC, Blue Chip and CBO also show similar declines in the unemployment to about 5-1/2 percent which is about the average unemployment rate that prevailed in the 1990s and 2000s.

The Administration, CBO, and the Blue Chip Consensus anticipate a subdued rate of inflation over the next two years. In the medium term, inflation is projected to return to a rate of around two percent per year, which is consis-

tent with the Federal Reserve's long-run policy goal. All forecasts have interest rates increasing substantially in the long run to similar levels.

Sensitivity of the Budget to Economic Assumptions

Both receipts and outlays are affected by changes in economic conditions. Budget receipts vary with individual and corporate incomes, which respond to both real economic growth and inflation. At the same time, outlays for many Federal programs are directly linked to develop-

Table 2-4. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS

(Fiscal years; in billions of dollars)

Budget effect	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total of Effects, 2014-2024
Real Growth and Employment												
Budgetary effects of 1 percent lower real GDP growth:												
(1) For calendar year 2014 only, with real GDP recovery in 2015-16:												
Receipts	-17.3	-27.7	-12.9	-1.5	0.0	0.0	-0.0	-0.0	-0.1	-0.1	-0.2	-59.8
Outlays	4.5	10.8	5.7	1.8	2.4	3.0	3.2	3.3	3.4	3.5	3.7	45.2
Increase in deficit (+)	21.8	38.5	18.6	3.3	2.3	3.0	3.2	3.3	3.5	3.6	3.8	104.9
(2) For calendar year 2014 only, with no subsequent recovery:												
Receipts	-17.3	-36.9	-42.5	-45.3	-47.8	-50.5	-53.4	-56.5	-59.7	-63.1	-66.6	-539.6
Outlays	4.5	13.2	15.6	19.2	24.0	28.9	33.0	37.1	41.4	46.0	50.8	313.7
Increase in deficit (+)	21.8	50.1	58.1	64.5	71.8	79.4	86.4	93.5	101.2	109.1	117.4	853.3
(3) Sustained during 2014 - 2024, with no change in unemployment:												
Receipts	-17.5	-56.8	-106.0	-161.4	-221.5	-287.2	-358.6	-436.2	-520.3	-611.4	-709.2	-3,486.1
Outlays	-0.2	-0.5	0.1	3.5	11.1	22.1	34.4	48.5	65.4	85.3	109.0	378.8
Increase in deficit (+)	17.3	56.3	106.2	164.9	232.7	309.3	393.1	484.7	585.7	696.7	818.2	3,864.9
Inflation and Interest Rates												
Budgetary effects of 1 percentage point higher rate of:												
(4) Inflation and interest rates during calendar year 2014 only:												
Receipts	23.6	50.1	49.8	47.7	50.7	53.7	56.9	60.2	63.4	66.8	70.1	593.0
Outlays	22.9	41.6	36.3	36.6	35.4	35.6	33.8	33.7	32.8	32.7	31.7	373.1
Decrease in deficit (-)	-0.7	-8.5	-13.6	-11.1	-15.3	-18.1	-23.0	-26.4	-30.6	-34.1	-38.4	-219.9
(5) Inflation and interest rates, sustained during 2014 - 2024:												
Receipts	23.6	77.4	137.0	196.2	258.7	329.8	414.0	504.9	600.7	704.3	815.7	4,062.4
Outlays	20.8	70.3	114.7	157.8	197.3	240.7	283.2	326.4	373.3	413.8	450.4	2,648.8
Decrease in deficit (-)	-2.8	-7.0	-22.3	-38.3	-61.4	-89.1	-130.8	-178.5	-227.4	-290.5	-365.4	-1,413.6
(6) Interest rates only, sustained during 2014 - 2024:												
Receipts	6.1	20.7	32.2	36.8	39.0	43.1	52.7	61.0	66.4	70.9	74.4	503.4
Outlays	11.2	41.2	63.3	83.6	101.2	118.8	134.7	149.6	162.6	175.2	186.4	1,227.9
Increase in deficit (+)	5.1	20.5	31.1	46.7	62.2	75.8	82.0	88.6	96.2	104.3	111.9	724.5
(7) Inflation only, sustained during 2014 - 2024:												
Receipts	17.4	56.4	104.3	158.5	218.5	285.2	359.4	441.6	531.5	630.1	737.5	3,540.3
Outlays	9.6	29.4	52.2	75.8	98.8	126.5	155.5	186.6	224.1	256.3	287.2	1,502.1
Decrease in deficit (-)	-7.8	-27.0	-52.1	-82.6	-119.7	-158.7	-203.9	-254.9	-307.4	-373.7	-450.3	-2,038.2
Interest Cost of Higher Federal Borrowing												
(8) Outlay effect of \$100 billion increase in borrowing in 2014 ...	0.1	0.2	0.9	2.1	3.2	4.0	4.4	4.6	4.8	5.0	5.2	34.6

¹ The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.

ments in the economy. For example, most retirement and other social insurance benefit payments are tied by law to consumer price indices. Medicare and Medicaid outlays are affected directly by the price of medical services. Interest on the debt is linked to market interest rates and the size of the budget surplus or deficit, both of which in turn are influenced by economic conditions. Outlays for certain benefits such as unemployment compensation and the Supplemental Nutrition Assistance Program vary with the unemployment rate.

This sensitivity complicates budget planning because differences in economic assumptions lead to changes in

the budget projections. Economic forecasting inherently entails uncertainty. It is therefore useful to examine the implications of changes in key economic assumptions. Many of the budgetary effects of such changes are fairly predictable, and a set of general principles or “rules of thumb” embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the surplus or deficit. These rules of thumb should be understood as suggesting orders of magnitude; they do not account for potential secondary effects.

Table 2-5. FORECAST ERRORS, JANUARY 1982-PRESENT

REAL GDP ERRORS			
2-Year Average Annual Real GDP Growth	Admin.	CBO	Blue Chip
Mean Error	0.0	-0.2	-0.2
Mean Absolute Error	1.1	1.1	1.1
Root Mean Square Error	1.5	1.4	1.5
6-Year Average Annual Real GDP Growth			
Mean Error	0.2	-0.1	-0.1
Mean Absolute Error	0.9	0.9	0.9
Root Mean Square Error	1.1	1.2	1.1
INFLATION ERRORS			
2-Year Average Annual Change in the GDP Price Index	Admin.	CBO	Blue Chip
Mean Error	0.3	0.2	0.4
Mean Absolute Error	0.7	0.7	0.7
Root Mean Square Error	0.8	0.9	0.9
6-Year Average Annual Change in the GDP Price Index			
Mean Error	0.4	0.5	0.7
Mean Absolute Error	0.6	0.8	0.9
Root Mean Square Error	0.8	0.9	1.1
INTEREST RATE ERRORS			
2-Year Average 91-Day Treasury Bill Rate	Admin.	CBO	Blue Chip
Mean Error	0.3	0.4	0.6
Mean Absolute Error	1.0	0.9	1.0
Root Mean Square Error	1.2	1.1	1.3
6-Year Average 91-Day Treasury Bill Rate			
Mean Error	0.5	1.0	1.2
Mean Absolute Error	1.1	1.2	1.3
Root Mean Square Error	1.3	1.5	1.5

The rules of thumb show how the changes in economic variables affect Administration estimates for receipts and outlays, holding other factors constant. They are not a prediction of how receipts or outlays would actually turn out if the economic changes actually materialized. The rules of thumb are based on a fixed budget policy which does not account for how policymakers might change taxes and spending should the economic outlook change substantially. For example, unexpected downturns in real economic growth, and attendant job losses, usually give rise to legislative actions to stimulate the economy with additional countercyclical policies. Also, the rules of thumb do not reflect certain "technical" changes that often accompany the economic changes. For example, changes in capital gains realizations often accompany changes in the economic outlook. On the spending side of the budget, the rules of thumb do not capture changes in deposit insurance outlays, even though bank failures are generally associated with weak economic growth and rising unemployment.

Economic variables that affect the budget do not always change independently of one another. Output and employment tend to move together in the short run: a high rate of real GDP growth is generally associated with a declining rate of unemployment, while slow or negative growth is usually accompanied by rising unemployment, a relationship known as Okun's Law. In the long run, however, the rate of growth of real GDP reflects mainly

the rates of growth of productivity and the labor force, and is not associated with changes in the average rate of unemployment. Expected inflation and interest rates are also closely interrelated: a higher expected rate of inflation increases nominal interest rates, while lower expected inflation reduces them.

Changes in real GDP growth or inflation have a much greater cumulative effect on the budget if they are sustained for several years than if they last for only one year. However, even temporary changes can have lasting effects if they permanently raise or lower the level of the tax base or the level of Government spending. Moreover, temporary economic changes that affect the deficit or surplus change the level of the debt, affecting future interest payments. Highlights of the budgetary effects of these rules of thumb are shown in Table 2-4.

For real growth and employment:

- The first block shows the effect of a temporary reduction in real GDP growth by one percentage point sustained for one year, followed by a recovery of GDP to the base-case level (the Budget assumptions) over the ensuing two years. In this case, the unemployment rate is assumed to rise by one-half percentage point relative to the Budget assumptions by the end of the first year, then return to the base case rate

Table 2-6. BUDGET EFFECTS OF ALTERNATIVE SCENARIOS
(Fiscal years; in billions of dollars)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Alternative Budget Deficit Projections:											
Administration Economic Assumptions	649	564	531	458	413	503	512	504	530	482	434
percent of GDP	3.7%	3.1%	2.8%	2.3%	1.9%	2.3%	2.2%	2.1%	2.1%	1.8%	1.6%
Alternative Scenario 1	637	568	566	526	502	604	622	620	650	604	559
percent of GDP	3.7%	3.1%	3.0%	2.6%	2.4%	2.8%	2.7%	2.6%	2.6%	2.3%	2.1%
Alternative Scenario 2	626	531	499	428	377	448	435	399	391	303	211
percent of GDP	3.6%	2.9%	2.6%	2.1%	1.8%	2.0%	1.8%	1.6%	1.5%	1.1%	0.7%

over the ensuing two years. After real GDP and the unemployment rate have returned to their base case levels, most budget effects vanish except for persistent out-year interest costs associated with larger near-term deficits.

- The second block shows the effect of a reduction in real GDP growth by one percentage point sustained for one year, with no subsequent recoupment of the lost growth, accompanied by a permanent increase in the natural rate of unemployment (and of the actual unemployment rate) of one-half percentage point relative to the Budget assumptions. In this scenario, the level of GDP and taxable incomes are permanently lowered by the reduced growth rate in the first year. For that reason and because unemployment is permanently higher, the budget effects (including growing interest costs associated with larger deficits) continue to grow in each successive year.
- The budgetary effects are much larger if the growth rate of real GDP is permanently reduced by one percentage point even leaving the unemployment rate unchanged, as might result from a shock to productivity growth. These effects are shown in the third block. In this example, the cumulative increase in

the budget deficit is many times larger than the effects in the first and second blocks.

For inflation and interest rates:

- The fourth block shows the effect of a one percentage point higher rate of inflation and one percentage point higher nominal interest rates maintained for the first year only. In subsequent years, the price level and nominal GDP would both be one percentage point higher than in the base case, but interest rates and future inflation rates are assumed to return to their base case levels. Receipts increase by somewhat more than outlays. This is partly due to the fact that outlays for annually appropriated spending are assumed to remain constant when projected inflation changes. Despite the apparent implication of these estimates, inflation cannot be relied upon to lower the budget deficit, mainly because policymakers have traditionally prevented inflation from permanently eroding the real value of spending.
- In the fifth block, the rate of inflation and the level of nominal interest rates are higher by one percentage point in all years. As a result, the price level and nominal GDP rise by a cumulatively growing

Chart 2-3. Real GDP: Alternative Projections

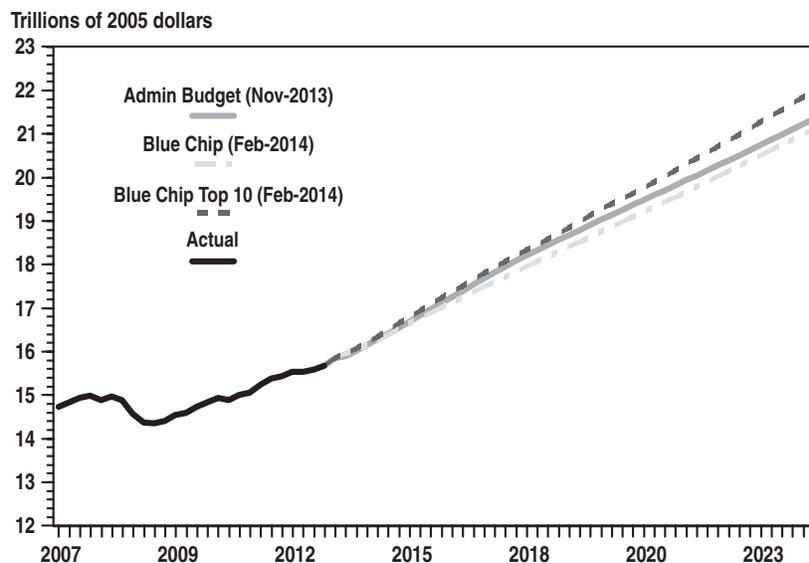
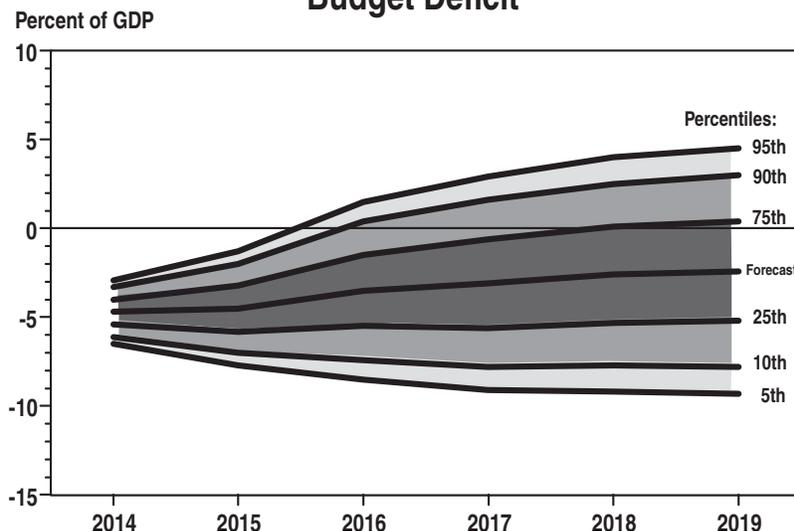


Chart 2-4. Range of Uncertainty for the Budget Deficit



percentage above their base levels. In this case, again the effect on receipts is more than the effect on outlays. As in the previous case, these results assume that annually appropriated spending remains fixed under the discretionary spending limits. Over the time period covered by the budget, leaving the discretionary limits unchanged would significantly erode the real value of this category of spending.

- The effects of a one percentage point increase in interest rates alone are shown in the sixth block. The outlay effect mainly reflects higher interest costs for Federal debt. The receipts portion of this rule-of-thumb is due to the Federal Reserve's deposit of earnings on its securities portfolio and the effect of interest rate changes on both individuals' income (and taxes) and financial corporations' profits (and taxes).
- The seventh block shows that a sustained one percentage point increase in inflation in the CPI and GDP price index decreases cumulative deficits substantially, due in part to the assumed erosion in the real value of appropriated spending. Note that the separate effects of higher inflation and higher interest rates shown in the sixth and seventh blocks do not sum to the effects for simultaneous changes in both shown in the fifth block. This is because the gains in budget receipts due to higher inflation result in higher debt service savings when interest rates are also assumed to be higher in the fifth block than when interest rates are assumed to be unchanged in the seventh block.
- The last entry in the table shows rules of thumb for the added interest cost associated with changes in

the budget deficit, holding interest rates and other economic assumptions constant.

The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table. The impact of a one percentage point lower rate of inflation or higher real growth would have about the same magnitude as the effects shown in the table, but with the opposite sign.

Forecast Errors for Growth, Inflation, and Interest Rates

As discussed in the previous section, the single most important variable that affects the accuracy of the budget projections is the forecast of the growth rate of real GDP. The rate of inflation and the level of interest rates also have substantial effects on the accuracy of projections. Table 2-5 shows errors in short- and long-term projections in past Administration forecasts, and compares these errors to those of CBO and the Blue Chip Consensus of private forecasts for real GDP, inflation and short-term interest rates.⁵

In the forecasts made since 1982, over a two-year horizon, the average error in projecting the annual real GDP growth rate was near zero for the Administration, but over a six-year horizon growth was slightly overestimated.

⁵ Two-year errors for real GDP and the GDP price index are the average annual errors in percentage points for year-over-year growth rates for the current year and budget year. For interest rates, the error is based on the average error for the level of the 91-day Treasury bill rate for the two-year and six-year period. Administration forecasts are from the budgets released starting in February 1982 (1983 Budget) and through February 2011 (2012 Budget), so that the last year included in the projections is 2012. The six-year forecasts are constructed similarly, but the last forecast used is from February 2007 (2008 Budget). CBO forecasts are from "The Budget and Economic Outlook" publications in January each year, and the Blue Chip forecasts are from their January projections.

Table 2-7. DIFFERENCES BETWEEN ESTIMATED AND ACTUAL SURPLUSES OR DEFICITS FOR FIVE-YEAR BUDGET ESTIMATES SINCE 1982
(Percent of GDP)

	Current year estimate	Budget year estimate	Estimate for budget year plus			
			One year (BY+1)	Two years (BY+2)	Three years (BY+3)	Four years (BY+4)
Average difference	0.6	-0.5	-1.4	-1.9	-2.4	-2.6
Average absolute difference	0.9	1.4	2.3	2.9	3.4	3.6
Standard deviation	1.0	1.9	2.7	3.1	3.3	3.2
Root Mean Squared Error	1.1	1.9	3.0	3.7	4.0	4.2

¹ A positive figure represents an overestimate of the deficit or an underestimate of the surplus.

² Average absolute difference is the difference without regard to sign.

Over both periods growth was slightly underestimated by the CBO and Blue Chip. Overall, the differences between the three forecasters were minor. The mean absolute error in the annual average growth rate was about 1.5 percentage point per year for all forecasters for two-year projections, and was about one-third smaller for all three for the six-year projections. The greater accuracy in the six-year projections could reflect a tendency of real GDP to revert at least partly to trend, though professional opinions on whether GDP growth is mean reverting are mixed. Another way to interpret the result is that it is hard to predict GDP around turning points in the business cycle, but somewhat easier to project the six-year growth rate based on assumptions about the labor force, productivity, and other supply-side factors that affect GDP.

Inflation, as measured by the GDP price index, was overestimated by all forecasters (with Blue Chip having the largest errors) for both the two-year and six-year projections, with larger errors for the six-year projections. This reflects the gradual disinflation over the 1980s and early 1990s, which was greater than most forecasters expected. Average errors for all three sets of forecasts since 1994 were close to zero (not shown).

The nominal interest rate on the 91-day Treasury bill was also overestimated by all three forecasters, with errors larger for the six-year time horizon. Again this reflects the secular decline in nominal interest rates over the past 30 years, reflecting lower inflation for most of the period, as well as a decline in real interest rates since 2000 resulting from weakness in the economy and Federal Reserve policy. The errors were somewhat less for the Administration than for CBO and the Blue Chip forecasts.

Alternative Scenarios

The rules of thumb described above can be used in combination to show the effect on the budget of alternative economic scenarios. Considering explicit alternative scenarios can also be useful in gauging some of the risks to the current budget projections. For example, the strength of the recovery over the next few years remains highly uncertain. Those possibilities are explored in the two al-

ternative scenarios presented in this section and shown in Chart 2-3.

The first alternative scenario assumes that real GDP growth and unemployment beginning in 2013:Q4 follow the projections in the February 2014 Blue Chip forecast for the period through the end of 2015, and are extended through 2024 from the semi-annual October 2013 Blue Chip report. In this case, after 2013, the level of GDP remains lower than the Administration's forecast throughout the projection period. This alternative includes a smaller real recovery from the loss of output during the 2008-2009 recession. Growth returns to normal, but without a substantial catch-up to make up for previous output losses.

The second alternative is the average of the highest 10 real GDP projections of the Blue Chip forecasters, also based on the February and October forecasts. This forecast is slightly higher than the Administration's forecast through 2017 with the high-10 Blue Chip growth exceeding the Administration's considerably in the out years.

Table 2-6 shows the budget effects of these alternative scenarios compared with the Administration's economic forecast. Under the first alternative, budget deficits are significantly higher in each year compared with the Administration's forecast. In the second alternative, the deficit is modestly higher than the Administration's projection in the near term, but results in a substantially lower deficit in the long run and cumulatively over 10 years.

Many other scenarios are possible, of course, but the point is that the most important influences on the budget projections beyond the next year or two are the rate at which GDP and employment recover from the recession.

Uncertainty and the Deficit Projections

The accuracy of the Administration's budget projections depends not only on the accuracy of economic projections, but also on technical factors and the differences between proposed policy and enacted legislation. Table 2-7 shows total deficit errors as a percentage of GDP for the current-year forecast in each year's budget as well as the errors for the budget-year and four following years. As expected, the size of the average absolute errors increases the far-

Table 2-8. THE STRUCTURAL BALANCE
(Fiscal years; in billions of dollars)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Unadjusted surplus (-) or deficit	459	1,413	1,293	1,300	1,087	680	649	564	531	458	413	503	512	504	530	482	434
Cyclical component	-41	283	404	399	363	389	373	314	224	127	49	12	-4	2	-2	0	-0
Structural surplus (-) or deficit	500	1,129	889	900	724	290	276	249	307	331	364	491	516	501	532	481	434
(Fiscal years; percent of Gross Domestic Product)																	
Unadjusted surplus (-) or deficit	3.1%	9.8%	8.7%	8.4%	6.8%	4.1%	3.7%	3.1%	2.8%	2.3%	1.9%	2.3%	2.2%	2.1%	2.1%	1.8%	1.6%
Cyclical component	-0.3%	2.0%	2.7%	2.6%	2.3%	2.3%	2.2%	1.7%	1.2%	0.6%	0.2%	0.1%	-0.0%	0.0%	-0.0%	0.0%	-0.0%
Structural surplus (-) or deficit	3.4%	7.8%	6.0%	5.9%	4.5%	1.7%	1.6%	1.4%	1.6%	1.6%	1.7%	2.2%	2.2%	2.1%	2.1%	1.8%	1.6%

NOTE: The NAIRU is assumed to be 5.4%.

ther ahead in the future for which the year the projection is made. Average errors have overestimated the current year's deficit, but have underestimated future years by increasing amounts. The error measures can be used to show a probabilistic range of uncertainty of what the range of deficit outcomes may be over the next five years relative to the Administration's deficit projection. Chart 2-4 shows this cone of uncertainty, which is constructed under the assumption that future forecast errors would be governed by the normal distribution with a mean of zero and standard error equal to the root mean squared error, as a percent of GDP, of past forecasts. The deficit is projected to be 2.3 percent of GDP in 2019, but has a 90 percent chance of being within a range of a surplus of 4.6 percent of GDP and a deficit of 9.1 percent of GDP.

Structural and Cyclical Deficits

As shown above, the budget deficit is highly sensitive to the business cycle. When the economy is operating below its potential and the unemployment rate exceeds the level consistent with stable inflation, receipts are lower, outlays are higher, and the deficit is larger than it would be otherwise. These features serve as "automatic stabilizers" for the economy by restraining output when the economy threatens to overheat and cushioning economic downturns. They also make it hard to judge the overall stance of fiscal policy simply by looking at the unadjusted budget deficit.

An alternative measure of the budget deficit is called the structural deficit. This measure provides a more useful perspective on the stance of fiscal policy than does the unadjusted budget deficit. The portion of the deficit traceable to the response of the automatic stabilizers to the effects of the business cycle is called the cyclical component. The remaining portion of the deficit is called the structural deficit. The structural deficit is a better gauge of the underlying stance of fiscal policy than the unadjusted deficit because it removes most of the effects of the business cycle. So, for example, the structural deficit would include fiscal policy changes such as the 2009 Recovery Act, but not the automatic changes in unemployment insurance or reduction in tax receipts that would have occurred without the Act.

Estimates of the structural deficit, shown in Table 2-8, are based on the historical relationship between changes in the unemployment rate and real GDP growth, as well

as relationships of unemployment and real GDP growth with receipts and outlays. These estimated relationships take account of the major cyclical changes in the economy and their effects on the budget, but they do not reflect all the possible cyclical effects on the budget, because economists have not been able to identify the cyclical factor in some of these other effects. For example, the sharp decline in the stock market in 2008 pulled down capital gains-related receipts and increased the deficit in 2009 and beyond. Some of this decline is cyclical in nature, but economists have not identified the cyclical component of the stock market with any precision, and for that reason, all of the stock market's effect on capital gains receipts is counted in the structural deficit.

Another factor that can affect the deficit and is related to the business cycle is labor force participation. Since the official unemployment rate does not include workers who have left the labor force, the conventional measures of potential GDP, incomes, and Government receipts understate the extent to which potential work hours are under-utilized because of a decline in labor force participation. The key unresolved question here is to what extent changes in labor force participation are cyclical and to what extent they are structural. By convention, in estimating the structural budget deficit, all changes in labor force participation are treated as structural.

There are also lags in the collection of tax revenue that can delay the impact of cyclical effects beyond the year in which they occur. The result is that even after the unemployment rate has fallen, receipts may remain cyclically depressed for some time until these lagged effects have dissipated. The recent recession added substantially to the estimated cyclical component of the deficit, but for all the reasons stated above, the cyclical component is probably understated. As the economy recovers, the cyclical deficit is projected to decline. After unemployment reaches 5.4 percent, the level assumed to be consistent with stable inflation, the estimated cyclical component vanishes, leaving only the structural deficit, although some lagged cyclical effects would arguably still be present.

Despite these limitations, the distinction between cyclical and structural deficits is helpful in understanding the path of fiscal policy. The large increase in the deficit in 2009 and 2010 is due to a combination of both components of the deficit. There was a large increase in the cyclical component because of the rise in unemployment. That is

what would be expected considering the severity of the recent recession. Finally, there was a large increase in the structural deficit because of the policy measures taken to combat the recession. This reflects the Government's decision to make active use of fiscal policy to lessen the severity of the recession and to hasten economic recov-

ery. Between 2014 and 2018, the cyclical component of the deficit is projected to decline sharply to near zero as the economy recovers at an above-trend rate of GDP growth. The structural deficit shrank by six percentage points between 2009 and 2013, reflecting the relatively sharp fiscal tightening measures taken during that period.