# Changes in Long-Term Budget Projections Since June 2018

The 30-year extended baseline projections for federal spending and revenues presented in this report differ from the projections that the Congressional Budget Office published in 2018 because of certain changes in law, the availability of more recent data, changes to the agency's projections of demographic and economic factors, and other changes in assumptions and methods.[1] CBO has also revised its methods of analyzing uncertainty and fiscal scenarios that are alternatives to the extended baseline projections. This appendix compares CBO's current projections with the previous ones. Because most of last year's projections ended in 2048, the appendix generally makes comparisons only through that year.

Measured as a percentage of gross domestic product (GDP), budget deficits and federal debt held by the public are now projected to be smaller over the next three decades than CBO projected last year.

- In CBO's extended baseline projections, deficits are projected to grow from 4.2 percent of GDP this year to 8.6 percent in 2048, which are 0.4 percentage points and 1.0 percentage point lower, respectively, than projected last year (see Figure B-1).

- Primary deficits—deficits excluding net spending for interest—are projected to grow from 2.4 percent of GDP this year to 3.0 percent of GDP in 2048, which are 0.3 percentage points and 0.2 percentage points lower, respectively, than projected last year.

- Debt held by the public is projected to grow more slowly than projected last year, rising from 78 percent of GDP this year to 141 percent in 2048; last year, CBO projected that it would rise from 79 percent of GDP in 2019 to 152 percent in 2048.

The revised projections of deficits and debt resulted primarily from lower projected spending, which was partially offset by a small reduction in projected revenues.

- Projected discretionary spending throughout the 30-year projection period is lower than CBO anticipated last year because appropriations for relief and recovery efforts related to hurricanes and wildfires were smaller in 2019 than in 2018.[2]

- Net spending for interest on debt over the 30-year period is lower in this year's projections than it was in last year's because less debt is projected to be accumulated and because CBO has revised downward its projections of the average interest rate on that debt (see Appendix A).

- Projected outlays for Social Security (throughout the 30-year period) and major health care programs (over the first 10 years) are slightly smaller than they were last year because the most recent data show reductions in the number of beneficiaries and in spending, respectively.

- Revenues are projected to be slightly lower because of new administrative and tax data.
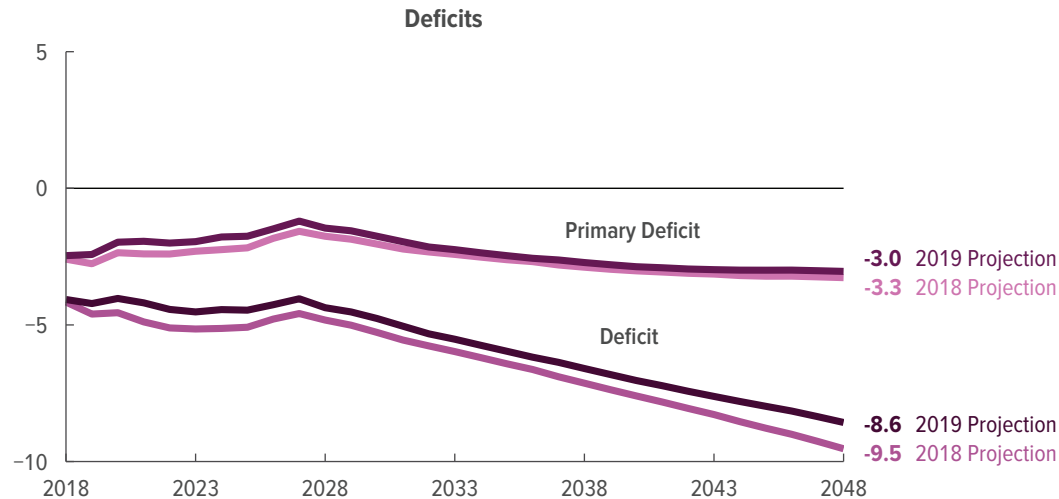
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1. The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections and then extending most of the concepts underlying those projections for the rest of the long-term projection period. For the 2018 extended baseline projections, see Congressional Budget Office, *The 2018 Long-Term Budget Outlook* (June 2018), www.cbo.gov/publication/53919. For the 10-year projections underlying the extended baseline projections in this report, see *Updated Budget Projections: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151. For the changes in projections of demographic and economic factors since 2018, see Appendix A of this report.

2. Projections of discretionary spending are based on the most recent appropriations for each discretionary program and are increased over time to account for inflation. (In addition, total discretionary spending is subject to caps that are specified in law and that limit discretionary outlays through 2021.)

**Figure B-1.**

## CBO's 2018 and 2019 Extended Baseline Projections of Deficits and Federal Debt Held by the Public

Percentage of GDP

**Deficits**



| | |
|---|---|
| **-3.0** | 2019 Projection |
| **-3.3** | 2018 Projection |

| | |
|---|---|
| **-8.6** | 2019 Projection |
| **-9.5** | 2018 Projection |

Annual deficits over the next three decades are smaller in this year's projections than they were in last year's. The differences are larger for total deficits than for primary deficits because projected net spending for interest has fallen.

**Federal Debt Held by the Public**



| | |
|---|---|
| **152** | 2018 Projection |
| **141** | 2019 Projection |
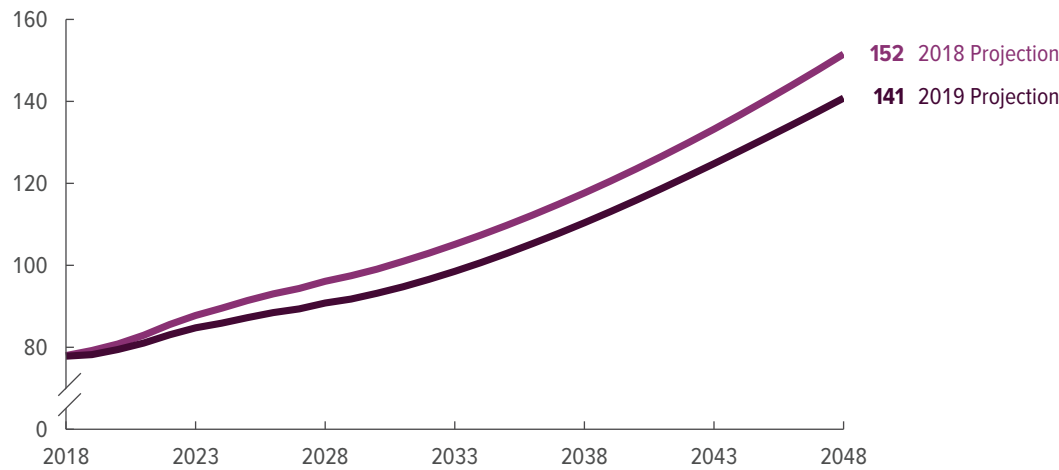
Projected debt is also lower now. The difference between the two sets of projections grows over time, reaching about 11 percent of GDP.

Source: Congressional Budget Office.

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

The primary deficit is the deficit excluding net spending for interest.

GDP = gross domestic product.

## Changes in Projected Spending

In CBO's extended baseline projections, spending as a percentage of GDP is lower than projected last year because of reductions in both noninterest spending and net spending for interest.
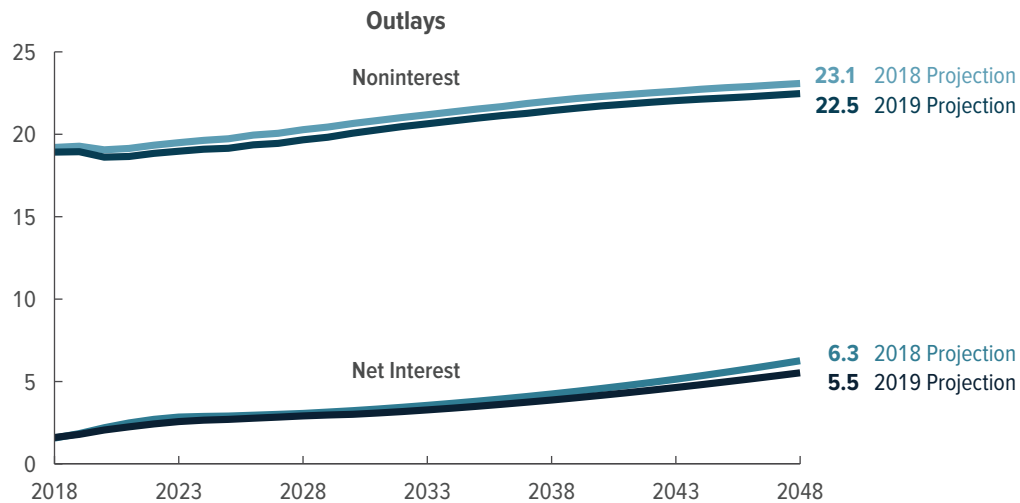
### Noninterest Spending

As a percentage of GDP, noninterest spending—that is, spending for Social Security, spending for the major federal health care programs, other mandatory spending, and discretionary spending—is projected to be lower throughout the 30-year period than projected last year

**Figure B-2.**

## CBO's 2018 and 2019 Extended Baseline Projections of Outlays and Revenues

Percentage of GDP



**Outlays**

Noninterest

23.1   2018 Projection
22.5   2019 Projection

Net Interest

6.3   2018 Projection
5.5   2019 Projection

Noninterest spending and net spending for interest are both lower in this year's projections than they were in last year's.

Noninterest spending is now projected to be 0.3 percent of GDP lower in 2019, and 0.6 percent of GDP lower in 2048, than projected last year. Although this year's projection of net spending for interest is about the same as last year's for 2019, it is about 0.7 percent of GDP lower for 2048.

**Revenues**

19.8   2018 Projection
19.4   2019 Projection
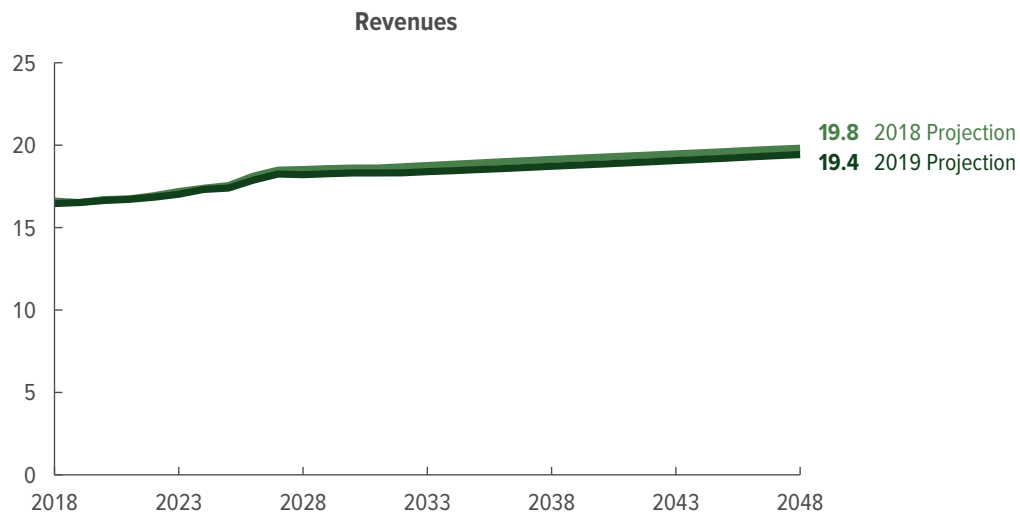
Projected revenues over the next three decades are also slightly lower in this year's projections than they were in last year's—0.4 percent of GDP lower by 2048.

Source: Congressional Budget Office.

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

GDP = gross domestic product.

(see Figure B-2). Most of that change stems from lower projections of discretionary spending.

**Discretionary Spending.** In CBO's current projections, outlays for discretionary spending as a percentage of GDP equal 6.3 percent of GDP in 2019, rather than the 6.4 percent projected last year; 5.0 percent of GDP in 2029, rather than the 5.4 percent projected last

year; and 5.0 percent of GDP in 2048, rather than the 5.5 percent projected last year. The reduction throughout the 30-year period occurred primarily because appropriations for 2019 that are designated as emergency requirements (generally to respond to wildfires and other major disasters) are substantially lower in 2019 than they were in 2018. So far, appropriations for 2019 amount to $2 billion—a sharp reduction from the $108 billion that

was appropriated in 2018, mostly for relief and recovery efforts related to Hurricanes Harvey, Irma, and Maria and wildfires in western states. In accordance with the statutes that govern its projections, CBO develops its projections for discretionary spending by starting with appropriations for the most recent year available and adjusting those amounts for inflation over time. CBO's projections last year were based on the amounts appropriated for 2018; the current projections are based on the much smaller amounts appropriated for 2019.[3]

**Spending for Social Security.** In CBO's current projections, outlays for Social Security as a percentage of GDP are slightly lower than the agency anticipated last year. Although projected spending for Social Security in 2019 is about the same as projected last year (4.9 percent of GDP), it is slightly lower throughout the next 10 years and thereafter. In 2048, that spending is projected to equal 6.2 percent of GDP, rather than the 6.3 percent of GDP projected last year.

Over the next decade, the revisions to outlays are due to slight reductions in projected spending for both of Social Security's components—Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI). CBO's current projections of the number of OASI beneficiaries and DI beneficiaries over the next 10 years are lower than the previous projections by about 1 percent and 5 percent, respectively. Those revisions reflect recent data showing that people claimed OASI benefits later than expected and that fewer people were awarded DI benefits than expected. In addition, CBO has reduced its projections of population growth. The effect of fewer beneficiaries is slightly offset by a higher-than-anticipated cost-of-living adjustment that beneficiaries received in January 2019.

After 2028, the slight reduction in OASI outlays is driven by downward revisions to CBO's projections of the population and to projections of wages and salaries (see Appendix A for a discussion of changes in CBO's

demographic and economic projections). For DI outlays, the projected reduction after the first decade is also driven by a reduction in the projected share of the population that would receive disability benefits. CBO now projects a long-run age- and sex-adjusted rate of disability incidence—the share of workers who are awarded disability benefits in each year out of all workers who are insured under DI but not receiving benefits at the start of the year—of 5.2 per 1,000.[4] Last year, the projected rate was 5.4 per 1,000. CBO revised it because there have consistently been fewer new DI beneficiaries than the agency expected in recent years. The revised rate is also closer to current longer-term historical averages. Specifically, the average rate from 1990 through 2018, a time during which DI policy has remained fairly steady—and also from 1990 through 2007, the period covering the last two full business cycles—was about 5.2 per 1,000. The downward revision reduces the total projected number of DI beneficiaries in 2048 by about 3 percent.

**Spending for Major Health Care Programs.** CBO's current projection of federal spending for the major health care programs, measured as a percentage of GDP, is slightly lower over the next 10 years than it was in last year's projections and about the same thereafter. The change consists mainly of small revisions in projected outlays for Medicare and for subsidizing health insurance purchased through marketplaces and related spending.

*Medicare.* Spending for Medicare net of offsetting receipts (which are mostly premiums paid by beneficiaries) is projected to be about 0.1 percent of GDP lower in 2019 than anticipated last year and less than 0.1 percent of GDP lower, on average, over the first decade of the projection period. That revision was made mainly because the most recent data indicate that spending for Medicare's Part D (which covers prescription drugs) and Part A (Hospital Insurance) has been lower than expected. After the first decade, net spending for Medicare is projected to be about the same as projected last year.

*Medicaid, CHIP, and Marketplace Subsidies.* Throughout the first decade, outlays for Medicaid and the Children's

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3.  To project discretionary spending, CBO assumes that such spending would generally adhere to the caps that are specified in current law through 2021 and then increase gradually, to account for inflation, through 2029. Afterward, discretionary spending remains roughly constant as a percentage of GDP in CBO's projections. (It is not precisely constant as a percentage of GDP because CBO's projection of GDP includes the macroeconomic effects of the policies underlying the extended baseline projections.)

4.  The adjustment accounts for changes since 2000 in the age and sex makeup of the population that has worked long enough and recently enough to satisfy work requirements for disability benefits but is not yet receiving those benefits.

Health Insurance Program (CHIP), together with spending to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending, are projected to be, on average, less than 0.1 percent of GDP lower than projected last year. That reduction is driven by lower projections of premiums for insurance purchased through marketplaces, reflecting updated data and technical revisions. After the first decade, projected spending is also less than 0.1 percent of GDP lower than projected last year, reaching 3.3 percent of GDP in 2048.

*Methods Underlying Projections of Health Care Spending.* To project long-term spending for the major health care programs, CBO used the same method that it used last year. Namely, it combined estimates of the number of people who are projected to receive benefits from those programs with fairly mechanical estimates of the growth of spending per beneficiary (adjusted to account for demographic changes to the beneficiaries in each program). CBO has estimated the growth of spending per beneficiary by combining projected growth in potential nominal GDP per person with projected excess cost growth for each program. (Potential GDP is the maximum sustainable output of the economy; excess cost growth is the extent to which health care costs per person, after being adjusted for demographic changes, grow faster than potential GDP per person.) For both the 10-year and the 30-year periods, potential GDP per person is projected to grow at an average rate of about 3.4 percent per year, about the same rate that CBO projected last year.

Through 2029, CBO used the rate of excess cost growth for Medicare, Medicaid, and private health insurance premiums that is implicit in the agency's 10-year baseline projections for each of those categories. For 2030, the rate equals the average rate from the last 5 years of those projections (2025 to 2029), which is different for each category. After 2030, the rate for each category moves linearly, by the same fraction of a percentage point each year, from that category-specific rate to a rate of 1.0 percent in 2049.[5]

For Medicare, the average annual rate of excess cost growth implicit in CBO's baseline projections is about 1.2 percent from 2020 through 2029, a slightly higher rate than last year's projection of 1.0 percent from 2019 through 2028. (The increase reflects slightly higher projected spending per beneficiary because CBO revised its methods to incorporate updated data from the Centers for Medicare & Medicaid Services.) The projected rate of excess cost growth for 2030 is 1.2 percent, the same as last year's estimate for 2029. Excess cost growth is projected to average 1.1 percent over the full projection period, a slightly higher rate than last year's estimate for the 2018–2048 period (1.0 percent) but the same as the historical average of 1.1 percent from 1985 to 2017.

For Medicaid, the average annual rate of excess cost growth implicit in CBO's baseline projections for the federal share of such spending is 1.8 percent from 2020 through 2029, up by about 0.2 percentage points from last year's estimate for 2019 through 2028. The rate for 2030 is 1.8 percent, up by about 0.2 percentage points from last year's estimate for 2029. Those changes were the cumulative result of many updates that CBO made to its baseline projections for legislative, economic, and technical reasons. The rate of excess cost growth is projected to average 1.6 percent over the full projection period, which is about 0.3 percentage points higher than last year's estimate for the 2018–2048 period and 0.9 percentage points higher than the 1985–2017 average.

For private health insurance premiums, which CBO uses as an input to its calculation of marketplace subsidies, the average annual rate of excess cost growth implicit in CBO's baseline projections is 1.8 percent from 2020 through 2029 (which is slightly lower than last year's estimate of 2.0 percent for the 2019–2028 period). The rate for 2030 is 1.5 percent, which again is slightly lower than last year's estimate of 1.6 percent for 2029. The rate of excess cost growth is projected to average 1.4 percent over the full projection period, which is about 0.1 percentage point lower than last year's estimate for the 2018–2048 period and 0.7 percentage points lower than the 1988–2017 average.

**Other Mandatory Spending.** CBO's projections for other mandatory spending are slightly lower than they were last year. (Other mandatory spending includes outlays for retirement programs for federal civilian and military employees, certain programs for veterans, refundable

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5.   For more information, see Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), Chapter 3, www.cbo.gov/publication/51580. In contrast to outlays for the larger health care programs, outlays for CHIP are projected to be a constant percentage of GDP after 2029.

tax credits, the Supplemental Nutrition Assistance Program, and all other mandatory programs aside from Social Security and the health care programs described above.) On average over the 30-year projection period, outlays for other mandatory spending as a percentage of GDP in CBO's projections are less than 0.1 percent of GDP lower than projected last year. That small change was the cumulative result of several updates that CBO made for legislative, economic, and technical reasons.

### Net Spending for Interest

In CBO's current projections, net spending for interest—that is, the government's interest payments on debt held by the public, offset by interest income that the government receives—is lower throughout the 30-year projection period than it was in last year's projections (see Figure B-2 on page 67). That spending is lower because the agency's projections of interest rates, deficits, and federal debt held by the public are likewise lower. (For a discussion of changes to CBO's projections of interest rates, see Appendix A.)

For the 2019–2028 period, net spending for interest is projected to average 2.5 percent of GDP; last year, the projected average was 2.7 percent. It is projected to equal 3.0 percent of GDP in 2029 (down 0.2 percentage points from last year's projections) and 5.5 percent of GDP in 2048 (down 0.7 percentage points from last year's projections).

### Changes in Projected Revenues

In CBO's extended baseline projections, revenues as a percentage of GDP are slightly lower throughout the 30-year period than they were in last year's projections. Although in 2019 they are projected to be about the same, by 2048 they are projected to be about 0.4 percent of GDP lower than CBO projected last year. Most of the revisions occur in the first decade of the projection period.

The downward revisions to total revenues as a share of GDP result from CBO's slightly lower projections of individual income taxes, payroll taxes, and corporate income taxes. Receipts from individual income taxes and from payroll taxes are now each projected to be 0.1 percent of GDP lower over the 2019–2028 period than CBO projected last year. Those changes are mainly driven by new administrative and tax data that suggest lower tax receipts than CBO had projected. Also, the Bureau of Economic Analysis has revised upward its estimates of some of the sources of income that those taxes

have been levied on—particularly proprietors' income and monetary interest income, which is the share of personal interest income that does not come from marketed goods and services. Average tax rates on those types of income have therefore been lower than CBO previously estimated. As a result, CBO has lowered its projections of average tax rates in the future. Additional factors contributing to the downward revisions include lower taxable distributions from pension plans than projected previously, changes in the relationship between earnings and payroll tax receipts that have taken place in recent years and that are projected to persist, and a downward revision to CBO's forecast of wages and salaries. Receipts from corporate income taxes are also projected to be 0.1 percent of GDP lower over the 2019–2028 period; that change results from new data from corporate income tax returns for 2016 and improvements in CBO's modeling of the income of multinational corporations.

Those effects are partially offset by an increase in projected revenues from customs duties that reflects new tariffs imposed by the Administration during 2018. In 2019 and over the 2019–2028 period, those revenues are now projected to be 0.2 percent of GDP higher than CBO projected last year.[6]

### Changes in Social Security's Projected Finances

Social Security's 75-year actuarial deficit—a measure of the program's budgetary shortfall over a 75-year period—is currently projected to be 1.5 percent of GDP (which is about the same as estimated last year) or 4.6 percent of taxable payroll (which is slightly higher than last year's estimate of 4.4 percent).[7]

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6.  The projections of revenues from customs duties over the next decade were most recently published in May 2019; see Congressional Budget Office, *Updated Budget Projections: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151. CBO's extended baseline projections incorporate the assumption that the new tariffs would continue throughout the projection period at the rates in effect at the beginning of May. For more information about CBO's approach to projecting revenues from customs duties, see Congressional Budget Office, *The Budget and Economic Outlook: 2019 to 2029* (January 2019), www.cbo.gov/publication/54918.

7.  The actuarial deficit is computed as the sum of the present value of projected tax revenues and the trust funds' current balance minus the sum of the present value of projected outlays and a year's worth of benefits at the end of the period. The result is negative, indicating that the program's long-term cost is greater than its income. A present value is a single number that expresses a flow of current and future income (or payments) in terms of an equivalent lump sum received (or paid) at a specific time.

Those projections result from several factors. On the one hand, CBO has lowered its projection of payroll taxes, making the actuarial deficit larger. That reduction was a result of new administrative and tax data, reduced projections of the labor force, and downward revisions to wages and salaries throughout the projection period. Incorporating into the analysis another year (2093) with a relatively large difference between Social Security revenues and outlays also increased the actuarial deficit. On the other hand, CBO has lowered projected outlays for Social Security—making the actuarial deficit smaller— because the agency has reduced its projections of the number of beneficiaries in the OASI and DI programs and its projections of wages and salaries. (The reduction to projections of the number of beneficiaries was made partly because of downward revisions to the long-run rate of disability incidence and population growth.) The small increase in the actuarial deficit when measured as a percentage of taxable payroll also reflects a slightly lower projection of the share of earnings that is subject to Social Security payroll taxes over the next 30 years.[8]

CBO projects that if current law governing the program's taxes and benefits did not change, the DI trust fund would be exhausted in fiscal year 2028, the OASI trust fund would be exhausted in calendar year 2032, and the combined trust funds would also be exhausted in calendar year 2032. Last year, those exhaustion dates were three years earlier for the DI trust fund, the same year for the OASI trust fund, and one year earlier for the combined trust funds. The change in the date of exhaustion of the DI trust fund is due to lower projections of the number of DI beneficiaries over the next 10 years.

## Changes in Analyzing Uncertainty

CBO has changed the methods that it uses to analyze the uncertainty of its projections. To illustrate that uncertainty last year, the agency created two projections of federal debt—one in which key factors were varied in ways that would raise projected deficits in relation to CBO's extended baseline projections and another in which those factors lowered projected deficits. The ranges of variation that the agency used for the economic factors were based on historical movements and potential future developments of each individual factor. This year, CBO instead analyzed the long-term uncertainty surrounding the key

economic factors by using simulations from a multivariate statistical model.[9] That approach accounts not only for the uncertainty of long-term trends of individual factors but also for the uncertainty of those factors' long-term movement in relation to one another.

CBO has also significantly increased the number of factors that it varies when analyzing uncertainty. Last year, CBO varied four key factors—the labor force participation rate, the growth rate of total factor productivity (TFP) in the nonfarm business sector, interest rates on federal debt held by the public, and excess cost growth for Medicare and Medicaid spending.[10] This year, CBO varied seven key factors, the first three of which are demographic, the next three of which are economic, and the last of which relates to health care:

- The total fertility rate,

- The rate of mortality improvement,

- The net immigration rate,

- The growth rate of TFP in the nonfarm business sector,

- Interest rates on federal debt held by the public,

- The civilian unemployment rate, and

- Excess cost growth for Medicare and Medicaid spending.

Introducing demographic factors into this year's analysis—specifically, varying the civilian unemployment rate together with the demographic factors, which affect

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8.  Beyond the 30-year projection period, the share of earnings subject to Social Security payroll taxes is held constant in CBO's projections.

9.  A multivariate statistical model is one that describes the statistical properties (such as mean, standard deviation, and correlations) of multiple variables. CBO's simulations for the growth rate of total factor productivity in the nonfarm business sector, the interest rates on federal debt held by the public, and the civilian unemployment rate are based on a vector autoregressive (VAR) multivariate model. CBO's VAR model incorporates parameters that vary with time, allowing the variables to have time-varying statistical properties. In particular, the model allows the variables to exhibit highly persistent (but not necessarily permanent) deviations from their historical averages. CBO estimated the parameters of the VAR model using annual data from 1953 to 2018.

10. Total factor productivity is the average real output per unit of combined labor and capital services.

the size of the working-age population—has allowed CBO to make a more comprehensive assessment of the uncertainty of the economy's future amount of labor. In last year's analysis, by contrast, CBO varied one economic factor, the labor force participation rate, to quantify that uncertainty.

CBO's new method of quantifying uncertainty in its projections and the additional uncertainty stemming from the demographic factors included in this year's analysis result in noticeable differences from last year's ranges of budgetary outcomes. Last year, CBO estimated that in 2039, federal debt under current law could be as much as 43 percent of GDP higher or 35 percent of GDP lower than it was in the agency's extended baseline projections. Also, CBO noted that those estimates did not cover the full range of possibilities. And the agency did not quantify the degree of its certainty that actual debt would equal a value between those estimates. Under the new method, CBO now estimates that if future tax and spending policies did not vary from those specified in current law, there is a two-thirds chance that federal debt held by the public in 2039 could be as much as 62 percent of GDP higher or 42 percent of GDP lower than it is in the agency's extended baseline projections.

CBO's current analysis of uncertainty extends 20 years into the future; last year, the analysis extended 30 years into the future. The likely range of uncertainty that CBO's models produce for projections of debt 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 a range 30 years in the future, projections of debt as a percentage of GDP would grow to amounts well outside that historical experience.

## Changes in Alternative Scenarios for Fiscal Policy

Last year, CBO published a report that described three fiscal scenarios that were alternatives to the extended baseline projections.[11] The first of the three scenarios, called the extended alternative fiscal scenario, incorporated the assumption that current law was changed to maintain certain major policies that are now in

place—including the individual income tax provisions of Public Law 115-97 (often called the 2017 tax act in CBO's publications), which are scheduled to expire in 2026 under current law. In that scenario, projected deficits were larger than in the extended baseline projections. In the second and third scenarios, projected deficits were larger still.

In this report, CBO has described two scenarios in addition to the extended baseline projections: an extended alternative fiscal scenario and another scenario, called the payable-benefits scenario, which incorporates the assumption that outlays for Social Security would be reduced to equal the program's total annual revenues once the combined Social Security trust funds were exhausted.

### The Extended Alternative Fiscal Scenario

Last year, CBO projected that debt held by the public in the extended alternative fiscal scenario would equal about 210 percent of GDP in 2048, which was about 60 percentage points more than in that year's extended baseline projections. This year, CBO projects that it would equal 211 percent in 2048, which is 70 percentage points more than in this year's extended baseline projections. The larger difference this year results from several modeling changes.

Two of the changes make the difference larger. First, in this year's extended alternative fiscal scenario, revenues are lower than in the extended baseline projections by a larger amount than they were last year because CBO has modeled the long-term effects of the policy changes in the extended alternative fiscal scenario in more detail than it did last year. Second, economic output is lower in the extended alternative fiscal scenario than it is in the extended baseline projections, pushing down some kinds of noninterest spending—and in CBO's long-term projections, such spending is now less sensitive to changes in economic output over the next decade than it was previously. As a result, the reduction in economic output in relation to the extended baseline projections pushes down noninterest spending by a smaller amount in this year's extended alternative fiscal scenario than in last year's.

Those changes are partially offset by a modeling improvement that reduces the effects of deficits on the return on capital and interest rates. Those effects are now based on a more comprehensive assessment of how changes in

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11. Congressional Budget Office, *The Long-Term Budget Outlook Under Alternative Scenarios for Fiscal Policy* (August 2018), www.cbo.gov/publication/54325.

private investment affect the capital stock and thus the return on capital—which is a key factor driving changes in interest rates throughout the economy, in CBO's view. This year, CBO has expanded its measure of the capital stock that is affected by changes in private investment to include owner-occupied residential housing. Last year, that measure mainly included nonfarm business capital stock. Because the measure is now more comprehensive, any given change in private investment (for example, a change resulting from larger deficits, which crowd out private investment) now results in a smaller percentage change in the measure. That smaller percentage effect on the capital stock results in a smaller change in the return on capital and ultimately in a smaller change in interest rates. Because of that modeling improvement, changes in deficits have a smaller effect on interest rates, and ultimately on federal debt held by the public, in this year's extended alternative fiscal scenario.

### The Payable-Benefits Scenario
In CBO's current payable-benefits scenario, debt equals 106 percent of GDP in 2049, which is 38 percentage points below its level in the extended baseline projections. CBO last examined a payable-benefits scenario in 2017 and projected that debt would equal 111 percent of GDP in 2047, the last year of the extended baseline projections at the time, which was 39 percentage points below its level in those extended baseline projections.

Also, CBO now projects that limiting Social Security benefits to amounts payable from revenues would result

in reducing benefits by 24 percent in calendar year 2033 (the year after the program's combined trust funds are projected to be exhausted) and by 29 percent in calendar year 2049. In 2017, CBO estimated that the reduction in benefits would amount to 28 percent in calendar year 2031 (the year after the projected exhaustion of the combined trust funds in that analysis) and greater percentages in later years.[12]

This year, CBO analyzed the payable-benefits scenario with the same suite of dynamic macroeconomic models that the agency used in analyzing the extended alternative fiscal scenario. In the 2017 analysis, CBO used a simpler set of models; assumed that people would not change their decisions about consumption, saving, or work in anticipation of receiving lower Social Security benefits; and assumed that they would not change their decisions about saving or work *after* receiving those lower benefits.

Furthermore, the current analysis incorporates the ways in which those changed decisions about work and saving would affect the economy and feed back into the federal budget. It also incorporates the ways in which those decisions would affect the overall demand for goods and services when benefits were unexpectedly cut. The previous analysis did not account for any of those effects.

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12. See Congressional Budget Office, *The 2017 Long-Term Budget Outlook* (March 2017), www.cbo.gov/publication/52480.