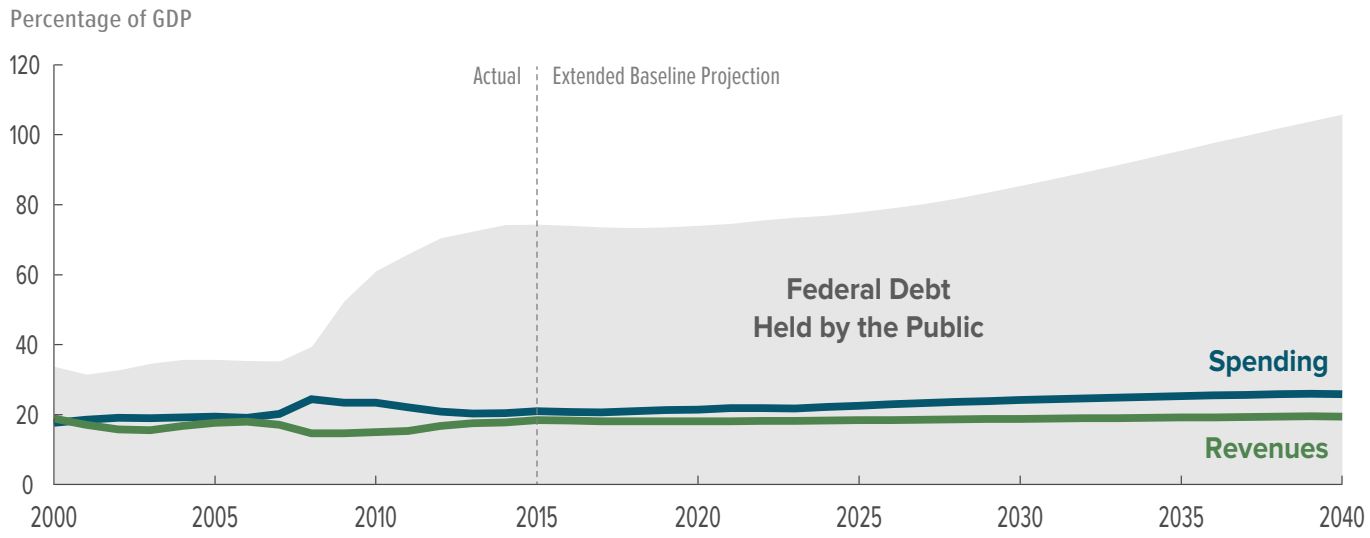
CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

CBO

The 2015 Long-Term Budget Outlook



If Lawmakers Aimed for Debt in 2040 to Equal . . .

Its 50-Year Average of **38%** of GDP. . .

2.6% of GDP, which is equal to a

14% ↑ Increase in **Revenues**

or

13% ↓ Cut in **Spending**

Its Current Level of **74%** of GDP. . .

1.1% of GDP, which is equal to a

6% ↑ Increase in **Revenues**

or

5½% ↓ Cut in **Spending**

How Much Would They Need to Increase Revenues or Reduce Noninterest Spending per Year?

JUNE 2015

Notes

Unless otherwise indicated, the years referred to in most of this report are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end. In Chapters 6 and 7, budgetary values, such as the ratio of debt or deficits to gross domestic product, are presented on a fiscal year basis, whereas economic variables, such as gross national product or interest rates, are presented on a calendar year basis.

Numbers in the text, tables, and figures of this report may not add up to totals because of rounding. Also, some values are expressed as fractions to indicate numbers rounded to amounts greater than a tenth of a percentage point.

As referred to in this report, the Affordable Care Act comprises the Patient Protection and Affordable Care Act and the health care provisions of the Health Care and Education Reconciliation Act of 2010, as affected by subsequent judicial decisions, statutory changes, and administrative actions.

The figure on the cover shows federal revenues, spending, and debt held by the public under CBO's extended baseline.

Additional data—including the data underlying the figures in this report, supplemental budget projections, and the demographic and economic variables underlying those projections—are posted along with the report on CBO's website.

Contents

Summary *1*

What Is the Outlook for the Budget in the Next 10 Years? *1*
What Is the Outlook for the Budget Through 2040? *2*
What Consequences Would a Large and Growing Federal Debt Have? *4*
What Effects Would Alternative Fiscal Policies Have? *4*
How Uncertain Are the Long-Term Budget Projections? *5*
What Choices Do Policymakers Have? *6*

1

The Long-Term Outlook for the Federal Budget *9*

The Budget Outlook for the Next 10 Years *9*
The Long-Term Budgetary Imbalance *10*
Consequences of a Large and Growing Federal Debt *16*
CBO's Approach to Producing Long-Term Projections *18*
Projected Spending Through 2040 *21*
BOX 1-1. CAUSES OF PROJECTED GROWTH IN FEDERAL SPENDING FOR THE MAJOR HEALTH CARE PROGRAMS AND SOCIAL SECURITY *24*
Projected Revenues Through 2040 *24*
Changes From Last Year's Long-Term Budget Outlook *26*

2

The Long-Term Outlook for Major Federal Health Care Programs *27*

Overview of Major Government Health Care Programs *28*
The Historical Growth of Health Care Spending *34*
Long-Term Responses to Rising Health Care Costs *37*
CBO's Method for Making Long-Term Projections of Federal Health Care Spending *40*
Long-Term Projections of Spending for the Major Health Care Programs *42*
BOX 2-1. NATIONAL SPENDING ON HEALTH CARE *44*

3

The Long-Term Outlook for Social Security *49*

How Social Security Works *49*
The Outlook for Social Security Spending and Revenues *51*

4

The Long-Term Outlook for Other Federal Noninterest Spending *57*

Other Federal Noninterest Spending Over the Past 50 Years *57*

Long-Term Projections of Other Federal Noninterest Spending *60*

5

The Long-Term Outlook for Federal Revenues *63*

Revenues Over the Past 50 Years *64*

Revenue Projections Under CBO's Extended Baseline *65*

Long-Term Implications for Tax Rates and the Tax Burden *68*

6

The Macroeconomic and Budgetary Effects of Various Fiscal Policies *73*

Long-Term Macroeconomic Effects of Federal Tax and Spending Policies *76*

Long-Term Effects of the Extended Baseline *79*

Long-Term Effects of an Alternative Fiscal Scenario *83*

Long-Term Effects of Two Illustrative Scenarios With Smaller Deficits *85*

Short-Term Macroeconomic Effects of the Three Additional Fiscal Scenarios *87*

7

The Uncertainty of Long-Term Budget Projections *91*

Long-Term Budgetary Effects of Changes in Mortality, Productivity, Interest Rates on Federal Debt, and Federal Spending on Medicare and Medicaid *92*

Other Sources of Uncertainty Related to Demographic, Economic, and Other Trends *104*

Potential Developments in the Economy and Their Effects on the Budget *104*

Implications of Uncertainty for the Design of Fiscal Policy *108*

A

CBO's Projections of Demographic, Economic, and Other Trends *111*

B

Changes in CBO's Long-Term Projections Since July 2014 *121*

List of Tables and Figures *126*

About This Document *128*

Summary

The long-term outlook for the federal budget has worsened dramatically over the past several years, in the wake of the 2007–2009 recession and slow recovery. Between 2008 and 2012, financial turmoil and a severe drop in economic activity, combined with various policies implemented in response to those conditions, sharply reduced federal revenues and increased spending. As a result, budget deficits rose: They totaled $5.6 trillion in those five years, and in four of the five years, they were larger relative to the size of the economy than they had been in any year since 1946. Because of the large deficits, federal debt held by the public soared, nearly doubling during the period. It is now equivalent to about 74 percent of the economy's annual output, or gross domestic product (GDP)—a higher percentage than at any point in U.S. history except a seven-year period around World War II.[1]

If current law remained generally unchanged in the future, federal debt held by the public would decline slightly relative to GDP over the next few years, the Congressional Budget Office projects. After that, however, growing budget deficits—caused mainly by the aging of the population and rising health care costs—would push debt back to, and then above, its current high level. The deficit would grow from less than 3 percent of GDP this year to more than 6 percent in 2040. At that point, 25 years from now, federal debt held by the public would exceed 100 percent of GDP.

Moreover, debt would still be on an upward path relative to the size of the economy. Consequently, the policy changes needed to reduce debt to any given amount would become larger and larger over time. The rising debt could not be sustained indefinitely; the government's creditors would eventually begin to doubt its ability to cut spending or raise revenues by enough to pay its debt obligations, forcing the government to pay much higher interest rates to borrow money.

What Is the Outlook for the Budget in the Next 10 Years?

The economy's gradual recovery from the recession, the waning budgetary effects of policies enacted in response to the weak economy, and other changes to tax and spending laws will cause the deficit to shrink in 2015 to its smallest percentage of GDP since 2007, CBO projects—2.7 percent, a much smaller percentage than the recent peak of nearly 10 percent in 2009.[2] Throughout the next decade, however, an aging population, rising health care costs per person, and an increasing number of recipients of exchange subsidies and Medicaid benefits attributable to the Affordable Care Act would push up spending for some of the largest federal programs if current laws governing those programs remained unchanged. Moreover, CBO expects interest rates to rebound in coming years from their current unusually low levels, raising the government's interest payments on debt.

1. When analyzing changes in spending, revenues, deficits, and debt, CBO usually measures those amounts relative to economic output. That approach automatically incorporates inflation and growth in population, output, and income, providing context for understanding the size of the government's activities at different points in time and their effects on the sustainability of the budget.

2. The projections in this report are consistent with CBO's March 2015 budget projections after adjustments are made to incorporate the effects of recently enacted legislation. The most important such adjustment was to incorporate the estimated effect of Public Law 114-10, the Medicare Access and CHIP [Children's Health Insurance Program] Reauthorization Act of 2015, which became law on April 16, 2015. For information on the March baseline budget projections, see Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973.

Budget deficits would not substantially increase at first, but eventually they would begin to rise. They would approach 4 percent of GDP toward the end of the 10-year period spanned by CBO's baseline budget projections, the agency anticipates. Deficits over the entire period would total about $7.4 trillion.

With deficits projected to remain close to their current percentage of GDP for the next few years, federal debt held by the public would remain at a very high level, between 73 percent and 74 percent of GDP, from 2016 through 2021. Thereafter, the larger deficits would boost debt—to 78 percent of GDP by the end of 2025.

What Is the Outlook for the Budget Through 2040?

To analyze the state of the budget in the long term, CBO has extrapolated its 10-year baseline projections through 2040, yielding a set of *extended* baseline projections that span a total of 25 years. (Both sets of projections generally incorporate the assumption that current law will not change.) Mainly because of the aging of the population and rising health care costs, the extended baseline projections show revenues that fall well short of spending over the long term, producing a substantial imbalance in the federal budget. As a result, budget deficits are projected to rise steadily and, by 2040, to raise federal debt held by the public to a percentage of GDP seen at only one previous time in U.S. history—the final year of World War II and the following year.

The harmful effects that such large debt would have on the economy would worsen the budget outlook. The projected increase in debt relative to the size of the economy, combined with a gradual increase in effective marginal tax rates (that is, the rates that would apply to an additional dollar of income), would make economic output lower and interest rates higher than CBO projected when producing the extended baseline. Those macroeconomic effects would, in turn, feed back into the budget, leading to lower federal revenues and higher interest payments on the debt. (The harm that growing debt would cause to the economy was not factored into CBO's detailed long-term budgetary projections, and it is generally not reflected in the discussion of the extended baseline elsewhere in this summary, but it is addressed in further analysis presented in Chapter 6.)

In the extended baseline projections, before those feedback effects are considered, federal spending rises from 20.5 percent of GDP this year to 25.3 percent of GDP by 2040 (see Summary Table 1). (Its average over the past 50 years has been 20.1 percent.) The projected increase reflects the following paths for various types of spending:

- Federal spending for Social Security and the government's major health care programs—Medicare, Medicaid, the Children's Health Insurance Program, and subsidies for health insurance purchased through the exchanges created by the Affordable Care Act—would rise sharply, to 14.2 percent of GDP by 2040, if current law remained generally unchanged. That percentage would be more than twice the 6.5 percent average seen over the past 50 years. The boost in spending is projected to occur because of the aging of the population; growth in per capita spending on health care; and, to a lesser extent, an increased number of recipients of exchange subsidies and Medicaid benefits attributable to the Affordable Care Act.

- The government's net outlays for interest would grow to 4.3 percent of GDP by 2040, CBO projects. That percentage would be higher than the 2.0 percent average of the past 50 years, because federal debt would be much larger.

- In contrast, other noninterest spending—that is, spending on everything other than Social Security, the major health care programs, and net interest—would decline to 6.9 percent of GDP by 2040, which would be well below the 11.6 percent average of the past 50 years.

Federal revenues would also increase relative to GDP under current law, but much more slowly than federal spending would. Revenues would equal 19.4 percent of GDP by 2040, CBO projects, which would be higher than the 50-year average of 17.4 percent. That increase would occur mainly because people's income grew more rapidly than inflation, pushing more income into higher tax brackets over time.[3]

3. One consequence is that individual income and payroll taxes as a share of income would grow for many households. For example, a married couple with two children earning the median income in 2014 and filing a joint tax return would have paid about 16 percent of their income in individual income and payroll taxes. Under current law, a similar couple earning the median income 25 years from now would pay about 19 percent of their income in individual income and payroll taxes.

Summary Table 1.

Key Projections Under CBO's Extended Baseline

Percentage of Gross Domestic Product

	2015	2025	2040
		Without Macroeconomic Feedback[a]	
Revenues			
Individual income taxes	8.4	9.5	10.4
Payroll taxes	5.9	5.7	5.7
Corporate income taxes	1.8	1.8	1.8
Other sources of revenues	1.7	1.2	1.5
Total Revenues	**17.7**	**18.3**	**19.4**
Spending			
Mandatory			
Social Security	4.9	5.7	6.2
Major health care programs[b]	5.2	6.1	8.0
Other mandatory programs	2.6	2.3	1.8
Subtotal	12.7	14.1	16.0
Discretionary	6.5	5.1	5.1
Net interest	1.3	3.0	4.3
Total Spending	**20.5**	**22.2**	**25.3**
Deficit	-2.7	-3.8	-5.9
Debt Held by the Public at the End of the Year	74	78	103
		With Macroeconomic Feedback	
Deficit	-2.7	-3.8	-6.6
Debt Held by the Public at the End of the Year	74	78	107
Memorandum:			
Social Security[a]			
Revenues[c]	4.4	4.3	4.3
Spending	4.9	5.7	6.2
Net increase (-) in deficit	-0.5	-1.4	-1.9
Medicare[a]			
Revenues[c]	1.5	1.6	1.7
Spending	3.5	4.4	6.3
Offsetting receipts	-0.5	-0.8	-1.2
Net increase (-) in deficit	-1.5	-2.0	-3.4
Tax Expenditures	8.1	n.a.	n.a.
Gross Domestic Product (Billions of dollars)[a]	18,016	27,456	50,800

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

n.a. = not available.

a. These projections do not reflect the macroeconomic feedback of the policies underlying the extended baseline after 2025. (For an analysis of those effects and their impact on debt, see Chapter 6.)

b. Net of offsetting receipts for Medicare.

c. Revenues include payroll taxes other than those paid by the federal government for federal employees, which are intragovernmental transactions. Revenues also include income taxes paid on Social Security benefits, which are credited to the trust funds.

By 2040, in CBO's projections that do not account for macroeconomic feedback effects, the deficit equals 5.9 percent of GDP, a higher percentage than in any year between 1947 and 2008. The resulting debt reaches 103 percent of GDP in 2040, more than in any year except 1945 and 1946.

Under the extended baseline with feedback effects included, CBO's estimate of the deficit in 2040 is higher—6.6 percent of GDP—and so is its estimate of federal debt held by the public: 107 percent of GDP.

What Consequences Would a Large and Growing Federal Debt Have?

How long the nation could sustain such growth in federal debt is impossible to predict with any confidence. At some point, investors would begin to doubt the government's willingness or ability to meet its debt obligations, requiring it to pay much higher interest costs in order to continue borrowing money. Such a fiscal crisis would present policymakers with extremely difficult choices and would probably have a substantial negative impact on the country. Unfortunately, there is no way to predict confidently whether or when such a fiscal crisis might occur in the United States. In particular, as the debt-to-GDP ratio rises, there is no identifiable point indicating that a crisis is likely or imminent. But all else being equal, the larger a government's debt, the greater the risk of a fiscal crisis.[4]

Even before a crisis occurred, the high and rising debt that CBO projects in the extended baseline would have macroeconomic effects with significant negative consequences for both the economy and the federal budget:

- The large amount of federal borrowing would draw money away from private investment in productive capital over the long term, because the portion of people's savings used to buy government securities would not be available to finance private investment. The result would be a smaller stock of capital, and therefore lower output and income, than would otherwise have been the case, all else being equal. (Despite those reductions, output and income per person, adjusted for inflation, would be higher in the future than they are now, thanks to the continued growth of productivity.)
- Federal spending on interest payments would rise, thus requiring the government to raise taxes, reduce spending for benefits and services, or both to achieve any targets that it might choose for budget deficits and debt.
- The large amount of debt would restrict policymakers' ability to use tax and spending policies to respond to unexpected challenges, such as economic downturns or financial crises. As a result, those challenges would tend to have larger negative effects on the economy and on people's well-being than they would otherwise. The large amount of debt could also compromise national security by constraining defense spending in times of international crisis or by limiting the country's ability to prepare for such a crisis.

What Effects Would Alternative Fiscal Policies Have?

Again, most of the projections in this report are based on the assumption that federal tax and spending policies will generally not differ from what current law specifies. (CBO makes that assumption not because it expects current law to remain the same, but because the budgetary and economic implications of current law are a useful benchmark for policymakers when they consider changing laws.) However, if tax and spending policies differed significantly from those specified in current law, budgetary and economic outcomes could differ significantly as well. To illustrate some possible differences, CBO analyzed the effects of three additional sets of fiscal policies: an extended alternative fiscal scenario, which would result in more debt than in the extended baseline; and two illustrative scenarios, which would result in less.

Under the extended alternative fiscal scenario, certain policies that are now in place but that are scheduled to change under current law are assumed to continue; some provisions of law that might be difficult to sustain for a long period are assumed to be modified; and federal revenues and certain kinds of federal spending are assumed to be maintained at or near their historical shares of GDP. If those changes to current law occurred, deficits (excluding interest payments) would be about $2 trillion higher over the next decade than they are in CBO's baseline; in subsequent years, such deficits would exceed those projected in the extended baseline by rapidly growing amounts. The harmful effects on the economy from the resulting increase in federal debt would be partly offset by the lower marginal tax rates that would be in place under

4. For further discussion, see Congressional Budget Office, *Federal Debt and the Risk of a Fiscal Crisis* (July 2010), www.cbo.gov/publication/21625.

the scenario. Nevertheless, in the long term, economic output would be lower and interest rates would be higher under the scenario than they would be if current law remained in place. After including the effects of those macroeconomic changes, CBO projects that federal debt held by the public would rise sharply—to about 175 percent of GDP in 2040.

Under the first of the two illustrative scenarios, budget deficits would be smaller than those projected under current law. Deficit reduction would be phased in so that deficits (excluding interest payments) would be a total of $2 trillion smaller through 2025 than they are in CBO's baseline; thereafter, deficits would be reduced each year by the same percentage of GDP by which they had been reduced in 2025. If that scenario occurred, output would be higher and interest rates would be lower in the long term than they would be if current law remained unchanged. Factoring in the effects of those macroeconomic changes on the budget, CBO projects that federal debt held by the public would equal about 72 percent of GDP in 2040, close to its percentage in 2013.

Under the other illustrative scenario, one with twice as much deficit reduction as in the previous scenario—a total decrease of $4 trillion in deficits (excluding interest payments) through 2025—CBO projects that federal debt held by the public would fall to 39 percent of GDP in 2040. That percentage would be close to the average ratio of debt to GDP over the past 50 years (38 percent). As in the preceding scenario, output would be higher and interest rates would be lower in the long term than they would be if current law did not change.

The fiscal policies in the three scenarios would also affect the economy in the short term, reflecting the short-term impact of tax and spending policies on the overall demand for goods and services. The first scenario, by making spending higher and taxes lower than they would be under current law, would increase demand and thereby raise output and employment over the next few years. By contrast, the deficit reduction that would take place under the other scenarios would decrease demand and thus reduce output and employment over the next few years.

How Uncertain Are the Long-Term Budget Projections?

Even if future tax and spending policies did not vary from what current law specifies, budgetary outcomes would undoubtedly differ from CBO's projections because of unexpected changes in the economy, demographics, and other factors.

To illustrate the uncertainty of its projections, CBO examined how varying its estimates of four factors—future mortality rates, productivity growth, interest rates on federal debt, and federal spending on Medicare and Medicaid—would affect the projections in a version of the extended baseline that included the macroeconomic effects of fiscal policies on the budget. In that version of the extended baseline, CBO's central estimate is that federal debt will equal 107 percent of GDP in 2040. The degree of variation in the four factors was based on their past variation as well as on possible future developments. For instance, during recent 25-year periods, beginning in the 1950–1974 period and ending in the 1990–2014 period, the average growth rate of total factor productivity—the average real output per unit of combined capital and labor—varied by about 1 percentage point. CBO therefore projected economic and budgetary outcomes if total factor productivity grew by 0.8 percent per year or by 1.8 percent per year over the next 25 years—that is, 0.5 percentage points more slowly or more quickly than the 1.3 percent projected for the extended baseline. The estimates show the following:

- In cases in which CBO varied only one of the four factors, federal debt held by the public after 25 years ranged from 18 percent of GDP below the agency's central estimate to 23 percent above it.

- In a case in which all four factors varied simultaneously in a way that raised projected deficits, but varied only 60 percent as much as in the individual cases just mentioned, federal debt after 25 years was projected to be about 37 percent of GDP higher than the agency's central estimate. Conversely, in a case in which all four factors varied in a way that lowered deficits but, again, by only 60 percent as much as in the individual cases, debt after 25 years was projected to be lower than CBO's central estimate by 31 percent of GDP.

Those calculations do not cover the full range of possible outcomes, nor do they address other sources of uncertainty in the budget projections, such as the risk of an economic depression or major war or the possibility of unexpected changes in birthrates, immigration, or labor force participation. Nonetheless, they show that the main implication of this report applies under a wide range of possible values for some key factors that influence federal spending and revenues. That is, in 25 years, if current law remained generally unchanged, federal debt—which is already high by historical standards—would probably be at least as high as it is today and would most likely be much higher.

What Choices Do Policymakers Have?

The unsustainable nature of the federal tax and spending policies specified in current law presents lawmakers and the public with difficult choices. Unless substantial changes were made to the major health care programs and Social Security, spending for those programs would equal a much larger percentage of GDP in the future than in the past. Federal spending as a whole would rise rapidly—even though, under current law, spending for all other federal benefits and services would make up a smaller percentage of GDP by 2025 than at any point in more than 70 years. Federal revenues would also represent a larger percentage of GDP in the future than they have, on average, in the past few decades. Even so, spending would soon start to exceed revenues by increasing amounts relative to GDP, generating rising budget deficits. As a result, federal debt held by the public would grow faster than the economy, starting a few years from now. Because debt is already unusually high relative to GDP, further sustained increases could be especially harmful to economic growth.

To put the federal budget on a sustainable path for the long term, lawmakers would have to make major changes to tax policies, spending policies, or both—by reducing spending for large benefit programs below the projected amounts, letting revenues rise more than they would under current law, or adopting some combination of those approaches. The size of such changes would depend on the amount of federal debt that lawmakers considered appropriate.

For instance, if lawmakers set a goal for 2040 of reducing debt held by the public to the average percentage of GDP seen over the past 50 years (38 percent), one approach would be to increase revenues and cut noninterest spending, relative to current law, by a total of 2.6 percent of GDP in each year beginning in 2016. That would come to about $480 billion, or $1,450 per person, in 2016 (see Summary Figure 1).[5] Many combinations of policies could be adopted to meet that goal, including the following:

- At one end of the spectrum, lawmakers could choose to reduce deficits solely by increasing revenues. Such a policy would require boosting revenues by 14 percent in each year over the 2016–2040 period relative to the amounts that CBO projects in the extended baseline. For households in the middle fifth of the income distribution in 2016, a 14 percent increase in all types of revenues would raise federal tax payments for that year by about $1,700, on average.

- At the other end of the spectrum, lawmakers could choose to reduce deficits solely by cutting noninterest spending, in which case they would have to make such spending 13 percent lower than projected in the extended baseline in each of the next 25 years. For example, a 13 percent cut would lower initial Social Security benefits by an average of about $2,400 for people in the middle fifth of the lifetime earnings distribution who were born in the 1950s and who claimed benefits at age 65.

Another goal might be to reduce debt in 2040 to its current percentage of GDP—74 percent. Meeting that goal would require increases in revenues and cuts in noninterest spending, relative to current law, totaling 1.1 percent of GDP in each year beginning in 2016.[6] Of course, other goals and other patterns for the timing of savings are possible as well.

In deciding how quickly to carry out policies to put federal debt on a sustainable path—regardless of the chosen goal for debt—lawmakers would face difficult trade-offs:

5. The estimated size of those policy changes does not account for the macroeconomic effects either of the particular policies that might be changed or of the reduction in debt.

6. The estimated size of those policy changes does not account for the macroeconomic effects of the particular policies that might be changed.

Summary Figure 1.

The Size of Policy Changes Needed Over 25 Years to Make Federal Debt Meet Two Possible Goals in 2040

Source: Congressional Budget Office.

Notes: The values shown in this figure are relative to CBO's extended baseline. The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period. The sizes of the policy changes do not account for the macroeconomic feedback of the policies that might be used to achieve the goals or, in the case of the goal to reduce debt to 38 percent of GDP, of the reduction in debt.

GDP = gross domestic product.

- The sooner significant deficit reduction was implemented, the smaller the government's accumulated debt would be; the smaller the policy changes would need to be to achieve the chosen goal; and the less uncertainty there would be about what policies might be adopted. However, precipitous spending cuts or tax increases would give people little time to plan and adjust to those policy changes, and the changes would weaken the economic expansion during the next two years or so—a period when the Federal Reserve would have little ability to lower short-term interest rates to boost the economy.

- Spending cuts or tax increases that were implemented several years from now would have a smaller negative effect on output and employment in the short term. However, waiting for some time before reducing spending or increasing taxes would result in a greater accumulation of debt, which would represent a greater drag on output and income in the long term and increase the size of the policy changes needed to reach the chosen target for debt.

CBO has estimated how much a delay in deficit reduction would increase the size of the policy changes needed to achieve a chosen goal for debt. If the goal was to reduce debt to its 50-year historical average by 2040, but lawmakers waited to implement new policies until 2021, the combination of increases in revenues and reductions in noninterest spending over the 2021–2040 period would need to equal 3.2 percent of GDP—0.6 percentage points more than if policy changes took effect in 2016. If lawmakers chose the same goal but postponed taking action until 2026, the necessary policy changes over the 2026–2040 period would amount to 4.2 percent of GDP.

Even if policy changes that shrank deficits in the long term were not implemented for several years, making decisions about them sooner rather than later could hold down longer-term interest rates, reduce uncertainty, and enhance businesses' and consumers' confidence. Such decisions could thereby make output and employment higher in the next few years than they would have been otherwise.

CHAPTER

1

The Long-Term Outlook for the Federal Budget

The Congressional Budget Office projects that the deficit will remain roughly stable as a share of the nation's output—its gross domestic product (GDP)—for the next several years if current laws remain generally unchanged. Federal debt held by the public also will be roughly stable relative to the size of the economy for several years, according to CBO's projections. However, the long-term budget outlook is projected to worsen.

The government's spending for major health care programs and for Social Security is a critical factor in that outlook. Such spending is expected to rise significantly from 2015 through 2040 because of a combination of three factors: the aging of the population; growth in per capita spending on health care; and, to a lesser extent, an increased number of recipients of exchange subsidies and Medicaid benefits attributable to the Affordable Care Act (ACA). That boost in spending is expected to exceed the decline in other noninterest spending relative to GDP over the same 25-year period. In addition, revenues are projected to increase, but more slowly than total noninterest spending. Higher interest payments and larger budget deficits would occur as a result, causing federal debt, which is already quite large relative to the size of the economy, to swell even more.

In this report, CBO presents its projections of federal outlays, revenues, deficits, and debt for the next few decades and discusses the possible consequences of the projected budgetary outcomes. The projections are consistent with CBO's current 10-year economic projections, which were released in January 2015, and the agency's March 2015 budget projections, with adjustments to incorporate the effects of recently enacted legislation.[1] CBO's long-term projections, which focus on the 25-year period ending in 2040, extend the baseline concept into later years; hence, they constitute what is called the *extended baseline*.

CBO's 10-year and extended baselines are meant to serve as benchmarks for assessing the budgetary effects of proposed changes in federal revenues or spending. They are not meant to be predictions of future budgetary outcomes; rather, they represent CBO's best assessment of future revenues, spending, and deficits if current law generally remained unchanged and the economy was generally stable in the long term. In that way, the baselines incorporate the assumption that some policy changes that lawmakers have routinely made in the past—such as extending certain expiring tax provisions—will not be made again.

The Budget Outlook for the Next 10 Years

The budget deficit is on track to fall in 2015 to its smallest percentage of economic output since 2007: CBO estimates that the deficit will be less than 3 percent of GDP, which is less than one-third of its peak of nearly 10 percent in 2009. That decline reflects the economy's gradual recovery from the 2007–2009 recession, the waning budgetary effects of policies enacted in response to the weak economy, and other changes to tax and spending policies. Debt held by the public will remain at about 74 percent

1. The most important adjustment to the March 2015 baseline was to incorporate the estimated effect of Public Law 114-10, the Medicare Access and CHIP [Children's Health Insurance Program] Reauthorization Act of 2015, which became law on April 16, 2015. See Congressional Budget Office, cost estimate for H.R. 2, the Medicare Access and CHIP Reauthorization Act of 2015 (March 25, 2015), www.cbo.gov/publication/50053. For information on the March baseline budget projections, see Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973. For information on the January 2015 economic projections, see Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), www.cbo.gov/publication/49892.

of GDP at the end of 2015—equal to its value in 2014, when it reached its highest level since 1950.

In those projections, a combination of the anticipated further strengthening of the economy and constraints on federal spending built into law keeps deficits close to their current percentage of GDP for the next several years. With deficits staying below 3 percent of GDP from 2015 through 2019, and then rising slowly thereafter, federal debt held by the public is projected to stay between 73 percent and 74 percent of GDP from 2015 through 2020.

Later in the 10-year baseline projection period, under current law, deficits would be notably larger, CBO anticipates. Interest rates are expected to rebound from their present unusually low levels, sharply increasing interest payments on the government's debt. Moreover, increased spending on the major health care programs and on Social Security is projected to cause mandatory spending to rise as a percentage of GDP.[2] In addition, revenues would grow relative to GDP for the next 10 years as an increase in individual income taxes was offset primarily by a decline in remittances from the Federal Reserve (all relative to the size of the economy). By 2025, under current law, the budget deficit would grow to nearly 4 percent of GDP; federal debt would equal 78 percent of GDP and would be on the rise relative to the size of the economy.

The Long-Term Budgetary Imbalance

The detailed long-term budget estimates that CBO presents in this and the following four chapters depend on projections of a host of demographic and economic conditions that the agency bases primarily on historical patterns. The estimates in these five chapters do not incorporate the long-term economic effects of changes in fiscal policies in the extended baseline; those effects are incorporated, however, in the estimates presented in Chapters 6 and 7. The demographic and economic projections that underlie the detailed long-term budget estimates are summarized later in this chapter and discussed in detail in Appendix A. (Appendix B offers a discussion of changes in CBO's projections since last year.)

CBO's extended baseline projections show a substantial imbalance in the federal budget over the long term, with revenues falling well short of spending. Two measures offer complementary perspectives on the size of that imbalance: Projections of federal debt illustrate how the shortfall in revenues relative to spending would accumulate over time under current law; and estimates of how much spending or revenues would need to be changed to achieve a chosen goal for federal debt illustrate the magnitude of the modifications in law that policymakers might consider.

In addition to its extended baseline, CBO has developed an *extended alternative fiscal scenario*, which incorporates the assumptions that certain policies that have been in place for a number of years will be continued, that some provisions of law that might be difficult to sustain for a long period will be modified, and that federal revenues and certain categories of federal spending will be maintained at or near their historical shares of GDP (see Chapter 6). Under that scenario, federal debt would grow even faster than it would under the extended baseline, so larger policy changes would be needed to reach any chosen fiscal target.

The Accumulation of Federal Debt

Debt held by the public represents the amount that the federal government has borrowed in financial markets, by issuing Treasury securities, to pay for its operations and activities.[3] If a given combination of federal spending and revenues is to be sustainable over time, debt held by the public eventually must grow no faster than the economy

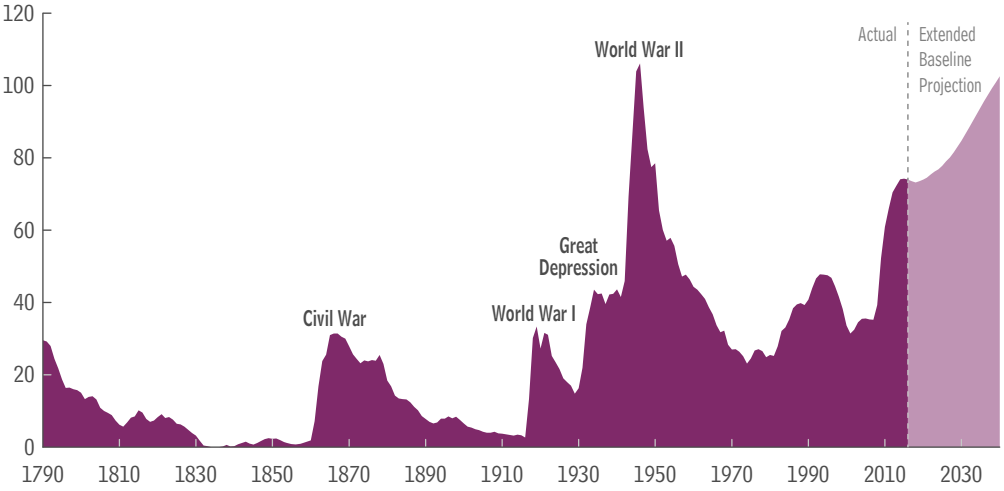
2. Lawmakers generally determine spending for mandatory programs by setting eligibility rules, benefit formulas, and other parameters rather than by appropriating specific amounts each year. In that way, mandatory spending differs from discretionary spending, which is controlled by annual appropriation acts.

3. When the federal government borrows in financial markets, it competes with other participants for financial resources and, in the long term, crowds out private investment, reducing economic output and income. In contrast, federal debt held by trust funds and other government accounts represents internal transactions of the government and has no direct effect on financial markets. (That debt and debt held by the public together make up gross federal debt.) For more discussion, see Congressional Budget Office, *Federal Debt and Interest Costs* (December 2010), www.cbo.gov/publication/21960. Several factors not directly included in the budget totals also affect the government's need to borrow from the public. They include increases or decreases in the government's cash balance as well as the cash flows reflected in the financing accounts used for federal credit programs.

Figure 1-1.

Federal Debt Held by the Public

Percentage of Gross Domestic Product



The historically high and rising amounts of federal debt that CBO projects would have significant negative consequences, including reducing the total amounts of national saving and income in the long term; increasing the government's interest payments, thereby putting more pressure on the rest of the budget; limiting lawmakers' flexibility to respond to unforeseen events; and increasing the likelihood of a fiscal crisis.

Source: Congressional Budget Office. For details about the sources of data used for past debt held by the public, see Congressional Budget Office, *Historical Data on Federal Debt Held by the Public* (July 2010), www.cbo.gov/publication/21728.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period. These projections do not reflect the macroeconomic feedback of the policies underlying the extended baseline. (For an analysis of those effects and their impact on debt, see Chapter 6.)

does. If debt continued to rise relative to GDP, at some point investors would begin to doubt the government's willingness or ability to repay its obligations. Such doubts would make it more expensive for the government to borrow money, thus necessitating cuts in spending, increases in taxes, or some combination of those two approaches. For that reason, the amount of federal debt held by the public relative to the nation's annual economic output is an important barometer of the government's financial position.

Measuring debt as a percentage of GDP is particularly useful when making comparisons between amounts of debt in different years. That measure accounts for changes in price levels, population, output, and income—all of which affect the scope of potential budgetary adjustments. Examining whether debt as a percentage of GDP is increasing over time from its current high level is therefore a simple and meaningful way to assess the sustainability of the budget.

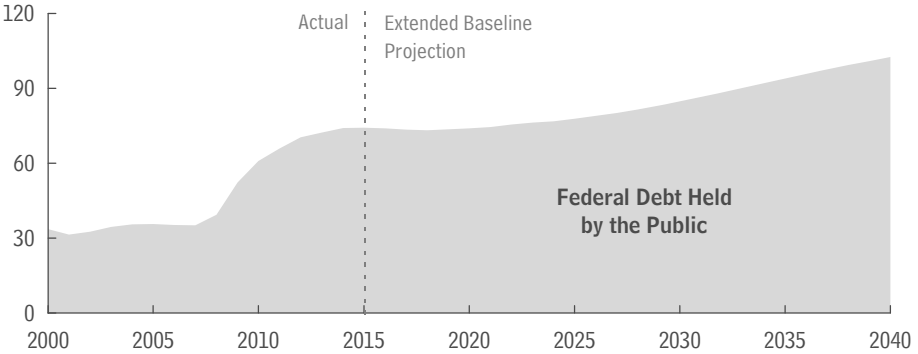
At the end of 2008, federal debt held by the public stood at 39 percent of GDP, which was close to its average of the preceding several decades. Since then, large deficits have caused debt held by the public to grow sharply—to 74 percent of GDP in 2014; debt is projected to stay at that level in 2015. Debt has exceeded 70 percent of GDP during only one other period in U.S. history: from 1944 through 1950; it peaked at 106 percent of GDP in 1946 because of the surge in federal spending that occurred during World War II (see Figure 1-1).

CBO projects that, as a share of GDP, debt held by the public will exceed its current level in 2021 and then keep rising if existing laws remain unchanged. By 2040, under the extended baseline, federal debt held by the public would reach 103 percent of GDP, even without accounting for the harmful economic effects of the growing debt (see Figure 1-2)—nearly the same percentage as that recorded in 1945 (104 percent) and in 1946 (106 percent) and more than two and a half times the average percentage during the past several decades. Incorporating the negative economic effects of higher debt pushes the projected debt up to 107 percent of GDP in 2040 (see Chapter 6). Moreover, the debt would be on an upward trajectory, which ultimately would be unsustainable.

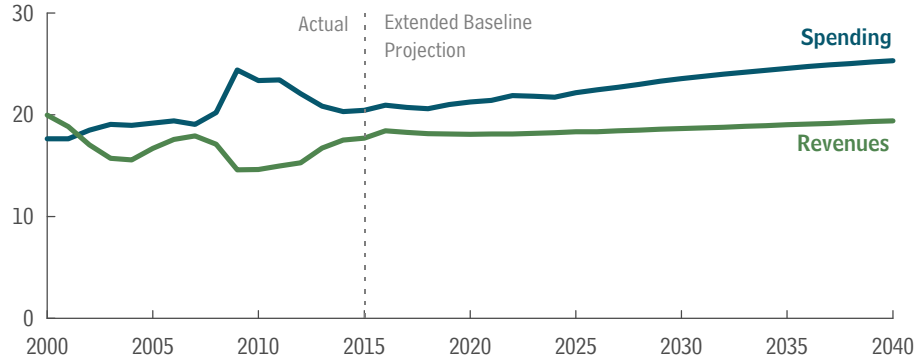
Figure 1-2.

Federal Debt, Spending, and Revenues

Percentage of Gross Domestic Product



Deficits and **debt held by the public** will remain roughly stable in the near term, reflecting the anticipated further strengthening of the economy and constraints on federal spending built into law. But the long-term outlook for the budget is projected to worsen . . .



. . . as growth in **total spending** would outpace growth in **total revenues**, resulting in larger budget deficits and debt if current laws remained generally unchanged.

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period. These projections do not reflect the macroeconomic feedback of the policies underlying the extended baseline. (For an analysis of those effects and their impact on debt, see Chapter 6.)

GDP = gross domestic product.

Continued

Projections so far into the future are highly uncertain, of course. Nevertheless, under a wide range of possible expectations about key factors affecting budgetary outcomes, CBO anticipates that if current laws generally stayed the same, federal debt in 2040 would be very high by the nation's historical standards (see Chapter 7).

The Magnitude and Timing of Policy Changes Needed to Meet Various Goals for Federal Debt

An alternative perspective on the long-term fiscal imbalance comes from assessing the changes in revenues or noninterest spending that would be needed to achieve a chosen goal for federal debt. One possible goal would be to try to ensure that federal debt remained the same percentage of GDP in some future year that it is today. Another would be to attempt to make federal debt the same percentage of GDP in some future year that it has been, on average, during the past several decades. Other goals are possible as well.

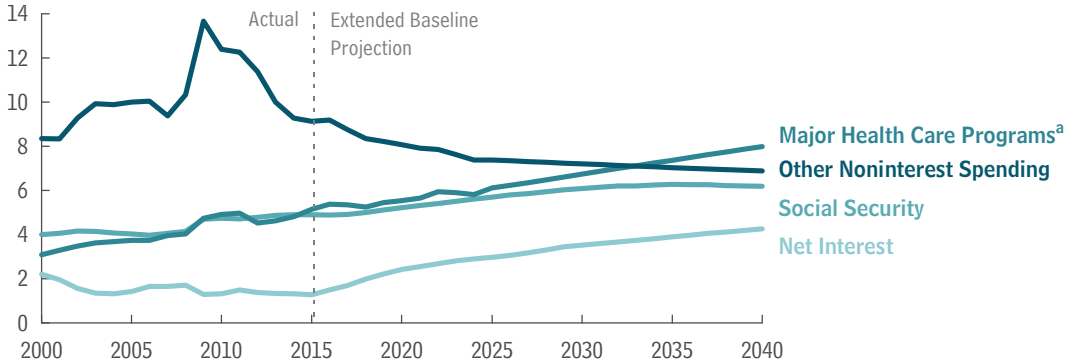
The changes in revenues or noninterest spending that are estimated to be necessary to achieve one of those goals are conceptually similar to the estimated actuarial imbalance—that is, a negative actuarial balance—that is commonly reported for the Social Security trust funds (see Table 3-1 on page 54). An estimated actuarial imbalance for a trust fund over a given period represents the changes in revenues or spending that would be needed to achieve the target balance for the trust funds if those changes were enacted immediately and maintained throughout the period. A similar calculation for the

Figure 1-2. **Continued**

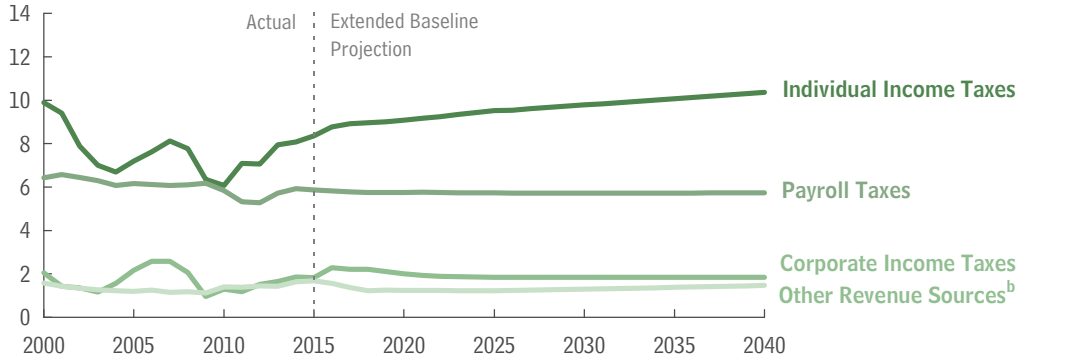
Federal Debt, Spending, and Revenues

Percentage of Gross Domestic Product

Growth in certain **components of spending**—the major health care programs and Social Security—is expected to exceed the decline in other noninterest spending relative to GDP. Net interest costs will also grow, as interest rates rebound . . .



. . . and as revenues grow only slightly more rapidly than GDP. A boost in one of the **sources of revenues**—individual income taxes—accounts for the rise in total revenues; receipts from all other sources, taken together, are projected to decline.



a. Consists of spending on Medicare (net of offsetting receipts), Medicaid, the Children's Health Insurance Program, and subsidies offered through health insurance exchanges.

b. Consists of excise taxes, remittances to the Treasury from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

federal government as a whole is one way to summarize the projected fiscal imbalance over a specified period.

The magnitude of the policy changes that would be needed to achieve a chosen goal for federal debt would depend, in part, on how quickly that goal was expected to be reached. Determining the timing of policy changes involves various trade-offs, including the economic effects of those changes and the burdens borne by different generations.

The Magnitude of Policy Changes Needed to Meet Various Goals. The scale of the changes in noninterest spending or revenues that would be needed to ensure that federal debt equaled its current percentage of GDP at a specific date in the future is often referred to as the fiscal gap.[4] In CBO's extended baseline, the fiscal gap for the 2016–2040 period amounts to 1.1 percent of GDP (without accounting for the economic effects of the policy changes that might be used to close the gap). That is, relative to the extended baseline, a combination of cuts in noninterest spending and increases in revenues that equaled 1.1 percent of GDP in each year beginning in 2016—amounting to about $210 billion in that year or

4. The fiscal gap equals the present value of noninterest outlays and other means of financing minus the present value of revenues over the projected period with adjustments to make the ratio of federal debt to GDP at the end of the period equal to the current ratio. Specifically, current debt is added to the present value of outlays and other means of financing, and the present value of the target end-of-period debt (which equals GDP in the last year of the period multiplied by the ratio of debt to GDP at the end of 2015) is added to the present value of revenues. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars. Other means of financing include changes in the government's cash balances and the cash flows of federal credit programs (mostly programs that provide loans and loan guarantees).

$650 per person—would result in debt in 2040 that would equal 74 percent of GDP, or the same percentage of GDP in 25 years that it equals now. If those changes came entirely from revenues or entirely from spending, they would amount, roughly, to a 6 percent increase in revenues or a 5½ percent cut in noninterest spending relative to the amounts projected for the 2016–2040 period.

Increases in revenues or reductions in noninterest spending would need to be larger to reduce debt to the percentages of GDP that are more typical of those in recent decades. For debt as a share of GDP to return to its average percentage over the past 50 years—38 percent—by 2040, the government would need to pursue a combination of increases in revenues and cuts in noninterest spending (relative to current-law projections) that totaled 2.6 percent of GDP each year. (Those increases and cuts would not account for the economic effects of the reduction in debt and the policy changes that might be used to achieve the goal; in 2016, 2.6 percent of GDP would be about $480 billion or $1,450 per person.)[5] Many combinations of policies could be adopted to meet that goal, including the following:

- If those changes came from increases of equal percentage in all types of revenues, they would represent an increase of about 14 percent, under the extended baseline, for each year in the 2016–2040 period. For households in the middle fifth of the income distribution in 2016, for example, such an increase would raise annual federal tax payments by about $1,700, on average.

- If the changes came from cuts of equal percentage in all types of noninterest spending, they would represent a cut of about 13 percent for each of the next 25 years. For example, people in the middle fifth of the lifetime earnings distribution who were born in the 1950s and who claimed benefits at age 65 would have their initial annual Social Security benefits lowered by about $2,400, on average, by such a cut.

The Timing of Policy Changes Needed to Meet Various Goals. In deciding how quickly to implement policies to put federal debt on a sustainable path—regardless of the chosen goal for federal debt—lawmakers face trade-offs:

- The sooner significant deficit reduction was implemented, the smaller the government's accumulated debt would be, the smaller the policy changes would need to be to achieve a particular long-term outcome, and the less uncertainty there would be about what policies would be adopted. However, if lawmakers implemented spending cuts or tax increases quickly, people would have little time to plan and adjust to the policy changes, and those changes would weaken the economic expansion over the next two years or so.

- By contrast, reductions in federal spending or increases in taxes that were implemented several years from now would have a smaller effect on output and employment in the short term. However, if lawmakers waited for some time before reducing federal spending or increasing taxes, the result would be a greater accumulation of debt, which would represent a greater drag on output and income in the long term and would increase the size of the policy changes needed to reach any chosen target for debt.

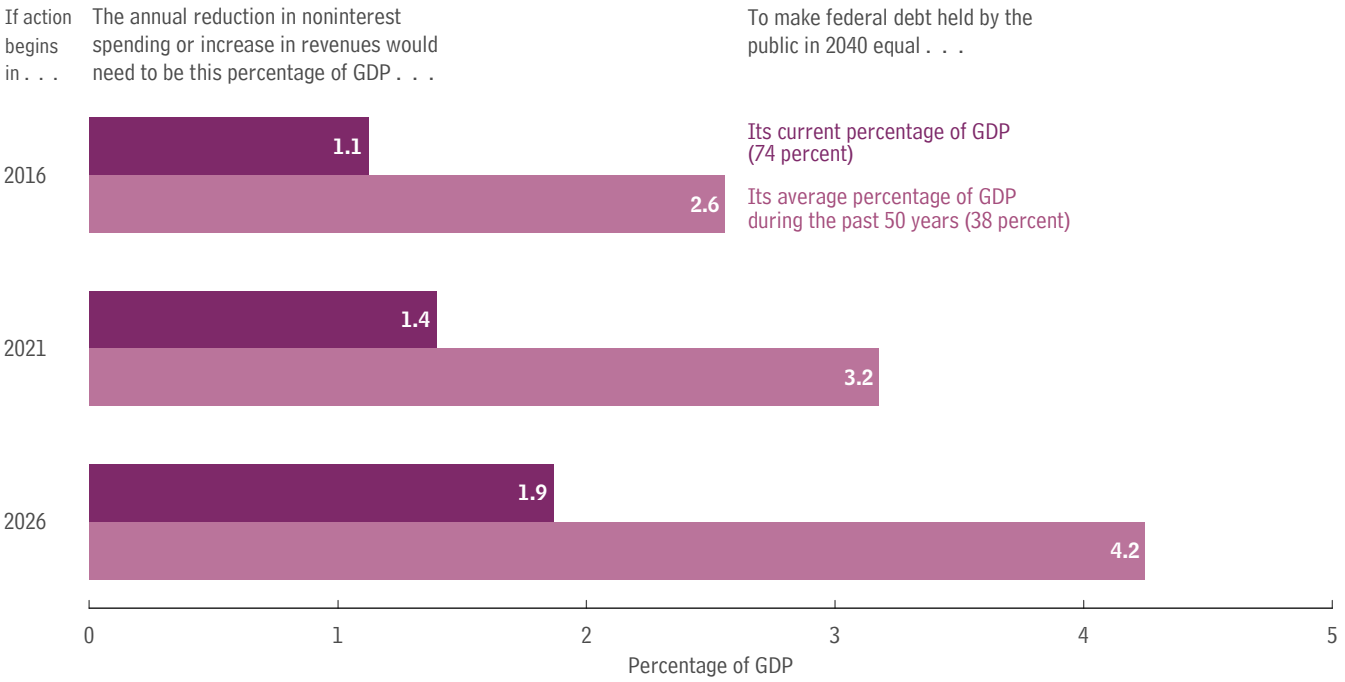
In addition, faster or slower implementation of policies to reduce budget deficits would tend to impose different burdens on different generations: Reducing deficits sooner would probably require more sacrifices by today's older workers and retirees for the benefit of today's younger workers and future generations. Reducing deficits later would require smaller sacrifices by older people and greater sacrifices by younger workers and future generations.

CBO has tried to illustrate that collection of trade-offs in three ways. First, the agency has estimated the macroeconomic consequences of several paths for federal debt in both the short term and the longer term. For example, it has analyzed the effects of phasing in deficit reduction so that, excluding interest payments, deficits would be $2 trillion lower through 2025 than under the baseline and, in subsequent years, would be reduced by the same percentage of GDP as in 2025. Under that scenario, CBO estimates, economic output would be slightly lower over the next few years but about 3 percent higher in

5. That figure is calculated in the same manner as the fiscal gap except that it uses a different target for end-of-period debt.

Figure 1-3.

The Magnitude and Timing of Policy Changes Needed to Make Federal Debt Meet Two Goals



Source: Congressional Budget Office.

Note: GDP = gross domestic product.

2040 than if current laws generally remained in effect. Those results and corresponding results for other scenarios are discussed in Chapter 6.

Second, CBO has estimated the amount by which delaying deficit reduction would increase the size of the policy adjustments needed to achieve any chosen goal for debt. For example, if the goal of lawmakers was for debt as a percentage of GDP to return to its historical average, but policy changes did not take effect until 2021, those changes would need to amount to 3.2 percent rather than 2.6 percent of GDP (see Figure 1-3). Waiting an additional five years would require even larger changes, amounting to 4.2 percent of GDP.

Third, CBO has studied how waiting to resolve the long-term fiscal imbalance would affect various generations of the U.S. population. In 2010, CBO compared economic outcomes under a policy that would stabilize the debt-to-GDP ratio starting in 2015 with outcomes under a policy that would delay stabilizing the ratio until 2025.[6] That analysis suggested that generations born after the earlier implementation date would be worse off if action to stabilize the debt-to-GDP ratio was postponed an additional 10 years. People born more than 25 years before that earlier implementation date, however, would be better off if action was delayed—largely because they would partly or entirely avoid the policy changes needed to stabilize the debt. Generations born between those two groups could either gain or lose from delayed action, depending on the details of the policy changes.[7]

Even if policy changes to reduce deficits in the long term were not implemented for several years, making decisions about them sooner rather than later would offer significant advantages. If decisions were reached sooner, people would have more time to plan and adjust their behavior to be prepared for the time when changes would be

6. See Congressional Budget Office, *Economic Impacts of Waiting to Resolve the Long-Term Budget Imbalance* (December 2010), www.cbo.gov/publication/21959. That analysis was based on a projection of slower growth in debt than CBO now projects, so the estimated effects of a similar policy today would be close, but not identical, to the effects estimated in that earlier analysis.

7. Those conclusions do not incorporate the possible negative effects of a fiscal crisis or effects that might arise from the government's reduced flexibility to respond to unexpected challenges.

implemented. In addition, decisions about policy changes that reduced future debt relative to amounts under current law would tend to increase output and employment in the next few years by holding down longer-term interest rates, reducing uncertainty, and enhancing businesses' and consumers' confidence.

Budgetary Imbalances Beyond the Next 25 Years

After 2040, the pressures of rising federal budget deficits and debt held by the public would increase further unless laws governing taxes and spending were changed. Although projections for the very long term are highly uncertain, CBO estimates that debt held by the public would be much larger relative to GDP after 75 years than it would be after 25 years. For information on CBO's projections for the very long term, see the supplemental material accompanying this report on the agency's website (www.cbo.gov/publication/50250).

Consequences of a Large and Growing Federal Debt

The high and rising amounts of federal debt held by the public that CBO projects for the coming decades under the extended baseline would have significant negative consequences for the economy in the long term and would impose significant constraints on future budget policy. In particular, the projected amounts of debt would reduce the total amounts of national saving and income in the long term; increase the government's interest payments, thereby putting more pressure on the rest of the budget; limit lawmakers' flexibility to respond to unforeseen events; and increase the likelihood of a fiscal crisis.

Less National Saving and Lower Income

Large federal budget deficits over the long term would reduce investment, resulting in lower national income and higher interest rates than would otherwise occur. Increased government borrowing would cause a larger share of the savings potentially available for investment to be used for purchasing government securities, such as Treasury bonds. Those purchases would crowd out investment in capital goods—factories and computers, for example—which would make workers less productive. Because wages are determined mainly by workers' productivity, the reduction in investment would reduce wages as well, lessening people's incentive to work. Both the government and private borrowers would face higher interest rates to compete for savings, and those rates would strengthen people's incentive to save. However, the rise in saving by households and businesses would be a good deal smaller than the increase in federal borrowing represented by the change in the deficit, so national saving—total saving by all sectors of the economy—would decline, as would private investment. (For a detailed analysis of those economic effects, see Chapter 6.)

In the short term, budget deficits would boost overall demand for goods and services, thus increasing output and employment relative to what they would be with smaller deficits or with no deficits at all. The impact of greater demand would be temporary, though, because stabilizing forces in the economy tend to push output back in the direction of its potential (or maximum sustainable) level. Those forces would include the response of prices and longer-term interest rates to greater demand and actions by the Federal Reserve.

Pressure for Larger Tax Increases or Spending Cuts

When the federal debt is large, the government ordinarily must make substantial interest payments to its lenders, and growth in the debt causes those interest payments to increase. (Net interest payments are currently fairly small relative to the size of the economy because interest rates are exceptionally low, but CBO anticipates that those payments will increase considerably as interest rates rise to their long-term levels.)

With rising debt and more normal interest rates, federal spending on interest payments would rise, thus requiring higher taxes, lower spending for benefits and services, or both to achieve any chosen targets for budget deficits and debt. If taxes were increased by raising marginal tax rates (the rates that apply to an additional dollar of income), those higher rates would discourage people from working and saving, thus further reducing output and income. Alternatively, lawmakers could choose to offset higher interest costs at least in part by reducing government benefits and services. Those reductions could be made in many ways, but to the extent that they came from cutting federal investments, future output and income also would be reduced. As another option, lawmakers could respond to higher interest payments by allowing deficits to increase for some period, but that approach would require greater deficit reduction later if lawmakers wanted to avoid a long-term increase in the debt-to-GDP ratio.

Reduced Ability to Respond to Domestic and International Problems

When the amount of outstanding debt is relatively small, a government can borrow money to address significant unexpected events—recessions, financial crises, or wars, for example. In contrast, when outstanding debt is large, a government has less flexibility to address financial and economic crises, which can be very costly for many countries.[8] A large amount of debt also can compromise a country's national security by constraining military spending in times of international crisis or by limiting the country's ability to prepare for such a crisis.

Several years ago, when federal debt was below 40 percent of GDP, the government had some flexibility to respond to the financial crisis and severe recession by increasing spending and cutting taxes to stimulate economic activity, providing public funding to stabilize the financial sector, and continuing to pay for other programs even as tax revenues dropped sharply because of the decline in output and income. As a result, federal debt almost doubled as a percentage of GDP. If federal debt stayed at its current percentage of GDP or increased further, the government would find it more difficult to undertake similar policies under similar conditions in the future. As a result, future recessions and financial crises could have larger negative effects on the economy and on people's well-being. Moreover, the reduced financial flexibility and increased dependence on foreign investors that accompany high and rising debt could weaken U.S. leadership in the international arena.

Greater Chance of a Fiscal Crisis

A large and continuously growing federal debt would have another significant negative consequence: It would increase the likelihood of a fiscal crisis in the United States.[9] Specifically, there would be a greater risk that investors would become unwilling to finance the government's borrowing needs unless they were compensated with very high interest rates; as a result, interest rates on federal debt would rise suddenly and sharply relative to rates of return on other assets. That increase in interest rates would reduce the market value of outstanding government bonds, causing losses for investors and perhaps precipitating a broader financial crisis by creating losses for mutual funds, pension funds, insurance companies, banks, and other holders of government debt—losses that might be large enough to cause some financial institutions to fail. A fiscal crisis can also make private-sector borrowing more expensive because uncertainty about the government's responses can reduce confidence in the viability of private-sector enterprises. Higher private-sector interest rates, when combined with reduced government spending and increased taxes, have tended to worsen economic conditions in the short term.

Unfortunately, predicting with any confidence whether or when such a fiscal crisis might occur in the United States is not possible. In particular, there is no identifiable tipping point in the debt-to-GDP ratio to indicate that a crisis is likely or imminent. All else being equal, however, the larger a government's debt, the greater the risk of a fiscal crisis.

The likelihood of such a crisis also depends on economic conditions. If investors expect continued economic growth, they are generally less concerned about the government's debt burden; conversely, substantial debt can reinforce more generalized concern about an economy. Thus, in many cases around the world, fiscal crises have begun during recessions—and, in turn, have exacerbated them. In some instances, a crisis has been triggered by news that a government would need to borrow an unexpectedly large amount of money. Then, as investors lost confidence and interest rates spiked, borrowing became more expensive for the government.

If a fiscal crisis were to occur in the United States, policymakers would have only limited—and unattractive—options for responding. In particular, the government would need to undertake some combination of three approaches: restructure the debt (that is, seek to modify the contractual terms of existing obligations), pursue an inflationary monetary policy, and adopt an austerity program of spending cuts and tax increases. Thus, such a crisis would confront policymakers with extremely difficult choices and probably have a significantly negative effect on the country.

8. 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, http://tinyurl.com/ml9kchv; and Carmen M. Reinhart and Vincent R. Reinhart, "After the Fall," *Macroeconomic Challenges: The Decade Ahead* (Federal Reserve Bank of Kansas City, 2010), http://tinyurl.com/lntnp6j (PDF, 1.6 MB). Also see Luc Laeven and Fabian Valencia, *Systemic Banking Crises Database: An Update,* Working Paper 12-163 (International Monetary Fund, June 2012), http://tinyurl.com/p2clvmy.

9. For additional discussion, see Congressional Budget Office, *Federal Debt and the Risk of a Fiscal Crisis* (July 2010), www.cbo.gov/publication/21625.

CBO's Approach to Producing Long-Term Projections

Under the extended baseline, CBO's assumptions about policies governing federal spending and revenues generally reflect current law, incorporating the same assumptions underlying the agency's 10-year baseline through 2025 and then extending the baseline concept to later years. To formulate its extended baseline, CBO projects demographic and economic conditions for the decades ahead and develops assumptions about future policies for the major categories of federal spending and revenues. The set of projected demographic and economic conditions, which CBO refers to as its economic benchmark, is consistent with CBO's 10-year baseline projections, as adjusted for recently enacted legislation, and reflects CBO's assessment of long-term demographic and economic trends thereafter; instead of incorporating the changes in federal debt and tax rates under the extended baseline, the economic benchmark incorporates the assumption that federal debt as a share of GDP and marginal tax rates remain constant at their 2025 levels in subsequent years. (That approach produces a relatively stable economic benchmark, which is described more fully in Appendix A.) Because the long-term projections of federal spending, revenues, and debt presented in this and the next four chapters reflect the relatively stable economic conditions underlying the economic benchmark, those projections do not incorporate the economic effects of rising debt beyond 2025 or possible changes to fiscal policies; those considerations are addressed in Chapters 6 and 7.

Economic Projections

Economic growth will be slower in the future than it has been in the past, CBO projects, largely because of a slowdown in the growth of the labor force resulting from the retirement of members of the baby-boom generation, declining birthrates, and the leveling-off of increases in women's participation in the labor market. The labor force is projected to grow at an average annual rate of 0.5 percent over the next 25 years, compared with the 1.7 percent recorded during the 1965–2007 period.[10] CBO projects that future productivity growth will be close to its historical average. Accounting for those and other economic variables, CBO projects that real (inflation-adjusted) GDP will increase at an average annual rate of 2.2 percent over the next 25 years, compared with 3.3 percent during the 1965–2007 period.

In the economic benchmark—where debt as a percentage of GDP is assumed to remain constant at the 2025 level—CBO projects that interest rates will rise from the unusually low levels in effect today but still be lower in the future than they have been, on average, during the past few decades. According to CBO's most recent economic projection for the next decade, the real interest rate (specifically, the interest rate after adjusting for the rate of increase in the consumer price index) on 10-year Treasury notes is projected to rise to 2.2 percent for the 2020–2025 period. After 2025, it is projected to rise to 2.3 percent and remain at that level, below its average of 3.1 percent over both the 1965–2007 and 1990–2007 periods.[11]

The average interest rate on all federal debt held by the public tends to be a little lower than the rate on 10-year Treasury notes because interest rates are generally lower on shorter-term debt than on longer-term debt; and, since the 1950s, the average maturity of federal debt has been shorter than 10 years. CBO projects that the average real interest rate on all federal debt held by the public will be 2.0 percent after 2025.

For the 2015–2040 period, the real interest rate on 10-year Treasury notes is projected to average 2.2 percent, and the rate for all federal debt held by the public is projected to average 1.5 percent. The average interest rate on federal debt is projected to rise more slowly than rates on 10-year Treasury notes because only a portion of federal debt matures each year.

If those figures for real interest rates were adjusted instead to reflect the rate of increase in the GDP price index (or the price index for personal consumption expenditures), the real interest rate on all federal debt held by the public over the next 25 years would average 1.9 percent. Thus, during the next 25 years as a whole, the growth rate of GDP—at 2.2 percent—is projected to exceed the average real interest rate on federal debt. (Beyond 2025, the

10. In its assessment of historical experience, CBO has excluded the years that have elapsed since 2007 because of the effects of the recession.

11. For comparisons of historical real rates, past values of the consumer price index were based on the Consumer Price Index Research Series Using Current Methods from the Bureau of Labor Statistics; that series accounts for changes over time in how that index measures inflation.

average interest rate on federal debt is projected to be only slightly higher than the growth rate of GDP.) When the interest rate is about the same as the growth rate of GDP, the ratio of debt to GDP would remain steady over time if the federal budget, excluding interest payments, was in balance.

Policy Assumptions

Under CBO's extended baseline, projections for the 2016–2025 period are identical to those in the agency's 10-year baseline, as adjusted for recently enacted legislation. For later years, the extended baseline generally follows the baseline concept (see Table 1-1 for a summary of CBO's policy assumptions).

Major Health Care Programs. CBO projects federal spending for the government's major health care programs—Medicare, Medicaid, the Children's Health Insurance Program, and insurance subsidies provided through the exchanges created under the ACA—for 2015 through 2025 under the assumption that there will generally be no changes to laws currently governing those programs. (Unless otherwise specified, Medicare outlays are presented net of offsetting receipts, mostly premiums paid by enrollees, which reduce net outlays for that program.)

Beyond 2025, the considerable uncertainty that surrounds the evolution of the health care delivery and financing systems leads CBO to employ a formulaic approach in its projections of federal spending for health care programs. Specifically, CBO combines estimates of the number of people who will be receiving benefits from the government's health care programs with fairly mechanical estimates of the growth in spending per beneficiary. (See Chapter 2 for details about the long-term projections for the major health care programs; CBO assumes that Medicare will pay benefits as scheduled under current law regardless of the status of the program's trust funds—an assumption that is consistent with a statutory requirement that, in its 10-year baseline projections, CBO assume that funding for entitlement programs is adequate to make all payments required by law.)[12]

Social Security. CBO projects spending for Social Security under the assumption that there will be no changes to laws currently governing that program. The agency also assumes that Social Security will pay benefits as scheduled under current law regardless of the status of the program's trust funds.[13] (For more on Social Security, see Chapter 3.)

Other Mandatory Programs. For other mandatory programs—such as retirement programs for federal civilian and military employees, certain veterans' programs, the Supplemental Nutrition Assistance Program (SNAP), unemployment compensation, and refundable tax credits—the projections through 2025 are based on the assumption that current law will remain generally unchanged.[14] For years after 2025, CBO projects outlays for refundable tax credits as part of its revenue projections and projects spending for the remaining mandatory programs as a whole by assuming that such spending will decline as a share of GDP after 2025 at the same annual rate that it is projected to fall between 2020 and 2025. That is, CBO does not estimate outlays for each program separately after 2025 (see Chapter 4).

Discretionary Spending. Discretionary spending in the extended baseline matches that in the 10-year baseline through 2025. Under current law, most of the government's discretionary appropriations for the 2015–2021 period are constrained by the caps put in place by the Budget Control Act of 2011, as amended. For 2022 through 2025, those appropriations are assumed to grow from the 2021 amount at the rate of anticipated inflation. Funding for certain purposes, such as war-related activities, is not constrained by the caps; CBO assumes that such funding will increase each year through 2025 at the rate of inflation, starting from the amount appropriated for the current year. After 2025, discretionary spending is assumed to remain fixed at its percentage of GDP in 2025 (see Chapter 4).

Revenues. Revenue projections through 2025 follow the 10-year baseline, which generally incorporates the

12. Section 257(b)(1) of the Balanced Budget and Emergency Deficit Control Act of 1985, 2 U.S.C. §907(b)(1).

13. The balances of the trust funds represent the total amount that the government is legally authorized to spend for those purposes. For a discussion of the legal issues related to exhaustion of a trust fund, see Noah P. Meyerson, *Social Security: What Would Happen If the Trust Funds Ran Out?* Report for Congress RL33514 (Congressional Research Service, August 28, 2014).

14. The law governing CBO's baseline projections (section 257(b)(2) of the Deficit Control Act) makes exceptions for some programs, such as SNAP, that have expiring authorizations but that are assumed to continue as currently authorized.

Table 1-1.

Assumptions About Policies for Spending and Revenues Underlying CBO's Extended Baseline

	Assumptions About Policies for Spending
Social Security	As scheduled under current law[a]
Medicare	As scheduled under current law through 2025; thereafter, projected spending depends on the estimated number of beneficiaries and health care costs per beneficiary (for which growth is projected to move smoothly to the underlying path of excess cost growth rates over the succeeding 15 years and then follow that path)[a]
Medicaid	As scheduled under current law through 2025; thereafter, projected spending depends on the estimated number of beneficiaries and health care costs per beneficiary (for which growth is projected to move smoothly to the underlying path of excess cost growth rates over the succeeding 15 years and then follow that path)
Children's Health Insurance Program	As projected in CBO's baseline through 2025; remaining constant as a percentage of GDP thereafter
Exchange Subsidies	As scheduled under current law through 2025; thereafter, projected spending depends on the estimated number of beneficiaries, an additional indexing factor for subsidies, and health care costs per beneficiary (for which growth is projected to move smoothly to the underlying path of excess cost growth rates over the succeeding 15 years and then follow that path)
Other Mandatory Spending	As scheduled under current law through 2025; thereafter, refundable tax credits are estimated as part of revenue projections, and the rest of other mandatory spending is assumed to decline as a percentage of GDP at the same annual rate at which it is projected to decline between 2020 and 2025
Discretionary Spending	As projected in CBO's baseline through 2025; remaining constant as a percentage of GDP thereafter
	Assumptions About Policies for Revenues
Individual Income Taxes	As scheduled under current law
Payroll Taxes	As scheduled under current law
Corporate Income Taxes	As scheduled under current law through 2025; remaining constant as a percentage of GDP thereafter
Excise Taxes	As scheduled under current law[b]
Estate and Gift Taxes	As scheduled under current law
Other Sources of Revenues	As scheduled under current law through 2025; remaining constant as a percentage of GDP thereafter

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

For CBO's most recent 10-year baseline projections, see Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973.

GDP = gross domestic product.

a. Assumes the payment of full benefits as calculated under current law, regardless of the amounts available in the program's trust funds.

b. The sole exception to the current-law assumption applies to expiring excise taxes dedicated to trust funds. The Balanced Budget and Emergency Deficit Control Act of 1985 requires CBO's baseline to reflect the assumption that those taxes would be extended at their current rates. That law does not stipulate that the baseline include the extension of other expiring tax provisions, even if they have been routinely extended in the past.

assumption that various tax provisions will expire as scheduled even if they have routinely been extended in the past. After 2025, rules for individual income taxes, payroll taxes, excise taxes, and estate and gift taxes are assumed to evolve as scheduled under current law.[15] Because of the structure of current tax law, total federal revenues from those sources are estimated to grow faster than GDP over the long term. Revenues from corporate income taxes and other sources (such as receipts from the Federal Reserve) are assumed to remain constant as a percentage of GDP after 2025 (see Chapter 5).

Projected Spending Through 2040

Over the past 50 years, federal outlays other than those for the government's net interest costs have averaged 18 percent of GDP. However, in the past several years, noninterest spending has been well above that average, both because of underlying trends and because of temporary circumstances (namely, the financial crisis, the weak economy, and policies implemented in response to them). Noninterest spending spiked to 23 percent of GDP in 2009 but then declined, falling to about 19 percent this year. If current laws that affect spending were unchanged, noninterest outlays would remain at about 19 percent of GDP throughout the coming decade, CBO projects, as an increase in mandatory spending was offset by a decline in discretionary spending relative to the size of the economy. After the mid-2020s, however, under the assumptions of the extended baseline, noninterest spending would rise relative to the size of the economy, mostly because of increased spending for major health care programs, reaching 21 percent of GDP by 2040.

CBO projects that, under current law, net outlays for interest would jump from 1.3 percent of GDP this year to almost 3 percent 10 years from now. By 2040, interest costs would be 4.3 percent of GDP, bringing total federal spending to over 25 percent of GDP (see Figure 1-4). Federal spending has been larger relative to the size of the economy only during World War II, when it topped 40 percent of GDP for three years.

15. The sole exception to that current-law assumption applies to expiring excise taxes dedicated to trust funds. The Deficit Control Act requires CBO's baseline to reflect the assumption that those taxes would be extended at their current rates. That law does not stipulate that the baseline include the extension of other expiring tax provisions, even if they have been routinely extended in the past.

Spending for Major Health Care Programs and Social Security

Mandatory programs have accounted for a rising share of the federal government's noninterest spending over the past few decades, reaching more than 60 percent in recent years. Most of the growth in mandatory spending has involved the three largest programs—Medicare, Medicaid, and Social Security. Federal outlays for those programs together made up almost half of the government's noninterest spending, on average, during the past 10 years, compared with less than a sixth five decades ago.

Most of the anticipated growth in noninterest spending as a share of GDP over the long term is expected to come from the government's major health care programs: Medicare, Medicaid, the Children's Health Insurance Program, and the subsidies for health insurance purchased through the exchanges created under the ACA. CBO projects that, under current law, total outlays for those programs over the next 25 years, net of offsetting receipts, would grow much faster than the overall economy, increasing from 5.2 percent of GDP now to 8.0 percent in 2040 (see Chapter 2). Spending for Social Security also would increase relative to the size of the economy, but by much less—from 4.9 percent of GDP in 2015 to 6.2 percent in 2040 and beyond (see Chapter 3).

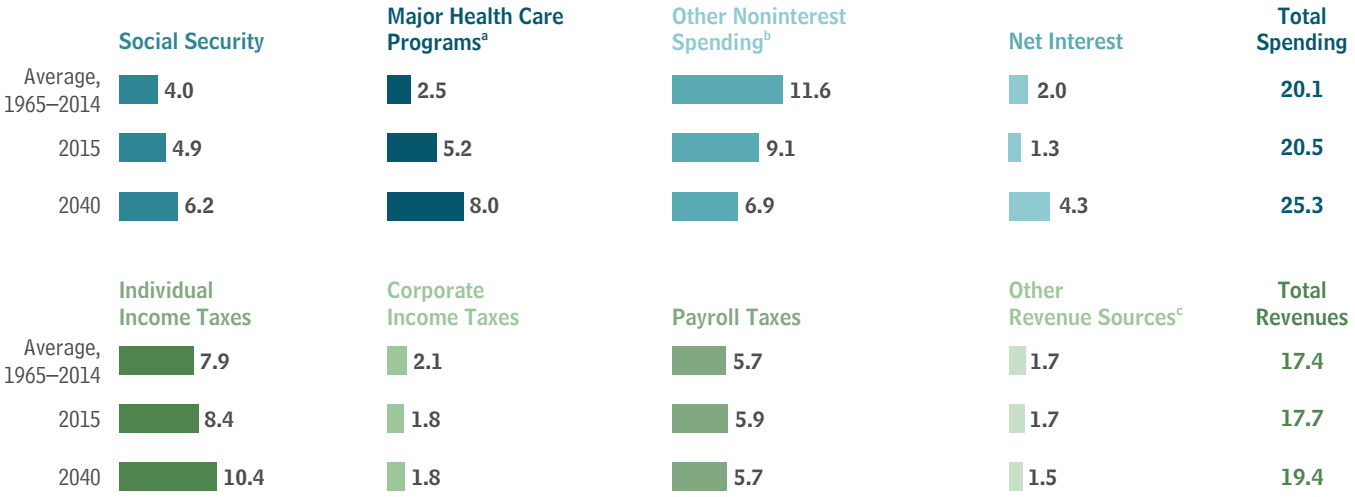
Those projected increases in spending for the government's major health care programs and Social Security between 2015 and 2040 are attributable primarily to three causes: the aging of the population; rising health care spending per beneficiary; and, to a lesser extent, an increased number of recipients of exchange subsidies and Medicaid benefits attributable to the ACA. (For estimates of the extent to which each cause contributes to the projected increases in spending, see Box 1-1 on page 24.)

The Aging of the Population. The retirement of members of the baby-boom generation portends a long-lasting shift in the age profile of the U.S. population—a change that will substantially alter the balance between working-age and retirement-age groups. During the next decade alone, the number of people age 65 or older is expected to rise by more than one-third, and the share of the population age 65 or older is projected to grow from the current 15 percent to 21 percent in 2040. By contrast, the share of the population between the ages of 20 and 64 is expected to drop from 59 percent to 54 percent.

Figure 1-4.

Spending and Revenues Under CBO's Extended Baseline, Compared With Past Averages

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

a. Consists of spending on Medicare (net of offsetting receipts), Medicaid, the Children's Health Insurance Program, and subsidies offered through health insurance exchanges.

b. Consists of all federal spending other than that for the major health care programs, Social Security, and net interest.

c. Consists of excise taxes, remittances to the Treasury from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

The aging of the population is the main factor driving the projected growth of Social Security spending as a percentage of GDP. Initial Social Security benefits are based on a person's earnings history, but those earnings are indexed to the overall growth of wages in the economy, so average benefits increase at approximately the same rate as average earnings. As a result, economic growth does not significantly alter spending for Social Security as a share of GDP. Rather, that share depends primarily on the ratio of the number of people working in jobs covered by Social Security (covered workers) to the number of Social Security beneficiaries. CBO projects that the ratio of covered workers to beneficiaries will decline significantly over the next quarter century—from 3 to 1 now to almost 2 to 1 in 2040—and then continue to drift downward.

Rising Health Care Spending per Beneficiary. Although the growth of health care spending has been slower during the past several years than it had been historically, CBO projects that per-enrollee spending in federal health care programs will continue to increase at a faster pace than potential GDP per capita over the next 25 years. The growth rate of spending per beneficiary in Medicare and Medicaid is projected to remain very low over the next few years but is then projected to increase gradually through 2040 (although remaining below its average growth rate of the past few decades). Compared with Medicare and Medicaid, costs per enrollee in private insurance are expected to grow more rapidly over the coming decade, but CBO projects a gradual slowing in later years. Although costs per beneficiary in federal health care programs are projected to increase faster than potential GDP per capita over the 25-year projection period, the difference between those two growth rates will be smaller than its average of recent decades, CBO projects (see Chapter 2).

Increased Number of Recipients of Exchange Subsidies and Medicaid Benefits. Under the ACA, many people can purchase subsidized insurance through the health insurance exchanges (or marketplaces) that are operated by the federal or state governments. Those subsidies come in two forms: refundable tax credits that can be applied to premiums, and cost-sharing subsidies that reduce deductibles and copayments. CBO anticipates that the number

of participants will increase over the next few years and that between 16 million and 17 million people will receive subsidized health insurance coverage through the exchanges in each year between 2019 and 2025, compared with 8 million now.[16] Also, several million others will obtain unsubsidized coverage through the exchanges.

In addition, as a result of the ACA and a subsequent Supreme Court ruling, each state has the option to expand eligibility for Medicaid to most nonelderly adults whose income is below 138 percent of the federal poverty guidelines (commonly known as the federal poverty level, or FPL).[17] By calendar year 2020, CBO anticipates, 80 percent of the people who meet the new eligibility criteria will live in states that will have expanded their programs.[18] Each year between 2020 and 2025, about 14 million more people, on net, are projected to have coverage through Medicaid than would have had such coverage in the absence of the ACA, compared with 10 million more now.

Other Noninterest Spending

In the extended baseline, total federal spending for everything other than the major health care programs, Social Security, and net interest declines to a smaller percentage of GDP than has been the case for more than 70 years. Such spending has amounted to more than 8 percent of GDP each year since the 1930s, reaching as much as 13 percent of GDP in 1965 and 12 percent in 1990; CBO estimates that it will be 9.1 percent of GDP in 2015. Under the assumptions used for this analysis, that spending is projected to fall below 8 percent of GDP in 2021 and then to decline further, dropping to 6.9 percent of GDP in 2040 (see Chapter 4).

Spending for discretionary programs is projected to decline significantly over the next 10 years relative to GDP—from 6.5 percent to 5.1 percent—because of the constraints on discretionary funding imposed by the Budget Control Act. For its long-term projections, CBO assumed that, in subsequent years, discretionary outlays would remain at the share of GDP projected for 2025.

Spending for mandatory programs other than the major health care programs and Social Security also is projected to decline relative to the size of the economy over the next 10 years. That spending accounts for 2.6 percent of GDP today and, under current law, is projected to fall to 2.3 percent of GDP in 2025. That decline would occur in part because the improving economy would reduce the number of people eligible for some programs in this category and in part because payments per beneficiary under some programs tend to rise with prices (which usually increase more slowly than people's income). Beyond 2025, CBO projects, other mandatory spending, excluding the portion stemming from refundable tax credits, would decline as a share of GDP at the same annual rate at which it is projected to fall between 2020 and 2025. As a result, other mandatory spending would fall to 1.8 percent of GDP by 2040—lower than at any point at least since 1962 (the first year for which comparable data are available).

Interest Payments

CBO expects interest rates to rebound in coming years from their current unusually low levels. As a result, the government's net interest costs are projected to more than double relative to the size of the economy over the next decade—from 1.3 percent of GDP in 2015 to 3.0 percent by 2025—even though, under current law, federal debt would be only slightly larger relative to GDP at the end of that decade than it is today.

Beyond 2025, interest rates in the economic benchmark are assumed to increase only slightly from their projected levels in 2025, so changes in net interest costs would roughly parallel changes in the amount of federal debt held by the public. By 2040, those costs would reach 4.3 percent of GDP under current law. Growth in net interest payments and growth in debt are mutually reinforcing: Rising interest payments push up deficits and debt, and rising debt pushes up interest payments.

16. See Congressional Budget Office, *Effects of the Affordable Care Act on Health Insurance Coverage—Baseline Projections* (March 2015), Table 3, www.cbo.gov/publication/43900.

17. The ACA expanded eligibility for Medicaid to include nonelderly residents with income of up to 133 percent of the FPL, but the law defines the income used to determine eligibility in a way that effectively increases that threshold to 138 percent of the FPL. The FPL is currently $24,250 for a family of four. See Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, "2015 Poverty Guidelines" (January 2015), http://aspe.hhs.gov/poverty/15poverty.cfm. As a result of the Supreme Court's decision on June 28, 2012, in *National Federation of Independent Business v. Sebelius,* 132 S. Ct. 2566 (2012), some states may choose not to expand their programs.

18. See Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), p. 69, www.cbo.gov/publication/49892.

Box 1-1.

Causes of Projected Growth in Federal Spending for the Major Health Care Programs and Social Security

Under its extended baseline, the Congressional Budget Office projects that the growth of federal noninterest spending as a share of gross domestic product (GDP) between 2015 and 2040 would result entirely from increases in spending for four large mandatory programs—Medicare, Medicaid, the subsidies provided through the health insurance exchanges established under the Affordable Care Act (ACA), and Social Security.[1] The health care programs currently account for about half of the overall spending for those four programs, and they would be responsible for more than two-thirds of the projected increase in such spending over the next 25 years. (By contrast, under the assumptions that govern the extended baseline, total federal spending on everything other than those four programs and net interest is projected to fall significantly as a percentage of GDP over the next 25 years.)

Three factors underlie the projected increase in federal spending for the health care programs and Social Security relative to the size of the economy:

- The aging of the U.S. population, which will increase the share of the population receiving benefits from those programs and also affect the average age, and thus the average health care costs, of beneficiaries;
- The effects of excess cost growth—that is, the extent to which health care costs per beneficiary, as adjusted for demographic changes, grow faster than potential GDP per capita;[2] and
- The increase, beyond that which has occurred through 2015, in enrollment in Medicaid under the ACA and in the number of people receiving subsidies for health insurance purchased through the exchanges.

CBO calculated how much of the projected growth in federal spending for the major health care programs and Social Security over the 2015–2040 period could be attributed to each of the three factors. (Of those factors, aging is the only one that affects CBO's projections for Social Security.) The agency compared the outlays projected for those programs under the extended baseline with the outlays that would occur under three alternative paths, each of which includes no increase in the number of recipients of exchange subsidies and Medicaid benefits attributable to the ACA: One included aging of the population but no excess cost growth; one included excess cost growth but no aging of the population; and one included both aging and excess cost growth.

The ways in which the aging of the population and excess cost growth interact accentuate those factors' individual effects. For example, as aging causes the number of Medicare beneficiaries to increase, rising health care spending per person has a greater impact on federal spending for health care. Likewise, when per-person health care costs rise, the increasing number of beneficiaries has greater budgetary consequences. The effect of that interaction can be identified separately—or, as in CBO's analysis, it can be allocated in proportion to the shares of projected growth that are attributable to the two factors: aging and excess cost growth.

1. The Children's Health Insurance Program, which is usually grouped with major federal health care programs in CBO's long-term projections, is not included in this analysis of the causes of projected growth.

2. Potential GDP is the economy's maximum sustainable output.

Continued

Projected Revenues Through 2040

Over the past 50 years, federal revenues as a share of GDP have averaged 17.4 percent—fluctuating between 14.6 percent and 20 percent of GDP—with no evident trend over time. After amounting to 17.9 percent of GDP in 2007, federal revenues fell sharply in 2009, to 14.6 percent of GDP, primarily because of the recession. With an improving economy and changes in certain tax rules that have resulted in higher tax rates, revenues will rebound to 17.7 percent of GDP in 2015, CBO estimates.

Box 1-1. **Continued**

Causes of Projected Growth in Federal Spending for the Major Health Care Programs and Social Security

Explaining Projected Growth in Federal Spending for the Major Health Care Programs and Social Security as a Share of GDP

	Percentage of Projected Growth Through	
	2025	2040
	Major Health Care Programs and Social Security	
Aging	62	56
Excess Cost Growth	17	35
Increased Number of Recipients of Exchange Subsidies and Medicaid Benefits Attributable to the ACA	21	10
	Major Health Care Programs	
Aging	42	43
Excess Cost Growth	26	45
Increased Number of Recipients of Exchange Subsidies and Medicaid Benefits Attributable to the ACA	32	12

Source: Congressional Budget Office.

Note: ACA = Affordable Care Act; GDP = gross domestic product.

The aging of the population and excess cost growth also affect the budgetary impact of the additional recipients of exchange subsidies and Medicaid benefits attributable to the ACA but in different directions: Excess cost growth increases the effect of the increased number of recipients on federal health care spending, but aging decreases the effect by reducing the share of the population that is under the age of 65 and, therefore, potentially eligible for the expanded federal benefits.

According to CBO's calculations, the aging of the population accounts for 56 percent of the projected growth in federal spending for the major health care programs and Social Security as a share of GDP through 2040 (see the table). Excess cost growth accounts for 35 percent, and the increased number of recipients of exchange subsidies and Medicaid benefits attributable to the ACA accounts for the remaining 10 percent. (For more information about CBO's projections of demographic changes over the 25-year period, see Figure 2-3 on page 45; for more information about excess cost growth and spending on federal health care programs, see Chapter 2.)

For the major health care programs alone, the relative impact of the population's aging is smaller, and the significance of factors related to health care is greater. Through 2040, aging accounts for 43 percent of projected growth in federal spending for those programs as a share of GDP, excess cost growth accounts for 45 percent, and the increased number of recipients of exchange subsidies and Medicaid benefits attributable to the ACA together account for 12 percent; most of that growth is projected to occur during the next few years. Total federal spending for those programs would increase from 5.2 percent of GDP in 2015 to 8.0 percent in 2040 under current law, CBO projects. Of that 2.8 percentage-point increase, aging would contribute 1.2 percentage points; excess cost growth, 1.3 percentage points; and the increased number of recipients of the exchange subsidies and Medicaid benefits attributable to the ACA, 0.3 percentage points.

Individual income taxes account for the bulk of federal revenues, almost half of all revenues in 2014; payroll taxes (also known as social insurance taxes) account for about one-third of all revenues; and corporate income taxes and excise taxes account for most of the remainder.[19]

CBO projects that, under current law, revenues would grow over the coming decade relative to GDP—to 18.3 percent of GDP in 2025. Individual income taxes would rise as a percentage of GDP largely because of structural features of the tax system, most significantly, real bracket creep—the pushing of a growing share of income into higher tax brackets because of a growth in real (inflation-adjusted) income and the interaction of the tax system with inflation. That increase would be

19. Most payroll tax revenues come from taxes designated for Social Security and Medicare; the rest come mainly from taxes for unemployment insurance.

partially offset by declines in other taxes relative to GDP, most notably receipts from the Federal Reserve.

Over the long term, revenues would keep growing slightly more rapidly than GDP under current law, as the effect of real bracket creep continues and certain tax increases enacted in the ACA generate a growing amount of revenues in relation to the size of the economy. By 2040, total revenues would be 19.4 percent of GDP, CBO projects. Increases in receipts from individual income taxes account for more than the 1.7 percentage-point rise in total revenues as a percentage of GDP over the next 25 years; receipts from all other sources, taken together, are projected to decline slightly as a percentage of GDP (see Chapter 5).

Even if no changes in tax law were enacted in the future, the effects of the tax system in 2040 would differ in significant ways from what those effects are today. Average taxpayers at all income levels would pay a greater share of income in taxes than similar taxpayers do now, primarily because a greater share of their income would be taxed in higher tax brackets. Moreover, the effective marginal tax rate on labor income (the percentage of an additional dollar of labor income paid in federal taxes) would be about 32 percent, compared with the current 29 percent. In contrast, the effective marginal tax rate on capital income (the percentage of an additional dollar of income from investments paid in federal taxes) would rise only slightly and remain close to 18 percent.

Changes From Last Year's Long-Term Budget Outlook

Each time it prepares long-term budget projections, CBO incorporates the effects of new legislation and updates the economic and technical aspects of its projections. The projections of federal revenues and overall noninterest outlays presented in this report are generally similar to those published in 2014, despite certain changes in law, revisions to some of the agency's assumptions and methods, and the availability of more recent data.[20] A downward revision to the projections for interest rates has lowered the projection for net interest costs and, as a result, CBO projects slightly lower debt in 2040 than the agency projected last year. That same downward revision to the projections for interest rates and some other changes have led CBO to estimate a smaller fiscal gap and a greater actuarial deficit for Social Security. (The key revisions to the projections since last year are discussed in Appendix B.)

Taken together, legislative, economic, and technical changes had the following effects on CBO's view of the federal budget in the long term:

- Under the extended baseline, CBO now projects that debt would reach 101 percent of GDP in 2039, compared with a projection last year of 106 percent. (Those figures do not incorporate feedback from the economic impact of those paths for federal debt; with such feedback considered, debt in 2039 is now projected to grow to 105 percent of GDP, compared with the 111 percent projected last year.)

- The estimated fiscal gap is smaller this year than last year. For the 2016–2040 period, CBO now estimates that cuts in noninterest spending or increases in revenues equal to 1.1 percent of GDP in each year through 2040 would be required to have debt in 2040 equal the same percentage of GDP that it constitutes today; last year, for the 2015–2039 period, CBO estimated that changes equal to 1.2 percent of GDP would be required. By itself, the reduction in projected interest rates on federal debt would have brought the gap down by 0.3 percent of GDP, but changes in projected GDP and the shift in the projection period offset most of that effect.

- The actuarial shortfall for the Social Security trust funds is estimated to be larger this year than was estimated last year. The estimated actuarial balance for Social Security is the sum of the present value of projected tax revenues and the trust funds' current balance minus the sum of the present value of projected outlays and a target balance at the end of the period; that difference is traditionally presented as a percentage of the present value of taxable payroll. CBO now estimates that the 75-year actuarial deficit for Social Security is 4.4 percent of taxable payroll, compared with the previous projection of 4.0 percent. That change reflects the reduction in projected interest rates, lower payroll tax revenues resulting from a lower projection of the taxable share of earnings, updated data, and other factors (see Chapter 3 and Appendix B).

20. For CBO's long-term projections for the 2014–2039 period, see Congressional Budget Office, *The 2014 Long-Term Budget Outlook* (July 2014), www.cbo.gov/publication/45471.

CHAPTER

2

The Long-Term Outlook for Major Federal Health Care Programs

Although spending for health care in the United States has grown more slowly in recent years than it did previously, high and rising amounts of such spending continue to pose a challenge not only for the federal government but also for state and local governments, businesses, and households. Total national spending on health care services and supplies—that is, by all people and entities in the United States, governmental and nongovernmental—increased from 4.6 percent of gross domestic product (GDP) in calendar year 1960 to 9.5 percent in 1985 and to 16.4 percent, about one-sixth of the economy, in 2013, the most recent year for which such data are available.[1] Federal spending for Medicare (net of certain receipts, termed offsetting receipts, which mostly consist of premiums paid by beneficiaries) and Medicaid rose from 2.0 percent of GDP in 1985 to 4.7 percent in 2014.[2]

Underlying those trends is the fact that health care spending per person has grown faster, on average, than the nation's economic output per capita during the past few decades. The Congressional Budget Office estimates that growth in health care spending per person outpaced growth in potential (or maximum sustainable) GDP per capita by an average of 1.4 percent per year between calendar years 1985 and 2013.[3] Key factors contributing to that faster growth were the emergence and increasing use of new medical technologies, rising personal income, and the declining share of health care costs that people paid out of pocket. Those factors were partly offset by other influences, including the spread of managed care plans in the 1990s, the 2007–2009 recession, and various legislated changes in Medicare's payment policies.

The future growth of health care spending by the federal government will depend on many factors, including demographic changes and the behavior of households, businesses, and state and local governments. (It will also depend on federal law, but CBO's extended baseline projections, which focus on the 25-year period ending in 2040, are generally based on the assumption that current law will not change.) CBO's extended baseline projections of federal health care spending match its 10-year baseline projections as adjusted to reflect recently enacted legislation for the next 10 years but employ a formulaic approach beyond that period, reflecting the considerable uncertainties about the evolution of the health care delivery and financing systems in the long run.[4] Specifically, CBO has projected federal spending after 2025 by

1. Centers for Medicare & Medicaid Services, National Health Expenditure Accounts, "NHE Tables" (accessed April 3, 2015), http://go.usa.gov/jmGY.

2. In this chapter, net federal spending for Medicare refers to gross spending for Medicare minus offsetting receipts, which are recorded in the budget as offsets to spending. When this chapter refers to net federal spending for *all* major federal health care programs, it means gross spending for all those programs minus offsetting receipts for Medicare.

3. As this chapter explains later, CBO derived that estimate after adjusting for demographic changes and giving greater weight to more recent years (in order to more closely reflect current trends in spending for health care).

4. The 10-year baseline referred to in this chapter is the one issued in March 2015, but adjusted to reflect legislation that was enacted after it was prepared. For the March baseline, see Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973. The most important adjustment to that baseline was the incorporation of the estimated effect of Public Law 114-10, the Medicare Access and CHIP Reauthorization Act of 2015, which became law on April 16, 2015. See Congressional Budget Office, cost estimate for H.R. 2, the Medicare Access and CHIP Reauthorization Act of 2015 (March 25, 2015), www.cbo.gov/publication/50053.

combining estimates of the number of people who will receive benefits from government health care programs with fairly mechanical estimates of the growth of spending per beneficiary:

- Under current law, the first of those factors—the number of people receiving benefits from government programs—is projected to increase during the next few decades. That increase can be attributed to two main causes. The first is the aging of the population—in particular, of the large baby-boom generation—which will increase the number of people receiving benefits from Medicare by about one-third over the next decade. The second is the projected increase over the next few years in the number of people who will enroll in Medicaid or receive federal subsidies for health insurance purchased through exchanges under the provisions of the Affordable Care Act (ACA).

- The second factor in CBO's projections of federal spending, the growth of spending per beneficiary in most of the major health care programs, is projected to move slowly from the average rate projected for the years 2023 through 2025 (with certain adjustments) to what CBO considers its underlying growth rate.[5] Each program's underlying growth rate is essentially its long-term growth rate, which begins with the rate of growth in health care spending in recent decades and is projected to decline gradually—as people try to limit their spending for health care in order to maintain their consumption of other goods and services, and as state governments, private insurers, and employers respond to the pressures of rising health care costs.

On the basis of that formula, CBO expects that federal spending on the government's major health care programs will continue to rise substantially relative to GDP. The major health care programs are Medicare, Medicaid, the Children's Health Insurance Program (CHIP), and the subsidies for health insurance purchased through the exchanges.[6] In CBO's extended baseline, net federal spending for those programs grows from an estimated 5.2 percent of GDP in 2015 to 8.0 percent in 2040—of which 5.1 percentage points would be devoted to net spending on Medicare and 2.9 percentage points to spending on Medicaid, CHIP, and the exchange subsidies.

Those estimates are subject to considerable uncertainty (as Chapter 7 explains). A particular challenge currently is assessing how much of the recent slowdown in the growth of health care spending can be attributed to temporary factors, such as the recession, and how much reflects more enduring developments. Studies have generally concluded that part of the slowdown cannot be linked directly to the weak economy, although they differ considerably in their assessment of other factors' importance. CBO's own analysis found no direct link between the recession and slower growth in Medicare spending.[7] Accordingly, over the past several years, CBO has substantially reduced its 10-year and long-term projections of spending per person for Medicare, for Medicaid, and for the country as a whole. However, the growth rates for spending per person are expected to rebound somewhat from their recent very low levels without returning all the way to the high levels seen in the past.

Overview of Major Government Health Care Programs

A combination of private and public sources finances health care in the United States, mostly through various forms of health insurance. Most nonelderly Americans—

5. CBO followed that procedure for three of the four major health care programs but a different one for the Children's Health Insurance Program.

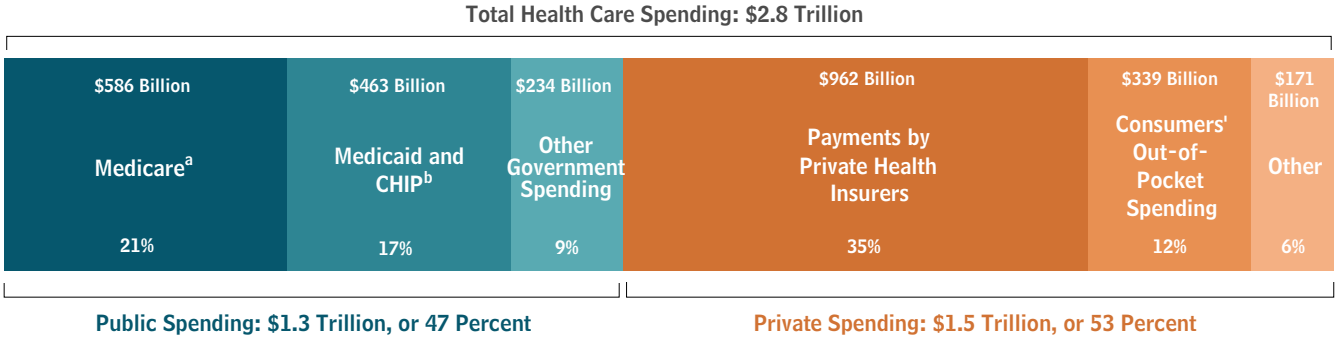
6. Federal spending on those programs is mandatory; that is, it results from budget authority provided in laws other than appropriation acts. Federal discretionary spending on health care—that is, spending that *is* subject to annual appropriations—is included not in the budget projections described here but rather in those for other noninterest spending (see Chapter 4 and Table 1-1 on page 20). Such discretionary spending includes spending for health research and for health care provided by the Veterans Health Administration. Some mandatory spending on health care (for example, spending for care for federal retirees) is also included in other noninterest spending; that mandatory spending represents a very small share of the federal budget. The spending for exchange subsidies that is analyzed in this chapter includes outlays for cost-sharing subsidies and for the refundable portion of subsidies for premiums; however, the reduction in taxes paid because of the premium subsidies—which is projected to be much smaller than the increase in outlays for the refundable portion of the subsidies—is included not here but in the revenue projections in Chapter 5.

7. Michael Levine and Melinda Buntin, *Why Has Growth in Spending for Fee-for-Service Medicare Slowed?* Working Paper 2013-06 (Congressional Budget Office, August 2013), www.cbo.gov/publication/44513.

Figure 2-1.

Distribution of Spending for Health Care, 2013

Total health care spending amounted to $2.8 trillion in calendar year 2013. That total does not include the cost to the federal government of the tax exclusion for employment-based health insurance, which amounted to roughly $250 billion in 2013.



Source: Congressional Budget Office based on data from the Centers for Medicare & Medicaid Services.

Note: CHIP = Children's Health Insurance Program.

a. Gross spending for Medicare refers to all of the program's spending not counting offsetting receipts (from premium payments made by beneficiaries to the government and amounts paid by states from savings on Medicaid's prescription drug costs) that are credited to the program.

b. Includes federal and state spending.

about 153 million of them in 2015, CBO and the staff of the Joint Committee on Taxation (JCT) estimate—have private health insurance obtained through an employer as their primary source of coverage. Many other people obtain insurance through government programs. In 2015, average monthly enrollment will be an estimated 55 million people in Medicare and an estimated 66 million in Medicaid.[8] In addition, CBO and JCT estimate that, over the course of this calendar year, an average of about 11 million nonelderly people will be covered by health insurance purchased through exchanges run by the federal government or state governments (though the total number enrolled at any particular time during the year might be higher), and most of those people will receive tax subsidies from the federal government to help pay for that insurance.[9] Another roughly 6 million people will be covered by a policy purchased directly from an insurer—that is, not through an exchange. At any given time during this calendar year, according to CBO and JCT's projections, about 35 million nonelderly people will be uninsured. Over the next few years, the number of people without insurance coverage is projected to decline.

In 2013, the most recent calendar year for which data are available, total spending for health care in the United States amounted to about $2.8 trillion (see Figure 2-1).[10] Of that amount, 53 percent was financed privately; specifically, 35 percent consisted of payments by private health insurers, 12 percent was consumers' out-of-pocket spending, and 6 percent came from other sources of

8. Congressional Budget Office, "Medicare—Baseline Projections" (March 2015), www.cbo.gov/publication/44205, and "Medicaid—Baseline Projections" (March 2015), www.cbo.gov/publication/44204. Both estimates given have been adjusted to reflect recently enacted legislation. Also, some people have coverage from more than one source at a time. Currently, about 8.3 million people with Medicaid coverage are also covered by Medicare, which is their primary source of coverage. For information about people eligible for benefits through both programs, see Congressional Budget Office, *Dual-Eligible Beneficiaries of Medicare and Medicaid: Characteristics, Health Care Spending, and Evolving Policies* (June 2013), www.cbo.gov/publication/44308.

9. Congressional Budget Office, "Effects of the Affordable Care Act on Health Insurance Coverage—Baseline Projections" (March 2015), www.cbo.gov/publication/43900. The estimates given have been adjusted to reflect recently enacted legislation.

10. This report defines total spending for health care as the health consumption expenditures in the national health expenditure accounts maintained by the Centers for Medicare & Medicaid Services. That definition excludes spending on medical research, structures, and equipment. Under a broader definition that includes those categories, total national spending for health care was 17.4 percent of GDP in calendar year 2013. For more information, see Micah Hartman and others, "National Health Spending in 2013: Growth Slows, Remains in Step With the Overall Economy," *Health Affairs*, vol. 34, no. 1 (January 2015), pp. 150–160, http://dx.doi.org/10.1377/hlthaff.2014.1107.

private funds, such as philanthropy.[11] The remaining 47 percent of total spending on health care was public: gross federal spending for Medicare, which made up 21 percent of the total; federal and state spending for Medicaid and CHIP, which accounted for 17 percent; and spending on various other programs (including those run by state and local governments' health departments, by the Department of Veterans Affairs, and by the Department of Defense), which accounted for 9 percent.

A significant share of private health care spending is subsidized through provisions in the tax code—primarily through the tax exclusion for employment-based health insurance, which is not reflected in the reported totals for health care spending. Under that provision, most payments that employers and employees make for health insurance coverage are exempt from payroll and income taxes. CBO estimates that in 2013, the federal cost, or tax expenditure, associated with that exclusion was roughly $250 billion, or 1.5 percent of GDP—a sum that was equal to nearly one-quarter of all spending on private health insurance and roughly equal to federal spending on Medicaid in that year.[12] It is projected to equal 1.6 percent of GDP over the 2016–2025 period.[13]

Medicare

In 2015, according to CBO's projections, Medicare will provide health insurance to about 55 million people who are elderly, are disabled, or have end-stage renal disease. The elderly make up about 85 percent of the enrollees; in general, people become eligible for Medicare when they reach 65, and disabled people become eligible 24 months after they qualify for benefits under Social Security's Disability Insurance program.[14]

The Medicare program provides a specified set of benefits. Hospital Insurance (HI), or Medicare Part A, covers inpatient services provided by hospitals, care in skilled nursing facilities, home health care, and hospice care. Part B mainly covers services provided by physicians, other practitioners, and hospitals' outpatient departments. Part D provides a prescription drug benefit. Most enrollees in Medicare are in the traditional fee-for-service program, in which the federal government pays for covered services directly; but about 30 percent have opted for Part C of the program, known as Medicare Advantage, in which they get coverage for Medicare benefits through a private health insurance plan. In 2014, gross spending for Medicare was $600 billion, and net spending (that is, gross spending minus offsetting receipts, which mostly consist of beneficiaries' payments of premiums) was $506 billion.

Parts A, B, and D of the program are financed in different ways. Outlays for Part A are financed by dedicated sources of income credited to a fund called the Hospital Insurance Trust Fund. Of those dedicated sources, the primary one is a payroll tax (amounting to 2.9 percent of all earnings), and the others are a 0.9 percent tax on earnings over $200,000 (or $250,000 for married couples) and a portion of the federal income taxes paid on Social Security benefits.[15] For Part B, premiums paid by beneficiaries cover just over one-quarter of outlays, and the government's general fund covers the rest. Enrollees' premiums under Part D are set to cover about one-quarter of the cost of the basic prescription drug benefit (although many low-income enrollees pay no premiums), and the general fund covers most of the rest. Federal payments to private insurance plans under Part C comprise a blend of funds drawn from Parts A, B, and D. Altogether, in calendar year 2013, about 43 percent of gross federal spending on Medicare was financed by the HI trust fund's

11. For the purposes of that analysis, out-of-pocket payments include payments made to satisfy cost-sharing requirements for services covered by insurance, as well as payments for services not covered by insurance. However, they do not include the premiums that people pay for health insurance—because premiums fund the payments that insurers provide, which have already been accounted for.

12. The estimated federal cost includes the effects on revenues from both payroll and income taxes. The income tax portion is based on Joint Committee on Taxation, *Estimates of Federal Tax Expenditures for Fiscal Years 2012–2017*, JCS-1-13 (February 1, 2013), http://go.usa.gov/3PkZA. For more information about the tax exclusion, see Congressional Budget Office, *The Distribution of Major Tax Expenditures in the Individual Income Tax System* (May 2013), www.cbo.gov/publication/43768.

13. Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), p. 103, www.cbo.gov/publication/49892.

14. People with amyotrophic lateral sclerosis (also known as Lou Gehrig's disease) are an exception: They are eligible for Medicare in the month when their Disability Insurance benefits start.

15. The thresholds for the 0.9 percent tax are not indexed for inflation. Certain people are subject to an additional 3.8 percent tax on unearned income that is officially labeled a Medicare tax even though the revenues are credited to the government's general fund rather than to the HI trust fund.

dedicated income, about 13 percent came from beneficiaries' premiums, and about 41 percent came from the general fund; money from other sources financed the rest.[16]

In the fee-for-service portion of Medicare, beneficiaries' cost-sharing obligations (that is, what they are obliged to pay out of pocket) vary widely by type of service, and the program does not set an annual limit on the health care costs for which beneficiaries are responsible. However, the great majority of beneficiaries—about 90 percent of them in 2010, according to one recent study—have supplemental insurance that covers many or all of the program's cost-sharing requirements.[17] The most common sources of supplemental coverage are plans for retirees offered by former employers, Medicare Advantage plans, individually purchased policies (called medigap insurance), and Medicaid.

A number of provisions of law constrain Medicare's payments to providers of health care. Most recently, the Medicare Access and CHIP Reauthorization Act of 2015 set the schedule of increases in Medicare's payment rates for physicians' services. Those increases will vary depending on the year and certain other factors, but they will range between zero and 0.75 percent per year.[18] That legislation also modified updates to payment rates for certain other services in some years.

The ACA also contains numerous provisions that, on balance, limit the growth of Medicare spending. The provisions that will have the greatest effect impose permanent reductions on the annual updates to payment rates for many providers (other than physicians) in the fee-for-service portion of the program. Under those provisions, the updates equal the estimated percentage change in the average prices of providers' inputs, such as labor and equipment, minus the 10-year moving average of growth in productivity in the economy overall. As a result, the providers will face pressure to match other businesses in their ability to use fewer inputs to produce a given amount of output. Other provisions of the ACA subtract specified fractions of a percentage point from the updates to payment rates for various services through 2019.

In addition, the ACA established the Independent Payment Advisory Board (IPAB), which is required to submit a proposal to reduce Medicare spending in certain years if the rate of growth in spending per enrollee is projected to exceed specified targets.[19] The proposal—or an alternative proposal submitted by the Secretary of Health and Human Services if the board does not submit a qualifying proposal—must achieve a specified amount of savings in the year it is implemented while not increasing spending in the succeeding nine years by more than the amount of those first-year savings. The proposal would go into effect automatically unless blocked or replaced by subsequent legislation. In CBO's baseline projections, the rate of growth of Medicare spending per beneficiary is below the target rate for each year through 2024 but exceeds it in 2025. As a result, CBO projects that the IPAB mechanism will reduce spending in 2025 by about $1 billion.[20]

Finally, the Budget Control Act of 2011, as amended, specifies automatic procedures known as sequestration (that is, the cancellation of funding) that will reduce most Medicare payments through September 2024 still further. Sequestration will reduce payment rates for most services

16. Those calculations are based on data from Boards of Trustees, Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds, *2014 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds* (July 2014), Table II.B1, http://go.usa.gov/bUZm. The measures of benefits and premium receipts in that table treat Part D premiums for basic benefits that beneficiaries pay directly to plans as if those premiums were paid to Medicare and then disbursed to the plans.

17. Medicare Payment Advisory Commission, *A Data Book: Health Care Spending and the Medicare Program* (June 2014), p. 27, http://go.usa.gov/3D3DQ (PDF, 1.7 MB).

18. From October 1998 through March 2015, payment rates for services covered by the fee schedule for physicians were governed by the sustainable growth rate (SGR) mechanism. In practice, however, the Congress almost always overrode the SGR mechanism when it was about to reduce payment rates. In April 2015, legislation was enacted that replaced that mechanism. For more details, see Congressional Budget Office, cost estimate for H.R. 2, the Medicare Access and CHIP Reauthorization Act of 2015 (March 2015), www.cbo.gov/publication/50053.

19. From 2015 through 2019, the target growth rate is the average of inflation in the economy generally and inflation for medical services in particular; in subsequent years, the target growth rate is the percentage increase in per capita GDP plus 1 percentage point. The ACA prohibits the IPAB from proposing certain actions, such as modifying Medicare's eligibility rules or reducing benefits.

20. Congressional Budget Office, "Medicare—Baseline Projections" (March 2015), Note f, www.cbo.gov/publication/44205. The estimate has since been updated to reflect recently enacted legislation, but it still stands at about $1 billion in 2025.

by 2.0 percent through the first half of fiscal year 2023, by 2.9 percent for the second half of 2023, by 1.1 percent for the first half of 2024, and by 4.0 percent for the second half of 2024, according to CBO's estimates. All told, CBO projects that sequestration will cancel about $150 billion of Medicare payments to providers and health insurance plans over the 2016–2025 period.

Medicaid

A joint federal-state program, Medicaid pays for health care services, mostly for low-income people. About 83 million people will be enrolled in Medicaid at some point during 2015, CBO estimates, and the average monthly enrollment will be about 66 million.[21] Currently, almost half of Medicaid's enrollees are children in low-income families; almost one-third are adults under age 65 who are not disabled; and the remaining one-fifth or so are elderly or disabled adults. Expenses tend to be much higher for beneficiaries who are elderly or disabled, many of whom require long-term care, than for other beneficiaries. In 2014, about 30 percent of federal spending for benefits was for long-term services and supports, a category that includes institutional care provided in nursing homes and certain other facilities, as well as care provided in a person's home or in the community. In that year, the elderly or disabled accounted for more than half of federal spending for Medicaid benefits.[22]

States administer their Medicaid programs under federal guidelines that mandate a minimum set of services that must be provided to certain categories of low-income people. The required services include inpatient and outpatient hospital services, services provided by physicians and laboratories, comprehensive and preventive health care services for children, nursing home and home health care, and transportation. The required eligibility categories include families that would have met the financial requirements of the Aid to Families With Dependent Children program when it existed; elderly and disabled people who qualify for the Supplemental Security Income program; and children and pregnant women in families with income below 138 percent of the federal poverty guidelines (commonly referred to as the federal poverty level or FPL).[23]

Nevertheless, beyond the federal requirements, state governments have substantial flexibility to determine eligibility, benefits, and payments to providers under Medicaid. States may choose to make additional groups of people eligible (such as elderly adults who have income above the usual eligibility thresholds but who have high medical expenses relative to their income) or to provide additional benefits (such as coverage for prescription drugs and dental services). Moreover, many states seek and receive federal waivers that allow them to provide benefits and cover groups that would otherwise be excluded. Most recently, as a result of the ACA and a subsequent Supreme Court ruling, each state has the option to expand eligibility for Medicaid to most nonelderly adults with income below 138 percent of the FPL.[24] Currently, 29 states and the District of Columbia, which together contain about half of the people who meet the new eligibility criteria, have expanded their programs. CBO anticipates that more states will expand coverage during the next few years and that, by 2020, about 80 percent of the people who meet the new eligibility criteria will be in states that have expanded coverage.

The federal government's share of Medicaid's spending for benefits varies by state and has historically averaged about 57 percent. However, for enrollees newly eligible under the ACA's coverage expansion, the federal government will pay all costs through 2016, a slightly declining share of costs from 2017 to 2019, and 90 percent of costs in 2020 and beyond. According to CBO's estimates, those changes will raise the federal share of Medicaid

21. Those two estimates differ from each other for two reasons. First, many people are enrolled in Medicaid for less than 12 months. Second, for most enrollees, the typical 12-month eligibility period straddles two consecutive years. That is, some enrollees leave Medicaid partway through the year, after their eligibility period ends; other enrollees begin a new eligibility period after the start of the year. As a result, the total number of people enrolled in Medicaid at some point in the year is significantly higher than the average number of people enrolled in a given month.

22. Congressional Budget Office, "Medicaid—Baseline Projections" (March 2015), www.cbo.gov/publication/44204.

23. The FPL is currently $24,250 for a family of four. See Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, "2015 Poverty Guidelines" (January 2015), http://aspe.hhs.gov/poverty/15poverty.cfm.

24. In fact, the ACA expanded eligibility for Medicaid to include nonelderly residents with income of up to 133 percent of the FPL, but the act defined income in a way that effectively raised that threshold to 138 percent of the FPL. As a result of the Supreme Court decision, which was issued on June 28, 2012 (*National Federation of Independent Business v. Sebelius*, 132 S. Ct. 2566 (2012)), some states chose not to expand their programs.

spending to between 62 percent and 64 percent in 2015 and later years.[25]

In 2014, federal spending for Medicaid amounted to $301 billion, of which $270 billion covered benefits for enrollees. (The rest included payments to hospitals that served a disproportionate share of Medicaid patients and low-income uninsured patients, costs for the Vaccines for Children program, and administrative expenses.) On the basis of data provided by the Centers for Medicare & Medicaid Services (CMS), CBO estimates that the states spent $195 billion on Medicaid in that year.[26]

Children's Health Insurance Program

CHIP, a much smaller joint federal-state program, provides health insurance coverage for children in families whose income, though modest, is too high for them to qualify for Medicaid.[27] States have discretion to determine income eligibility, but it usually falls in the range between 100 percent and 300 percent of the FPL. Like Medicaid, CHIP is administered by the states within broad federal guidelines. Unlike Medicaid, however, CHIP has a fixed nationwide limit on federal spending.[28]

In 2014, federal spending on CHIP was $9.3 billion, and about 8 million people (almost all of them children) were enrolled in the program at some point during the year.[29] The federal share of CHIP spending varies among the states but usually averages about 70 percent.[30]

Subsidies for Insurance Purchased Through Exchanges

Many people can buy subsidized insurance through exchanges (also called marketplaces) operated by the federal government, by state governments, or through a partnership between federal and state governments. There are two kinds of subsidy: refundable tax credits to help pay for premiums; and cost-sharing subsidies to reduce out-of-pocket expenses, such as deductibles and copayments. To qualify for the premium tax credits, a person generally must have household income between 100 percent and 400 percent of the FPL and must not have access to certain other sources of health insurance coverage. (The most common examples are coverage through an employer that meets the law's definition of being affordable and coverage from a government program, such as Medicare or Medicaid.) To qualify for the cost-sharing subsidies, a person must meet the requirements for the premium tax credits, enroll in what the ACA calls a silver plan (which covers about 70 percent of the cost of covered benefits), and have household income below 250 percent of the FPL.

The size of a person's premium tax credit is the difference between the cost of the second-lowest-cost silver plan available to that person and a specified percentage of his or her household income. For example, in calendar year 2014, the tax credit was set so that people with income between 100 percent and 133 percent of the FPL would pay about 2 percent of their income to enroll in the second-lowest-cost silver plan, while people with higher income would pay a larger share of their income, up to about 9.5 percent for those with income between 300 percent and 400 percent of the FPL. (Therefore, if a person's premium for such a plan would be less than the applicable percentage of income, that person would receive no tax credit.) The amounts that enrollees must pay are indexed so that the subsidies cover roughly the same shares of the premiums over time. After calendar year 2017, however, an additional indexing factor may apply; if so, the shares of the premiums that enrollees pay

25. Congressional Budget Office, "Medicaid—Baseline Projections" (March 2015), Note a, www.cbo.gov/publication/44204.

26. CBO's calculations rely on unpublished data from states' filings of the CMS-64 Quarterly Expense Report for fiscal year 2014. States use that form to report their spending for Medicaid-covered benefits and administrative activities.

27. Under certain conditions, pregnant women and parents of children enrolled in CHIP are also eligible for the program, but they constitute a very small percentage of the program's enrollment. See Congressional Budget Office, "Children's Health Insurance Program—Baseline Projections" (March 2015), www.cbo.gov/publication/44189.

28. CHIP also differs from Medicaid in that its funding expires after September 2017, under current law.

29. Congressional Budget Office, "Children's Health Insurance Program—Baseline Projections" (March 2015), www.cbo.gov/publication/44189.

30. The ACA provided for a 23 percentage-point increase in the federal share of each state's CHIP spending from 2016 through 2019. CBO estimates that the average federal share will consequently rise from 70 percent to 93 percent during those four years before reverting to 70 percent in 2020. See Centers for Medicare & Medicaid Services, "Children's Health Insurance Program Financing" (accessed April 6, 2015), http://tinyurl.com/kqjfj3s.

will increase, and the shares of the premiums that the subsidies cover will decline.[31]

CBO and JCT estimate that, over the course of calendar year 2015, an average of about 11 million people will be covered by insurance purchased through the exchanges, of whom about 8 million will receive subsidies and 3 million will not. Over time, coverage through the exchanges will increase substantially, CBO and JCT expect, as people respond to the subsidies and to rising penalties for failing to obtain coverage. According to CBO and JCT's projections, an average of about 21 million people will have such coverage in 2016, and between 22 million and 24 million will have it in each year between 2017 and 2025. Roughly three-quarters of those enrollees are expected to receive subsidies. In fiscal year 2015, outlays for those subsidies and related spending will be about $41 billion, CBO and JCT estimate.[32]

The Historical Growth of Health Care Spending

Total spending for health care in the United States—that is, private and public spending combined—has risen significantly as a share of GDP over the past several decades. Such spending has grown relative to GDP in most years, except for the periods between calendar years 1993 and 2000 and again between 2009 and 2013 (the most recent year for which data are available). During both of those periods, spending for health care remained roughly stable as a share of the economy.

Some analysts have attributed the lull in growth from 1993 to 2000 to a substantial rise in the number of people enrolled in managed care plans and to excess capacity among providers of some types, which increased the leverage that health plans had in negotiating payments to providers; also, economic growth was relatively rapid in that period, making it easier for rising spending to remain stable as a share of the economy.[33] In examining the more recent slowdown in health care spending—from 2009 to 2013—analysts have reached different conclusions about the relative contributions of the weak economy and of changes in the delivery and financing of health care. Some analysts believe that an expansion of high-deductible health plans, increasing efforts by states to control Medicaid spending, and a slackening in the diffusion of new technologies are the key factors in the most recent slowdown.[34] Others believe that the weakened economy has been the primary factor.[35] How long the slowdown may persist is highly uncertain. In fact, one recent study estimated that total spending for health care in the United States increased as a share of GDP in calendar year 2014 and would continue to do so through 2023 (the last year included in the analysis).[36]

Spending for Medicare and Medicaid has also grown quickly in the past few decades, partly because of rising enrollment and partly because of rising costs per enrollee. Between 1985 and 2014, net federal spending for Medicare rose from 1.5 percent of GDP to 2.9 percent, and federal spending for Medicaid rose from 0.5 percent of GDP to 1.7 percent. (*Total* spending for Medicaid, including spending by the states, rose from 0.9 percent of GDP to 2.9 percent.) During the last few years of that period, however, net federal spending for Medicare grew

31. The additional indexing factor will apply in any year after calendar year 2017 in which the total costs of the exchange subsidies exceed a specified percentage of GDP. CBO expects that the indexing factor will apply in some years, although the uncertainty of projections of both the exchange subsidies and GDP make the timing unclear. For an explanation of the indexing factor, see Congressional Budget Office, *Additional Information About CBO's Baseline Projections of Federal Subsidies for Health Insurance Provided Through Exchanges* (May 2011), www.cbo.gov/publication/41464.

32. Congressional Budget Office, "Effects of the Affordable Care Act on Health Insurance Coverage—Baseline Projections" (March 2015), Table 3, www.cbo.gov/publication/43900. Related spending includes grants to states and payments by the federal government to insurers under several provisions of the ACA.

33. See Katharine Levit and others, "National Health Expenditures in 1997: More Slow Growth," *Health Affairs,* vol. 17, no. 6 (November/December 1998), pp. 99–110, http://dx.doi.org/10.1377/hlthaff.17.6.99.

34. See, for example, Amitabh Chandra, Jonathan Holmes, and Jonathan Skinner, "Is This Time Different? The Slowdown in Health Care Spending," *Brookings Papers on Economic Activity* (Fall 2013), pp. 261–323, http://tinyurl.com/pyrjret (PDF, 752 KB).

35. See, for example, Larry Levitt and others, *Assessing the Effects of the Economy on the Recent Slowdown in Health Spending* (Kaiser Family Foundation, April 2013), http://tinyurl.com/m78guc9; and David Dranove and others, "Health Spending Slowdown Is Mostly Due to Economic Factors, Not Structural Change in the Health Care Sector," *Health Affairs*, vol. 33, no. 8 (August 2014), pp. 1399–1406, http://dx.doi.org/10.1377/hlthaff.2013.1416.

36. Andrea M. Sisko and others, "National Health Expenditure Projections, 2013–23: Faster Growth Expected With Expanded Coverage and Improving Economy," *Health Affairs*, vol. 33, no. 10 (October 2014), pp. 1841–1850, http://dx.doi.org/10.1377/hlthaff.2014.0560.

only about as quickly as the overall economy did. Federal spending for Medicaid also grew at about that rate in recent years—until 2014, when spending for Medicaid increased rapidly because of the expansion of Medicaid coverage under the ACA. Between 2013 and 2014, net Medicare spending grew by only 2.8 percent, whereas federal Medicaid spending grew by 13.6 percent.[37]

Factors Affecting the Growth of Health Care Spending

A crucial factor underlying the rise in per capita spending for health care during the past few decades has been the emergence, adoption, and widespread diffusion of new medical technologies and services.[38] Major advances in medical science allow providers to diagnose and treat illnesses in ways that previously were impossible. Many of those innovations rely on costly new drugs, equipment, and skills.[39] Other innovations are relatively inexpensive, but their costs add up quickly as growing numbers of providers and patients make use of them. Although technological advances can sometimes reduce costs, they have generally increased total health care spending.

Other factors that have contributed to the growth of per capita spending on health care in recent decades include increases in personal income and changes in insurance coverage—in particular, declines in the share of health care costs that people with coverage pay out of pocket. Demand for medical care tends to rise as real (that is, inflation-adjusted) family income increases. People also use more care if they pay a smaller portion of the cost—and between 1970 and 2000, the share of total health care spending paid out of pocket declined rapidly, from 37 percent to 16 percent.[40] (More recently, the rate of decline has slowed, leaving the share of health care spending paid out of pocket at about 12 percent in 2013; reasons for that slowing include an increase in the share of insured people who have an annual deductible and an increase in the share enrolled in high-deductible health plans.)

In general, disentangling the effects of technology, income, and insurance coverage on the growth of health care spending is difficult, because rising income and expanding insurance coverage have themselves increased the demand for new technologies. One study estimated that new medical technologies and rising income were the most important factors behind the growth of health care spending between 1960 and 2007, and that the two accounted for roughly equal shares of that growth—but also that the effect of increasing insurance coverage during that period was highly uncertain.[41] Another study concluded that after Medicare was introduced, the resulting expansion of insurance coverage increased health care spending not just for the elderly patients who gained coverage but for younger patients as well. Part of the reason, according to the study, was that the increased insurance coverage spurred a more rapid and widespread adoption of existing treatment methods, such as those provided by cardiac intensive care units, for the elderly and nonelderly alike—though the study concluded that questions remained about the magnitude of those effects.[42]

Spending on health care per person would also be expected to grow if people were developing more health problems or becoming more likely to contract diseases, but the evidence about the importance of those factors is mixed. In particular, researchers have reached different

37. Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), p. 11, www.cbo.gov/publication/49892.

38. Congressional Budget Office, *Technological Change and the Growth of Health Care Spending* (January 2008), www.cbo.gov/publication/41665.

39. See, for example, Jay H. Hoofnagle and Averell H. Sherker, "Therapy for Hepatitis C—The Costs of Success," *The New England Journal of Medicine*, vol. 370, no. 16 (April 17, 2014), pp. 1552–1553, http://tinyurl.com/p7z4tyu.

40. Centers for Medicare & Medicaid Services, National Health Expenditure Accounts, "NHE Tables" (accessed April 3, 2015), http://go.usa.gov/jmGY.

41. Sheila Smith, Joseph P. Newhouse, and Mark S. Freeland, "Income, Insurance, and Technology: Why Does Health Spending Outpace Economic Growth?" *Health Affairs*, vol. 28, no. 5 (September/October 2009), pp. 1276–1284, http://dx.doi.org/10.1377/hlthaff.28.5.1276.

42. Amy Finkelstein, "The Aggregate Effects of Health Insurance: Evidence From the Introduction of Medicare," *The Quarterly Journal of Economics*, vol. 122, no. 1 (February 2007), pp. 1–37, http://tinyurl.com/oqlrvjq. One factor that may have contributed to that study's findings was the relatively generous payment system that Medicare adopted. Following the common practice of private insurers at the time, Medicare initially paid hospitals on the basis of their incurred costs—an approach that gave hospitals little incentive to control those costs—rather than according to fee schedules, as it does today. The increase in hospital spending that resulted from Medicare's creation might have been smaller under a less generous payment system.

Table 2-1.

Average Annual Rate of Excess Cost Growth in Spending for Health Care

Percent

	Medicare	Medicaid	Other	Overall
1975 to 2013	1.9	1.5	1.8	1.8
1980 to 2013	1.6	1.2	1.7	1.6
1985 to 2013	1.4	0.9	1.5	1.4
1990 to 2013	1.2	0.3	1.3	1.1

Source: Congressional Budget Office.

Note: Excess cost growth refers to the extent to which the growth rate of nominal health care spending per capita—adjusted for demographic characteristics of the relevant populations—outpaces the annual growth rate of potential gross domestic product (GDP) per capita, on average. (Potential GDP is CBO's estimate of the maximum sustainable output of the economy.) The historical rates of excess cost growth are a weighted average of annual rates: Twice as much weight is placed on the latest year as on the earliest year.

conclusions about the extent to which spending growth is affected by changes in the prevalence of chronic diseases (such as cardiovascular disease, diabetes, and arthritis); in the share of the people with those diseases who receive treatment; and in the costs per case of treating those diseases.[43]

Studies that have analyzed the growth of health care spending have consistently found that the aging of the population has had only a small effect on it.[44] Although older adults have higher average medical expenses than younger adults do, the age composition of the population has not changed enough to account for much of the increase in per capita spending. Aging has had a larger effect on *federal* spending for health care, however, because nearly all U.S. residents become eligible for Medicare when they turn 65. From 1985 to 2015, the share of the population that was at least 65 years old grew by about one-quarter, from almost 12 percent to 15 percent.

Excess Cost Growth

As part of its analysis of health care spending, CBO calculates the growth in that spending per person relative to the growth of potential GDP per person after removing the effects of demographic changes on health care spending—in particular, changes in the age distribution of the population.[45] The resulting ratio is called excess cost growth. The phrase is not intended to imply that growth in per capita spending for health care is necessarily excessive or undesirable; excess cost growth simply measures the extent to which the growth in such spending (adjusted for demographic changes) outpaces the growth in potential output per capita.

According to CBO's calculations, average rates of excess cost growth have ranged between 0.3 percent and 1.9 percent for various parts of the health care system and during various periods in the past several decades (see Table 2-1).[46] Although such rates are quite variable from year to year, they have generally declined over the past few decades, probably because of two important shifts in how care is financed. First, private health insurance has moved away from indemnity policies—which generally

43. For additional discussion, see Congressional Budget Office, *Key Issues in Analyzing Major Health Insurance Proposals* (December 2008), p. 23, www.cbo.gov/publication/41746. See also Congressional Budget Office, *How Does Obesity in Adults Affect Spending on Health Care?* (September 2010), www.cbo.gov/publication/21772; Charles S. Roehrig and David M. Rousseau, "The Growth in Cost per Case Explains Far More of U.S. Health Spending Increases Than Rising Disease Prevalence," *Health Affairs*, vol. 30, no. 9 (September 2011), pp. 1657–1663, http://dx.doi.org/10.1377/hlthaff.2010.0644; and Kenneth E. Thorpe and others, "The Rising Prevalence of Treated Disease: Effects on Private Health Insurance Spending," *Health Affairs*, web exclusive (June 2005), http://dx.doi.org/10.1377/hlthaff.w5.317.

44. See, for example, Uwe E. Reinhardt, "Does the Aging of the Population Really Drive the Demand for Health Care?" *Health Affairs*, vol. 22, no. 6 (November 2003), pp. 27–39, http://dx.doi.org/10.1377/hlthaff.22.6.27.

45. Potential GDP is CBO's estimate of the maximum sustainable output of the economy; using potential GDP rather than actual GDP in the calculation of excess cost growth limits the effect of cyclical changes in the economy on that calculation.

46. The rates of excess cost growth are a weighted average of annual rates in which twice as much weight was placed on the latest year as on the earliest year. In calculating excess cost growth for Medicare, CBO adjusted for changes in the age distribution of beneficiaries. In calculating excess cost growth for Medicaid, CBO adjusted for changes in the program's case mix—that is, the proportions of beneficiaries who were children, elderly, disabled, and none of the above—rather than for changes in the age distribution of beneficiaries. The rates of excess cost growth adjusted for demographic changes reflect changes in spending per person rather than changes in the number or composition of beneficiaries. The introduction of Medicare's Part D drug benefit in 2006 resulted in a onetime shift in some spending from Medicaid to Medicare; to adjust for that shift, CBO assumed that excess cost growth in 2006 for both Medicare and Medicaid was equal to the average of excess cost growth in the two programs for that year.

reimburse enrollees for their incurred medical costs and which predominated before the 1990s—and toward greater management of care. Second, beginning in the 1980s, Medicare shifted from payments that were based on the costs that providers incurred or the charges that they submitted to fee schedules that constrained price increases.

Excess cost growth has been especially low, on average, during two periods—in most of the 1990s and during the past few years. In the mid- to late 1990s, managed care was spreading rapidly, and some of the low excess cost growth probably represented a series of onetime downward shifts in health care costs, spread out over several years, rather than a permanent change in the underlying growth rate of health care spending. During the past few years, some of the low excess cost growth has probably reflected the economic downturn and may be reversed once the economy recovers further. Even the part of the currently low excess cost growth that reflects structural changes in how care is delivered or how it is financed may largely represent another onetime downward shift in costs, rather than a permanent reduction in the growth rate of spending.

For those reasons, even though growth rates are currently below the historical average, CBO judges that the rate of excess cost growth in overall spending on health care since 1985 is the rate that best reflects features of the health care delivery and financing systems that are likely to endure for a number of years—which is important because the agency uses its estimate of historical excess cost growth to inform its projections of future spending. Within that period, the later years provide a more useful guide to the future than the earlier years do. Therefore, CBO calculated a weighted average of the annual excess cost growth rates between 1985 and 2013 (the latest year for which data are available), placing twice as much weight on the latest year as on the earliest year and setting the weights for intermediate years by following a linear progression between the two. After making that adjustment, CBO arrived at its estimate of the historical rate of excess cost growth to be used as a basis for its long-term projections: 1.4 percent per year.[47]

Long-Term Responses to Rising Health Care Costs

Health care spending cannot rise more quickly than GDP forever. When that spending increases as a share of GDP, it absorbs a growing share of people's income, restraining the consumption of other goods and services and building pressure to slow its growth, both in the private sector and in government programs. Those responses will occur even if, as CBO assumes in making its projections, current federal law does not change.

Responses in the Private Sector, Health Insurance Exchanges, and Medicaid

CBO expects that the private sector will respond to rising health care costs by pursuing various ways to restrain spending. Many employers will intensify their efforts to reduce the costs of the insurance plans that they offer—for example, by working with insurers and providers to make the delivery of health care more efficient, by limiting the amount of insurance coverage that they offer, or by offering a fixed contribution that employees can use to purchase health insurance. Some employees will move to plans with more tightly managed benefits, narrower networks of providers, or higher cost-sharing requirements—moves that would lower premiums by shifting costs to the employees, but that also could reduce total spending on health care. Such changes are already under way; for example, the share of covered workers with an annual deductible increased from 55 percent in 2006 to 80 percent in 2014.[48]

When it goes into effect in 2018, an excise tax on certain health insurance plans with high premiums will also encourage some employers and individuals to choose plans with lower premiums. In some cases, employers are already reducing the benefits that their insurance plans cover or increasing workers' deductibles and copayments to avoid having to pay the tax in the future.[49] Although the excise tax will not apply to health insurance plans offered through exchanges, people buying coverage through exchanges are also likely to seek ways to avoid

47. The same method applied to data through 2007 yields an estimate of 1.6 percent per year. That is, the slow growth of health care spending experienced during the past several years, all else being equal, has reduced the average rate of excess cost growth by about 0.2 percentage points.

48. Gary Claxton and others, *Employer Health Benefits: 2014 Annual Survey* (Kaiser Family Foundation and Health Research and Educational Trust, September 2014), p. 120, http://tinyurl.com/q7h4osw.

49. Julie Piotrowski, "Excise Tax on 'Cadillac' Plans," Health Policy Briefs, *Health Affairs* (September 12, 2013), http://tinyurl.com/my4kfd7.

higher premiums, which will tend to slow the growth of federal spending for the exchange subsidies.[50]

Many state governments will respond to growing costs for Medicaid by restraining payment rates to providers and managed care plans, limiting the services that they choose to cover, or tightening eligibility for the program so that it serves fewer beneficiaries than it would have otherwise. Because federal spending for Medicaid depends on state spending, such actions by the states will tend to slow the growth of federal spending for the program as well.

Over the long term, those responses by businesses, individuals, and state governments will sharply slow the growth of health care spending, resulting in a reduction of the rate of excess cost growth in the health care system, CBO projects. That slowdown could occur in different ways. Improvements in the efficiency of the health care sector, for example, could lower the rate of excess cost growth. Many experts believe that a substantial share of current health care spending is of low value, meaning that the services provided yield little health benefit relative to their costs. If the use of such services fell, the rate of excess cost growth could also decline for an extended period without imposing direct costs on patients. However, reducing the use of low-value care without affecting high-value care is very challenging, so the degree to which such a reduction might occur is highly uncertain.[51]

The responses to high and rising health care costs could have other effects as well. They could lead to significant changes in the amount that people paid directly for care, their access to care, or the quality of care—at least, relative to what would have occurred without a slowdown in spending. In the private sector, people might face increased cost-sharing requirements and narrower networks of providers; new and potentially useful health technologies might be introduced more slowly or used less frequently than they would have been otherwise; and more treatments and interventions might not be covered by insurance. Those outcomes might affect people with employment-based health insurance and people purchasing health insurance through the exchanges. In Medicaid, some beneficiaries might lose their eligibility or have to pay more out of pocket if states narrowed their eligibility criteria or dropped coverage of optional services. Medicaid beneficiaries might also end up with more tightly managed care. In addition, private insurers and Medicaid programs might constrain payments to providers in ways that limited access to care, the quality of care, or both.

Responses in Medicare

Many features of the Medicare program cannot be altered without changes in federal law. Still, a reduction in spending growth elsewhere in the health care sector would probably affect Medicare, which is integrated to a significant degree with the other parts of the health care system. In particular, spending on Medicare will slow to the extent that actions by businesses, individuals, and states result in lower-cost patterns of practice by physicians, slower development and diffusion of new medical technologies, and cost-limiting changes to the structure of the overall health care system.

In addition, current law includes a number of incentives and mechanisms that could reduce spending growth in Medicare. For one thing, the program's premiums and cost sharing will consume a growing share of beneficiaries' income—because the growth of health care spending in general is projected to outpace the growth of income—and that will constrain demand for some Medicare services. Changes being made in the structure of Medicare's payments to providers, such as financial incentives to reduce hospital-acquired infections and readmissions, may also help hold down federal spending.[52] Further, the Center for Medicare & Medicaid Innovation, an arm of CMS, is testing promising ways to modify rules and payment methods that could reduce costs without impairing

50. A recent analysis of insurance plans available through exchanges found that many consumers continued enrolling in cheaper plans with narrower networks of providers even though they reported low satisfaction with those plans. See McKinsey Center for U.S. Health System Reform, *Hospital Networks: Evolution of the Configurations on the 2015 Exchanges* (April 2015), http://tinyurl.com/pnyv563 (PDF, 881 KB).

51. See Katherine Baicker, Sendhil Mullainathan, and Joshua Schwartzstein, *Behavioral Hazard in Health Insurance*, Working Paper 18468 (National Bureau of Economic Research, October 2012), www.nber.org/papers/w18468.

52. Sarah L. Krein and others, "Preventing Hospital-Acquired Infections: A National Survey of Practices Reported by U.S. Hospitals in 2005 and 2009," *Journal of General Internal Medicine*, vol. 27, no. 7 (July 2012), pp. 773–779, www.ncbi.nlm.nih.gov/pmc/articles/PMC3378739/. For a description of the program to reduce hospital readmissions, see Centers for Medicare & Medicaid Services, "Readmissions Reduction Program" (accessed April 6, 2015), http://go.usa.gov/DxKC.

the quality of health care; the changes that prove effective may be expanded by the Secretary of Health and Human Services.[53] Several such demonstrations are currently under way, but which, if any, will prove successful in slowing spending growth for Medicare as a whole is uncertain.

Growth in Medicare spending will also be constrained by the rules governing the annual updates that are made to Medicare's payment rates for health care services. The scheduled updates will generally be smaller than the increases in the prices of inputs (namely, labor and supplies) used to deliver care. But it is unclear whether providers' responses to that constraint will lead to offsetting increases or to further reductions in spending for Medicare and other health care programs. The answer depends on whether or to what extent the providers can restrain the growth of their costs, either by increasing their productivity over time—that is, producing the same quantity and quality of output (treatments and procedures) with fewer or less costly inputs—or by other means.

There is considerable uncertainty, partly because of data limitations, about the degree of productivity growth in the health care sector and how it compares with productivity growth in the economy as a whole. Some evidence suggests that productivity growth in the hospital industry is substantial. For example, one recent study found such evidence for selected medical conditions, after adjusting for trends in the severity of illness and improvements in patients' outcomes.[54] Also, a recent analysis by CMS indicates that Medicare's payment updates for services by providers other than physicians were, on average, roughly in line with general price inflation (which reflects growth in productivity in the economy as a whole) over the 1991–2011 period.[55] Furthermore, an analysis by the American Hospital Association indicates that private-sector payment rates grew at about the same pace as Medicare's payment rates over that period, on average, and that aggregate profit margins for hospitals in 2012 were higher than those in the early 1990s.[56] Taken together, those findings suggest that, on average, hospitals have improved their productivity roughly in line with economywide productivity growth.[57] Earlier evidence, however, suggests that productivity growth in the hospital industry is very low.[58] Evidence about productivity growth for physicians is harder to interpret, partly because of the challenges involved in measuring the quality of the care that they provide.[59]

If providers cannot increase their productivity enough over time to keep the growth of their costs in line with the updates to Medicare's payment rates, they might respond in other ways, such as reducing the quality of care, reducing Medicare beneficiaries' access to care (which might reduce spending), or trying to increase revenues by other means (which might increase spending). Providers that are not able to adjust to the constraint imposed by the payment updates might merge with more profitable providers or close.

If access to providers under the traditional fee-for-service program declined, more enrollees might shift into Medicare Advantage plans, which are not bound by the updates to payment rates that apply to traditional Medicare. Medicare Advantage plans might be able to offer better access to care than the fee-for-service program if they increased the rates that they paid providers, but that would probably require enrollees in such plans to pay higher premiums. Because federal payments to those plans are based largely on costs in the fee-for-service

53. A list of the center's ongoing projects is available at Centers for Medicare & Medicaid Services, "Innovation Models" (accessed April 6, 2015), http://go.usa.gov/3Dc2Q.

54. John A. Romley, Dana P. Goldman, and Neeraj Sood, "U.S. Hospitals Experienced Substantial Productivity Growth During 2002–11," *Health Affairs*, vol. 34, no. 3 (March 2015), pp. 511–518, http://dx.doi.org/10.1377/hlthaff.2014.0587.

55. Centers for Medicare & Medicaid Services, *Review of Assumptions and Methods of the Medicare Trustees' Financial Projections* (December 2012), p. 60, http://go.usa.gov/Xn7Q.

56. American Hospital Association, "Trends in Hospital Financing," in *Trends Affecting Hospitals and Health Systems* (accessed April 6, 2015), http://tinyurl.com/m4by9zd.

57. Less information is readily available about the influence of changes in Medicare's payment rates and methods over the past two decades on the growth of costs for other providers.

58. Jonathan D. Cylus and Bridget A. Dickensheets, "Hospital Multifactor Productivity: A Presentation and Analysis of Two Methodologies," *Health Care Financing Review*, vol. 29, no. 2 (Winter 2007–2008), pp. 49–64, http://go.usa.gov/XrHC; and Michael J. Harper and others, "Nonmanufacturing Industry Contributions to Multifactor Productivity, 1987–2006," *Monthly Labor Review*, vol. 133, no. 6 (June 2010), pp. 16–31, www.bls.gov/opub/mlr/2010/06/art2full.pdf (1 MB).

59. See Joseph P. Newhouse and Anna D. Sinaiko, "Estimates of Physician Productivity: An Evaluation," *Health Care Financing Review*, vol. 29, no. 2 (Winter 2007–2008), pp. 33–39, www.ncbi.nlm.nih.gov/pmc/articles/PMC4195017/.

program, it is unclear whether such a shift—if it were to occur—would substantially alter the trajectory of Medicare spending.

Because of the uncertainty about the responses of Medicare providers to the payment updates, CBO has not adjusted its projections of spending in the long term to take such responses into account.

CBO's Method for Making Long-Term Projections of Federal Health Care Spending

CBO's extended baseline projections of federal spending on the major health care programs, like the rest of the agency's extended baseline projections, generally reflect the provisions of current law. The projections in the extended baseline for the next 10 years match the agency's 10-year baseline projections as adjusted to reflect recently enacted legislation, which are based on detailed analysis of the major health care programs. Beyond the coming decade, however, projecting federal health care spending becomes increasingly difficult because of the considerable uncertainties involved. A wide range of changes could occur—in people's health, in the sources and extent of their insurance coverage, and in the delivery of medical care—that are almost impossible to predict but that could have a significant effect on federal health care spending.

Therefore, for the projections beyond 2025, CBO has adopted a formulaic approach—one that combines estimates of the number of beneficiaries of government health care programs with fairly mechanical projections of spending growth per beneficiary. CBO has estimated spending growth per beneficiary by combining projected growth in potential GDP per capita and projected excess cost growth for the program in question (with adjustments for demographic changes in the beneficiaries of that program).

The long-term projections of excess cost growth depend on CBO's assessment of the *underlying* rates of excess cost growth. The underlying growth rates begin in 2014 with the historical average rate of excess cost growth described above—1.4 percent per year—and are projected to decline gradually, at different rates for different programs, in response to the pressures created by rising costs. Projected excess cost growth for each program depends on the rate of excess cost growth for that program implied by the baseline projections for the next decade; on CBO's assessment of the underlying rate of excess cost growth for the program a quarter century from now and beyond; and on a blend of those factors for the intervening period (the 11th through the 24th years of the projection).

Excess Cost Growth Over the Next Decade

For 2016 through 2025, the projected rates of excess cost growth used in CBO's extended baseline are derived from CBO's 10-year baseline:

- For Medicare, CBO's baseline projections imply an average annual rate of excess cost growth over that decade of about 0.4 percent; that is, spending per beneficiary for Medicare (adjusted for demographic changes) is projected to grow slightly faster than potential GDP per capita. That slow projected growth rate stems partly from slow projected growth in the use of Medicare services, which is consistent with recent experience. In addition, some of the limitations on payments under current law will be phased in. Consequently, excess cost growth in Medicare is projected to be negative during the next few years and then to rise to about 0.8 percent per year by the end of the decade.

- For federal Medicaid spending, CBO's baseline projections imply an average annual rate of excess cost growth of 0.5 percent (after the effects of the changing federal share of Medicaid spending are removed). The expansion of benefits in some states to people with income of up to 138 percent of the FPL will increase total Medicaid spending; it will also probably change the average cost per enrollee over the next several years, because average spending on the new enrollees (mostly adults who are not disabled) will tend to differ from average spending on previously eligible enrollees. However, excess cost growth incorporates an adjustment for demographic changes, so it is not significantly affected by the expansion.

- For the exchange subsidies, CBO's baseline projections of spending per enrollee depend on its projections of private health insurance premiums. The agency's baseline projections imply an average annual rate of excess cost growth of about 2 percent for those premiums. The agency's projections of spending per enrollee on the exchange subsidies also account for the likelihood that federal subsidies will cover a declining share of the premiums over time as a result of the additional indexing factor mentioned above.

Underlying Rates of Excess Cost Growth

CBO's projections of the underlying rates of excess cost growth are calculated as follows:

- For all parts of the health care system, the underlying rate of excess cost growth in 2014 equals the weighted average rate of excess cost growth observed in the overall health care system between 1985 and 2013, which is 1.4 percent.

- The underlying rates of excess cost growth gradually decline, over 75 years, to zero for Medicaid and private insurance premiums and to 1.0 percent for Medicare. CBO built in that difference because, in the absence of changes in federal law, state governments and the private sector have more flexibility to respond to the pressures of rising health care spending than the federal government does. Such a difference in growth rates could occur if, for instance, actions taken to reduce spending growth in the private sector weakened the incentives to develop and disseminate new medical technologies for nonelderly people but had a smaller effect on new technologies for diseases that principally affected the elderly.

- The underlying rate of excess cost growth in each sector declines in linear fashion—that is, by the same fraction of a percentage point each year. That linear decline, which CBO calls the underlying path of excess cost growth, reflects the agency's assessment that, over time, the steps needed to keep reducing growth rates will become increasingly onerous, but the pressure to take them will also intensify because of increasingly high health care spending.

Formulating Long-Term Projections

In CBO's extended baseline, projected federal spending for the major federal health care programs for the 2016–2025 period matches the projected spending in CBO's 10-year baseline. For 2026 and later years, the projection of federal spending is constructed as follows:

- For Medicare, excess cost growth in 2026 equals 0.9 percent, the average rate projected from 2023 through 2025 with certain adjustments.[60] It then increases by the same fraction of a percentage point each year for 14 years, so that in 2040 it matches the rate in the underlying path for that year, 1.3 percent. Altogether, by CBO's projections, excess cost growth for Medicare would average 0.8 percent per year during the 2016–2040 period. To generate estimates of total spending in the long term, CBO combined those projections of excess cost growth with estimates of the future number of Medicare beneficiaries. CBO estimates that the number of beneficiaries would grow with the size of the population age 65 and over and with the number of recipients of Social Security's Disability Insurance program.[61]

- For Medicaid, excess cost growth in 2026 equals 0.7 percent, the average rate projected from 2023 through 2025. It then increases by the same fraction of a percentage point each year for 14 years, so that in 2040 it matches the rate in the underlying path, 0.9 percent. According to the agency's projections, excess cost growth for the program would average 0.7 percent per year during the 2016–2040 period. To generate projections for Medicaid spending in the long term, CBO combined its projections of excess cost growth with estimates of the future number of Medicaid beneficiaries. States' future decisions about Medicaid eligibility and covered benefits are quite uncertain even over the next 10 years, and that uncertainty grows with time; accordingly, CBO adopted a formulaic approach to generating the number of Medicaid beneficiaries after the next decade. That approach takes into account population growth, increasing earnings, and prospective actions by states (see Appendix A).

- For private health insurance premiums, excess cost growth in 2026 is about 2 percent, the average rate projected from 2023 through 2025. It then decreases

60. Spending amounts were adjusted for the fact that, because of the quirks of the calendar, Medicare is scheduled to make 11, rather than the normal 12, capitation payments in Parts C and D of the program in 2024. In addition, the effect of sequestration was removed because that cancellation of funding will not affect spending after 2024. After those adjustments were made, the average projected rate of excess cost growth rate from 2023 through 2025 came to 0.8 percent. Under current law, payment rates for physicians' services in Medicare will remain at the 2019 level from 2020 through 2025, and they will increase annually starting in 2026. Those changes in the scheduled payment updates boost the projected excess cost growth rate in 2026 from 0.8 percent to 0.9 percent.

61. For more information about how CBO projects the number of beneficiaries of Social Security's Disability Insurance program, see Congressional Budget Office, *CBO's Long-Term Model: An Overview* (June 2009), www.cbo.gov/publication/20807, and Appendix A of this report.

by the same fraction of a percentage point each year for 14 years, so that in 2040 it matches the rate in the underlying path for that year, 0.9 percent. CBO projected the amounts of the exchange subsidies on the basis of excess cost growth for private health insurance premiums, the effects of the additional indexing factor described above, and growth in income (which reduces the share of the population that is eligible for subsidies).

- Under current law, funding for CHIP expires after September 2017. Following statutory guidelines, CBO assumes in its baseline spending projections that annual funding for the program from 2018 through 2025 will amount to $5.7 billion.[62] For 2026 and beyond, CBO assumes that spending on the program will equal the same share of GDP as the share in 2025.

All long-term economic and demographic developments are uncertain, but excess cost growth in health care may be particularly so. Pharmaceuticals, medical procedures and technology, and the delivery of care all continue to evolve rapidly, potentially making spending for any of the federal health care programs much higher or lower than CBO projects. Compounding the uncertainty imposed by those factors are the uncertain responses of beneficiaries and providers. For example, enrollees may be willing to accept more restrictions on their use of new services in return for lower premiums and cost-sharing requirements in Medicare Advantage plans. And if some insurers encourage or discourage the use of certain new drugs and technologies, the result may be changes in providers' behavior that affect the services received by people covered by other insurers. The number of beneficiaries in Medicaid and the exchanges is also very uncertain, because changes in the distribution of income and the steps that states may take regarding eligibility are unclear. Chapter 7 shows how CBO's projections would differ if the growth of costs per beneficiary in Medicare and Medicaid proved significantly higher or lower than the agency projects in the extended baseline.

62. See Congressional Budget Office, cost estimate for H.R. 2, the Medicare Access and CHIP Reauthorization Act of 2015 (March 2015), www.cbo.gov/publication/50053.

Long-Term Projections of Spending for the Major Health Care Programs

In CBO's extended baseline projections, which generally reflect current law, federal spending on the major health care programs increases significantly as a percentage of the economy in the coming decades.

Projected Spending

In 2015, federal spending for Medicare (net of offsetting receipts), Medicaid, CHIP, and the exchange subsidies will amount to 5.2 percent of GDP, CBO expects; net Medicare spending will equal 3.0 percent and federal spending on Medicaid, CHIP, and the exchange subsidies will equal 2.2 percent. In CBO's extended baseline, federal spending for those programs rises to 8.0 percent of GDP in 2040; net Medicare spending accounts for 5.1 percent and spending on Medicaid, CHIP, and the exchange subsidies for 2.9 percent (see Figure 2-2).[63] Gross Medicare spending is projected to increase from 3.5 percent of GDP in 2015 to 6.3 percent in 2040.

The projected rise in federal spending for the major health care programs relative to GDP results from the continued aging of the population, the expectation that health care costs per beneficiary will continue to grow somewhat faster than potential GDP per capita, and the continued increase in spending for federal subsidies for health care through Medicaid and the insurance exchanges over the next few years. In CBO's extended baseline, aging accounts for 43 percent of the programs' spending growth relative to GDP over the next 25 years, excess cost growth accounts for 45 percent, and an increased number of recipients of exchange subsidies and Medicaid benefits attributable to the ACA accounts for 12 percent (see Box 1-1 on page 24).

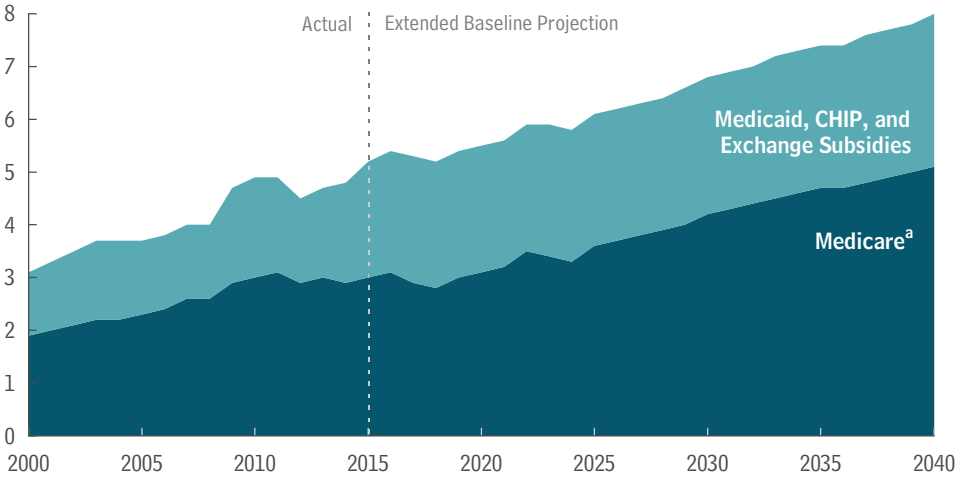
The factors that underlie the projected rise in total federal spending for the major health care programs also affect the amounts of spending that would subsidize care for different types of beneficiary. Although the ACA has

63. The projections in this chapter include the effects of the exchange subsidies on outlays; the smaller effects on revenues are included in the projections presented in Chapter 5. In all of the projections, the outlays for the exchange subsidies are presented in combination with outlays for Medicaid and CHIP; they all constitute federal subsidies for health insurance for low- and moderate-income households. Spending for the exchange subsidies includes related spending for risk adjustment.

Figure 2-2.

Federal Spending on the Major Health Care Programs, by Category

Percentage of Gross Domestic Product



The projected rise in federal spending for the major health care programs relative to GDP results from the continued aging of the population; the expectation that health care costs per person will continue to grow at a faster rate than potential GDP per capita; and, to a lesser extent, an increased number of recipients of exchange subsidies and Medicaid benefits attributable to the Affordable Care Act.

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

CHIP = Children's Health Insurance Program.

a. Net spending for Medicare refers to gross spending for Medicare net of offsetting receipts (from premium payments made by beneficiaries to the government and amounts paid by states from savings on Medicaid's prescription drug costs).

expanded federal support for health care regardless of people's health status, only about one-fifth of federal spending for the major health care programs in 2025 would finance care for able-bodied, nonelderly people, CBO projects in the extended baseline; about three-fifths would go toward care for people who are at least 65 years old, and about one-fifth toward care for blind and disabled people. After 2025, according to CBO's estimates in the extended baseline, the share of federal spending for the major health care programs that finances care for people who are at least 65 would rise slowly because of the continued aging of the population.

Among people who are at least 65, the fraction who will be significantly older than 65 will increase over the next 25 years (see Figure 2-3). That shift affects CBO's long-term projections because Medicare spending has traditionally been higher, on average, for the older people within the over-65 group. For example, in Parts A and B of the fee-for-service portion of Medicare in calendar year 2012, spending averaged about $5,000 for 66-year-olds, $8,500 for 75-year-olds, and $12,500 for 85-year-olds.[64] CBO expects that pattern to persist. One consequence of the pattern is that elderly beneficiaries over any given age receive a disproportionate share of the program's spending. For example, people who will be at least 75 years old in 2040 will represent about 56 percent of the elderly people enrolled in Medicare but will account for about 70 percent of the program's spending for elderly people, according to CBO's projections.

Although this chapter focuses on federal spending for health care, CBO also projected total national spending on health care (see Box 2-1). The agency combined its projections of federal spending on the major health care programs with rough projections of other health care spending. According to that analysis, which involves substantial uncertainty, national spending on health care as a share of GDP would continue to rise—from about

64. Calculating average spending for 65-year-old beneficiaries is not helpful for this comparison because most of them are enrolled in Medicare for only part of the calendar year in which they turn 65. The amounts reported here include spending under Parts A and B of Medicare averaged among all beneficiaries of each age enrolled in Part A, Part B, or both, within the traditional fee-for-service program. The fraction of beneficiaries enrolled in both Parts A and B increases as beneficiaries age.

Box 2-1.

National Spending on Health Care

National spending on health care increased from 9.5 percent of gross domestic product (GDP) in 1985 to 16.4 percent of GDP in 2013. In the Congressional Budget Office's extended baseline, which generally reflects current law, national spending for health care increases to about 25 percent of GDP by 2040.

CBO has only a limited ability to project national spending on health care, because the agency does not track all of the components of that spending as closely as it analyzes the components that are directly relevant to the federal budget. Therefore, to generate projections of national spending for health care, the agency combined its own projections for some categories of spending with projections for other categories developed by the Office of the Actuary in the Centers for Medicare & Medicaid Services (CMS).[1] The resulting projections were rough and involved substantial uncertainty—especially as they moved farther into the future—and therefore should be viewed with caution.

To project national spending for health care for the 2016–2025 period, CBO started with its projections of federal spending on the government's major health care programs. Other spending for health care includes payments by private health insurers, out-of-pocket payments by consumers, and other public spending. CBO estimated such spending by means of its own projections of payments by private health insurers and the Office of the Actuary's projections of out-of-pocket payments by consumers and of other public spending. Because the projections from CMS are available only through 2023, CBO used a historical rate of excess cost growth to extend them for the following two years.[2]

To project national spending for health care after 2025, CBO again started with its projections of federal spending on the government's major health care programs. It estimated other spending for health care by combining its projections of demographic and economic conditions with assumptions about excess cost growth for such spending. The starting point for projected excess cost growth in other health care spending was the weighted average rate of excess cost growth observed in the overall health care system between 1985 and 2013. CBO assumed that the rate of excess cost growth for other health care spending would slow from that historical rate—1.4 percent—in 2014 to zero over 75 years, in reaction to the pressures developing from rising health care spending. The slowdown was assumed to occur in linear fashion—that is, the rate of excess cost growth was assumed to decline by the same number of fractional percentage points each year.

1. This report defines total spending for health care as the health consumption expenditures in the national health expenditure accounts maintained by CMS. That definition excludes spending on medical research, structures, and equipment, and it includes out-of-pocket spending, payments made by public and private health insurance plans, spending on public health, and payments made by other third-party payers, such as workers' compensation.

2. Andrea M. Sisko and others, "National Health Expenditure Projections, 2013–23: Faster Growth Expected With Expanded Coverage and Improving Economy," *Health Affairs*, vol. 33, no. 10 (October 2014), pp. 1841–1850, http://dx.doi.org/10.1377/hlthaff.2014.0560.

17 percent of GDP now to about 25 percent by 2040—if current laws remained in place.

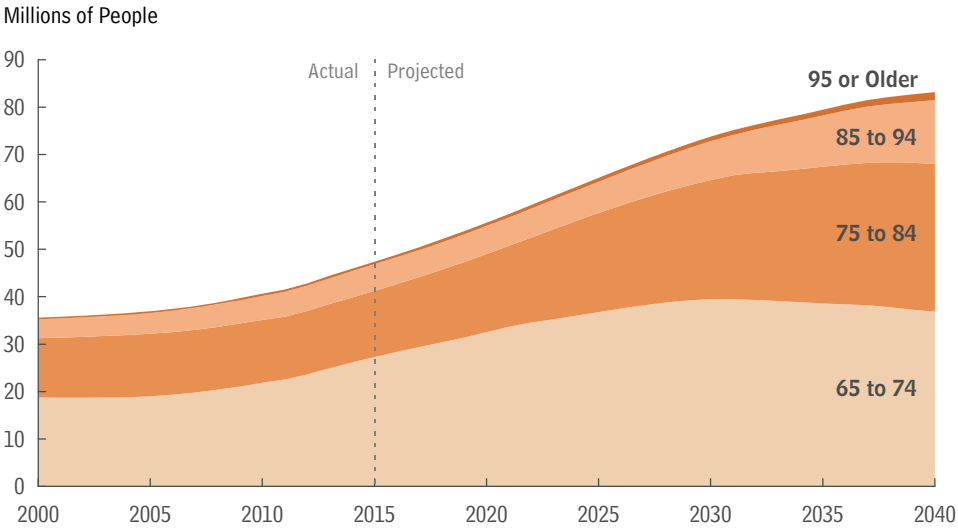
Projected Financing

Spending on the government's major health care programs is financed in various ways. For Medicaid and CHIP, states and the federal government share in the financing. The federal share of spending on those programs is funded entirely from the government's general fund, as are the outlays for subsidies provided through the health insurance exchanges.

In contrast, Medicare is funded mostly through a combination of dedicated taxes, beneficiaries' premiums, and

Figure 2-3.

Number of People Age 65 or Older, by Age Group



Per-person spending for Parts A and B of Medicare climbs with age: The program's average spending for an 85-year-old is more than twice that for a 66-year-old. Thus, average Medicare costs will rise as the number of people who are significantly older than 65 increases.

Source: Congressional Budget Office.

money from the government's general fund. The relative magnitudes of those sources of funding have changed significantly over time. Dedicated taxes have declined from 67 percent of gross federal spending for Medicare in 2000 to an estimated 40 percent in 2015 (see Figure 2-4). During the same period, the share of gross spending financed by offsetting receipts (mostly premiums paid by beneficiaries) has grown from 10 percent to an estimated 13 percent, and the share financed by the general fund and the remaining sources of funding for the program has increased from 23 percent to 47 percent. The increase in the share of spending covered by sources other than dedicated taxes is largely the result of an increase in the share of benefits provided by the parts of the program that are financed mainly by a combination of premiums and money from the general fund—Part B and, since 2006, Part D.[65] In CBO's extended baseline, receipts from dedicated Medicare taxes equal only 22 percent of gross federal spending for Medicare in 2040, and beneficiaries' premiums and other offsetting receipts account for 17 percent—leaving 61 percent financed by general funds and the remaining sources.

Benefits under Part A of Medicare are paid from the Hospital Insurance Trust Fund, which is credited with receipts largely from payroll taxes and from other revenues. A commonly used measure of the sustainability of Part A of Medicare is the timing of the projected exhaustion of the HI trust fund. According to CBO's baseline projections, under current law, the balance of the HI trust fund would increase from $202 billion at the end of fiscal year 2014 to $245 billion at the end of fiscal year 2020. Starting in 2021, CBO expects expenditures to outstrip income. By 2025, the fund's balance would be down to $156 billion.[66] CBO projects that the trust fund would be exhausted early in the 10-year period after 2025.[67]

Once the HI trust fund was exhausted, total payments to health plans and providers for services covered under Part A of Medicare would apparently be limited to the

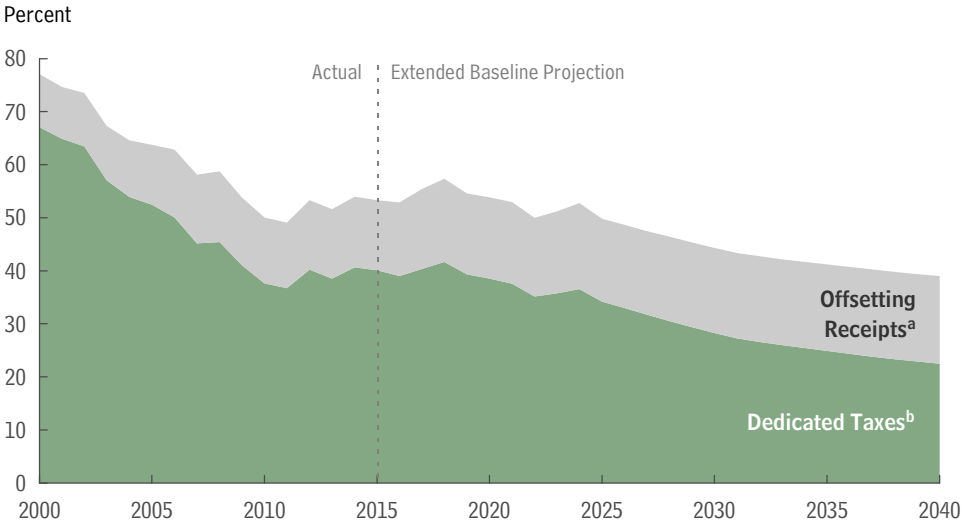
65. In 2000, Part B accounted for 41 percent of gross Medicare spending; in 2015, Parts B and D will account for 56 percent of gross Medicare spending, CBO estimates. In 2015, the percentage of benefits covered by premiums and other offsetting receipts would be higher than shown here if the two-thirds of Part D premiums paid directly by beneficiaries to Part D plans and the resulting benefit payments were included; however, they are not recorded in the federal budget.

66. Congressional Budget Office, "Medicare—Baseline Projections" (March 2015), www.cbo.gov/publication/44205. The estimate given is an updated one that reflects recently enacted legislation.

67. In contrast, the Supplementary Medical Insurance Trust Fund, which pays for benefits covered under Parts B and D of Medicare, cannot be exhausted, because it is financed mainly through premiums and money from the general fund. The amounts of contributions from those sources are set to cover the costs of those benefits.

Figure 2-4.

Medicare's Dedicated Taxes and Offsetting Receipts as a Share of Medicare Spending



Over the past several years, the share of Medicare spending funded by taxes and premiums has dropped. The share funded by the government's general fund has consequently grown.

Sources: Office of Management and Budget (actual shares up to 2014); Congressional Budget Office (projected shares).

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

a. Mostly premium payments made by beneficiaries to the government; also includes amounts paid by states from savings on Medicaid's prescription drug costs.

b. Payroll taxes and a portion of the federal income taxes paid on Social Security benefits.

amount of revenues subsequently credited to the trust fund. If that occurred, beneficiaries' access to health care services covered under Part A would almost certainly be reduced. However, for the purposes of these projections, CBO assumes that Medicare will pay benefits as scheduled under current law regardless of the status of the HI trust fund—an assumption that is consistent with a statutory requirement that CBO, in its 10-year baseline projections, assume that funding for an entitlement program is adequate to make all payments required by law for that program.[68]

Medicare Benefits and Payroll Taxes for People in Different Birth Cohorts

Over the course of their lifetimes, members of different generations will pay different amounts of Medicare payroll taxes and receive different amounts of Medicare benefits. Benefits will be a larger share of lifetime earnings for members of later generations, primarily because of the growth of health care spending per person but also because of increases in life expectancy, which will allow those people to receive benefits for longer periods, on average. Payroll taxes will be higher for later cohorts, because real earnings generally grow over time. Lifetime payroll taxes, however, will be about the same share of lifetime earnings, because payroll taxes are a fixed share of earnings.

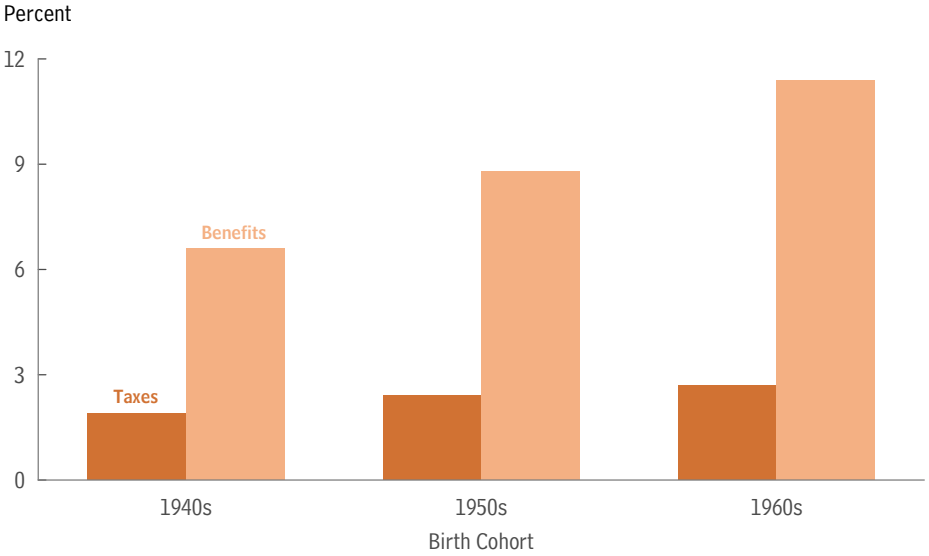
CBO estimated real lifetime benefits and payroll taxes for various birth cohorts as the present value, discounted to the year in which a beneficiary turns 65, of all benefits that a person receives from Medicare (net of premiums paid for those benefits) and all payroll taxes paid to the program (see Figure 2-5).[69] CBO estimates that, under the assumption that all scheduled benefits are paid, real

68. See section 257(b)(1) of the Balanced Budget and Emergency Deficit Control Act of 1985; 2 U.S.C. §907(b)(1).

69. For this analysis, benefits are those scheduled to be paid under current law, regardless of the balances projected for the HI trust fund. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars.

Figure 2-5.

Mean Lifetime Medicare Payroll Taxes and Benefits Relative to Lifetime Earnings, by Decade of Birth



Because of projected growth in health care spending per person and higher life expectancy, lifetime Medicare benefits will be a larger share of lifetime earnings for later generations.

Source: Congressional Budget Office.

Note: The amounts shown here are ratios of lifetime payroll taxes and benefits to lifetime earnings. Lifetime payroll taxes include all payroll taxes paid to the program. Payroll taxes consist of the employer's and employee's shares combined. Lifetime Medicare benefits include all benefits that a person is scheduled to receive from Medicare (net of premiums paid by beneficiaries to the government). To calculate present value, amounts are adjusted for inflation (to produce constant dollars) and discounted to age 65. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars. [Figure corrected on June 23, 2015]

average lifetime benefits (net of premiums paid) for each birth cohort as a percentage of lifetime earnings will generally be greater than those for the preceding cohort. For example, benefits received over a lifetime are projected to equal about 7 percent of lifetime earnings for people born in the 1940s, on average, but 11 percent for people born in the 1960s. By contrast, real average lifetime payroll taxes relative to lifetime earnings will rise from 2 percent for the 1940s cohort to almost 3 percent for the 1960s cohort.[70]

70. For people born in the 1940s and 1950s, lifetime payroll taxes as a share of lifetime earnings are lower than for later cohorts because those later cohorts face a higher statutory payroll tax rate for Hospital Insurance. That rate increased from 0.35 percent in 1966 to 2.9 percent in 1986, and it has stayed constant since.

[Text and footnote corrected on June 23, 2015]

CHAPTER

3

The Long-Term Outlook for Social Security

Social Security, which in 2015 marks its 80th anniversary, is currently the largest single program in the federal government's budget. The program consists of Old-Age and Survivors Insurance (OASI), which pays benefits to retired workers, to their dependents and survivors, and to some survivors of deceased workers; and Disability Insurance (DI), which makes payments to disabled workers and to their dependents until those workers reach the age of eligibility to receive full retirement benefits under OASI. Social Security currently has more than 59 million beneficiaries. The Congressional Budget Office estimates that mandatory outlays for Social Security will total $883 billion in fiscal year 2015, which will account for nearly one-quarter of all federal spending.[1]

During the program's first four decades, spending for Social Security increased sharply relative to the size of the economy—from less than 1 percent of gross domestic product (GDP) in the first few years to about 4 percent of GDP in the mid-1970s. That increase was caused largely by program expansions, including the creation in 1956 of the DI program. Spending rose to 4.8 percent of GDP in 1983, the year that marked the enactment of the last significant piece of legislation focused on Social Security. Between 1984 and 2007, Social Security spending fluctuated between 4.0 percent and 4.5 percent of GDP. During the 2007–2009 recession, GDP shrank, and the number of OASI and DI claimants rose unusually rapidly as the job market deteriorated. As a result, the program's outlays grew to 4.7 percent of GDP in 2009. CBO estimates that outlays for Social Security will be 4.9 percent of GDP in 2015.

In coming decades, more members of the baby-boom generation will reach retirement age and longer life spans will lead to longer retirements, so a much larger portion of the population will draw benefits. As a result, if the full benefits specified under current law are paid, CBO projects, Social Security spending would reach 6.2 percent of GDP in 2040 (see Figure 3-1).

How Social Security Works

Because 71 percent of its beneficiaries are retired workers or the spouses and children of those recipients, Social Security often is characterized as a retirement program.[2] In general, workers qualify for Social Security benefits if they are age 62 or older and have paid sufficient Social Security taxes for at least 10 years.

Social Security also provides other benefits, including payments to the survivors of deceased workers—about 10 percent of beneficiaries. In addition, workers who have not reached the full retirement age and who have had to limit employment because of a physical or mental disability can qualify for DI benefits—in many cases after a shorter period of employment than is required to collect retirement benefits. Disabled workers and their spouses and children account for 18 percent of beneficiaries.[3]

1. The $883 billion in mandatory outlays includes benefits paid ($878 billion), transfers to the Railroad Retirement Board ($5 billion), and payments to the U.S. Treasury for administrative costs (about $1 billion). CBO estimates that the Social Security Administration will spend an additional $6 billion, classified as discretionary outlays, on administration of the program. In this chapter, spending for Social Security generally refers to mandatory outlays.

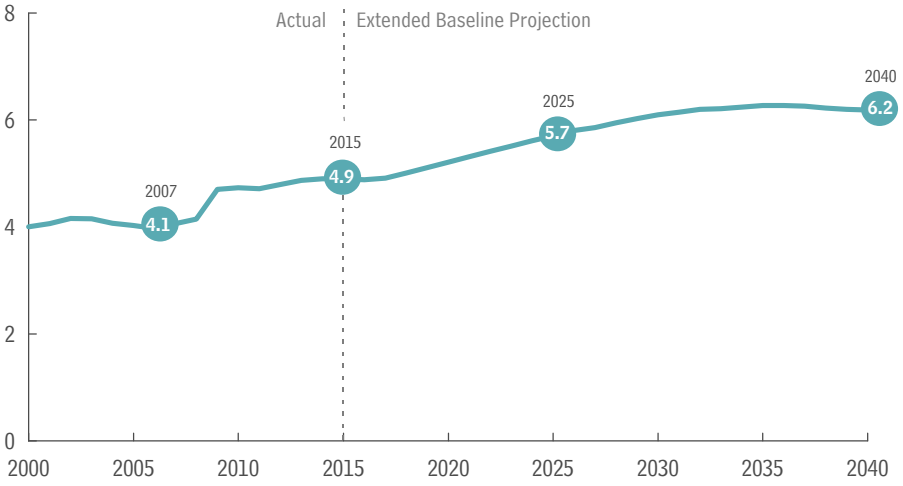
2. A more detailed description of the Social Security program is presented in Congressional Budget Office, *Social Security Policy Options 2015* (forthcoming).

3. See Congressional Budget Office, *Policy Options for the Social Security Disability Insurance Program* (July 2012), www.cbo.gov/publication/43421, and *Social Security Disability Insurance: Participation Trends and Their Fiscal Implications* (July 2010), www.cbo.gov/publication/21638.

Figure 3-1.

Spending for Social Security

Percentage of Gross Domestic Product



One effect of the 2007–2009 recession was a marked increase in spending for new Social Security recipients. The retirement of baby boomers is expected to increase spending over the rest of the projection period.

Source: Congressional Budget Office.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

In dollar terms, about 70 percent of Social Security benefits are paid to retired workers and their dependents, survivors receive 13 percent, and disabled workers and their spouses and children receive 16 percent.[4]

Benefits

The benefits that retired or disabled workers initially receive are based on individual earnings histories. Those earnings and the formula used to compute initial benefits are indexed to changes in average annual earnings for the U.S. workforce as a whole (including earnings that are not subject to taxation under Social Security). In subsequent years, a cost-of-living adjustment is applied to benefits to reflect annual growth in consumer prices.

The calendar year in which a worker was born determines the age at which that worker becomes eligible to receive full retirement benefits. Workers born before 1938 were eligible to receive full retirement benefits at the age of 65. Under a schedule put in place by the Social Security Amendments of 1983, the full retirement age is increasing gradually: It reached 66 for people born between 1943 and 1954; it will gradually rise again, beginning with people born in 1955, who will turn 62 in 2017, reaching 67 for people born after 1959, who will turn 62 in 2022 or later. The early eligibility age—at which a worker qualifies for reduced retirement benefits—remains unchanged at 62.

The Social Security Administration has estimated that the initial average annual benefit was about $19,800 for a worker who retired in calendar year 2014 at the full retirement age of 66 and whose earnings (averaged over his or her career) equaled the national average.[5] That amount would replace about 44 percent of that worker's career-average earnings indexed by national average wage growth to 2008, the year in which that worker turned 60. In coming decades, replacement rates will be lower for workers with average earnings who retire at age 66 because of the scheduled increase in the full retirement age. Nevertheless, because initial benefits are based on

4. The ways in which beneficiaries and benefits are categorized are not completely consistent—some beneficiaries receive benefits in more than one category. For instance, retired workers who also receive survivors' benefits are classified as retired for the purpose of calculating the number of beneficiaries in each category. For the purpose of calculating the distribution of benefits, however, their benefit payments are prorated to the categories of retired worker and survivor.

5. See Michael Clingman, Kyle Burkhalter, and Chris Chaplain, *Replacement Rates for Hypothetical Retired Workers*, Actuarial Note 2014.9 (Social Security Administration, July 2014), Table C, www.socialsecurity.gov/OACT/NOTES/ran9.

beneficiaries' previous earnings indexed to overall average wage growth and because wages are expected to grow faster than inflation over the long term, in CBO's estimation, the real (inflation-adjusted) value of those initial benefits will rise over time.

Taxes

The Social Security program is funded by dedicated tax revenues from two sources. Today, roughly 96 percent comes from a payroll tax—generally, 12.4 percent of earnings that are subject to the Social Security tax. Workers and their employers each pay half; self-employed people pay the entire amount. Earnings up to a maximum annual amount—$118,500 in calendar year 2015—are subject to the payroll tax. That taxable maximum generally increases annually at the same rate as average earnings in the United States, and it has remained a nearly constant proportion of the average wage since the early1980s. Because earnings have grown more for high earners than for others, the portion of earnings covered by Social Security on which payroll taxes are paid has fallen from 90 percent in 1983 to 81 percent in 2015. CBO expects this disparity in growth in earnings to continue for at least the next decade; the portion of earnings that is subject to the Social Security tax is projected to fall to about 79 percent by 2025 and to decline slightly thereafter.

The remaining share of tax revenues—4 percent—is collected from income taxes on Social Security benefits. Recipients who file as single people must pay taxes on their benefits if the sum of their non–Social Security income (adjusted gross income plus nontaxable interest income) and half of their benefits exceeds $25,000; the threshold for joint filers is $32,000. Under current law, those thresholds will remain the same over time—no adjustments are made to account for earnings growth or for inflation.

Trust Funds

Revenues from the payroll tax and the tax on benefits are credited to the two Social Security trust funds (the OASI Trust Fund and the DI Trust Fund). Social Security benefits account for 99 percent of total outlays from the trust funds; the remaining 1 percent covers administrative costs. Interest on the balances is credited to the trust funds, but because the interest transactions represent payments from one part of the government (the general fund of the U.S. Treasury) to another (the Social Security trust funds), they do not affect federal budget deficits or surpluses. The trust funds' balances ($2.8 trillion at the end of April 2015) have accumulated over many years; during that time, tax revenues and interest received by the trust funds have exceeded the benefits paid out.

The Outlook for Social Security Spending and Revenues

Analysts have long projected that the cost of the Social Security program will rise significantly over the coming decades. Average benefits per recipient are expected to continue to grow because the earnings on which those benefits are based also will increase, and, other things being equal, that relationship would tend to keep total benefits roughly stable as a percentage of GDP. Moreover, as a larger share of the baby-boom generation reaches retirement age and as longer life spans lead to longer retirements, a significantly larger portion of the population will draw benefits. Those forces will combine to cause the total amount of benefits scheduled to be paid under current law to grow faster than the economy. However, total revenues for the program are anticipated to decline slightly relative to the size of the economy because most of the revenues come from the payroll tax, which has a flat rate (up to the taxable maximum, indexed to average earnings), and the proportion of earnings subject to that tax is expected to shrink. That faster growth in total benefits than in total revenues will create a shortfall in the program's finances. The extent of the shortfall and the amounts of Social Security benefits received and taxes paid by people born in different years will depend on changes in life expectancy and other factors.

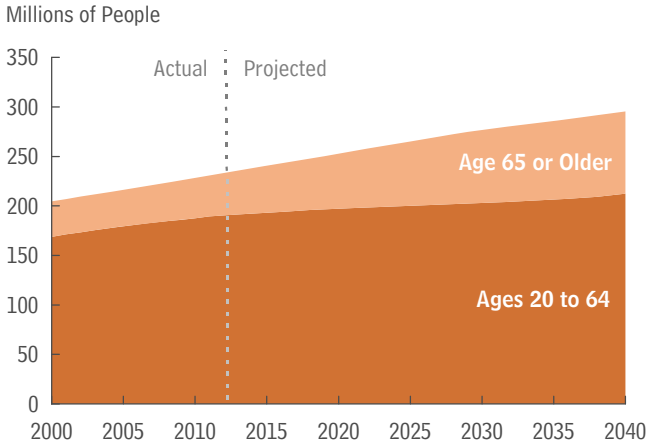
CBO's extended baseline, which encompasses the period from 2015 through 2040, generally reflects the provisions of current law. The projections for Social Security spending and revenues are based on a detailed microsimulation model, which starts with data about individuals from a representative sample of the population and projects demographic and economic outcomes for that sample through time. For each individual in the sample, the model simulates birth, death, immigration and emigration, marital status and changes to it, fertility, labor force participation, hours worked, earnings, and payroll taxes, along with Social Security retirement, disability, and dependent benefits.[6]

6. See Congressional Budget Office, *CBO's Long-Term Model: An Overview* (June 2009), www.cbo.gov/publication/20807.

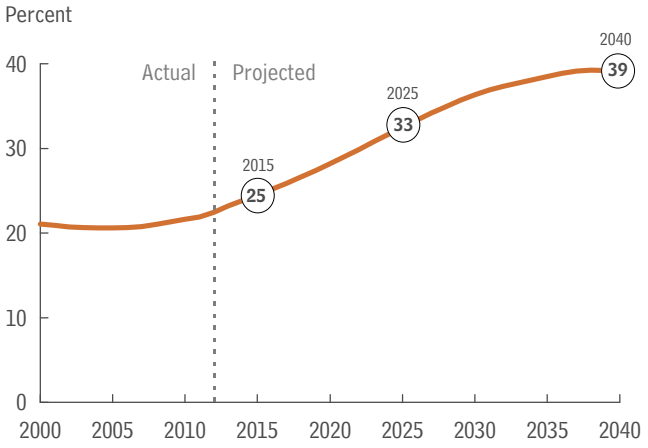
Figure 3-2.

Changes in the Population, by Age Group

The number of people age 65 or older is expected to rise by 76 percent over the projection period, whereas the number between the ages of 20 and 64 will rise by just 10 percent.



Thus, by 2040, the proportion of the older to the younger group of people will have risen from the current 25 percent to nearly 40 percent.



Source: Congressional Budget Office.

Demographic Changes

According to CBO's projections, the number of people who are age 65 or older will increase by 37 percent between now and calendar year 2025 and by 76 percent between now and 2040. In comparison, CBO anticipates increases of just 4 percent and 10 percent in the population between the ages of 20 and 64 over those periods. Today, that older group is about one-quarter of the size of the younger group. The proportion is expected to increase to 33 percent by 2025 and to almost 40 percent by 2040 (see Figure 3-2). If current laws remained in place, more than 78 million people would collect benefits in 2025 and almost 100 million people would do so in 2040; currently, there are more than 59 million beneficiaries. (For more information on CBO's demographic projections, see Appendix A.)

After declining for several years, the average age of Social Security beneficiaries will begin to increase as the baby-boom generation continues to enter retirement. Currently, almost 12 percent of retired-worker beneficiaries over the age of 64 are at least 85 years old. As life expectancy increases, Social Security beneficiaries as a group will become older; by 2040, 19 percent of retired-worker beneficiaries over the age of 64 will be at least 85 years old.

CBO expects that future increases in life expectancy will be larger for people with higher lifetime earnings, which would be consistent with the pattern of past increases.[7] Today, a 65-year-old man whose household is in the highest quintile (the highest fifth) of lifetime earnings can be expected to live more than three years longer, CBO estimates, than a man of the same age whose household is in the lowest quintile of lifetime earnings; a 65-year-old woman in a household with high lifetime earnings can be expected to live more than a year longer than a woman of the same age in a household with low lifetime earnings. CBO projects that, on average by 2040, men in households with high lifetime earnings will live more than five years longer than men in households with low lifetime earnings, and women in households with high earnings will live almost three years longer than women in households with low earnings.

7. Life expectancy is the number of additional years a person is expected to live at a specified age. For more information on mortality differentials among groups with different earnings, see Congressional Budget Office, *Growing Disparities in Life Expectancy* (April 2008), www.cbo.gov/publication/41681; and Julian P. Cristia, *The Empirical Relationship Between Lifetime Earnings and Mortality,* Working Paper 2007-11 (Congressional Budget Office, August 2007), www.cbo.gov/publication/19096.

The projected changes in the life expectancy of people with high earnings relative to that of people with low earnings affect projections both of the total amount of Social Security benefits and of their distribution. Retirees with higher lifetime earnings receive larger benefits than retirees with lower earnings, so the greater increase in life expectancy of people in households with high lifetime earnings will raise total future benefits, all else being equal. Similarly, the greater increase in life expectancy of high earners will boost the ratio of lifetime Social Security benefits to lifetime Social Security taxes for high earners relative to that of low earners.[8]

Projected Spending and Revenues

If current laws remained in place, spending for Social Security would rise from 4.9 percent of GDP in 2015 to 6.2 percent by 2040, CBO estimates.[9] The share of Social Security spending on disability benefits would fall from 16 percent today to 13 percent in 2040. Most disabled beneficiaries are between age 50 and the full retirement age, and, as the baby-boom generation becomes older, the share of the population in that range will decline.

Between 2015 and 2040, Social Security revenues would grow more slowly than spending, according to projections in CBO's extended baseline. Because Social Security payroll tax receipts constitute a fixed share of taxable earnings, and taxable earnings are projected to decline as a share of GDP, payroll taxes also would decline as a share of GDP—from 4.2 percent in 2015 to 4.1 percent in 2040 (for further discussion, see Appendix A). However, both the number of Social Security recipients whose benefits are subject to taxation and their average income tax rates would increase, CBO projects. (For information about CBO's projections of total income taxes, see Chapter 5.) As a result, income taxes on Social Security benefits that are credited to the Social Security trust funds would grow from about 0.2 percent of GDP today to 0.3 percent of GDP in 2040. By that year, total Social Security tax revenues—payroll taxes plus taxes on benefits—would equal 4.4 percent of GDP, the same as the current amount.

In 2010, for the first time since the enactment of the Social Security Amendments of 1983, annual outlays for the program exceeded annual revenues excluding interest credited to the trust funds. A gap between those amounts has persisted since then, and in 2014 outlays exceeded noninterest income by about 9 percent. CBO now projects that, as more people in the baby-boom generation retire over the next 10 years, the gap will widen between amounts credited to the trust funds and payments to beneficiaries. According to CBO's extended baseline projections, if current laws remained unchanged, Social Security outlays would exceed the program's revenues by almost 30 percent in 2025 and by more than 40 percent in 2040.

Financing of Social Security

A common measure of the sustainability of a program that has a trust fund and a dedicated revenue source is its estimated actuarial balance over a given period—that is, the sum of the present value of projected tax revenues and the current trust fund balance minus the sum of the present value of projected outlays and a target balance at the end of the period.[10] For Social Security, that difference is traditionally presented as a percentage of the present value of taxable payroll. Over the next 75 years, if current laws remained in place, the program's actuarial

8. The ratio of lifetime benefits to taxes in Social Security depends on annual benefits and on the number of years for which benefits are collected. Beneficiaries with low lifetime earnings receive an annual benefit that replaces a larger portion of their average lifetime earnings than beneficiaries with high lifetime earnings, but they also tend to live for fewer years and therefore to collect benefits for a shorter period. All told, lifetime Social Security benefits as a share of lifetime earnings decrease as earnings rise, but estimates of that effect vary widely and depend on whether disabled and survivors' beneficiaries are included, how spousal benefits are accounted for, and how married couples are treated. For example, see Barry P. Bosworth and Kathleen Burke, *Differential Mortality and Retirement Benefits in the* Health and Retirement Study (April 2014), pp. 5–6, http://tinyurl.com/nqlhpyt.

9. CBO's projections incorporate the assumption that Social Security will pay benefits as scheduled under current law regardless of the status of the program's trust funds.

10. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars. To account for the difference between the trust fund's current balance and the balance desired for the end of the period, the balance at the beginning is added to the projected tax revenues and an additional year of costs at the end of the period is added to projected outlays.

Table 3-1.

Financial Measures for Social Security Under CBO's Extended Baseline

Projection Period (Calendar years)	Income Rate	Cost Rate	Actuarial Balance (Difference)
		As a Percentage of Taxable Payroll	
25 Years (2015 to 2039)	14.9	17.7	-2.8
50 Years (2015 to 2064)	14.2	17.9	-3.8
75 Years (2015 to 2089)	14.0	18.3	-4.4
		As a Percentage of Gross Domestic Product	
25 Years (2015 to 2039)	5.0	6.0	-0.9
50 Years (2015 to 2064)	4.7	6.0	-1.3
75 Years (2015 to 2089)	4.6	6.1	-1.4

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

Over the relevant periods, the income rate is the present value of annual tax revenues plus the initial trust fund balance, and the cost rate is the present value of annual outlays plus the present value of a year's worth of benefits as a reserve at the end of the period, each divided by the present value of gross domestic product or taxable payroll. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars. The actuarial balance is the difference between the income and cost rates.

To be consistent with the approach used by the Social Security trustees, the 25-, 50-, and 75-year projection periods for the financial measures reported here include 2015 and end in 2039, 2064, and 2089, respectively. See Social Security Administration, *The 2014 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (July 2014), www.socialsecurity.gov/OACT/TR/2014.

shortfall would be 4.4 percent of taxable payroll, or 1.4 percent of GDP, CBO estimates (see Table 3-1).[11] Thus, given CBO's projections, actuarial balance could be achieved for Social Security through calendar year 2089 if payroll taxes were increased immediately and permanently by 4.4 percent of taxable payroll, if scheduled benefits were reduced by an equivalent amount, or if some combination of tax increases and spending reductions of equal present value was adopted.

The estimates of the actuarial shortfall do not account for revenues and outlays after the 75-year projection period. A policy that increased revenues or reduced outlays by the same percentage of taxable payroll in each year so as to eliminate the 75-year shortfall would not necessarily place Social Security on a permanently stable financial path. Instead, such a policy would create surpluses during the next several decades but generate deficits in later years and leave the system in a state of financial imbalance after calendar year 2089. If such a policy was adopted, the 75-year measure used in this report and commonly used in other analyses of Social Security would show no shortfall now because the measure includes the taxes paid by workers each year until 2089 but does not include the benefits that would be paid to those workers after that year.

11. To be consistent with the 75-year actuarial balance reported by the Social Security trustees, the 75-year projection period used here begins in calendar year 2015 and ends in calendar year 2089. The Social Security trustees estimated in 2014 that the program's 75-year actuarial shortfall was 2.9 percent of taxable payroll, 1.5 percentage points less than CBO estimates. The larger shortfall projected by CBO stems largely from three differences in the projections: CBO anticipates that life expectancy will increase somewhat more rapidly, the incidence of disability will be a little higher, and in the long run interest rates will be 0.6 percentage points lower. Taken together, all of the other factors that affect the actuarial shortfall would lead CBO and the trustees to make roughly the same estimate. For more details on CBO's projections, see Appendix A. For more details on the trustees' projections, see Social Security Administration, *The 2014 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (July 2014), www.socialsecurity.gov/OACT/TR/2014.

The measure of actuarial balance used here is known as the 75-year open-group unfunded obligation because, with no change in law, the program would continue to be open to new participants. Those new participants would pay much more in taxes over the next 75 years than they would receive in benefits during that period.

An alternative measure—sometimes called the closed-group unfunded obligation—shows the shortfall in the system that would occur if the law was changed to close Social Security to anyone currently younger than age 15, thereby encompassing future taxes paid and benefits received only by people who are now age 15 or older. (Similar assessments are made of the financial outlook for private pension plans.) CBO estimates that, when measured as a percentage of the taxable payroll, the 75-year closed-group shortfall as of 2015 is about two-thirds larger than the 75-year open-group shortfall.

Another commonly used measure of Social Security's sustainability is the trust funds' date of exhaustion. Under CBO's extended baseline, the DI trust fund will be exhausted in fiscal year 2017 and the OASI trust fund will be exhausted in calendar year 2031. It is a common analytical convention, however, to consider the DI and OASI trust funds as combined, although legally they are separate. Therefore, this report focuses on the combined trust funds. In CBO's extended baseline, the combined OASDI trust funds are projected to be exhausted in calendar year 2029.

If a trust fund's balance declined to zero and current revenues were insufficient to cover benefits specified in law, the Social Security Administration would no longer have legal authority to pay full benefits when they were due. In the years after a trust fund's exhaustion, annual outlays therefore could not exceed annual revenues. Under those circumstances, all receipts to the trust fund would be used and the trust fund balance would remain essentially at zero.[12]

Social Security benefits can be projected in two different ways: as payable benefits, which conform to the limits imposed by a trust fund's balance, or as scheduled benefits, which reflect the benefit formulas specified in law, regardless of a trust fund's balance. This report uses the latter approach, which is consistent with a statutory requirement that CBO, in its 10-year baseline projections, assume that funding for entitlement programs is adequate to make all payments required by law.[13] In 2030, the year after the combined trust funds are expected to be exhausted, revenues are projected to equal 72 percent of scheduled outlays. Under those circumstances, payable benefits would be 28 percent less than scheduled benefits.

Social Security Benefits and Payroll Taxes for People in Different Birth Cohorts

People in different generations will, on average, end up paying different amounts of Social Security taxes and receiving different amounts of benefits over their lifetime.[14] Under current law, taxes and benefits alike would be higher for people born later because real earnings are projected to keep growing. Continuing increases in life expectancy also would contribute to growth in lifetime benefits because later cohorts would live to receive Social Security benefits for longer periods. To compare the effects of Social Security benefits and taxes on different generations, CBO calculated lifetime Social Security benefits and payroll taxes as the present value—discounted to the year in which the beneficiary turns 65—of all such benefits that workers would receive from the program or all payroll taxes they would pay to the program.[15] CBO measures the present value of benefits or taxes relative to the present value of lifetime earnings, with all values adjusted for inflation (see Figure 3-3). That analysis results in the following conclusions:

12. Noah P. Meyerson, *Social Security: What Would Happen If the Trust Funds Ran Out?* Report for Congress RL33514 (Congressional Research Service, August 2014). That report notes the entitlement created under the Social Security Act, cites other law that prohibits officials from making expenditures in excess of available funds, and acknowledges that the two create a potential conflict that must be resolved by the Congress or in the courts.

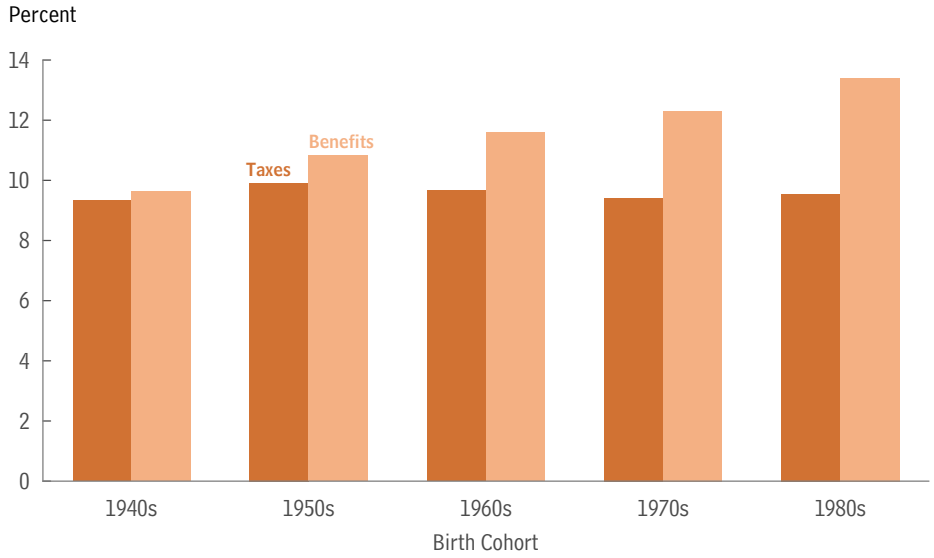
13. Section 257(b)(1) of the Balanced Budget and Emergency Deficit Control Act of 1985; 2 U.S.C. §907(b)(1).

14. For analysis of the distribution of Social Security benefits and taxes according to CBO's 2014 long-term projections, see Congressional Budget Office, *CBO's 2014 Long-Term Projections for Social Security: Additional Information* (December 2014), Exhibits 8–10, www.cbo.gov/publication/49795.

15. For this analysis, payroll taxes include the combined shares paid by employers and employees. Benefits are net of income taxes paid on benefits and credited to the Social Security trust funds. For discussion of the methods CBO used for these estimates, see Congressional Budget Office, *CBO's 2014 Long-Term Projections for Social Security: Additional Information* (December 2014), Appendix B, www.cbo.gov/publication/49795.

Figure 3-3.

Mean Lifetime Scheduled Social Security Taxes and Benefits Relative to Lifetime Earnings



An increase in life expectancy will mean that people born later will receive more in Social Security benefits (relative to their earnings) than those born earlier. Payroll taxes are not expected to keep pace, however, because they apply to a limited amount of earnings and that share of earnings subject to the tax is projected to decline for people born later.

Source: Congressional Budget Office.

Notes: The distribution of lifetime household earnings includes only people who live to at least age 45. Payroll taxes consist of the employer's and employee's shares combined. To calculate present value, amounts are adjusted for inflation (to produce constant dollars) and discounted to age 65. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars.

Lifetime Social Security benefits include all benefits paid to an individual except those received by young widows and children. Those benefits are excluded from this measure because there are insufficient data for years before 1984.

Scheduled benefits are benefits calculated under the Social Security Act, regardless of the balances in the program's trust funds.

- Real average lifetime scheduled benefits for each birth cohort as a percentage of lifetime earnings will generally be greater than those for the preceding cohort, and increases in life expectancy will cause that percentage to rise over time. For example, for people born in the 1950s, the mean amount of benefits received over a lifetime is projected to be about 11 percent of lifetime earnings. For people born in the 1980s, that amount will be 13 percent if they receive scheduled benefits.

- Real average lifetime payroll taxes for each birth cohort relative to lifetime earnings will generally be slightly less than those for the preceding cohort because of two factors: Under current law Social Security payroll taxes are a fixed share of earnings below the taxable maximum, and the portion of earnings that is subject to Social Security tax is projected to fall. For example, for people born in the 1950s, the mean amount of payroll taxes paid over a lifetime is projected to be about 10 percent of lifetime earnings. For people born in the 1980s, that amount will be 9.5 percent.

CHAPTER

4

The Long-Term Outlook for Other Federal Noninterest Spending

In 2015, almost half of the federal government's spending will go toward programs and activities other than the major health care programs (Medicare, Medicaid, the Children's Health Insurance Program, and the subsidies for health insurance purchased through exchanges), Social Security, and net interest. That spending—referred to in this report as other federal noninterest spending—includes outlays for discretionary programs, which are funded through the annual appropriation process, and outlays for mandatory programs other than the major health care programs and Social Security, which are usually funded according to laws that set eligibility and payment rules.[1] Mandatory spending in this category also includes the refundable portions of the earned income tax credit, the child tax credit, and the American Opportunity Tax Credit, which are recorded in the budget as outlays.

Under the broad assumptions used for this analysis, the Congressional Budget Office projects that other federal noninterest spending would drop from a total of 9.1 percent of gross domestic product (GDP) in 2015 to 7.4 percent in 2025 and then to 6.9 percent in 2040:

- Discretionary spending, which equals an estimated 6.5 percent of GDP in 2015, would fall to 5.1 percent of GDP by 2025; for its extended baseline, CBO assumed that discretionary spending would remain fixed at its percentage of GDP in 2025 (see Figure 4-1).
- Mandatory spending other than that for the major health care programs and Social Security would decrease from 2.6 percent of GDP this year to 2.3 percent in 2025. For its extended baseline, CBO assumed that such spending—other than the portion related to refundable tax credits—would continue to fall relative to GDP at the same rate that occurred over the 2020–2025 period. (Refundable tax credits are estimated as part of the revenue projections, which are described in Chapter 5.) Putting those pieces together, other mandatory spending is projected to equal 1.8 percent of GDP in 2040.

Other Federal Noninterest Spending Over the Past 50 Years

During the past 50 years, federal spending for everything other than the major health care programs, Social Security, and net interest has averaged 12 percent of GDP. Such spending equaled 13 percent of GDP in 1965, stayed between 12 percent and 15 percent from 1966 through 1987, and fell to around 8 percent in the late 1990s and early 2000s. By 2003, such spending had moved up to 10 percent of GDP, remaining close to that level through most of the first decade of the 2000s. It then spiked to 14 percent of GDP in 2009, before receding to 9 percent in 2014.

Discretionary Spending

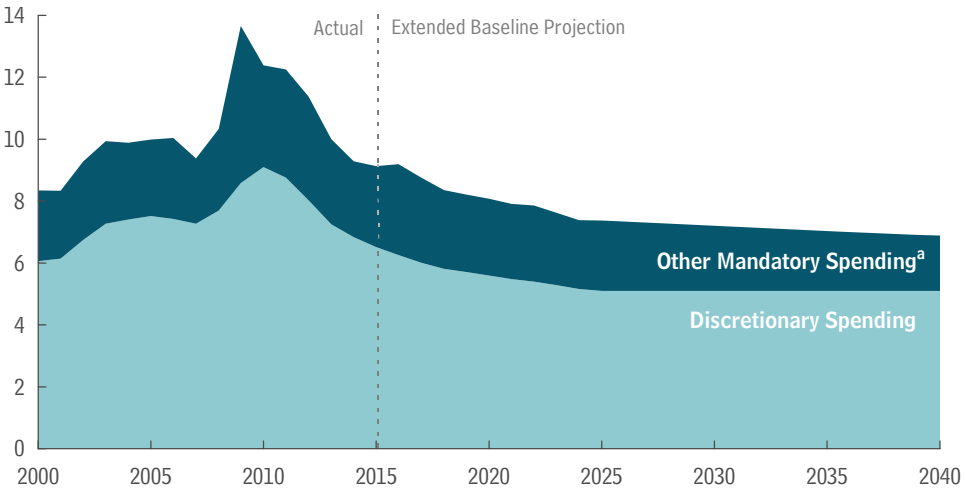
A distinct pattern in the federal budget since the 1970s has been the diminishing share of spending that occurs through the annual appropriation process. Between 1965 and 2014, discretionary spending declined from 66 percent of total federal spending to 34 percent. Relative to the size of the economy, that spending decreased from 10.9 percent of GDP to 6.8 percent.

1. For a description of the activities included in various categories of federal spending, see Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), Box 3-1, www.cbo.gov/publication/49892.

Figure 4-1.

Other Federal Noninterest Spending

Percentage of Gross Domestic Product



Other federal noninterest spending in CBO's extended baseline falls by 25 percent relative to gross domestic product between 2015 and 2040. Nearly two-thirds of that drop stems from the projected decline in discretionary spending over the next decade.

Source: Congressional Budget Office.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

a. Other mandatory spending is all mandatory spending other than that for the major health care programs, Social Security, and net interest. It includes the refundable portions of the earned income and child tax credits and of the American Opportunity Tax Credit.

About half of discretionary spending is devoted to national defense and is administered primarily by the Department of Defense (DoD). That department's spending falls mostly into three broad categories:

- Operation and maintenance, which supports the day-to-day activities of the military, the training of military units, the majority of costs for the military's health care system, and compensation for most of DoD's civilian employees;
- Military personnel, which covers compensation for uniformed service members, including pay, allowances for housing and food, and related activities, such as moving service members and their families to new duty stations; and
- Acquisition, which includes procurement, research, development, testing, and evaluation of weapon systems and other major pieces of equipment.

Fifty years ago, in 1965, defense discretionary spending equaled 7.2 percent of GDP. It dropped below 5.0 percent of GDP in the late 1970s but averaged 5.9 percent during the defense buildup from 1982 to 1986 (see Figure 4-2). After the end of the Cold War, outlays for defense fell again relative to GDP, reaching a low of 2.9 percent at the turn of the century. Such outlays climbed again in the 2000s, mainly as a result of spending on military operations in Iraq and Afghanistan. Defense spending averaged 4.6 percent of GDP from 2009 through 2011, before falling to 3.5 percent in 2014.

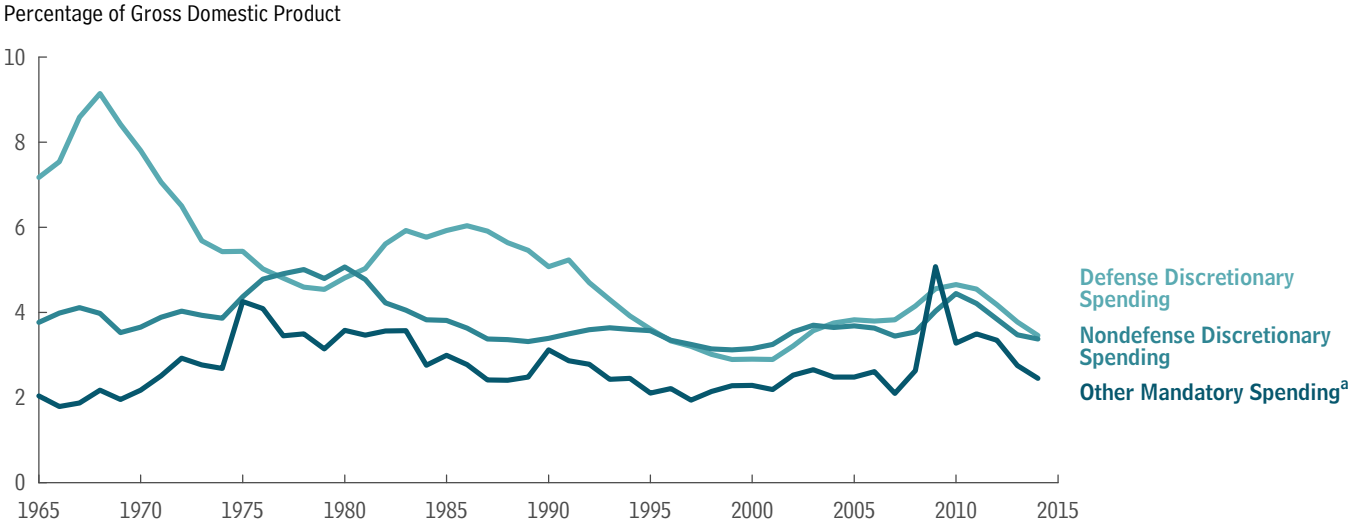
The rest of discretionary spending is for nondefense purposes. It covers a wide array of federal investment and other activities, including the following:

- Education (excluding student loans), training, employment, and social services;
- Transportation, including highway programs, transit programs, and airport security;
- Housing assistance;
- Veterans' health care;
- Health-related research and public health programs;
- Administration of justice, including federal law enforcement, criminal justice, and correctional activities;

Figure 4-2.

Other Federal Noninterest Spending, by Category, 1965 to 2014

Other federal noninterest spending is now about 30 percent lower as a percentage of gross domestic product (GDP) than it was in 1965. Lower defense discretionary spending—which is half the size it was, relative to GDP, in 1965—accounts for most of that reduction.



Source: Congressional Budget Office.

a. Other mandatory spending is all mandatory spending other than that for the major health care programs, Social Security, and net interest. It includes the refundable portions of the earned income and child tax credits and of the American Opportunity Tax Credit.

- International affairs, including international development, humanitarian assistance, peacekeeping, nuclear nonproliferation, and the operation of U.S. embassies and consulates; and

- Activities and programs in other areas, including natural resources and the environment, science, and community and regional development.

In 1965, nondefense discretionary spending amounted to 3.8 percent of GDP. Such spending remained close to 4 percent of GDP, on average, for the following decade but averaged almost 5 percent of GDP between 1976 and 1981. From 1984 to 2008, nondefense discretionary spending stayed between 3 percent and 4 percent of GDP. More recently, funding from the American Recovery and Reinvestment Act of 2009, as well as other funding associated with the federal government's response to the 2007–2009 recession, helped push nondefense discretionary spending above 4 percent of GDP from 2009 through 2011. Such spending dropped back to 3.4 percent of GDP in 2014.

Other Mandatory Spending

Mandatory spending other than that for the major health care programs and Social Security includes the following programs and activities:

- Civilian and military retirement, including benefits paid to retired federal civilian and military employees, and benefits paid to retired railroad workers;

- Earned income, child, and other refundable tax credits, for which payments are made to taxpayers for whom the credit exceeds their tax liability;

- Veterans' benefits, some of which are available to veterans only (such as housing, readjustment, disability compensation, and life insurance), and others of which are sometimes also available to dependents or survivors (such as educational assistance, pensions, dependency and indemnity compensation, and burial benefits);

- Food and nutrition programs, including the Supplemental Nutrition Assistance Program, (formerly known as the Food Stamp program), and child nutrition programs;

- Unemployment compensation;
- Supplemental Security Income; and
- Family support and foster care, including grants to states that help fund welfare programs, Temporary Assistance for Needy Families, foster care, and child support enforcement.

Other mandatory spending is net of various offsetting receipts, which are payments collected by government agencies from other government accounts or from the public in businesslike or market-oriented transactions and are recorded in the budget as negative outlays (that is, credits against mandatory spending). A significant share of offsetting receipts goes to the Medicare program (mostly in the form of premiums paid by beneficiaries) and is combined with Medicare outlays in this report (see Chapter 2 for more information). Other offsetting receipts come from the contributions that government agencies make to federal retirement programs, the proceeds from leases to drill for oil and natural gas on the Outer Continental Shelf, payments made to the U.S. Treasury by Fannie Mae and Freddie Mac, and other sources.

Other mandatory spending averaged about 2.5 percent of GDP from the mid-1960s through the mid-1970s. It then increased to about 3.5 percent of GDP, on average, from the mid-1970s through the early 1980s. It was generally lower from the mid-1980s to 2008, averaging about 2.5 percent of GDP. In 2009, however, other mandatory spending roughly doubled, to 5.1 percent of GDP, because of the financial crisis and recession and the federal government's response to them. As the economy has improved and the increases in spending related to the financial crisis and recession have waned, other mandatory spending has declined sharply relative to the size of the economy, falling to 2.5 percent of GDP in 2014.

Long-Term Projections of Other Federal Noninterest Spending

Under CBO's extended baseline, all federal spending apart from that for the major health care programs, Social Security, and net interest is projected to total 7.4 percent of GDP in 2025 and 6.9 percent in 2040. Those figures represent the lowest amounts relative to the size of the economy since the 1930s.

Discretionary Spending

Projections of discretionary spending for 2015 through 2025 come from CBO's most recent 10-year baseline budget projections, which were published in March.[2]

Through 2021, most discretionary appropriations are constrained by the caps put in place by the Budget Control Act of 2011 (as amended); for 2022 through 2025, CBO assumed that those appropriations would equal the 2021 amount, with increases for projected inflation. Funding for certain purposes, such as war-related activities, is not constrained by the Budget Control Act's caps; through 2025, CBO assumed, such funding would increase each year at the rate of inflation, starting from the current amount. Under those assumptions, outlays from discretionary appropriations are projected to decline from 6.5 percent of GDP this year—already well below the 50-year average of 8.8 percent—to 5.1 percent in 2025 (see Table 4-1). That 2025 amount would be the smallest share of discretionary spending relative to GDP in more than half a century (since at least 1962, the first year for which comparable data are available). Defense discretionary spending would equal 2.6 percent of GDP in 2025, and nondefense discretionary spending would equal 2.5 percent of GDP. Each of those amounts would also be the smallest as a share of the economy in at least five decades.

CBO's baseline and extended baseline are meant to be benchmarks for measuring the budgetary effects of legislation, so they mostly reflect the assumption that current laws remain unchanged. However, after 2021—when the caps established by the Budget Control Act are due to expire—total discretionary spending will not be constrained by current laws but instead will be determined by lawmakers' future actions. With no basis for predicting those actions, CBO based its long-term projections of discretionary spending on a combination of the baseline projections through 2025 and historical experience.

Specifically, after 2025, CBO's extended baseline incorporates the assumption that discretionary spending remains at the percentage of GDP projected for 2025—in other words, such spending grows at the same pace as the economy. In CBO's judgment, projecting a continued decline in discretionary spending as a share of GDP beyond 2025 would not provide the most useful benchmark for

2. See Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973.

Table 4-1.

Other Federal Noninterest Spending Projected Under CBO's Baseline

Percentage of Gross Domestic Product

	2015	2025
Discretionary Spending		
Defense	3.2	2.6
Nondefense	3.3	2.5
Total	**6.5**	**5.1**
Other Mandatory Spending		
Civilian and military retirement	0.9	0.8
Nutrition programs	0.5	0.4
Refundable tax credits[a]	0.5	0.3
Veterans' benefits	0.5	0.4
Unemployment compensation	0.2	0.2
Supplemental Security Income	0.3	0.3
Offsetting receipts	-0.9	-0.5
Other	0.6	0.5
Total	**2.6**	**2.3**
Total, Other Federal Spending	**9.1**	**7.4**

Source: Congressional Budget Office.

Note: Other federal spending is all spending other than that for the major health care programs, Social Security, and net interest.

a. The earned income and child tax credits and the American Opportunity Tax Credit.

considering potential changes to discretionary programs, for several related reasons: First, discretionary spending has been a larger share of economic output throughout the past 50 years than it is projected to be in 2025. Second, nondefense discretionary spending has been higher than 3.0 percent of GDP throughout the past five decades and has shown no sustained trend relative to GDP. Third, defense spending has equaled at least 2.9 percent of GDP throughout the past five decades and has shown no trend relative to GDP in the past two decades. Conversely, projecting an increase in discretionary spending as a percentage of GDP beyond 2025 would require CBO to select a specific percentage, which the agency does not have a clear basis for doing. As a result of those considerations, CBO assumed for the extended baseline that discretionary spending would remain the same as a share of GDP after 2025 as CBO projects for 2025 in the 10-year baseline.

Other Mandatory Spending

In constructing its baseline projections, CBO assumes that mandatory programs will operate as they do under current law, which includes the automatic spending cuts put in place by the Budget Control Act.

In CBO's most recent baseline projections, total mandatory spending other than that for the major health care programs and Social Security is estimated to be 2.6 percent of GDP this year and to rise to 2.9 percent of GDP in 2016, primarily because of lower offsetting receipts. Such spending then declines in subsequent years, to 2.3 percent of GDP by 2025.[3]

Most of the projected decline in other mandatory spending relative to GDP through 2025 occurs because the number of beneficiaries for some of the programs is expected to decline relative to the size of the population as the economy expands and because average payments per beneficiary are projected to decrease relative to average income. For example, income thresholds for eligibility for some large income support programs, such as Supplemental Security Income and the Supplemental Nutrition Assistance Program, generally rise with prices, whereas income usually rises more rapidly—especially with the strengthening of the economy that CBO anticipates during the next several years. As a result, CBO expects, the number of beneficiaries in some programs will rise more slowly than the population or even decrease over the next 10 years. Furthermore, average payments under some large programs are often indexed to inflation and therefore tend to grow more slowly than income.

A small part of the decline between 2015 and 2025 stems from a projected reduction in spending for the earned income tax credit, the child tax credit, and the American Opportunity Tax Credit. Outlays for the refundable portions of those credits are projected to decrease from 0.5 percent of GDP in 2015 to 0.3 percent in 2025. About one-third of the decrease stems from the scheduled expiration of the American Opportunity Tax Credit and temporary increases in the earned income and child tax credits at the end of calendar year 2017, and about two-thirds is because, as income grows, the amounts of various credits that people qualify for decrease.

3. See Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), p. 16, www.cbo.gov/publication/49892.

For the years beyond 2025, CBO projected outlays for the refundable portions of the earned income and child tax credits as part of its long-term revenue projections (discussed in Chapter 5). The remainder of other mandatory spending was not projected in detail after 2025 because of the number of programs involved and the variety of factors that influence spending on them. Instead, CBO used an approximate method to project spending for those programs as a group, assuming that such spending would decline as a share of GDP after 2025 at the same rate at which it is projected to fall between 2020 and 2025. As benefits for some programs decline further relative to average income under current law, the benefits available to people many years in the future would differ markedly from what they are today.

Under the assumption that some benefits decline relative to average income, mandatory spending other than that for the major health care programs, Social Security, and refundable tax credits would decrease from 2.0 percent of GDP in 2025 to 1.6 percent by 2040. Including spending on those tax credits, other mandatory spending would equal 1.8 percent of GDP in 2040.

CHAPTER

5

The Long-Term Outlook for Federal Revenues

Federal revenues come from various sources, including individual and corporate income taxes, payroll (social insurance) taxes, excise taxes, estate and gift taxes, and other taxes and fees. Currently, proceeds from individual income taxes and payroll taxes account for about 80 percent of the federal government's revenues.

Projecting future revenue collections is difficult because revenues are sensitive to economic developments and because policymakers often make changes to tax law. For this report, the Congressional Budget Office projected the future path of revenues under an extended baseline. That approach follows the agency's baseline budget projections for the next decade and then extends the baseline concept beyond that 10-year window. The revenues projected for the 10-year window are the same as those in CBO's March 2015 baseline, as adjusted for recently enacted legislation.[1]

In general, the extended baseline reflects current law and embodies two assumptions about future federal tax policy:

- The rules governing individual income, payroll, excise, and estate and gift taxes will evolve as specified under current law (including the recent or scheduled expiration of temporary provisions lawmakers have routinely extended before); and
- Revenues from corporate income taxes and other sources (such as receipts from the Federal Reserve) will grow as projected under current law through 2025 and then remain constant as a share of gross domestic product (GDP) thereafter.[2]

Not intended to predict budgetary outcomes, the projections instead represent CBO's general assessment of future revenues if current laws remained unchanged. (Chapter 6 discusses the consequences of fiscal policies other than those that the extended baseline incorporates.)

Under the extended baseline, federal revenues as a share of GDP are projected to rise from 17.7 percent in 2015 to 18.3 percent in 2025. That growth largely reflects structural features of the tax system, most significantly because of real bracket creep—the pushing of a growing share of income into higher tax brackets because of growth in real (inflation-adjusted) income and the interaction of the tax system with inflation.

After 2025, in the extended baseline, revenues continue rising faster than GDP, largely for two reasons: The effect of real bracket creep continues, and certain tax increases enacted in the Affordable Care Act (ACA) generate a growing amount of revenues in relation to the size of the economy. As a result, federal revenues are projected to

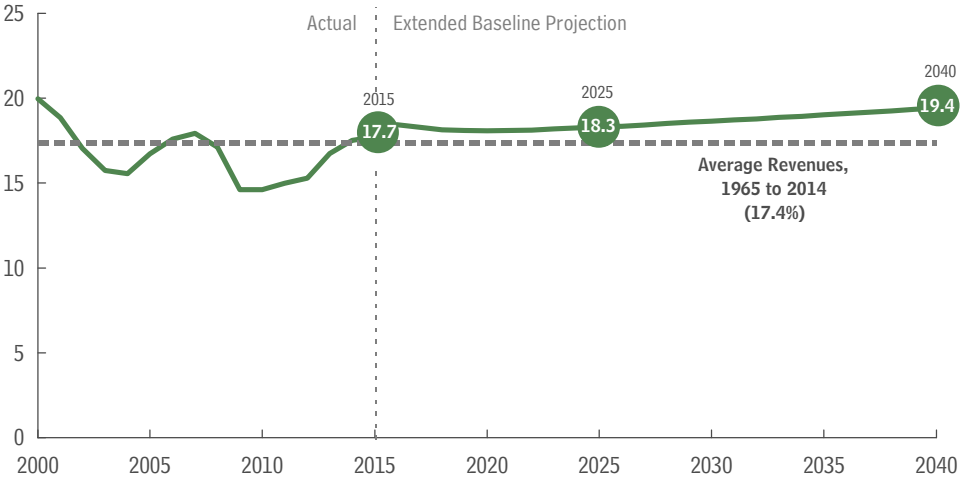
1. The baseline this chapter refers to is the baseline issued in March 2015, as adjusted to reflect legislation enacted after CBO prepared those projections. The only such legislation affecting revenues enacted before CBO made the current projections is Public Law 114-10, the Medicare Reauthorization and CHIP Extension Act of 2015, which became law on April 16, 2015. According to CBO's projections, that law will increase revenues by less than $1 billion in any given year between 2015 and 2025. For details of CBO's March baseline, see Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973. For details of Public Law 114-10, see Congressional Budget Office, cost estimate for H.R. 2, the Medicare Access and CHIP Reauthorization Act of 2015 (March 25, 2015), www.cbo.gov/publication/50053.

2. The sole exception to the current-law assumption during the 10-year baseline period applies to expiring excise taxes dedicated to trust funds. The Balanced Budget and Emergency Deficit Control Act of 1985 requires CBO's baseline to reflect the assumption that those taxes would be extended at their current rates. That law does not stipulate that the baseline include the extension of other expiring tax provisions, even if lawmakers have routinely extended them before.

Figure 5-1.

Total Revenues

Percentage of Gross Domestic Product



Under CBO's extended baseline, revenues as a share of GDP rise slowly after 2025 mainly because of real bracket creep and certain tax increases enacted in the Affordable Care Act.

Source: Congressional Budget Office.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

reach 19.4 percent of GDP by 2040 (see Figure 5-1).[3] By comparison, revenues over the past 50 years have averaged 17.4 percent of GDP. Without significant changes in tax law, the tax system's effects in 2040 would be quite different from what they are today. A larger share of each additional dollar of income that households earned would go to taxes, and households throughout the income distribution would pay more of their total income in taxes than households in similar places in that distribution pay today.

3. This chapter's revenue projections are based on CBO's benchmark projections of economic variables such as GDP, inflation, and interest rates. For the 2015–2025 period, the benchmark matches CBO's January 2015 economic forecast. For later years, the benchmark generally reflects the economic experience of the past few decades. The benchmark also incorporates two assumptions about fiscal policy—that debt held by the public is maintained at 78 percent of GDP, the level reached in 2025 in CBO's baseline budget projections, and that effective marginal tax rates on income from work and saving remain constant after that year. (Effective marginal tax rates on labor or capital income represent the percentage of an additional dollar of such income that is paid in federal taxes.) Thus, this chapter's economic benchmark and the revenue projections do not account for how the increase in marginal tax rates that would occur after 2025 under the extended baseline might affect people's behavior. Chapter 6 analyzes the economic impact of the debt levels and marginal tax rates that CBO projects under the extended baseline. For more about the economic benchmark, see Appendix A.

Revenues Over the Past 50 Years

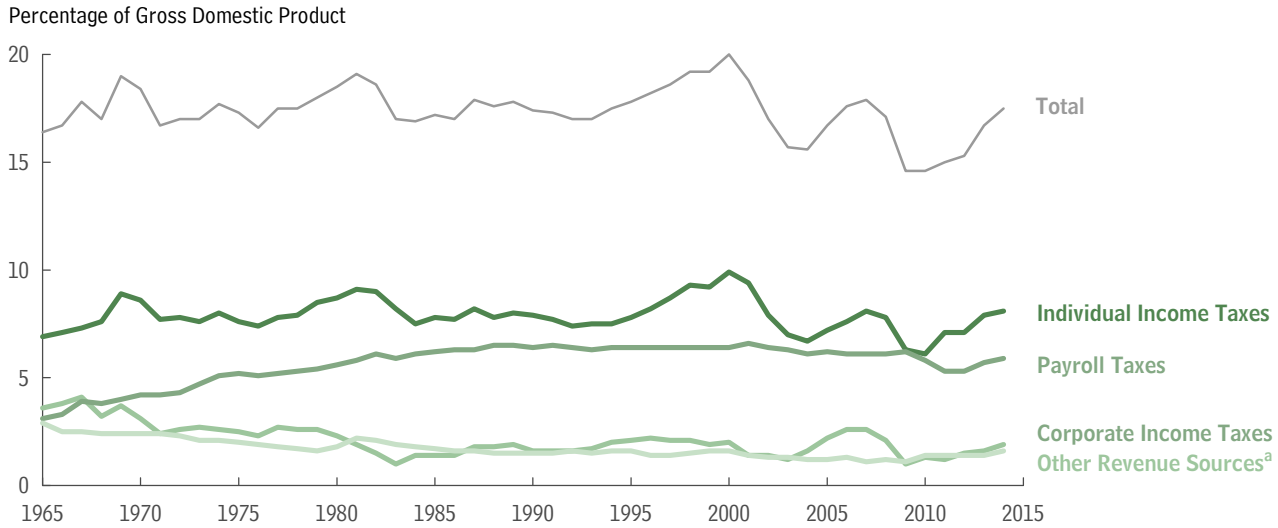
Over the past 50 years, total federal revenues have been as high as 20.0 percent of GDP (in 2000) and as low as 14.6 percent (in 2009 and 2010), with no evident trend (see Figure 5-2). The composition of total revenues during that period has varied as well. Individual income taxes, which account for about half of all revenues now, have ranged from slightly less than 10 percent of GDP (in 2000) to slightly more than 6 percent (in 2010). Payroll taxes, which generate about one-third of total revenues now, have varied from about 3 percent of GDP to more than 6 percent during the past 50 years. (Those taxes consist primarily of payroll taxes credited to the Social Security and Medicare Hospital Insurance trust funds.) Corporate income taxes have fluctuated between about 1 percent of GDP and 3 percent since the 1960s, as have combined revenues from other sources.

Some of the variation in the amounts of revenue that different taxes generated has stemmed from changes in economic conditions and from how those changes interact with the tax code. For example, without legislated tax reductions, real bracket creep tends to cause receipts from individual income taxes to grow in relation to GDP. Also, because some parameters of the tax system are not indexed to increase with inflation, rising prices alone subject a greater share of income to higher effective tax

Figure 5-2.

Revenues, by Source, 1965 to 2014

Over the past 50 years, total revenues averaged 17.4 percent of GDP; most of the variation around that average reflects variation in individual income tax receipts.



Source: Congressional Budget Office.

a. Consists of excise taxes, remittances to the U.S. Treasury from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

rates.[4] Cyclical developments in the economy also affect revenues. During economic downturns, for example, taxable corporate profits generally fall faster than the nation's output, shrinking corporate tax revenues in relation to GDP; losses in households' income also tend to push a greater share of total income into lower tax brackets, reducing individual income tax revenues in relation to GDP. Thus, total tax revenues as a share of GDP automatically decline when the economy is weak and rise when the economy is strong.

By contrast, revenues derived from excise taxes have declined over time in relation to GDP because many excise taxes are levied on the unit quantity of a good purchased (such as a gallon of gasoline) as opposed to a percentage of the price paid. Because those levies are not indexed for inflation, the revenues they generate have declined as a share of GDP as prices have risen.

Tax revenues as a share of GDP have also varied with legislative changes. In the past 50 years, at least a dozen changes in law have raised or lowered annual revenues by at least 0.5 percent of GDP.

Revenue Projections Under CBO's Extended Baseline

CBO's extended baseline follows the agency's March 2015 baseline budget projections, as adjusted for recently enacted legislation, for the next decade and then extends the baseline concept beyond that 10-year window.[5] The extended baseline reflects the assumptions that, after 2025, the rules governing the individual income, payroll, excise, and estate and gift taxes will evolve as specified under current law and that revenues from corporate income taxes and all other sources (such as receipts from the Federal Reserve) will remain constant as a share of GDP.

4. The parameters of the tax system include the amounts that define the various tax brackets; the amounts of the personal exemption, standard deductions, and credits; and tax rates. Although many of the parameters—including the personal exemption, standard deduction, and tax brackets—are indexed for inflation, some, such as the amount of the maximum child tax credit, are not. The effect of price increases on tax receipts was much more significant before 1984, when none of the parameters of the individual income tax were indexed for inflation.

5. See Congressional Budget Office, *Updated Budget Projections: 2015 to 2025* (March 2015), www.cbo.gov/publication/49973.

Table 5-1.

Sources of Growth in Total Revenues as a Percentage of GDP Between 2015 and 2040 Under CBO's Extended Baseline

Source of Growth	Percentage of GDP
Structural Features of the Individual Income Tax System (Including real bracket creep)[a]	1.3
New and Expiring Tax Provisions	0.7
Aging and the Taxation of Retirement Income	0.3
Other Factors (Including remaining changes in individual income taxes and all changes in corporate, payroll, excise, and estate and gift taxes)[b]	-0.6
Growth in Total Revenues Over the 2015–2040 Period	**1.7**

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

GDP = gross domestic product.

a. Real bracket creep refers to the phenomenon in which rising real (inflation-adjusted) income causes an ever-larger proportion of income to be subject to higher tax rates.

b. Excludes the effects on all those revenue sources of new and expiring tax provisions, which are accounted for in a preceding line of the table.

During the next decade, under current law, some new provisions of tax law will go into effect and certain provisions will expire. Reflecting those scheduled changes, the extended baseline incorporates the following assumptions:

- A new tax on certain employment-based health insurance plans with high premiums, scheduled to go into effect in 2018 as a result of the ACA, will be implemented without modification.

- Certain tax provisions that recently expired will not be extended later, and provisions scheduled to expire over the next several years will do so, even if lawmakers have routinely extended them before. For example, tax credits for research and experimentation expired at the end of December 2014 and will not be extended, and certain individual income tax credits will expire or decline in value after 2017.

If current laws remained in place, tax revenues would rise from 17.7 percent of GDP in 2015 to 18.3 percent in 2025 and then to 19.4 percent in 2040, CBO estimates. Increases in receipts from individual income taxes more than account for the projected rise of 1.7 percentage points in total revenues as a percentage of GDP over the next 25 years; receipts from all the other sources, taken together, are projected to decline slightly as a share of GDP.

The projected increase in tax receipts reflects several factors, including structural features of the income tax system, new and expiring tax provisions (including scheduled future tax changes enacted in the ACA), demographic trends, and other factors (see Table 5-1).

Structural Features of the Individual Income Tax System

Real bracket creep is the most important structural feature of the tax system contributing to growth in revenue over time. It has two kinds of effects. Rising real income subjects an ever-larger proportion of income to higher tax rates, and it further increases taxes by reducing taxpayers' eligibility for various credits, such as the earned income tax credit and the child tax credit.

Also, some provisions of the tax code are not indexed for inflation, so cumulative inflation generates some increase in receipts in relation to GDP. For example, the ACA imposed an additional tax on the investment income of individuals with income exceeding $200,000 and of families with income exceeding $250,000. Those thresholds are not indexed for inflation, so the tax will affect an increasing share of investment income over time and will boost revenues by a small but growing share of GDP.[6]

6. The ACA also imposed an additional Medicare tax of 0.9 percent, paid entirely by the employee, on earnings (wages and salaries) exceeding $200,000 for individuals and $250,000 for families. Because those thresholds are not indexed for inflation, the tax will apply to an increasing share of earnings over time and thereby raise payroll tax revenues as a share of GDP by larger amounts over time. However, a decline in the share of earnings subject to the Social Security tax will more than offset that effect, CBO projects, because a further slight increase in earnings inequality will cause more earnings to be above the taxable maximum for Social Security.

Revenues from the individual income tax also depend on the distribution of income. CBO's projections reflect an expectation that earnings will grow faster for higher-income people than for others during the next decade—as they have over the past several decades—and that the incomes of all taxpayers will grow at similar rates thereafter. Altogether, if current laws remained in place, growth in people's income would increase income tax revenues as a portion of GDP by 1.3 percentage points between 2015 and 2040, CBO estimates.

New and Expiring Tax Provisions

Under the extended baseline, CBO assumes that tax provisions will take effect or expire as specified under current law. Two tax provisions enacted in the ACA will go into effect over the next several years. Those new provisions will begin to raise revenues as a share of GDP after 2015. Certain other provisions—mainly providing tax credits—are scheduled to expire, also boosting revenue.

The most significant new provision, an excise tax on employment-based health insurance whose value exceeds certain thresholds, is scheduled to go into effect in 2018. That tax is expected to increase revenues in two ways:

- First, in those cases in which the tax applied, it would generate additional excise tax revenues.
- Second, many individuals and employers will probably shift to lower-cost insurance plans to either reduce the excise tax paid or avoid paying it altogether. As a result, total payments of health insurance premiums for those individuals—and the associated tax-exempt contributions from their employers—will be less than they would have been without the tax. However, CBO expects that total compensation paid by employers (including wages and salaries, contributions to health insurance premiums, pensions, and other fringe benefits) will not be affected over the long term.[7] Thus, smaller expenditures for health insurance will mean higher taxable wages and salaries for employees and, as a result, higher payments of income and payroll taxes.[8]

Thus, whether policyholders decided to pay the excise tax or to avoid it by switching to lower-cost plans, total tax revenues would ultimately rise compared with what they would have been without the tax. Although the threshold for the tax on high-premium health insurance plans is indexed for changes in overall consumer prices, health care costs will grow faster than prices over the long term, CBO projects. Consequently, more people will be affected over time.[9] Under the extended baseline, the excise tax is projected to increase total revenues by 0.5 percent of GDP in 2040.

The other ACA provision that will increase revenues in relation to GDP after 2015 penalizes certain employers that do not offer their employees health insurance coverage meeting certain criteria. That provision will be phased in over the 2015–2016 period and will increase revenues starting in 2016, CBO estimates.

In addition, several tax provisions either recently expired or are slated to expire over the next several years. Recently expired provisions include tax credits for research and experimentation as well as a deferral of tax payments on certain types of foreign-earned income, both of which had been in effect for many years. And after 2017, several credits in the individual income tax system are scheduled to expire or to be scaled back.[10]

Together, under the extended baseline, the scheduled introduction of new tax provisions and the expiration of certain existing tax provisions would raise receipts by 0.7 percent of GDP between 2015 and 2040, CBO projects.

7. In the past, rising premiums have been an important cause of slow wage growth. See Paul Ginsburg, *Alternative Health Spending Scenarios: Implications for Employers and Working Households* (Brookings Institution, April 2014), http://tinyurl.com/ksh9p47.

8. Even if the excise tax caused employers to shift to lower-cost health insurance plans without a corresponding increase in wages, other taxes, such as those on corporate profits, would tend to rise. The resulting revenues would be similar to the amounts projected in CBO's extended baseline.

9. The thresholds will be indexed to general inflation plus 1 percentage point for 2019 and to general inflation for 2020 and later years.

10. A provision allowing businesses to immediately deduct 50 percent of new investments in equipment from their taxable income expired at the end of calendar year 2014. That expiration causes significant movements in receipts over the next few years but contributes little to the growth of revenues as a share of GDP over the 2015–2025 or 2015–2040 period. Projected receipts in 2016, the first fiscal year that fully reflects the less favorable depreciation rules in effect under current law for 2015 and later years, are higher because of the smaller initial deductions for new investments. Over time, however, that effect diminishes as taxpayers take deductions for investments made under the less favorable rules.

Aging and the Taxation of Retirement Income

During the next few decades, members of the baby-boom generation (people born between 1946 and 1964) will continue to retire. They will withdraw money from retirement accounts and receive pension benefits, boosting income tax revenues as a share of GDP. Depending on the specific characteristics of retirement plans—such as 401(k) plans and individual retirement accounts—some or all of the amounts withdrawn will be taxable. Likewise, compensation deferred under employer-sponsored defined benefit plans is taxed when benefits are paid.[11] Thus, the U.S. Treasury will receive significant tax revenues that have been deferred for years. As a result, under the extended baseline, revenues as a share of GDP are projected to climb by about 0.3 percentage points between 2015 and 2040. That upward trend is expected to end around 2040, when almost all baby boomers will have reached retirement.

Other Factors

Under the extended baseline, factors besides those already discussed would cause revenues to decline by a combined 0.6 percent of GDP between 2015 and 2040. (The estimate reflects current law but does not consider scheduled changes to law and the structural and demographic effects of individual income taxes, which are accounted for separately.) About two-thirds of that decline would occur by 2025. In particular, remittances to the Treasury from the Federal Reserve—which have been very large since 2010 because the central bank's portfolio has grown and changed in composition—are projected to decline to more typical levels.

CBO also projects that, excluding the excise tax on high-premium health insurance plans, excise taxes would decline as a share of GDP over time. Many excise taxes are assessed as a fixed dollar amount per unit quantity of a good purchased, not as a percentage of the price paid. Therefore, as overall prices rise over time, receipts from excise taxes as a share of GDP tend to fall. Moreover, payroll taxes for unemployment insurance are expected to decline to more typical levels over the next few years, further reducing receipts as a share of GDP. Partly offsetting the declines in receipts is a small projected rise in individual income taxes for reasons other than structural features, scheduled changes in law, or aging and the taxation of retirement income.

Long-Term Implications for Tax Rates and the Tax Burden

Even if legislators enacted no future changes in tax law, the effects of the tax system that would be in place in the future would differ significantly from those of today's tax system. Increases in real income over time would push more income into higher tax brackets in the individual income tax system, raising people's effective marginal tax rates and average tax rates. (The effective marginal tax rate is the percentage of an additional dollar of income from labor or capital that is paid in federal taxes. The average tax rate is total taxes paid divided by total income.) Moreover, fewer taxpayers would be eligible for certain tax credits, such as the earned income and child credits, because rising real income would push taxpayers above the income limits for eligibility. Inflation would also raise tax rates, although to a much lesser extent because most of the tax code's key parameters are indexed for inflation. Slightly more taxpayers would become subject to the alternative minimum tax (AMT) over time, although the American Taxpayer Relief Act of 2012 greatly limited the share of taxpayers who would pay that tax.[12] Thus, in the long run, people throughout the income distribution would pay a larger share of their income in taxes than people at the same points in the distribution pay today, and many taxpayers would face diminished incentives to work and save.

Marginal Tax Rates on Income From Labor and Capital

Under CBO's extended baseline, marginal tax rates on income from labor and capital would rise over time. The effective marginal federal tax rate on labor income would,

11. A defined benefit plan is an employment-based plan that promises employees a certain benefit upon retirement. Typically, the benefit is based on a formula that takes into account an employee's length of service and salary.

12. The AMT is a parallel income tax system with fewer exemptions, deductions, and rates than the regular income tax system. Households must calculate the amount they owe under both tax systems and pay whichever is larger. The American Taxpayer Relief Act raised the exemption amounts for the AMT for 2012 and, beginning in 2013, permanently indexed those exemption amounts for inflation. Also indexed for inflation were the income thresholds at which those exemptions phase out and the income threshold at which the second rate bracket for the AMT begins. Although rising real income will gradually subject more taxpayers to the AMT, many of those newly affected will owe only slightly more than their regular income tax liability.

Table 5-2.

Estimates of Effective Marginal Federal Tax Rates Under CBO's Extended Baseline

Percent

	2015	2025	2040
Marginal Tax Rate on Labor Income	28.8	31.1	32.2
Marginal Tax Rate on Capital Income	18.0	18.4	18.5

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The effective marginal federal tax rate on income from labor is the share of an additional dollar of such income that is paid in federal individual income taxes and payroll taxes, averaged across taxpayers by using weights proportional to their labor income. The effective marginal federal tax rate on income from capital is the share of the return on an additional dollar of investment made in a particular year that will be paid in taxes over the life of that investment. Rates are calculated for different types of assets and industries and then averaged over all types of assets and industries, using the share of asset values as weights.

CBO projects, increase from 28.8 percent in calendar year 2015 to 32.2 percent in 2040 (see Table 5-2). (The effective marginal tax rate on labor income reflects labor income averaged across taxpayers by using weights proportional to their labor income.) By contrast, the effective marginal federal tax rate on capital income (returns on investment) is projected to rise only from 18.0 percent to 18.5 percent over that period.

The projected increase in the effective marginal tax rate on labor income reflects four primary factors:

- *Real bracket creep under the regular income tax.* As households' inflation-adjusted income rose over time, they would be pushed into higher marginal tax brackets. (Because the thresholds for taxing income at different rates are indexed for inflation, increases in income that just kept pace with inflation would not generally raise households' marginal tax rates.) One consequence is that the share of ordinary income subject to the top rate of 39.6 percent would rise from 12 percent in 2015 to 16 percent by 2040, CBO estimates.[13]

- *The structure of premium subsidies in health insurance exchanges (or marketplaces).* Those subsidies are conveyed in the form of tax credits that phase out as income rises over a certain range, increasing marginal rates on income in that range. Under current law, the income range over which the subsidies are phased out would expand with inflation, but the subsidies would grow faster than inflation. As a result, over time, for each extra dollar of income someone earns, the subsidy would be reduced by a larger fraction of that dollar, thereby raising the effective marginal tax rate.

- *Rising health care costs.* Rising health care costs tend to reduce marginal tax rates by reducing the taxable share of compensation. However, CBO expects that the excise tax on certain high-premium health insurance plans would more than offset this effect over the next few decades. That tax would affect a growing share of compensation over time because health care costs are expected to rise faster than the threshold for the tax.

- *The additional 0.9 percent tax on earnings above an established threshold that was enacted in the ACA.* Over time, that tax would apply to a growing share of labor income because the $250,000 threshold is not indexed for inflation.

The effective marginal tax rate on capital income would rise only slightly over the next 25 years, CBO projects. CBO estimates that real bracket creep would not raise that rate very much because a large share of capital income is already being taxed at top rates in 2015. Moreover, the other key factors that would push up the effective marginal tax rate on labor income would not affect the tax rate on capital income.

The increase in the marginal tax rate on labor income would reduce people's incentive to work, and the increase in the marginal tax rate on capital income would reduce their incentive to save. However, the reduced earnings and savings because of the higher taxes would also encourage people to work and save more in order to maintain the same amount of after-tax income and savings. Evidence suggests that the former behavioral responses typically prevail and that, on balance, higher

13. Ordinary income is all income subject to the income tax except long-term capital gains and dividends.

marginal tax rates discourage economic activity.[14] (The overall effect of federal taxes on economic activity depends not only on marginal tax rates but also on the amount of revenues raised in relation to federal spending and thereby on the resulting federal deficits and debt.) This chapter's analysis does not reflect those macroeconomic effects, which are discussed in Chapter 6.

Average Tax Rates for Some Representative Households

Some parameters of the tax code are not indexed for inflation, and most are not indexed for real income growth. As a result, the personal exemption, the standard deduction, the amount of the child tax credit, and the thresholds for taxing income at different rates all would tend to decline in relation to income over time under current law. One consequence is that, under the extended baseline, average federal tax rates would increase over time.

The cumulative effect of rising prices would significantly reduce the value of some parameters of the tax system that are not indexed for inflation, CBO projects. For example, CBO estimates that the amount of mortgage debt eligible for the mortgage interest deduction, which is not indexed for inflation, would fall from $1 million today to about $600,000 in 2040 measured in today's dollars. As another example, the portion of Social Security benefits that is taxable would increase from about 35 percent now to over 50 percent by 2040, CBO estimates, because the thresholds for taxing benefits are not indexed for inflation.

Under the extended baseline, even tax parameters that are indexed for inflation would lose value over time in comparison with income. For example, according to CBO's projections, the current $4,000 personal exemption would rise by almost 80 percent by 2040 because it is indexed for inflation. But income per household will probably almost triple during that period, so the value of the exemption in relation to income would decline by almost 40 percent. If income grew at similar rates for higher-income and lower-income taxpayers, that decline would tend to boost the average tax rates of lower-income taxpayers more than the average tax rates of other taxpayers because, for lower-income taxpayers, the personal exemption is larger in relation to income. For another example, CBO projects that without legislative changes, the proportion of taxpayers claiming the earned income tax credit would fall from 16 percent this year to 11 percent in 2040 as growth in real income made more taxpayers ineligible for the credit.[15]

Those developments and others would cause individual income taxes as a share of income to grow by different amounts over time for households at different points in the income distribution. For example:

- According to CBO's analysis, a married couple with two children earning the median income of $105,600 (including both cash income and other compensation) in 2015 and filing a joint tax return will pay about 4 percent of their income in individual income taxes (see Table 5-3).[16] By 2040, under current law, a similar couple earning the median income would pay 8 percent of their income in individual income taxes.

- For a married couple with two children earning half the median income, the change in individual income taxes as a share of income would be much greater, CBO estimates: In 2015, such a family will typically receive a net payment from the federal government equal to 10 percent of its income in the form of refundable tax credits, but by 2040 it would become a net taxpayer, paying about 1 percent of its income in income taxes.

- By comparison, for a married couple with two children earning four times the median income, CBO projects that the share of income that they would pay in individual income taxes would be much higher in both 2015 and 2040 but rise much less—from 19 percent to 22 percent—between those years.

14. For additional discussion, see Congressional Budget Office, *How the Supply of Labor Responds to Changes in Fiscal Policy* (October 2012), www.cbo.gov/publication/43674, and *Taxing Capital Income: Effective Marginal Tax Rates Under 2014 Law and Selected Policy Options* (December 2014), www.cbo.gov/publication/49817.

15. In CBO's projections, future family structures are similar to those today. If marriage rates among families with earnings near the eligibility range for the credit were to decline, for instance, the proportion of the population receiving the earned income tax credit would probably be higher than it would be otherwise, and vice versa.

16. The examples incorporate the assumption that all income that taxpayers receive is from labor compensation. Furthermore, median income is assumed to grow with average income, so income at each multiple of the median grows at the same rate. For details about the calculations, see Table 5-3.

Table 5-3.

Individual Income and Payroll Taxes as a Share of Total Income Under CBO's Extended Baseline

	Income (2015 dollars)[a]		Taxes as a Share of Total Income (Percent)	
	Cash	Total	Income Taxes[b]	Income and Payroll Taxes[c]
		Taxpayer Filing a Single Return		
Half the Median Total Income				
2015	11,300	18,300	-1	9
2040	17,600	29,600	2	11
Median Total Income				
2015	28,300	36,500	6	18
2040	45,100	59,200	7	19
Twice the Median Total Income				
2015	62,200	73,100	10	23
2040	100,100	118,400	12	25
Four Times the Median Total Income				
2015	130,800	146,100	15	27
2040	212,100	236,700	16	29
		Married Couple (With Two Children) Filing a Joint Return[d]		
Half the Median Total Income				
2015	32,900	52,800	-10	0
2040	52,900	85,500	1	11
Median Total Income				
2015	81,900	105,600	4	16
2040	132,300	171,000	8	19
Twice the Median Total Income				
2015	180,000	211,200	11	24
2040	291,100	342,000	14	28
Four Times the Median Total Income				
2015	384,700	422,400	19	29
2040	624,500	683,900	22	32

Source: Congressional Budget Office based on data from the March 2014 Current Population Survey.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

Cash income includes compensation from wages. Total income includes cash income, the employer's costs for employment-based health insurance, and the employer's share of payroll taxes. For 2040, the premium on employment-based health insurance is assumed not to exceed the excise tax threshold in the Affordable Care Act.

Taxpayers are assumed to itemize if itemized deductions are greater than the standard deduction. State and local taxes are assumed to equal 8 percent of wages; other deductions are assumed to equal 15 percent of wages.

a. Income amounts have been rounded to the nearest $100. Inflation adjustments are made using the personal consumption expenditures price index.

b. Negative tax rates result when refundable tax credits, such as the earned income and child tax credits, exceed the tax owed by people in an income group. (Refundable tax credits are not limited to the amount of income tax owed before they are applied.)

c. Payroll taxes include the share paid by employers.

d. The examples for a married couple reflect the assumption that the spouses earn the same amount.

By contrast, under current law, payroll taxes as a share of income would differ only slightly in 2040 from what they are today. Those taxes are principally levied as a flat rate on earned income below a certain threshold, which is indexed for both inflation and overall growth in real earnings. Thus, the changes over the next 25 years in the sum of income and payroll taxes as a share of income would be quite similar to the changes in income taxes as a share of income.

Although rising real income would contribute to rising average tax rates under current law, that real income growth would also mean that future households would have higher after-tax income than similar households at the same point in the income distribution have today. For example, from 2015 to 2040, CBO projects that real after-tax income for a couple earning the median income would grow by over 50 percent under the extended baseline.

CHAPTER

6

The Macroeconomic and Budgetary Effects of Various Fiscal Policies

Federal tax and spending policies have significant effects on the economy, and those macroeconomic effects, in turn, affect the budget. Although the budget projections presented in the preceding chapters of this report incorporate the effects of fiscal policy on the economy over the next decade, they do not incorporate those effects beyond 2025, relying instead on "benchmark" projections of economic variables. Unlike the economic forecast constructed by the Congressional Budget Office for the traditional 10-year baseline period, which generally reflects current laws regarding taxes and spending, the economic benchmark that CBO uses for projections beyond the 10-year period reflects the assumption that marginal tax rates (the rates that apply to an additional dollar of income) and the ratio of debt to gross domestic product (GDP) will remain constant after 10 years.

This chapter expands on the analysis in the preceding chapters in two ways. First, it shows how the budgetary policies that would be in place under the extended baseline would affect the economy in the long run—that is, how the economy that resulted from those policies would differ from CBO's economic benchmark—and how those macroeconomic effects would, in turn, feed back into the budget. Second, the chapter shows how the budget and the economy would evolve under three additional scenarios involving changes in fiscal policy. The first, the extended alternative fiscal scenario, incorporates changes to those policies assumed under the extended baseline that some analysts consider difficult to maintain; it would result in larger deficits and more debt than are projected in the extended baseline. The other two scenarios are illustrative. Through unspecified increases in tax revenue, cuts in spending, or some combination of the two, they would result in smaller deficits and lower debt than under the extended baseline.

Although changes in tax and spending policies can affect the economy in a variety of ways, CBO's analysis in this chapter focuses on the following four changes and their macroeconomic effects:

- Higher debt draws money away from (that is, crowds out) investment in capital goods and thereby reduces output below what would otherwise occur.
- Higher marginal tax rates discourage working and saving, which reduces output.
- Larger transfer payments to working-age people discourage working, which reduces output.
- Increased federal investment in education, research and development (R&D), and infrastructure helps develop a skilled workforce, encourages innovation, and facilitates commerce, all of which increase output.

For each of those policy changes, the opposite change has the opposite effect; for example, lower marginal tax rates increase output above what would otherwise occur.

Because the magnitude of the macroeconomic effects of specified changes in fiscal policies is uncertain, CBO reports not only a central estimate for the outcome of each set of policies but also a range of likely outcomes.[1] When estimating output, CBO focused on effects on

1. For certain key variables in its long-term economic models, CBO has developed ranges of values based on the research literature on those variables; each range is intended to cover roughly the middle two-thirds of the likely values for the variable. To calculate the ranges of estimates for the effects of each set of fiscal policies, CBO used the ranges of values for each variable. To calculate the central estimates, it used values for the variables at the midpoints of those ranges.

gross national product (GNP), which—unlike the more commonly cited GDP—includes the income that U.S. residents earn abroad and excludes the income that foreigners earn in this country; it is therefore a better measure of the resources available to U.S. households.

CBO estimates that the fiscal policies in the extended baseline would result in output lower than what is projected in the economic benchmark, primarily because the ratio of debt to output and marginal tax rates on labor income would increase significantly over time; in addition, the increase in debt would lead to higher interest rates. According to CBO's central estimates, real (inflation-adjusted) GNP in 2040 would be roughly 2 percent lower than the amount projected in the benchmark, and interest rates would be about a quarter of a percentage point higher.[2] Those economic changes, in turn, would worsen the budgetary outlook, though not dramatically: Under the extended baseline with macroeconomic feedback, federal debt held by the public is projected to rise to 107 percent of GDP in 2040; under the extended baseline without macroeconomic feedback (described in Chapter 1), it is projected to be 103 percent.

For the three additional fiscal scenarios, CBO's analysis yields the following macroeconomic and budgetary outcomes (according to the agency's central estimates):

- In the first scenario—that is, the extended alternative fiscal scenario—revenues and certain categories of spending measured as shares of GDP remain close to their historical averages over the long run rather than change as they would under the extended baseline. Under that scenario, deficits excluding interest payments would be about $2 trillion larger over the first decade than those under the baseline; thereafter, such deficits would be larger than those under the extended baseline by rapidly increasing amounts, doubling as a percentage of GDP in less than 10 years. CBO projects that real GNP in 2040 would be about 5 percent lower under the extended alternative fiscal scenario than under the extended baseline with macroeconomic feedback and that interest rates would be about three-quarters of a percentage point higher. As a result of those economic developments, federal debt would rise to 175 percent of GDP in 2040 (see Figure 6-1).

- Under the second scenario, which is illustrative and does not reflect any specific fiscal policies, deficit reduction is phased in such that total deficits excluding interest payments through 2025 are $2 trillion lower than those projected under the baseline and, in each subsequent year, the reduction measured as a percentage of GDP equals the 2025 reduction. CBO projects that real GNP in 2040 would be about 3 percent higher and interest rates would be about a third of a percentage point lower under this scenario than under the extended baseline with macroeconomic feedback. After accounting for those economic developments, CBO projects that federal debt in 2040 would be about 72 percent of GDP—about the same ratio as it was in 2013.

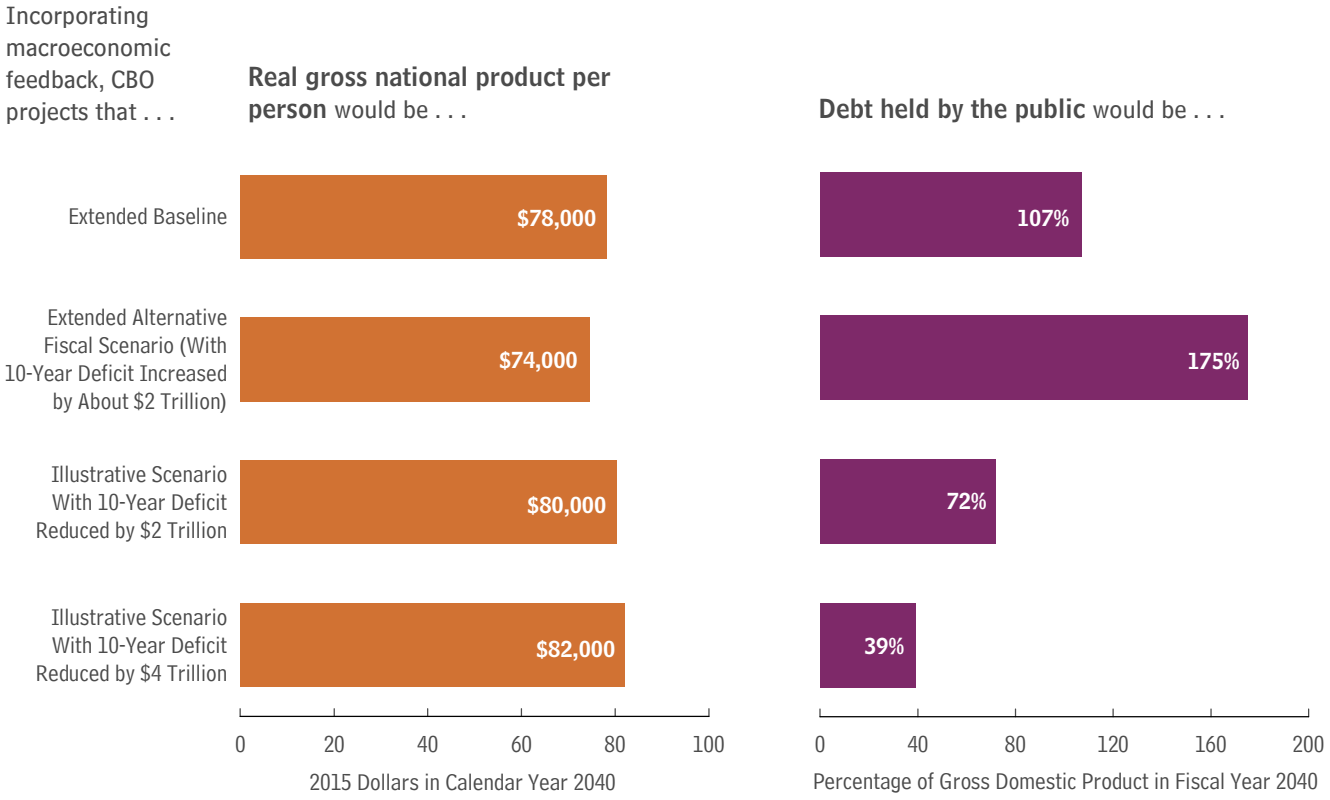
- Under the third scenario, which is also illustrative, the amount of deficit reduction in the next 10 years is twice as large as in the second, with the reduction phased in such that total deficits excluding interest payments through 2025 are $4 trillion lower than those under the baseline. As in the second scenario, measured as a percentage of GDP, the reduction in the deficit in each subsequent year equals the 2025 reduction. CBO projects that real GNP in 2040 would be about 5 percent higher and interest rates would be about two-thirds of a percentage point lower under this scenario than under the extended baseline with macroeconomic feedback. With those economic effects accounted for, federal debt would fall to 39 percent of GDP in 2040, slightly above its level in 2007 (35 percent) and its average over the past 50 years (38 percent).

The three additional fiscal scenarios would have significant effects on the economy during the next few years as well as over the long term (which is the focus of this chapter). The scenarios that would raise output in the long term above what is projected in the extended baseline would lower it in the short term, and the scenario that would reduce output in the long term would raise it in the short term. CBO estimates that the decrease in tax revenues and increase in spending under the extended alternative fiscal scenario would cause real GDP in 2016 to be 0.6 percent higher than it would be under current law and would cause the number of full-time-equivalent employees in 2016 to be 0.7 million greater than is

2. For the results presented in this chapter, changes in interest rates refer to changes in both the average real return on private capital and the average real interest rate on federal debt.

Figure 6-1.

Effects in 2040 of the Fiscal Policies in CBO's Extended Baseline, Extended Alternative Fiscal Scenario, and Illustrative Scenarios With Smaller Deficits



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The extended alternative fiscal scenario incorporates these assumptions: Certain policies that have been in place for a number of years but that are scheduled to change will be continued, some provisions of law that might be difficult to sustain for a long period will be modified, and federal revenues and certain categories of federal spending measured as shares of gross domestic product will be maintained at or near their historical averages over the long term.

In the illustrative scenarios with the 10-year deficit reduced by $2 trillion and by $4 trillion relative to the baseline, those amounts are the cumulative reductions in deficits excluding interest payments between 2016 and 2025.

Real (inflation-adjusted) gross national product differs from gross domestic product, the more common measure of the output of the economy, by including the income that U.S. residents earn abroad and excluding the income that nonresidents earn in this country.

The results are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

projected under current law.[3] Under the first illustrative scenario, a drop in demand for goods and services would cause real GDP to be 0.2 percent lower and the number of full-time-equivalent employees to be 0.2 million smaller in 2016 than is projected under current law. Under the second illustrative scenario, which would bring about a larger decrease in demand, real GDP would be 0.3 percent lower and the number of full-time-equivalent employees would be 0.4 million smaller in 2016 than they would be under current law.

3. A year of full-time-equivalent employment is equal to 40 hours of employment per week for one year.

Long-Term Macroeconomic Effects of Federal Tax and Spending Policies

Federal tax and spending policies can affect the economy through many channels, including the amount of federal borrowing, marginal tax rates on labor and capital income, transfer payments to working-age people, and federal investment. To analyze medium-term to long-term effects of changes in federal tax and spending policies, CBO used an enhanced version of a model originally developed by Robert Solow in which people base their decisions about working and saving primarily on current economic conditions—especially wage levels, interest rates, and government policies. Their responses to changes in such conditions generally mirror their responses to economic and policy developments in the past; as a result, the responses reflect people's anticipation of future policies in a general way but not their expectations of particular future developments.[4]

How Increased Federal Borrowing Affects the Economy

Increased borrowing by the federal government generally crowds out private investment in productive capital in the long term. That is because the portion of the amount people save that is used to buy government securities is not available to finance private investment. The result is a smaller stock of capital and lower output in the long term than would otherwise be the case (all else held equal).

Two factors offset part of that crowding-out effect. One is that additional federal borrowing tends to boost private saving, which increases the total funds available to purchase federal securities and finance private investment. That response occurs for several reasons:

- Additional federal borrowing tends to raise interest rates, which boosts the return on saving;
- Some people anticipate that policymakers will raise taxes or cut spending in the future to cover the cost of paying interest on the additional accumulated debt, so those people increase their own saving to prepare for paying higher taxes or receiving less in benefits; and
- The policies that give rise to deficits (such as tax cuts or increases in government transfer payments) put more money in private hands, some of which is saved.

However, the rise in private saving is generally a good deal smaller than the increase in federal borrowing, so greater federal borrowing leads to less *national* saving.[5] CBO's central estimate, which is based on the research literature on this topic, is that private saving rises by 43 cents for every one-dollar increase in federal borrowing in the long run, leaving a net decline of 57 cents in national saving.

The second factor offsetting part of the crowding-out effect is that higher interest rates tend to increase net inflows of capital from other countries—by attracting more foreign capital to the United States and inducing U.S. savers to keep more of their money at home. Those additional net inflows prevent investment in this country from declining as much as national saving does in the face of more federal borrowing. CBO's central estimate, again drawn from the research literature on the topic, is that net inflows of private capital rise by 24 cents for every one-dollar increase in government borrowing in the long run.

However, an increase in inflows of capital from other countries also means that more profits and interest payments will flow overseas. Therefore, although flows of capital into the United States can help moderate a decline in domestic investment, part of the income resulting from that additional investment does not accrue to U.S. residents. The result is that greater net inflows of capital keep GDP from declining as much as it would otherwise, but they are less effective in restraining the decline in

4. For details of CBO's model, see Congressional Budget Office, *CBO's Method for Estimating Potential Output: An Update* (August 2001), www.cbo.gov/publication/13250. For a general explanation of how CBO analyzes the effects of fiscal policies, see Congressional Budget Office, *How CBO Analyzes the Effects of Changes in Federal Fiscal Policies on the Economy* (November 2014), www.cbo.gov/publication/49494.

5. National saving comprises total saving by all sectors of the economy: personal saving; business saving, in the form of after-tax profits not paid out as dividends; and government saving or dissaving, in the form of surpluses or deficits of the federal government and state and local governments.

GNP.[6] Thus, other things being equal, increases in debt cause a greater reduction in GNP than in GDP, and reductions in debt lead to a greater increase in GNP than in GDP.

With those two offsets to the crowding-out effect taken together, when the deficit goes up by one dollar, national saving falls by 57 cents and foreign capital inflows rise by 24 cents, leaving a net decline of 33 cents in investment in the long run, according to CBO's central estimates. To reflect the wide range of estimates in the economics literature of how government borrowing affects national saving and domestic investment, CBO also uses a range of estimates for those effects: At the low end of that range, for each dollar that deficits rise, domestic investment falls by 15 cents; at the high end of that range, domestic investment falls by 50 cents.[7]

The effect of deficits on investment alters pretax wages and the return on capital, changing incentives to work and save:

- Less investment leads to a smaller capital stock, which makes workers less productive and thereby decreases pretax wages below what they would otherwise be. Those lower wages reduce people's incentive to work.

- Less investment also increases the productivity of existing capital because more workers make use of each unit of capital—each computer or piece of machinery, for example. That greater productivity raises the return on capital. A higher return on capital boosts the return on equity shares in the ownership of capital and boosts the return on other investments (such as interest rates on federal debt) that are competing for private saving. The resulting increase in the return on saving makes saving more attractive.

CBO's estimates of the effects of higher federal debt on private saving, net capital inflows, and interest rates are based on historical experience. However, history may not be a good guide to the effects of rising debt in the extended baseline because the extended baseline shows a large, persistent increase in the ratio of debt to GDP—an outcome that is unprecedented in the United States, where large increases in debt have been temporary, such as those that occurred during and immediately after wars or severe economic downturns. If participants in financial markets came to believe that policymakers intended to allow federal debt as a percentage of GDP to continue to rise, interest rates would probably increase by more than the historical relationship between federal debt and interest rates suggests. In addition, the increases in federal debt might not affect private saving and net capital inflows in the same way that they have in the past.

As Chapter 1 discusses in greater detail, increased federal debt would, in the long term, have several negative consequences in addition to the effects just described:

- Increased borrowing would increase the amount of interest that the government pays to its lenders, all else being equal. Those larger interest payments would make it more difficult to reduce future budget deficits, necessitating larger increases in taxes or reductions in noninterest spending.

- Increased borrowing would restrict policymakers' ability to use tax and spending policies to respond to unexpected challenges, such as economic downturns or financial crises. As a result, those challenges would tend to have larger negative effects on the economy and on people's well-being.

- Increased borrowing would increase the probability of a fiscal crisis in which investors lost so much confidence in the government's ability to manage its budget that the government was unable to borrow at affordable rates. Such a crisis would present policymakers with extremely difficult choices and would probably have a very significant negative impact on the country.

6. The difference in the effect of an increase in debt on GDP and GNP depends, in large part, on the amount of additional capital that foreigners invest in the United States and on the rate of return that they receive on their investments. The increase in the return on capital in this country and the increase in net holdings of U.S. assets by foreigners—both of which imply greater income earned by foreign investors—decrease GNP relative to GDP. In CBO's analyses of fiscal policy, the rate of return earned by foreign investors in the United States changes when the rate of return on capital in this country changes. However, to be consistent with U.S. experience in recent decades, that response is less than one-for-one.

7. For a review of evidence about the effect of deficits on investment, see Jonathan Huntley, *The Long-Run Effects of Federal Budget Deficits on National Saving and Private Domestic Investment*, Working Paper 2014-02 (Congressional Budget Office, February 2014), www.cbo.gov/publication/45140.

How Increases in Marginal Tax Rates Affect the Economy

Increases in marginal tax rates on labor and capital income reduce output and income below what they would be with lower rates (all else held equal). A higher marginal tax rate on capital income (income derived from wealth, such as stock dividends, realized capital gains, and owners' profits from businesses) decreases the after-tax rate of return on saving, weakening people's incentive to save. However, because that higher marginal tax rate also decreases the return that they receive on their existing savings, people will need to save more to have the same future standard of living, which tends to increase the amount of saving. CBO concludes, as do most analysts, that the former effect outweighs the latter, meaning that a higher marginal tax rate on capital income decreases saving. Specifically, CBO estimates that an increase in the marginal tax rate on capital income that decreased the after-tax return on saving by 1 percent would result in a decrease in private saving of 0.2 percent. (A decrease in the marginal tax rate on capital income would have the opposite effect.) Less saving results in less investment, a smaller capital stock, and lower output and income.

Similarly, a higher marginal tax rate on labor income (such as wages and salaries) decreases people's incentive to work: Reduced after-tax compensation for an additional hour of work makes work less valuable than other uses of a person's time. That phenomenon, known as the substitution effect, tends to reduce the labor supply. However, because that higher marginal tax rate also decreases the after-tax income that they earn from the work they are already doing, people will need to work more to maintain their standard of living. That phenomenon, known as the income effect, tends to increase the labor supply. CBO concludes, as do most analysts, that the former effect outweighs the latter, meaning that a higher marginal tax rate on labor income decreases the labor supply. (A lower marginal tax rate on labor income would have the opposite effect.) Fewer hours of work result in lower output and income.

To reflect the high degree of uncertainty about the size of the effect that changes in marginal tax rates have on the number of hours people choose to work, CBO uses a range of values in its analyses of fiscal policy.[8] The responsiveness of the labor supply to taxes is often expressed as the total wage elasticity (the change in total labor income caused by a 1 percent change in after-tax wages). The total wage elasticity equals the substitution elasticity (which measures the substitution effect) minus the income elasticity (which measures the income effect). In this analysis, CBO's central estimate for the change in the labor supply in response to an increase in marginal tax rates corresponds to a total wage elasticity of 0.19 (composed of a substitution elasticity of 0.24 and an income elasticity of 0.05). CBO's range of likely changes in the labor supply is bounded at the low end by a total wage elasticity of about 0.06 (with a substitution elasticity of 0.16 and an income elasticity of 0.10) and at the high end by a value of about 0.32 (with a substitution elasticity of 0.32 and an income elasticity of zero).[9]

How Increases in Transfer Payments to Working-Age People Affect the Economy

Increases in transfer payments to working-age people discourage work by increasing the amount of resources available to those people and by making work less attractive than other uses of their time. An increase in payments raises people's income, so they can work less and maintain the same standard of living. That income effect tends to reduce the labor supply. In addition, an increase in transfer payments tends to create an implicit tax on additional earnings because those earnings cause people to receive reduced benefits from some transfer programs, thereby encouraging them to substitute other activities for work. That substitution effect also tends to reduce the labor supply. (Thus, in contrast with changes in marginal tax rates, changes in transfer payments generate income and substitution effects that generally work in the same direction.) Those reductions in the labor supply take the form of some people's choosing to work fewer hours and other people's choosing to withdraw from the labor force altogether.

In this analysis, CBO incorporates the income effect of changes in transfer payments to working-age people by using the same income elasticity that it uses to analyze the response of the labor supply to changes in marginal tax rates. This analysis does not, however, incorporate the substitution effect of changes in transfer payments

8. CBO uses those same values to estimate the effect on the labor supply of changes in pretax hourly wages.

9. For details on CBO's estimates of the responsiveness of the supply of labor to changes in the after-tax wage rate, see Congressional Budget Office, *How the Supply of Labor Responds to Changes in Fiscal Policy* (October 2012), www.cbo.gov/publication/43674.

because CBO is still developing methods for estimating the complex array of implicit taxes arising from federal transfer policies.

How Increases in Federal Investment Affect the Economy

Increases in federal investment promote long-term economic growth by raising productivity.[10] Spending on education helps develop a skilled workforce, spending on R&D encourages innovation, and spending on infrastructure such as roads and airports facilitates commerce. If not for receiving a public education (funded in part by federal spending), many workers would have lower wages than they do; the development of the Internet, initially funded through government R&D, led to the creation of whole segments of today's economy; and without public highways, the trucking industry would face much higher costs. The result of that greater productivity is higher private-sector output. By contrast, decreases in federal investment could reduce productivity and long-term growth.

CBO's central estimate is that federal investment yields, on average, one-half of the return of a comparable investment by the private sector.[11] However, the size of the return on federal investment is subject to considerable uncertainty, so CBO also uses a range of likely returns. At the low end, CBO uses a rate of return of zero on federal investment—which would mean that such investment has no effect on future private-sector output. At the high end, CBO uses a rate of return on federal investment equal to the average return on a comparable investment by the private sector. The actual rate of return for a particular federal investment could lie outside that range; a project might have a negative return or, alternatively, yield a greater return than a comparable private-sector investment.

Because of the nature of federal investment, CBO estimates that its returns accrue more slowly than do returns to private investment.[12] The agency expects that, on average, the full effect of federal investment on output is realized within eight years after the outlays are made. In particular, the agency expects that 10 percent of federal investment becomes productive within one year of investment, 20 percent in each of the next two years, and 10 percent in each of the fourth through eighth years following the investment.

Long-Term Effects of the Extended Baseline

The extended baseline generally incorporates the fiscal policies specified in current law. Those policies would cause deficits and debt as percentages of GDP to rise and marginal tax rates to increase over time. Those policies would also increase transfers to working-age families (primarily for health care) and reduce federal investment as a percentage of GDP. Together, those changes would make output lower and interest rates higher than projected in the economic benchmark. Those macroeconomic effects, in turn, would result in worse budgetary outcomes than those based on the economic benchmark.

Fiscal Policies in the Extended Baseline

Under the extended baseline, federal debt would be larger and marginal tax rates would be higher than the values CBO assumed for its economic benchmark after 2025. Furthermore, that benchmark does not reflect the increase in transfer payments and decline in federal investment as a share of GDP that are projected under the extended baseline.

Under the policies in the extended baseline, federal debt held by the public, which is currently 74 percent of GDP, would rise to 78 percent in 2025 and to 107 percent in 2040 (with macroeconomic feedback), CBO projects

10. For further discussion, see Congressional Budget Office, *Federal Investment* (December 2013), www.cbo.gov/publication/44974. This analysis focuses on federal investment for nondefense purposes. Defense investment contributes to the production of weapon systems and other defense goods, but much of it is sufficiently separate from domestic economic activity that it does not typically contribute to future private-sector output; the exception is the small portion of defense investment that goes to basic and applied research.

11. For a discussion of the macroeconomic effects of federal investment, see Congressional Budget Office, *The Macroeconomic and Budgetary Effects of Federal Investment* (forthcoming).

12. From 1988 to 2008, for example, 33 percent of nondefense federal investment was for education and 23 percent was for R&D; such investments, in CBO's assessment, take considerably longer to boost private-sector output than does the investment in physical capital that accounts for most private-sector investment.

(see Table 6-1).[13] Those percentages are larger than the ones underlying the economic benchmark, which incorporates the assumption that federal debt will rise to 78 percent of GDP by 2025 and then remain at that level thereafter.

In addition, marginal tax rates on labor and capital income would increase over time, as rising real incomes pushed more income into higher tax brackets. The effective marginal tax rate on labor income in 2040 would be about 32 percent and the rate on capital income would be about 19 percent; those rates are currently about 29 percent and 18 percent, respectively (see Chapter 5 for details). By contrast, the economic benchmark reflects the assumption that effective marginal tax rates on income from labor and capital will rise through 2025 in line with CBO's estimates under current law and remain at their 2025 levels (namely, 31 percent and 18 percent) thereafter.

Transfer payments to working-age people measured as a share of GDP would increase under the extended baseline, CBO projects. The macroeconomic effects of the increase in those payments over the coming decade are incorporated in CBO's baseline economic forecast for the 2015–2025 period and thus are incorporated in the economic benchmark. However, the further increase in those payments beyond 2025—which is expected to occur as rising federal spending for certain health care programs more than offsets declining federal spending (relative to the size of the economy) for some other transfer programs—is not included in the economic benchmark.

Given the assumptions underlying CBO's baseline, discretionary spending for nondefense purposes measured as a share of GDP is projected to decline significantly during the next decade and then to remain level thereafter (see Chapter 4 for details). Over the past two decades, about half of nondefense discretionary spending has been for investments in education, infrastructure, and R&D. If the share of such spending that goes to investment was the same as it has been in the past, then federal investment measured as a share of GDP would also fall markedly over the next decade and then remain at its 2025 level thereafter. The macroeconomic effects of such a reduction in investment are incorporated in CBO's baseline economic forecast and economic benchmark for the 2015–2025 period. The benchmark does not, however, include the effects of such a reduction beyond 2025.

Output and Interest Rates Under the Extended Baseline

In CBO's assessment, larger federal debt and higher marginal tax rates on labor income are the developments projected under the extended baseline that would have the largest effects on the economy. The projected rise in transfer payments and decline in federal investment as a share of GDP would also affect the economy, but to a lesser extent. That macroeconomic feedback would cause output and interest rates to differ from the amounts projected under CBO's economic benchmark, which does not account for such feedback.

Under the extended baseline, real GNP in 2040 would be about 2 percent below what is projected in the economic benchmark, CBO estimates.[14] As a result, real GNP per person in 2040 would be about $78,000 (in 2015 dollars), whereas it would be about $80,000 under the benchmark (which does not incorporate macroeconomic feedback); those amounts would be considerably greater than the estimated GNP per person in 2015 (about $57,000), primarily because of anticipated growth in productivity (see Figure 6-2). Interest rates in 2040 would be about a quarter of a percentage point higher than those projected in the benchmark, CBO estimates.

Those outcomes are CBO's central estimates. On the basis of the agency's ranges of likely outcomes for key variables, CBO estimates that under the extended baseline, real GNP in 2040 would probably be between about 1 percent and about 4 percent lower than in the benchmark. The estimated increase in interest rates in 2040 would probably range from one-tenth to one-half of a

13. Some combination of increases in revenues or reductions in noninterest spending that resulted in deficits that were 1.1 percent of GDP lower than those projected in the extended baseline would be necessary in each year over the 2015–2040 period to return debt as a percentage of GDP to its current level in 2040. To return debt to its average percentage of GDP over the past 50 years (38 percent), the annual deficits would have to be 2.6 percent of GDP lower than under the extended baseline. For a discussion of how CBO constructs those measures, see Chapter 1. The estimates here, like those in Chapter 1, are calculated without macroeconomic feedback.

14. Projected real GNP in 2025 under the extended baseline equals that in the economic benchmark because during the 10-year budget window, the benchmark matches CBO's economic forecast, which is consistent with the baseline tax and spending policies, and includes macroeconomic feedback.

Table 6-1.

Long-Run Effects on the Federal Budget of the Fiscal Policies in Various Budget Scenarios

Percentage of Gross Domestic Product

	2025	2040
Without Macroeconomic Feedback	**Revenues**	
Extended baseline	18.3	19
With Macroeconomic Feedback		
Extended baseline	18.3	19
Extended alternative fiscal scenario (with 10-year deficit increased by about $2 trillion)	18.0	18
Illustrative scenario with 10-year deficit reduced by $2 trillion	n.a.	n.a.
Illustrative scenario with 10-year deficit reduced by $4 trillion	n.a.	n.a.
Without Macroeconomic Feedback	**Spending Excluding Interest Payments**	
Extended baseline	19.2	21
With Macroeconomic Feedback		
Extended baseline	19.2	21
Extended alternative fiscal scenario (with 10-year deficit increased by about $2 trillion)	19.7	25
Illustrative scenario with 10-year deficit reduced by $2 trillion	n.a.	n.a.
Illustrative scenario with 10-year deficit reduced by $4 trillion	n.a.	n.a.
Without Macroeconomic Feedback	**Deficit (-) or Surplus Excluding Interest Payments**	
Extended baseline	-0.9	-2
With Macroeconomic Feedback		
Extended baseline	-0.9	-2
Extended alternative fiscal scenario (with 10-year deficit increased by about $2 trillion)	-1.6	-7
Illustrative scenario with 10-year deficit reduced by $2 trillion	0.5	*
Illustrative scenario with 10-year deficit reduced by $4 trillion	1.9	1
Without Macroeconomic Feedback	**Total Deficit (-) or Surplus**	
Extended baseline	-3.8	-6
With Macroeconomic Feedback		
Extended baseline	-3.8	-7
Extended alternative fiscal scenario (with 10-year deficit increased by about $2 trillion)	-5.0	-15
Illustrative scenario with 10-year deficit reduced by $2 trillion	-2.1	-3
Illustrative scenario with 10-year deficit reduced by $4 trillion	-0.4	*
Without Macroeconomic Feedback	**Federal Debt Held by the Public**	
Extended baseline	78	103
With Macroeconomic Feedback		
Extended baseline	78	107
Extended alternative fiscal scenario (with 10-year deficit increased by about $2 trillion)	87	175
Illustrative scenario with 10-year deficit reduced by $2 trillion	68	72
Illustrative scenario with 10-year deficit reduced by $4 trillion	59	39

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections, which include macroeconomic feedback, through 2025 and then extending the baseline concept for the rest of the long-term projection period. The extended baseline without macroeconomic feedback does not include any additional feedback after 2025.

The extended alternative fiscal scenario incorporates these assumptions: Certain policies that have been in place for a number of years but that are scheduled to change will be continued, some provisions of law that might be difficult to sustain for a long period will be modified, and federal revenues and certain categories of federal spending measured as shares of gross domestic product will be maintained at or near their historical averages over the long term.

In the illustrative scenarios with the 10-year deficit reduced by $2 trillion and by $4 trillion relative to the baseline, those amounts are the cumulative reductions in deficits excluding interest payments between 2016 and 2025.

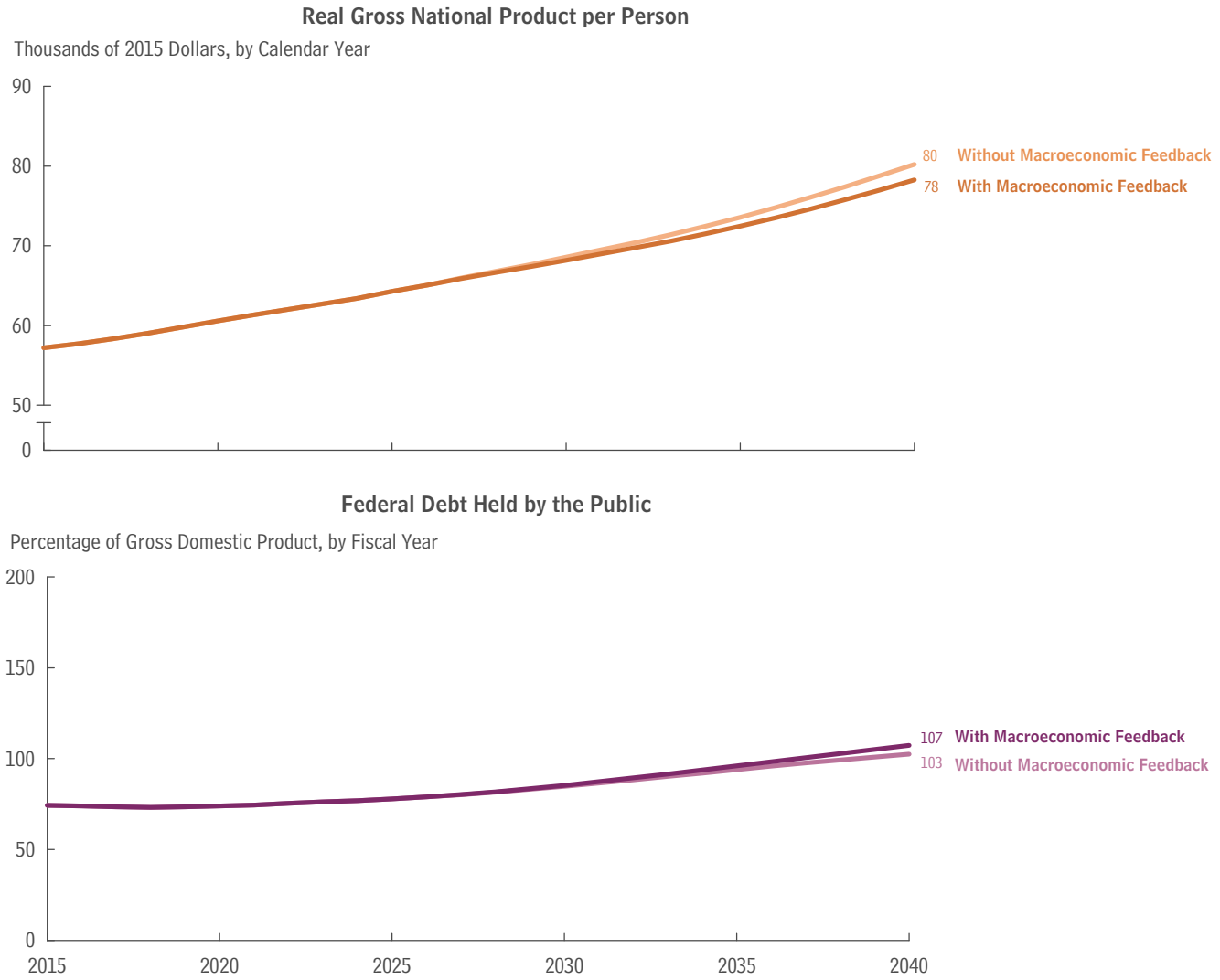
The results with macroeconomic feedback include the macroeconomic effects of the budget policies in the long run and the effects of that macroeconomic feedback on the budget. Those results are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

n.a. = not applicable; * = between -0.5 percent and zero.

Figure 6-2.

Effects of the Fiscal Policies in CBO's Extended Baseline

The fiscal policies in the extended baseline would further raise federal debt because they would reduce output and increase interest rates relative to the values for those factors without macroeconomic feedback—that is, in the economic benchmark that is intended to reflect stable economic conditions.



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections, which include macroeconomic feedback, through 2025 and then extending the baseline concept for the rest of the long-term projection period. The extended baseline without macroeconomic feedback does not include any additional feedback after 2025.

Real (inflation-adjusted) gross national product differs from gross domestic product, the more common measure of the output of the economy, by including the income that U.S. residents earn abroad and excluding the income that nonresidents earn in this country.

The results with macroeconomic feedback include the macroeconomic effects of the budget policies and the effects of that macroeconomic feedback on the budget. Those results are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

percentage point. Outcomes could fall outside those ranges, which reflect only a few sources of uncertainty regarding the effects of fiscal policies on the economy. Significant uncertainty surrounds CBO's projections for other reasons as well. (That uncertainty is explored in Chapter 7.)

Budgetary Outcomes Under the Extended Baseline

The reduction in economic output and increase in interest rates (relative to the benchmark) caused by the fiscal policies in the extended baseline would make budgetary outcomes worse. Lower output implies less income and thus less tax revenue; it also implies that for any given amount of federal debt, the ratio of debt to GDP would be higher. Moreover, higher interest rates would mean larger interest payments on federal debt. In the other direction, lower output implies lower federal spending on health care and retirement programs.[15]

After incorporating those additional budgetary effects, CBO projects that debt held by the public in 2040 would be 107 percent of GDP; it is projected to be 103 percent under the extended baseline without macroeconomic feedback after 2025 (see Table 6-1 and Figure 6-2). In addition to the effects on output, income, and interest rates reported here, the high and rising federal debt projected under the extended baseline would impose significant constraints on policymakers and would raise the risk of a fiscal crisis.

Long-Term Effects of an Alternative Fiscal Scenario

Under the extended alternative fiscal scenario, certain policies now in place that are scheduled to change under current law are assumed to continue, some provisions of law that might be difficult to sustain for a long period are assumed to be modified, and federal revenues and certain categories of federal spending measured as shares of GDP are assumed to be maintained at or near historical averages. Thus, the scenario incorporates changes to those current policies that are reflected in the extended baseline but that some analysts consider difficult to maintain.

Under the extended alternative fiscal scenario, deficits would be substantially larger than they are projected to be in the extended baseline, and marginal tax rates on labor income and capital income would be lower. In addition, transfers to working-age people would be larger, and federal investment would be higher. Taken together, those differences would cause output to be lower and interest rates to be higher in the long run than under the extended baseline. Those macroeconomic effects, in turn, would further increase the gap between deficits and debt in this scenario and those in the extended baseline.

Fiscal Policies in the Extended Alternative Fiscal Scenario

Under the extended alternative fiscal scenario, deficits excluding interest payments would be larger than they are projected to be in the extended baseline by about $2 trillion through 2025 and by increasing amounts in subsequent years.[16] Deficits would be larger under this scenario than under the extended baseline because noninterest spending would be higher and revenues lower (see Table 6-1).

Noninterest spending under this scenario would be 0.5 percent of GDP higher in 2025 and roughly 4 percent of GDP higher in 2040 than in the extended baseline. Those differences stem from two assumptions about the policies underlying the scenario that differ from those underlying the extended baseline:

- The automatic reductions in spending in 2016 and later that are required by the Budget Control Act of 2011 as amended would not occur—although the original caps on discretionary appropriations in the 2011 law would remain in place; and

15. In this analysis (as well as the analysis in Chapter 7), decreases in GDP stemming from macroeconomic feedback are estimated to reduce revenues (given current tax law), spending for Social Security (because lower earnings result in smaller benefits), and federal spending for health care programs (according to CBO's standard approach to projecting long-term cost growth, which is described in Chapter 2). However, CBO projects that other federal noninterest spending would remain at the amounts projected in the extended baseline even if GDP deviated from that baseline.

16. For additional detail on the policies underlying the alternative fiscal scenario, see Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), www.cbo.gov/publication/49892. In contrast to the estimates of the budgetary effects of those policies that CBO published in that earlier report, the estimates shown in Table 6-1 in this report incorporate macroeconomic feedback.

- Federal noninterest spending—apart from that for Social Security, the major health care programs (net of offsetting receipts), and certain refundable tax credits—as a percentage of GDP would rise after 2025 to its average during the past two decades rather than fall significantly below that level, as it does in the extended baseline.

Eliminating the Budget Control Act's automatic spending reductions and raising projected spending for a broad set of programs after 2025 would increase transfers to working-age people. Those policy changes would also increase discretionary spending and, consequently, federal investment, CBO projects.

Revenues under the extended alternative fiscal scenario would be 0.3 percent of GDP lower in 2025 and roughly 1 percent of GDP lower in 2040 than they are projected to be under the extended baseline. Overall, revenues as a share of GDP under the extended alternative fiscal scenario would remain flat after 2025 rather than rise as they do in the extended baseline. In the latter, revenues are projected to grow over time as a percentage of GDP largely for two reasons: Rising real income would push a greater share of income into higher tax brackets, and certain tax increases enacted in the Affordable Care Act would, to a lesser extent, generate increasing amounts of revenue relative to the size of the economy. Historically, however, federal revenues as a percentage of GDP have not trended upward; they have fluctuated with no evident trend during the past few decades.

The path of revenues in the extended alternative fiscal scenario shows what would happen if policymakers extended expiring tax provisions over the next decade and then made other changes to the law to keep revenues measured as a percentage of GDP close to their historical average. In particular, CBO incorporated the following two assumptions in the extended alternative fiscal scenario that differ from those underlying the extended baseline:

- About 70 expiring tax provisions, including one that allows businesses to deduct 50 percent of new investments in equipment immediately, will be extended through 2025; and

- After 2025, revenues will equal 18 percent of GDP, which is the level projected for 2025 given that assumption about expiring tax provisions and which is slightly higher than the average of 17.4 percent over the past 50 years.

Output and Interest Rates Under the Extended Alternative Fiscal Scenario

The substantially larger debt under the extended alternative fiscal scenario than under the extended baseline would reduce output and income below the projections in that baseline because of the additional crowding out of capital investment. In addition, the larger transfers to working-age people would reduce the supply of labor. However, the lower marginal tax rates on labor and capital income and the additional federal investment would boost output above the level projected for the extended baseline.

On balance, in CBO's assessment, output would be lower and interest rates would be higher under the extended alternative fiscal scenario than they would be under the extended baseline with macroeconomic feedback. In its central estimates, CBO projects that real GNP would be 0.6 percent lower in 2025 and about 5 percent lower in 2040; according to CBO's ranges of likely values for key variables, the reduction in real GNP would range from 0.3 percent to 1 percent in 2025 and from about 2 percent to about 8 percent in 2040 (see Table 6-2). However, even with the negative impact of the fiscal policies that are assumed under the alternative scenario, CBO projects that real GNP per person would be considerably higher in 2040 than in 2015 because of continued growth in productivity. Interest rates in 2040 would be about three-quarters of a percentage point higher under the alternative scenario than under the extended baseline, according to CBO's central estimate.

Budgetary Outcomes Under the Extended Alternative Fiscal Scenario

Budgetary outcomes under the extended alternative fiscal scenario would be worsened by the economic changes that resulted from the fiscal policies included in it. With the effects of lower output and higher interest rates incorporated, federal debt held by the public under the extended alternative fiscal scenario would reach 175 percent of GDP in 2040, according to CBO's central estimate; it is projected to be 107 percent of GDP under the extended baseline with macroeconomic feedback (see Figure 6-3). Thus, debt would be much higher and would rise much more rapidly than under the extended baseline.

In addition to having the effects on output, income, and interest rates reported here, the alternative fiscal scenario would also bring about many of the other consequences associated with high and rising federal debt that are

Table 6-2.

Long-Run Effects on Real GNP of the Fiscal Policies in Various Budget Scenarios

Percentage Difference From Level in the Extended Baseline With Macroeconomic Feedback

	2025	2040
Extended Alternative Fiscal Scenario (With 10-Year Deficit Increased by About $2 Trillion)		
Central estimate	-0.6	-5
Range	-1.0 to -0.3	-8 to -2
Illustrative Scenario With 10-Year Deficit Reduced by $2 Trillion		
Central estimate	0.6	3
Range	0.3 to 1.0	1 to 4
Illustrative Scenario With 10-Year Deficit Reduced by $4 Trillion		
Central estimate	1.2	5
Range	0.6 to 1.9	2 to 8

Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The extended alternative fiscal scenario incorporates these assumptions: Certain policies that have been in place for a number of years but that are scheduled to change will be continued, some provisions of law that might be difficult to sustain for a long period will be modified, and federal revenues and certain categories of federal spending measured as shares of gross domestic product will be maintained at or near their historical averages over the long term.

In the illustrative scenarios with the 10-year deficit reduced by $2 trillion and by $4 trillion relative to the baseline, those amounts are the cumulative reductions in deficits excluding interest payments between 2016 and 2025.

Real (inflation-adjusted) gross national product (GNP) differs from gross domestic product, the more common measure of the output of the economy, by including the income that U.S. residents earn abroad and excluding the income that nonresidents earn in this country.

The central estimates and ranges reflect alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

discussed above, and they would be especially acute under this scenario because the debt would be so high and would rise so rapidly. Such a path for debt would impose considerable constraints on policymakers and would significantly raise the risk of a fiscal crisis—and it would ultimately be unsustainable.

Long-Term Effects of Two Illustrative Scenarios With Smaller Deficits

CBO also projected economic developments during the coming decade under two illustrative budgetary paths that would gradually decrease deficits through unspecified increases in tax revenue, cuts in spending, or some combination of the two.[17] In the long run, the reduced federal deficits and debt under those scenarios would cause output and income to be higher and the ratio of federal debt to GDP to be lower than they would be under the extended baseline.

Fiscal Policies in the Two Illustrative Scenarios

In the two illustrative scenarios, CBO assumed that total deficits excluding interest payments between 2015 and 2025 would be $2 trillion or $4 trillion lower than what they are projected to be under current law. The reduction in the deficit relative to the extended baseline would be comparatively small in 2016 but would increase steadily through 2025; at that point, the reduction in the deficit excluding interest payments would be $360 billion, or nearly 1½ percent of GDP, under the first scenario and $720 billion, or over 2½ percent of GDP, under the second. In each subsequent year, the reduction, measured as a percentage of GDP, would equal the 2025 reduction.

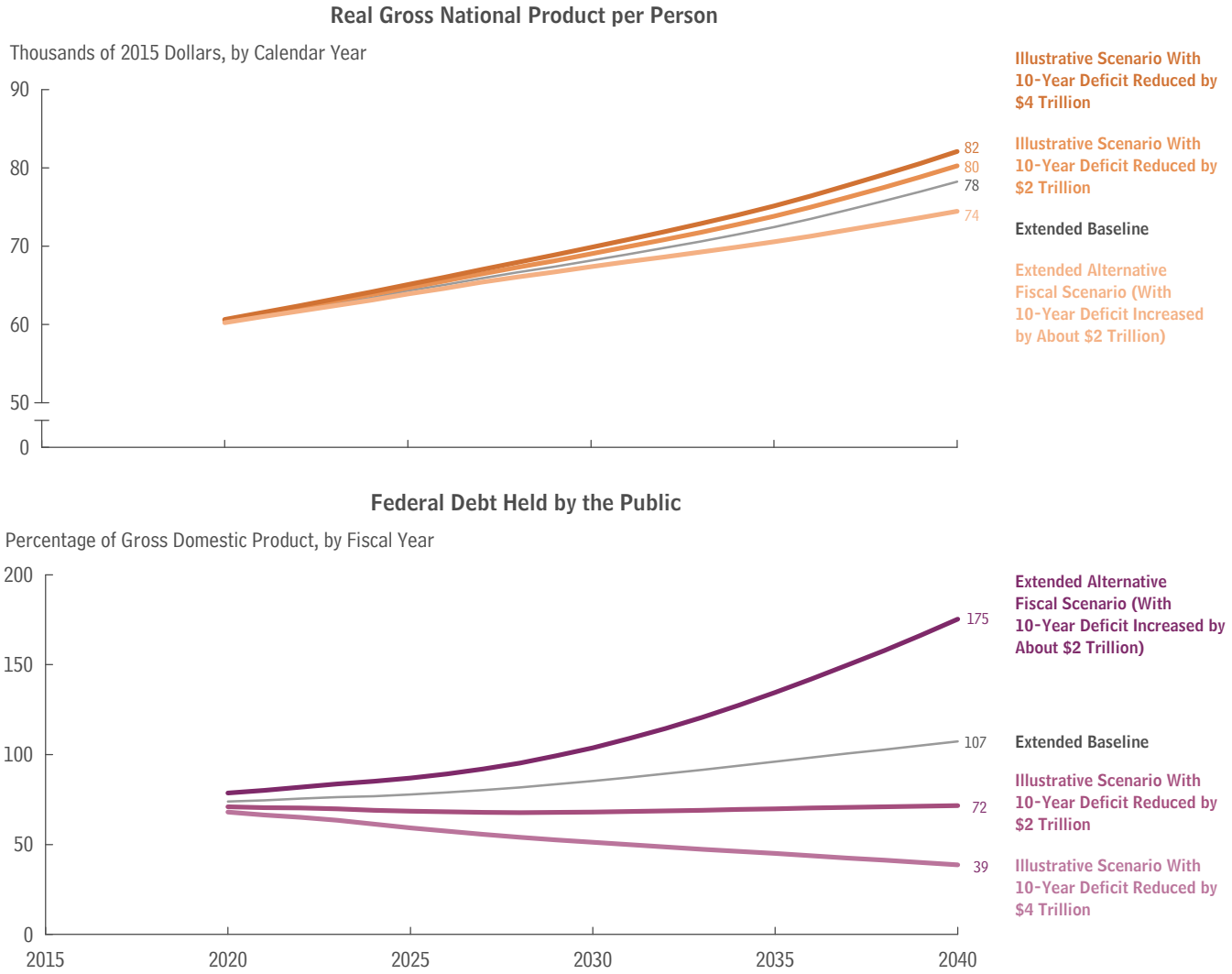
For the sake of simplicity and to avoid any presumption about which policies might be chosen to reduce the deficit, CBO analyzed those illustrative scenarios without

17. Congressional Budget Office, *Budgetary and Economic Outcomes Under Paths for Federal Revenues and Noninterest Spending Specified by Chairman Price* (March 2015), www.cbo.gov/publication/49977.

Figure 6-3.

Long-Run Effects of the Fiscal Policies in CBO's Extended Baseline, Extended Alternative Fiscal Scenario, and Illustrative Scenarios With Smaller Deficits

The effects of lower economic output and higher interest rates under the extended alternative fiscal scenario would raise federal debt held by the public by increasing amounts over time. The two illustrative scenarios involving deficit reductions would have the opposite effects.



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The extended alternative fiscal scenario incorporates these assumptions: Certain policies that have been in place for a number of years but that are scheduled to change will be continued, some provisions of law that might be difficult to sustain for a long period will be modified, and federal revenues and certain categories of federal spending measured as shares of gross domestic product will be maintained at or near their historical averages over the long term.

In the illustrative scenarios with the 10-year deficit reduced by $2 trillion and by $4 trillion relative to the baseline, those amounts are the cumulative reductions in deficits excluding interest payments between 2016 and 2025.

The results shown here do not include the macroeconomic effects of the scenarios from 2015 to 2019. Short-run macroeconomic effects are discussed later in this chapter.

Real (inflation-adjusted) gross national product differs from gross domestic product, the more common measure of the output of the economy, by including the income that U.S. residents earn abroad and excluding the income that nonresidents earn in this country.

The results are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

specifying the tax and spending policies underlying them. As a result, the projected outcomes under the scenarios do not reflect any direct changes to incentives to work and save; in particular, marginal tax rates and transfers to working-age people are assumed to be the same as those under current law. Also, the contributions that government investment makes to future productivity and output are assumed to reflect their historical averages.

The estimated macroeconomic effects presented here therefore arise solely from the differences in deficits and debt. However, reducing budget deficits significantly below what they would be under current law without altering government investment or incentives to work and save would be very difficult. The overall economic impact of policies that lowered deficits would depend not only on the way they changed federal borrowing but also on the way they affected government investment and incentives to work and save.

Output and Interest Rates Under the Two Illustrative Scenarios

Under the scenario involving a $2 trillion reduction in deficits in the first decade, real GNP would be higher than it would be under the extended baseline with macroeconomic feedback by 0.6 percent in 2025 and by about 3 percent in 2040, according to CBO's central estimates (see Table 6-2). According to CBO's ranges of likely values for key variables, the increase in real GNP would probably be between 0.3 percent and 1 percent in 2025 and between about 1 percent and about 4 percent in 2040. Interest rates in 2040 would be about one-third of a percentage point lower under that scenario than under the extended baseline, according to CBO's central estimate.

Under the scenario involving a $4 trillion reduction in deficits in the first decade, real GNP would be higher than it would be under the extended baseline with macroeconomic feedback by 1.2 percent in 2025 and by about 5 percent in 2040, by CBO's central estimates. According to CBO's ranges of likely values for key variables, the increase in real GNP would probably be between 0.6 percent and 1.9 percent in 2025 and between about 2 percent and about 8 percent in 2040. Interest rates in 2040 would be about two-thirds of a percentage point lower under that scenario than under the extended baseline, according to CBO's central estimate.

CBO projects that under either illustrative scenario, real GNP per person would be substantially higher in 2040 than in 2015.

Budgetary Outcomes Under the Two Illustrative Scenarios

The higher output and lower interest rates under the illustrative scenarios would improve budgetary outcomes in the long run. For the scenario with $2 trillion of deficit reduction in the first decade, federal debt held by the public in 2040 would stand at 72 percent of GDP, according to CBO's central estimates, slightly less than the 74 percent of GDP that debt amounted to at the end of 2014 and 35 percentage points lower than it is projected to be under the extended baseline with macroeconomic feedback (see Table 6-1 on page 81 and Figure 6-3). For the scenario with $4 trillion of deficit reduction in the first decade, federal debt held by the public would fall to 39 percent of GDP in 2040, 68 percentage points lower than it is projected to be under the extended baseline with macroeconomic feedback; such debt was 35 percent of GDP in 2007 and averaged 38 percent over the past 50 years.

The scenario with the $2 trillion deficit reduction would also limit the other consequences of high and rising federal debt that were discussed above. Because debt as a percentage of GDP would be fairly steady—albeit high by historical standards—the constraints on policymakers and the risk of a fiscal crisis would be smaller than they would be under the extended baseline scenario, in which the debt-to-GDP ratio is projected to increase substantially. The scenario with the $4 trillion deficit reduction would reduce the other consequences of high debt much more sharply. With debt returning to about the percentage of GDP that it averaged over the past 50 years, the constraints on policymakers and the risk of a fiscal crisis would be greatly diminished compared with what they would be under the extended baseline.

Short-Term Macroeconomic Effects of the Three Additional Fiscal Scenarios

The various fiscal policies whose long-term macroeconomic effects have been analyzed in this chapter would have short-term effects as well. In the short term, policies that increased federal spending or cut taxes (and thus boosted budget deficits) would generally increase the demand for goods and services, thereby raising output and employment above what they would be in the absence of those policies. Similarly, policies that decreased federal

Table 6-3.

Short-Run Effects of the Fiscal Policies in Various Budget Scenarios

	Inflation-Adjusted Gross Domesic Product (Percentage difference)		Full-Time-Equivalent Employment (Difference in millions)	
	2016	2017	2016	2017
Alternative Fiscal Scenario				
Central estimate	0.6	0.3	0.7	0.5
Range	0.1 to 1.0	0 to 0.6	0.2 to 1.3	0.1 to 0.9
Illustrative Scenario With 10-Year Deficit Reduced by $2 Trillion				
Central estimate	-0.2	-0.2	-0.2	-0.2
Range	-0.3 to -0.1	-0.3 to 0	-0.3 to -0.1	-0.4 to -0.1
Illustrative Scenario With 10-Year Deficit Reduced by $4 Trillion				
Central estimate	-0.3	-0.3	-0.4	-0.5
Range	-0.6 to -0.1	-0.6 to -0.1	-0.7 to -0.1	-0.9 to -0.1

Source: Congressional Budget Office.

Notes: Figures reflect the differences in the levels between outcomes under a scenario and outcomes under CBO's baseline, which incorporates an assumption that current laws generally remain unchanged.

The alternative fiscal scenario incorporates these assumptions: Certain policies that have been in place for a number of years but that are scheduled to change will be continued, some provisions of law that might be difficult to sustain for a long period will be modified, and federal revenues and certain categories of federal spending measured as shares of gross domestic product will be maintained at or near their historical averages over the long term.

In the illustrative scenarios with the 10-year deficit reduced by $2 trillion and by $4 trillion relative to the baseline, those amounts are the cumulative reductions in deficits excluding interest payments between 2016 and 2025.

The central estimates and ranges reflect alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

spending or raised taxes (and thus decreased budget deficits) would generally reduce demand, thereby lowering output and employment below what they would be otherwise. Those effects are stronger when short-term interest rates are near zero and output is below its potential (maximum sustainable) level, in part because under those conditions the Federal Reserve is unlikely to adjust short-term interest rates to try to offset the effects of changes in federal spending and taxes.

Effects of the Extended Alternative Fiscal Scenario

The increase in deficits under the extended alternative fiscal scenario would cause real GDP to be higher in the next few years than it would be under current law, CBO estimates. The policies incorporated in that scenario would raise the demand for goods and services in the short run, increasing real GDP above what is projected under current law by 0.6 percent in 2016 and 0.3 percent in 2017, according to CBO's central estimates (see Table 6-3).[18] The policies would probably also increase real GDP for a few years after 2017, but CBO has not estimated the effects for those years. According to CBO's ranges of likely outcomes for key variables, in 2016, real GDP would probably be between 0.1 percent and 1 percent higher, and in 2017, it would probably be equal to or be as much as 0.6 percent higher, than what is projected under current law.[19]

18. CBO's estimates of the short-term effects of the extended alternative fiscal scenario and the two illustrative scenarios on real GDP are very similar to the agency's estimates of the effects on real GNP. This analysis focuses on GDP to be consistent with CBO's other analyses of the short-term impact of fiscal policies. The estimates reported here refer to averages during the calendar years referenced; some of CBO's other analyses of the short-term impact of fiscal policies have focused on effects during particular quarters of the year.

19. For a discussion of CBO's analytical approach to estimating the short-term economic effects of fiscal policy, see Felix Reichling and Charles Whalen, *Assessing the Short-Term Effects on Output of Changes in Federal Fiscal Policies*, Working Paper 2012-08 (Congressional Budget Office, May 2012), www.cbo.gov/publication/43278; and Congressional Budget Office, *How CBO Analyzes the Effects of Changes in Federal Fiscal Policies on the Economy* (November 2014), www.cbo.gov/publication/49494.

To produce that additional output, businesses would hire more workers. According to CBO's central estimates, the policies in the alternative fiscal scenario would increase the number of full-time-equivalent employees above the number projected under current law by 0.7 million in 2016 and by 0.5 million in 2017.

Effects of the Two Scenarios With Smaller Deficits

Under the two illustrative scenarios that reduce deficits, real GDP would be lower in the next several years than projected under current law, CBO estimates. Because the agency did not specify the fiscal policies underlying those two scenarios, the estimated macroeconomic effects arise solely from the differences in overall deficits.

In the $2 trillion scenario, the reductions in the deficit excluding interest costs amount to $40 billion in 2016 and $76 billion in 2017. In the $4 trillion scenario, those reductions amount to $80 billion in 2016 and $151 billion in 2017. Under the first scenario, real GDP in 2016 would be 0.2 percent lower than it is projected to be under current law (or between 0.1 percent and 0.3 percent lower, according to CBO's ranges of likely outcomes for key variables); in 2017, real GDP would again be 0.2 percent lower (or, according to CBO's ranges of likely outcomes, it would be equal to or be as much as 0.3 percent lower than what it is projected to be under current law).[20] Under the second scenario, real GDP would be 0.3 percent lower than it is projected to be under current law (or between 0.1 percent and 0.6 percent lower, according to CBO's ranges of likely outcomes for key variables) in both 2016 and 2017. By CBO's estimates, the policies would continue to reduce real GDP below what it would be under current law for a few years after 2017, but CBO has not estimated the effects for those years.

Because businesses would produce less, they would hire fewer workers. According to CBO's central estimates, the number of full-time-equivalent employees under the first scenario would be 0.2 million smaller both in 2016 and 2017 than under current law; under the second scenario, there would be 0.4 million fewer full-time-equivalent employees in 2016 and 0.5 million fewer in 2017 than under current law.

20. CBO's central estimates here reflect the agency's assumption that in the two illustrative scenarios, each one-dollar change in budget deficits excluding interest payments relative to those under current law would, in the short term and under current economic conditions, change output cumulatively by one dollar over several quarters. That dollar-for-dollar response lies within the ranges of estimated effects on GDP of many policies that CBO examined in analyzing the macroeconomic effects of the American Recovery and Reinvestment Act of 2009. CBO's range of likely outcomes implies that each one-dollar change in deficits excluding interest payments would, in the short term and under current economic conditions, change output cumulatively by between $0.33 and $1.67. For a similar approach, see Congressional Budget Office, *Budgetary and Economic Outcomes Under Paths for Federal Revenues and Noninterest Spending Specified by Chairman Price, March 2015* (March 2015), www.cbo.gov/publication/49977.

CHAPTER

7

The Uncertainty of Long-Term Budget Projections

Budget projections are inherently uncertain. The projections in this report generally reflect current law and estimates of future economic conditions and demographic trends. If future spending and tax policies differ from what is prescribed in current law, budgetary outcomes will differ from those in the Congressional Budget Office's extended baseline, as the preceding chapter shows. But even if policies do not change, the economy, demographics, and other factors will undoubtedly differ from what CBO projects, and those differences will in turn cause budgetary outcomes to deviate from the projections in this report. Those variations could be within the ranges of experience observed in the relevant historical data—which, for the factors that CBO analyzes, cover roughly the past 50 to 70 years—or they might deviate from historical experience. Moreover, there could be significant budgetary effects from channels that CBO does not currently take into account in its estimates.

To illustrate some of the uncertainty about long-term budgetary outcomes, CBO constructed alternative projections showing what would happen to the budget if various underlying factors differed from the values that are used in most of this report. The agency focused on four factors that are among the most fundamental and yet most uncertain inputs into the agency's long-term economic and budget projections. Specifically, CBO quantified the consequences of alternative paths for the following variables:

- The decline in mortality rates;
- The growth rate of total factor productivity (that is, the efficiency with which labor and capital are used to produce goods and services; it is often referred to in this chapter simply as productivity);
- Interest rates on federal debt held by the public; and
- The growth rate of federal spending per beneficiary for Medicare and Medicaid.

Different paths for those four factors would affect the budget in various ways. For example, lower-than-projected mortality rates would mean longer average life spans, which would increase the number of people who received benefits from such programs as Social Security, Medicare, and Medicaid; lower mortality rates would also boost the size of the labor force and thereby add to tax revenues (but by less than the increase in benefit costs). Faster growth in spending per beneficiary for Medicare and Medicaid would boost outlays for those two programs. Either of those changes would increase deficits and debt—which would lead to lower output and higher interest rates, macroeconomic feedback that would further worsen the budget outlook.[1] By contrast, faster growth in productivity or lower interest rates on federal debt held by the public would reduce deficits and debt—the former, by raising output and increasing revenues, and the latter, by lowering the government's interest payments.

The projected budgetary outcomes under the alternative paths differ widely. The simulated variations in productivity, interest rates, and Medicare and Medicaid spending have large effects on the budget within 25 years, whereas the simulated variation in mortality rates does not. When only one of the factors is changed, CBO's projections of federal debt held by the public in 2040 range from

1. In cases in which projected budget deficits are larger than those in the extended baseline, output would be lower, leading to lower revenues (under current tax law), less spending on Social Security (because lower earnings result in smaller benefits), and less federal spending on Medicare and Medicaid (according to CBO's standard approach to projecting long-term cost growth, which is described in Chapter 2). However, CBO assumes that other federal noninterest spending would remain at the amounts in the extended baseline even if output deviated from the amounts underlying that baseline.

89 percent of gross domestic product (GDP) to 130 percent, whereas it is projected to be 107 percent under the extended baseline with macroeconomic feedback.[2] When all four factors are changed at once, projections of federal debt in 2040 range from 76 percent to 144 percent of GDP. Those projected levels of debt are all high by historical standards, and a number of them exceed the peak of 106 percent of GDP that the United States reached in 1946.

The four factors listed above are not the only ones that could differ from CBO's expectations and, in turn, affect the agency's budget projections. For example, an increase in the birth rate or in labor force participation could boost the growth of the labor force and thus raise tax revenues. Similarly, decisions by states about how much they spend on Medicaid could increase or decrease federal spending relative to CBO's projections.

Large disruptions in the economy could have significant effects on the budget that are not quantified in this analysis. The analytic approach that CBO used for this long-term analysis focuses on projecting average outcomes. An economic depression, unexpectedly large losses on federal financial obligations, a large-scale military conflict, the development of a previously underused natural resource, or a major catastrophe—to give just a few examples—could create conditions in the next 25 years that are substantially better or worse than those that produced the historical data on which the analysis is based.

Policymakers could address the uncertainty associated with long-term budget projections in various ways. For instance, they might design policies that partly insulated the federal budget from some unanticipated events; however, such policies could have unwanted consequences, such as shifting risk to individuals. Another possibility is that policymakers might aim for a smaller amount of federal debt to provide a buffer against the budgetary impact of adverse surprises and allow for more flexibility in responding to unexpected crises in the future.

2. As Chapter 6 explains, that version of the extended baseline incorporates the macroeconomic effects of the fiscal policies in the extended baseline and, in turn, the feedback of those effects to the federal budget. As a result, the economic and budget projections in the extended baseline with macroeconomic feedback differ somewhat from those presented in the first five chapters of this report.

Long-Term Budgetary Effects of Changes in Mortality, Productivity, Interest Rates on Federal Debt, and Federal Spending on Medicare and Medicaid

Budgetary outcomes could differ from CBO's projections if mortality rates, the growth rate of productivity, interest rates on government debt, or the growth of federal spending on Medicare and Medicaid diverged from the paths that underlie the extended baseline projections in this report. Unexpected changes in mortality rates would gradually lead to changes in spending for Social Security, Medicare, and Medicaid. Changes in productivity would lead to changes in economic output, which would affect both revenues and spending. Changes in the interest rates on federal debt would affect the amount of interest paid by the government. And changes in the growth rate of federal health care spending, one of the largest components of the budget, would have significant implications for overall federal spending.

For CBO's alternative projections, the ranges of variation for those four factors were based on the historical variation in their 25-year averages as well as on consideration of possible future developments, which together offer a guide (though admittedly an imperfect one) to the amount of uncertainty that surrounds projections of those factors over the next 25 years. To better capture overall uncertainty, CBO also constructed two projections in which all four factors simultaneously varied from their values under the extended baseline. In one of those cases, all of the factors varied in ways that increased the amount of federal debt; in the other, they varied in ways that reduced the amount of the debt.[3]

Under the projections of those four factors that are used in CBO's extended baseline, federal debt held by the

3. Another approach to quantifying the uncertainty of budget projections would be to create a distribution of outcomes from a large number of simulations in which such factors as productivity growth, interest rates, and the rate of increase of health care costs varied. CBO generally uses that approach in its reports on the financial outlook for the Social Security trust funds. See Congressional Budget Office, *CBO's 2014 Long-Term Projections for Social Security: Additional Information* (December 2014), www.cbo.gov/publication/49795, and *Quantifying Uncertainty in the Analysis of Long-Term Social Security Projections* (November 2005), www.cbo.gov/publication/17472. However, determining the appropriate variation in those factors and estimating the distribution of outcomes for the federal budget as a whole requires additional modeling tools that CBO has not yet developed.

public would equal 107 percent of GDP in 2040 (including macroeconomic feedback). Alternative projections of the factors would lead to the following outcomes:

- If mortality rates declined 0.5 percentage points per year more slowly or more quickly than they do in CBO's extended baseline, federal debt held by the public in 2040 would be 106 percent of GDP or 109 percent of GDP, respectively.
- If productivity grew 0.5 percentage points per year more quickly or more slowly than it does in CBO's extended baseline, federal debt held by the public in 2040 would be 91 percent of GDP or 125 percent of GDP, respectively.
- If the average interest rate on government debt was 0.75 percentage points lower or higher than that in CBO's extended baseline, federal debt held by the public in 2040 would be 89 percent of GDP or 130 percent of GDP, respectively.
- If spending per beneficiary for Medicare and Medicaid grew 0.75 percentage points per year more slowly or more quickly than it does in CBO's extended baseline, federal debt held by the public in 2040 would be 89 percent of GDP or 129 percent of GDP, respectively.
- If all four factors deviated from their baseline values in ways that reduced deficits but did so by only 60 percent as much as in the cases specified above, federal debt held by the public in 2040 would be 76 percent of GDP; if all four factors deviated in ways that increased deficits but did so by only 60 percent as much as in the cases specified above, federal debt held by the public would be 144 percent of GDP.[4]

Mortality

Mortality rates measure the number of deaths in a given year per thousand people in a population. Faster improvement in age-specific mortality rates would mean people of all ages would be expected to live longer, which would increase the number of people who received benefits from—and thus outlays for—Social Security, Medicare, Medicaid, and certain other mandatory spending programs.[5] Changes in mortality rates would also affect the budget by changing the size of the labor force and thereby changing tax revenues; specifically, CBO projects that the average person would work three more months for each additional year of life expectancy, slightly increasing overall labor force participation (see Appendix A).

Mortality rates have declined steadily over the past half century, and CBO expects that decline to continue. Just how steep that future decline will be, however, is quite uncertain. CBO therefore constructed projections covering a 1 percentage-point range (see Figure 7-1). The agency arrived at that range by comparing the average annual change in mortality rates for the 45 25-year periods that began each year from 1942 (the 1942–1966 period) to 1986 (the 1986–2010 period). The average annual change varied by about the same amount—roughly 1 percentage point—for men and for women.[6] Applying that 1 percentage-point range around the 1.2 percent rate used in CBO's extended baseline resulted in rates of decline ranging from 0.7 percent per year to 1.7 percent per year. If the rate of decline was within that range, life expectancy for 65-year-olds would be between 85.8 years and 87.9 years in 2040, whereas under the extended baseline, it would be 86.8 years in 2040; it is 84.5 years today.

Those alternative projections for the decline in mortality rates would lead to the following alternative budget projections:

4. According to CBO's analysis of the historical data, joint variation to that extent yields outcomes for federal debt that are about as likely as the outcomes when an individual factor changes to the full extent of its range.

5. If an increase in life expectancy was accompanied by a gain in the average number of years that elderly people spend in good health, Medicare and Medicaid spending for elderly beneficiaries would not necessarily increase with the growth in the elderly population.

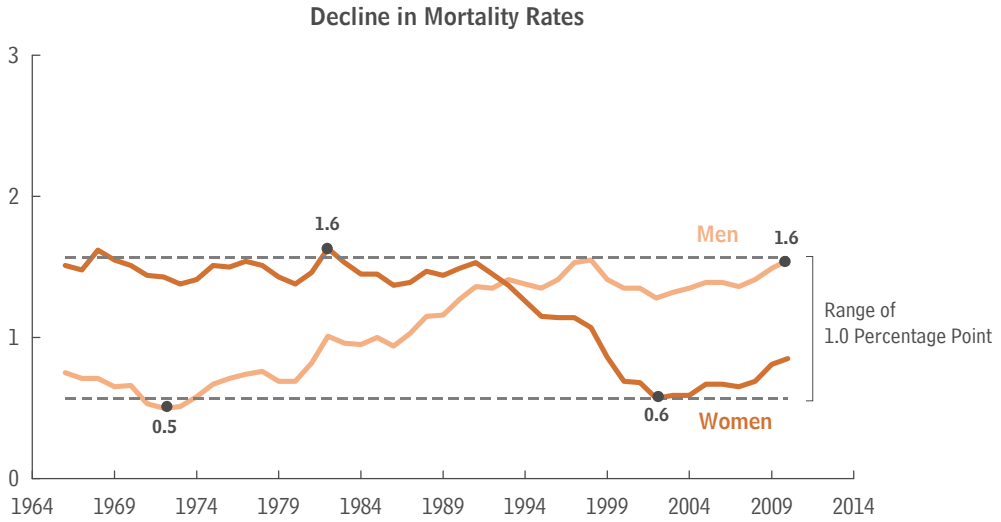
6. The rate of decline in *aggregate* mortality—that is, the rate for men and women combined—exhibited substantially less variation than the decline in mortality rates for men and women separately. From 1950 through 1980, the mortality rate for women declined faster than the mortality rate for men; after 1980, the mortality rate for men declined faster than the mortality rate for women. (That difference resulted in part from changes in smoking rates over time for men and for women.) In CBO's assessment, the variations in the declines of the mortality rates of men and women considered separately are more representative of the uncertainty in mortality rates over the next 25 years.

Figure 7-1.

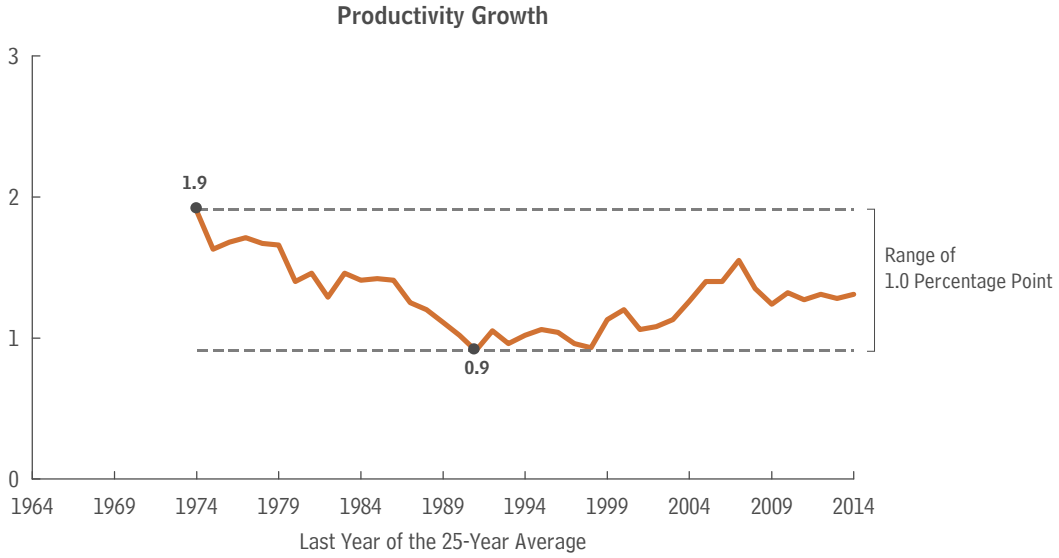
The 25-Year Averages and Ranges CBO Used for Four Factors Affecting Budgetary Outcomes

Percentage Points

Labeled values indicate the highest and lowest 25-year averages for each series.



The average productivity growth of 1.9 percent from 1949 to 1974 was greater than the 25-year averages since then.



Sources: Congressional Budget Office; Social Security Administration; Federal Reserve.

Notes: The 25-year average for a given year is the average of the data value for that year and the values for the preceding 24 years. For example, the 25-year average for productivity growth in 1974 is the average of the growth of productivity from 1949 through 1974.

The decline in the mortality rate is the decline in the number of deaths per thousand people in a population in a given year.

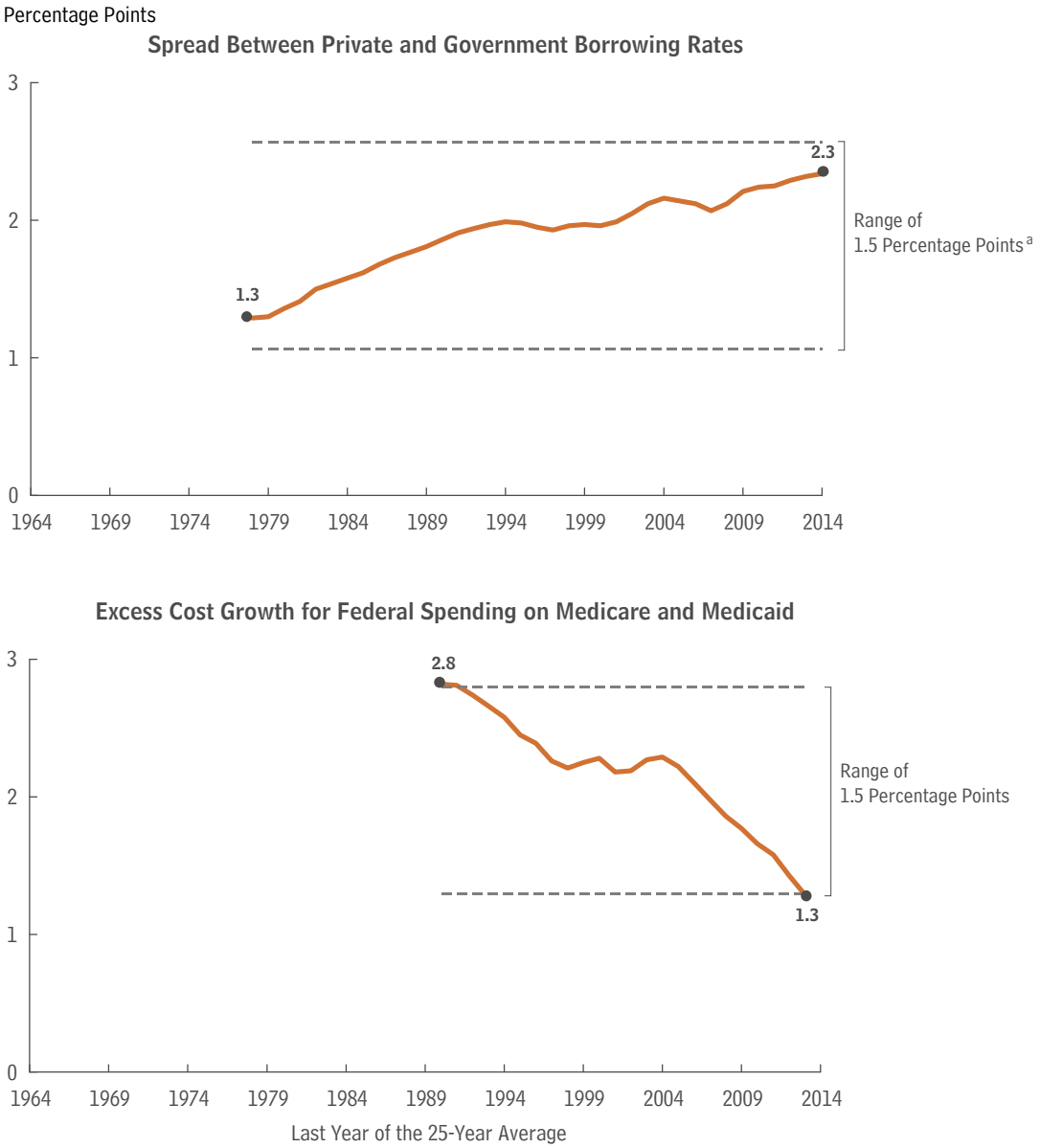
Productivity growth is the growth in total factor productivity, which is the efficiency with which labor and capital are used to produce goods and services.

The spread between private and government borrowing rates is the difference between the interest rate on Baa-rated corporate bonds and on 10-year Treasury notes.

Continued

Figure 7-1. **Continued**

The 25-Year Averages and Ranges CBO Used for Four Factors Affecting Budgetary Outcomes



Excess cost growth refers to the extent to which the annual growth rate of nominal health care spending per capita—adjusted for demographic characteristics of the relevant populations—outpaces the annual growth rate of potential (maximum sustainable) output per capita. The historical rates of excess cost growth are a weighted average of annual rates: Twice as much weight is placed on the latest year as on the earliest year.

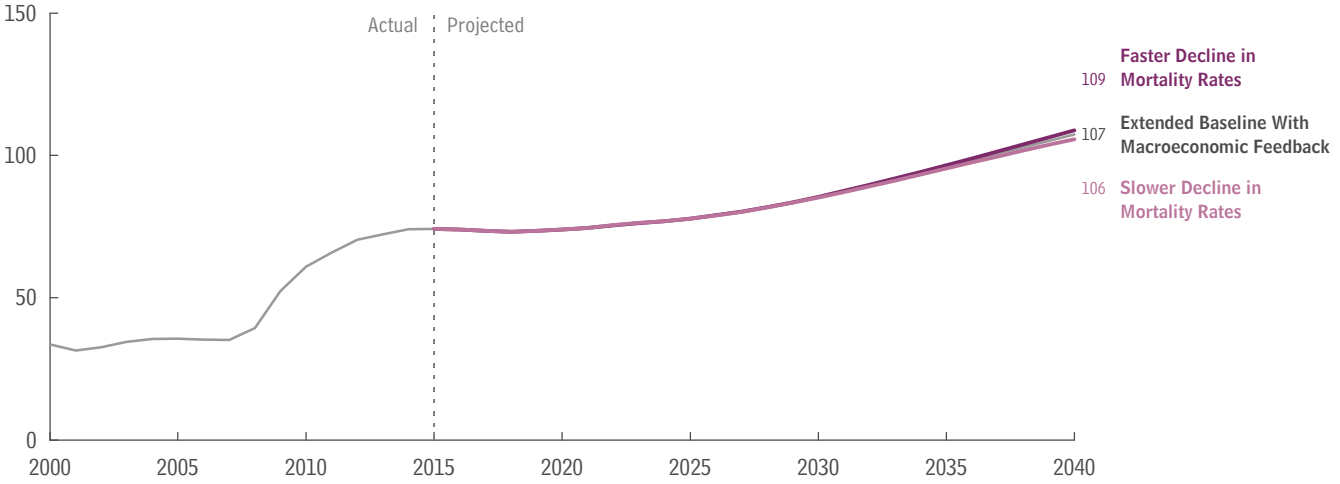
Time periods reflect data availability.

a. To account for various sources of uncertainty as well as for other factors that may not be fully represented by the particular measure of the spread used and the historical time period analyzed, CBO expanded the range of uncertainty used for this analysis from the 1.0 percentage point suggested by the historical data to 1.5 percentage points.

Figure 7-2.

Federal Debt Given Different Rates of Mortality Decline

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The faster decline in the mortality rates is 0.5 percentage points higher—and the slower decline in the mortality rates is 0.5 percentage points lower—than the annual decline of 1.2 percent used in the extended baseline with macroeconomic feedback.

Federal debt refers to debt held by the public. Estimates for the extended baseline with macroeconomic feedback are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

- If mortality rates declined by 0.7 percent a year—that is, 0.5 percentage points more slowly than the rate used in the extended baseline—outlays for Social Security, Medicare, and Medicaid would be lower. That would lead to less federal debt held by the public—specifically, debt would equal 106 percent of GDP in 2040 rather than the 107 percent that CBO projects under the extended baseline with macroeconomic feedback (see Figure 7-2). In addition, the estimated changes in spending or revenues needed to keep federal debt held by the public at its current level of 74 percent of GDP over the 25-year period—the fiscal gap—would be slightly smaller than CBO projects under the extended baseline, but they would round to the same 1.1 percent of GDP.[7] Although those differences are relatively small in 2040, they would grow substantially over time as the effect on mortality rates compounded and average life spans fell increasingly below those incorporated in the baseline.
- In contrast, if mortality rates declined by 1.7 percent a year, or 0.5 percentage points more quickly than in the extended baseline, outlays for the same three programs would be higher, resulting in federal debt held by the public that reached 109 percent of GDP in 2040. The 25-year fiscal gap would rise to 1.2 percent of GDP.

Productivity

Total factor productivity is an important determinant of economic output. Its growth stems from the introduction and spread of new technological approaches, from increases in workers' education and skill levels, and from

7. For a discussion of how CBO measures the fiscal gap, see Chapter 1. The estimates of the fiscal gap presented in this chapter, like those in Chapter 1, are calculated without macroeconomic feedback. It would not be informative to include the negative economic effects of rising debt (and their feedback to the budget) in the fiscal gap calculation because the fiscal gap shows the budgetary changes required to keep debt from rising in the first place; if those budgetary changes were made, the negative economic effects (and their feedback to the budget) would not occur.

the use of new processes that improve the efficiency of organizations.[8] CBO estimates that the growth of total factor productivity, which has averaged 1.4 percent per year since 1950, has accounted for over 40 percent of the increase in real (inflation-adjusted) nonfarm business output over that time. CBO's extended baseline incorporates the projection that such productivity will increase, on average, by 1.3 percent per year in the coming decades.

However, the growth rate of total factor productivity has often varied for extended periods. Periods of rapid growth have generally resulted from major technological innovations. For example, innovations in four critical areas—electricity generation, internal combustion engines, chemicals, and telecommunications—triggered a surge in productivity in the 1920s and 1930s. Another surge occurred in the 1950s and 1960s, spurred by the electrification of homes and workplaces, suburbanization, completion of the nation's highway system, and production of consumer appliances. The latest surge in productivity—a more modest one—began in the 1990s and is attributed to innovations involving computers and other types of information technology.[9] Productivity growth has been relatively weak since the 2007–2009 recession, largely because of the cyclical weakness in the economy that is expected to continue to dissipate over the next few years.

The future growth rate of productivity is quite uncertain. The nation could experience faster growth in productivity than is reflected in CBO's extended baseline, either steadily (from ongoing gains from, for example, integrating information technology into the economy) or in a burst (from a technological breakthrough, such as the development of a new source of energy). Conversely, the growth of productivity could be slower than in CBO's extended baseline if the rate of increase in workers' education levels declined or if technological innovation or the dispersion of previous technological innovations throughout the economy diminished. For example, although CBO projects that productivity growth will improve once the economy fully recovers, the 2007–2009 recession and slow recovery have weakened productivity for an extended period. If the continued weakness indicates that the effects of the recession will last longer than CBO projected, productivity growth over the longer term could be weaker than is reflected in the extended baseline.

A different growth rate for productivity would affect the federal budget by changing output and income and also, in CBO's assessment, by changing the interest rates paid by the federal government. Higher total factor productivity means that capital is more productive, which implies a higher rate of return from private capital investment, all else being equal. According to widely used economic models, if productivity grows faster, that rate of return remains higher over time. Because the federal government competes with private borrowers for investors' money, higher returns from private investment should push up interest rates paid by the federal government. Although empirical estimates of the relationship between productivity growth and interest rates vary, the theoretical relationship is clear enough for CBO to incorporate an effect on interest rates into this analysis.[10]

Average productivity growth during the 41 25-year periods beginning with the 1950–1974 period and ending with the 1990–2014 period varied by about 1 percentage point (see Figure 7-1 on page 94). CBO therefore projected economic and budgetary outcomes if total factor productivity grew by either 0.8 percent or 1.8 percent per year over the next 25 years—that is, 0.5 percentage points more slowly or more quickly than the 1.3 percent per year incorporated in the extended baseline.[11]

8. Total factor productivity is different from labor productivity, which measures the amount of goods and services that can be produced per hour of labor.

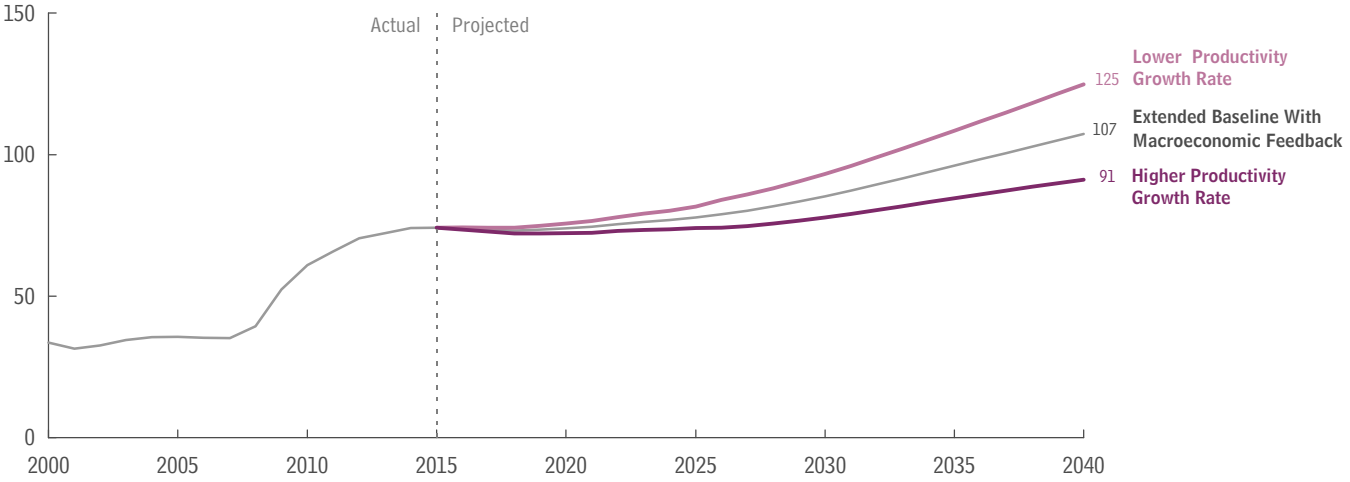
9. For further discussion, see Robert Shackleton, *Total Factor Productivity Growth in Historical Perspective*, Working Paper 2013-01 (Congressional Budget Office, March 2013), www.cbo.gov/publication/44002.

10. For example, in the Solow-type growth model that CBO used for this analysis, if productivity grew 0.5 percentage points more quickly than in the extended baseline with macroeconomic feedback, the average interest rate on federal debt held by the public in 2040 would be about 1 percentage point higher than the baseline value. For details of that model, see Congressional Budget Office, *CBO's Method for Estimating Potential Output: An Update* (August 2001), www.cbo.gov/publication/13250.

11. For another approach to measuring uncertainty in long-run projections of productivity growth, see Ulrich K. Müller and Mark W. Watson, *Measuring Uncertainty About Long-Run Predictions* (draft, Princeton University, September 2014), http://tinyurl.com/nl9bzws (PDF, 3 MB). Müller and Watson's approach yields a range of uncertainty around productivity growth that is similar in size to the range that CBO calculated.

Figure 7-3.

Federal Debt Given Different Rates of Productivity Growth



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The lower productivity growth rate is 0.5 percentage points lower—and the higher productivity growth rate is 0.5 percentage points higher—than the annual rate of 1.3 percent used in the extended baseline with macroeconomic feedback.

Federal debt refers to debt held by the public. Estimates for the extended baseline with macroeconomic feedback are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

Those alternative projections for total factor productivity growth would lead to the following alternative budget projections:

- If total factor productivity grew by 1.8 percent annually, 0.5 percentage points more quickly than in the baseline, then the greater GDP would result in more revenue, smaller budget deficits, and less federal debt. Federal debt held by the public would be 91 percent of GDP in 2040 rather than the 107 percent that CBO projects under the extended baseline with macroeconomic feedback (see Figure 7-3). The 25-year fiscal gap would be 0.8 percent of GDP rather than the 1.1 percent that CBO projects under the extended baseline.

- If productivity grew by 0.8 percent annually, 0.5 percentage points more slowly than in the baseline, the slower economic growth would result in less revenue, bigger budget deficits, and more debt. That debt would be 125 percent of GDP in 2040. The 25-year fiscal gap would rise to 1.5 percent of GDP.

Faster or slower productivity growth could also affect the budget in ways that are not accounted for in this analysis—for example, by changing the shares of the nation's income received by workers (as wages and salaries, for instance) and by the owners of capital (as corporate profits, for instance). In recent years, technological change appears to have affected productivity in ways that put downward pressure on labor's share (for example, by expanding options for using capital in place of labor), a trend that some economists believe will be long-lasting.[12] In addition, some types of ongoing technological change appear to be intensifying wage inequality.[13] Such shifts in

12. For further discussion, see Congressional Budget Office, *How CBO Projects Income* (July 2013), www.cbo.gov/publication/44433.

13. For further discussion, see Congressional Budget Office, *The Distribution of Household Income and Federal Taxes, 2011* (November 2014), www.cbo.gov/publication/49440.

the distribution of income could significantly affect tax revenues and spending for some programs (such as Social Security); whether they would have a large net effect on the federal budget overall is unclear.

Interest Rates on Federal Debt

Interest rates affect the budget by changing the interest payments that the federal government makes on debt held by the public. Interest rates are currently at historic lows, but CBO projects that they will rise over the next few years and return to levels closer to their long-run averages. As a result, interest payments on federal debt held by the public, which are currently a little over 1 percent of GDP, are projected to grow to about 3 percent of GDP by 2025, even though federal debt as a percentage of GDP is projected to be only slightly larger in that year than it is currently.

However, given how much interest rates on government debt have varied in the past, projections of those rates involve a great deal of uncertainty. CBO estimates that the real interest rate on 10-year Treasury notes (that is, the rate adjusted to exclude the effects of inflation) averaged about 3 percent during the 1960s, about 1 percent during the 1970s, about 5 percent during the 1980s, about 4 percent during the 1990s, about 2 percent between 2000 and 2007, and about 1 percent during the past seven years.[14]

CBO's long-term projection of interest rates takes into account economic and financial factors such as the amount of federal debt, the rate of growth of the labor force, the rate of growth of productivity, private saving, and the amount of inflows of capital from foreign investors (see Appendix A). Different projections of those factors would imply different projections of interest rates. For example, as explained above, faster productivity growth implies higher interest rates, all else being equal. But many of the economic and financial factors that affect interest rates also affect the budget in other ways—for instance, faster productivity growth leads to faster income growth and higher revenues—and those additional effects complicate the relationship between interest rates and the budget.[15]

To isolate the budgetary effect of changes to the interest rate that the federal government pays on debt held by the public, CBO analyzed uncertainty in its projection of the difference (called the spread) between the federal government's borrowing rates and private borrowing rates. For any given level of private borrowing rates, changes to that spread affect the rate at which the federal government borrows but do not usually have significant direct effects on economic conditions or on the federal budget apart from interest payments.

The conditions that have historically determined the spread between the government's borrowing rates and private borrowing rates include portfolio preferences among U.S. and foreign investors, the perception of the underlying risk of private securities relative to federal debt, the response of financial institutions to regulations that require the holding of low-risk assets, and the liquidity of federal debt relative to that of private securities. For example, the difference between the rates of interest on 10-year Treasury notes and on highly rated corporate bonds rose from the 1990s to the 2000s as investors became more averse to risk in the wake of the sharp stock market drop of the early 2000s; even after the economy recovered, the difference remained larger than it had been before the drop.

To find a guide to the uncertainty surrounding the spread between government borrowing rates and private borrowing rates, CBO examined the average spread between the interest rate on 10-year Treasury notes and the interest rate on a large class of corporate debt (specifically, an index of corporate debt with a credit rating of Baa) during the 25-year periods beginning with the 1954–1978 period and ending with the 1990–2014 period. That spread varied over those periods by about 1 percentage point (see Figure 7-1 on page 94). However, the historical averages do not reflect certain sources of uncertainty about spreads in the future. For one thing, estimates of the risk premium—the additional return that investors require to hold assets that are riskier than Treasury securities—have been quite volatile in recent years, so more distant history may be a poor guide to the future premium. For another, although private and foreign investors alike have been eager to invest in risk-free U.S. assets in recent

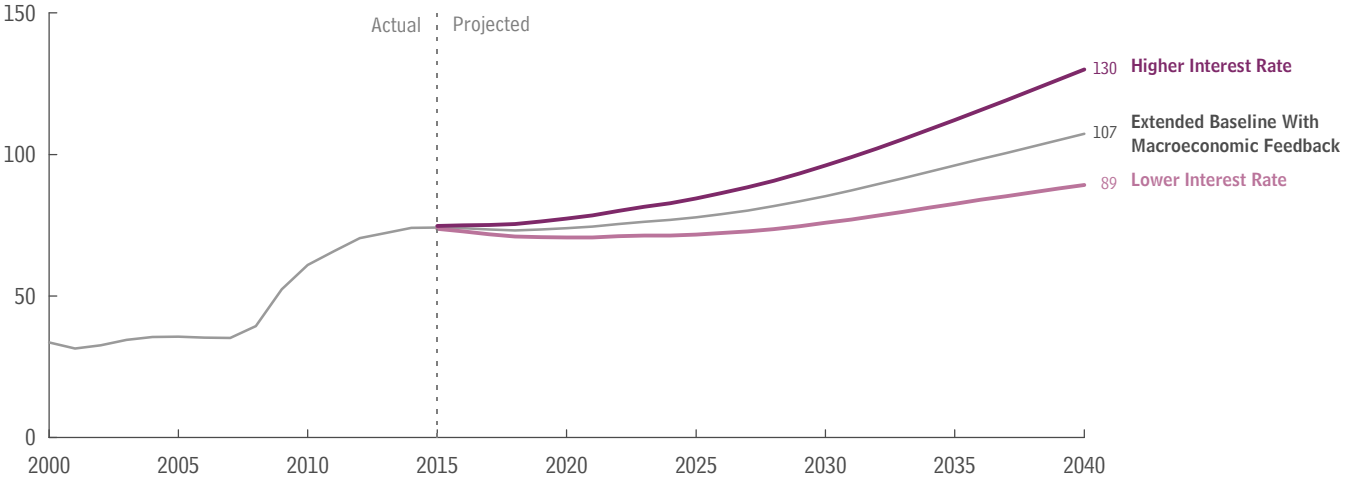
14. To calculate historical real interest rates, the actual rates were adjusted using changes in the consumer price index. Past values of the consumer price index were adjusted to account for changes over time in how that index measures inflation.

15. In addition, many economic and financial factors that affect the government's borrowing rate also affect interest rates in the private sector, which in turn affect private capital investment and thus income and output.

Figure 7-4.

Federal Debt Given Different Interest Rates

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The higher interest rate is 0.75 percentage points higher—and the lower interest rate is 0.75 percentage points lower—than the rate used for each year in the extended baseline with macroeconomic feedback.

Federal debt refers to debt held by the public. Estimates for the extended baseline with macroeconomic feedback are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

years, those investors may change their preferences as financial markets in emerging economies continue to develop and become more attractive. Furthermore, the effect that the regulatory changes that were enacted in response to the 2007–2009 financial crisis will have on investors' demand for corporate and federal debt remains very uncertain. To account for those sources of uncertainty as well as for other factors that may not be fully represented by the particular measure of the spread used and the historical period analyzed, CBO expanded the range of uncertainty used for this analysis from the 1.0 percentage point suggested by the historical data to 1.5 percentage points.[16]

Those alternative projections for the interest rate on federal debt held by the public would lead to the following alternative budget projections:

- If the spread between the government and private borrowing rates was 0.75 percentage points larger than the average incorporated in the baseline—resulting in a lower government borrowing rate—but the economy was otherwise the same, then net interest would equal 3.2 percent of GDP by 2040 instead of the 4.7 percent projected in the extended baseline with macroeconomic feedback.[17] Federal debt held by the public would be 89 percent of GDP in 2040 rather than the 107 percent that CBO projected in that baseline (see Figure 7-4). The 25-year fiscal gap

16. For the extended baseline with macroeconomic feedback, CBO projects that the federal government's nominal borrowing rate wil average 3.9 percent between 2015 and 2040. If the spread between government and private borrowing rates was within the 1.5 percentage-point range of uncertainty, then after accounting for macroeconomic feedback, the government's nominal borrowing rate would be expected to be between 3.1 percent and 4.8 percent, on average, over that period.

17. The estimated effects on budget projections of changes in the government's borrowing rates do not incorporate any changes in remittances by the Federal Reserve or in the relative amounts of different types of taxable income (for example, profits and interest income). Such changes would have additional budgetary implications.

would be 0.6 percent of GDP rather than the 1.1 percent that CBO projects under the extended baseline.[18]

- If the spread between the government and private borrowing rates was 0.75 percentage points smaller than the average incorporated in the baseline but the economy was otherwise the same, then net interest would equal 6.9 percent of GDP in 2040, and federal debt held by the public would be projected to reach 130 percent of GDP. The 25-year fiscal gap would rise to 1.6 percent of GDP.

Federal Spending on Medicare and Medicaid

The federal government pays for health care through Medicare, Medicaid, subsidies for insurance purchased through the exchanges established under the Affordable Care Act, and other programs as well as through tax preferences, especially the exclusion for employment-based health insurance.[19] In CBO's extended baseline, federal spending on health care per beneficiary increases more slowly in the future than it has, on average, in recent decades, though it still substantially outpaces the growth of potential (that is, maximum sustainable) output per capita. But the future growth of health care costs is quite uncertain, and it is consequently a significant source of budgetary uncertainty. CBO assesses the effects of uncertainty in the future growth of health care costs on the federal budget by varying the growth rate of costs in the two largest components of federal spending on health care, Medicare and Medicaid.

Many factors will affect Medicare and Medicaid spending per beneficiary in the long term (for further discussion, see Chapter 2). One of them is the extent to which advances in health care technology raise or lower costs. New medical procedures or treatments may prove more effective in helping patients, which could lower costs. However, such procedures and treatments are often very expensive; even services that are relatively inexpensive could make spending rise quickly if ever-growing numbers of patients used them.[20] Other factors that could affect health care costs are changes in the structure of payment systems and innovations in the delivery of health care.

In addition, Medicare and Medicaid spending will be affected by the health of the population. Outlays for Medicare and Medicaid depend in part on the prevalence of certain medical conditions—cardiovascular and pulmonary diseases, diabetes, arthritis, and depression, for example—among beneficiaries. The prevalence of such conditions could evolve in unexpected ways for various reasons, including changes in behavior (for example, in smoking rates, levels of physical activity, or dietary patterns), new treatments for various illnesses, new medical interventions that reduced the occurrence or severity of certain conditions or diseases, and the emergence of epidemics.

The measure that CBO examined for this analysis of uncertainty was excess cost growth—that is, the difference between the growth rate of health care spending per capita and the growth rate of potential output per capita.[21] In the 25-year periods starting with the 1966–1990 period and ending with the 1989–2013 period, excess cost growth for the health care system as a whole varied by about 1.5 percentage points (see Figure 7-1 on page 94). CBO used a 1.5 percentage-point range of variation and analyzed the effects of rates of excess cost growth for Medicare and Medicaid that were 0.75 percentage points above and below the rate of growth for each year in the extended baseline.[22] (CBO focused on Medicare and Medicaid because the projected

18. In estimating the fiscal gap under the alternative projections for interest rates, CBO altered the rate used to discount future taxes, noninterest spending, and debt by the same amount as other interest rates. For example, in calculating the fiscal gap under the projection with lower interest rates, future primary deficits (that is, deficits excluding interest payments) and the end-of-period debt are given a greater weight than they are under projections with higher interest rates.

19. Under that provision of the tax code, most payments that employers and employees make for health insurance coverage are exempt from income and payroll taxes.

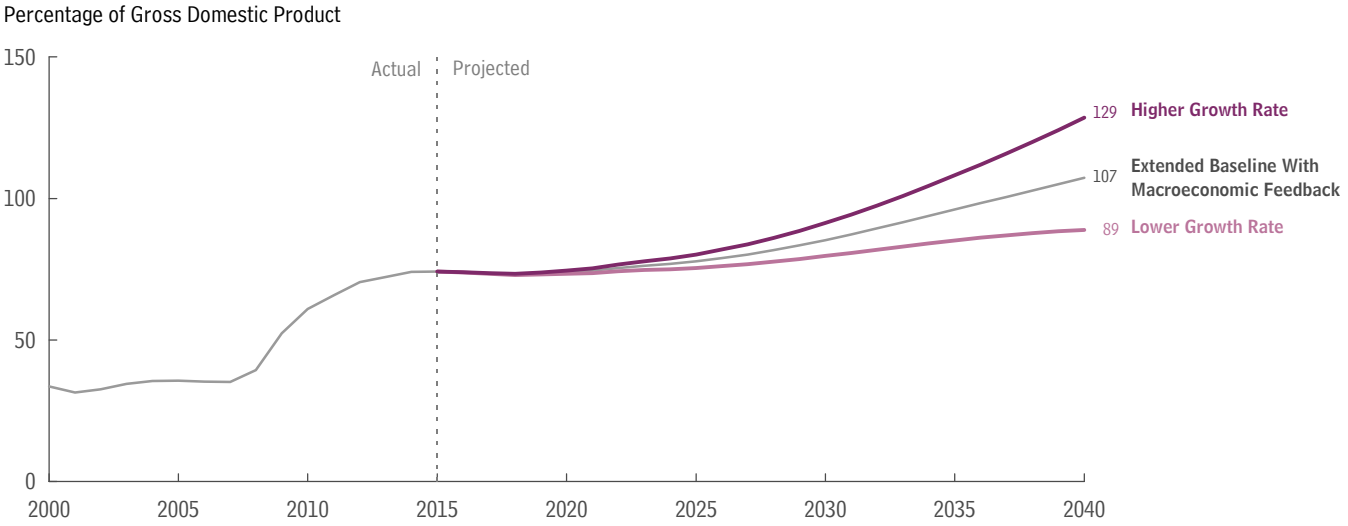
20. See Congressional Budget Office, *Technological Change and the Growth of Health Care Spending* (January 2008), www.cbo.gov/publication/41665.

21. The definition and calculation of excess cost growth are discussed in more detail in Chapter 2.

22. In the extended baseline, CBO projects that the rate of excess cost growth in Medicare and Medicaid for each year will match the rate in the agency's baseline projections for the next 10 years and then move in the succeeding 15 years toward the projected underlying path. The estimated underlying rate starts at the rate of excess cost growth experienced in the health care system in recent decades and declines gradually as people respond to the pressures of rising costs.

Figure 7-5.

Federal Debt Given Different Rates of Growth of Federal Health Care Spending



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

The higher growth rate of per-beneficiary federal spending on Medicare and Medicaid is 0.75 percentage points higher—and the lower growth rate is 0.75 percentage points lower—than the growth rate used for each year in the extended baseline with macroeconomic feedback.

Federal debt refers to debt held by the public. Estimates for the extended baseline with macroeconomic feedback are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

size of those programs means that variations in their rates of growth would have particularly large effects on the federal budget.)

Those alternative projections for the growth of health care spending would lead to the following alternative budget projections:

- If Medicare and Medicaid spending per beneficiary rose 0.75 percentage points per year more slowly than in the extended baseline, federal debt held by the public would be 89 percent of GDP in 2040 rather than the 107 percent that CBO projects under the extended baseline with macroeconomic feedback (see Figure 7-5). The 25-year fiscal gap would be 0.5 percent of GDP rather than the 1.1 percent that CBO projects under the extended baseline.

- If Medicare and Medicaid spending per beneficiary rose 0.75 percentage points per year more quickly than in the extended baseline, federal debt held by the public would be 129 percent of GDP in 2040. The 25-year fiscal gap would rise to 1.8 percent of GDP.

Multiple Factors

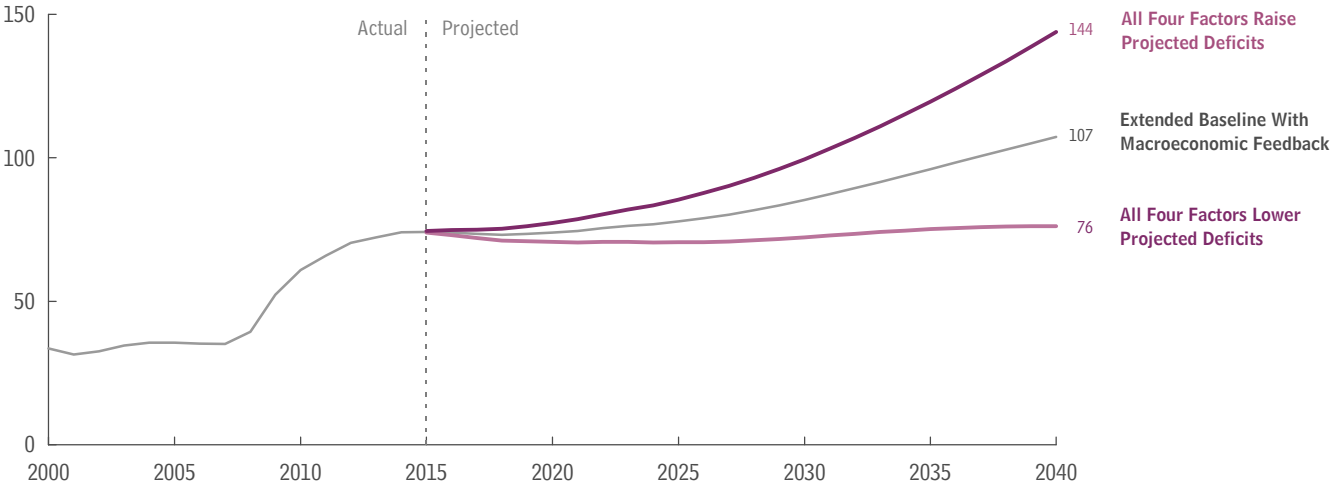
The previous cases illustrated what would happen to the federal budget if a single factor differed from the projections that CBO used in the extended baseline. Undoubtedly, however, multiple factors will differ from CBO's projections. In addition, estimating the budgetary consequences of such a circumstance is more complicated than simply adding together the outcomes of the individual cases. For example, higher-than-projected health care costs would have a larger effect on the budget if interest rates on federal debt were also higher than CBO projects—because the government would have to pay more interest on debt that resulted from the additional health care spending.

To account for the interactions among the key variables and the fact that having just one individual factor reach the end of its range is much more likely than having all

Figure 7-6.

Federal Debt Given Different Rates of Mortality Decline, Productivity Growth, Interest, and Growth of Federal Health Care Spending

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

Notes: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period.

For this figure, CBO used ranges for the four factors that are 60 percent as large as the ranges used for the individual cases (shown in Figures 7-2 to 7-5).

Federal debt refers to debt held by the public. Estimates for the extended baseline with macroeconomic feedback are CBO's central estimates from ranges determined by alternative assessments about how much deficits crowd out investment in capital goods such as factories and computers (because a larger portion of private saving is being used to purchase government securities) and about how much people respond to changes in after-tax wages by adjusting the number of hours they work.

four do so simultaneously, CBO used smaller ranges for each of the four factors when they are assumed to change together than it used for them individually. It analyzed illustrative cases in which all four factors varied from the baseline by 60 percent of their individual ranges. According to CBO's analysis of the historical data, joint variation to that extent yields outcomes for federal debt that are about as likely as the outcomes when an individual factor changes to the full extent of its range. For example, in the cases discussed above, the range for the rate of productivity growth was 1 percentage point, yielding growth rates that were 0.5 percentage points higher and lower than the values in the extended baseline; but for the combined projections, the range for the rate of productivity growth is 0.6 percentage points, yielding growth rates that span the baseline values by 0.3 percentage points.

Varying the four factors together in that way would lead to the following budget projections:

- If mortality rates declined 0.3 percentage points per year more slowly, productivity grew 0.3 percentage points per year more quickly, the difference between the average interest rate on government debt and private interest rates was about 0.45 percentage points greater, and federal costs per beneficiary for Medicare and Medicaid grew by about 0.45 percentage points per year more slowly than under the extended baseline, federal debt held by the public would be 76 percent of GDP in 2040—about what it is now—rather than the 107 percent that CBO projects under the extended baseline with macroeconomic feedback (see Figure 7-6). The 25-year fiscal gap would be 0.6 percent of GDP rather than the 1.1 percent that CBO projects under the extended baseline.

- If mortality rates declined 0.3 percentage points per year more quickly, productivity grew 0.3 percentage points per year more slowly, the difference between the average interest rate on government debt and private interest rates was about 0.45 percentage points

smaller, and federal costs per beneficiary for Medicare and Medicaid grew by about 0.45 percentage points per year more quickly than under the extended baseline, federal debt held by the public would be 144 percent of GDP in 2040. The 25-year fiscal gap would be 1.7 percent of GDP.

Other Sources of Uncertainty Related to Demographic, Economic, and Other Trends

CBO's long-term budget estimates depend on projections of numerous variables in addition to those analyzed above. (Many of those variables are discussed in detail in Appendix A.) Although the factors discussed in the previous section are four of the more important ones, they are intended to provide illustrative examples, not to be exhaustive. Every variable has some uncertainty associated with it. For instance, demographics, labor force growth, and decisions by states about Medicaid are also important, but CBO has not yet quantified the potential effects on the budget of uncertainty involving those factors.

Changes in Demographics and Labor Force Growth

Demographic factors have significant effects on economic and budgetary outcomes. For instance, GDP depends to a large degree on the size of the labor force, which is related to the number of adults between the ages of 20 and 64, and federal outlays for Medicare, Medicaid, and Social Security are closely linked to the number of people who are at least 65 years old. Higher rates of fertility or greater immigration flows would generally cause federal spending to decrease relative to GDP because they would increase the ratio of adults ages 20 to 64 to elderly adults. (Mortality, another demographic factor that affects the economy and the budget, was addressed separately above.)

The growth of the labor force could also change for reasons other than demographic ones. Projections of the labor force are based on estimates of the size of the population and estimates of the rates of participation in the labor force by people in different demographic groups. Those participation rates in turn depend on a number of factors, including economic conditions, cultural shifts, and public policies (especially those that involve taxes on labor or that directly affect people's incentive to work in some other way).[23] The overall rate of participation in the labor force has varied considerably over time. For example, it averaged 59 percent in the 1950s and 1960s, increased to more than 67 percent by 2000, and has declined since then, averaging a little more than 62.8 percent in the first four months of 2015. The large increase from the 1960s to 2000 was mostly the result of an increasing number of women in the labor force. If the next 25 years saw some kind of cultural shift that had a similarly large effect on the overall rate of participation in the labor force, labor force growth could be significantly different from what CBO expects.

Faster or slower labor force growth would produce better or worse budgetary outcomes, all else being equal. If the labor force grew more quickly than projected for the extended baseline, the faster economic growth would result in higher revenues, smaller budget deficits, and a smaller ratio of federal debt to GDP. In contrast, if the labor force grew more slowly than projected in the extended baseline, the slower economic growth would result in lower revenues, larger budget deficits, and a greater ratio of debt to GDP.

Decisions by States About Medicaid

State governments have flexibility in administering their Medicaid programs, and the decisions that they make about eligibility, benefits, and payments to providers affect the federal budget because the federal government pays a large share of Medicaid's costs. One source of uncertainty is whether states will maintain or increase Medicaid spending—by obtaining program waivers to expand eligibility to new population groups, enhancing outreach efforts to increase enrollment of eligible people, or expanding covered benefits—as rising earnings reduce the number of children and nondisabled adults who are eligible for the program over time. Decisions by states could significantly decrease or increase federal expenditures for Medicaid relative to the amounts in CBO's projections.

Potential Developments in the Economy and Their Effects on the Budget

The range of outcomes presented above conveys only part of the uncertainty associated with long-term budget projections. They do not account for other plausible

23. The rate of participation in the labor force has changed over time within demographic groups; see Congressional Budget Office, *CBO's Labor Force Projections Through 2021* (March 2011), www.cbo.gov/publication/22011.

but unpredictable developments that could increase or decrease federal debt relative to CBO's projections. Such possible developments could include an economic depression like the one that occurred in the United States in the 1930s; unexpectedly large losses on federal financial obligations, such as mortgage guarantees; and unpredictable catastrophes, such as a major natural disaster or world war, the effects of changes in climate, or the discovery of valuable natural resources.

A Severe Economic Downturn

In general, when economic output rises or falls, the federal budget is automatically affected. For example, economic downturns can reduce revenues significantly and raise outlays for safety-net programs, such as unemployment insurance and nutrition assistance.[24] In addition, such downturns have historically prompted policymakers to enact legislation that further reduces revenues and increases federal spending—to help people suffering from the weak economy, to bolster the financial condition of state and local governments, and to stimulate additional economic activity and employment. The budgetary effects of the recent recession were particularly large: Federal debt increased from 35 percent of GDP at the end of 2007 to 70 percent at the end of 2012, in large part because of the recession and weak recovery and the policy responses enacted to counter those developments.

The long-term projections of output and unemployment in this report reflect economic trends from the end of World War II to the present, a period that included several economic downturns that were not fully offset by upturns of similar magnitude.[25] But the projections do not account for the possibility of a severe economic downturn like the Great Depression of the 1930s. Such events are rare; for that reason and others, their magnitude and timing cannot readily be predicted. If such an event occurred in the next 25 years, federal debt would probably be substantially greater than projected in CBO's extended baseline.

Changes in Losses on Federal Insurance or Credit Programs

The federal government supports a variety of private activities through federal insurance and credit programs that provide loans and loan guarantees.[26] CBO includes the expected losses from those credit and insurance programs in its baseline projections. Significantly greater losses could result from certain unexpected events, such as a major disruption in the financial system or a deep slump in the economy. Alternatively, long periods of financial and economic stability could lead to smaller losses.

Federal insurance and credit programs generate losses when the support provided by the federal government exceeds the money taken in by the programs through fees, loan repayments, interest payments, asset sales, wage garnishment, and other means. For example, in the wake of the recent housing crisis, widespread defaults on guaranteed mortgages led to substantial outlays by the federal government. Widespread defaults on student loans or the bankruptcy of numerous companies with underfunded pension plans could lead to analogous costs for the federal government in the future.[27] Conversely, long periods of particularly strong economic growth could allow federal insurance and credit programs to collect higher-than-projected repayments and cover lower-than-projected expenses.

24. See Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), Appendix D, www.cbo.gov/publication/49892.

25. Since the end of World War II, the unemployment rate has been about one-quarter of one percentage point higher, on average, than CBO's estimate of the natural rate of unemployment (the rate arising from all sources except fluctuations in aggregate demand). That difference implies that periods of significant economic weakness (such as the 2007–2009 recession and its aftermath) have pushed the unemployment rate above CBO's estimate of the natural rate more than periods of significant economic strength have pushed it below that estimate. Consistent with that finding is CBO's projection that the unemployment rate in the long term will be 5.3 percent, which is about one-quarter of one percentage point higher than CBO's estimate of the natural rate of unemployment in the long term. For further discussion, see Appendix A.

26. Federal insurance programs provide coverage for deposits at financial institutions (through the Federal Deposit Insurance Corporation), for workers' pensions (through the Pension Benefit Guaranty Corporation), and for property against damage by floods (through the National Flood Insurance Program), among other things. The largest federal credit programs provide mortgage loan guarantees (through the Federal Housing Administration, Fannie Mae, and Freddie Mac); student loans; and federally backed loans to businesses (through the Small Business Administration, for example). There are a number of smaller programs, including the loan guarantees provided by the Department of Energy and the terrorism risk insurance program administered by the Treasury Department.

27. For more discussion, see James D. Hamilton, *Off-Balance-Sheet Federal Liabilities*, Working Paper 19253 (National Bureau of Economic Research, July 2013), www.nber.org/papers/w19253.

Moreover, the federal government may have significant implicit liabilities apart from the liabilities created by formal government programs. In the event of a financial crisis, for example, federal policymakers might decide to provide monetary support to the financial system, as they did during the recent financial crisis. Such support could increase federal outlays above the amounts in the extended baseline.

Catastrophes

The federal government also faces implicit obligations in the case of catastrophes. Small-scale natural and man-made disasters occur fairly often in the United States; they may seriously damage local communities and economies, but they have rarely had significant, lasting impacts on the national economy. By contrast, a catastrophe could affect budgetary outcomes by reducing economic growth over a number of years, leading to substantial increases in federal spending. For example, the nation could experience a massive earthquake, a pandemic, an asteroid strike, a geomagnetic storm from a large solar flare, or a nuclear meltdown or attack that rendered a significant part of the country uninhabitable. Participation in a major war could also have significant economic and budgetary impacts: The ratio of federal debt held by the public to GDP rose by 60 percentage points during World War II, for instance. Because catastrophic events are extremely rare, it is very difficult to estimate the probability of their future occurrence and their possible effects on the budget.

Climate Change

CBO's extended baseline does not explicitly incorporate the effects of climate change. It implicitly includes some small effects by reflecting historical spending on such programs as federal crop insurance, federal flood insurance, and the Federal Emergency Management Agency's disaster relief program.[28] Aside from those implicit changes in federal outlays, the extended baseline does not incorporate any budgetary effect that climate change might have; it does not, for example, account for the effect on federal tax revenues that climate change could have if it affected the nation's economic output.

Substantial uncertainty surrounds any projection that attempts to account for the impact that climate change might have on the economy or on the budget. That uncertainty arises from several sources, including the unpredictability of global economic activity and technology development—both of which affect the amount of emissions in the future—as well as limitations in current data and the imperfect understanding of physical processes and of many aspects of the interacting components (land, air, water and ice, and life) that make up the Earth's climate system. In addition to the unpredictability of climate change itself, the impact that any such change would have on the economy and the budget is also quite uncertain.

CBO has not undertaken a full analysis of the budgetary costs stemming from climate change, but it is currently analyzing the potential costs of future hurricanes.[29] That analysis suggests that the costs of future hurricane damage will rise at a faster rate than GDP; however, the amount of additional hurricane damage is likely to remain small enough, on average, that the resulting federal expenditures would not significantly affect the general budget categories in which hurricane-related spending falls.

Three factors that influence the rate of growth of future hurricane damage are sea levels, the frequency of severe hurricanes, and the amount of development in coastal areas (because the damage caused by hurricanes will depend, in part, on the amount of people and property in harm's way):

- Hurricane damage is expected to increase over time because climate change is projected to lead to rising sea levels, which will tend to increase damage from storm surges when hurricanes occur.

28. Some of the programs most affected by weather-related disasters—such as federal crop insurance and flood insurance—fall into the "other mandatory spending" category in CBO's long-term projections; in CBO's extended baseline, other mandatory spending (apart from outlays for refundable tax credits) is projected to continue to decline as a share of GDP after the 10-year period that CBO's baseline projections span at the same rate as it is projected to decline during the last five years of that initial period. Other programs affected by weather-related disasters—such as the Federal Emergency Management Agency's disaster relief program—are discretionary; spending for those programs is projected to remain constant as a share of GDP after the 10-year baseline projection period.

29. Terry Dinan, Senior Adviser, Congressional Budget Office, "Hurricane Damage: Effects of Climate Change and Coastal Development" (presentation to the Summer Conference of the Association of Environmental and Resource Economists, San Diego, Calif., June 5, 2015), www.cbo.gov/publication/50230.

- Climate change may increase the occurrence of the most intense (Category 4 and 5) storms in the North Atlantic Basin, leading to more damage in the United States.
- The growth in hurricane damage attributable solely to increases in coastal development is projected to be slower than the growth of the economy overall. That slower rate stems from the expectation that new development will tend to be denser (reducing wind damage per structure if buildings are closer together and storm surge damage per structure if buildings are taller), more expensive construction and therefore less vulnerable to storm damage.

All told, CBO projects that the amount of damage attributable to climate change and coastal development will probably be around 0.05 percent of GDP in the 2030s and less than 0.1 percent of GDP in the 2070s.

Many estimates suggest that the effect of climate change on the nation's economic output, and hence federal tax revenues, will probably be small over the period that is covered by CBO's long-term projections and larger, but still modest, in later years.[30] Even under scenarios in which significant warming is assumed, the projected long-term effects of climate change on GDP in the United States tend to be modest relative to underlying economic growth for two primary reasons. First, only a small share of the U.S. economy is directly affected by changes in climate; the largest effects will probably occur in the agricultural sector, which currently represents about 1 percent of total U.S. output. (The direct economic effects of climate change may be larger in other countries, particularly those for which agricultural output is a larger share of the total.) Second, some activities within the agricultural sector—crop production in the north, for example—could experience gains because of climate change. In any event, some of the effects of climate change (such as the loss of biodiversity), neither directly relate to measured economic output nor affect tax revenues. CBO continues to monitor research on the effects of climate change on the U.S economy, to consider how those effects might alter the federal budget outlook, and to evaluate federal policies that may lead to lower emissions or mitigate damage from changes in the climate.

In addition to uncertainty about the magnitude of disasters caused by climate change, there is uncertainty about how lawmakers would respond to them. In the future, lawmakers could increase funding above the amounts in CBO's projections if the effect of climate change on the frequency and magnitude of weather-related disasters became significantly larger. For example, increased damage from storm surges might lead the Congress to pass additional emergency supplemental appropriations for disaster relief or to approve legislation providing funding to protect infrastructure that is vulnerable to rising sea levels. Or lawmakers could amend existing laws to reduce federal spending on weather-related disasters. For instance, the Congress might decide to alter flood insurance or crop insurance programs in a way that provides insured parties with greater incentive to avoid potential damage. But CBO's baseline projections, which are built on current law, cannot capture such possible changes.

Natural Resources

The future discovery and development of productive natural resources may cause federal receipts to increase. For example, recent advances in combining two drilling techniques, hydraulic fracturing and horizontal drilling, have allowed access to large deposits of shale resources—that is, crude oil and natural gas trapped in shale and certain other dense rock formations. Virtually nonexistent a decade ago, the development of shale resources has boomed in the United States in recent years, affecting two kinds of federal receipts—federal tax revenues and payments to the government by private developers of federally owned resources. By boosting GDP, shale development increases tax receipts. Because some of the shale resources being developed are federally owned, developers must make payments to the federal government; however, most of the nation's shale resources are not federally owned, so those payments do not increase federal receipts by a significant amount.[31] Advances in the development of other resources may also contribute to federal receipts and make federally owned resources more valuable.

30. Congressional Budget Office, *Potential Impacts of Climate Change in the United States* (May 2009), www.cbo.gov/publication/41180.

31. Congressional Budget Office, *The Economic and Budgetary Effects of Producing Oil and Natural Gas From Shale* (December 2014), www.cbo.gov/publication/49815.

Implications of Uncertainty for the Design of Fiscal Policy

Policymakers could take uncertainty into account in various ways when making fiscal policy choices.[32] For example, they might decide to design policies that reduced the budgetary implications of certain unexpected events. Policymakers might also decide to provide a buffer against events with negative budgetary implications by aiming for lower debt than they would otherwise.

Reducing the Budgetary Implications of Unexpected Events

Fiscal policy cannot eliminate the risk factors that create uncertainty about budgetary outcomes, but it can reduce the budgetary implications of those factors. However, reducing budgetary uncertainty for the federal government could have unwanted consequences, such as shifting risk to individuals. Under current law, for example, growth in Medicare and Medicaid outlays per beneficiary depends on the growth of per capita health care costs. Some policymakers have proposed that growth in federal outlays per beneficiary of those programs be linked instead to measures of overall economic growth.[33] Such a change could affect national spending for health care, the federal budget, individuals' costs, and the budgets of state and local governments. It might greatly reduce uncertainty about future federal outlays for Medicare and Medicaid, but it might also greatly increase uncertainty about the future costs borne by the programs' beneficiaries and by state and local governments.[34]

Similarly, policymakers could reduce the budgetary implications of uncertainty about future life expectancy by indexing the eligibility age for programs such as Social Security or Medicare to average life spans. Under current law, if longevity increased more than expected, outlays for federal health care and retirement programs would exceed projections. If policies were changed so that the age of eligibility for those programs rose automatically with increases in longevity, the budgetary effects of such increases would be dampened. However, people would face greater uncertainty about the timing and size of the benefits that they would receive, and the effects would vary among subgroups of the population.

In addition, policymakers could reduce the budgetary implications of unexpected rises in interest rates by increasing the share of government borrowing that is done through longer-term securities. Using that approach, the Treasury could lock in interest rates for a considerable period. However, interest rates on longer-term debt are typically higher than rates on shorter-term debt, so that approach would probably raise the interest that the federal government paid. Moreover, if interest rates were locked in for a long period, the federal government would benefit less from unexpected *declines* in interest rates.

Whether or not the federal budget directly bears the risk of uncertain outcomes, all risk is ultimately distributed among individuals—as taxpayers, as beneficiaries of federal programs, or as both. If federal spending for certain programs turned out to be higher than projected, the additional imbalance could be offset only through higher revenues or lower outlays for other programs or activities at some point in the future. If the additional imbalance was not offset, then deficits would be larger, resulting in lower future income. Conversely, if budgetary imbalances were smaller than expected, then an opportunity would exist to lower taxes or boost spending; it would also be possible to reduce future deficits, resulting in higher income. Which income groups or generations benefited the most—or bore the largest burden—from unexpected budgetary imbalances would depend on the policies that lawmakers enacted to deal with such imbalances.

Reducing Federal Debt

As an alternative or complementary approach, policymakers could improve the federal government's ability to withstand the effects of events that would significantly worsen the budgetary outlook. In particular, reducing the amount of federal debt held by the public would give future policymakers more flexibility in responding to extraordinary events. For example, a financial crisis in the future might have significant negative economic and budgetary implications—just as the 2007–2009 financial

32. See Alan J. Auerbach and Kevin Hassett, "Uncertainty and the Design of Long-Run Fiscal Policy," in Auerbach and Ronald D. Lee, eds., *Demographic Change and Fiscal Policy* (Cambridge University Press, 2001), pp. 73–92, http://tinyurl.com/p93enfp.

33. For examples of these proposals, see Congressional Budget Office, *Preliminary Analysis of the Rivlin-Ryan Health Care Proposal* (attachment to a letter to the Honorable Paul D. Ryan, November 17, 2010), www.cbo.gov/publication/21928.

34. Most proposed policy changes of that sort would affect both the expected amounts of federal outlays and the uncertainty about those outlays, but those two effects are conceptually distinct.

crisis did: The ratio of federal debt held by the public to GDP increased by 35 percentage points between 2007 and 2012. If another financial crisis prompted a similar increase when the ratio of federal debt to GDP was already at a high level (such as its current level of 74 percent), policymakers might be reluctant to accept the initial cost of a desired intervention in the financial system or the economy, even if they expected to recoup at least part of that cost over time.

In addition, a high ratio of debt to GDP increases the risk of a fiscal crisis in which investors lose confidence in the government's ability to manage its budget and the government in turn loses its ability to borrow at affordable rates.[35] There is no way to predict the amount of debt that might precipitate such a crisis, but starting from a position of relatively low debt would reduce the risk.

35. That sort of crisis might be triggered by an adverse event that quickly drove up the ratio of debt to GDP, such as a depression or a war. For further discussion, see Congressional Budget Office, *Federal Debt and the Risk of a Fiscal Crisis* (July 2010), www.cbo.gov/publication/21625.

APPENDIX

A

CBO's Projections of Demographic, Economic, and Other Trends

The long-term budget estimates in this report depend on projections by the Congressional Budget Office for a host of demographic, economic, and other variables. CBO refers to that collection of projections as its economic benchmark, a measure that is consistent with the agency's baseline economic and budgetary projections for the ensuing 10 years. Beyond 2025, the economic benchmark generally reflects historical trends; it does not incorporate the extent to which economic output and interest rates would change if federal debt as a percentage of gross domestic product (GDP) or marginal tax rates changed after 2025, as is projected to occur under current law. (For average values from 2015 through 2040, see Table A-1. Projected annual values for the major demographic and economic variables for the next 75 years are included in the supplemental data for this report, available online at www.cbo.gov/publication/50250.)

Demographic Variables

The size and composition of the U.S. population in coming decades will affect federal tax revenues and spending as well as the overall performance of the economy. Among other effects, demographic changes will influence the size of the labor force and the number of beneficiaries of such federal programs as Medicare and Social Security. Population projections include estimates of rates of fertility, immigration, and mortality. (CBO uses projections published by the Social Security trustees for fertility rates but makes its own projections of immigration and mortality rates.) CBO anticipates that the total U.S. population will increase from 325 million at the beginning of 2015 to 394 million in 2040.

Fertility

CBO has adopted the intermediate (midrange) estimates of fertility rates published by the Social Security Administration in 2014.[1] Those values imply an average fertility rate of 2.0 children per woman between 2015 and 2040. (The Social Security trustees' report defines the fertility rate as the average number of children that a woman would have in her lifetime if, at each age of her life, she experienced the birth rate observed or assumed for that year and if she survived her entire childbearing period.)

Immigration

For its economic benchmark, CBO projects that after 2025, net annual immigration (the net result of people leaving and entering the United States) will equal 3.2 immigrants for every 1,000 members of the U.S. population, a ratio that is consistent with the data for most of the past two centuries.[2] On that basis, CBO projects, net annual immigration to the United States will amount to 1.2 million people in 2026 and 1.3 million in

1. See Social Security Administration, *The 2014 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (July 2014), Table V.A1, www.ssa.gov/oact/tr/2014.

2. The ratio equals the estimated average net flow of immigrants between 1821 and 2002; see 2003 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (October 2003), p. 28, http://go.usa.gov/38pbH (PDF, 450 KB). That ratio also was published in 2011 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2011), p. 64, http://go.usa.gov/38pE3 (PDF, 6.3 MB). For more details about U.S. immigration, see Congressional Budget Office, *A Description of the Immigrant Population—2013 Update* (May 2013), www.cbo.gov/publication/44134.

Table A-1.

Values for Demographic and Economic Variables Underlying CBO's Long-Term Budget Projections

	Average Annual Values		
	2015–2025	2015–2040	2031–2040
Demographic Variables			
Fertility rate (Children per woman)	2.0	2.0	2.0
Immigration rate (Per 1,000 people in the U.S. population)	4.0	3.6	3.2
Rate of mortality decline (Percent, adjusted for age and sex)	1.2	1.2	1.2
Economic Variables (Percent)			
Growth of the labor force	0.6	0.5	0.4
Growth of average hours worked	-0.1	-0.1	*
Unemployment			
Unemployment rate	5.4	5.4	5.3
Natural rate of unemployment	5.3	5.1	5.0
Earnings as a share of compensation	81	81	80
Inflation			
Growth of the CPI-U	2.3	2.3	2.4
Growth of the GDP deflator	1.9	2.0	2.0
Interest rates			
Real rates			
On 10-year Treasury notes and the OASDI trust funds	2.0	2.2	2.3
On all federal debt held by the public	0.9	1.5	2.0
Nominal rates			
On 10-year Treasury notes and the OASDI trust funds	4.2	4.5	4.7
On all federal debt held by the public	3.2	3.9	4.4
Growth of productivity			
Total factor productivity	1.4	1.3	1.3
Labor productivity	1.8	1.8	1.8
Growth of real earnings per worker	1.6	1.4	1.4
Growth of GDP			
Real GDP	2.3	2.2	2.2
Nominal GDP	4.3	4.3	4.2

Source: Congressional Budget Office.

Note: CPI-U = consumer price index for all urban consumers; GDP = gross domestic product; OASDI = Old-Age, Survivors, and Disability Insurance (Social Security); * = between -0.05 percent and zero.

2040. Estimates of authorized and unauthorized immigration over the long term are subject to a great deal of uncertainty, however, and the number of immigrants could be higher or lower than CBO projects. Over the past 50 years, net annual immigration (averaged over five-year periods) has varied from almost 7 to fewer than 2 immigrants per 1,000 members of the U.S. population.[3]

3. 2011 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2011), p. 70, http://go.usa.gov/38pE3 (PDF, 6.3 MB).

Mortality

Demographers have concluded that mortality rates have declined steadily in the United States for at least the past half century. (Mortality rates measure the number of deaths per thousand people in a population. Historically, declines in mortality rates have varied among age groups, but for simplicity, CBO projects the same rate of decline for all ages.) In the absence of compelling reasons to expect that trends will differ in the future, CBO projects that mortality rates will continue to fall at the same pace exhibited over the 60 years from 1950 to 2010; that is, at

an average rate of 1.2 percent per year.[4] That extrapolation of past trends suggests that the average life expectancy for someone born in 2040 will be 82.6 years*; in contrast, CBO estimates an average life expectancy of 79.2 years for someone born in 2015. Similarly, CBO projects that someone who turns 65 in 2040 can be expected to live another 21.8 years, on average, or 2.4 years longer than someone turning 65 in 2015 is expected to live. Those figures represent averages for all people of a given age and sex in those years.

CBO's projections also incorporate differences in mortality on the basis of age, sex, marital status, education, and lifetime household earnings. (For people under 30, the mortality projections reflect only age and sex.) CBO expects that future increases in life expectancy will be larger for people with higher lifetime earnings than for those with lower earnings—an assessment that is consistent with patterns of past increases.[5] Today, on average, a 65-year-old man whose household is in the highest one-fifth (quintile) of the distribution of lifetime earnings will live more than three years longer, CBO projects, than a man of the same age whose household is in the lowest quintile of lifetime earnings; for women, that difference in life span is more than a year. CBO projects that by 2040, men in households with high lifetime earnings will live more than five years longer than men in households with low lifetime earnings; the corresponding difference for women will be almost three years.

Economic Variables

For the 2015–2025 period, CBO's benchmark projections of economic variables—such as the size of the labor force, inflation, interest rates, and earnings per worker—match the values in the agency's January 2015 economic forecast (which underlies the agency's most recent 10-year budget projections).[6] Beyond 2025, the economic benchmark generally reflects the experience of the past few decades, adjusted to account for projected demographic developments and an assumption that the ratio of debt to GDP and effective marginal tax rates will remain stable.[7] Thus, it does not incorporate the extent to which economic output and interest rates would change if federal debt as a percentage of GDP or if marginal tax rates changed after 2025, as is projected to occur under current law. Rather, the benchmark is governed by the assumption that federal debt held by the public will be kept at 78 percent of GDP (the percentage at the end of 2025, according to CBO's baseline budget projections) and that effective marginal tax rates on income from labor and capital will remain constant at their 2025 levels. (Chapter 6 presents some estimates of the economic effects of projected deficits and marginal tax rates under CBO's extended baseline and some alternative policies.)

The Labor Market

Benchmark projections for the labor market include estimates of the growth of the labor force, the average number of hours that people work, the rate of unemployment, the share of total compensation that people receive in the form of earnings, and the share of those earnings that is subject to Social Security payroll taxes. Those factors affect the amount of tax revenues that the government

4. That projection is greater than the 0.8 percent average annual decline projected in the Social Security trustees' 2014 report but less than the 1.3 percent average annual decline that is consistent with methods recommended by the Social Security Advisory Board's 2011 Technical Panel on Assumptions and Methods. The panel's recommendation reflects a belief that the decrease in mortality rates will be larger in the future than in the past because of a decline in tobacco use. However, because of uncertainty about the possible effects of many other factors in the future, such as obesity rates and advancements in medical technology, CBO has based its mortality projections on a simple extrapolation of past trends. For additional discussion, see Joyce Manchester, "Why CBO Changed Its Approach to Projecting Mortality," *CBO Blog* (September 24, 2013), www.cbo.gov/publication/44598. For further discussion of mortality patterns in the past and methods for projecting mortality, see 2011 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2011), pp. 55–64, http://go.usa.gov/38pE3 (PDF, 6.3 MB). For additional background, see Hilary Waldron, "Literature Review of Long-Term Mortality Projections," *Social Security Bulletin*, vol. 66, no. 1 (September 2005), pp. 16–30, http://go.usa.gov/XKGk; and John R. Wilmoth, *Overview and Discussion of the Social Security Mortality Projections*, Working Paper (Social Security Advisory Board, 2003 Technical Panel on Assumptions and Methods, May 2005), http://go.usa.gov/38dce (PDF, 480 KB).

5. For more information about mortality differences among groups with different earnings, see Congressional Budget Office, *Growing Disparities in Life Expectancy* (April 2008), www.cbo.gov/publication/41681; and Julian P. Cristia, *The Empirical Relationship Between Lifetime Earnings and Mortality*, Working Paper 2007-11 (Congressional Budget Office, August 2007), www.cbo.gov/publication/19096.

6. See Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), Chapter 2, www.cbo.gov/publication/49892.

7. Those budgetary assumptions allow for relatively stable long-term economic projections.

[*Value corrected on June 23, 2015]

collects and the amount of federal spending on Social Security and certain other federal programs.

Growth of the Labor Force. The number of workers is expected to increase more slowly in coming decades than in past years. Although the labor force expanded at an average rate of 1.7 percent annually between 1970 and 2007 (the most recent peak in the business cycle), CBO projects slower average growth—about 0.5 percent a year—for the 2015–2040 period.

That slowdown is expected to result both from more workers' exiting the labor force and from fewer workers' entering it. The number projected to leave the labor force is anticipated to increase compared with past decades as the older members of the baby-boom generation have begun reaching retirement age (although the average age at which people leave the labor force to retire has increased slightly in recent decades). At the same time, fewer workers are projected to enter the labor force than in past decades for two main reasons: First, birth rates have declined (the average fertility rate was more than three children per woman in the 1950s and 1960s, compared with fewer than two children today), and second, the increased participation of women in the labor force has leveled off over the past several years.

Despite those trends, however, increases in longevity will cause participation in the labor force to be slightly greater than it would be otherwise, CBO anticipates. CBO expects that the average person will work three months longer for each additional year of life expectancy in the coming decades. Thus, if life expectancy is four years longer for one cohort of workers than for an earlier group, the longer-lived cohort would work an average of one extra year (everything else being equal). CBO's projections also reflect the view that older people with more education will stay in the labor force longer than those with less education because people with more education are both more likely to be in the labor force when they enter their 60s and less likely to claim Social Security benefits at an early age.

Over the 1970–2007 period, the population of people ages 20 to 64 grew by an average of 1.3 percent per year, but the labor force grew by 1.7 percent per year, mainly because of large increases in the participation rate of women (a factor that was only partly offset by a decline in the participation rate of men). Over the next decade, the gap between those growth rates will narrow, CBO projects, with the population between the ages of 20 and 64 increasing by about 0.4 percent a year and the labor force growing by about 0.6 percent a year, on average. That narrowing reflects partially offsetting effects: The increased propensity of people who are age 65 or older to continue to work and the positive effects of the strengthening labor market on participation more than offset the negative effects on participation from the reduction in people's incentive to work that results from the Affordable Care Act and the structure of the tax code. From 2015 to 2040, the labor force is projected to increase at a rate of about 0.5 percent a year, on average, which is slightly faster than the average annual growth of about 0.4 percent that is projected for the population between the ages of 20 and 64 because of increased labor force participation at older ages.

Average Hours Worked. Different subgroups of the labor force work different numbers of hours, on average. For instance, men tend to work more hours than women do, and people between the ages of 30 and 40 tend to work more hours than do people between the ages of 50 and 60. CBO's projections are based on the assumption that those differences among groups will remain stable. However, CBO also expects that over the long term, the composition of the labor force will shift toward certain groups (such as older workers) that tend to work less, slightly reducing the average number of hours worked by the labor force as a whole. CBO estimates that by 2040, the average number of hours per worker will be about 2 percent less than it is today.

The Unemployment Rate. In January 2015, CBO projected that the unemployment rate would decline from 5.7 percent at the end of 2014 to 5.3 percent at the end of 2017. That projected improvement through 2017 reflects CBO's expectation that the economic expansion will strengthen in the next few years and that the effects of certain structural factors that have contributed to higher unemployment—such as the stigma attached to long-term unemployment and the possible erosion of unemployed workers' job skills—will diminish.[8] The projections for 2018 and 2019 are largely based on the transition to a period when the relationship between the unemployment rate and the natural rate of unemployment is expected to match its historical average. (The natural rate of

8. See Congressional Budget Office, *The Slow Recovery of the Labor Market* (February 2014), www.cbo.gov/publication/45011.

unemployment is the rate that results from all sources other than fluctuations in overall demand related to the business cycle.) As a result, the unemployment rate is projected to increase to 5.5 percent by 2020, when the natural rate of unemployment is expected to be 5.3 percent.[9]

CBO projects that in 2020 and later, the average unemployment rate will be about one-quarter of a percentage point higher than the natural rate of unemployment. That projection is based not on a forecast of specific cyclical movements in the economy but rather on CBO's estimate that the unemployment rate has been roughly that much higher than the natural rate since the end of World War II, on average, and has been higher than the natural rate in each of the past five business cycles.

After 2025, the average unemployment rate is projected to decline as the natural rate of unemployment slowly moves downward, continuing its previous trend as structural factors continue to fade. The natural and actual rates of unemployment are projected to decrease to 5.0 percent and 5.3 percent, respectively, by 2028 and then to remain at those levels.

Earnings as a Share of Compensation. Workers' total compensation consists of taxable earnings and nontaxable benefits, such as paid leave and employers' contributions to health insurance and pensions. Over the years, the share of total compensation paid in the form of earnings has slipped—from about 90 percent in 1960 to about 80 percent in 2014—mainly because the cost of health insurance has grown more quickly than has total compensation.[10]

Looking ahead, CBO expects that health care costs will continue to rise more rapidly than earnings, a trend that by itself would further decrease the proportion of compensation that workers receive as earnings. However, the Affordable Care Act imposed an excise tax on some employment-based health insurance plans that have premiums above a specific threshold. Some employers and workers will respond to that tax—which is scheduled to take effect in 2018—by shifting to less expensive plans, thereby reducing the share of compensation composed of health insurance premiums and increasing the share composed of earnings. CBO projects that the effects of the excise tax on the mix of compensation will roughly offset the effects of rising costs for health care for a few decades; after that, the effects of rising health care costs will outweigh the effects of the excise tax.[11] As a result, in CBO's benchmark, the share of compensation that workers receive as earnings is projected to remain near 80 percent through 2040. (For more about the projected effects of the excise tax, see Chapter 5; for a discussion of projected changes in the costs of health care, see Chapter 2.)

Share of Earnings Below the Taxable Maximum. Most workers are in jobs that are covered by Social Security—their earnings are subject to Social Security payroll taxes. (A small segment of the workforce, mostly people who work for some state and local governments and members of the clergy, have jobs that are excluded from such coverage.) Covered earnings are expected to be about 85 percent of all earnings in 2015. Social Security payroll taxes are levied only on covered earnings up to a maximum annual amount ($118,500 in 2015). Earnings below that amount are taxed at a combined rate of 12.4 percent, split between the employer and employee (self-employed workers pay the full amount), and no tax is paid on earnings above the cap. The taxable maximum has remained a nearly constant proportion of the average wage since the mid-1980s, but because earnings have grown more for higher earners than for others, the portion of covered earnings on which Social Security taxes are paid has fallen from 90 percent in 1983 to 81 percent now. CBO expects that unequal growth in earnings to continue at least for the next decade, and therefore the portion of earnings subject to Social Security tax is projected to fall to about 79 percent by 2025 and to decline slightly thereafter.

Inflation

CBO's economic benchmark includes projections of the rate of inflation in the prices of various categories of goods and services, as measured by the annual rate of

9. See Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), pp. 30 and 50, www.cbo.gov/publication/49892.

10. For more details, see Congressional Budget Office, *How CBO Projects Income* (July 2013), www.cbo.gov/publication/44433.

11. CBO anticipates that the effects of the excise tax on the taxable share of compensation will diminish over time, both because it expects that most people will continue to want a significant amount of health insurance and because the Affordable Care Act set minimum amounts of coverage for health insurance plans. Therefore, the number of additional people moving to less expensive insurance plans will eventually dwindle.

change in the consumer price index for urban wage earners and clerical workers (CPI-W) and in the consumer price index for all urban consumers (CPI-U). CBO projects that inflation will average 2.3 percent over the 2015–2040 period. The projected long-term rate is similar to the average rate of inflation since 1990, a period in which growth in the CPI-U averaged 2.6 percent a year.

The annual inflation rate for all final goods and services produced in the economy, as measured by the rate of increase in the GDP deflator, is projected to average 0.4 percentage points less than the annual increase in the consumer price indexes over the long term.[12] The GDP deflator grows more slowly than the consumer price indexes because of the different methods used to calculate them and also because it is based on the prices of a different set of goods and services.

Interest Rates

CBO's economic benchmark includes projections of various interest rates that the federal government pays to borrow money, such as the rate on 10-year Treasury notes, the average rate on federal debt held by the public, and the average rate on holdings of the Social Security trust funds.

After considering several factors, including slower growth of the labor force, CBO expects real (inflation-adjusted) interest rates on federal borrowing to be lower in the future than they have been, on average, in the past few decades. For example, the real interest rate on 10-year Treasury notes (calculated by subtracting the rate of increase in the CPI-U from the nominal yield on those notes) averaged roughly 3.1 percent between 1990 and 2007.[13] From 2015 to 2040, that rate is projected to average 2.2 percent. But in the later years of the projection period, it is projected to be 2.3 percent.

Factors Affecting Interest Rates. Using past trends as a starting point for projecting interest rates over the long term requires analysts to make judgments about which periods to consider. Real interest rates were very low in the 1970s because of an unexpected surge in inflation, and those rates were quite high in the 1980s as inflation declined unexpectedly rapidly.[14] Interest rates also fell sharply during the financial crisis and recession that began in 2007. To avoid using those possibly less representative periods, CBO examined average interest rates and their determinants between 1990 and 2007 and then considered how different those determinants might be over the long term.

In CBO's assessment, the following factors will probably reduce interest rates on government securities relative to their 1990–2007 average:

- The labor force is projected to grow much more slowly in the future than it has for the past few decades. If everything else remains equal, slower growth in the labor force will raise the amount of capital per worker in the long term, reducing the return on capital and therefore also reducing the return on alternative investments, such as government bonds.[15]

- The share of total income received by high-income households is expected to remain larger in the future than it has been during the past few decades. Higher-income households tend to save a greater proportion of income, so that the difference in the distribution of income will increase the total amount of savings available for investment (other things being equal), also increasing the amount of capital per worker.

- Total factor productivity—real output per unit of combined labor and capital services—will grow slightly more slowly in the future than it has in recent decades, CBO projects. For a given rate of investment, lower productivity growth reduces both the return on capital and interest rates (all else being equal).

12. Final goods and services include goods and services bought by consumers, those purchased for investment, and those purchased by governments, as well as net exports.

13. Farther back, the real interest rate on 10-year Treasury notes averaged 3.2 percent between 1970 and 2007 and 2.9 percent between 1953 and 2007. For comparisons of historical real rates, past rates are calculated using the CPI Research Series Using Current Methods.

14. Although real interest rates are calculated by subtracting inflation rates from nominal interest rates, inflation can still affect them. If lenders set nominal interest rates assuming that inflation will be a certain percentage and it ends up being much higher, real interest rates will be lower than lenders intended. If inflation ends up being lower than expected, the opposite will occur.

15. For more information about the relationship between the growth of the labor force and interest rates, see Congressional Budget Office, *How Slower Growth in the Labor Force Could Affect the Return on Capital* (October 2009), www.cbo.gov/publication/41325.

- The risk premium—the additional return that investors require to hold assets that are riskier than Treasury securities—will probably remain higher in the future than it was, on average, in the 1990–2007 period. Financial markets were already showing less appetite for risk in the early 2000s, so the risk premium was higher toward the end of that 18-year period than the average over the whole 1990–2007 period. In addition, CBO expects, the demand for low-risk assets will be stronger in the wake of the financial crisis, in part because of the ways in which financial institutions have responded to oversight from regulators.

At the same time, in CBO's assessment, the following factors will tend to increase interest rates on government securities relative to their 1990–2007 average:

- If current laws do not change, federal debt will be much larger as a percentage of GDP than it was before 2007. CBO's economic benchmark is built on the assumption that the ratio of debt to GDP after 2025 will remain at its 2025 value—78 percent—which is almost twice as high as the 40 percent average seen over the 1990–2007 period.[16] Higher federal debt tends to crowd out private investment in the long term, reducing the amount of capital per worker and increasing both the return on capital and interest rates.

- Net inflows of capital from other countries will be smaller as a percentage of GDP in the future than they have been, on average, in recent decades, CBO projects. In the 1990s and early to mid-2000s, rapid economic growth and high rates of saving in various nations with emerging market economies led to large flows of capital from those countries to the United States. As those nations' economies continue to grow, however, their consumption will probably increase relative to their saving—because markets for those countries' debt will develop and because average citizens will tend to receive more of the gains from economic growth—and their demand for domestic investment will rise. That combination of changes will reduce capital flows to the United States, decreasing domestic investment and the amount of capital per worker and increasing rates of return. (Those developments are consistent with CBO's projection that the United States' trade deficit, the gap between its imports and its exports, will be narrower in the future as a percentage of GDP than it has been for the past few decades.)

- The capital share of income—the percentage of total income that is paid to owners of capital—which has been on an upward trend for the past few decades, will remain higher than its average of recent decades, CBO projects. Although it is expected to decline somewhat over the next decade from its current, historically high level, the factors that appear to have contributed to its rise (such as technological change and globalization) are likely to persist, keeping it above the historical average. A larger share of income accruing to owners of capital will directly boost the return on capital and thus interest rates, in CBO's estimation.

- The retirement of the baby-boom generation and slower growth of the labor force will reduce the number of workers in their prime saving years relative to the number of older people drawing down their savings. The result will be a decrease in the total amount of savings available for investment (all else being equal), which will tend to reduce the amount of capital per worker and thereby push up interest rates. (CBO estimates that this effect will only partially offset the effect on savings of increased income inequality, leaving a net increase in savings available for investment.)

Other factors not listed here will have smaller—and largely offsetting—effects on interest rates on federal borrowing over the long term, CBO estimates.

CBO also relies on information from financial markets in projecting interest rates over the long term. For example, the current interest rate on 30-year Treasury bonds implies a forecast of interest rates on shorter-term securities 30 years into the future. Incorporating that information tends to reduce interest rates that CBO projects compared with rates implied by the analysis of factors described above.

Projections of Interest Rates. Although some of the factors mentioned above have received considerable attention from researchers, others have not. The effects on interest rates of the growth of the labor force and the amount of federal debt, for example, can be quantified

16. See Chapter 6 for a discussion of the ways that the budgetary policies that would be in place under the extended baseline would affect the economy in the long term.

using available data, theoretical models, and estimates from the research literature. But the extent to which other factors will affect interest rates is more difficult to quantify. For example, changes such as shifting preferences for high-risk rather than low-risk assets are not directly observable. And factors such as the distribution of income are observable, but models and empirical estimates offer little guidance for quantifying their effects on interest rates. Moreover, prices in financial markets do not definitively indicate investors' expectations about interest rates over the long term, in part because most of the government's outstanding debt securities have maturities that are much shorter than the 25-year period that is the focus of CBO's long-term projections.

With those considerable sources of uncertainty, CBO relied on its own economic models, the economics research literature, and other information to guide assessments of the influence of different factors on interest rates in the future. Nevertheless, its projections ultimately reflect CBO's judgment.

The estimates and assumptions that underlie the economic benchmark suggest that the inflation-adjusted interest rate on 10-year Treasury notes will be about 1 percentage point lower in the coming decades than its average of 3.1 percent for the 1990–2007 period. Therefore, CBO projects, the real interest rate on 10-year Treasury notes (adjusted for the rate of increase in the CPI-U) will rise in the next few years from its current, extraordinarily low level of 1.7 percent to average 2.2 percent over the 2015–2040 period.

The average interest rate on all federal debt held by the public tends to be a little lower than the rate on 10-year Treasury notes because interest rates are generally lower on shorter-term debt than on longer-term debt, and the average maturity of federal debt is expected to remain at less than 10 years. Thus, CBO projects, the average real interest rate on all federal debt held by the public (adjusted for the rate of increase in the CPI-U) will be 1.5 percent over the 2015–2040 period. (The average interest rate on all federal debt is projected to rise more slowly than the 10-year rate because only a portion of federal debt matures each year.) CBO generally uses the average interest rate on all federal debt as a discount rate when it calculates the present value of future streams of total federal revenues and outlays in its long-term projections, as it does in estimating the fiscal gap described in Chapter 1.[17]

The Social Security trust funds hold special-issue bonds that generally earn interest rates that are higher than the average interest rate on federal debt. Therefore, in projecting the balances in the trust funds and calculating the present value of future streams of revenues and outlays for those funds, CBO uses an interest rate that averages 2.2 percent from 2015 to 2040 and 2.3 percent in the later years of the projection.

Combining CBO's projections of average real interest rates with its projection of inflation as measured by the growth of the CPI-U produces estimates of average nominal interest rates. Over the 2015–2040 period, nominal rates are projected to average 4.5 percent on 10-year Treasury notes and 3.9 percent on all federal debt held by the public.

Output

In its economic benchmark, CBO projects that real GDP will grow fairly quickly over the next few years, reflecting a recovery in aggregate demand. Thereafter, real GDP is projected to grow at a pace that reflects increases in the capital stock, productivity, and the supply of labor.

Capital Stock. Over the next decade, growth in the nation's stock of capital will be driven by economic output, national saving, and international capital flows, CBO estimates. For simplicity, CBO projects that after 2025, the capital stock will expand at a pace that is sufficient to maintain a constant rate of return on capital. That projection is consistent with CBO's projection that the average real interest rate on all federal debt held by the public will be 2.0 percent in the long term (after 2029).

Productivity. Total factor productivity is projected to increase at an average annual rate of 1.3 percent from 2015 to 2040—a growth rate that is slightly slower than the average rate of 1.4 percent seen over the period since 1950. CBO expects productivity to grow more slowly in coming decades partly because increases in average educational attainment, which contribute to

17. The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest (known as the discount rate) that is used to translate past and future cash flows into current dollars. The lower the discount rate, the higher the present value of the future flows.

workers' skills, have slowed since 1980.[18] That effect will be partly offset, however, by the aging of the labor force over the next few decades, as better health and longer life spans cause people to stay in the workforce longer than previous cohorts did. An older workforce will be composed of more highly educated workers, because workers with higher educational attainment tend to remain in the labor force longer.

Another factor that is projected to slow the growth of total factor productivity is a lower projected amount of federal investment. Under the assumptions used for these projections, the government's nondefense discretionary spending is projected to decline over the next decade to a much smaller percentage of GDP than it has averaged in the past. Since the 1980s, about half of such spending has consisted of federal investment in physical capital (such as roads), education and training, and research and development.[19] Those forms of investment contribute to total factor productivity, CBO estimates, so as the economy adjusts to smaller amounts of federal investment (consistent with less nondefense discretionary spending as a percentage of GDP), the growth rate of total factor productivity is projected to be dampened slightly.

Supply of Labor. Total hours worked will increase at an average annual rate of 0.4 percent between 2015 and 2040, CBO estimates, on the basis of the projections of the size of the labor force, average hours worked, and unemployment.

The growth rates projected for the labor supply, the capital stock, and total factor productivity are consistent with CBO's projection of the average growth of labor productivity (real output per hour worked): 1.8 percent annually over the 2015–2040 period. Trends in prices, in the growth of nonwage compensation (such as employment-based health insurance), and in average hours worked imply that real earnings per worker will grow more slowly than labor productivity—by an average of 1.6 percent a year over the 2015–2025 period and by 1.4 percent a year over the 2015–2040 period.[20]

Real GDP. CBO's projection of the growth rate of real GDP—an annual average of 2.2 percent over the 2015–2040 period—is much slower than the rate of economic growth seen in the past few decades (3.1 percent), primarily because of the slowdown that CBO anticipates in the growth of the labor force. Moreover, as the fraction of the population that is of working age shrinks, per capita real GDP is expected to increase more slowly than in the past—at an average annual rate of 1.5 percent over the 2015–2040 period, compared with 2.1 percent during the 40 years before the start of the 2007–2009 recession.

Just as the unemployment rate is projected to be about one-quarter of a percentage point higher than the natural rate of unemployment in the long term, total GDP is projected to be one-half of a percent lower than its potential (maximum sustainable) amount. That projection is based on CBO's estimate that actual GDP has been roughly that much lower than potential GDP, on average, since the end of World War II and has been lower than potential GDP, on average, in each of the past five business cycles. Those outcomes reflect the fact that actual output has fallen short of CBO's estimate of potential output during and after economic downturns to

18. CBO calculates total factor productivity as the portion of growth in output that is not accounted for by growth in hours worked and in capital services. Therefore, when an increase in workers' skills makes each hour of work more productive, CBO measures that effect as an increase in total factor productivity. Various researchers have examined trends in workers' skills and the effect of those trends on future economic growth; that research has not reached a consensus about the size of the effect. For example, see David M. Byrne, Stephen D. Oliner, and Daniel E. Sichel, *Is the Information Technology Revolution Over?* Finance and Economics Discussion Series Paper 2013-36 (Board of Governors of the Federal Reserve System, March 2013), http://go.usa.gov/XXNR; John Fernald, *Productivity and Potential Output Before, During, and After the Great Recession*, Working Paper 2012-18 (Federal Reserve Bank of San Francisco, September 2012), http://tinyurl.com/pk8b666 (PDF, 480 MB); Robert J. Gordon, *Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds*, Policy Insight 63 (Center for Economic Policy Research, September 2012), http://tinyurl.com/p57pzt5; and Claudia Goldin and Lawrence F. Katz, *The Race Between Education and Technology: The Evolution of U.S. Educational Wage Differentials, 1890 to 2005*, Working Paper 12984 (National Bureau of Economic Research, March 2007), www.nber.org/papers/w12984.

19. See Congressional Budget Office, *Federal Investment* (December 2013), www.cbo.gov/publication/44974.

20. Trends in prices are important in projecting those measures because real earnings per worker are calculated here using the CPI-U, and real output per hour is calculated using the GDP deflator. CBO projects that the CPI-U will grow 0.4 percentage points faster per year than will the GDP deflator over the long term.

a larger extent and for longer periods than actual output has exceeded potential output during economic booms.

If the real interest rates were adjusted to reflect the rate of increase in the GDP price index instead of the CPI-U, the real interest rate on all federal debt held by the public over the next 25 years would average 1.9 percent. Thus, during the next 25 years as a whole, the growth rate of GDP—at 2.2 percent—is projected to exceed the average real interest rate on federal debt. (Beyond 2025, the average interest rate on federal debt is projected to be only slightly higher than the growth rate of GDP.) When the interest rate is about the same as the growth rate of GDP, the ratio of debt to GDP would remain steady over time if the federal budget, excluding interest payments, was in balance.

Other Trends

In addition to projecting the demographic and economic trends that underlie the economic benchmark, CBO also projects other trends as it develops its long-term budget projections. CBO has produced its own projection of the rate at which people will qualify for Social Security's Disability Insurance program in coming decades as well as projections of enrollment in Medicaid.

Disability

One variable that affects the federal budget is the rate of disability incidence, defined here as the rate at which people will become eligible for Social Security's Disability Insurance program. CBO projects that an average of 5.6 per thousand people who have worked long enough to qualify for disability benefits, but who are not yet receiving them, will qualify for the program each year after 2025. (That projection accounts for changes in the age and sex makeup of the population, relative to its composition in 2000.) CBO's estimate is based on analysis of past trends and on recommendations by the Social Security Technical Panel on Assumptions and Methods.[21]

21. See Congressional Budget Office, *The 2013 Long-Term Budget Outlook* (September 2013), p. 17, www.cbo.gov/publication/44521.

Medicaid Enrollment

To implement the formulaic approach it used to project Medicaid enrollment over the long term, CBO adopted the assumption that the number of elderly and disabled Medicaid beneficiaries would grow with the overall population, with adjustments for changes in the age distribution of the population. The agency also projected that the number of beneficiaries who are children and nondisabled adults would increase more slowly than the population overall, reflecting the assumption that growth in earnings will reduce the number of people whose income is below the most common threshold for eligibility for those groups—in many states that threshold is 138 percent of the federal poverty guidelines. Because earnings are projected to grow faster than prices, on average, and because poverty guidelines are indexed to prices, over time fewer people are projected to have income below the eligibility threshold in their state.

In the past, many states have used Medicaid's flexible program rules to increase or decrease spending in various ways. Under current law, for example, states with income eligibility criteria below 138 percent of the federal poverty guidelines for nonelderly adults can expand coverage for that group. They also can increase enrollment in the program by adopting administrative policies and procedures that simplify the enrollment process and expand program benefits by covering more optional services. (Such mechanisms also may be used to shrink program spending when states are facing fiscal constraints.) More generally, states can apply for waivers of Medicaid program requirements to enable them to change program eligibility criteria and covered benefits in other ways. (The Secretary of Health and Human Services has the authority to waive some Medicaid program requirements through certain research and demonstration projects or through consolidated State Innovation Waivers that include Medicaid-related components.) For these projections, therefore, CBO assumed that, over time, states would make changes in their Medicaid programs that offset roughly half of the effect of earnings growth on eligibility. As a result, the total number of people enrolled in Medicaid is projected to be roughly constant after 2035.

APPENDIX

B

Changes in CBO's Long-Term Projections Since July 2014

The long-term projections of federal revenues and outlays presented in this report are generally similar to the ones that the Congressional Budget Office published in 2014 despite certain changes in law, revisions to some of the agency's assumptions and methods, and the availability of more recent data.[1] Without macroeconomic feedback taken into account, debt is projected to rise from about 74 percent of gross domestic product (GDP) this year to 101 percent in 2039 under the extended baseline, whereas last year, CBO projected that debt would rise to 106 percent of GDP in 2039 (see Figure B-1). The difference stems primarily from a change in CBO's projection of the interest rates on federal debt. Under the extended alternative fiscal scenario with macroeconomic feedback, debt is projected to rise to 166 percent of GDP in 2039; last year, that figure was 183 percent.

Changes in Methods Underlying the Extended Baseline

Since last year, CBO has changed its projections of economic output and interest rates in the long term, has modified its expectations about the share of payroll that will be subject to Social Security's payroll tax, and has revised its projections of enrollment in Medicaid. Those changes, taken together, result in a projected path for debt that is slightly lower than the one last year.

Lower GDP

CBO's current projection of nominal GDP in 2039 is about 3 percent smaller than its estimate last year. Mostly, that change occurred because CBO lowered its projection of real (inflation-adjusted) GDP in the 10-year economic projections that it published in January 2015.[2] That revision derived mostly from a reduced estimate of total factor productivity (that is, the efficiency with which labor and capital are used to produce goods and services) in the first 10 years of the projection period. Because the projected growth rate of real GDP after 2025 is about the same this year as it was last year, that difference persists. CBO also reduced its projection of the rate of inflation by 0.1 percentage point.

Lower Interest Rates

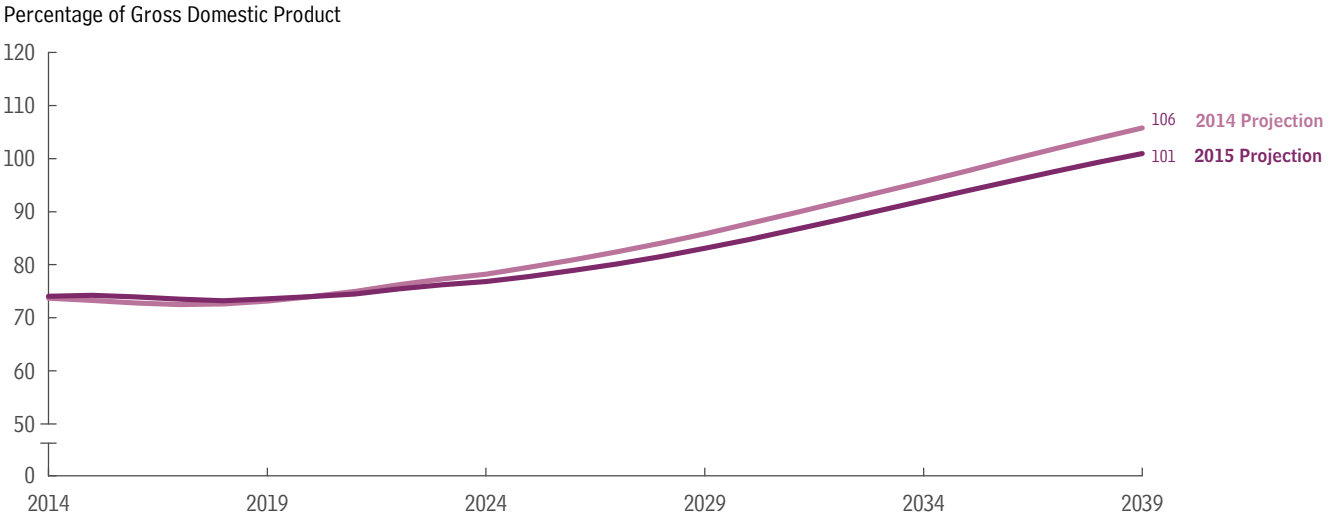
In last year's long-term analysis, the real interest rate on 10-year Treasury notes—calculated by subtracting the rate of increase in the consumer price index from the nominal yield on such notes—was projected to be 2.5 percent in the long term. CBO now projects that rate to be 2.3 percent. Similarly, last year, the projected average real interest rate on government debt was 2.2 percent, but the agency now expects it to be 2.0 percent (thus lower by the same amount). Primarily, CBO's revision to projected interest rates results from incorporating financial market participants' expectations for low interest rates well into the future. Gleaning market participants' predicted path of interest rates over the long term from prices of financial instruments is subject to enormous uncertainty because current interest rates are also influenced by transitory liquidity and risk factors that are difficult to disentangle from expectations about future interest rates. Nonetheless, a review of the results from the available models and evidence linking current rates to future rates suggests that participants in financial markets expect low interest rates well into the future, and the paths that they anticipate have fallen notably over the past year.

1. See Congressional Budget Office, *The 2014 Long-Term Budget Outlook* (July 2014), www.cbo.gov/publication/45471.

2. For further discussion, see Congressional Budget Office, *The Budget and Economic Outlook: 2015 to 2025* (January 2015), pp. 52–55, www.cbo.gov/publication/49892.

Figure B-1.

Comparison of CBO's 2014 and 2015 Projections of Federal Debt Held by the Public Under the Extended Baseline



Source: Congressional Budget Office.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period. These projections do not reflect the macroeconomic effects of the policies underlying the extended baseline. (For an analysis of those effects and their impact on debt, see Chapter 6.)

A Lower Share of Earnings That Are Subject to the Social Security Payroll Tax

Since last year, a methodological improvement has led CBO to lower its projection of the share of earnings that are subject to the Social Security payroll tax, from an average of 82 percent to an average of 78 percent for the 2025–2039 period. Specifically, the agency has better aligned its methods for projecting revenues and its methods for projecting the earnings of workers covered by Social Security. This year, the estimated share of earnings below the taxable maximum (reported in Appendix A) for years beyond the next decade incorporates the increase in earnings inequality that underlies CBO's baseline projection of revenues over the next decade.

Lower Enrollment in Medicaid

This year, CBO has revised an assumption that affects the projected enrollment in Medicaid. Specifically, CBO now anticipates that states will take fewer actions that would maintain Medicaid spending over the long term (through such means as obtaining program waivers to expand eligibility to new population groups, enhanced outreach efforts to increase enrollment of eligible people, and expansion of covered benefits) as rising earnings over time reduce the number of people who would be eligible for the program as it is currently implemented. Last year, CBO assumed that states' actions would offset all of the effect of earnings growth on eligibility; this year, CBO assumes that those actions will offset only half of that effect. The change reduces the agency's projection of the number of Medicaid beneficiaries by an increasing amount over time and by a total of 4 percent after 25 years.

Changes in Spending and Revenues Under the Extended Baseline

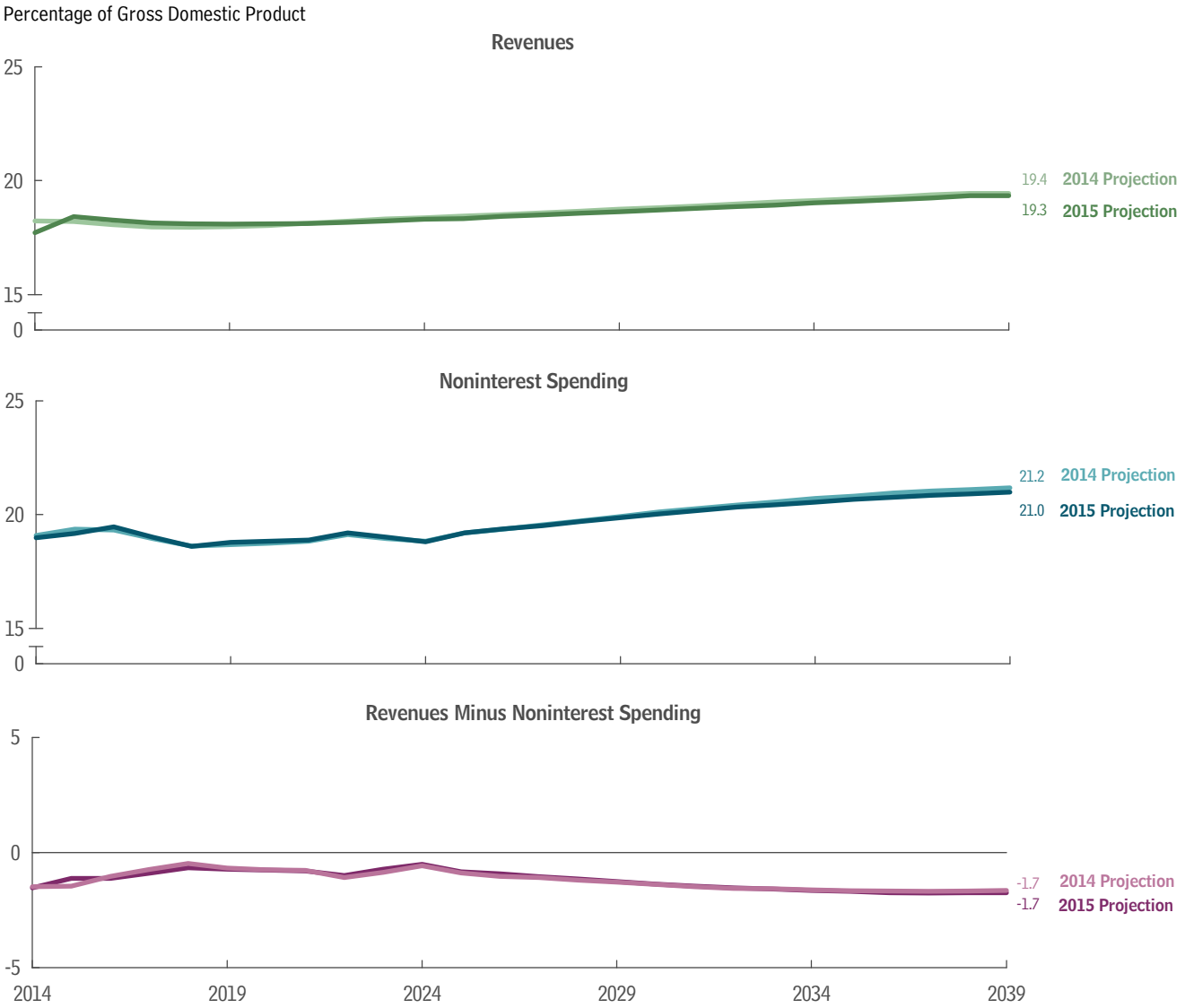
In CBO's extended baseline, noninterest spending exceeds revenues throughout the next quarter century; the shortfall is similar to that projected in 2014 (see the bottom panel of Figure B-2). Interest costs on the debt are lower than last year because of lower interest rates.

Revenues

Federal revenues are projected to be slightly lower relative to GDP in coming decades than the amounts CBO projected in 2014 (see the top panel of Figure B-2). By 2025, revenues are projected to be 18.3 percent of GDP, whereas last year, the estimate was 18.4 percent. That difference is estimated to persist in subsequent years,

Figure B-2.

Comparison of CBO's 2014 and 2015 Budget Projections Under the Extended Baseline



Source: Congressional Budget Office.

Note: The extended baseline generally reflects current law, following CBO's 10-year baseline budget projections through 2025 and then extending the baseline concept for the rest of the long-term projection period. These projections do not reflect the macroeconomic effects of the policies underlying the extended baseline. (For an analysis of those effects and their impact on debt, see Chapter 6.)

reflecting slightly slower growth in realizations of capital gains that are taxable and other factors. By 2039, revenues are now projected to equal 19.3 percent of GDP, or 0.1 percentage point lower than the 19.4 percent estimate last year.

Noninterest Spending

Noninterest spending is projected to be about the same relative to GDP as what CBO projected in 2014 (see the middle panel of Figure B-2). In particular, noninterest spending is projected to be slightly higher than last year's estimates for about the first decade of the projection period and then to fall below last year's estimates beginning in 2027. In 2039, it is projected to be 21.0 percent of GDP, or 0.2 percentage points lower than last year's estimate. Federal health care spending is projected to be about the same, Social Security spending lower, and other noninterest spending about the same relative to GDP compared with the amounts CBO projected last year.

Federal Health Care Spending. CBO's current long-term projection of federal spending on major health care programs is largely the same as last year's—though the growth rate of Medicare spending is faster than that projected last year, and the growth rate of the spending for Medicaid and exchange subsidies is much slower. Spending for Medicare net of offsetting receipts is now estimated to amount to 5.0 percent of GDP in 2039, or about 0.4 percentage points higher than what CBO estimated last year. That difference reflects higher projected spending for the program in the first 10 years and slightly higher estimates of the rate of excess cost growth (or growth in spending per beneficiary beyond the growth in potential output per capita) through the end of the projection period. In total, federal spending for Medicaid, the Children's Health Insurance Program, and the exchange subsidies is projected to amount to 2.8 percent of GDP in 2039, or 0.5 percentage points lower than the sum projected last year; that difference reflects less spending for Medicaid and exchange subsidies in the first 10 years, lower average excess cost growth, and lower enrollment in Medicaid after 2025.

Social Security Spending. The current 25-year projection of Social Security spending is lower as a percentage of GDP than last year's, largely because CBO projects that a smaller portion of earnings would be subject to the Social Security tax. The program's benefits are based on taxable earnings, so that a reduction in the share of taxable earnings, which would yield lower tax revenues, would also result in smaller benefits in the future. The 75-year actuarial deficit currently projected for Social Security, 4.4 percent of taxable payroll, is greater than the 4.0 percent estimated last year (see Table 3-1 on page 54). Revised projections of economic factors, primarily lower projected interest rates, account for about half of the 0.4 percentage-point increase, and revised projections of taxable payroll account for the other half. Smaller changes—arising from updated data, the effects of the one-year shift in the projection period, and estimating changes—largely offset one another.

Other Noninterest Spending. This year, total federal spending as a share of GDP on everything other than the major health care programs, Social Security, and net interest is projected to be similar throughout the next 25 years to the share CBO projected last year.

Interest Costs

Although CBO's current projection of debt held by the public expressed as a share of GDP is only slightly lower than the agency's estimate last year, interest outlays are significantly lower in this year's analysis because of lower projected interest rates and a lower projected cumulative deficit (see Figure B-1 on page 122). In this year's report, interest spending in 2039 is projected to equal 4.2 percent of GDP, whereas last year, that figure was 4.7 percent.

The Fiscal Gap

The magnitude of the changes in noninterest spending or revenues that would be needed to make federal debt equal its current percentage of GDP at a specific date in the future is often called the fiscal gap.[3] The estimated fiscal gap is slightly smaller this year than last year, largely because CBO projects lower interest rates. All else held equal, a lower interest rate leads to a smaller fiscal gap. For the 2016–2040 period, CBO estimates that cuts in noninterest spending or increases in revenues equal to 1.1 percent of GDP in each year through 2040 would be required to have debt that year equal the same percentage of GDP that it constitutes today; last year, for the 2015–2039 period, CBO estimated that changes equal to 1.2 percent of GDP would be required. By itself, the reduction in projected interest rates on federal debt would have brought the gap down by 0.3 percent of GDP, but changes in projected GDP and the shift in the projection period offset most of that effect.

Changes in Assumptions Incorporated in the Extended Alternative Fiscal Scenario

Under its extended alternative fiscal scenario last year, CBO assumed that Medicare's payment rates for services provided by physicians would be held constant at the 2014 level rather than being cut by about a quarter early in 2015, as was scheduled under current law and therefore reflected in the extended baseline. The Medicare

3. The fiscal gap equals the present value of noninterest outlays and other means of financing minus the present value of revenues over the projected period with adjustments to make the ratio of federal debt to GDP at the end of the period equal to the current ratio. Specifically, current debt is added to the present value of outlays and other means of financing, and the present value of projected debt at the end of the period (which equals GDP in the last year of the period multiplied by the ratio of debt to GDP at the end of 2015) is added to the present value of revenues.

Access and CHIP Reauthorization Act of 2015 set new rules for updating those payment rates starting in April 2015. So for that element, the extended alternative fiscal scenario and the extended baseline are now the same.

Changes in Estimated Economic Effects of Various Fiscal Policies

In this year's long-term analysis, the estimated effects on gross national product of fiscal policies that would increase or decrease future debt relative to that in the extended baseline are smaller than those in last year's analysis. Those reductions stem primarily from two factors. First, CBO reduced its projection of interest rates, so a given change in the deficit in one year cumulates to a smaller change in debt in future years and therefore has less effect on output. Second, under the extended alternative fiscal scenario, deficits excluding interest payments differ from those under the extended baseline by slightly less than they did in last year's analysis and, again, affect output less.

Changes in Methods for Analyzing Uncertainty

CBO changed its approach to analyzing the long-term budgetary effects of simultaneous changes in multiple economic factors—namely, mortality rates, growth of total factor productivity, interest rates on federal debt, and the growth rate of federal spending per beneficiary for Medicare and Medicaid (as discussed in Chapter 7). An occasion when one of those factors is at the end of the range used in the analysis of uncertainty is more likely than having all four of the factors at the end of their ranges simultaneously; so last year, adopting a rough approximation for the latter occasions, CBO narrowed those ranges by half. This year, CBO undertook more detailed analysis of the simultaneous movement in the four factors since 1967 and concluded that slightly wider ranges (60 percent as wide as the ranges applicable to individual factors in isolation) more accurately reflect the historical data.

Changes in the Presentation of Projections Beyond 25 Years

In the past, CBO included projections for years 25 years in the future in an appendix to the report, but after reassessing the considerable uncertainty surrounding projections of deficits and debt that far into the future, the agency decided to post them only as supplemental data on its website (www.cbo.gov/publication/50250).

Changes in the Presentation of Summarized Financial Measures for the Hospital Insurance Trust Fund

CBO is no longer reporting summarized financial measures, such as actuarial balances over 75 years, for Medicare's Hospital Insurance (Part A) trust fund. After reassessing those measures, the agency concluded that they do not provide meaningful information given the formulaic methodology CBO uses to project Medicare spending over the long term. Changes over time in the nature of health care and in the system for delivering health care might affect Part A and the other portions of Medicare differently, but the summarized financial measures for the Hospital Insurance trust fund that CBO previously provided did not take that possibility into account. Because CBO has yet to develop the analytic capability to project such developments, it concluded that projections for just Part A of the Medicare program were not useful.

List of Tables and Figures

Tables

S-1. Key Projections Under CBO's Extended Baseline 3

1-1. Assumptions About Policies for Spending and Revenues Underlying CBO's Extended Baseline 20

2-1. Average Annual Rate of Excess Cost Growth in Spending for Health Care 36

3-1. Financial Measures for Social Security Under CBO's Extended Baseline 54

4-1. Other Federal Noninterest Spending Projected Under CBO's Baseline 61

5-1. Sources of Growth in Total Revenues as a Percentage of GDP Between 2015 and 2040 Under CBO's Extended Baseline 66

5-2. Estimates of Effective Marginal Federal Tax Rates Under CBO's Extended Baseline 69

5-3. Individual Income and Payroll Taxes as a Share of Total Income Under CBO's Extended Baseline 71

6-1. Long-Run Effects on the Federal Budget of the Fiscal Policies in Various Budget Scenarios 81

6-2. Long-Run Effects on Real GNP of the Fiscal Policies in Various Budget Scenarios 85

6-3. Short-Run Effects of the Fiscal Policies in Various Budget Scenarios 88

A-1. Values for Demographic and Economic Variables Underlying CBO's Long-Term Budget Projections 112

Figures

S-1. The Size of Policy Changes Needed Over 25 Years to Make Federal Debt Meet Two Possible Goals in 2040 7

1-1. Federal Debt Held by the Public 11

1-2. Federal Debt, Spending, and Revenues 12

1-3. The Magnitude and Timing of Policy Changes Needed to Make Federal Debt Meet Two Goals 15

1-4. Spending and Revenues Under CBO's Extended Baseline, Compared With Past Averages 22

2-1. Distribution of Spending for Health Care, 2013 29

2-2. Federal Spending on the Major Health Care Programs, by Category 43

Figures (Continued)

2-3. Number of People Age 65 or Older, by Age Group 45

2-4. Medicare's Dedicated Taxes and Offsetting Receipts as a Share of Medicare Spending 46

2-5. Mean Lifetime Medicare Payroll Taxes and Benefits Relative to Lifetime Earnings, by Decade of Birth 47

3-1. Spending for Social Security 50

3-2. Changes in the Population, by Age Group 52

3-3. Mean Lifetime Scheduled Social Security Taxes and Benefits Relative to Lifetime Earnings 56

4-1. Other Federal Noninterest Spending 58

4-2. Other Federal Noninterest Spending, by Category, 1965 to 2014 59

5-1. Total Revenues 64

5-2. Revenues, by Source, 1965 to 2014 65

6-1. Effects in 2040 of the Fiscal Policies in CBO's Extended Baseline, Extended Alternative Fiscal Scenario, and Illustrative Scenarios With Smaller Deficits 75

6-2. Effects of the Fiscal Policies in CBO's Extended Baseline 82

6-3. Long-Run Effects of the Fiscal Policies in CBO's Extended Baseline, Extended Alternative Fiscal Scenario, and Illustrative Scenarios With Smaller Deficits 86

7-1. The 25-Year Averages and Ranges CBO Used for Four Factors Affecting Budgetary Outcomes 94

7-2. Federal Debt Given Different Rates of Mortality Decline 96

7-3. Federal Debt Given Different Rates of Productivity Growth 98

7-4. Federal Debt Given Different Interest Rates 100

7-5. Federal Debt Given Different Rates of Growth of Federal Health Care Spending 102

7-6. Federal Debt Given Different Rates of Mortality Decline, Productivity Growth, Interest, and Growth of Federal Health Care Spending 103

B-1. Comparison of CBO's 2014 and 2015 Projections of Federal Debt Held by the Public Under the Extended Baseline 122

B-2. Comparison of CBO's 2014 and 2015 Budget Projections Under the Extended Baseline 123

About This Document

This volume is one of a series of reports on the state of the budget and the economy that the Congressional Budget Office issues each year. In accordance with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Prepared with guidance from Linda Bilheimer, Wendy Edelberg, Benjamin Page, Julie Topoleski, and David Weiner, the report represents the work of many analysts at CBO. Julie Topoleski wrote the summary. Michael Simpson wrote Chapter 1. Geena Kim, Lyle Nelson, and Xiaotong Niu wrote Chapter 2. Charles Pineles-Mark wrote Chapter 3. Geena Kim wrote Chapter 4. Joshua Shakin wrote Chapter 5. Devrim Demirel wrote Chapter 6. Jonathan Huntley wrote Chapter 7. Geena Kim wrote Appendix A. Xiaotong Niu and Michael Simpson wrote Appendix B. Leigh Angres, Christina Hawley Anthony, Jessica Banthin, Elizabeth Bass, Tom Bradley, Chad Chirico, Kent Christensen, Sheila Dacey, Terry Dinan, Philip Ellis, Kathleen FitzGerald, Matthew Goldberg, Holly Harvey, Jeffrey Holland, Kim Kowalewski, Sarah Masi, Eamon Molloy, Damien Moore, Andrea Noda, Sam Papenfuss, Allison Percy, Kevin Perese, Emily Stern, Robert Stewart, and Dwayne Wright made valuable contributions.

Michael Simpson developed the long-term budget simulations, with assistance from Geena Kim, Xiaotong Niu, and Charles Pineles-Mark. Devrim Demirel, Jonathan Huntley, Leah Loversky, and Frank Russek prepared the macroeconomic simulations. David Weiner coordinated the revenue simulations, which were prepared by Paul Burnham, Ed Harris, Shannon Mok, Kurt Seibert, Joshua Shakin, Logan Timmerhoff, and Marvin Ward. Stephanie Hugie Barello, Leah Loversky, Kyle Redfield, Logan Timmerhoff, Zoe Williams, and Shiqi Zheng fact-checked the report. Also, the report builds on the 10-year projections of the economy and budget that CBO released earlier this year and that reflected the contributions of more than 100 people at the agency.

Jeffrey Kling and Robert Sunshine reviewed the report. Christine Bogusz, Kate Kelly, Loretta Lettner, Bo Peery, Benjamin Plotinsky, John Skeen, and Gabe Waggoner edited the report, and Maureen Costantino and Jeanine Rees prepared it for publication. Geena Kim, Xiaotong Niu, Charles Pineles-Mark, and Michael Simpson prepared the supplemental data, with assistance from Jeanine Rees.

The report is available on CBO's website (www.cbo.gov/publication/50250).

Keith Hall
Director

June 2015