

The Budget Outlook for the Next 30 Years

Overview

By the end of this year, federal debt held by the public is projected to equal 78 percent of gross domestic product (GDP)—its highest level since shortly after World War II. If current laws generally remained unchanged, growing budget deficits would boost federal debt drastically over the next 30 years, the Congressional Budget Office projects. Debt would reach 92 percent of GDP by the end of the next decade and 144 percent by 2049 (see Table 1-1). That level of debt would be the highest in the nation's history by far, and it would be on track to increase even more. Although long-term projections are very uncertain, in CBO's assessment, even if a key set of factors, including productivity growth and interest rates, were favorable for the fiscal situation over the next three decades, debt as a share of GDP would most likely rise if current laws remained unchanged. If lawmakers changed current laws to maintain certain policies now in place—most significantly, if they prevented a cut in discretionary spending in 2020 and an increase in individual income taxes in 2026—the result would be even larger increases in debt (see Chapter 2). The prospect of such high and rising debt poses substantial risks for the nation and presents policymakers with significant challenges.

What CBO's Projections Represent

The long-term projections of federal spending, revenues, deficits, and debt in this report are consistent with the 10-year baseline budget projections that CBO published in May 2019 and the economic forecast that the agency published in January 2019.¹ They extend most of the concepts underlying those 10-year budget projections for an additional 20 years, and they reflect the macroeconomic effects of projected fiscal policy over that 30-year period. Together, those long-term projections constitute the agency's *extended baseline* projections.

CBO's 10-year and extended baseline projections are not predictions of budgetary outcomes. Rather, they

represent the agency's best assessment of future spending, revenues, deficits, and debt under the assumption that current laws generally remain unchanged. In doing so, they give lawmakers a point of comparison from which to measure the effects of proposed legislation.

How Federal Debt Has Grown in Recent Years

Debt held by the public is the amount that the federal government has borrowed in financial markets by issuing Treasury securities to pay for its operations and activities.² Debt as a percentage of GDP is a useful measure for comparing amounts of debt in different years because it removes the effects of changes in prices, population, output, and income—all of which affect the nation's ability to finance the debt. That measure places the effects of potential adjustments to the budget within the context of the nation's resources. Examining whether debt as a percentage of GDP is increasing is therefore a simple and meaningful way to assess the budget's sustainability.

Federal debt held by the public has ballooned over the past decade. At the end of 2007, federal debt stood at 35 percent of GDP, but deficits arising from the 2007–2009 recession and subsequent policies caused debt to grow sizably in relation to the economy over the next five years. By the end of 2012, debt as a share of GDP had doubled, reaching 70 percent. The upward trajectory has generally continued since then, and debt is projected to be 78 percent of GDP by the end of this year—a very high level by historical standards. (Over the past

1. See Congressional Budget Office, *Updated Budget Projections: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151, and *The Budget and Economic Outlook: 2019 to 2029* (January 2019), www.cbo.gov/publication/54918.

2. 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, thus reducing economic output and income. By contrast, federal debt held by trust funds and other government accounts represents internal transactions of the government and does not directly affect financial markets. (Together, that debt and debt held by the public 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 fluctuations in the government's cash balance as well as the cash flows of the financing accounts used for federal credit programs.

Table 1-1.

CBO's Extended Baseline Projections

Percentage of Gross Domestic Product

	2019	Projected Annual Average		
		2020–2029	2030–2039	2040–2049
Revenues				
Individual income taxes	8.2	8.9	9.9	10.4
Payroll taxes	5.8	5.9	5.9	5.9
Corporate income taxes	1.2	1.4	1.3	1.3
Other ^a	1.3	1.3	1.4	1.6
Total Revenues	16.5	17.5	18.5	19.2
Outlays				
Mandatory				
Social Security	4.9	5.5	6.2	6.2
Major health care programs ^b	5.2	6.0	7.5	8.8
Other	2.6	2.4	2.2	2.1
Subtotal	12.7	13.9	15.9	17.1
Discretionary	6.3	5.3	5.0	5.0
Net interest	1.8	2.6	3.5	4.9
Total Outlays	20.7	21.9	24.3	27.1
Deficit	-4.2	-4.3	-5.8	-7.9
Debt Held by the Public at the End of the Period	78	92	113	144
Memorandum:				
Social Security				
Revenues ^c	4.4	4.5	4.5	4.4
Outlays ^d	4.9	5.5	6.2	6.2
Contribution to the Federal Deficit ^e	-0.6	-1.1	-1.7	-1.8
Medicare				
Revenues ^c	1.4	1.5	1.6	1.7
Outlays ^d	3.6	4.4	5.8	7.0
Offsetting receipts	-0.6	-0.8	-1.0	-1.3
Contribution to the Federal Deficit ^e	-1.5	-2.1	-3.2	-4.1
Gross Domestic Product at the End of the Period (Trillions of dollars)	21.3	31.0	45.2	66.5

Source: Congressional Budget Office.

This table satisfies a requirement specified in section 3111 of S. Con. Res. 11, the Concurrent Resolution on the Budget for Fiscal Year 2016.

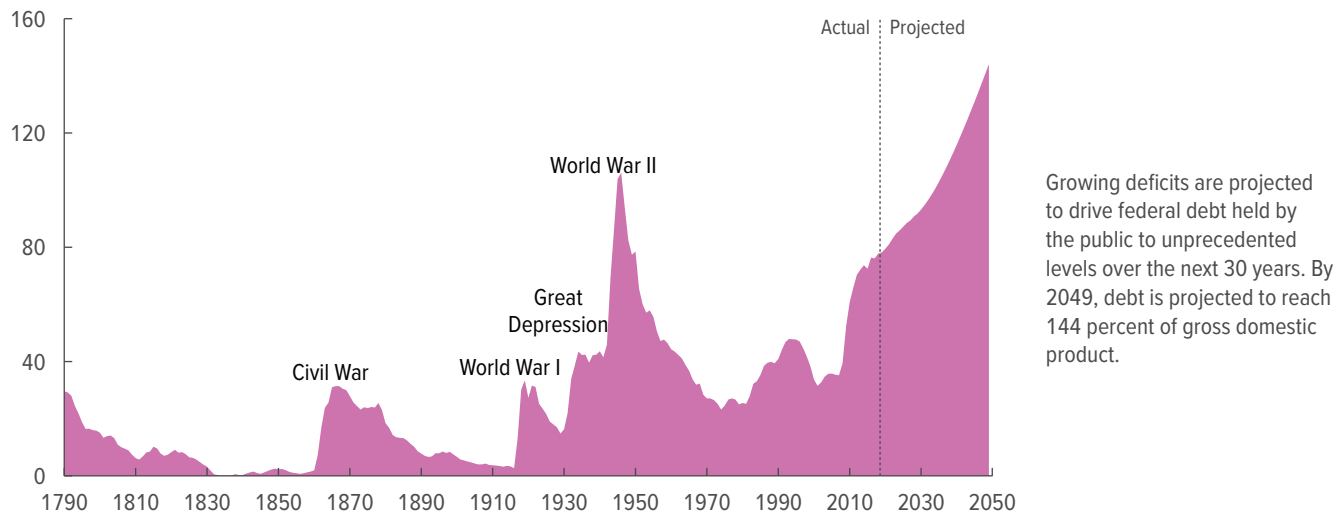
The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those projections for the rest of the long-term projection period.

- Consists of excise taxes, remittances to the Treasury from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.
- Consists of spending for Medicare (net of premiums and other offsetting receipts), Medicaid, and the Children's Health Insurance Program, as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.
- Includes all payroll taxes for the program other than those paid by the federal government on behalf of its employees (which are intragovernmental transactions). Also includes income taxes paid on Social Security benefits, which are credited to the trust funds. Excludes interest credited to the trust funds.
- Excludes discretionary outlays related to administration of the program.
- The contribution to the deficit shown here differs from the change in the trust fund balance for the program because it excludes intragovernmental transactions, interest earned on balances, and outlays related to administration of the program.

Figure 1-1.

Federal Debt Held by the Public Since 1790

Percentage of Gross Domestic Product



Growing deficits are projected to drive federal debt held by the public to unprecedented levels over the next 30 years. By 2049, debt is projected to reach 144 percent of gross domestic product.

Source: Congressional Budget Office.

50 years, such debt has averaged 42 percent of GDP.) It has exceeded 70 percent of GDP during only one other period in U.S. history—from 1944 to 1950 following the surge in federal spending that occurred during World War II (see Figure 1-1).

Why Debt Is Projected to Grow

The total amount of debt is projected to increase each year as the government runs budget deficits. If current laws generally remained unchanged, federal budget deficits would grow substantially over the next 30 years (see Figure 1-2). In CBO's projections, that increase occurs because mandatory spending—in particular, outlays for Social Security and the major health care programs—and interest payments on federal debt grow faster than revenues (see Figure 1-3 on page 10).

2019 to 2029. Deficits (adjusted to exclude the effects of shifts in the timing of certain payments) are projected to increase from 4.2 percent of GDP in 2019 to 4.5 percent of GDP by 2029—a level that has been exceeded in only eight years since 1946.³ (Four of those years followed

the 2007–2009 recession, and the other four followed a double-dip recession in the early 1980s.) From 2019 to 2029, projected deficits average 4.3 percent of GDP—nearly one-and-a-half times the average over the past 50 years.

In CBO's projections, mandatory spending increases from 12.7 percent of GDP in 2019 to 14.9 percent in 2029. In contrast, discretionary spending decreases in relation to the size of the economy over that period—from 6.3 percent of GDP in 2019 to 5.0 percent in 2029. Revenues increase from 16.5 percent of GDP in 2019 to 18.3 percent in 2029. (A large portion of that increase is attributable to the expiration of nearly all of the individual income tax provisions of the 2017 tax act, Public Law 115-97.)

As a result of those changes in spending and revenues, primary deficits (deficits excluding net spending for interest) shrink in CBO's projections, falling from 2.4 percent of GDP in 2019 to 1.6 percent in 2029. But growing debt and rising average interest rates on federal

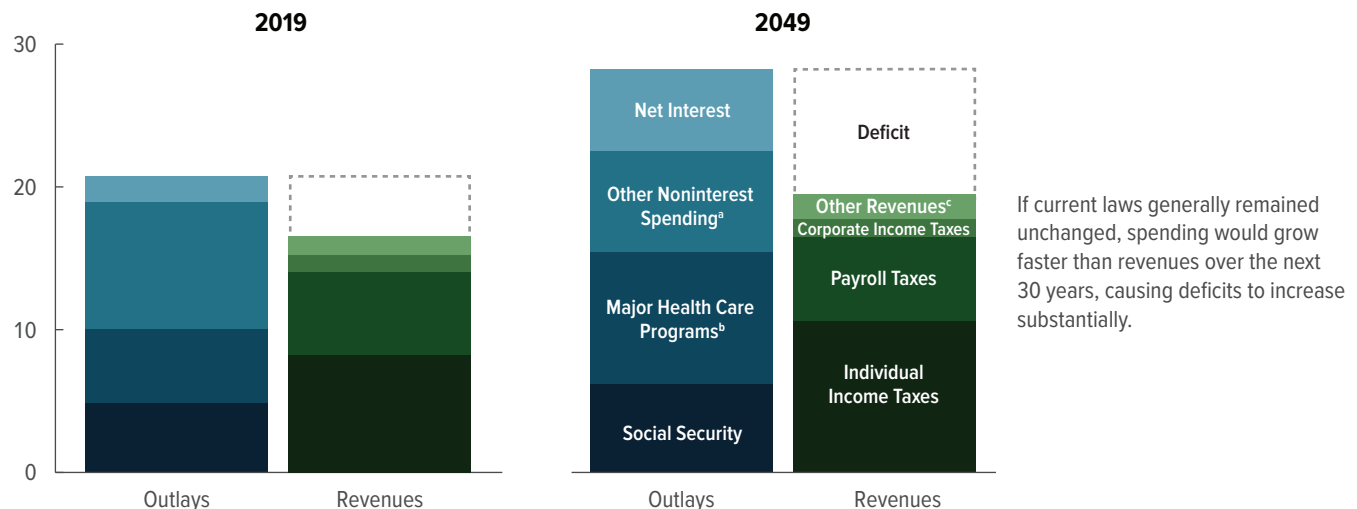
3. When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Over the next decade, certain payments will be shifted from fiscal years 2023, 2024,

and 2029 to fiscal years 2022, 2023, and 2028. Those shifts will noticeably boost spending and the deficit in fiscal years 2022 and 2028 and reduce spending and deficits in fiscal years 2024 and 2029. No adjustments were made for timing shifts after the first decade of the projection period.

Figure 1-2.

The Federal Budget in 2019 and 2049

Percentage of Gross Domestic Product



If current laws generally remained unchanged, spending would grow faster than revenues over the next 30 years, causing deficits to increase substantially.

Source: Congressional Budget Office.

- Consists of all federal spending other than that for Social Security, the major health care programs, and net interest.
- Consists of spending for Medicare (net of premiums and other offsetting receipts), Medicaid, and the Children's Health Insurance Program, as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.
- Consists of excise taxes, remittances to the Treasury from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

debt increase net interest costs from 1.8 percent of GDP in 2019 to 3.0 percent in 2029. The resulting increase in net outlays for interest more than offsets the decrease in primary deficits.

2029 to 2049. Deficits continue to grow beyond the first 10 years in CBO's extended baseline projections, rising from 4.5 percent of GDP in 2029 to 6.8 percent by 2039 and 8.7 percent by 2049 (an amount exceeded only in 2009, following the last recession). In the last two decades of the projection period, deficits average 6.9 percent of GDP.

After 2029, mandatory spending continues to increase faster than economic output, reaching 16.6 percent of GDP in 2039 and 17.5 percent in 2049, whereas discretionary spending increases only slightly, to 5.1 percent in 2049. Revenues also rise, although not as quickly as spending. They increase because of real bracket creep (the process in which an ever-larger proportion of income becomes subject to higher tax rates as income rises faster than inflation) and because of collections from the tax

on high-premium health plans that is scheduled to take effect in 2022.

As a result of those developments, primary deficits increase over the last two decades of the projection period, reaching 2.8 percent of GDP in 2039 and 3.0 percent by 2049 (see Figure 1-4 on page 12). And because in CBO's projections federal debt is already high at the end of the next decade and interest rates continue to rise, net outlays for interest increase from 3.0 percent of GDP in 2029 to 5.7 percent in 2049, adding substantially to projected deficits.

How CBO Analyzes the Uncertainty of Its Projections

Long-term projections are very uncertain. CBO therefore examined the extent to which federal debt would differ from the extended baseline projections if a set of key factors—several demographic and economic factors as well as the growth of health care costs—deviated from the paths underlying those projections. In CBO's assessment, there is about a two-thirds chance that federal debt would be between 71 percent and 175 percent of GDP in 2039. That range indicates that if current

laws generally remained unchanged, in 20 years federal debt—which is already high by historical standards—would probably be much higher than it is today.⁴

In addition to estimating that likely range by simulating budgetary outcomes when the values for all of the key factors varied simultaneously, the agency examined the sensitivity of its projections to higher or lower values for some of those factors individually. For example, if growth of total factor productivity in the nonfarm business sector was 0.5 percentage points faster than CBO’s central estimate, in 2049 federal debt held by the public would be 106 percent of GDP; if such growth was 0.5 percentage points slower, debt would be 185 percent of GDP. Or if federal borrowing rates were 1.0 percentage point lower than CBO’s central estimate, in 2049 debt would be 107 percent of GDP; if they were 1.0 percentage point higher, debt would be 199 percent of GDP.

Consequences of High and Rising Federal Debt

If federal debt as a percentage of GDP continues to rise at the pace that CBO projects it would under current law, the economy would be affected in two significant ways:

- That debt path would dampen economic output over time, and
- Rising interest costs associated with that debt would increase interest payments to foreign debt holders and thus reduce the income of U.S. households by increasing amounts.

That debt path would also pose significant risks to the fiscal and economic outlook, although those risks are not currently apparent in financial markets. In particular, that path would have the following effects:

- Increase the risk of a fiscal crisis—that is, a situation in which the interest rate on federal debt rises abruptly because investors have lost confidence in the U.S. government’s fiscal position—and

- Increase the likelihood of less abrupt, but still significant, negative economic and financial effects, such as expectations of higher rates of inflation and more difficulty financing public and private activity in international markets.

In addition, high debt might cause policymakers to feel restrained from implementing deficit-financed fiscal policy to respond to unforeseen events or for other purposes, such as to promote economic activity or strengthen national defense.

Not all effects of the projected path of debt are negative. In addition to allowing policymakers to achieve goals for spending and revenue policies under current law, that path would cause interest rates to be higher than they otherwise would be, giving the Federal Reserve more flexibility in implementing monetary policy. (Higher interest rates would also have adverse economic effects, as described below.)

If policymakers understand the potential effects of high and rising debt, they may be better equipped to weigh the consequences of fiscal policy under current law against those of proposed changes to law. In all likelihood, if policymakers postponed fiscal tightening and debt as a share of GDP continued to rise, the changes necessary to stabilize debt would place an even greater burden on future generations.

Effects Incorporated in CBO’s Extended Baseline Projections

The path of federal borrowing in CBO’s extended baseline projections would have negative economic consequences over the longer term. CBO projects that rising debt would crowd out the resources available for private investment, reducing the growth of economic output and income. In addition, rising interest payments would result in increasingly large payments to foreign investors and thus further dampen domestic income.

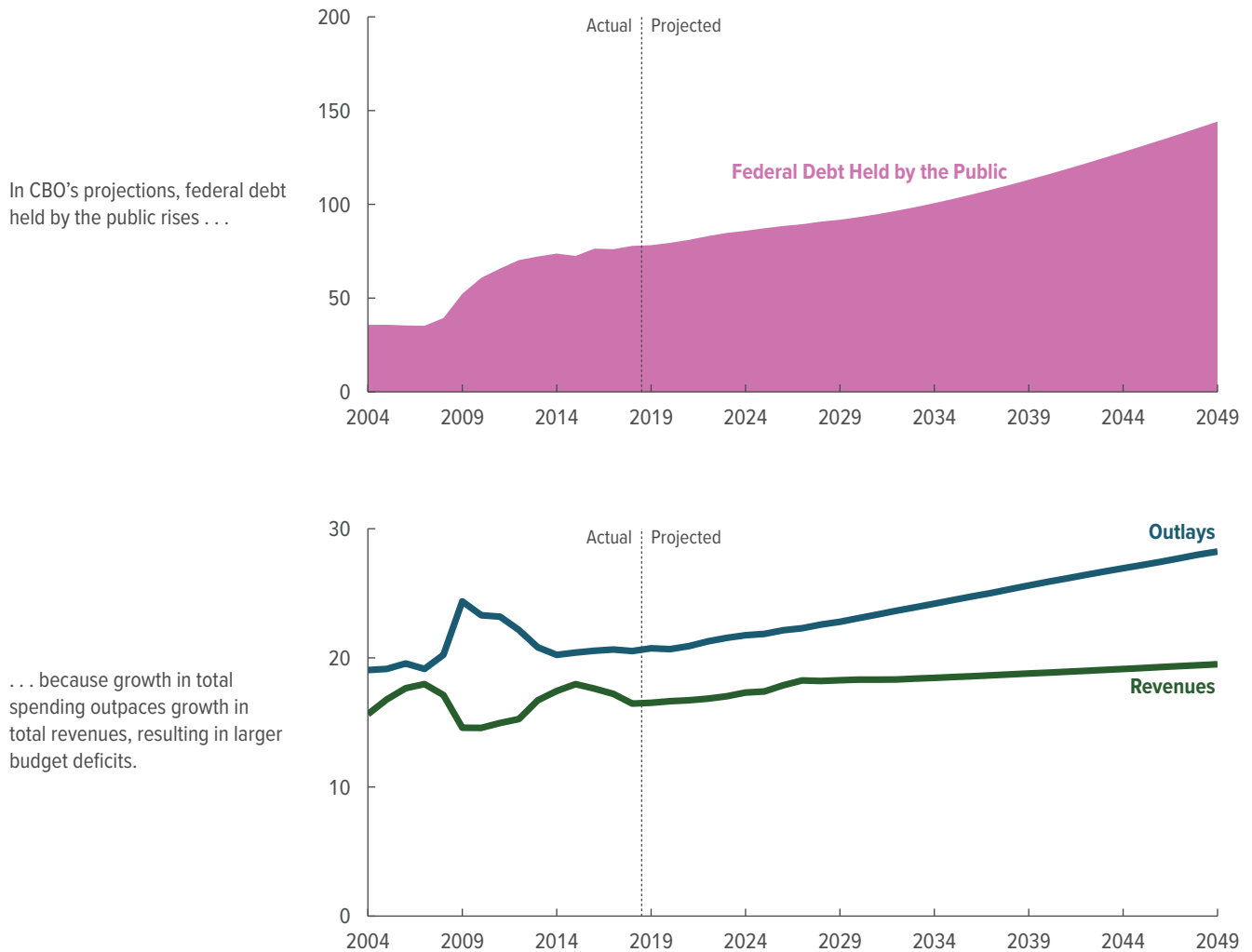
Crowding Out of Private Investment. The projected path of federal borrowing would reduce output in the long run. When the government borrows, it borrows from people and businesses whose saving would otherwise finance private investment in productive capital, such as factories and computers. Although an increase in government borrowing strengthens the incentive to save—in part by increasing interest rates—the resulting rise in private saving is not as large as the increase in

4. The range of likely outcomes that CBO’s models produce is less informative after 20 years because the key parameters governing the economic effects of fiscal policy in the agency’s models are based on the nation’s historical experience with federal borrowing. At the high end of such a range for 30 years in the future, projections of debt as a percentage of GDP would grow to amounts well outside historical experience.

Figure 1-3.

CBO's Budget Projections in Brief

Percentage of GDP



Continued

government borrowing; national saving, or the amount of domestic resources available for private investment, therefore declines.⁵ Private investment falls less than

national saving does in response to government deficits, however, because the higher interest rates that are likely to result from increased federal borrowing tend to attract more foreign capital to the United States.

5. In CBO's assessment, another reason that an increase in government borrowing strengthens the incentive to save is that some people expect that policymakers will raise taxes or cut spending in the future to cover the cost of paying interest on the additional federal debt. As a result, some of those people increase their saving to prepare for paying higher taxes or receiving less in benefits. For further discussion of that effect and the estimated effect of federal borrowing on private investment, see Jonathan Huntley, *The Long-Run Effects of Federal Budget Deficits*

If investment in capital goods declined, workers would, on average, have less capital to use in their jobs. As a result, they would be less productive, their compensation

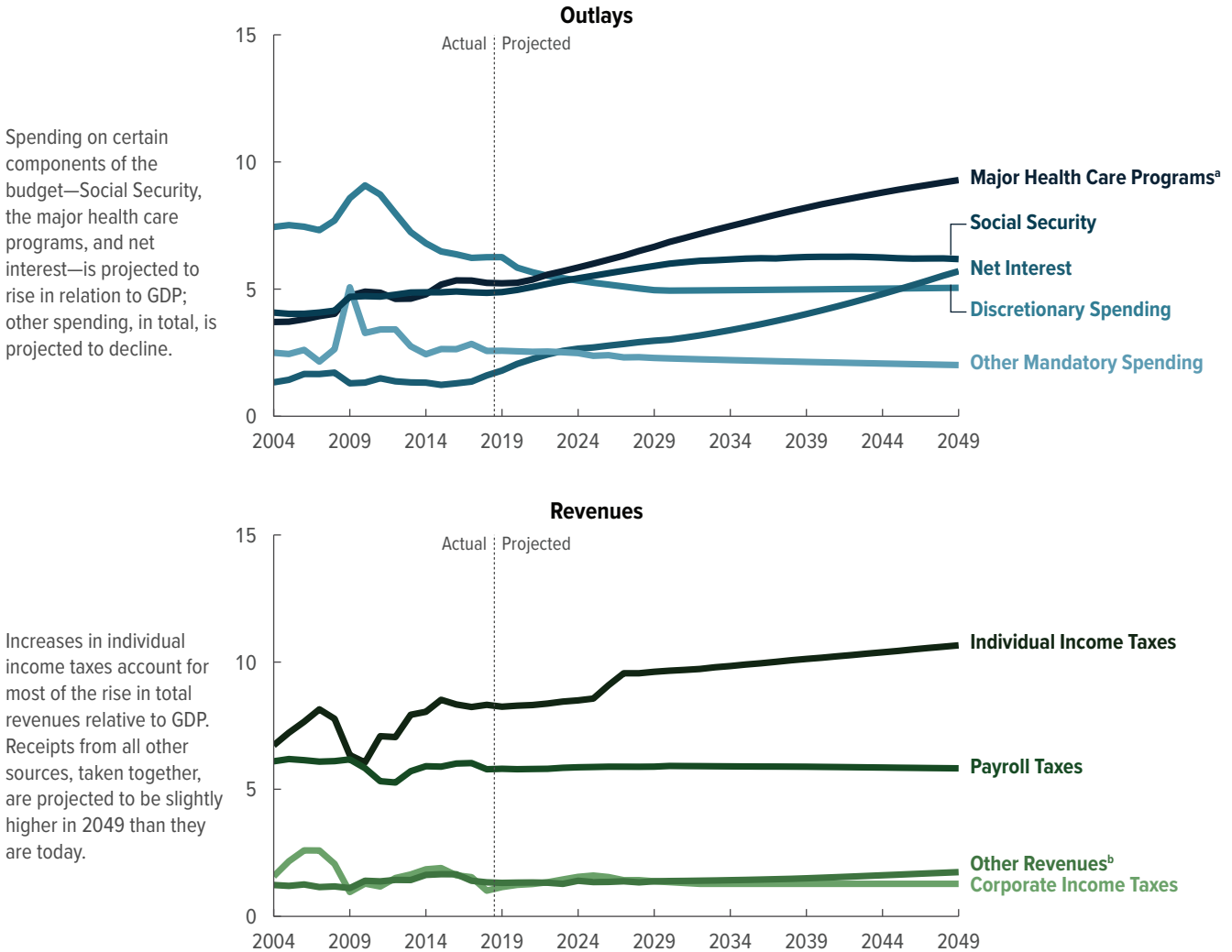
on *National Saving and Private Domestic Investment*, Working Paper 2014-02 (Congressional Budget Office, February 2014), www.cbo.gov/publication/45140.

Figure 1-3.

Continued

CBO’s Budget Projections in Brief

Percentage of GDP



Source: Congressional Budget Office.

GDP = gross domestic product.

- a. Consists of spending for Medicare (net of premiums and other offsetting receipts), Medicaid, and the Children’s Health Insurance Program, as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.
- 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.

would be lower, and they would thus be less inclined to work. Those effects would increase over time as federal borrowing grew. As an example of the benefits of lower debt, in CBO’s estimate, budgetary changes that entailed steadily reducing debt over 30 years to 42 percent of GDP (its average over the past 50 years) would, all else being equal, boost economic growth each year by about 0.1 percentage point in relation to growth in the agency’s

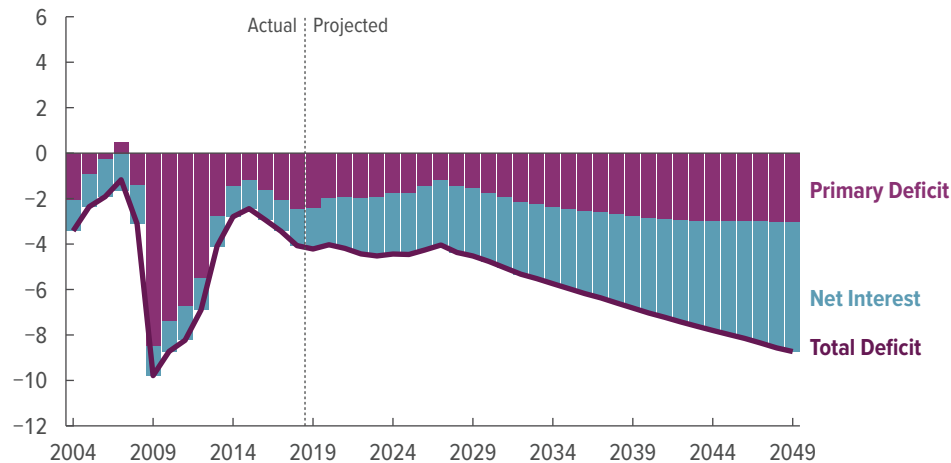
extended baseline projections. As a result, GDP would be 4.3 percent higher in 2049 than it is in the extended baseline projections, and GDP per person in 2049 would be about \$4,200 higher (in 2019 dollars).

Rising Interest Payments. The projected increase in federal borrowing would also drive up interest costs, increasing the burden of interest outlays in the federal budget.

Figure 1-4.

Total Deficit, Primary Deficit, and Net Interest

Percentage of Gross Domestic Product



Although rising revenues and shrinking discretionary spending are projected to decrease primary deficits as a percentage of gross domestic product from 2019 to 2029, total deficits remain large because of rising net spending for interest.

Source: Congressional Budget Office.

Primary deficits or surpluses exclude net spending for interest.

In CBO's extended baseline projections, net interest outlays grow from 1.8 percent of GDP in 2019 to 3.0 percent in 2029 and then continue to increase over the next two decades to 5.7 percent by 2049. Moreover, because foreign investors hold a significant portion of Treasury securities, the increase in outlays represents an increase in payments to foreign investors and thus a reduction in domestic income relative to total U.S. economic output. If, for example, debt was reduced to 42 percent of GDP by 2049, gross national product—which, unlike GDP, includes income that U.S. residents earn abroad and excludes income payments to nonresidents—would be 5.8 percent higher than it is in CBO's extended baseline projections. (That increase is 1.5 percentage points greater than the percentage increase in GDP that would result from that path for debt.) GNP per person in 2049 would be about \$5,500 higher (in 2019 dollars) than it is in the extended baseline projections.

CBO projects a substantial increase in interest costs in part because of a projected increase in interest rates. Although the agency does not expect interest rates to rise as much as it previously anticipated, the projected increase in debt from an already high level means that even moderate increases in interest rates would lead to significantly higher interest costs. CBO now projects the average interest rate on federal debt to increase

from 2.4 percent in 2019 to 4.2 percent by 2049. The additional interest costs resulting from that increase in interest rates accounts for roughly one-quarter of the increase in debt as a share of GDP over the next three decades in CBO's extended baseline projections; the cost of financing the primary deficits projected over that period at current interest rates accounts for the remainder of that increase.

That interest rate projection reflects the relatively muted rise in interest rates over the past decade, which has generally surprised CBO, other government agencies, and many private-sector forecasters. CBO's projections of interest rates also reflect the trajectory of federal debt in the agency's baseline, prices in financial markets that indicate expectations of future interest rates, and other factors. Although factors such as slower labor force growth are projected to put downward pressure on interest rates, CBO expects rates to rise because of such factors as an increase in inflation, faster growth of productivity, increased demand for investment in emerging economies, and increases in federal borrowing (see Appendix A).

Still, even as the outlook for federal borrowing has worsened over the past decade, financial markets have shown few signs of adverse effects, and interest rates on Treasury

securities have remained relatively low. CBO has revised its projections of interest rates downward several times in response. For example, from 2030 to 2035, the average rate on federal debt is now projected to be 3.5 percent, 1.7 percentage points lower than the agency projected for that period in June 2010. Similarly, the average real (inflation-adjusted) interest rate on federal debt is now projected to be 1.1 percent, 1.6 percentage points lower than the 2010 projection. Those downward revisions have reduced the projected costs of federal borrowing under current law and reduced the estimated changes in fiscal policy that would be necessary to stabilize debt as a share of GDP.

Although the government has benefited from persistently low interest rates, which have dampened the costs of federal borrowing, those low rates can also have negative implications, including their potential to constrain the implementation of monetary policy. Persistently low and declining interest rates could affect the Federal Reserve's ability to use monetary policy to respond sufficiently to a negative shock—such as a sudden worsening in international conditions or abrupt and unexpected fiscal tightening—because monetary policy would be less able to support economic growth once short-term interest rates were lowered to zero. In the long run, less effective monetary policy would reduce national income, on average. The current path of debt helps mitigate those potential negative effects by keeping rates from being even lower.

Risk of a Fiscal Crisis

High and rising federal debt increases the likelihood of a fiscal crisis because it erodes investors' confidence in the government's fiscal position and could result in a sharp reduction in their valuation of Treasury securities, which would drive up interest rates on federal debt because investors would demand higher yields to purchase Treasury securities. For example, concerns about the U.S. government's fiscal position could lead to a sudden increase in inflation expectations, fear of a large decrease in the value of the U.S. dollar, or a loss of confidence in the federal government's ability or commitment to repay its debt in full.

In a fiscal crisis, dramatic increases in Treasury rates would reduce the market value of outstanding government securities, and the resulting losses incurred by holders of those securities—including mutual funds, pension funds, insurance companies, and banks—could be large

enough to cause some financial institutions to fail. A fiscal crisis could thus lead to a financial crisis. Because the United States plays a central role in the international financial system, such a crisis could spread globally.

Policymakers' options for responding to a fiscal crisis would each have negative economic consequences, and choosing among them would involve difficult trade-offs. Such options include using monetary policy to raise inflation, thereby reducing the burden of financing outstanding securities; restructuring the debt (that is, modifying the contractual terms of existing obligations); or dramatically cutting spending or increasing taxes.

The risk of a fiscal crisis depends on many factors beyond the level of federal debt. Among those factors are investors' expectations about the budget and economic outlook, which can shift over time, and domestic and international financial conditions, including global interest rates. Furthermore, the relationships between those many factors and the risk of a crisis are uncertain and can shift over time depending, in part, on the state of the economy. In CBO's assessment, the debt-to-GDP ratio has no set tipping point at which a crisis becomes likely or imminent. Indeed, CBO cannot reliably quantify the probability that a fiscal crisis will occur. Thus, the distribution of possible outcomes that the agency considered in preparing its baseline projections does not include the potential budgetary and economic outcomes of a fiscal crisis.

At this time, financial markets show little indication of the risk of a fiscal crisis in the near future. Yet, markets do not always fully reflect risks on the horizon, and more important, the risk of a fiscal crisis is subject to sudden change in the wake of unexpected events. Moreover, all else being equal, the risk increases as the debt level rises, which it is projected to do under current law; if certain tax increases and discretionary spending cuts do not take place as scheduled during the next few years, the debt level would rise even more than it does in CBO's extended baseline projections.

An economic downturn could heighten the risk of a fiscal crisis. In a downturn, the economy shrinks and automatic stabilizers boost federal spending and reduce tax liabilities (and thus revenues). As a result of those developments, deficits and debt (measured as a share of GDP) would be larger than they are in CBO's extended baseline projections. Moreover, policymakers would

face heightened risk that a fiscal crisis would result from elevated debt during circumstances that in the past have led them to enact new policies that increased deficits and in situations in which the Federal Reserve has less flexibility in implementing monetary policy. The effect of the increase in federal borrowing on interest costs would be mitigated to some degree if interest rates fell during the downturn, as they have in the past. But deficits and debt that were larger than CBO projects could make investors more likely to drastically reduce their valuations of Treasury securities, which would lead to significantly higher interest rates on those securities. Those factors suggest lawmakers could avoid certain risks to the economy by reducing deficits in times of relatively strong economic growth.

Risks of Other Disruptions

Even in the absence of an abrupt fiscal crisis, high and rising debt could generate persistent negative effects on the economy beyond those incorporated in CBO's extended baseline projections, including a gradual decline in the value of Treasury securities and other domestic assets. High and rising debt could lead to moderate but ongoing increases in inflation expectations. Increases in federal borrowing could also lead to an erosion of confidence in the U.S. dollar as an international reserve currency. Among other effects, such developments would make it more difficult to finance public and private activity. Moreover, the increased dependence on foreign investors that would accompany high and rising debt could pose other challenges, such as making U.S. financial markets more vulnerable to a change in valuation of U.S. assets by participants in global markets.

The projected level of debt creates the risk that interest costs would be substantially greater than projected—even without a fiscal crisis—if interest rates were higher than those underlying CBO's extended baseline projections. For example, if unexpected changes in financial factors caused the average borrowing rate to be 1 percentage point higher every year than the rate underlying the agency's extended baseline projections but all other aspects of the economy were unaffected, then the government's net interest costs would amount to about 10 percent of GDP 30 years from now, CBO projects. That amount is equal to about half of federal revenues projected for that year. Moreover, under those circumstances, federal debt would equal almost 200 percent of GDP, CBO estimates. If interest rates jumped, investors could become concerned about the government's fiscal

position over the long term as they worked to determine whether the uptick in rates was temporary or signaled a long-run trend. Alternatively, a lower borrowing rate would result in smaller interest costs than those in CBO's extended baseline projections.

High debt and large deficits might also create constraints for policymakers as they contemplate making changes to fiscal policy. As the federal government increases its borrowing, ever larger cuts in primary deficits would be required to achieve particular deficit or debt targets. In addition, as a result of the outlook for federal borrowing, policymakers could feel restrained from using deficit-financed fiscal policy to respond to unforeseen events or for other purposes, including to promote economic activity or to further other goals. High debt could also undermine national security if policymakers felt constrained from increasing national security spending to resolve an international crisis or to prepare for such a crisis before it began.

Demographic and Economic Trends Underlying CBO's Long-Term Projections

Demographic and economic projections are key determinants of the long-term budget outlook. Through 2029, the projections in this report are the same as those that underlie CBO's 10-year baseline budget projections; for later years, the agency projects conditions on the basis of its assessment of long-term trends. The agency uses a model with four components to integrate demographic and economic changes into its long-term budget projections.⁶

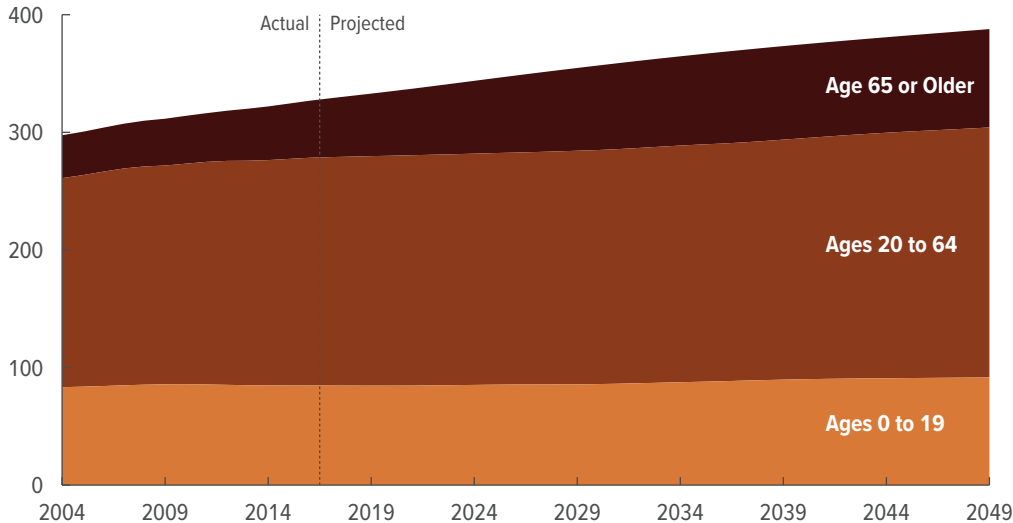
- A demographic model is used to project the size of the population by age and sex.
- A microsimulation model is used to project year-to-year changes in demographic characteristics and economic outcomes for individuals in a representative sample of the population.
- A long-term budget model is used to project federal outlays, revenues, deficits, and debt beyond CBO's standard 10-year budget period.

6. See Congressional Budget Office, *An Overview of CBOLT: The Congressional Budget Office Long-Term Model* (April 2018), www.cbo.gov/publication/53667.

Figure 1-5.

Population, by Age Group

Millions of People



The percentage of the population age 65 or older is projected to rise over the coming decades, maintaining a long-standing historical trend.

Source: Congressional Budget Office.

Actual data are shown through calendar year 2016, the most recent year for which such data are available.

- A model of economic growth is used to simulate how demographics, fiscal policy, and economic factors affect the U.S. economy and, in turn, the federal budget.

Those four components interact in a variety of ways. For example, the economic projections reflect the effects that increases in spending and revenues in the extended baseline projections—in particular, increased federal borrowing and rising effective marginal tax rates—would have on the economy. Such effects would result in a smaller labor supply, a smaller stock of capital, and less output than would otherwise be the case. (Appendix A describes CBO’s demographic and economic projections.) In turn, the budgetary outcomes in the extended baseline projections reflect those economic effects.

Demographic Projections

The size and age profile of the U.S. population affect the federal budget and the nation’s economy. For example, the composition of the population influences the size of the labor force and the number of beneficiaries of Social Security and other federal programs. In CBO’s projections, the U.S. population increases from 333 million at the beginning of 2019 to 388 million in 2049, expanding by 0.5 percent each year, on average. That

rate is slower than the average annual growth rate of the past 50 years (0.9 percent). The share of the population that is 65 or older also rises over the coming decades, continuing a long-standing historical trend. By 2049, 22 percent of the population would be age 65 or older, whereas today that share is 16 percent (see Figure 1-5). To estimate the growth of the U.S. population, CBO projects rates of fertility, immigration, and mortality.

Fertility. The total fertility rate is calculated as the sum of fertility rates for women between 15 and 49 in a given year and represents the average number of children that a woman would have in her lifetime.⁷ In general, that rate tends to decline during recessions and rebound during recoveries. Instead of rebounding after the 2007–2009 recession, however, the fertility rate fell. In 2007, the rate was 2.1 births per woman, but it has steadily declined since then, falling to 1.9 children per woman in 2010 and to 1.8 children per woman in 2017 (the most

7. The total fertility rate can also be defined as the average number of children that a woman would have if, in each year of her life, she experienced the birth rates observed or assumed for that year and if she survived her entire childbearing period.

recent year for which data are available).⁸ CBO expects the total fertility rate to gradually increase to 1.9 children per woman by 2022 and to remain at that level for the rest of the projection period. The lower fertility rates over the past decade result in slower growth of the population age 16 or older in the future. That slow future growth has noticeable effects on CBO's projections of economic growth in the second decade of the projection period.

Immigration. With birth rates projected to remain low, net immigration flows become an increasingly important part of overall U.S. population growth; in 2019, projected net inflows account for approximately 45 percent of overall population growth, but by 2049 that share is nearly 87 percent. CBO projects three broad categories of immigration: legal permanent residents (LPRs), legal temporary residents, and foreign-born people without legal status.⁹ In the agency's projections, the rate of net annual immigration averages 3.1 immigrants per thousand people over the next 30 years, rising from 2.8 in 2019 to 3.1 in 2029 and staying at that level through 2049. That rate, which accounts for all people who enter or leave the United States in a given year, is slightly higher than the average net annual immigration rate since the end of the 2007–2009 recession.

Of those three categories, annual net flows of LPRs are largest, averaging approximately 860,000 people per year in the first decade and approximately 890,000 annually

over the second decade. Net flows of foreign-born people without legal status increase over the next five years in CBO's projections, from zero net flows in 2019 (meaning that immigration is offset by emigration in this category) to about 170,000 in 2024; thereafter, annual net flows remain about the same through 2039. The annual net increase of legal temporary residents is projected to remain relatively steady, at approximately 80,000 per year, over the next 20 years.

In its projections for years after 2039, CBO uses the same annual rate of growth for all categories of immigrants. Specifically, CBO projects that the net number of new immigrants would grow at a rate equal to the growth of the overall population in the previous year; that rate averages 0.4 percent annually through 2049. The share of the population that is foreign born is thus projected to grow from approximately 14 percent today to approximately 16 percent in 2049.

Mortality. Life expectancy is projected to improve (that is, mortality rates are projected to decline) over the next 30 years, on average. In CBO's projections, mortality rates, which measure the number of deaths per thousand people in the population, decline at the same pace as the rates for each age and sex group declined from 1950 to 2015. Average life expectancy at birth increases from 79.1 years in 2019 to 82.5 years in 2049 in CBO's projections. Similarly, life expectancy at age 65 increases by 2.1 years over that period, from 19.4 years in 2019 to 21.5 years in 2049.¹⁰

Economic Projections

The performance of the U.S. economy in coming decades will affect the federal government's spending, revenues, and debt accumulation. CBO makes its economic projections by assessing trends in key economic variables, such as the size and composition of the labor force, capital accumulation, productivity, inflation, and interest rates. The agency also considers ways in which fiscal policy influences economic activity.

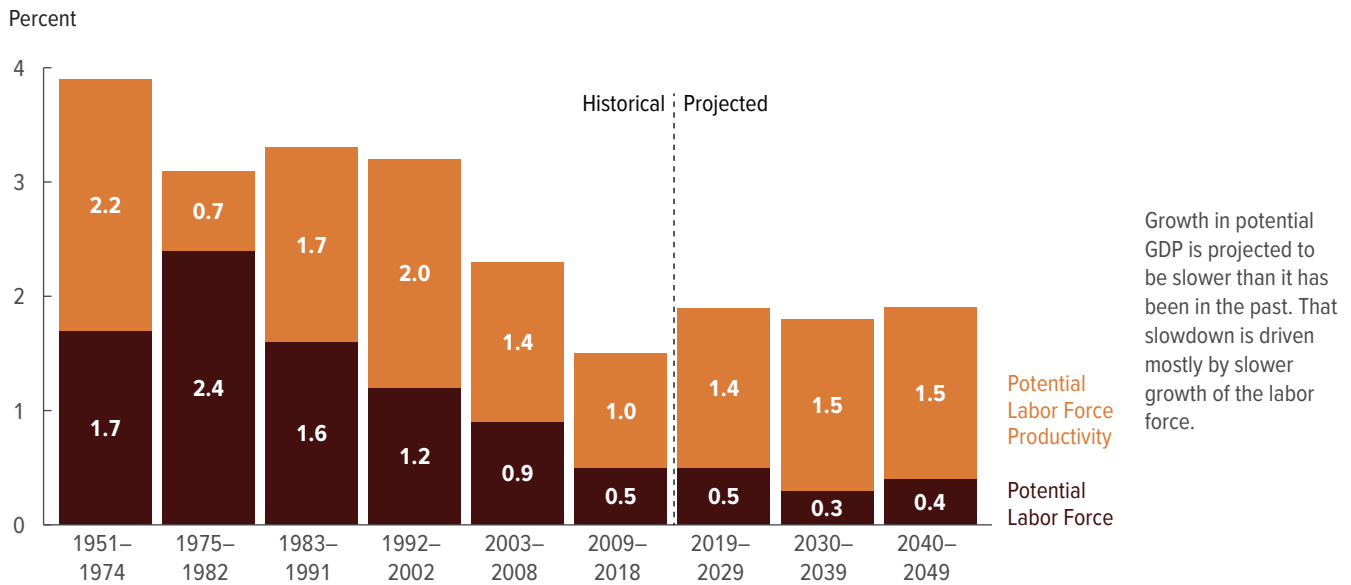
Economic Growth and the Size of the Labor Force. In CBO's extended baseline projections, growth in potential (maximum sustainable) GDP in the future is slower

8. See Brady E. Hamilton and others, *Births: Provisional Data for 2017*, Vital Statistics Rapid Release Report 4 (National Center for Health Statistics, May 2018), www.cdc.gov/nchs/nvss/vsrr/reports.htm.

9. CBO uses the term "foreign-born people without legal status" to refer to foreign-born people other than LPRs, refugees, asylees, and temporary residents and visitors. Most foreign-born people without legal status either unlawfully entered the United States without inspection or lawfully entered the United States in a temporary status and then unlawfully remained in the country after that temporary status expired. Some foreign-born people without legal status are beneficiaries under Temporary Protected Status or under policies whereby the executive branch does not seek their immediate removal from the United States (Deferred Action for Childhood Arrivals, for example); others are allowed to remain in the United States while they await their removal proceedings in immigration courts. Many foreign-born people are authorized to work in the United States and can therefore apply for a Social Security number, which would also make them eligible for certain refundable tax credits. People are more likely to report employment income and pay the applicable income and payroll taxes when they have a Social Security number.

10. Life expectancy as used here is period life expectancy, which is the amount of time that a person in a given year would expect to survive beyond his or her current age on the basis of that year's mortality rates for various ages.

Figure 1-6.

Average Annual Growth of Real Potential GDP

Source: Congressional Budget Office.

Real potential GDP is the maximum sustainable output of the economy, adjusted to remove the effects of inflation. The two contributing factors are the potential labor force and potential labor force productivity. The potential labor force is the labor force (that is, the number of people in the civilian noninstitutionalized population who are age 16 or older and who are either working or actively seeking work) adjusted to remove the effects of fluctuations in the business cycle. Potential labor force productivity is the ratio of potential GDP to the potential labor force.

GDP = gross domestic product.

than it has been over the past 50 years. Over the next 30 years, real potential GDP increases at an average rate of 1.9 percent per year, whereas from 1969 to 2018, it grew at an average annual rate of 2.8 percent. That slower growth is attributable to several factors—most notably, slower growth of the potential labor force (the labor force adjusted for fluctuations in the business cycle). In CBO’s projections, the potential labor force grows by 0.4 percent per year, on average, through 2049 (see Figure 1-6); the average annual growth rate over the past 50 years was 1.5 percent. That slower projected growth of the potential labor force results mainly from slowing population growth and the aging of the population.

Productivity. Total factor productivity in the nonfarm business sector grows more slowly than its historical average in CBO’s projections, increasing by 1.1 percent per year, on average, from 2019 to 2049. That rate, which measures the growth of the average real output per unit of combined labor and capital services in the nonfarm business sector (which accounts for approximately 75 percent of economic activity), is slower than the

1.4 percent that such growth has averaged annually since 1950. Factors influencing that projection include slower productivity growth over the past several decades (except during a period of rapid growth in the late 1990s and early 2000s), relatively modest growth in labor quality (a measure of workers’ skills), and a projected reduction in federal investment as a share of GDP.

Potential labor productivity in the entire economy—defined as real potential GDP per potential hour of work—is likewise projected to grow more slowly than it has in the past, reflecting the slower growth of total factor productivity and less private investment in capital goods. Since 1950, labor productivity has risen by 1.7 percent per year, on average; through 2049, it is projected to increase by an average of 1.5 percent per year.

Interest Rates. As the economy continues to expand, interest rates rise in CBO’s latest economic projections but remain lower than they have been historically. The interest rate on 10-year Treasury notes rises from 2.9 percent at the end of 2018 to 3.8 percent in 2029. That rate

is projected to increase to 4.6 percent in 2049—1.2 percentage points below the 5.8 percent average recorded over the 1990–2007 period. In CBO’s projections, slower growth of the labor force and lower inflation than in the past push interest rates down from their historical levels; the effects on interest rates of those two factors and others are projected to outweigh the effects of rising federal debt and other factors that tend to push interest rates up above their historical levels.

The average interest rate on all federal debt held by the public tends to be lower than the rate on 10-year Treasury notes. (Interest rates are generally lower on shorter-term debt than on longer-term debt, and the average term to maturity of federal debt has been less than 10 years since the 1950s.) On the basis of projections of interest rate spreads, the average interest rate on federal debt is projected to be about 0.4 percentage points lower than the interest rate on 10-year Treasury notes after 2029. As a result, in CBO’s projections, the average interest rate on federal debt rises to 4.2 percent by 2049.

Effects of Fiscal Policy. CBO’s economic projections incorporate the macroeconomic effects of projected changes in federal tax and spending policies under current law. In particular, the agency projects that increased borrowing by the federal government under current law would crowd out some private investment in capital in the long term. Less private investment in capital goods would, in turn, make workers less productive, leading to lower wages. Lower wages would reduce people’s incentive to work and thus lead to a smaller supply of labor.

The agency also incorporates the economic effects of higher marginal tax rates in its extended baseline projections. As more income is pushed into higher tax brackets over time, labor and capital income face higher effective tax rates. Higher marginal tax rates on labor income would reduce after-tax wages and thus people’s incentive to work, and the increase in the marginal tax rate on capital income would reduce their incentive to save and invest. All told, less private investment and a smaller labor supply would lower economic output and income.

Projected Spending Through 2049

Spending for all of the government’s programs and activities and for its net interest costs is projected to account for a larger percentage of GDP in coming years than it has, on average, over the past 50 years.

Excluding net spending on interest, federal outlays averaged 18.3 percent of GDP from 1969 to 2018. Under current law, noninterest outlays are projected to rise from 18.9 percent of GDP in 2019 to 19.8 percent in 2029: Mandatory spending (which includes spending on Social Security and the major health care programs as well as outlays for many smaller programs) is generally projected to increase as a share of the economy, and discretionary spending is generally projected to decrease.

After 2029, under the assumptions that govern the extended baseline, noninterest spending relative to the size of the economy would continue to rise, reaching 22.5 percent of GDP by 2049. (For a summary of the assumptions about spending and revenues that underlie CBO’s extended baseline, see Table 1-2.) That increase would mostly result from larger outlays for the two biggest mandatory programs: Social Security and Medicare (see Figure 1-7).

Under current law, net interest costs would, CBO projects, rise from 1.8 percent of GDP in 2019 to 3.0 percent in 2029 as debt accumulates and interest rates increase from their currently low levels. By 2049, net interest costs would equal 5.7 percent of GDP, boosting total federal spending to 28.2 percent of GDP. Spending has exceeded that level only once, for a three-year period during World War II. In those years, when defense spending increased sharply, total federal spending topped 40 percent of GDP.

CBO projects that growth in spending for Social Security, the major health care programs, and interest would reshape the spending patterns of the U.S. government (see Figure 1-8 on page 21). Net spending for interest would account for a much greater portion of total federal spending in 2049 than it does today, and spending on Social Security and the major health care programs would account for a much larger share of all federal noninterest spending. Discretionary spending, however, would account for a much smaller share of all federal noninterest spending in 2049 than it does today.

Spending for Social Security and the Major Health Care Programs

Mandatory programs have accounted for a growing share of the federal government’s noninterest spending over the past few decades. Most of that growth has occurred because Social Security and Medicare provide benefits mainly to people age 65 or older, a group that has been

Table 1-2.

Assumptions About Outlays and Revenues Underlying CBO's Extended Baseline Projections

Assumptions About Outlays	
Social Security	As scheduled under current law ^a
Medicare	As scheduled under current law through 2029; thereafter, projected spending depends on the estimated number of beneficiaries and health care costs per beneficiary (for which excess cost growth is projected to move smoothly to a rate of 1.0 between 2030 and 2049) ^a
Medicaid	As scheduled under current law through 2029; thereafter, projected spending depends on the estimated number of beneficiaries and health care costs per beneficiary (for which excess cost growth is projected to move smoothly to a rate of 1.0 between 2030 and 2049)
Children's Health Insurance Program	As projected in CBO's baseline through 2029; thereafter, projected spending remains constant as a percentage of GDP
Subsidies for Health Insurance Purchased Through the Marketplaces	As scheduled under current law through 2029; thereafter, projected spending depends on the estimated number of beneficiaries, an additional indexing factor for subsidies, and excess cost growth for private health insurance premiums (which is projected to move smoothly to a rate of 1.0 between 2030 and 2049)
Other Mandatory Spending	As scheduled under current law through 2029; 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 roughly the same annual rate at which it is projected to decline between 2024 and 2029 ^b
Discretionary Spending	As projected in CBO's baseline through 2029; thereafter, projected spending remains roughly constant as a percentage of GDP ^c
Assumptions About Revenues	
Individual Income Taxes	As scheduled under current law
Payroll Taxes	As scheduled under current law
Corporate Income Taxes	As scheduled under current law
Excise Taxes	As scheduled under current law ^d
Estate and Gift Taxes	As scheduled under current law
Other Sources of Revenues	As scheduled under current law (remain constant as a percentage of GDP after 2029)

Source: Congressional Budget Office.

The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those projections 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: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151.

Excess cost growth is the extent to which the growth rate of nominal health care spending per person (adjusted to remove the effects of aging) exceeds the growth rate of potential GDP per person. (Potential GDP is the maximum sustainable output of the economy.)

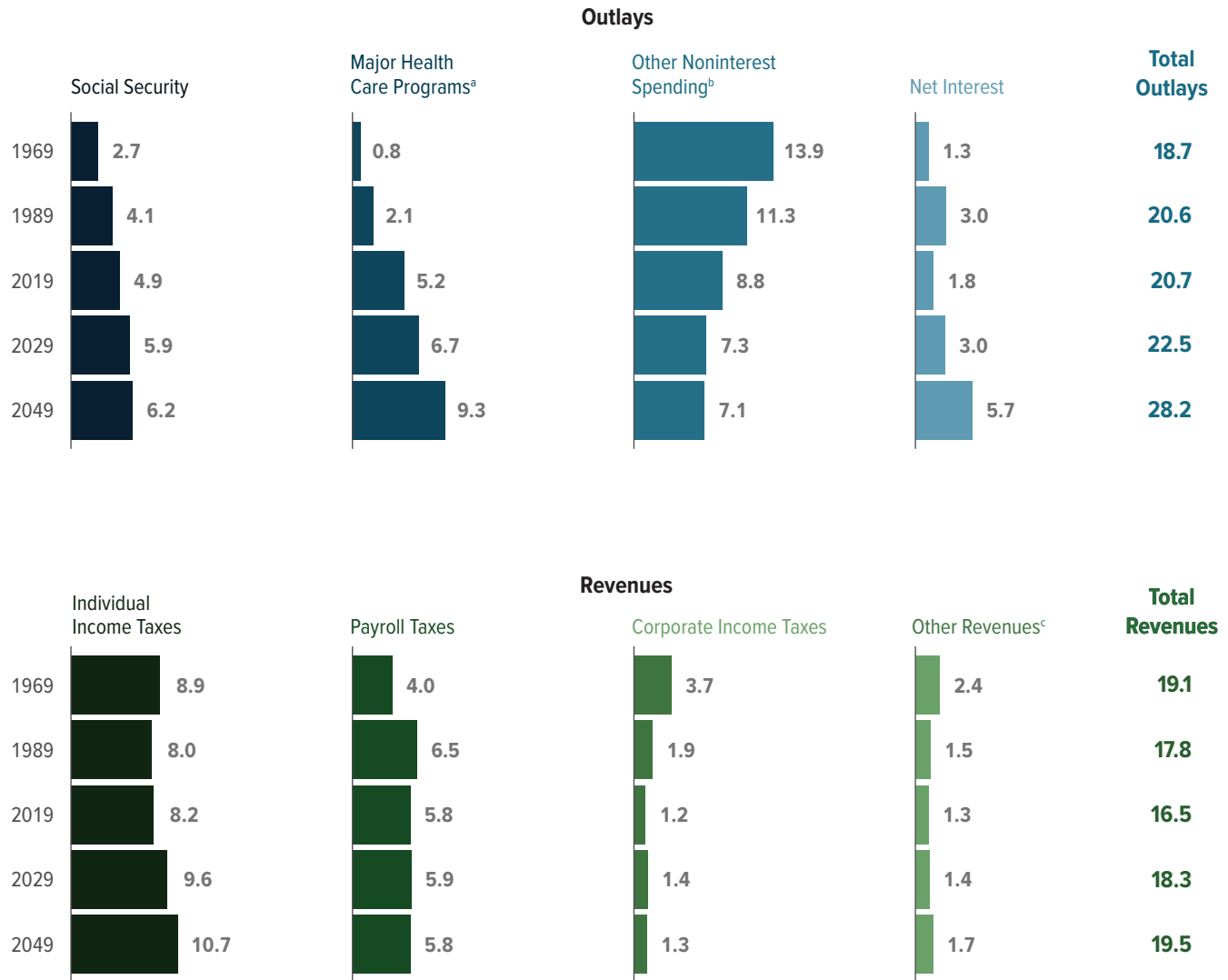
GDP = gross domestic product.

- a. The payment of full benefits as calculated under current law is assumed to continue regardless of the amounts available in the program's trust funds.
- b. In that projection, GDP includes the macroeconomic effects of the policies underlying the extended baseline projections. If it did not, the rest of other mandatory spending after 2029 would decline at the same rate at which it is projected to decline between 2024 and 2029 (excluding the decline in spending for the Supplemental Nutrition Assistance Program).
- c. In that projection, GDP includes the macroeconomic effects of the policies underlying the extended baseline projections. If it did not, discretionary spending after 2029 would remain the same (measured as a percentage of GDP) as the amount projected for 2029.
- d. The current-law assumption does not apply 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.

Figure 1-7.

Outlays and Revenues in Selected Years

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

a. Consists of spending for Medicare (net of premiums and other offsetting receipts), Medicaid, and the Children’s Health Insurance Program, as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.

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

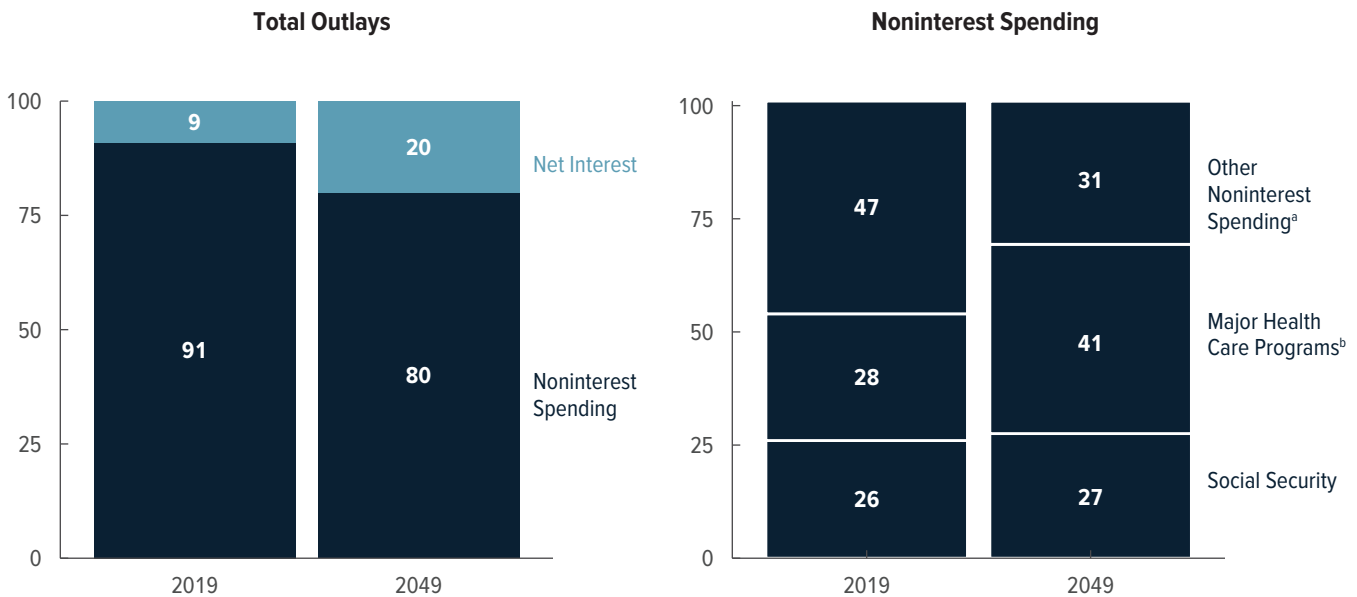
growing significantly. In CBO’s extended baseline, the aging of the U.S. population continues to drive up outlays for Social Security and Medicare. Moreover, Medicare outlays also climb because, in CBO’s estimation, health care costs per person will continue to rise. By 2049, CBO projects, federal spending for people

age 65 or older (including spending for Social Security, Medicare, and Medicaid—the federal health care program for people with limited income and resources) would account for about half of all federal noninterest spending; today, that share is about two-fifths.

Figure 1-8.

Composition of Federal Outlays

Percent



Source: Congressional Budget Office.

- a. Consists of all federal spending other than that for Social Security, the major health care programs, and net interest.
- b. Consists of spending for Medicare (net of premiums and other offsetting receipts), Medicaid, and the Children's Health Insurance Program, as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.

Social Security. Created in 1935, Social Security is the largest single program in the federal budget. Its two components pay benefits to 64 million people in all. The larger of the two, Old-Age and Survivors Insurance (OASI), pays benefits to retired workers, their eligible dependents, and some survivors of deceased workers. The smaller program, Disability Insurance (DI), makes payments to disabled workers and their dependents until those workers are old enough to claim full retirement benefits under OASI.

Under current law, CBO projects, spending for Social Security would increase noticeably as a share of the economy, continuing the trend of the past five decades. CBO projects that the number of Social Security beneficiaries would rise from 64 million in 2019 to 97 million in 2049 and that spending for the program would increase from 4.9 percent of GDP to 6.2 percent over that period (see Figure 1-7 on page 20). Those projections reflect the assumption that Social Security will continue to pay benefits as scheduled under current law, regardless of

the status of the program's trust funds.¹¹ That approach is consistent with a statutory requirement that CBO's 10-year baseline projections incorporate the assumption that funding for such programs is adequate to make all payments required by law.¹² (For analysis of a scenario in which benefit payments would be limited to the amounts in the trust funds, see Chapter 2.)

The Social Security program is funded by dedicated tax revenues from two sources. Currently, 96 percent comes from a payroll tax; the rest is collected from income taxes on Social Security benefits. Revenues from the payroll

11. The balances of the trust funds represent the total amount that the government is legally authorized to spend for those purposes. For more details about the legal issues related to exhaustion of a trust fund, see William R. Morton and Barry F. Huston, *Social Security: What Would Happen If the Trust Funds Ran Out?* Report for Congress RL33514 (Congressional Research Service, June 11, 2018), <https://go.usa.gov/xEtw>.

12. Sec. 257(b)(1) of the Balanced Budget and Emergency Deficit Control Act of 1985 (Deficit Control Act), P.L. 99-177 (codified at 2 U.S.C. §907(b)(1) (2016)).

Table 1-3.

Summary Financial Measures for the Social Security System

Projection Period (Calendar years)	Income Rate	Cost Rate	Actuarial Balance
As a Percentage of Gross Domestic Product			
25 Years (2019 to 2043)	5.1	6.1	-1.1
50 Years (2019 to 2068)	4.8	6.1	-1.4
75 Years (2019 to 2093)	4.6	6.2	-1.5
As a Percentage of Taxable Payroll			
25 Years (2019 to 2043)	14.6	17.6	-3.1
50 Years (2019 to 2068)	14.0	18.0	-4.0
75 Years (2019 to 2093)	13.9	18.4	-4.6

Source: Congressional Budget Office.

These projections incorporate the assumption that spending for Social Security continues as scheduled even if its trust funds are exhausted. Through 2049, the projections incorporate macroeconomic feedback caused by rising federal debt and marginal tax rates. After 2049, they do not account for such feedback.

For programs such as Social Security that have both a trust fund and a dedicated source of revenue, a common measure of sustainability is the actuarial balance, which is the income rate over a given period minus the cost rate over that period. The income rate is the present value of annual tax revenues plus the initial trust fund balance, divided by the present value of gross domestic product (GDP) or taxable payroll. The cost rate is the present value of annual outlays plus the present value of a reserve equal to a year's worth of benefits at the end of the period, divided by the present value of GDP or taxable payroll. (The present value of a flow of revenues or outlays over time expresses that flow as a single amount received or paid at a given time. The present value depends on the rate of interest, known as the discount rate, that is used to translate the cash flow into current dollars.)

tax and the tax on benefits are credited to the Old-Age and Survivors Insurance Trust Fund and the Disability Insurance Trust Fund, which finance the program's benefits. In CBO's extended baseline projections, dedicated tax revenues for the combined trust funds remain roughly constant through 2049 at about 4.4 percent of GDP.

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 year's worth of

benefits at the end of the period.¹³ For Social Security, that difference is traditionally expressed as a percentage of the present value of taxable payroll over 75 years.¹⁴

With the trust funds' revenues projected to grow more slowly than their expenditures, the program would have a long-term actuarial deficit. Over the next 75 years, if current laws remained in place, the program's actuarial deficit would be 1.5 percent of GDP, or 4.6 percent of taxable payroll, CBO projects (see Table 1-3).¹⁵ According to CBO's projections, it would therefore be possible to pay the benefits prescribed by current law and maintain the necessary trust fund balances through 2093 if payroll taxes were raised immediately and permanently by about 4.6 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.¹⁶

13. A present value expresses a flow of past and future income or payments as a single amount received or paid at a specific time. The value depends on the interest rate, known as the discount rate, used to translate past and future cash flows into current dollars at that time. To account for the difference between a trust fund's current balance and the desired balance at 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.
14. Taxable payroll is the total amount of earnings (wages and self-employment income) from employment covered by Social Security that is below the applicable annual taxable maximum (\$132,900 in 2019).
15. The 75-year projection period used here begins in calendar year 2019 and ends in calendar year 2093. The Social Security trustees have estimated that the program's 75-year actuarial shortfall would be 2.8 percent of taxable payroll, which is about 1.8 percentage points less than CBO's projection. For details on the trustees' projections, see Social Security Administration, *The 2018 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (June 2018), www.ssa.gov/oact/trf/2018.
16. A policy that either increased revenues or reduced outlays by the same percentage of taxable payroll each year to eliminate the 75-year shortfall would not necessarily place Social Security on a permanently stable financial path. Estimates of the actuarial deficit do not account for revenues or outlays after the 75-year projection period. Because shortfalls are smaller earlier in the 75-year projection period than they are later, such a policy would create surpluses in the next several decades but result in deficits later and leave the system financially unbalanced after calendar year 2093. Additionally, the calculation of the actuarial balance does not include the effects of any macroeconomic feedback that would result from an increase in taxes or a reduction in benefits.

Another commonly used measure of Social Security's sustainability is the trust funds' dates of exhaustion. CBO projects that under current law, the DI trust fund would be exhausted in fiscal year 2028 and the OASI trust fund would be exhausted in calendar year 2032. If their balances were combined, the OASDI trust funds would be exhausted in calendar year 2032, CBO estimates.

The Major Health Care Programs. Outlays for the major health care programs consist of spending for Medicare, Medicaid, and the Children's Health Insurance Program (CHIP), as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act (ACA) and related spending.¹⁷ Medicare, which provides health insurance to about 61 million people (most of whom are at least 65 years old), accounts for more than 60 percent of that spending.

CBO projects federal spending for the government's major health care programs for 2019 through 2029 under the assumption that the laws governing those programs will, in general, remain unchanged. As with Social Security, CBO assumes that Medicare will pay benefits as scheduled under current law, regardless of the amounts in the program's trust funds. For longer-term projections, considerable uncertainty surrounds the evolution of health care delivery and financing systems. That uncertainty led CBO to use a formulaic approach to prepare projections beyond 2029: It combines estimates of the number of expected beneficiaries of the government's health care programs with mechanical estimates of the growth in spending per beneficiary.

Over the past five decades, spending for the major health care programs has steadily grown faster than the economy, and that trend continues in CBO's extended baseline. In 2019, net federal spending for the major health care programs is estimated to equal 5.2 percent of GDP. If current laws generally remained in place, net outlays for those programs would increase to 9.3 percent in 2049: Medicare spending, net of offsetting receipts (mostly premiums paid by enrollees), would grow by 3.0 percent of GDP, and spending on Medicaid and

CHIP, combined with outlays for marketplace subsidies and related spending, would grow by 1.0 percent of GDP (see Figure 1-9).¹⁸

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

The aging of the population and rising health care costs per person are the primary reasons for the sharp rise in projected spending for Social Security and the major federal health care programs over the next 30 years. The extent to which health care costs per person (adjusted to remove the effects of aging) grow faster than potential GDP per person is known as excess cost growth. In CBO's extended baseline projections, spending for Social Security and the major federal health care programs grows from 10.7 percent of GDP in 2019 to 16.8 percent in 2049 (see Figure 1-10).¹⁹ Spending for Social Security grows from 4.9 percent of GDP in 2019 to 6.2 percent in 2049, and spending for the major federal health care programs grows from 5.9 percent of GDP to 10.7 percent.

If CBO had set the shares of the population by age at today's proportions and had set excess cost growth at zero when developing its projections, spending on those programs as a share of GDP in 2049 would have been projected to be 10.7 percent—the same share as estimated for 2019.²⁰ Aging accounts for an increase of 3.0 percentage points, or roughly half of the difference between 10.7 percent and 16.8 percent. Excess cost growth accounts for the other half, an increase of 3.1 percentage points. For Social Security, aging accounts for more than the full increase in spending. For the major health care programs, aging accounts for 1.5 percentage points of the growth, and excess cost growth accounts for the remainder.

The Aging of the Population. In CBO's projections, the aging of the baby-boom generation and continued gains

17. Spending related to subsidies for insurance purchased through the marketplaces includes spending for subsidies for insurance provided through the Basic Health Program and spending for the risk-adjustment and reinsurance programs that were established by the ACA to stabilize premiums for health insurance purchased by individuals and small employers.

18. In CBO's projections, the outlays for subsidies for insurance purchased through the marketplaces and related spending are combined with outlays for Medicaid and CHIP. Federal subsidies for health insurance for low- and moderate-income households account for most of those outlays.

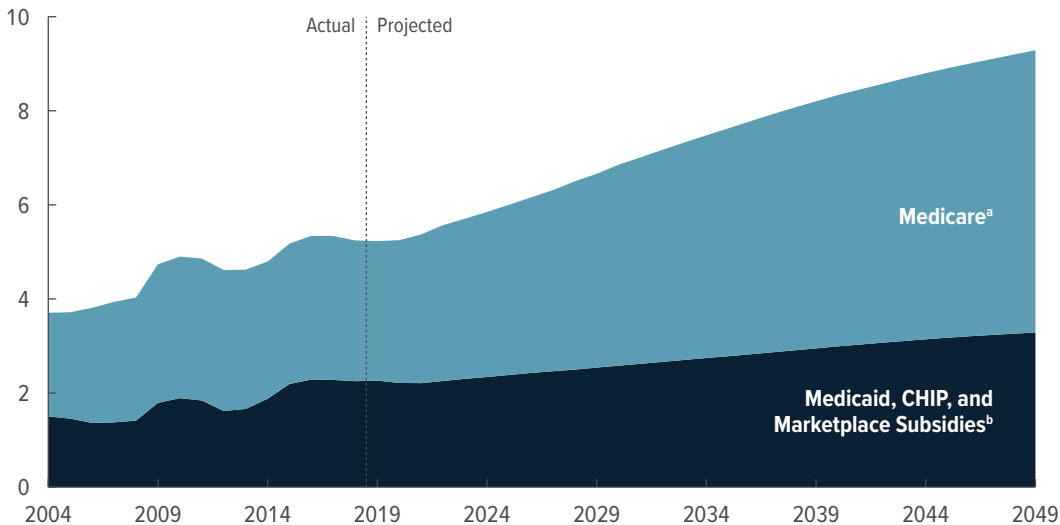
19. This analysis of causes of spending growth includes gross spending on Medicare.

20. If the effects of aging and excess cost growth were removed, spending on those programs as a percentage of GDP would be slightly lower in 30 years than it is today, mainly because of the scheduled increase in the full retirement age for Social Security.

Figure 1-9.

Federal Outlays for the Major Health Care Programs, by Category

Percentage of Gross Domestic Product



Medicare spending, net of offsetting receipts, is projected to account for about three-quarters of the increase in spending for the major health care programs over the next 30 years.

Source: Congressional Budget Office.

CHIP = Children's Health Insurance Program.

- a. Refers to net spending for Medicare, which accounts for offsetting receipts that are credited to the program. Those offsetting receipts are mostly premiums paid by beneficiaries to the government.
- b. "Marketplace Subsidies" refers to spending to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and insurance provided through the Basic Health Program, as well as spending to stabilize premiums for health insurance purchased by individuals and small employers.

in life expectancy increase the share of the population that is age 65 or older from 16 percent to 22 percent between 2019 and 2049.

Aging accounts for all of the projected long-term increase in Social Security spending as a percentage of GDP. Because the share of the population that is 65 or older is growing, a larger segment of the population will receive Social Security benefits, increasing federal spending for the program.

Aging also contributes to the projected increase in spending, relative to GDP, for the major health care programs, particularly Medicare, which is the largest such program. Most beneficiaries qualify for Medicare at age 65. As that group becomes larger and older, on average, Medicare spending will increase, not only because the number of beneficiaries will rise but also because people tend to require more health care as they age. Aging explains about one-third of the increase in spending for the major

health care programs as a share of GDP over the 2019–2049 period in CBO's projections.

Rising Health Care Costs per Person. Even though growth in health care costs per person has slowed recently, over the next 30 years such costs are projected to continue to grow faster than potential GDP per person (see Figure 1-11). In CBO's extended baseline projections, excess cost growth accounts for about two-thirds of the increase in spending, measured as a share of GDP, for the major health care programs between 2019 and 2049.

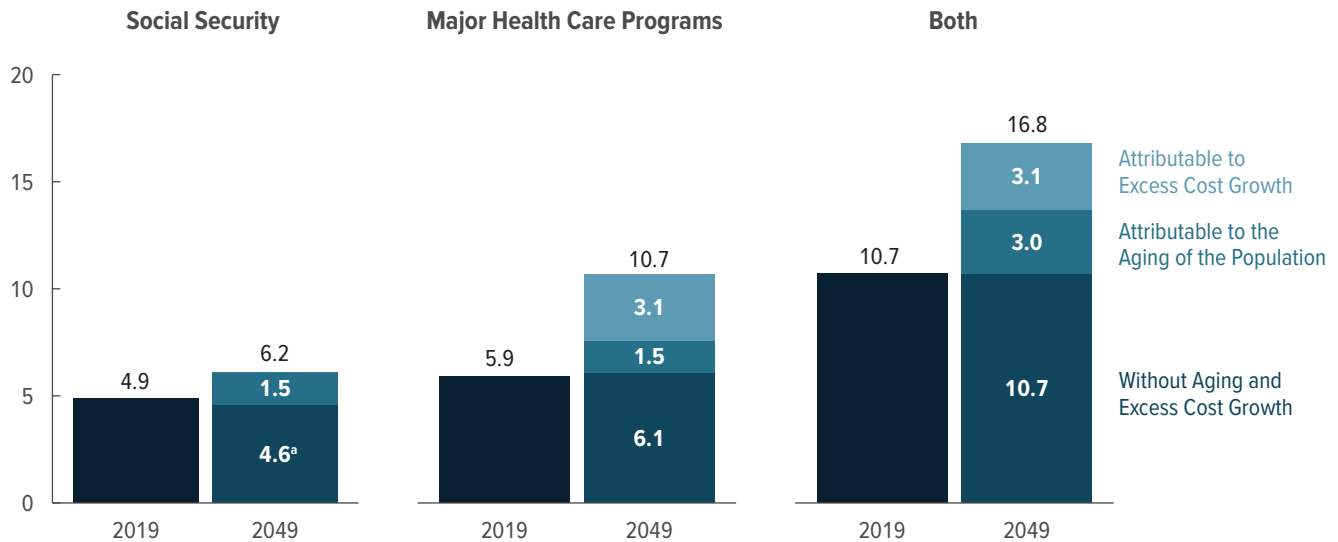
Other Noninterest Spending

In CBO's extended baseline projections, total federal spending for everything other than Social Security, the major health care programs, and interest declines as a share of GDP to its lowest level in more than 70 years. Over the past 50 years, such spending has averaged 11 percent of GDP, but it has been as high as 14 percent (in the late 1960s and early 1970s) and as low as

Figure 1-10.

Spending for Social Security and the Major Health Care Programs in 2019 and 2049

Percentage of GDP



Source: Congressional Budget Office.

Spending for the major health care programs consists of gross spending for Medicare (which does not account for the offsetting receipts that are credited to the program), Medicaid, and the Children’s Health Insurance Program, as well as outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending. Those outlays have been adjusted to exclude the effects of shifting payments from one fiscal year into another so that those payments are not made on a weekend.

Excess cost growth is the extent to which the growth rate of nominal health care spending per person (adjusted to remove the effects of aging) exceeds the growth rate of potential GDP per person. (Potential GDP is the maximum sustainable output of the economy.)

GDP = gross domestic product.

a. If aging and excess cost growth did not occur after 2019, spending on Social Security as a share of GDP would be lower in 30 years, mainly because of the scheduled increase in the full retirement age for Social Security.

8 percent (in the late 1990s and early 2000s). Other noninterest spending is estimated to equal 8.8 percent of GDP in 2019. In CBO’s extended baseline projections, such spending falls to 7.3 percent of GDP in 2029 and to 7.1 percent of GDP in 2049. Both discretionary spending and other mandatory spending are projected to decline in relation to GDP.

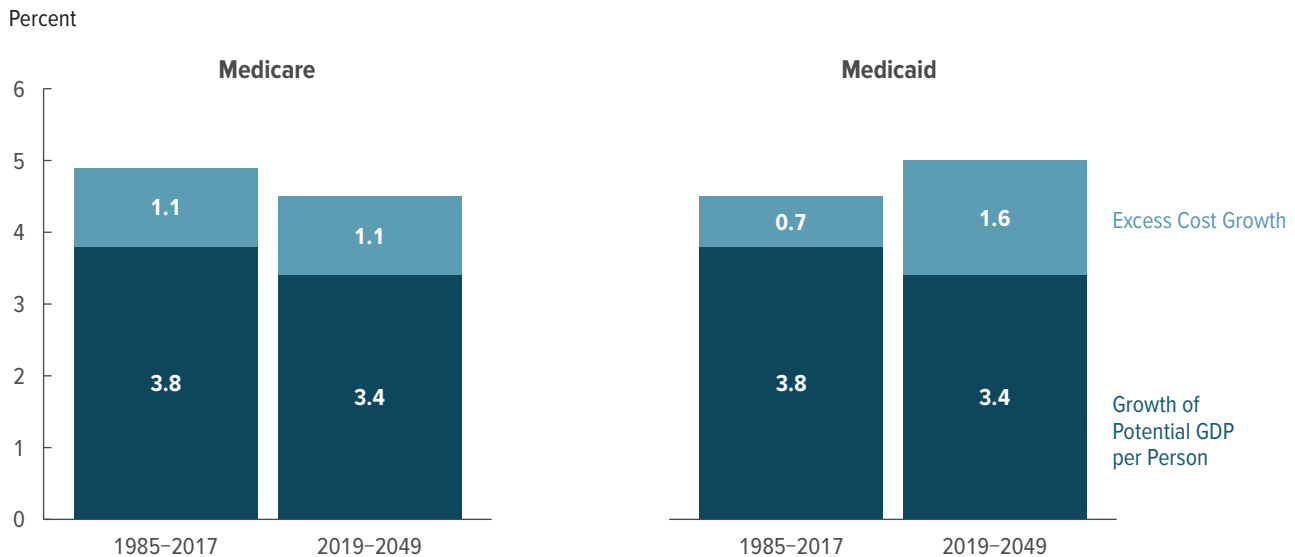
Discretionary Spending. About half of all discretionary spending is dedicated to national defense, and the rest is for an array of federally funded investments and activities, including education, transportation, housing assistance, veterans’ health care, health-related research and public health programs, the administration of justice, and international affairs.

Over the past half-century, discretionary spending has diminished markedly as a percentage of GDP: Between 1969 and 2018, it declined from 12.0 percent of GDP to 6.3 percent. In CBO’s baseline projections, discretionary outlays equal 6.3 percent of GDP in 2019 and then decrease steadily over the coming decade, falling to 5.0 percent of GDP in 2029.

Through 2021, most discretionary funding is limited by caps on annual discretionary appropriations that were originally specified in the Budget Control Act of 2011 (P.L. 112-25, as amended). The decline in discretionary outlays relative to GDP over the next eight years in CBO’s projections reflects lower statutory limits on discretionary funding in 2020 and 2021 and CBO’s assumption (required by law) that discretionary funding will grow at the rate of inflation—which is slower

Figure 1-11.

Average Annual Growth of Health Care Costs per Beneficiary



Source: Congressional Budget Office, using data from the Centers for Medicare & Medicaid Services.

Excess cost growth is the extent to which the growth rate of nominal health care spending per person (adjusted to remove the effects of aging) exceeds the growth rate of potential GDP per person. (Potential GDP is the maximum sustainable output of the economy.)

The averages of the components (excess cost growth and growth in potential GDP per person) are estimated separately using weighted regression, with twice as much weight placed on the last year of the period as on the first year. As a result, the components do not add up exactly to the average growth in health care costs per person (adjusted to remove the effects of aging), particularly over history, when growth rates varied substantially from year to year.

GDP = gross domestic product.

than the projected growth of GDP—beginning in 2022. CBO’s extended baseline projections reflect the assumption that after 2029, discretionary spending will remain roughly constant as a percentage of GDP (see Figure 1-12).²¹

Other Mandatory Spending. Since the mid-1960s, mandatory spending excluding that for Social Security and the major health care programs has generally remained between 2 percent and 4 percent of GDP.

21. CBO assumed that discretionary spending after 2029 would remain constant as a percentage of GDP before the agency accounted for the effect on the economy of the fiscal policies projected under the extended baseline. Because CBO estimates that those policies would dampen economic growth, projected discretionary spending would not grow at precisely the same rate as GDP. Although discretionary spending declines in relation to GDP from 2019 to 2029 in CBO’s projections, historical evidence suggests that such a decline is unlikely to persist: Discretionary spending has historically been a larger share of economic output than it is projected to be in 2029. For that reason, CBO did not assume that the share would decline further.

(One exception occurred in 2009, when such spending, referred to as other mandatory spending, spiked to 5.1 percent because of policies enacted in response to the severe recession.) Other mandatory spending includes retirement programs for federal civilian and military employees, certain veterans’ programs, the Supplemental Nutrition Assistance Program (SNAP), Supplemental Security Income, unemployment compensation, and refundable tax credits.²²

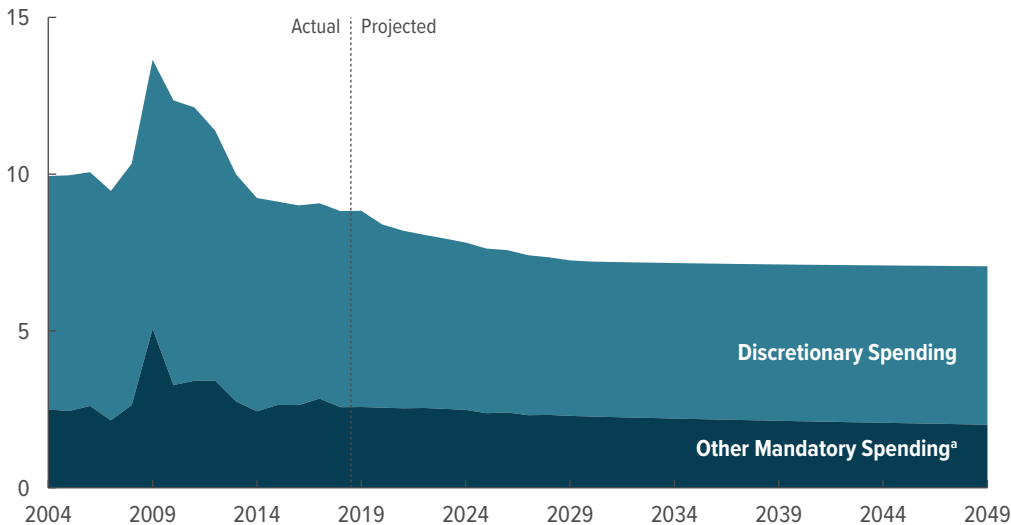
Other mandatory spending declines slightly as a share of the economy over the next 10 years in CBO’s projections. Such spending accounts for 2.6 percent of GDP today and, if current laws generally remained unchanged,

22. Refundable tax credits reduce a filer’s overall income tax liability; if the credit exceeds the rest of the filer’s income tax liability, the government pays all or some portion of that excess to the taxpayer (and the payment is treated as an outlay in the budget). See Congressional Budget Office, *Refundable Tax Credits* (January 2013), www.cbo.gov/publication/43767.

Figure 1-12.

Other Federal Noninterest Spending

Percentage of Gross Domestic Product



Measured as a percentage of economic output, other federal noninterest spending declines between 2019 and 2049 in CBO's projections, mainly because of a projected decrease in discretionary spending over the next decade.

Source: Congressional Budget Office.

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

would decline to 2.3 percent of GDP in 2029.²³ That decrease stems primarily from average benefits' increasing more slowly than income (because benefit growth is generally indexed to inflation measures that do not account for real income growth).

In CBO's extended baseline projections, other mandatory spending falls to 2.0 percent of GDP by 2049. In part, that reduction is attributable to growth in income, which would reduce the number of people eligible for refundable tax credits. It also reflects the assumption that after 2029 other mandatory spending, excluding outlays for such tax credits, would decline at roughly the same rate as such spending is projected to fall between 2024 and 2029.²⁴

23. Sec. 257(b)(2) of the Deficit Control Act, which governs CBO's baseline projections, makes exceptions regarding current law for some programs, such as SNAP, that have expiring authorizations but that are assumed to continue as currently authorized.

24. For the years after 2029, other mandatory spending was not projected in detail 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. Except for the outlays for refundable tax credits, after 2029 such spending is assumed to decline in relation to GDP (before any possible effects of fiscal policy on the economy are accounted for) at the same rate at

Net Interest Costs

Over the past 50 years, the government's net interest costs have averaged 2.0 percent of GDP, although they have been as high as 3.2 percent and as low as 1.2 percent. In CBO's extended baseline projections, net interest costs increase steadily as a share of the economy over the next decade—from 1.8 percent of GDP in 2019 to 3.0 percent by 2029—as greater federal borrowing boosts debt-service costs and as interest rates rise. Those costs reach 5.7 percent of GDP by 2049—higher than they have ever been before (see Figure 1-7 on page 20). If net interest costs followed that projected path, they would exceed other mandatory spending by 2023, exceed all discretionary spending by 2046, and approach spending for Social Security by 2049.

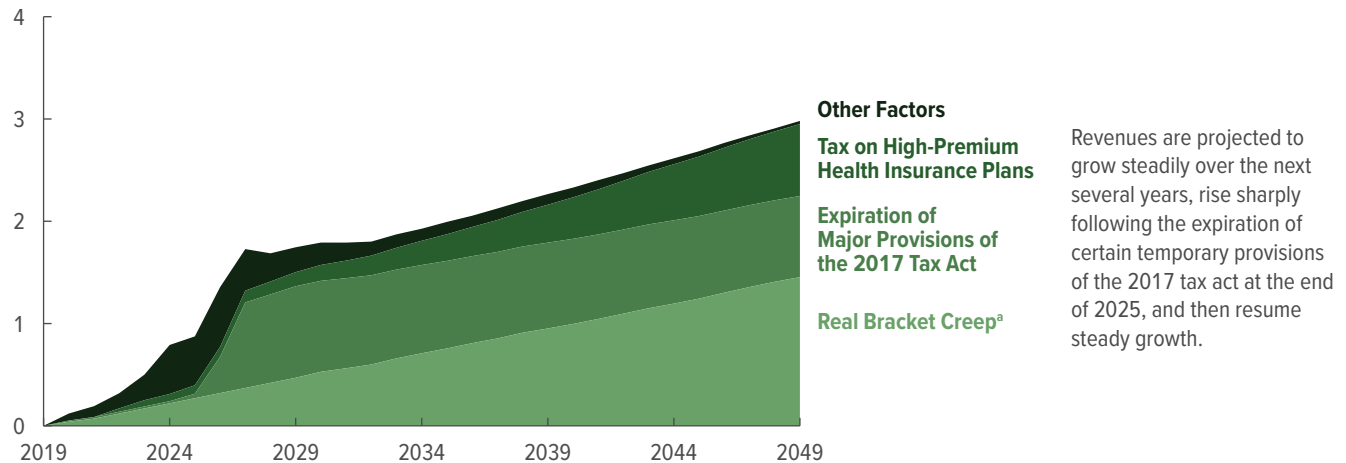
Deficits and debt rise in CBO's projections because of the growing gap between spending and revenues, and higher interest costs are a major contributor to the growth of that gap. More than half of the increase in spending as a percentage of GDP from 2019 to 2049 results from higher net interest costs. Moreover, of the 4.5 percentage-point increase in the federal budget deficit over that period, only 0.6 percentage points

which it is projected to fall between 2024 and 2029 (excluding the decrease in spending for SNAP).

Figure 1-13.

Increases in Federal Revenues

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

a. Real bracket creep is the process in which, as income rises faster than inflation, a larger proportion of income becomes subject to higher tax rates.

are attributable to the primary deficit—the rest of the increase is due to rising net interest costs. In large part, those rising interest costs stem from increases in interest rates that reflect long-term economic trends, which CBO projects would occur even if debt did not rise beyond its current level. But greater federal borrowing places additional upward pressure on interest rates and thus on interest costs. Moreover, growth in net interest costs and growth in debt reinforce one another: Rising interest costs boost deficits and debt, and rising debt pushes up interest costs.

Projected Revenues Through 2049

In CBO's extended baseline projections, revenues measured as a share of GDP are generally higher than they have been, on average, in recent decades. As a share of GDP, revenues have averaged 17.4 percent over the past 50 years, but they have fluctuated between 15 percent and 20 percent of GDP because of changes in tax laws and interactions between those laws and economic conditions.

If current laws generally remained unchanged, revenues would increase in relation to GDP over the coming decade, CBO projects. Revenues are projected to rise steadily from 16.5 percent of GDP in 2019 to 17.4 percent by 2025 and then to grow more rapidly, reaching 18.3 percent by 2029. The projected growth in revenues after 2025 is largely attributable to the expiration of

nearly all of the individual income tax provisions of the 2017 tax act.

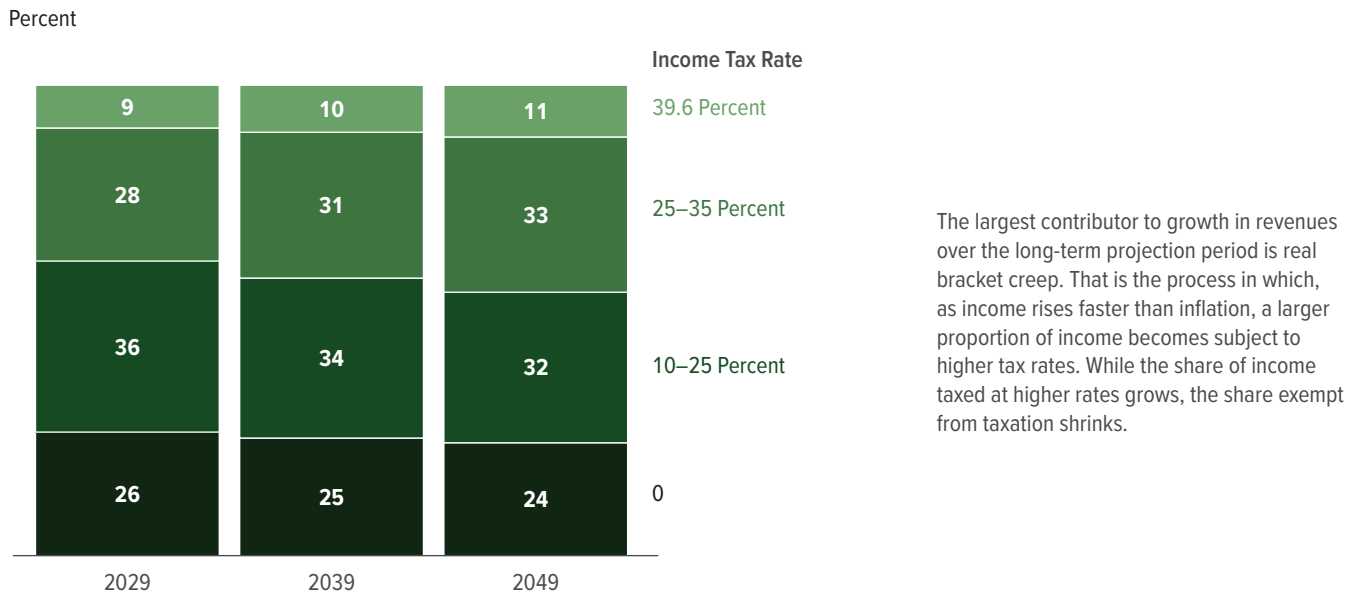
For years after 2029, revenues are projected following the assumption that the rules for all tax sources will change only as scheduled under current law.²⁵ Thus, in CBO's extended baseline projections, revenues continue to grow faster than GDP after 2029 and total 19.5 percent of GDP in 2049. Increases in receipts from individual income taxes account for most of the projected 3.0 percentage-point rise in total revenues as a share of GDP over the next three decades. Receipts from all other sources combined are projected to increase slightly as a share of GDP (see Figure 1-7 on page 20).

Over the entire 30-year period, the underlying causes of the projected increase in total revenues as a share of GDP are real bracket creep in the individual income tax system, expiring tax provisions and the tax on high-premium health insurance plans, and other factors.

25. The sole exception to the current-law assumption during the 30-year projection period 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 lawmakers have routinely extended them before.

Figure 1-14.

Shares of Income Taxed at Different Rates Under the Individual Income Tax System



Source: Congressional Budget Office.

Income here refers to adjusted gross income—that is, income from all sources not specifically excluded by the tax code, minus certain deductions. The income tax rate is the statutory rate specified under the individual income tax system.

The lowest statutory rate is zero because of deductions and exemptions.

Real Bracket Creep in the Individual Income Tax System

The largest contributor to the increase in total revenues is real bracket creep (see Figure 1-13 on page 28). If current laws generally remained unchanged, real bracket creep would continue to gradually push up taxes in relation to income over the next three decades, CBO projects. That occurs because most income tax brackets, exemptions, credits, and other tax thresholds are indexed to inflation.²⁶ When income grows faster than inflation, as generally happens during economic expansions, more income is pushed into higher tax brackets and credits phase out, thereby increasing tax receipts. Between 2029 and 2049, the share of income taxed at the top rate rises by 2 percentage points—and the share of income exempted from taxation falls by 2 percentage points—because of real bracket creep (see Figure 1-14).

Expiring Tax Provisions and the Tax on High-Premium Health Insurance Plans

The second largest contributor to the increase in revenues is the expiration, after calendar year 2025, of nearly all provisions of the 2017 tax act that affect individual income taxes. The expiration of those provisions would boost individual income tax receipts as a share of GDP by 0.8 percentage points by 2029, CBO projects.

The third major source of the increase in revenues is a tax on certain employment-based health insurance plans with high premiums that was originally enacted in 2010 and is scheduled to take effect in 2022.²⁷ Although the revenues raised by that tax would initially be small, rapid growth in health care costs is projected to drive up revenues from that tax over subsequent decades. CBO projects that the tax would bring in revenues equal to 0.7 percent of GDP by 2049.

26. Some parameters of the tax system, including the amount of the child tax credit, are fixed in nominal dollars and are not adjusted for inflation.

27. Under the Affordable Care Act, employer-sponsored health benefits will be subject to an excise tax equal to 40 percent of the value of those benefits exceeding certain thresholds. That tax was originally scheduled to take effect in 2018 but has been delayed twice by legislation, most recently by the Extension of Continuing Appropriations Act, 2018.

Table 1-4.

Effective Marginal Federal Tax Rates Underlying CBO's Extended Baseline Projections

Percent	2019	2029	2049
Marginal Tax Rate on Labor Income	26.8	30.3	32.0
Marginal Tax Rate on Capital Income	15.7	15.7	15.9

Source: Congressional Budget Office.

The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those projections for the rest of the long-term projection period.

The effective marginal tax rate on labor income is a weighted average of the percentage of an additional dollar of a taxpayer's labor income that is paid in federal individual income taxes and payroll taxes. Weights are assigned to taxpayers on the basis of their labor income. The effective marginal tax rate on capital income is the percentage 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. The before- and after-tax rates of return used to calculate that effective tax rate are weighted averages of the rates for every combination of asset type, industry, form of organization, and source of financing; the weights used are the values of the assets for each combination.

Other Factors

Many other factors affect revenues in the extended baseline projections. For example, earnings are projected to grow faster for higher-income people than for other people over the next 30 years. That trend would cause a larger share of individual income to be taxed at higher rates. The resulting increase in individual income tax revenues would be largely offset by a decrease of nearly the same amount in payroll tax receipts, CBO projects, because a greater share of earnings would be above the maximum amount subject to Social Security payroll taxes. In addition, several other tax provisions are scheduled to expire over the coming decade, which generally pushes up revenues in CBO's projections.

Those factors would, under current law, cause the effects of the tax system in 2049 to differ substantially from the system's effects today. Taxpayers across the income distribution would, on average, pay more of their income in taxes in 2049 than similar taxpayers do now if current laws generally remained unchanged. In addition, a larger share of each additional dollar of income that households earned would go to pay taxes because under current law, the effective marginal federal tax rates for labor would

rise (see Table 1-4). The effective marginal tax rate on capital would also rise by a small amount. Higher marginal rates can dampen economic activity: Increases in the marginal tax rate on labor income reduce people's incentive to work, and increases in the marginal tax rate on capital income reduce their incentive to save.²⁸

Uncertainty of CBO's Long-Term Projections

Budget projections are inherently uncertain. Even if future tax and spending policies do not vary from those specified in current law, budgetary outcomes will undoubtedly differ from those in CBO's extended baseline projections because of unexpected changes in demographics, the economy, and other factors. To quantify the uncertainty of budgetary outcomes over the long term, CBO examined the extent to which federal debt as a percentage of GDP would differ from its extended baseline projections if a set of key factors—several demographic and economic factors and the growth of health care costs—deviated from the paths underlying those projections.

CBO projects that there is a two-thirds chance that federal debt held by the public would be between 71 percent and 175 percent of GDP in 2039 if current laws generally remained unchanged (see Figure 1-15). That range of outcomes indicates that federal debt held by the public after 20 years could be as much as 42 percentage points lower or as much as 62 percentage points higher than the agency's extended baseline projection of 113 percent of GDP.

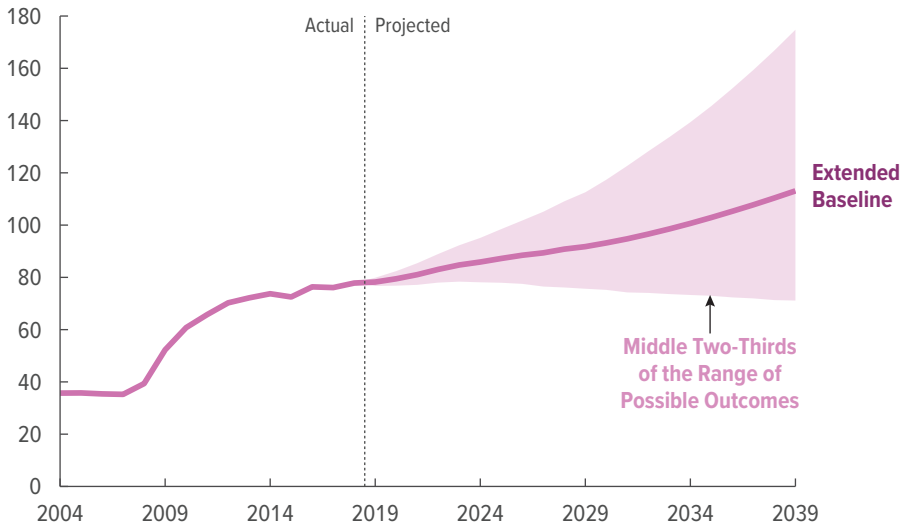
To estimate that likely range, CBO simulated budgetary outcomes 30 years from now by varying all of the key factors at once, but the agency also examined the sensitivity of its projections to higher or lower values for some of those factors, including productivity growth or interest rates, in isolation (see Box 1-1). CBO's analysis does not address certain sources of uncertainty in the budget projections, such as the risk of an economic depression or a major war or catastrophe. Also, although the factors considered here are some of the more important ones, they are not the only ones. Nonetheless, the results show that the main implications of this report apply under a wide range of possible values for key factors that influence federal spending and revenues. If current

28. Although the marginal tax rate on capital income is projected to rise under current law, it would still be lower than it has been in recent years.

Figure 1-15.

Uncertainty in CBO's Projections of Federal Debt Held by the Public

Percentage of GDP



There is a two-thirds chance that federal debt held by the public will be between 71 percent and 175 percent of GDP by 2039.

Source: Congressional Budget Office.

The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those projections for the rest of the long-term projection period.

To quantify the uncertainty of long-term budgetary outcomes, CBO estimated a distribution of outcomes using simulations of its long-term model, each with a unique set of values for key economic and demographic factors. Specifically, CBO assessed the consequences of alternative paths for the following factors: the growth rate of total factor productivity, interest rates on federal debt held by the public, the civilian unemployment rate, the rates of excess cost growth for Medicare and Medicaid spending, the fertility rate, the rate of mortality improvement, and the rate of immigration.

The civilian unemployment rate is the percentage of people in the labor force who are unemployed. (The labor force is the number of people in the civilian noninstitutionalized population who are age 16 or older and who are either working or actively seeking work.) Excess cost growth is the extent to which the growth rate of nominal health care spending per person (adjusted to remove the effects of aging) exceeds the growth rate of potential GDP per person. (Potential GDP is the maximum sustainable output of the economy.)

GDP = gross domestic product.

laws generally remained unchanged, in 20 years federal debt—which is already high by historical standards—would probably be much higher than it is today.

The Basis of CBO's Uncertainty Analysis

If the size of the population, productivity growth, interest rates, unemployment rates, and excess cost growth for Medicare and Medicaid diverged from the paths underlying CBO's extended baseline budget projections, budgetary outcomes could differ markedly from those projections.²⁹ To quantify the uncertainty of its budget projections arising from the uncertainty of those key factors, CBO assessed past trends of those factors. The

agency also evaluated the extent to which some factors—productivity growth, interest rates, and unemployment rates—have moved together over long periods of time.

Using simulations that incorporated historical data, the agency projected potential future outcomes for each key factor.³⁰ On the basis of those simulations, the agency constructed ranges that capture two-thirds of possible outcomes over the next two decades for each of those factors as well as for the budgetary outcomes resulting from them. There is a two-thirds chance that an outcome will fall within the range estimated for it. The ranges reflect the uncertainty of the long-term trend of each

29. The civilian unemployment rate is the percentage of people in the labor force who are unemployed.

30. Details about the methods used in this analysis of uncertainty will be provided in a forthcoming publication.

Box 1-1.

Sensitivity of Budget Projections to Changes in Underlying Economic Factors

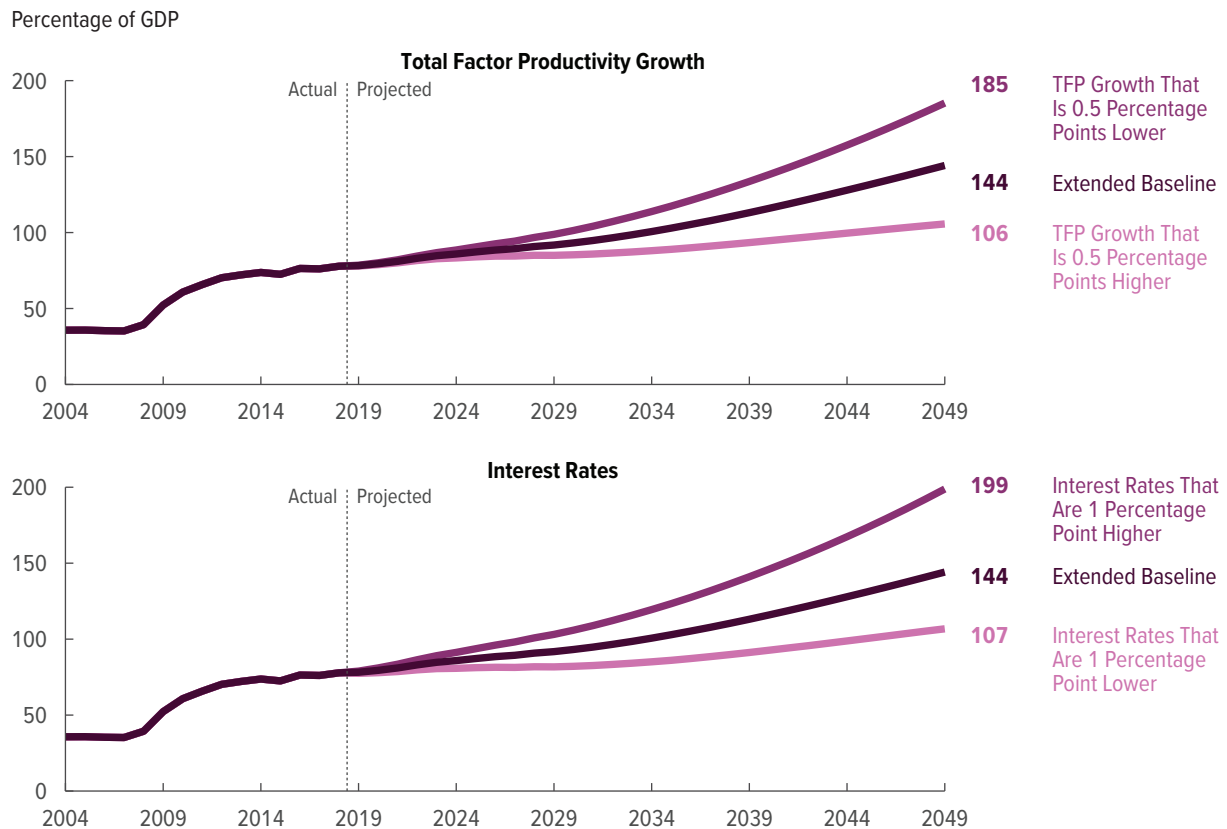
How would the budget be affected if the economy ended up growing more quickly than it does in the Congressional Budget Office’s projections? For example, what if productivity grew more quickly than CBO expects? Or what if interest rates turned out to be higher than CBO’s central estimates? For instance, what if investors were willing to take on more risk than projected and interest rates on federal debt rose in relation to interest rates on private securities more than CBO expects? How would such a development affect the budget? To help answer those questions and others, the agency examined the sensitivity of its budget projections to values for productivity growth and for interest rates on federal debt that differed from its central estimates for those key factors.

Growth of Nonfarm Business Productivity

CBO assessed average nonfarm business total factor productivity (TFP) growth over 30-year periods between 1950 and the present.¹ Over those periods, the 30-year average of productivity growth varied by about 1 percentage point, indicating that future outcomes would most likely fall within a 1 percentage-point range around the agency’s central estimates.² The agency therefore projected economic and budgetary outcomes

1. Total factor productivity is the growth of real (inflation-adjusted) output per unit of combined labor and capital services.
2. See Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), Chapter 7, www.cbo.gov/publication/51580.

Federal Debt If Total Factor Productivity Growth or Interest Rates Differed From the Values Underlying CBO’s Projections



Source: Congressional Budget Office.

GDP = gross domestic product; TFP = total factor productivity.

Continued

Box 1-1.

Continued

Sensitivity of Budget Projections to Changes in Underlying Economic Factors

using rates of growth of nonfarm business TFP that were 0.5 percentage points higher and 0.5 percentage points lower than the rate underlying the extended baseline projections.³

- If nonfarm business productivity grew 0.5 percentage points faster each year than CBO projects, federal debt held by the public would be 106 percent of gross domestic product (GDP) in 2049 rather than 144 percent, as it is in the extended baseline projections (see the figure).
- If, instead, nonfarm business productivity grew 0.5 percentage points more slowly each year than projected, federal debt held by the public would be 185 percent of GDP in 2049.

Interest on Federal Debt Held by the Public

CBO also examined the variation in interest rates on federal debt held by the public over 30-year periods since 1949 to assess the extent to which unexpected changes in financial factors contribute to changes in those rates. (The agency estimated how much of that variation could be explained directly or indirectly by economic or budgetary factors; the remaining, unexplained variation was the contribution of unexpected changes in financial factors.) On the basis of that analysis, CBO determined that future outcomes are likely to fall within a range of 2 percentage points around the agency's central estimate. Thus, CBO projected economic and budgetary outcomes using interest rates on federal debt that were 1.0 percentage point higher (before accounting for macroeconomic effects) and 1.0 percentage point lower than the agency's central estimates.

- If federal borrowing rates were 1.0 percentage point higher each year than CBO projects, federal debt held by the

3. CBO's extended baseline projections generally reflect current law, following the agency's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those projections for the rest of the long-term projection period.

public would be 199 percent of GDP in 2049 rather than the 144 percent in the extended baseline projection (see the figure).

- If, instead, federal borrowing rates were 1.0 percentage point lower each year than they are in CBO's extended baseline projections, federal debt held by the public would be 107 percent of GDP in 2049.

Other Factors

CBO has also examined the sensitivity of its budget projections to other factors, as it has done in the past. Last year, for example, CBO examined the extent to which federal debt as a percentage of GDP would differ from amounts in the extended baseline projections if four key factors underlying its analysis varied by fixed amounts: the labor force participation rate, the growth rate of total factor productivity in the nonfarm business sector, interest rates on federal debt held by the public, and excess cost growth for Medicare and Medicaid spending.⁴ The degree of variation in each of those factors was based on historical movements and considered the effects of possible future developments. Estimates of the budgetary outcomes of alternative paths for each of the four factors (including the two discussed here), as well as estimates of the effects when all four factors vary simultaneously, are presented in the supplemental data posted along with this report on CBO's website (www.cbo.gov/publication/55331).

4. See Congressional Budget Office, *The 2018 Long-Term Budget Outlook* (June 2018), pp. 23–35, www.cbo.gov/publication/53919. The labor force participation rate is the percentage of people in the civilian noninstitutionalized population who are age 16 or older and either working or actively seeking work. Excess cost growth is the extent to which the growth rate of nominal health care spending per person (adjusted to remove the effects of aging) exceeds the growth rate of potential gross domestic product per person. Potential GDP per person is the maximum sustainable output of the economy.

factor as well as the uncertainty associated with the long-term correlation among some factors.

Uncertainty of Demographic Factors

CBO projected a range of outcomes for the total fertility rate, the rate of mortality improvement, and the rate of net immigration, all of which affect the size of the population (see Table 1-5). On the basis of historical data and

current trends, CBO estimates that there is roughly a two-thirds chance that those factors would fall within the following ranges:

- The total fertility rate would be between 1.8 and 2.0 births per woman, or between 5 percent lower and 5 percent higher than the rate underlying the extended baseline projections.

Table 1-5.

Middle Two-Thirds of the Ranges of Possible Outcomes for Key Factors Used to Quantify the Uncertainty in CBO's Projections of Federal Debt Held by the Public

	Average Annual Value, 2019 to 2039		
	Low	Extended Baseline	High
Demographic Factors			
Total fertility rate (Children per woman)	1.8	1.9	2.0
Rate of mortality improvement (Percent) ^a	0.6	0.9	1.2
Net immigration rate (Per 1,000 people in the U.S. population)	2.9	3.1	3.3
Economic Factors (Percent)			
Growth in total factor productivity in the nonfarm business sector ^b	0.6	1.1	1.6
Interest rate on 10-year Treasury securities	2.4	3.8	5.1
Civilian unemployment rate ^c	3.7	4.6	5.5
Excess Cost Growth (Percent)^d			
Medicare	0.5	1.1	1.7
Medicaid	1.2	1.8	2.4

Source: Congressional Budget Office.

The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections through 2029 and then extending most of the concepts underlying those projections for the rest of the long-term projection period.

GDP = gross domestic product.

- a. The rate of mortality improvement is the average annual percentage improvement in mortality rates. A mortality rate is the number of deaths per thousand people; improved (that is, lower) mortality rates result in longer life expectancy.
- b. Total factor productivity in the nonfarm business sector measures the growth of the average real (inflation-adjusted) output per unit of combined labor and capital services.
- c. The civilian unemployment rate is the percentage of people in the labor force who are unemployed. Labor force data are restricted to the civilian noninstitutionalized population who are age 16 or older and are either working or actively seeking work.
- d. Excess cost growth is the extent to which the growth rate of nominal health care spending per person (adjusted to remove the effects of aging) exceeds the growth rate of potential GDP per person. (Potential GDP is the maximum sustainable output of the economy.)

- The rate of mortality improvement would be between 0.6 percent and 1.2 percent, or as much as one-third lower or higher than the rate underlying the extended baseline projections. If rates of mortality improvement fell within that range, life expectancy at birth would be between 80.5 and 82.2 years by 2039, or between 1 percent shorter and 1 percent longer than the value underlying the extended baseline projections. (Life expectancy at age 65 would be between 20.3 and 21.4 years, or 2½ percent shorter to 2½ percent longer than CBO's baseline value.)
- The average net immigration rate over the 20-year projection period would be between 2.9 and 3.3 per thousand people in the U.S. population, or between

6½ percent less than and 6½ percent greater than the rate underlying the extended baseline projections.³¹

As a result of varying those key demographic factors, in two-thirds of CBO's simulations the civilian noninstitutionalized population grew by an average of between 0.6 percent and 0.7 percent from 2019 to 2039. If the growth of that population was within that range, by 2039 that population would be between 293 million and 297 million, or between 2 million (or 0.7 percent) smaller than and 2 million (or 0.7 percent) larger than the population underlying CBO's extended baseline projections.

31. For some categories of immigrants, the number of people admitted in any year is restricted by caps. For this analysis, the net number of immigrants in those categories does not vary. Net inflows of foreign-born people without legal status are highly uncertain, and those net flows are varied for this analysis.

Uncertainty of Economic Factors and the Growth of Health Care Costs

CBO examined three economic factors and the growth of health care costs in its uncertainty analysis. In the agency's assessment, there is roughly a two-thirds chance that the following outcomes would occur over the next two decades (see Table 1-5 on page 34):

- The average growth rate of total factor productivity in the nonfarm business sector would be between 0.6 percent and 1.6 percent, or as much as 0.5 percentage points less than or greater than the rate underlying CBO's extended baseline projections.
- The average interest rate on 10-year U.S. Treasury securities would be between 2.4 percent and 5.1 percent, or as much as 1.4 percentage points lower or higher than the rate underlying the extended baseline projections.
- The average civilian unemployment rate would be between 3.7 percent and 5.5 percent, or as much as 0.9 percentage points less than or greater than the rate underlying the extended baseline projections.
- The rates of excess cost growth for Medicare and Medicaid spending would be as much as 0.6 percentage points higher or lower than the rates underlying the extended baseline projections.

Changes in those factors would affect the budget in important ways. For example, if the unemployment rate was higher than projected, the economy's output and tax revenues would be less than they are in CBO's extended baseline projections, and consequently, federal deficits and debt would be greater than the agency projects. By contrast, if the rates of cost growth for Medicare and Medicaid were lower than projected, deficits and debt would be less than they are in the extended baseline projections, primarily because outlays would be smaller.

Changes From Last Year's Long-Term Budget Outlook

As a share of GDP, federal debt and deficits are now projected to be lower over the next three decades than CBO projected last year. In the agency's current extended baseline projections, debt is equal to 141 percent of GDP in 2048, which is 11 percentage points lower than the amount the agency projected last year. Projected deficits (both primary and total) as a share of GDP in this year's report are smaller throughout the entire projection period than those in last year's report. (See Appendix B for more information on changes in the long-term budget projections since last year.)

The revised projections of debt and deficits resulted primarily from a reduction in projected outlays, specifically in discretionary spending and in net spending for interest, which was partially offset by a small reduction in projected revenues. This year's projections of discretionary spending are lower than last year's projections because appropriations for relief and recovery efforts related to hurricanes and wildfires were smaller in 2019 than they were in 2018. (Projections for future years are based on the 2019 appropriations.) This year's projections of net spending for interest are lower because less debt is projected to be accumulated and because CBO has revised downward its projections of the average interest rate on that debt. Revenues are projected to be slightly lower than they were in last year's projections because of new administrative and tax data.

The 75-year actuarial deficit currently projected for Social Security is 1.5 percent of GDP (the same amount that CBO estimated last year) or 4.6 percent of taxable payroll (which is slightly larger than last year's estimate of 4.4 percent). Those projections reflect several developments since last year. The actuarial deficit increased partly because CBO lowered its projections of payroll taxes. Also, the agency incorporated another year with a relatively large deficit into the analysis. Largely offsetting those increases, however, was a downward revision that CBO made to its projections of outlays for Social Security.