Panel A
Historic GDP Growth Rates

10-Year Average		**3.37%**
20-Year Average		**4.17%**
30-Year Average		**4.65%**
40-Year Average		**5.56%**
50-Year Average		**6.36%**

Calculated using GDP data on Page 1 of Exhibit JRW-10

Panel B
Projected GDP Growth Rates

	Time Frame	Projected Nominal GDP Growth Rate
Congressional Budget Office	**2019-2049**	**4.40%**
Survey of Financial Forecasters	**Ten Year**	**4.25%**
Social Security Administration	**2018-2095**	**4.35%**
Energy Information Administration	**2018-2050**	**4.20%**

Sources:

Congressional Budget Office,The *2019 Long-Term Budget Outlook* , June 15, 2019.
https://www.cbo.gov/system/files/2019-06/55331-LTBO-2.pdf

U.S. Energy Information Administration, *Annual Energy Outlook 2019* , Table: Macroeconomic Indicators,
https://www.eia.gov/outlooks/aeo/pdf/appa.pdf

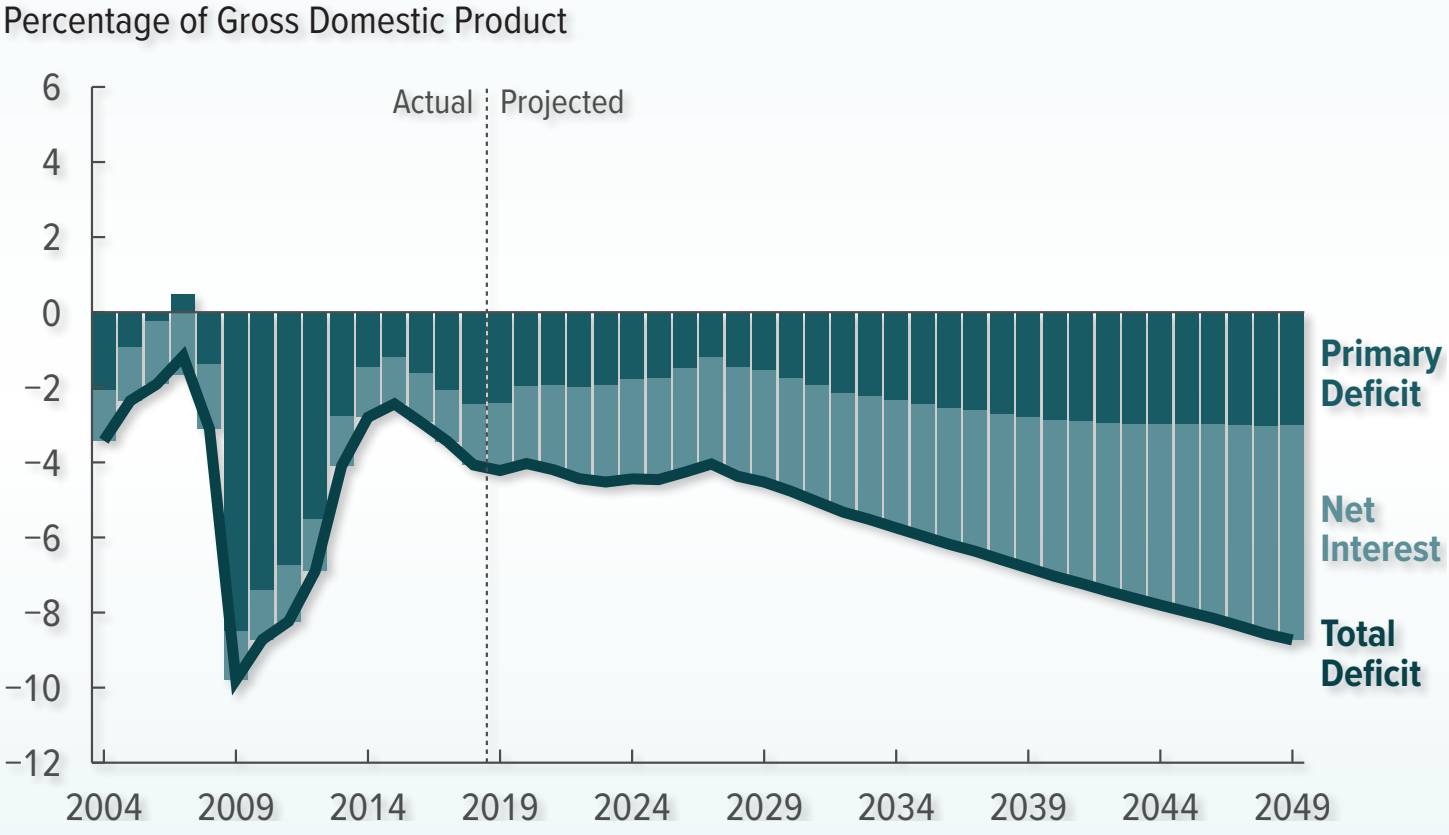
Social Security Administration, 2019 Annual Report of the Board of Trustees of the Old-Age,
Survivors, and Disability Insurance (OASDI) Program, Table VI.G4, p. 211(June 15, 2019),
https://www.ssa.gov/oact/TR/2019/VI_G2_OASDHI_GDP.html#200732
in projected GDP from $21,485 trillion in 2019 to $546,331 trillion in 2095.

https://www.philadelphiafed.org/-/media/research-and-data/real-time-center/survey-of-professional-forecaste

CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

CBO

The 2019 Long-Term Budget Outlook



JUNE 2019

At a Glance

Each year, the Congressional Budget Office publishes a report presenting its budget projections for the next 30 years. Those *extended baseline* projections generally reflect current law. This report is the latest in the series.

- **Debt in CBO's Extended Baseline Projections**. Large budget deficits over the next 30 years are projected to drive federal debt held by the public to unprecedented levels—from 78 percent of gross domestic product (GDP) in 2019 to 144 percent by 2049. That projection incorporates CBO's central estimates of various factors, such as productivity growth and interest rates on federal debt. CBO's analysis indicates that even if values for those factors differed from the agency's projections, debt several decades from now would probably be much higher than it is today.

- **Other Possible Outcomes.** The agency's projections of debt are highly sensitive to changes in the factors underlying them. For example, if the growth of total factor productivity in the nonfarm business sector was one-half of one percentage point lower each year than CBO projects, all else being equal, debt in 2049 would be 185 percent of GDP; if such growth was one-half of one percentage point higher, debt that year would be 106 percent of GDP. If interest rates were one percentage point higher each year than CBO projects, debt in 2049 would be 199 percent of GDP; if they were one percentage point lower, debt that year would be 107 percent of GDP.

- **Debt Under Alternative Scenarios.** If lawmakers changed current laws to maintain certain major 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—then debt held by the public would increase even more, reaching 219 percent of GDP by 2049. By contrast, if Social Security benefits were limited to the amounts payable from revenues received by the Social Security trust funds, debt in 2049 would reach 106 percent of GDP, still well above its current level.

- **Interest Costs.** The projected increase in federal borrowing would lead to significantly higher interest costs. In CBO's extended baseline projections, net outlays for interest more than triple in relation to the size of the economy over the next three decades, exceeding all discretionary spending by 2046.

- **Noninterest Spending.** Mainly owing to the aging of the population, spending for Social Security and the major health care programs (primarily Medicare) is projected to rise as a percentage of GDP over the coming decades. The growth of spending for Medicare and the other major health care programs is also driven by rising health care costs per person.

- **Revenues.** Measured as a percentage of GDP, revenues are projected to be roughly flat over the next few years, rise slowly, and then jump in 2026 because of the scheduled expiration of certain provisions of the 2017 tax act. Thereafter, they continue to rise—but they do not keep pace with growth in spending. The factor contributing most to the long-term growth in revenues is the increasing share of income that is pushed into higher tax brackets.

- **Comparison With Last Year's Projections.** Debt as a percentage of GDP in 2048 is 11 percentage points lower in this year's extended baseline projections than it was in last year's. That difference is largely driven by spending projections that are lower than they were last year.

Contents

Notes

The Congressional Budget Office's extended baseline projections show the budget's long-term path under most of the same assumptions that the agency uses, in accordance with statutory requirements, in constructing its 10-year baseline projections. Both sets of projections incorporate the assumptions that current law generally remains unchanged, that some mandatory programs are nevertheless extended after their authorizations lapse, and that spending for Medicare and Social Security continues as scheduled even if their trust funds are exhausted.

Unless this report indicates otherwise, all projections shown in the figures are extended baseline projections.

Unless the report indicates otherwise, the years that it refers to are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end. Budgetary values, such as the ratio of debt or deficits to gross domestic product, are calculated on a fiscal year basis; economic variables, such as gross national product or interest rates, are calculated on a calendar year basis.

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. All budget projections in this report have been adjusted to exclude the effects of those timing shifts. For the dollar amounts of payments that are shifted in CBO's 10-year baseline budget projections, see Congressional Budget Office, *Updated Budget Projections: 2019 to 2029* (May 2019), Table 2, www.cbo.gov/publication/55151.

Numbers in the text, tables, and figures may not add up to totals because of rounding.

Unless the report specifies otherwise, Medicare outlays are presented net of offsetting receipts, which reduce outlays for the program.

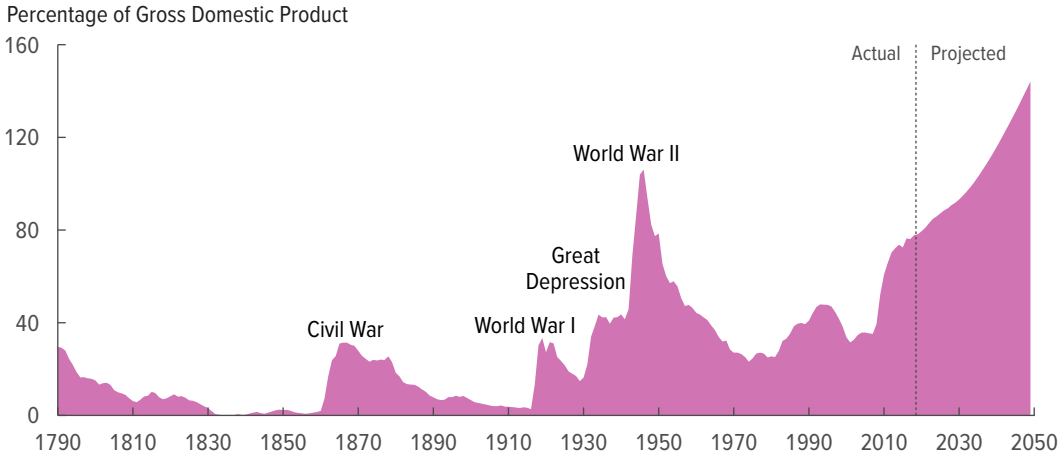
As referred to in this report, the Affordable Care Act comprises the Patient Protection and Affordable Care Act; the health care provisions of the Health Care and Education Reconciliation Act of 2010; and the effects of subsequent judicial decisions, statutory changes, and administrative actions.

Data and supplemental information files—the data underlying the figures in this report, supplemental budget projections, and the demographic and economic variables underlying those projections—are posted along with the report on CBO's website (www.cbo.gov/publication/55331). Previous editions of this report are also available on the website (https://go.usa.gov/xmezZ).

Visual Summary

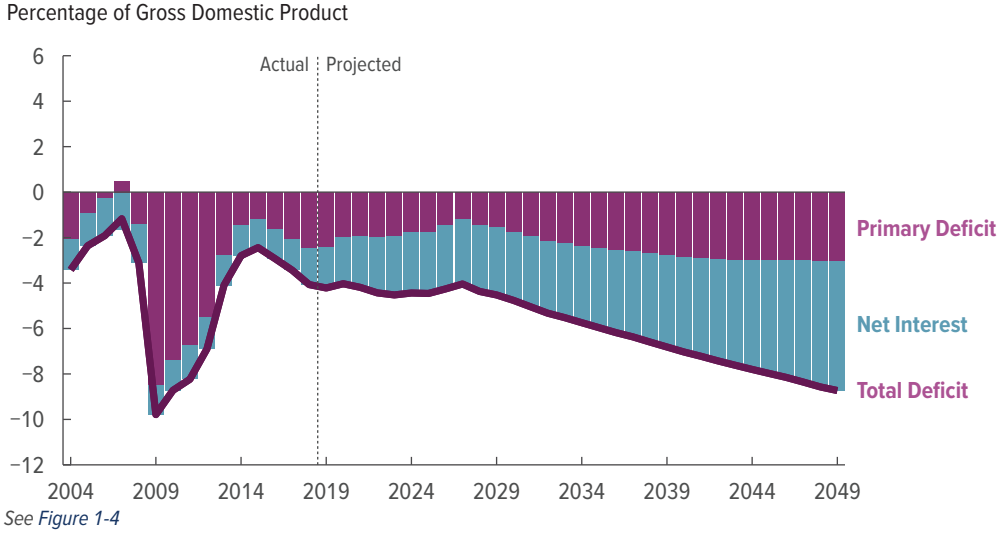
Each year, the Congressional Budget Office issues a set of long-term budget projections—that is, projections of what federal spending, revenues, deficits, and debt would be for the next 30 years if current laws generally did not change. CBO calls them extended baseline projections. This year's projections of federal debt are slightly lower than last year's, mainly because CBO has reduced its projections of discretionary and net interest spending. Those reductions are partially offset by a small reduction in projected revenues.

Debt and Deficits



In CBO's projections, federal debt held by the public totals 144 percent of gross domestic product (GDP) in 2049, an unprecedented level.

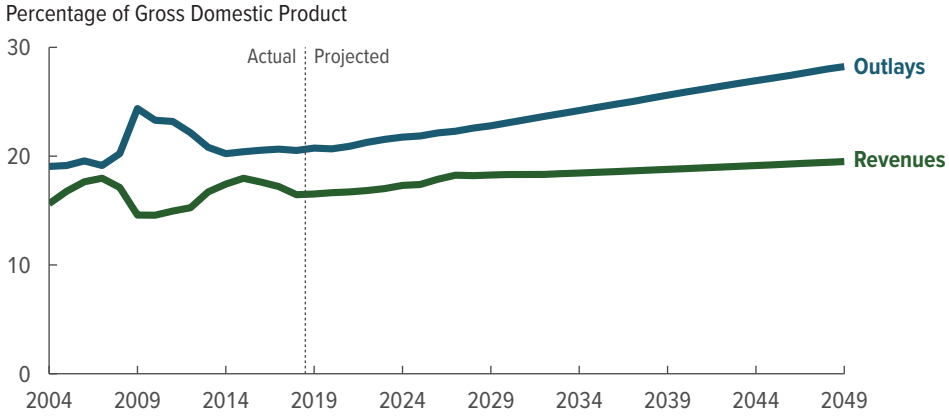
See Figure 1-1



Deficits grow from 4.2 percent of GDP in 2019 to 8.7 percent in 2049, driving up debt. Net spending for interest on debt accounts for most of the growth in total deficits.

See Figure 1-4

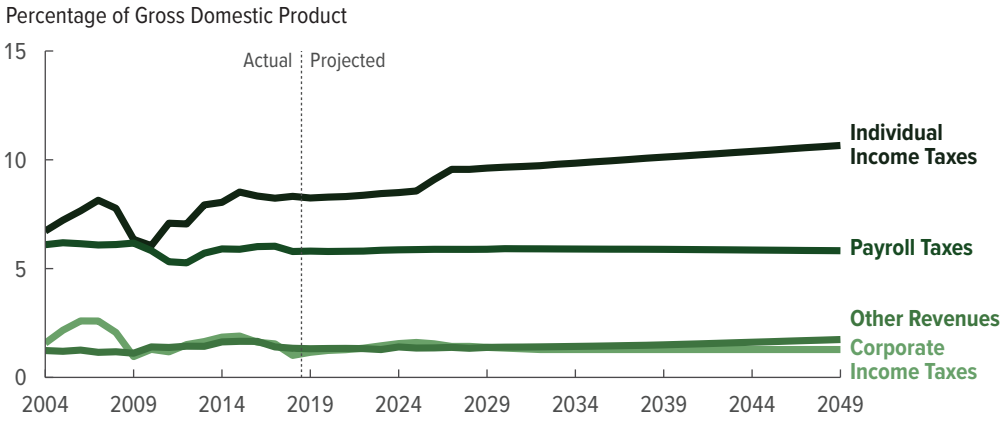
Debt and Deficits (Continued)



See Figure 1-3

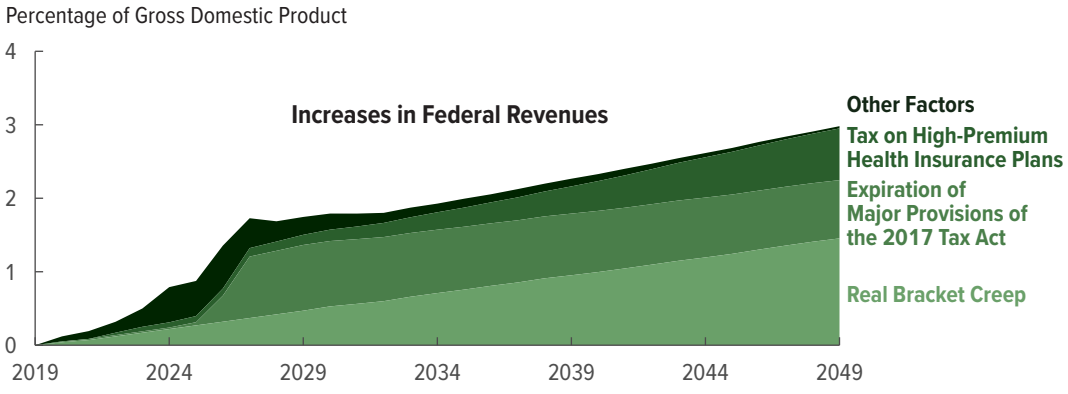
Deficits grow because growth in spending outpaces growth in revenues.

Revenues In CBO's projections, federal revenues increase as a percentage of GDP—from 16.5 percent in 2019 to 19.5 percent in 2049.



See Figure 1-3

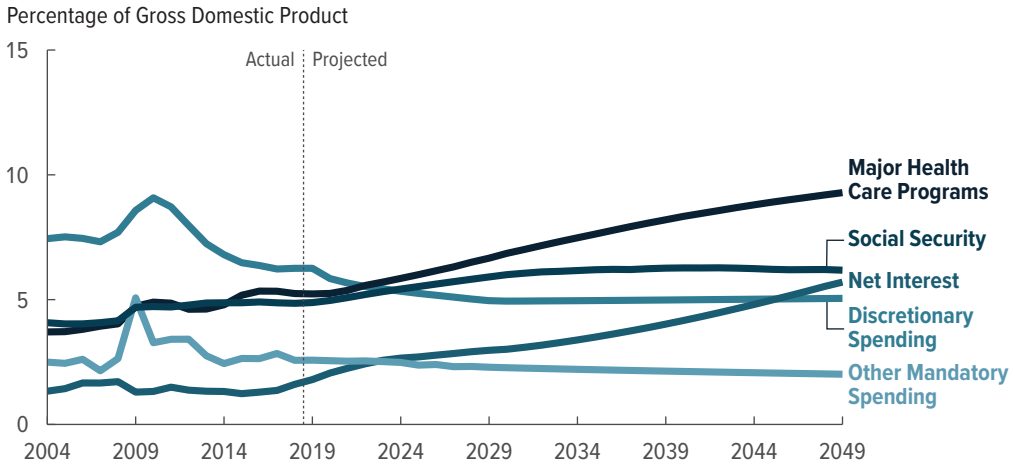
Increases in receipts from individual income taxes account for most of the rise in total revenues.



See Figure 1-13

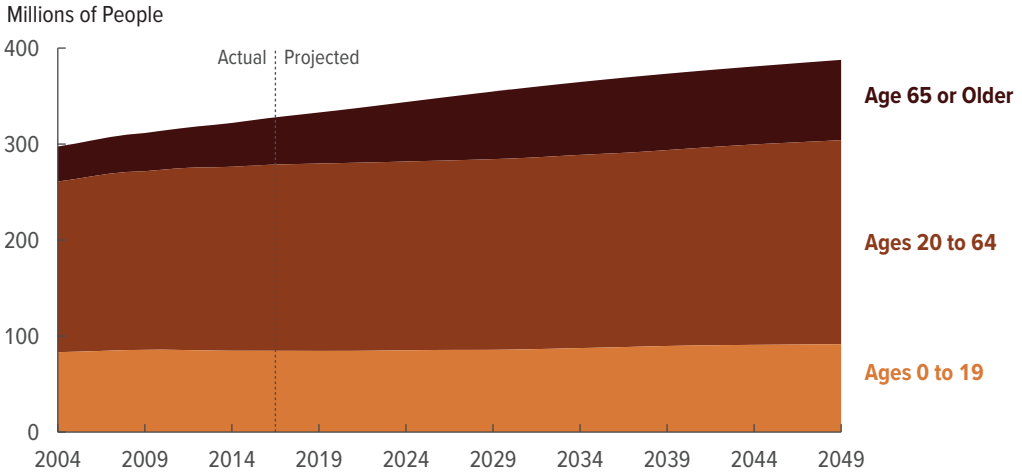
The largest source of growth in tax revenues is real bracket creep—the process in which, as income rises faster than inflation, a larger proportion of income becomes subject to higher tax rates.

Spending Federal spending grows from 20.7 percent of GDP today to 28.2 percent in 2049.



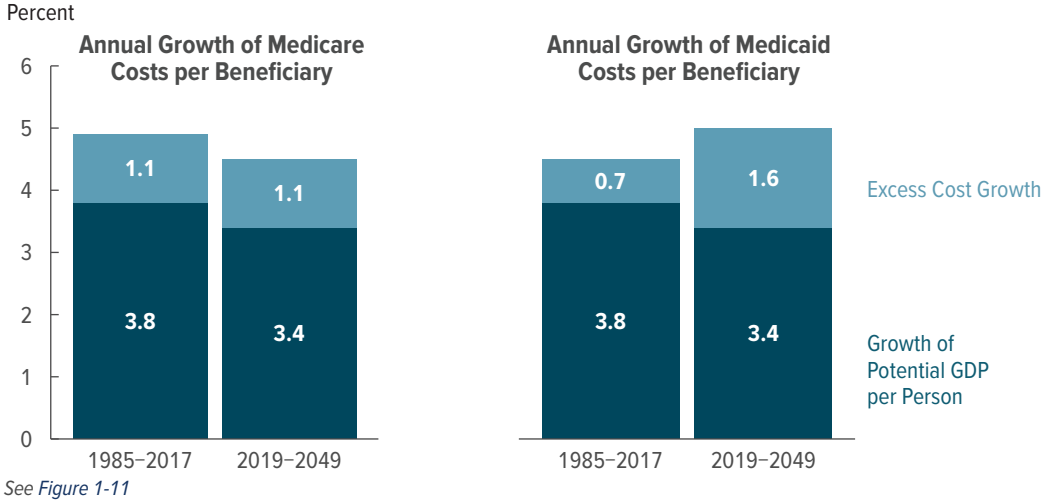
See Figure 1-3

Spending increases, as a percentage of GDP, for net interest, the major health care programs, and Social Security. That spending growth is partially offset by declining spending for other programs.



See Figure 1-5

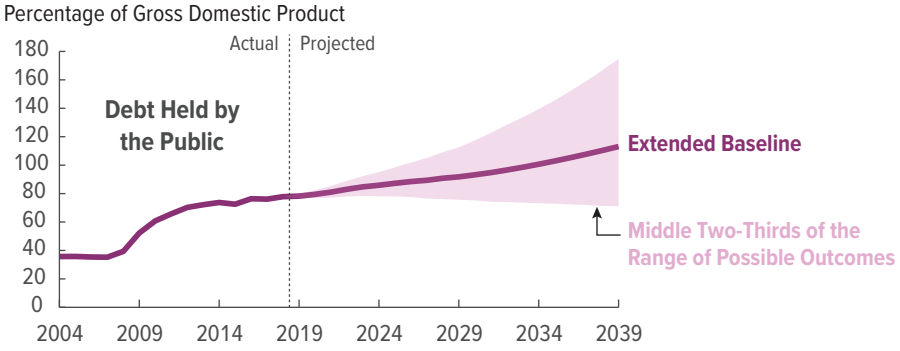
Much of the spending growth for Social Security and Medicare results from the aging of the population. As baby boomers age and as life expectancy continues to increase, the percentage of the population age 65 or older will grow significantly, boosting the number of beneficiaries of those programs.



See Figure 1-11

Growth in spending on Medicare and the other major health care programs is also driven by rising health care costs per beneficiary, as it has been in the past. Excess cost growth is the extent to which growth in health care costs per person, adjusted to remove the effects of aging, exceeds growth in potential GDP (the economy's maximum sustainable output) per person.

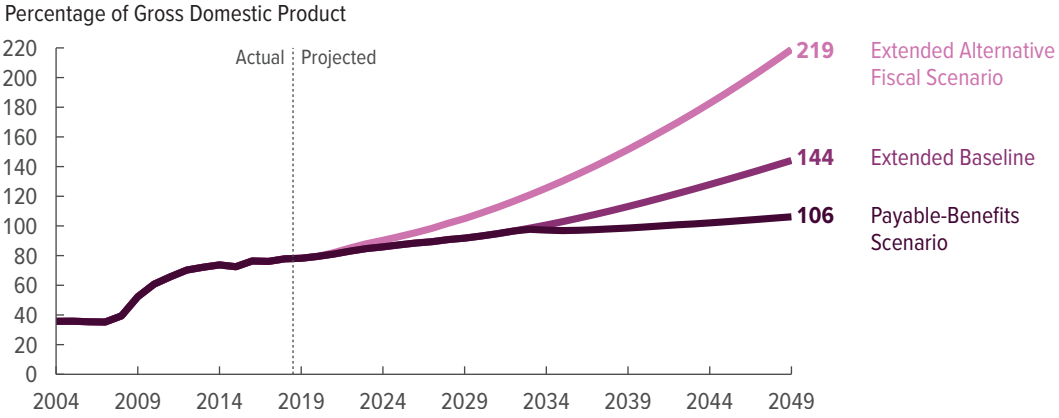
Uncertainty



See Figure 1-15

The economic and demographic variables used to construct CBO's projections are uncertain. But even if their values differed from those underlying the extended baseline projections, in 20 years, federal debt would probably be much higher than it is today, if current laws generally remained unchanged.

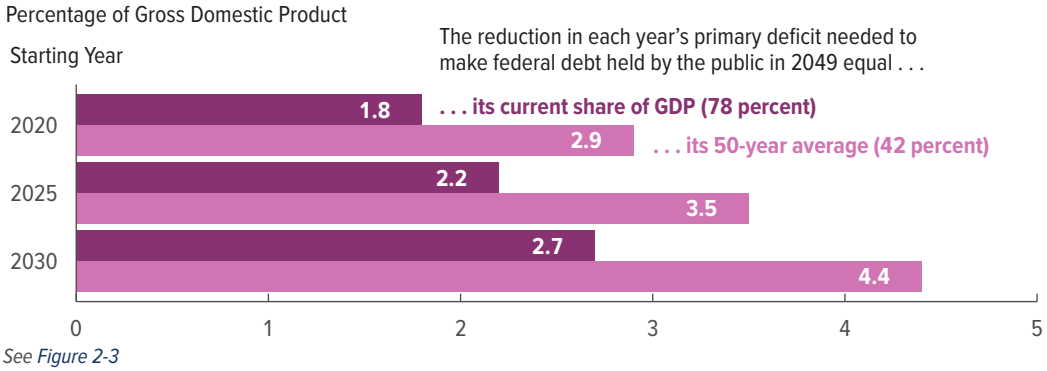
Alternative Scenarios



See Figure 2-1

In relation to the extended baseline projections, debt would be greater under an extended alternative fiscal scenario (in which certain major policies now in place would be maintained) and less under a payable-benefits scenario (in which Social Security benefits would be limited to the program's total annual revenues after 2032).

Various Goals for Deficit Reduction



See Figure 2-3

The longer policymakers waited to reduce primary deficits, the larger those reductions would have to be.

CHAPTER

1

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

		Projected Annual Average		
	2019	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.

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

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.

c. 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.

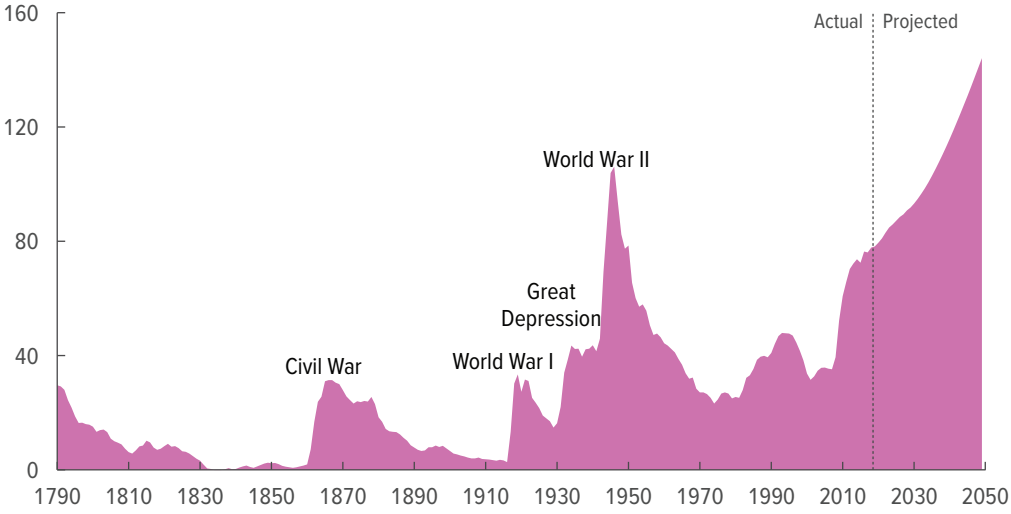
d. Excludes discretionary outlays related to administration of the program.

e. 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.)

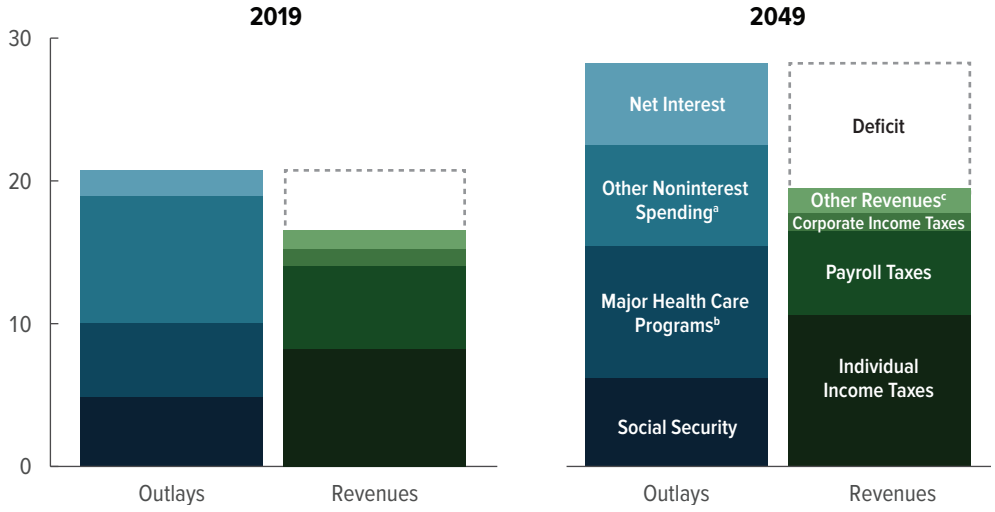
As a result of those changes in spending and revenues, primary deficits (deficits excluding net spending for interest) shrink in CBO's projections, falling from 2.4 percent of GDP in 2019 to 1.6 percent in 2029. But growing debt and rising average interest rates on federal

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.

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.

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.

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

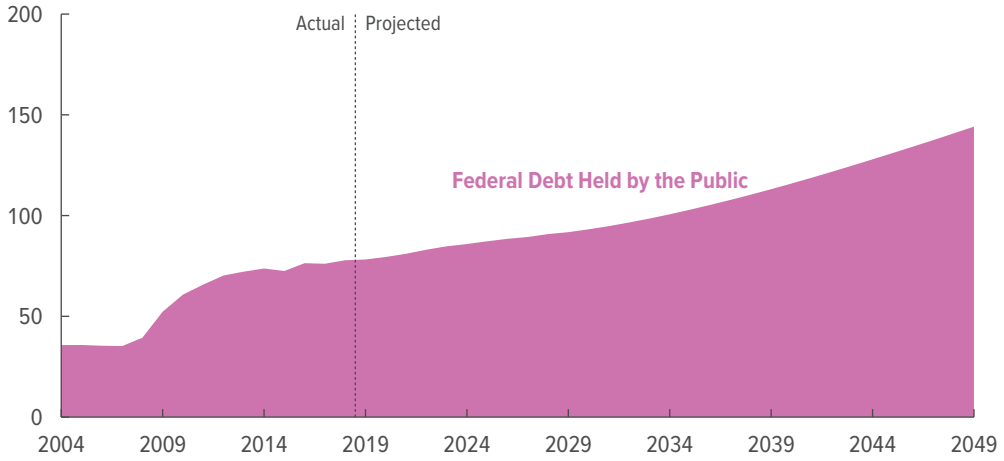
4. The range of likely outcomes that CBO's models produce is less informative after 20 years because the key parameters governing the economic effects of fiscal policy in the agency's models are based on the nation's historical experience with federal borrowing. At the high end of such a range for 30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

Figure 1-3.

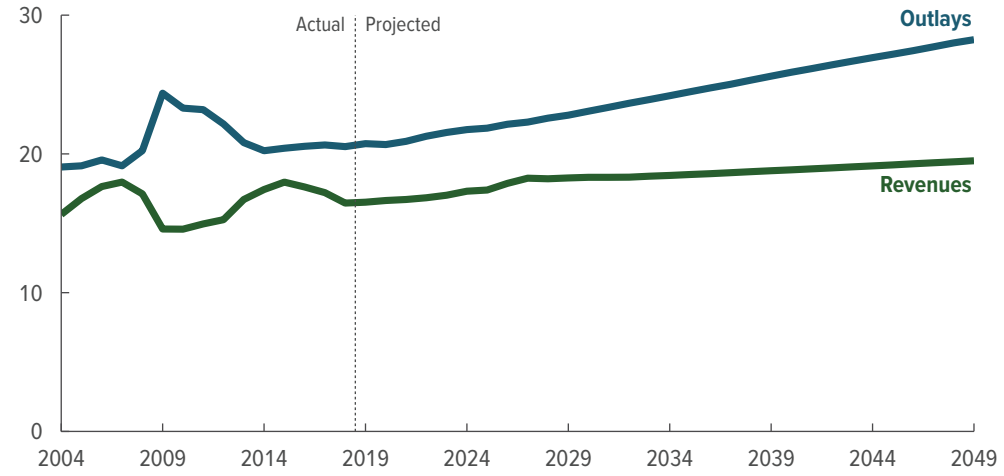
CBO's Budget Projections in Brief

Percentage of GDP

In CBO's projections, federal debt held by the public rises . . .



. . . because growth in total spending outpaces growth in total revenues, resulting in larger budget deficits.



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.

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

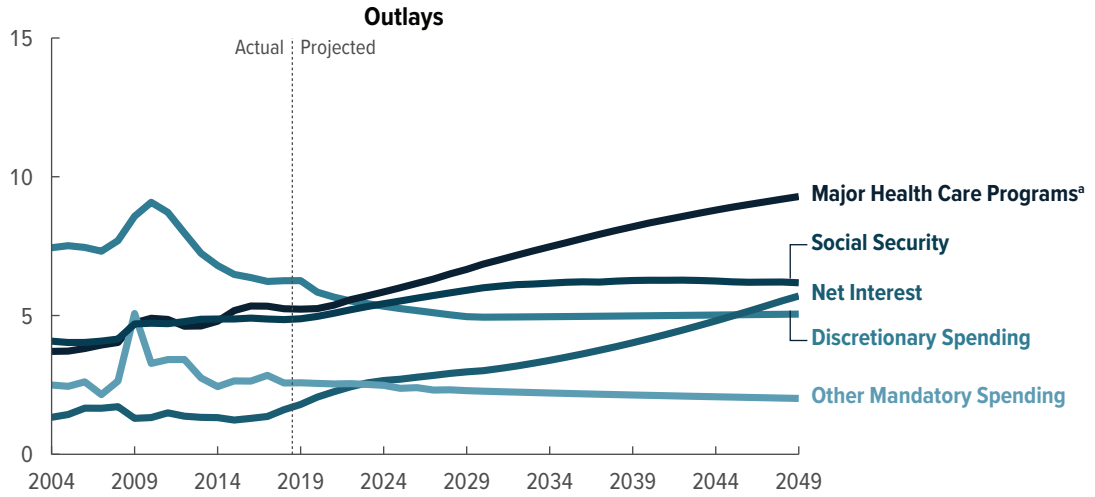
5. In CBO's assessment, another reason that an increase in government borrowing strengthens the incentive to save is that some people expect that policymakers will raise taxes or cut spending in the future to cover the cost of paying interest on the additional federal debt. As a result, some of those 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 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

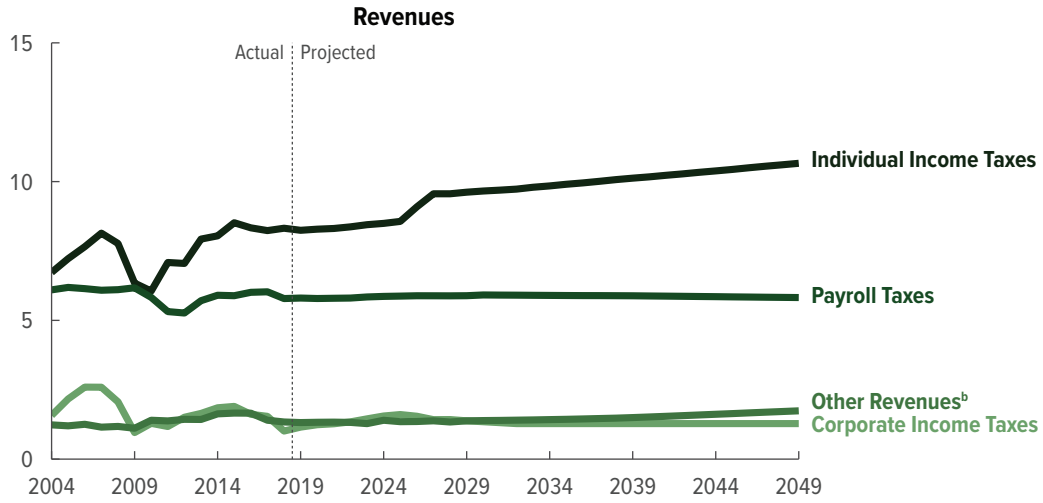
CBO's Budget Projections in Brief

Percentage of GDP

Spending on certain components of the budget—Social Security, the major health care programs, and net interest—is projected to rise in relation to GDP; other spending, in total, is projected to decline.



Increases in individual income taxes account for most of the rise in total revenues relative to GDP. Receipts from all other sources, taken together, are projected to be slightly higher in 2049 than they are today.



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.

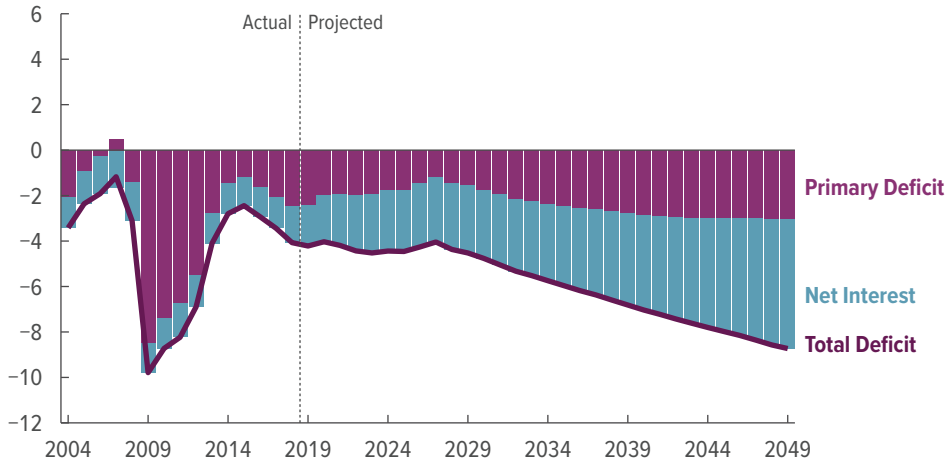
would be lower, and they would thus be less inclined to work. Those effects would increase over time as federal borrowing grew. As an example of the benefits of lower debt, in CBO's estimate, budgetary changes that entailed steadily reducing debt over 30 years to 42 percent of GDP (its average over the 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

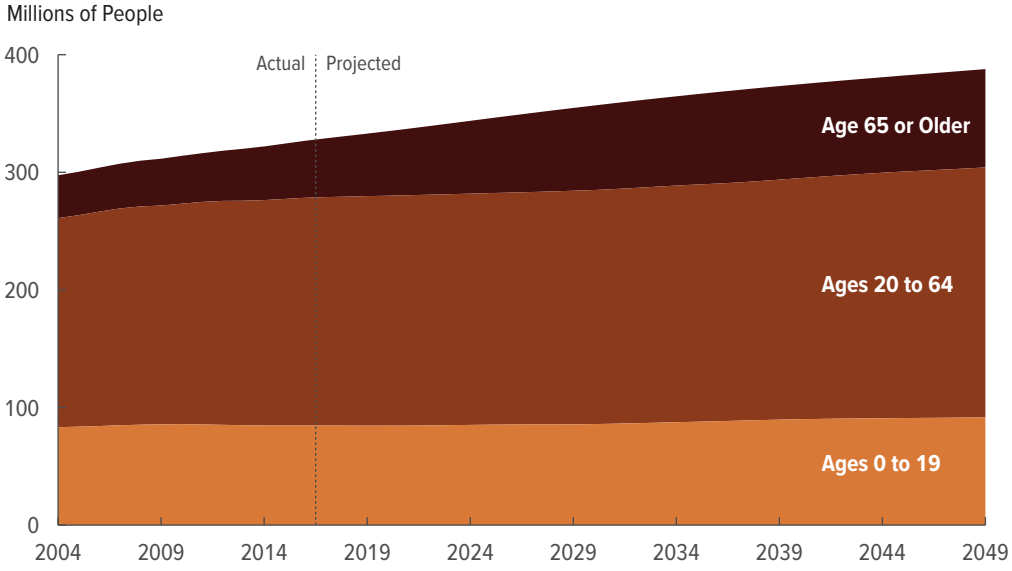
Demographic and economic projections are key determinants of the long-term budget outlook. Through 2029, the projections in this report are the same as those that underlie CBO's 10-year baseline budget projections; for later years, the agency projects conditions on the basis of its assessment of long-term 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



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

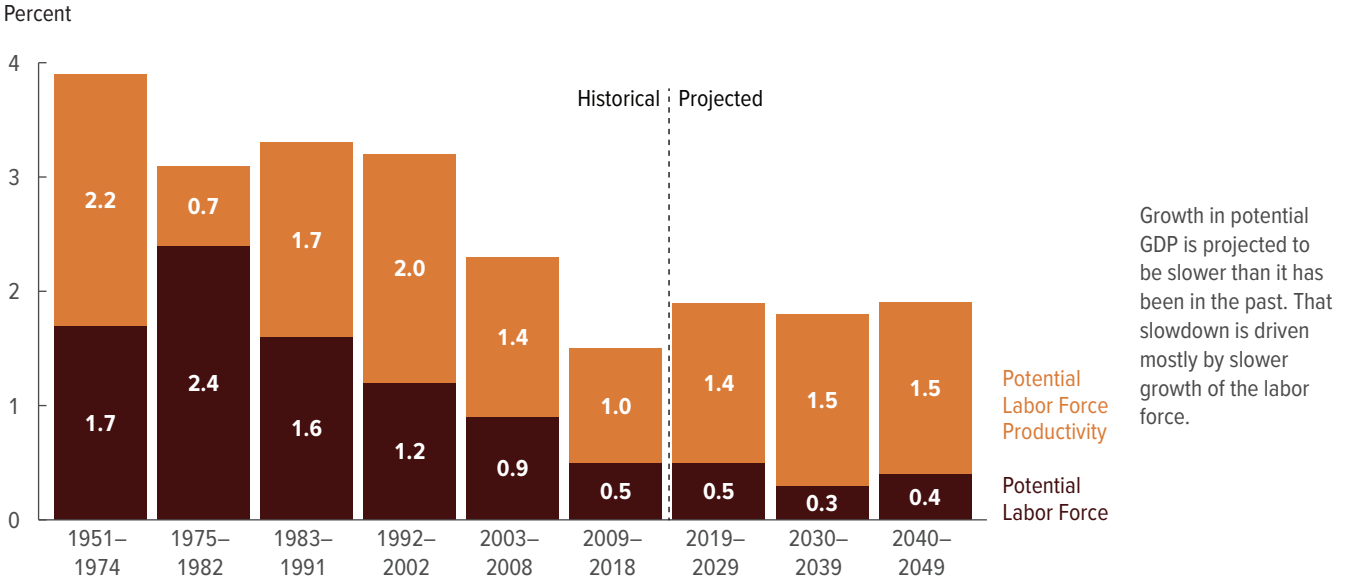
8. See Brady E. Hamilton and others, *Births: Provisional Data for 2017*, Vital Statistics Rapid Release Report 4 (National Center for Health Statistics, May 2018), www.cdc.gov/nchs/nvss/vsrr/reports.htm.

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.

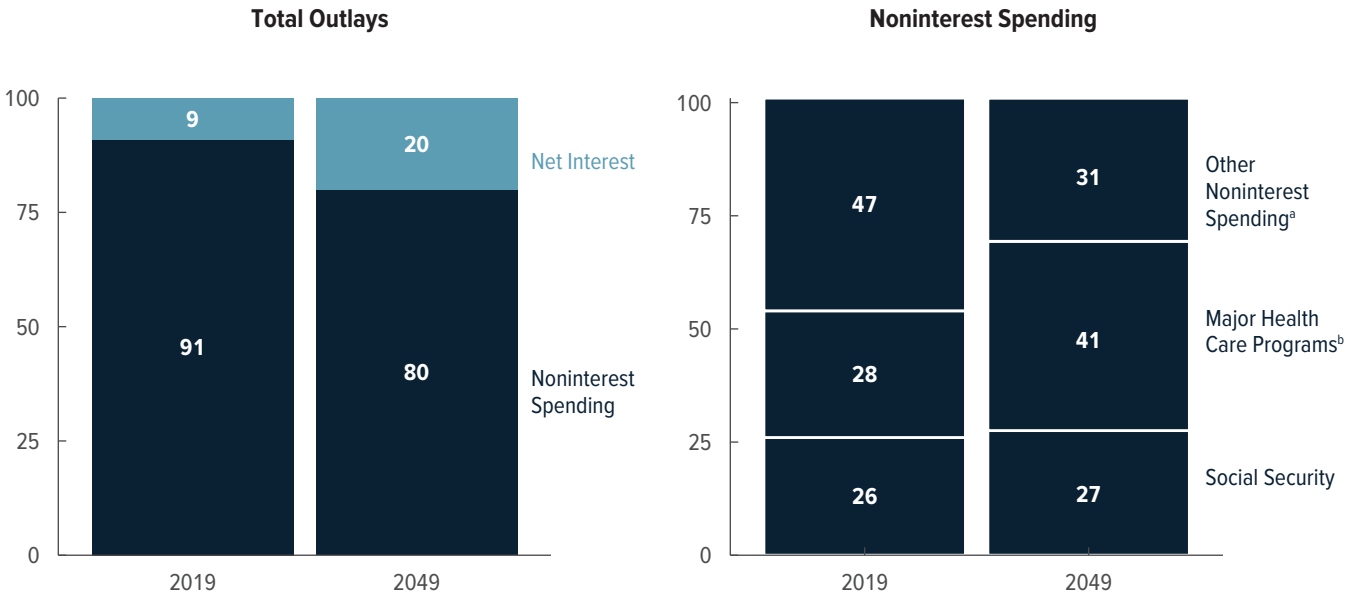
c. Consists of excise taxes, remittances to the Treasury from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

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/xEtaw.

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/tr/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.

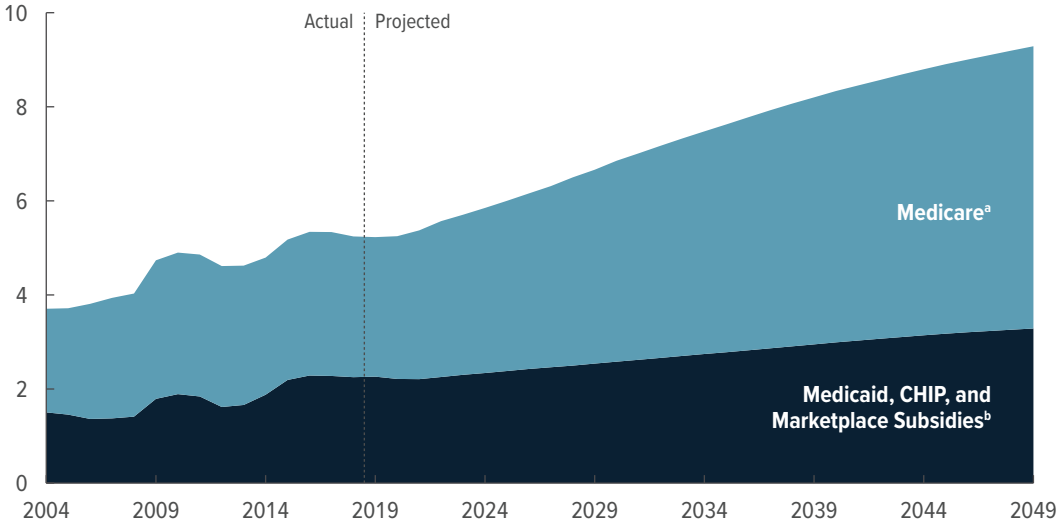
19. This analysis of causes of spending growth includes gross spending on Medicare.

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.

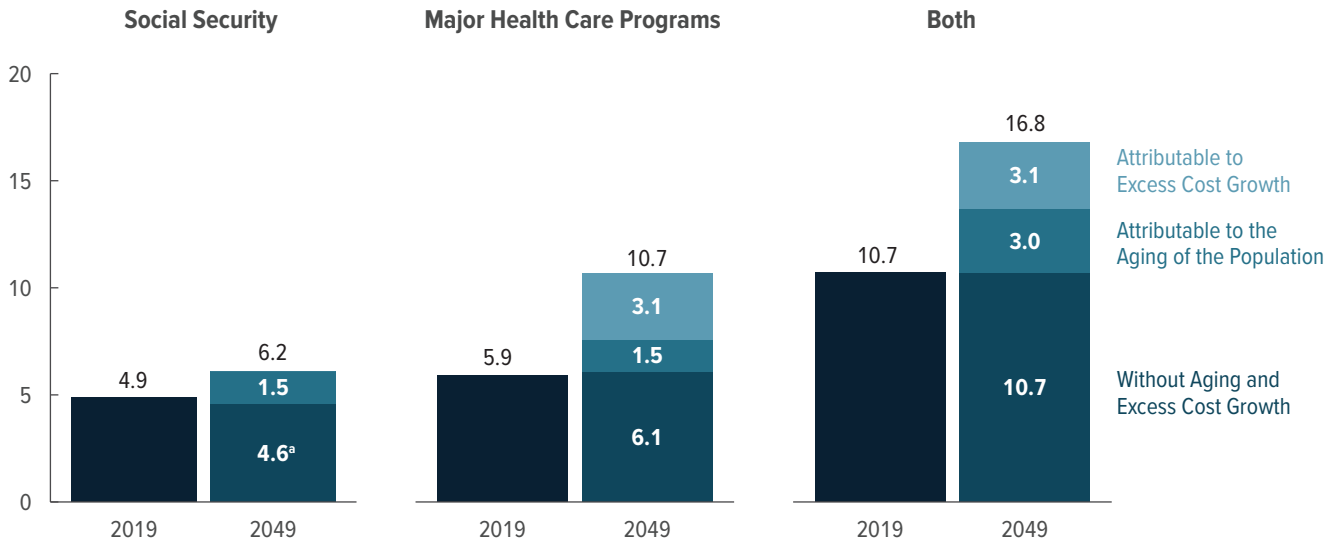
Other Noninterest Spending

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.

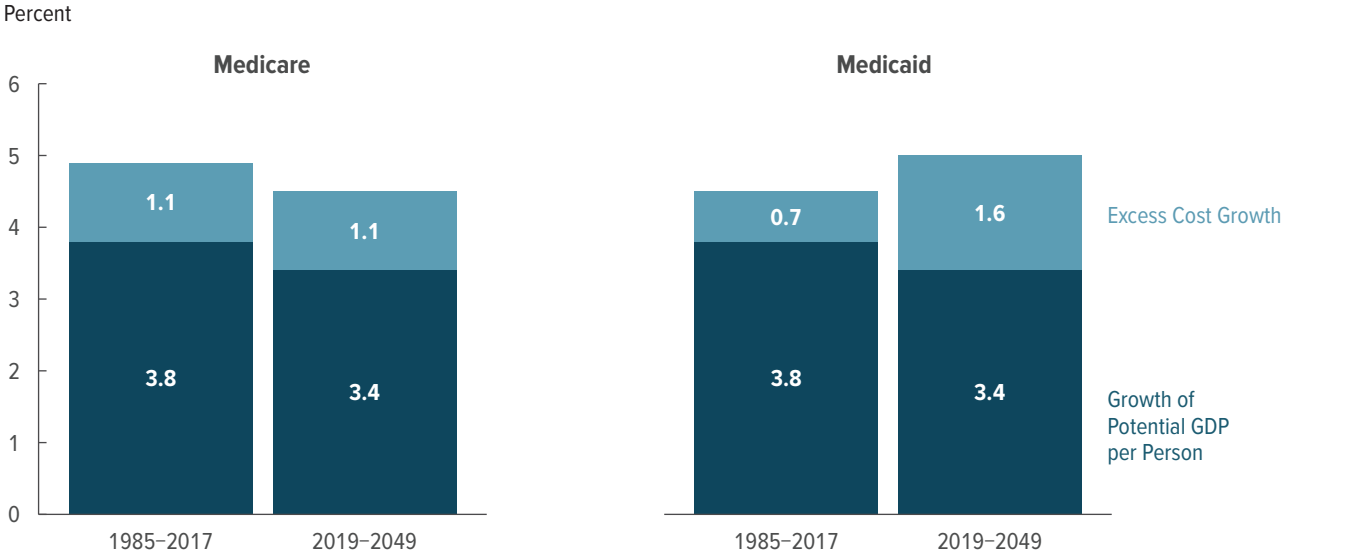
Discretionary Spending. About half of all discretionary spending is dedicated to national defense, and the rest is for an array of federally funded investments and activities, including education, transportation, housing assistance, veterans' health care, health-related research and public health programs,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

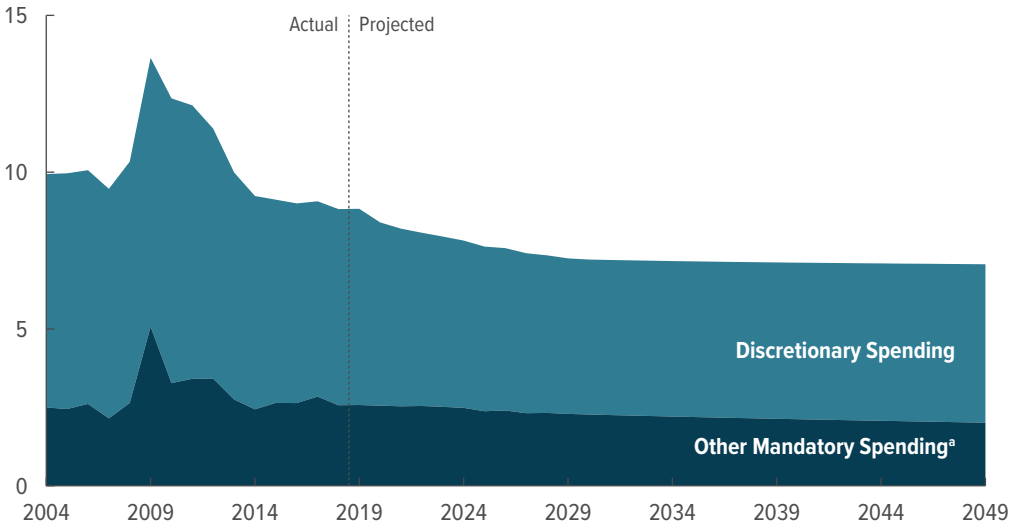
21. CBO assumed that discretionary spending after 2029 would remain constant as a percentage of GDP before the agency accounted for the effect on the economy of the fiscal policies projected under the extended baseline. Because CBO estimates that those policies would dampen economic growth, projected 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.

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]

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

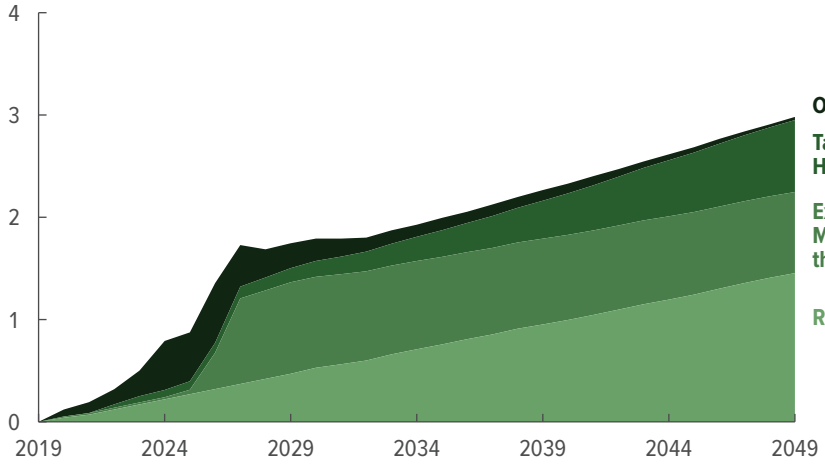
23. Sec. 257(b)(2) of the Deficit Control Act, which governs CBO's baseline projections, makes exceptions regarding current law for some programs, such as SNAP, that have expiring authorizations but that are assumed to continue as currently authorized.

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 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



Revenues are projected to grow steadily over the next several years, rise sharply following the expiration of certain temporary provisions of the 2017 tax act at the end of 2025, and then resume steady growth.

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.

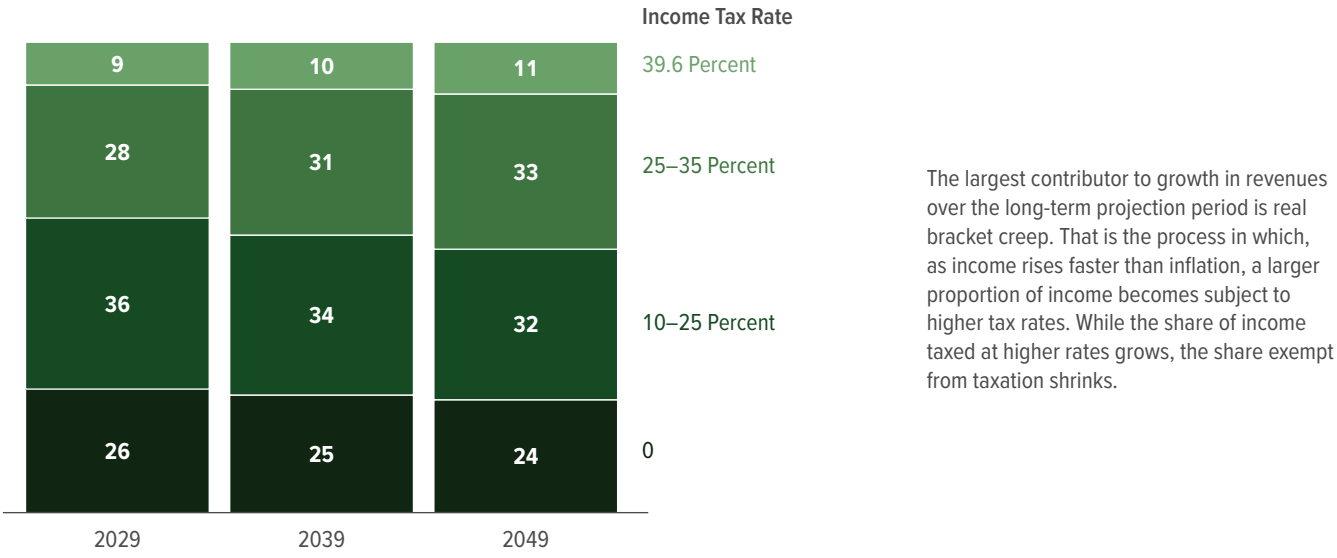
For years after 2029, revenues are projected following the assumption that the rules for all tax sources will change only as scheduled under current law.[25] Thus, in CBO's extended baseline projections, revenues continue to grow faster than GDP after 2029 and total 19.5 percent of GDP in 2049. Increases 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.

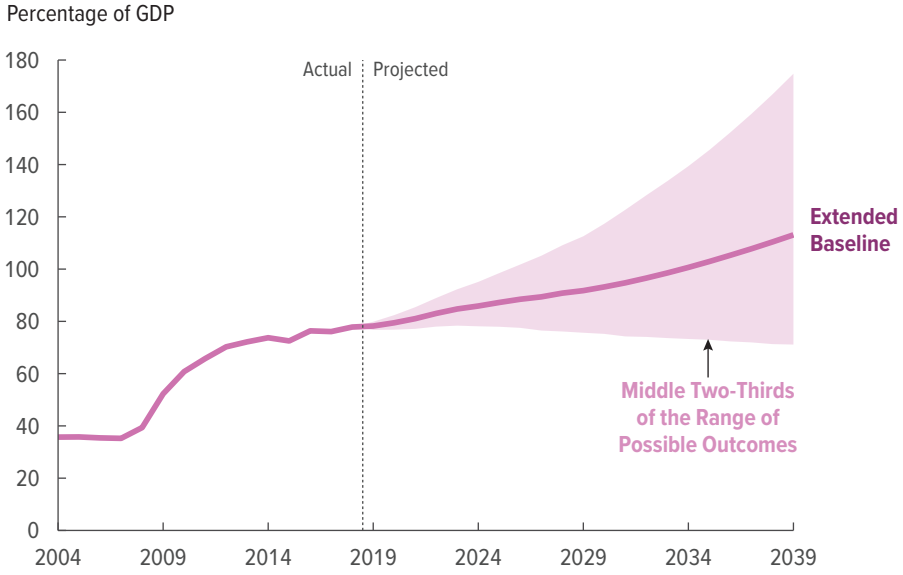
CBO projects that there is a two-thirds chance that federal debt held by the public would be between 71 percent and 175 percent of GDP in 2039 if current laws generally remained unchanged (see Figure 1-15). That range of outcomes indicates that federal debt held by the public after 20 years could be 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



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.

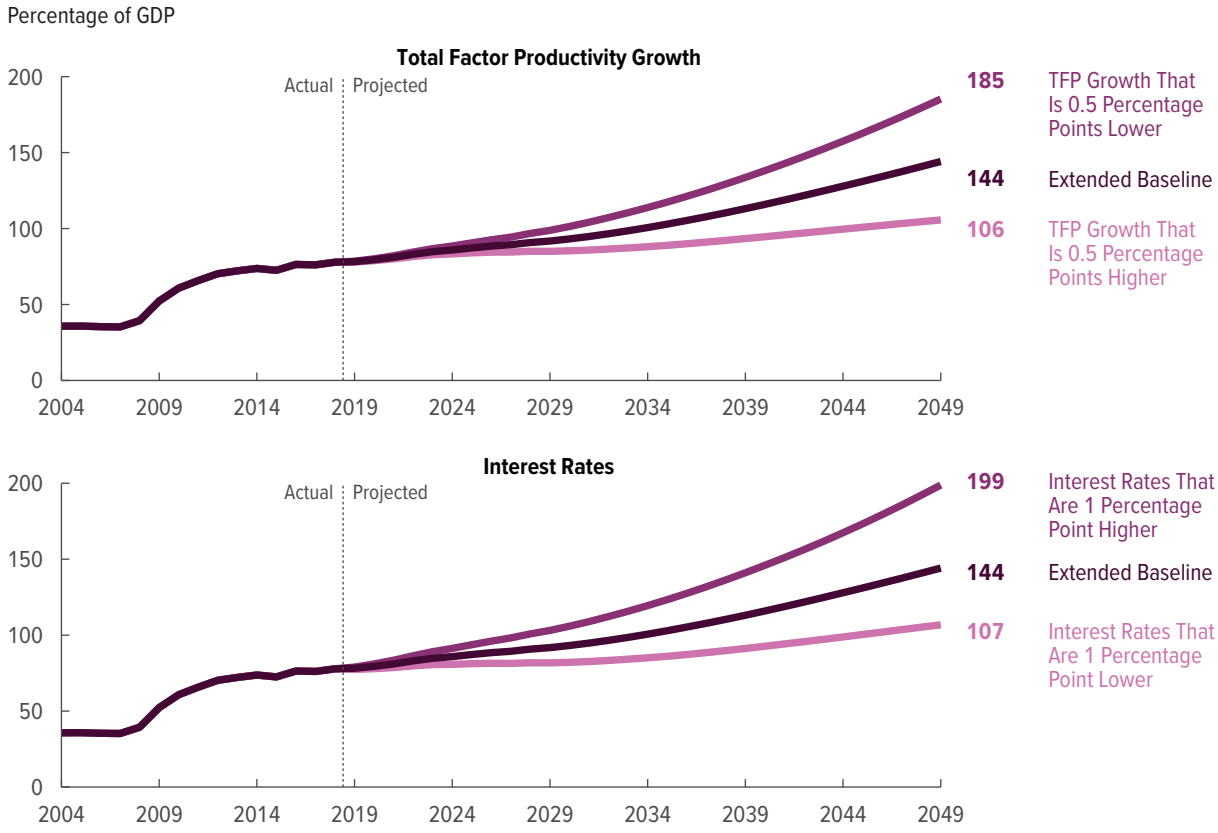
Growth of Nonfarm Business Productivity

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 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).

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.

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.

CHAPTER

2

The Long-Term Budget Outlook Under Alternative Scenarios

Overview

This chapter expands on the analysis in Chapter 1 in various ways. First, it shows how the federal budget and the nation's economy would evolve under an *extended alternative fiscal scenario* in which substantial tax increases and discretionary spending cuts would not take place as scheduled; instead, current law would change to maintain certain major policies that are now in place. Compared with outcomes in the Congressional Budget Office's extended baseline projections, which generally reflect current law, outcomes under the extended alternative fiscal scenario would differ in the following ways:

- Federal deficits and debt would be far larger.
- Real gross domestic product (GDP) would be lower in the long run. (Real GDP is nominal GDP that has been adjusted to remove the effects of inflation.)
- Federal spending would be higher, and most taxpayers would pay less in taxes.
- The risk of a fiscal crisis occurring would be greater over the longer run. In addition, the risk of negative economic and financial effects that were less abrupt but still significant would be greater.

Second, this chapter presents an analysis under which Social Security benefits are limited to the amounts payable from revenues received by the Social Security trust funds. Under that *payable-benefits scenario*, spending for Social Security would be significantly lower than it is in the extended baseline projections. Other outcomes relative to CBO's extended baseline projections are the following:

- Federal deficits and debt as a percentage of GDP would be lower.
- Spending on Social Security benefits for older people would be greatly curtailed, leading to increases in the overall labor supply and private saving.
- That drop in benefits would induce beneficiaries to reduce their spending, causing real GDP to be lower in the short term; but real GDP would be higher in the longer term, when the reduction in federal deficits would boost the funds available for private investment.
- The risk of a fiscal crisis occurring would be lower over the longer run. In addition, the risk of negative economic and financial effects that were less abrupt but still significant would be lower.

Third, the chapter examines the size and timing of policy changes needed to meet various goals for deficit reduction. (The policy changes examined here are illustrative, and the results do not reflect any particular assumptions about specific changes.) If lawmakers aimed for debt as a share of GDP in 2049 to fall to its 50-year average through across-the-board fiscal adjustments of equal size (as a percentage of GDP) each year, for example, they could reach that goal by increasing revenues or by decreasing spending by $1,900 per person in 2020, CBO projects.

Additionally, the timing of deficit reduction has implications for its effects, in terms of costs and benefits, on different generations of the U.S. population. CBO estimates that delaying policy action would require larger changes in revenues and outlays to reach a given level of debt as a percentage of GDP by 2049. That is, making policy changes in 2025 or 2030 that aimed to achieve a target ratio of debt to GDP would require a greater percentage reduction in noninterest spending or a larger percentage increase in revenues than making such changes in 2020.

Furthermore, delaying policy action would reduce the well-being of younger and future generations while improving the well-being of older generations. Even though the burden of delaying policy action would be borne by future generations, income among those generations is projected to be higher, on average, owing to the growth of the U.S. economy.

Budgetary and Economic Effects of an Alternative Fiscal Scenario

CBO examined budgetary and economic outcomes under an extended alternative fiscal scenario. Under that scenario, current law would be changed to maintain certain policies that are now in place. As a result, deficits would be larger than they are in CBO's extended baseline projections. For example, the deficit would be $774 billion larger in 2029—about 60 percent larger than the deficit in CBO's baseline projections. Federal debt would equal 219 percent of GDP in 2049 and continue to rise in later years.

In the extended alternative fiscal scenario, spending and tax policies for the first 10 years are identical to those in CBO's alternative fiscal scenario.[1] The budgetary outcomes differ, however, because in addition to the conventional estimates, this report incorporates estimated effects of the changes in fiscal policy on the economy and the effects of those economic changes on the budget. Over the next 10 years, the extended alternative fiscal scenario incorporates the following features:

- The caps on discretionary appropriations currently in effect through 2021 cease after 2019, and appropriations instead grow at the same rate as inflation in each year.
- The expiring revenue provisions of the 2017 tax act—including provisions that specify tax rates and brackets, the number of allowable deductions, the size of the child tax credit and the portion that is refundable, and the reach of the alternative minimum tax—are extended.
- The expansion of bonus depreciation for businesses deducting certain investments is held at 100 percent.
- Certain temporary tax provisions that have recently expired or are scheduled to expire in coming years, including several trade preference programs, are permanently extended.
- Certain postponed taxes established by the Affordable Care Act are repealed.

As a result, in 2029, discretionary outlays are projected to total 5.7 percent of GDP, 0.7 percentage points greater than they are in the extended baseline projections. Revenues are projected to total 17.0 percent of GDP, 1.3 percentage points lower than they are in the extended baseline projections.

After 2029, projections of discretionary spending reflect the assumption that such spending would remain roughly constant as a percentage of GDP.[2] By 2049, that amount would exceed outlays in the extended baseline projections by 0.9 percentage points.

Extending the expiring tax provisions is projected to lower revenues (relative to amounts in the extended baseline projections) by an average of 1.5 percent of GDP each year between 2030 and 2049.

Nevertheless, revenues as a share of GDP trend upward under this scenario, mostly because of structural features of the tax code; they reach 17.6 percent of GDP in 2049. That upward trend differs from historical experience, however. Over the past 50 years, federal revenues as a percentage of GDP have fluctuated around their 50-year average of 17.4 percent with no evident long-term trend.

How CBO Analyzed Outcomes Under the Extended Alternative Fiscal Scenario

Relative to the fiscal policy in place under current law, fiscal policy under this scenario would reflect significant changes. Those changes are projected to have effects on the economy that would feed back to budgetary outcomes. CBO has not analyzed every way in which those changes would affect the economy in the long term. Instead, for the simplified analysis presented in this report, CBO has analyzed three of those effects.[3]

1. See Congressional Budget Office, *Updated Budget Projections: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151.

2. That assumption also underlies the extended baseline projections. See Table 1-2 on page 19.

3. For a general explanation of how CBO analyzes the effects of fiscal policies, see Congressional Budget Office, *How CBO Analyzes the Effects of Changes in Federal Fiscal Policies on the Economy* (November 2014), www.cbo.gov/publication/49494.

- Effective marginal tax rates on labor income would be lower under the extended alternative fiscal scenario than they are in the extended baseline projections, encouraging people to work and save more and thereby increasing output.[4]

- Effective marginal tax rates on income from most types of capital would also be lower, which would encourage saving and investment and again increase output.[5]

- Federal debt would be greater under the extended alternative fiscal scenario than it is in the extended baseline projections—drawing money away from (or "crowding out") investment in capital goods and services, reducing the stock of private capital, and making output smaller than it would be otherwise.

In addition to those three effects, any changes to fiscal policy could alter people's incentives in other ways, possibly resulting in significant long-term changes to the economy. For example, changes to tax policy might alter businesses' choices about how they were structured, and those choices might then alter the effective marginal tax rate on capital income. Similarly, changes in the tax treatment of mortgage debt would affect households' decisions about how much to save. Because this analysis is simplified, it does not incorporate those effects.

CBO also analyzed short-term outcomes under the extended alternative fiscal scenario. Policies that increased spending or reduced revenues would boost overall demand for goods and services over the next few years, thereby making output and employment in the short term higher than they would be otherwise.

CBO estimated the effects of this scenario on both GDP and GNP (gross national product). Each of those measures is important for different reasons. GDP is important because by accounting for effects on domestic economic and income growth, it helps assess the productive capacity—and therefore the tax base—of the economy within U.S. borders (including the contributions of foreign-owned capital and labor). GNP is important because it is a more complete measure of the income available to U.S. residents. (GNP differs from GDP by including the income that U.S. residents earn abroad and excluding the income that nonresidents earn from domestic sources.) Under the extended alternative fiscal scenario, the amount of federal debt owned by foreigners and the inflows of foreign capital are larger than they are in CBO's extended baseline projections. As a result, the long-term negative effects of that debt on GNP are larger than the negative effects on GDP.

Budgetary and Economic Outcomes Under the Extended Alternative Fiscal Scenario

Under the extended alternative fiscal scenario, CBO projects, the primary deficit (which excludes interest costs) in 2049 would be 6.1 percent of GDP. (In the extended baseline projections, it is 3.0 percent of GDP.) Once the rising costs of debt service are added, the total deficit in 2049 would equal 15.5 percent, not the 8.7 percent of GDP it equals in CBO's extended baseline projections (see Table 2-1).

CBO projects the following outcomes in 2049. (Amounts in the extended baseline projections are shown in parentheses.)

- Net interest costs would be 9.4 percent of GDP (rather than 5.7 percent).

- Total spending excluding interest payments would be 23.7 percent of GDP (rather than 22.5 percent).

- Revenues would be 17.6 percent of GDP (rather than 19.5 percent).

- Debt held by the public would be 219 percent of GDP (rather than 144 percent).

The crowding out of private investment, the smaller capital stock, and the larger supply of labor would, on balance, cause output to be lower and interest rates to be higher in the long term under the extended alternative fiscal scenario than they are in the extended baseline projections. In 2049, for instance, real GDP would be 2.5 percent lower (see Table 2-2). In addition, real GNP in 2049 would be 3.6 percent lower, and real GNP per person would be about $3,400 lower (see Figure 2-1 on page 42). Also, the interest rate on 10-year Treasury

4. The effective marginal tax rate on labor income is the share of an additional dollar of such income that is paid in federal individual income taxes and payroll taxes—averaged among taxpayers, with weights proportional to their labor income.

5. The effective marginal tax rate on capital income is the share of the return on an additional dollar of investment made in a particular year that will be paid in taxes over the life of that investment.

Table 2-1.

Budget Projections Under Three Scenarios

Percentage of Gross Domestic Product

	2029	2049
	Revenues	
Extended Baseline	18.3	19.5
Extended Alternative Fiscal Scenario	17.0	17.6
Payable-Benefits Scenario	18.3	19.6
	Spending Excluding Interest Payments	
Extended Baseline	19.8	22.5
Extended Alternative Fiscal Scenario	20.6	23.7
Payable-Benefits Scenario	19.8	20.5
	Deficit (-) or Surplus, Excluding Interest Payments	
Extended Baseline	-1.6	-3.0
Extended Alternative Fiscal Scenario	-3.6	-6.1
Payable-Benefits Scenario	-1.6	-0.9
	Total Deficit (-) or Surplus	
Extended Baseline	-4.5	-8.7
Extended Alternative Fiscal Scenario	-7.0	-15.5
Payable-Benefits Scenario	-4.5	-4.9
	Federal Debt Held by the Public	
Extended Baseline	92	144
Extended Alternative Fiscal Scenario	105	219
Payable-Benefits Scenario	92	106

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.

Under the extended alternative fiscal scenario, substantial tax increases and discretionary spending cuts would not take place as scheduled; instead, current law would be changed to maintain certain major policies that are now in place. Under the payable-benefits scenario, spending for Social Security would be significantly lower than it is in the extended baseline projections.

The estimates of deficits, surpluses, and debt include macroeconomic feedback.

securities in 2049 would be 0.4 percentage points higher than the rate in CBO's extended baseline projections.

In addition to the effects on output and interest rates reported here, other effects would occur under the extended alternative fiscal scenario. In particular, the significant increase in federal borrowing would elevate the risk of a fiscal crisis and would limit lawmakers' ability to respond to unforeseen events. Negative economic and financial effects that were less abrupt but still significant—such as higher inflation expectations or an increased burden of financing public and private activity in international markets—would also have a greater chance of occurring under this scenario. Those effects would worsen the consequences associated with high and rising federal debt.

The policies underlying the extended alternative fiscal scenario would have short-term effects as well. Over the next few years, greater federal spending would boost the overall demand for goods and services, causing output to be higher than it otherwise would be. In CBO's estimation, real GDP would be 0.7 percent higher in 2020 and 0.4 percent higher in 2021 than it is in the extended baseline projections. In addition, the Federal Reserve would respond, in CBO's view, by raising interest rates to restrain the boost in overall demand and prevent inflation from rising above the central bank's goal. As a result, the interest rate on 10-year Treasury securities would be 0.2 percentage points higher in 2020 and 2021 than it is in the extended baseline projections, CBO estimates (see Table 2-3 on page 43).

The economic and budgetary effects of the policies underlying the extended alternative fiscal scenario are highly uncertain, as are the effects of the extended baseline. That uncertainty arises mainly from two sources: uncertainty about future economic conditions and demographic trends, and uncertainty about the macroeconomic effects of policy changes. If future economic and demographic conditions and their responses to policy changes differed from CBO's projections, budgetary and economic outcomes would differ from those the agency estimates under the extended alternative fiscal scenario.

For example, if federal borrowing rates were 0.1 percentage point higher (or lower) than they are in the extended baseline projections, debt in the extended alternative fiscal scenario would be 225 percent of GDP (or 212 percent of GDP) rather than 219 percent in 2049. If total factor productivity growth was 0.1 percentage point higher (or lower), debt would be 209 percent of GDP (or 228 percent of GDP). Those estimated effects are roughly scalable for moderate changes in the economic variables. In particular, if interest rates were more than 0.5 percentage points higher than they are in the extended baseline projections or total factor productivity growth was more

Table 2-2.

Long-Term Economic Effects Under Two Scenarios Relative to CBO's Extended Baseline Projections

	2029	2049
	Real GDP (Percent)	
Extended Alternative Fiscal Scenario	-0.1	-2.5
Payable-Benefits Scenario	n.a.	1.7
	Interest Rates on 10-Year Treasury Securities (Percentage points)	
Extended Alternative Fiscal Scenario	0.1	0.4
Payable- Benefits Scenario	n.a.	-0.2

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.

Under the extended alternative fiscal scenario, substantial tax increases and discretionary spending cuts would not take place as scheduled; instead, current law would be changed to maintain certain major policies that are now in place. Under the payable-benefits scenario, spending for Social Security would be significantly lower than it is in the extended baseline projections.

n.a. = not applicable.

than 0.3 percentage points lower, projected debt as a percentage of GDP under the extended alternative fiscal scenario would grow to levels well outside of U.S. historical experience, which provides the empirical basis for CBO's models.

Budgetary and Economic Effects of a Payable-Benefits Scenario

Without legislative action, the combined trust funds for Social Security (known as Old-Age, Survivors, and Disability Insurance, or OASDI) are projected to be exhausted in calendar year 2032. Beyond that point, trust fund balances would no longer be available to make up the gap between benefits specified in current law and annual trust fund receipts. CBO's extended baseline projections reflect the assumption that the Social Security Administration will pay benefits as scheduled under current law regardless of the status of the program's trust funds.[6] However, if the trust funds' combined balance declined to zero and current revenues were insufficient to pay benefits specified in law, the Social Security Administration would no longer be permitted to pay beneficiaries the full amounts to which they were entitled.[7] CBO analyzed a payable-benefits scenario in which Social Security benefits would be limited to the amounts payable from dedicated funding sources beginning in 2033.

Although it is unclear how much payments for specific beneficiaries would be reduced if total benefits were limited to the amounts payable from dedicated funding, CBO estimated the amount of the total reduction in annual benefits that would be necessary for the trust funds' outlays to match revenues in each year after the funds were exhausted. The required reduction would amount to 24 percent in 2033 and rise gradually to 29 percent in 2049 (relative to the amounts in CBO's extended baseline projections).

In CBO's assessment, if benefits paid out were limited to revenues received by the Social Security trust funds, federal deficits would decrease by 1.5 percent of GDP in 2033 and by 3.8 percent in 2049 (relative to the amounts in CBO's extended baseline projections). The cut in benefits would not be announced until 2033 and would therefore be unexpected (which matters for the projection of macroeconomic effects). That abrupt cut in benefits in 2033 would cause a substantial drop in consumer spending and a corresponding increase in saving. It would also probably induce some older workers to work more hours or to delay retirement and save more. In addition, some Social Security beneficiaries might return to work to supplement their income.

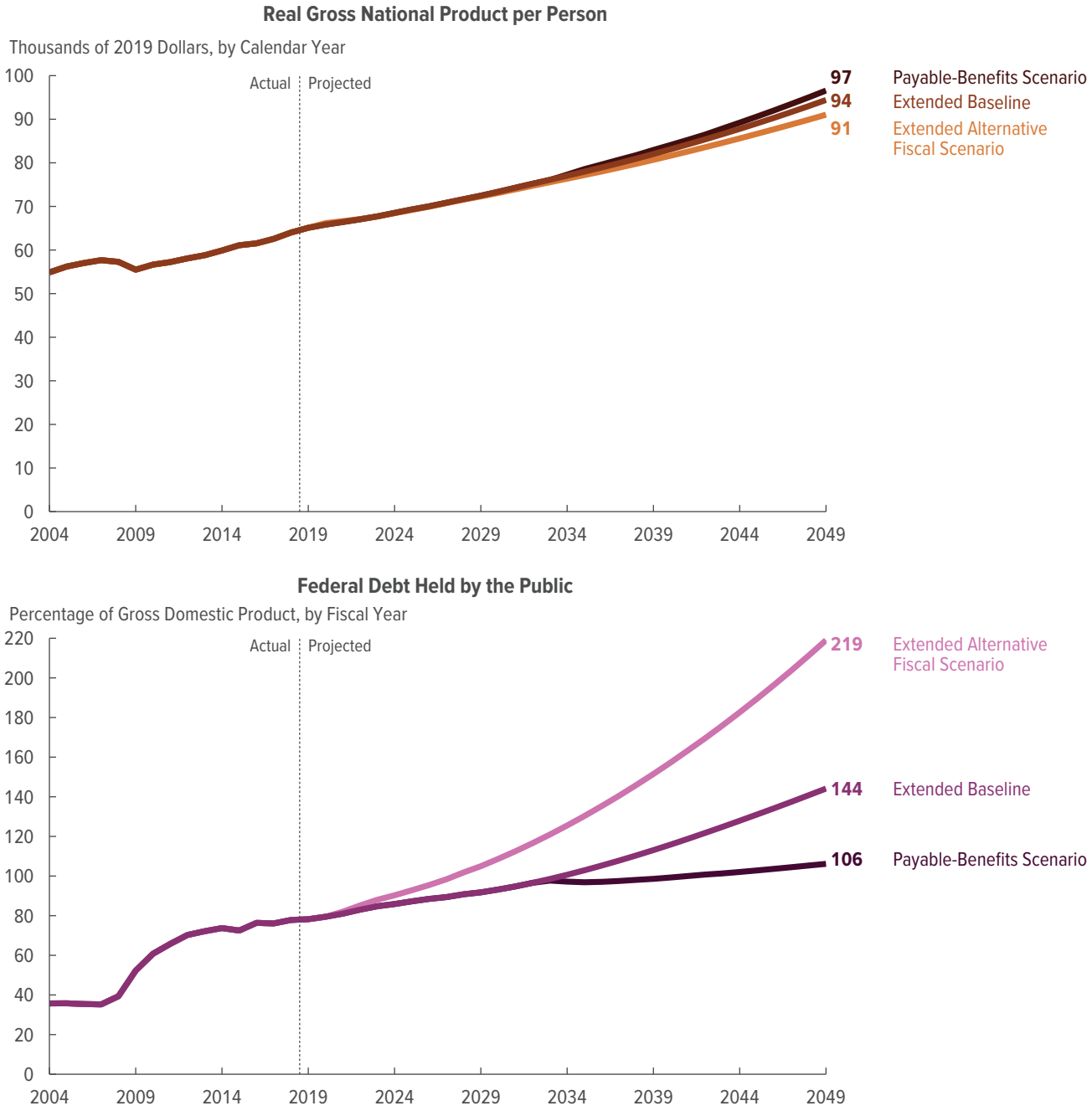
Under the payable-benefits scenario, changes in overall demand would lower GDP in the first few years following the reduction in benefits. In the long run, however, increases in the labor supply and investment stemming from smaller budget deficits would boost output and reduce interest rates. Those changes, which are measured relative to amounts in CBO's extended baseline projections, would generally decrease income and wealth for older generations and increase them for

6. That approach is consistent with the 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.

7. The balances of the trust funds represent the total amount that the government is legally authorized to spend. 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/xEtaw.

Figure 2-1.

Output per Person and Debt Under Three Scenarios



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.

Under the extended alternative fiscal scenario, substantial tax increases and discretionary spending cuts would not take place as scheduled; instead, current law would be changed to maintain certain major policies that are now in place. Under the payable-benefits scenario, spending for Social Security would be significantly lower than it is in the extended baseline projections.

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

The estimates of deficits, surpluses, and debt include macroeconomic feedback.

Table 2-3.

Short-Term Economic Effects Under Two Scenarios Relative to the Extended Baseline Projections

	2020	2021	2033	2034
	Real GDP (Percent)			
Extended Alternative Fiscal Scenario	0.7	0.4	n.a.	n.a.
Payable-Benefits Scenario	n.a.	n.a.	-0.8	-0.1
	Interest Rates on 10-Year Treasury Securities (Percentage points)			
Extended Alternative Fiscal Scenario	0.2	0.2	n.a.	n.a.
Payable-Benefits Scenario	n.a.	n.a.	-0.7	-0.4

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.

Under the extended alternative fiscal scenario, substantial tax increases and discretionary spending cuts would not take place as scheduled; instead, current law would be changed to maintain certain major policies that are now in place. Under the payable-benefits scenario, spending for Social Security would be significantly lower than it is in the extended baseline projections.

n.a. = not applicable.

younger ones. That shift would stem not only from the direct effects of a drop in benefits, but also from macroeconomic effects that would raise wages in the long run. Incorporating those macroeconomic effects into its analysis, CBO projects that the debt-to-GDP ratio would stand at 106 percent in 2049, 38 percentage points below the extended baseline projection—but still well above the current level.

How CBO Analyzed Outcomes Under the Payable-Benefits Scenario

As with the extended alternative fiscal scenario, this scenario represents significant changes to the fiscal policy projected under current law. Because benefit cuts would be unexpected, workers would not adjust their saving and hours worked beforehand. Hence, projections under this scenario do not differ from those in the extended baseline until 2033, when those cuts would begin. Thereafter, people would expect benefits to be reduced permanently. As a result, changes in investment and the labor supply would lead in the long term to greater output and lower interest rates than in CBO's extended baseline projections. Although CBO has not analyzed every way in which those changes would affect the economy in the long term, the agency analyzed four of those effects for this report.

- The reduction in benefits would decrease retirees' income, pushing down the overall demand for goods and services and causing output to be lower than it is in the extended baseline projections in 2033 and 2034.
- The benefit cuts would cause some people to work more and some to remain in the labor force longer than they would have otherwise. Both of those factors would expand the supply of labor and thus the economy's output in the long term.
- In CBO's assessment, some workers who have not yet retired would respond to the prospect of smaller benefit payments by boosting their saving and reducing their spending.[8] Those changes would lessen the effect that smaller future benefit payments would have on households' future income and spending. The resulting increases in saving and the labor supply would boost the capital stock and GDP.
- Federal debt would be lower than it is in the extended baseline projections—increasing the amount of money available for (or "crowding in") private investment in capital goods and services, boosting the stock of private capital, and making output greater than it would be otherwise.

8. In this analysis, CBO did not address the potential effects of moving households' savings into or out of tax-deferred or taxable savings accounts.

Budgetary and Economic Outcomes Under the Payable-Benefits Scenario

In 2049, primary deficits under the payable-benefits scenario would be smaller than they are in CBO's extended baseline projections—0.9 percent of GDP instead of 3.0 percent of GDP. Adding debt-service costs raises those amounts to 4.9 percent of GDP under the payable-benefits scenario and to 8.7 percent of GDP in the extended baseline projections (see Table 2-1 on page 40).

For the payable-benefits scenario, CBO projects the following outcomes in 2049 (compared with outcomes in the extended baseline):

- Net interest costs would be 4.0 percent of GDP (rather than 5.7 percent).
- Total spending excluding net interest costs would be 20.5 percent of GDP (rather than 22.5 percent).
- Revenues would be 19.6 percent of GDP (rather than 19.5 percent).
- Debt would be 106 percent of GDP (rather than 144 percent).

In CBO's assessment, the crowding in of private investment and the increase in the supply of labor and the capital stock would cause output to be higher and interest rates to be lower in the long term under the payable-benefits scenario than they are in the extended baseline projections. Specifically, real GDP would be 1.7 percent higher in 2049, CBO estimates (see Table 2-2 on page 41). In addition, real GNP would be 2.3 percent higher in 2049, and real GNP per person would be about $2,200 higher in that year (see Figure 2-1 on page 42). In contrast, the interest rate on 10-year Treasury securities would be 0.2 percentage points lower under this scenario than it is in CBO's extended baseline projections.

The policies underlying the payable-benefits scenario would have short-term effects as well. In CBO's assessment, people would respond to smaller benefit payments by reducing their spending, which would decrease the overall demand for goods and services. As a result, real GDP would be 0.8 percent lower in 2033 and 0.1 percent lower in 2034 than it is in the extended baseline projections, CBO estimates. In CBO's view, the Federal Reserve would respond by lowering interest rates to boost overall demand and prevent inflation from falling below the central bank's longer-term goal. In addition, the increase in the saving rate—and other factors—would further reduce interest rates. Taken together, those effects would cause the interest rate on 10-year Treasury securities to be 0.7 percentage points lower in 2033 and 0.4 percentage points lower in 2034 than it is in the extended baseline projections, in CBO's estimation (see Table 2-3 on page 43).

The economic and budgetary effects of the policies underlying the payable-benefits scenario are highly uncertain, as are the effects of the extended baseline. That uncertainty arises mainly from two sources: uncertainty about future economic conditions and demographic trends, and uncertainty about how reductions in Social Security benefits would affect the economy and the budget. If future economic and demographic conditions and the macroeconomic effects of reduced Social Security benefits differed from CBO's projections, budgetary and economic outcomes would differ from those the agency estimates under the payable-benefits scenario. For example, if interest rates on federal debt were 0.1 percentage point higher (or lower) than they are in the extended baseline projections, debt in the payable-benefits scenario would be 109 percent of GDP (or 102 percent of GDP) rather than 106 percent in 2049. If total factor productivity growth was 0.1 percentage point higher (or lower), debt would be 100 percent of GDP (or 111 percent of GDP). Those estimated effects are roughly scalable for moderate changes in the economic variables.

The Size and Timing of Policy Changes Needed to Meet Various Goals for Deficit Reduction

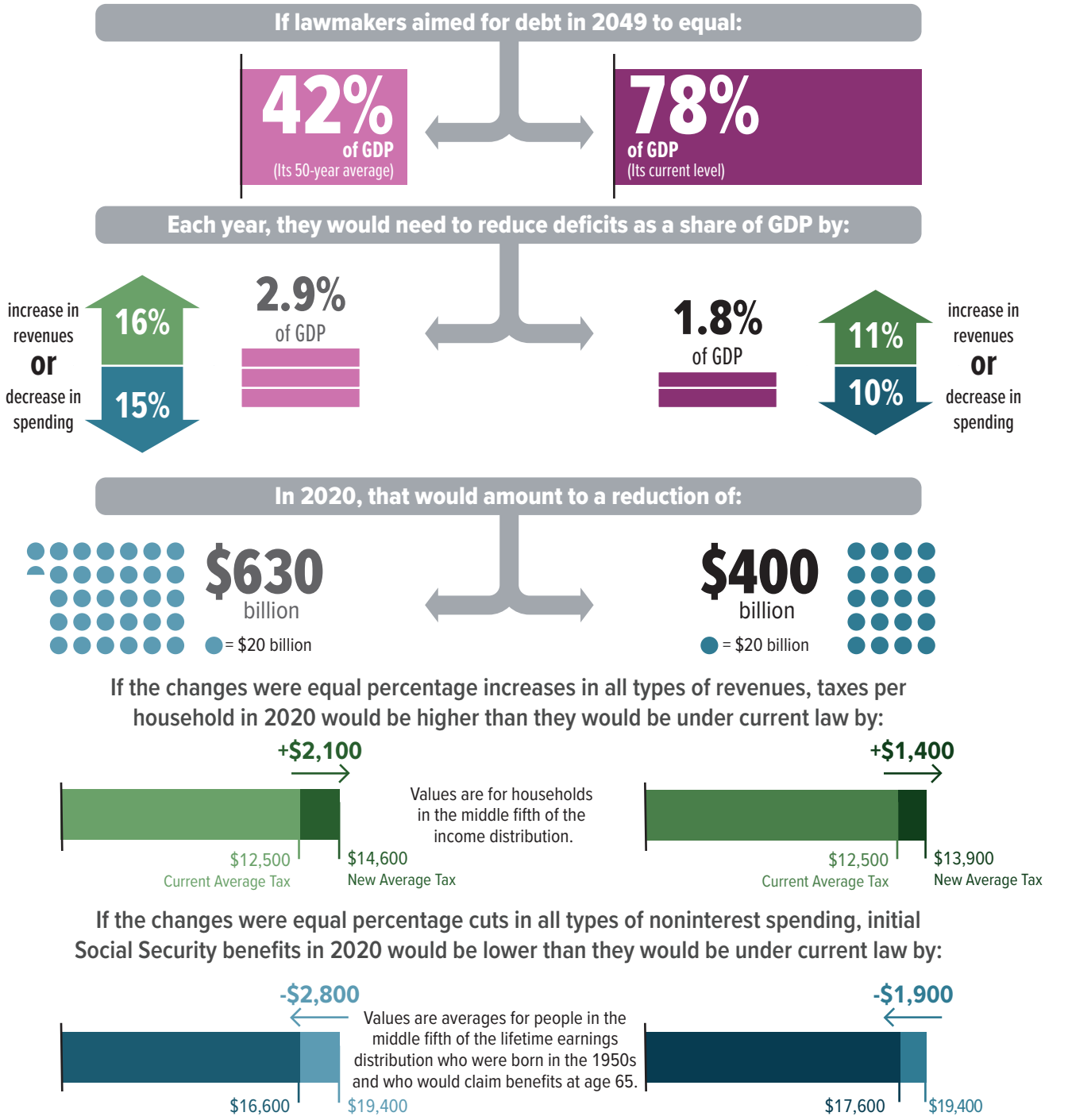
CBO estimated the size of changes in spending or revenues that would be needed if lawmakers wanted to achieve some specific targets for federal debt held by the public. The agency also assessed the extent to which the size of policy adjustments would change if such deficit reduction occurred later, and it examined how waiting to resolve the long-term fiscal imbalance would affect different generations of the U.S. population.

The Size of Policy Changes Needed to Meet Various Goals for Deficit Reduction

If lawmakers wanted debt in 2049 to match its current level of 78 percent of GDP, they could cut noninterest spending or raise revenues (or do both) in each year beginning in 2020 by amounts totaling 1.8 percent of GDP (see Figure 2-2). In 2020, 1.8 percent of GDP would be about $400 billion, or $1,200 per person. If

Figure 2-2.

The Size of Policy Changes Needed to Make Federal Debt Meet Two Possible Goals in 2049



Source: Congressional Budget Office

In this figure, the indicated sizes of policy changes are relative to CBO's extended baseline projections, which 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 projected effects of the policy changes on debt include the direct effects of the policy changes and the feedback to the federal budget from faster economic growth. The effects on growth and the feedback to the federal budget reflect the positive economic effects of lowering the debt but do not reflect any assumptions about the specific details of the policy changes.

GDP = gross domestic product.

such an adjustment was made in each year, the budget would show a primary surplus of 0.2 percent of GDP in 2030 and a primary deficit of 0.7 percent of GDP by 2049. If the changes came entirely from revenues or spending, they would amount to an 11 percent increase in revenues or a 10 percent cut in noninterest spending (relative to amounts in CBO's extended baseline projections).

Increases in revenues or cuts in noninterest spending would need to be larger than 1.8 percent of GDP to reduce debt to levels recorded in recent decades. If lawmakers wanted to decrease debt to 42 percent of GDP (its average over the past 50 years) by 2049, they could increase revenues or cut noninterest spending (in relation to amounts under current law) or adopt some combination of those two actions beginning in 2020 by amounts totaling 2.9 percent of GDP each year. In 2020, 2.9 percent of GDP would be about $630 billion, or $1,900 per person.

To lower debt to its average over the past 50 years solely by increasing revenues or cutting noninterest spending, lawmakers could make the following changes:

- If collections of the various types of revenues were increased proportionally, total revenues would need to be about 16 percent higher each year over the 2020–2049 period. On average, that adjustment would result in federal taxes that were about $2,100 higher than they are under current law for households in the middle fifth of the income distribution in 2020.

- If all types of noninterest spending were cut by an equal percentage, spending overall would need to be about 15 percent lower in each of the next 30 years. For example, such cuts would lower initial annual Social Security benefits by about $2,800, on average, for people in the middle fifth of the lifetime earnings distribution who were born in the 1950s and who first claimed benefits at age 65.

In those examples, the projected effects on debt include both the direct effects of the policy changes and the feedback to the federal budget that would result from faster economic growth. In general, reducing the federal debt increases the amount of money available for (or crowds in) private investment in capital goods and services, which increases the stock of private capital and economic output. The policy changes examined here are illustrative, however, and the results do not reflect any particular assumptions about specific changes. Any policy change could alter productivity growth and people's incentives to work and save, which would in turn affect overall economic output and feed back to the federal budget.

The Timing of Policy Changes Needed to Meet Various Goals for Deficit Reduction

The size of the policy changes needed to achieve a particular goal for federal debt would depend, in part, on how quickly that goal was expected to be reached. Regardless of the chosen goal for federal debt, lawmakers would face trade-offs in deciding how quickly to implement policies designed to reduce or stabilize debt as a percentage of GDP. The benefits of reducing the deficit sooner would include a smaller accumulated debt, smaller policy changes required to achieve long-term outcomes, and less uncertainty about the policies lawmakers would adopt. If lawmakers cut spending or increased taxes abruptly, people might have insufficient time to plan for or to adjust to the new system.

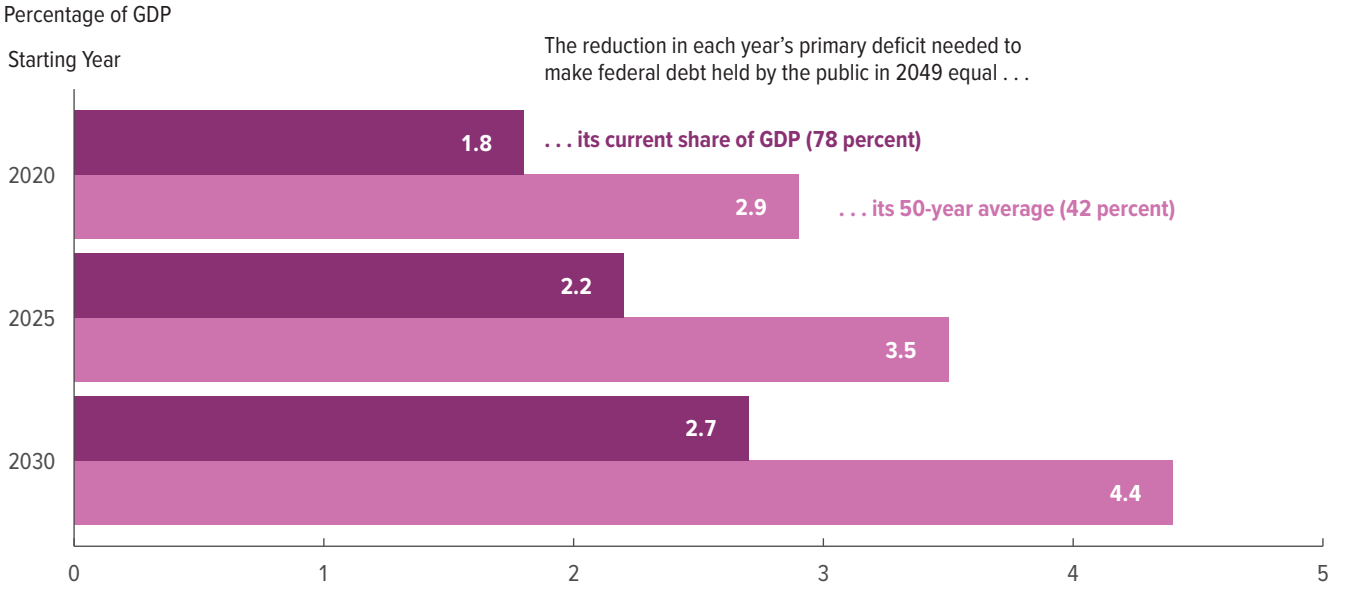
Over the first several years following their adoption, such policy changes would dampen overall demand for goods and services, thus decreasing output and employment below amounts projected under current law. That dampening effect is expected to be temporary, however, because of how prices and interest rates would respond to the reductions in demand and to the resulting actions by the Federal Reserve.

By contrast, if policymakers waited longer to reduce federal spending or increase taxes, more debt would accumulate, which would slow the growth of output and income. Delaying implementation would thus mean that reaching any chosen target for debt would require larger changes. Nonetheless, if policymakers waited longer to enact deficit-reduction policies, the economy probably would be affected less over the short term than it would be if changes were made immediately.

Faster or slower implementation of policies to reduce budget deficits would tend to impose different burdens on different generations. Reducing deficits sooner would probably require older workers and retirees to sacrifice more but would benefit younger workers and future generations. Reducing deficits later would require smaller sacrifices from older people but greater ones from younger workers and future generations.

Figure 2-3.

How Timing Affects the Size of Policy Changes Needed to Make Federal Debt Meet Two Possible Goals in 2049



Source: Congressional Budget Office.

GDP = gross domestic product.

CBO has analyzed those trade-offs in two ways. First, it estimated the extent to which the size of policy adjustments would change if deficit reduction was delayed by five or 10 years. (CBO did not make any assumptions about the specific policy changes that might be used to reduce the deficit.) For example, if lawmakers sought to reduce debt as a share of GDP to its historical 50-year average of 42 percent in 2049 and if the necessary policy changes did not take effect until 2025, the annual reduction in the primary deficit would need to amount to 3.5 percent of GDP rather than the 2.9 percent that would accomplish the same goal if the changes were made starting in 2020 (see Figure 2-3). If lawmakers chose to wait another five years to implement the policies (having them take effect in 2030), even larger changes would be necessary; in that case, the required annual reduction in the primary deficit would amount to 4.4 percent of GDP.

Second, CBO studied the effects on the average per capita income of various generations from waiting to resolve the long-term fiscal imbalance. CBO compared economic outcomes under two types of policies. One would stabilize the debt-to-GDP ratio starting in a particular year, and the other would wait 10 years to do so. For policies such as across-the-board benefit cuts or tax rate increases for all adults, that analysis suggests that the average income of generations born after the earlier implementation date would be lower under the policy with a 10-year delay.[9] In contrast, people born more than 25 years before the earlier implementation date would have a higher average income if action was delayed—mainly because they would partly or entirely avoid the policy changes needed to stabilize the debt. Generations born between those

9. Those results are preliminary conclusions from an update of work that CBO published in 2010. See Congressional Budget Office, *Economic Impacts of Waiting to Resolve the Long-Term Budget Imbalance* (December 2010), www.cbo.gov/publication/21959. That analysis was based on a projection of slower growth in debt than CBO now projects, so the estimated effects of a similar policy today would be close, but not identical, to the effects estimated in that analysis. For a different approach to analyzing the costs of debt reduction for different generations, see Shinichi Nishiyama and Felix Reichling, *The Costs to Different Generations of Policies That Close the Fiscal Gap*, Working Paper 2015-10 (Congressional Budget Office, December 2015), www.cbo.gov/publication/51097.

two groups could either gain or lose from delayed action, depending on the specific details of the policy changes.[10]

CBO's analysis indicates that delaying policy changes would reduce the well-being of younger generations compared with a situation in which policy changes occurred earlier. Moreover, the further in the future that a policy change occurred, the more the well-being of older generations would be improved and that of younger generations would be worsened. However, the additional burden on younger generations resulting from delaying policy changes would be relatively small compared with their lifetime earnings potential because, on average, future generations are expected to have much higher income than current generations.

Even if lawmakers waited to implement policy changes to reduce deficits in the long term, deciding about those changes sooner would offer two main advantages. First, people would have more time to prepare by changing the number of hours they work, the age at which they plan to retire, and the amount they choose to save. Second, policy changes that would reduce the debt over the long term would hold down longer-term interest rates and could lessen uncertainty—thus enhancing businesses' and consumers' confidence. Those factors would boost output and employment in the near term.

10. Those conclusions do not incorporate the negative effects that would arise from a fiscal crisis if one occurred or effects that might arise from the government's reduced flexibility to respond to unexpected challenges.

APPENDIX

A

CBO's Projections of Demographic and Economic Trends

The Congressional Budget Office develops its assessment of the long-term outlook for the federal budget on the basis of its projections of demographic and economic trends over the next three decades. Through 2029, the economic and demographic projections presented in this report are the same as those that CBO published in January.[1] For 2030 through 2049—the remaining years of CBO's extended baseline—the agency's projections generally reflect historical trends and anticipated demographic changes.[2] (A set of annual projections is included in this report's supplemental data, available online at www.cbo.gov/publication/55331.)

Demographic Factors

Both the size and composition of the U.S. population influence the overall growth of the economy and affect federal tax revenues and spending. Rates of fertility, net immigration, and mortality determine the population and thus the size of the labor force and the number of people receiving benefits from federal programs such as Social Security and Medicare. Because of changes to those rates, CBO projects the population to be smaller and to grow at a slower pace in the future than it projected last year.

Population

In CBO's projections, the total population increases from 333 million at the beginning of 2019 to 388 million in 2049, and population growth slows from a rate of 0.6 percent per year to 0.4 percent per year by the end of the projection period (see Table A-1). The slowdown in growth is particularly pronounced for the population age 16 or older, which grows on average by 0.8 percent per year in the first decade of the projection, 0.5 percent in the second decade, and 0.4 percent in the third. Over the entire 30-year period, the U.S. population is projected to grow at an average annualized rate of 0.5 percent (compared with a rate of 0.9 percent over the past 30 years): Births account for an average annual increase of 1.2 percentage points, immigration adds 0.3 percentage points, and mortality subtracts 1.0 percentage point.

The population is projected not only to grow more slowly but also to become older, on average, than in the past. In the agency's projections, over the 30-year period, the share of the population that is 65 or older grows, whereas the share that is of working age (defined as people ages 20 to 64) shrinks. As a result, CBO projects, a growing portion of the population will receive benefits from the Social Security and Medicare programs while a shrinking portion will be working and paying into the trust funds that support those programs.

Fertility

CBO projects a gradual rise in the total fertility rate over the next few years, increasing from a rate of 1.8 children per woman in 2018 to a rate of 1.9 children per woman from 2022 through 2049.[3] Fertility rates tend to be procyclical, meaning they often decline during recessions and rebound during recoveries. However, the U.S. fertility rate did not recover after the 2007–2009 recession; the rate (which averaged 2.0 children per woman in the 20 years prior to the recession) peaked at 2.1 in 2007.

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

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

3. The total fertility rate represents the average number of children that a woman would have in her lifetime and is calculated as the sum of fertility rates for all ages between 15 and 49 in a given year. 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. In CBO's long-term model, the likelihood that a particular woman will have a child depends on such factors as that woman's education, marital status, immigration status, and childbearing history.

Table A-1.

Average Annual Values for Demographic Variables That Underlie CBO's Extended Baseline Projections

	1989–2018	2019–2029	2030–2039	2040–2049	Overall, 2019–2049
Growth of Population (Percent)	0.9	0.6	0.5	0.4	0.5
Contribution to Population Growth (Percentage points):					
Births	1.4	1.2	1.2	1.2	1.2
Net immigration	0.4	0.3	0.3	0.3	0.3
Deaths	-0.9	-0.9	-1.0	-1.1	-1.0
Growth of Civilian Noninstitutionalized Population (Percent)[a]	1.1	0.8	0.5	0.4	0.6
Memorandum:					
Fertility Rate (Children per woman)	2.0	1.9	1.9	1.9	1.9
Life Expectancy at Birth, End of Period (Years)[b]	78.9	80.3	81.4	82.5	82.5
Life Expectancy at Age 65, End of Period (Years)[b]	19.4	20.1	20.8	21.5	21.5
Immigration Rate (Per 1,000 people in the U.S. population)	3.7	3.1	3.1	3.1	3.1

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.

a The civilian noninstitutionalized population includes individuals age 16 or older who are not inmates of institutions or on active duty in the armed forces.

b. 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.

Since then, the fertility rate has steadily declined, reaching 1.9 children per woman in 2010 and 1.8 children per woman in 2017 (the most recent year for which data are available).

CBO projects that total fertility rates will remain below the replacement rate—the fertility rate required for a generation to exactly replace itself—of 2.1 children per woman for the next three decades.[4] Over the next 30 years, that relatively low rate of fertility will contribute to slower population growth. CBO's projection is consistent with the recommendation made to the Social Security Advisory Board by its 2015 Technical Panel on Assumptions and Methods.[5]

Immigration

Under current law, CBO projects, annual net immigration to the United States (a measure that accounts for all people who either enter or leave the United States in any year) would rise from 0.9 million people in 2019 to 1.2 million people in 2049. In an environment of relatively low birth rates, net immigration flows become a more important part of overall U.S. population growth. Between 2019 and 2029, projected net inflows account for approximately half of overall population growth, but by the last decade of the projection period that share is about four-fifths of all growth.

The new immigrants would largely consist of legal permanent residents (LPRs). Over the next two decades, average annual net flows of LPRs are projected to increase from approximately 860,000 LPRs per year in the first decade to approximately 890,000 over the second decade. In addition, the number of legal temporary residents is projected to increase steadily by approximately 80,000 per year over the next 20 years.

CBO's projections of annual net flows of foreign-born people without legal status, which are informed by the agency's economic projections and by recent demographic

4. See Joyce A. Martin and others, *Births: Final Data for 2017*, National Vital Statistics Reports, vol. 67, no. 8 (National Center for Health Statistics, November 2018), www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_08-508.pdf (988 KB).

5. See 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), p. 9, https://go.usa.gov/cJYR5 (PDF, 3.4 MB).

trends, increase over that period.[6] Growth in the U.S. economy is an important factor because, in CBO's estimation, periods of faster growth over the past two decades have been associated with higher net flows of foreign-born people without legal status. CBO expects that relationship to boost such immigration. However, estimates indicate that the number of foreign-born people without legal status in 2016 was the lowest since 2004 despite relatively strong economic conditions in the United States, which implies that other factors have constrained such immigration in recent years. CBO expects those other factors to continue to hold down such immigration in the near term.[7] Nevertheless, over time, the agency expects economic growth to again become an important factor for immigration.

On the basis of recent data, CBO anticipates that net flows of foreign-born people without legal status will be smaller in the near term than the long-term relationship between immigration and economic growth would suggest; the agency projects zero net flows in 2019 (meaning that immigration is offset by emigration in this category). The agency expects annual net flows of foreign-born people without legal status to increase significantly between 2020 and 2024, reaching approximately 170,000 by 2024, and then remain roughly unchanged through 2039, reflecting both economic growth and those other constraining factors.

For projections beyond the next 20 years, CBO employs a simplified approach: After 2039, under current law, the agency projects that net immigration for all categories would grow at a rate equal to overall population growth in the prior year; that rate averages 0.4 percent annually through 2049.

Mortality

The mortality rate, which is the number of deaths per thousand people, has generally declined in the United States since the early 20th century, although the rate of those improvements has slowed over time. For the most part, the mortality rate has decreased more quickly for younger people than for older people during that period. However, mortality rates rose in 2015 and 2016, the most recent years for which data were available at the time this analysis was completed. The result was that life expectancy at birth declined in both years, marking the first decreases in this metric since 1993. Those declines are primarily driven by increases in mortality from Alzheimer's disease, suicide, chronic liver disease, septicemia, and unintentional drug overdoses (in particular, opioids).[8]

CBO projects mortality rates for every five-year age group to decline at the same average pace each group experienced from 1950 through 2015. After projecting average mortality rates for men and women in each age group, CBO incorporates differences in those rates for people 30 years of age and older on the basis of marital status, education, disability insurance status, and lifetime household earnings (for people under 30, the mortality projections account for age and sex only). CBO projects lower mortality rates and thus longer life expectancies for people who are married, have more education, do not receive benefits through the Social Security Disability Insurance (DI) program, or are in higher-income groups.[9]

6. CBO uses this term to refer to foreign-born people other than LPRs, refugees, asylees, 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 (for example, Deferred Action for Childhood Arrivals); others are allowed into the United States while they await their removal proceedings in immigration courts. Many of those foreign-born people without legal status are authorized to work in the United States, in which case they may apply for a Social Security number and must pay applicable federal taxes.

7. For the most recent estimates, see Jeffrey S. Passel and D'Vera Cohn, *U.S. Unauthorized Immigrant Total Dips to Lowest Level in a Decade* (Pew Research Center, November 2018), https://tinyurl.com/y9tmol2g. Official data on foreign-born people without legal status are limited, so historical estimates are very uncertain.

8. For an account of how factors affecting mortality and mortality improvement rates have changed over time, see National Center for Health Statistics, *Health, United States, 2017: With Special Feature on Mortality,* www.cdc.gov/nchs/data/hus/hus17.pdf (10.5 MB).

9. For more information about mortality differences among groups with different earnings, see Tiffany Bosley, Michael Morris, and Karen Glenn, *Mortality by Career-Average Earnings Level*, Actuarial Study 124 (Social Security Administration, April 2018), https://tinyurl.com/yct5qdew (PDF, 301KB); Congressional Budget Office, *Growing Disparities in Life Expectancy* (April 2008), www.cbo.gov/publication/41681; and Julian P. Cristia, *The Empirical Relationship Between Lifetime Earnings and Mortality*, Working Paper 2007–11 (Congressional Budget Office, August 2007), www.cbo.gov/publication/19096.

CBO's projections result in an average life expectancy at birth of 82.5 years in 2049, compared with 79.1 years in 2019.[10] Similarly, life expectancy at age 65 is projected to be 21.5 years in 2049, or 2.1 years longer than life expectancy at age 65 in 2019.[11]

Changes in Demographic Projections Since Last Year

CBO's estimates of the U.S. population change as the result of changes in rates of fertility, immigration, and mortality.

Population. In CBO's projections, the population increases from approximately 333 million in 2019 to 355 million in 2029—an average annualized growth rate of about 0.6 percent. Last year, CBO projected the population would grow slightly faster, increasing from 335 million to 358 million over that same period, an average annualized rate of 0.7 percent. Those revisions reflect changes to underlying data—specifically, unexpectedly high mortality rates for 2015 and 2016 and unexpectedly low fertility rates for 2016 and 2017—as well as changes to the way the agency projects fertility rates and net immigration.

In the two decades following 2029, the population is projected to grow at an average annual rate of 0.4 percent (revised down from 0.5 percent in last year's report) to 388 million by 2049 (5 million, or 1.4 percent, fewer people than projected last year).

Fertility. The total fertility rate is projected to be lower through 2021 than CBO projected last year. Total fertility rates have been persistently low since the 2007–2009 recession. In recognition of that trend, CBO expects total fertility rates to remain low for the next few years, gradually rising from a rate of 1.8 children per woman in 2019 to 1.9 children per woman by 2022, and then remaining at that rate. By contrast, CBO last year projected a total fertility rate of 1.9 children per woman in each year for 2018 through 2048.

The lower fertility rate in the first three years of the projection period eventually results in fewer births and a smaller working-age population throughout the entire period than CBO projected last year. There are approximately 547,000 fewer births over the first half of the projection period, but the effects of fewer births become most evident in the second half of the projection period, as the 2019–2021 birth cohort ages into its working and childbearing years. Between 2035 and 2049, the population age 16 and older contains about 3.7 million fewer people per year, on average, than CBO projected last year. Moreover, the combination of lower fertility rates and a smaller population of childbearing adults results in roughly 60,000 fewer births per year, on average, than the agency projected last year.

Net Immigration. CBO's projection of net immigration is also lower than its projection last year. Between 2019 and 2049, the agency projects the average net immigration rate to be 3.1 immigrants per thousand people, compared with an average rate of 3.2 over the same period in last year's report. Those revisions are attributable to more recent data and adjustments to the way CBO projects net immigration in the extended baseline.

In total, over the next decade, CBO projects approximately 352,000 (or 2.9 percent) fewer immigrants, on net, than the agency projected last year. That change is driven primarily by smaller projected net flows of LPRs and foreign-born people without legal status. In particular, CBO has revised its near-term projection of net flows of foreign-born people without legal status to be lower on the basis of recent data that suggest net flows for this category are likely to be smaller over the next few years than previously projected. Indeed, the agency's projection of zero net flows for 2019 reflects a downward revision of 171,000. Nevertheless, in CBO's assessment, domestic economic conditions will return as an important driver of immigration flows by the middle of the coming decade and, under current law, net flows of foreign-born people without legal status will again be positive.

Last year, for the final 20 years of the extended baseline projection, CBO based its projections of net immigration flows for all categories on the average growth in net immigration published by the Census Bureau—a

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.

11. CBO projects life expectancy in 2090 to be 86.4 years at birth and 24.1 years at age 65. CBO's projections of life expectancies are longer than those of the Social Security trustees (85.7 and 23.5 years, respectively) but shorter than the projections (88.3 and 25.3 years, respectively) recommended in 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), pp. 13–20, https://go.usa.gov/cJYR5 (PDF, 3.4 MB).

constant rate of 0.6 percent. After reassessing that approach, the agency now projects that the same economic forces driving immigration trends in the first decade of its projection will persist through the second decade. Because of that change, net immigration is projected to grow at an average annual rate of 0.3 percent—half the rate of growth projected last year—resulting in a total of 400,000 (or 3.4 percent) fewer immigrants, on net, between 2030 and 2039.

Beyond 2039, because of the significant uncertainty surrounding the mix of immigrants in the long run, CBO projects net immigration flows based on overall population growth in the prior year. As a result of that change, net immigration is projected to grow at an average annual rate of 0.4 percent between 2040 and 2049, compared with the annual rate of 0.6 percent CBO projected last year. In total, CBO projects approximately 740,000 (or 6.0 percent) fewer net immigrants over that period than the agency projected last year.

Mortality. Recent data show higher mortality rates than CBO expected last year for all age groups, but particularly for people under 45 years of age. Those data led CBO to increase its projection of mortality rates for all age groups in the near term and to reduce their rates of mortality improvement over the next three decades. As a result, CBO now projects approximately 970,000 (or 0.9 percent) more deaths over the next three decades than the agency projected last year.

CBO's new projections of mortality rates and mortality improvement also affect the agency's projections of life expectancies, which it now expects to be lower than it reported last year. Life expectancy at birth is projected to be 82.4 years in 2048, 0.4 years shorter than CBO projected last year, and life expectancy at age 65 is projected to be 21.5 years, 0.2 years shorter than in last year's projection.

Economic Factors

The federal government's revenues, spending, and debt depend on key economic factors such as the growth of gross domestic product (GDP), the size and composition of the labor force, the number of hours worked, the distribution of earnings among workers, capital accumulation, productivity, inflation, and interest rates. CBO's projections of those factors reflect the agency's assessment of various economic and demographic developments as well as the effects of fiscal policy on economic activity.

Gross Domestic Product

CBO expects total output, or GDP, in the economy to grow by an average of 3.9 percent per year over the 2019–2049 period (see Table A-2). In the agency's projections, real (inflation-adjusted) GDP growth over that period averages 1.9 percent per year, about what CBO projected last year for the 2018–2048 period. That rate is less than the average growth of 2.5 percent for the past three decades. CBO expects that growth in real GDP per person will average 1.3 percent over the next three decades, less than the 1.6 percent growth of the past three decades.

Projections of GDP. CBO projects that over the next five years, GDP and employment will initially exceed and then return to their long-run relationships with their maximum sustainable levels. After five years, real GDP is then projected to grow at a pace that reflects the increases in the supply of labor, capital services, and productivity described below. That projected pace also takes into consideration the influences of the marginal tax rates and increases in federal debt that CBO projects in its extended baseline.[12]

Over the long term, total GDP is projected to be one-half of one percent below its potential (maximum sustainable) amount, as it has roughly been, on average, over past decades. Those projected outcomes reflect CBO's assessment that, during and after economic downturns, actual output has fallen short of potential output to a greater extent and for longer periods than actual output has exceeded potential output during economic booms.[13]

Projected real GDP growth over the next three decades is slower than the average annual rate of 2.5 percent recorded over the past three decades because the labor force is projected to grow more slowly. On average, CBO projects that real GDP will grow at an annual rate of 1.8 percent from 2019 to 2029. In the decade after 2029, average growth is projected to remain at 1.8 percent before rising to 1.9 percent over the 2040–2049 period. The pattern of projected GDP growth

12. The marginal tax rate is the percentage of an additional dollar of income from labor or capital that is paid in taxes.

13. See Congressional Budget Office, *Why CBO Projects That Actual Output Will Be Below Potential Output on Average* (February 2015), www.cbo.gov/publication/49890.

Table A-2.

Average Annual Values for Economic Variables That Underlie CBO's Extended Baseline Projections

Percent

	1989–2018	2019–2029	2030–2039	2040–2049	Overall, 2019–2049
Growth of GDP					
Real GDP[a]	2.5	1.8	1.8	1.9	1.9
Nominal GDP (Fiscal year)	4.7	4.0	3.8	3.9	3.9
Real GDP per Person	1.6	1.2	1.3	1.5	1.3
Growth of the Labor Force	1.0	0.5	0.3	0.4	0.4
Labor Force Participation Rate	65.5	62.0	60.3	59.7	60.7
Unemployment					
Unemployment rate	5.9	4.5	4.6	4.5	4.5
Natural rate of unemployment	5.1	4.5	4.4	4.2	4.4
Growth of Average Hours Worked	-0.1	*	*	*	*
Growth of Total Hours Worked	0.9	0.4	0.3	0.4	0.4
Earnings as a Share of Compensation	81	81	81	81	81
Growth of Real Earnings per Worker	0.9	1.2	1.1	1.0	1.1
Share of Earnings Below the Taxable Maximum	85	82	81	80	81
Growth of Productivity					
Total factor productivity in the nonfarm business sector	1.2	1.1	1.1	1.1	1.1
Real GDP per hour worked[a]	1.6	1.4	1.5	1.5	1.5
Labor force productivity[b]	1.5	1.3	1.5	1.5	1.4
Inflation					
Growth of the CPI-U	2.5	2.4	2.4	2.4	2.4
Growth of the GDP price index	2.1	2.1	2.0	2.0	2.0
Interest Rates					
Real rates					
On 10-year Treasury notes and the OASDI trust funds	2.2	1.3	1.6	2.0	1.6
Nominal rates					
On 10-year Treasury notes and the OASDI trust funds	4.7	3.7	4.0	4.4	4.0
On all federal debt held by the public[c]	4.8	3.1	3.6	4.0	3.6

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.

CPI-U = consumer price index for all urban consumers; GDP = gross domestic product; OASDI = Old-Age, Survivors, and Disability Insurance; * = between -0.05 and 0.05.

a. Real values have been adjusted to remove the effects of changes in prices.

b. The ratio of real GDP to the labor force. Elsewhere, CBO reports other measures of labor productivity, such as the ratio of real potential GDP to the potential labor force.

c. The interest rate on all federal debt held by the public equals net interest payments in the current fiscal year divided by debt held by the public at the end of the previous fiscal year.

follows the pattern of labor force growth over the next three decades.

Real GDP per person is expected to increase at a slower pace than it has in the past—at an average annual rate of 1.3 percent over the 2019–2049 period, compared with 1.6 percent over the past 30 years. That occurs mainly because the labor force is projected to grow more slowly than the overall population.

Changes in Projections of GDP Since Last Year. In CBO's current projections, the level of real GDP is slightly higher in 2028 than the agency projected last year. Over the subsequent two decades, the agency's current projection of real GDP grows slightly more slowly than it did last year; by 2048, real GDP is 1.6 percent less than it was last year. GDP growth is projected to grow more slowly in the second decade (2030 to 2039), mainly because growth in the labor force is slower in this year's projection than it was in last year's projection. In the third decade, GDP growth is similar to last year's projection.

The Rate of Labor Force Participation and Labor Force Growth

The size of the labor force depends on the rates at which people of different demographic groups participate in the labor market. Since the mid-2000s, the overall labor force participation rate in the United States has declined substantially, driven predominantly by the aging of the population.[14] CBO expects that downward trend to continue over the coming decades before slowing down and eventually leveling off toward the end of the 30-year projection period. As a result, the labor force is projected to grow more slowly than the population. CBO's projections of the overall participation rate and labor force growth are broadly similar to its previous projections. However, the agency has made larger revisions to the participation rates of specific demographic groups.

Projections of the Labor Force Participation Rate. In CBO's projections, the rate of labor force participation declines from 62.8 percent in 2019 to 61.0 percent in 2029 and to 59.8 percent in 2040, where it remains roughly constant for the rest of the projection period. In CBO's assessment, the aging of the population accounts for nearly the entire decline, while the effects of other factors largely offset one another.

People over age 65 tend to participate in the labor force at lower rates than younger people—as of 2018, the average participation rate for prime-age people (those ages 25 to 54) was 82 percent, whereas that for people over age 65 was about 20 percent. Therefore, the ongoing aging of the population is expected to dampen the overall rate of participation in the labor force over the next 30 years. Among the civilian noninstitutionalized population age 16 or older, the share of people over age 65 has increased from 16 percent to 20 percent over the past decade and is projected to rise to 27 percent by 2049. In the meantime, the share of the prime-age population is expected to decline from 49 percent in 2018 to 45 percent by 2049. Without the effects of further aging of the population—that is, if the age composition of the population remained the same as it was in 2018—the overall labor force participation rate over the next 30 years would be roughly constant (and slightly higher than its 2018 level), in CBO's assessment.

Aside from the aging of the population, CBO expects the effects on labor force participation of other demographic trends, economic trends, and fiscal policies under current law to largely offset one another over the coming decades. In particular, two long-term trends are expected to put downward pressure on the participation rate:

- Members (particularly men) of each generation that followed the baby boomers tend to participate in the labor force at lower rates than their predecessors did at the same age.[15] (One notable exception in later generations is that women younger than 35 generally participate at higher rates than female baby boomers did at the same ages. However, as those later generations of women have aged, their participation rates have also fallen below those of their predecessors.)

- The marriage rate is projected to continue to fall, especially among men, and unmarried men tend to participate in the labor force at lower rates than married men do.

CBO expects those forces to be mostly offset by two trends that are expected to increase participation:

14. The labor force participation rate is the share of the civilian noninstitutionalized population age 16 or older that participates in the labor force.

15. Baby boomers are people born between 1946 and 1964.

- The population is becoming more educated, and people with more education tend to participate in the labor force at higher rates than do people with less education.

- Increasing longevity is expected to lead people to continue working to increasingly older ages.

In addition to the effects of those demographic trends, budgetary effects and incentives under current tax law, combined with economic trends, would also affect the labor force. For example, rising federal deficits are projected to slow growth in the stock of private capital and to limit the growth of after-tax wages, thereby reducing the supply of labor. Meanwhile, under current law, tax rates on individual income are set to rise in 2026 when some provisions of the 2017 tax act expire. In addition, as people's income rises faster than inflation, more of their income is pushed into higher tax brackets through a process known as real bracket creep, raising their effective tax rates. After 2025, those higher tax rates and real bracket creep are projected to decrease participation in the labor force because people would see a lower return on their labor.

Changes in Projections of the Labor Force Participation Rate Since Last Year. CBO's current projection of the overall labor force participation rate is slightly lower than previously projected for 2019 to 2024 and slightly higher than previously projected for 2025 to 2048. The new projection incorporates the agency's reassessment of recent trends in the participation rates of different demographic groups.

Compared with its previous projections, CBO has lowered its projection of the participation rate of the youngest group of workers (ages 16 to 24) throughout the 30-year projection period. The agency now expects that group's rate of participation in the labor force to fall, from about 55 percent in 2018 to 54 percent in 2048, instead of rising to 57 percent as previously projected. CBO's revision mainly reflects the observation that the participation rate of the youngest workers has declined substantially since the 2007–2009 recession and has failed to recover meaningfully in recent years despite the growth of the economy.[16] That development suggests that the factors that have pushed down younger Americans' participation rates since the last recession are more structural and less cyclical than previously estimated.

Conversely, the agency has raised its projection of the participation rate of prime-age people throughout the 30-year projection period. CBO now expects the participation rate of that group to be higher, on average, over the next three decades than its current rate. That contrasts with CBO's previous projection that the rate would decline slightly over the next three decades. The agency revised its projection primarily because the participation rate of prime-age people has rebounded more strongly in the past year than expected, which suggests that the rate's decline after the last recession was driven more by cyclical factors and less by structural factors than previously estimated.

Projections of Labor Force Growth. Because a falling participation rate means that less of the growth in population translates into labor force growth, the labor force is expected to increase even more slowly than the population from 2019 to 2049. Although the population age 16 or older is expected to grow by 0.6 percent per year, on average, the labor force is projected to grow at an average rate of 0.4 percent per year. That represents a significant slowdown in labor force growth from earlier periods: For example, the average annual growth rate was 1.2 percent during the 1990–2006 period.

In CBO's projections, growth in the labor force declines from an average of 0.5 percent during the 2019–2029 period to 0.3 percent during the 2030–2039 period, driven by a decline in population growth over the next two decades as well as a decline in the participation rate. Labor force growth rebounds slightly, to an average of 0.4 percent per year, in the third decade of the 30-year projection period; the labor force participation rate is expected to have stabilized by then and therefore would no longer subtract from labor force growth.

Changes in Projections of Labor Force Growth Since Last Year. CBO's current projection of labor force growth is similar to last year's projection through 2029 but lower in the second decade because of the downward revision in population growth discussed in previous sections. In the third decade, projected labor force growth

16. For a discussion of CBO's methods for projecting labor force participation, see Joshua Montes, *CBO's Projection of Labor Force Participation Rates*, Working Paper 2018-04 (Congressional Budget Office, March 2018), www.cbo.gov/publication/53616.

is similar to last year's projection because higher participation rates offset the downward revisions to population growth.

Other Labor Market Outcomes

In addition to the rate of labor force participation and the size of the labor force, CBO's long-term labor market outlook also includes its projections for the unemployment rate, the average and total number of hours that people work, and various measures of workers' earnings over the next 30 years. The agency regularly updates those projections to incorporate updates to historical data, reassessments of trends, and changes to its analytic methods.

Unemployment. In CBO's projections, the unemployment rate falls from 3.9 percent at the end of 2018 to 3.5 percent in 2019, about 1.1 percentage points below the agency's estimate of the natural rate of unemployment (the rate that results from all sources other than fluctuations in overall demand related to the business cycle). As economic growth slows after 2019, the unemployment rate rises, surpassing the natural rate by 2022. (The natural rate of unemployment is projected to fall from 4.6 percent in 2019 to 4.5 percent in 2029.) From 2023 onward, the unemployment rate is expected to remain roughly one-quarter of one percentage point above the natural rate, a difference that is consistent both with the historical average relationship between the two measures and with the projected gap of one-half of one percent between actual and potential GDP.

After 2029, both the actual and the natural rates of unemployment are projected to decline gradually as the labor force ages and becomes increasingly educated. (Older and more educated workers tend to have lower actual and natural rates of unemployment.) By 2049, the natural rate of unemployment is projected to be about 4.2 percent, and the actual rate is projected to be about 4.4 percent.

Average Hours Worked. Different subgroups of the labor force work different numbers of hours, on average. Men tend to work more hours than women do, for example, and people between the ages of 30 and 40 tend to work more hours than people between the ages of 50 and 60 do. In CBO's estimation, those differences among groups will remain stable. However, over the long term, the composition of the labor force is projected to shift toward groups that tend to work less (such as older workers). As a result, the average number of hours worked by the labor force as a whole is expected to decline slightly. By 2049, the average number of hours that people work is expected to be about 0.9 percent less than it is today.

Total Hours Worked. Based on projections of the size of the labor force, average hours worked, and unemployment, total hours worked are estimated to increase at an average annual rate of 0.4 percent between 2019 and 2049. This is slower than the average annual rate of 0.9 percent over the past three decades. The drop in the growth of total hours is mainly because the population is expected to grow more slowly in the future than it has over the past 30 years.

Average growth in total hours worked falls from 0.4 percent in the first decade of CBO's projections (2019 to 2029) to 0.3 percent in the second decade, rising to 0.4 percent in the third decade. A drop in population growth between the first and second decades is the main cause of the projected decline in growth of total hours worked. Growth in total hours worked increases in the third decade because the decline in the rate of labor force participation ends.

Earnings as a Share of Compensation. Workers' total compensation consists of taxable earnings and nontaxable benefits such as employers' contributions to health insurance and pensions. Over the years, the share of total compensation paid in the form of earnings has declined—from about 90 percent in 1960 to about 81 percent in 2018—mainly because the cost of health insurance has risen more quickly than total compensation.[17]

CBO expects that trend in health care costs to continue, which would further decrease the proportion of compensation that workers receive as earnings. However, under current law, an excise tax on certain employment-based health insurance plans that have premiums above specified amounts is scheduled to take effect in 2022. Some employers and workers are expected to respond by shifting to less expensive plans, thereby reducing the share of compensation consisting of health insurance premiums and increasing the share that consists of earnings. In CBO's projections, the effects of the tax on the mix of compensation roughly offset the effects of rising costs for health care until the effects of rising costs outweigh those of the excise tax late in the projection period. As a result,

17. For more details, see Congressional Budget Office, *How CBO Projects Income* (July 2013), www.cbo.gov/publication/44433.

the share of compensation that workers receive as earnings is projected to remain close to 81 percent through most of the 2019–2049 period.

Growth of Real Earnings per Worker. Projections of wages and salaries, nonwage compensation (such as employment-based health insurance), average hours worked, labor productivity (discussed below), and prices imply that real earnings per worker would grow by an average of 1.1 percent annually over the 2019–2049 period. That rate is higher than the average annual growth of 0.9 percent over the past 30 years.

Distribution of Earnings. Over the past several decades, earnings have grown faster for higher earners than for lower earners. In CBO's projections, the unequal growth in earnings continues for the next three decades, although that disparity falls over time. The distribution of earnings affects revenues from income taxes and payroll taxes, among other things. Income taxes are affected by the earnings distribution because of the progressive rate structure of the individual income tax; people with lower income pay a smaller share of their earnings than people with higher income do.

Social Security payroll taxes are also affected by the earnings distribution. Those taxes are levied only on earnings up to a certain annual amount ($132,900 in 2019). Below that amount, earnings are taxed at a combined rate of 12.4 percent, split between the employer and employee (self-employed workers pay the full amount); no tax is paid on earnings above the cap. The taxable maximum has remained a nearly constant proportion of the average wage since the mid-1980s, but because earnings have grown more for higher earners than for others, the portion of covered earnings on which Social Security payroll taxes are paid has fallen from 90 percent in 1983 to 84 percent in 2017.[18] The portion of earnings subject to Social Security taxes is projected to fall to an average of 82 percent between 2019 and 2029, 81 percent in the following decade, and 80 percent between 2040 and 2049.

Changes in Projections of Other Labor Market Outcomes Since Last Year. Projections of most other labor market outcomes are generally similar to what CBO projected last year. CBO's current projections of wages and salaries are slightly lower than last year's, mainly because updates to historical wage and salary data indicate that their share of GDP was, on average, lower over the past decade than previously reported. As a result, CBO revised down its projection of wages and salaries over the next three decades.

Also, CBO's current projection of the unemployment rate is higher during the 2019–2023 period but slightly lower from 2024 onward. The upward revision in the near term largely reflects the agency's assessment that recent trends in hiring, layoffs, and retirement that had put downward pressure on the unemployment rate will not last as long as CBO estimated earlier. For the 2024–2048 period, in contrast, the downward revision occurred because the agency lowered its estimate of the natural rate of unemployment after reassessing the effects of the composition of the potential labor force. In particular, because younger workers tend to have higher natural rates of unemployment (on average, more than 10 percent, compared with prime-age workers' 4 percent from 1990 to 2018), revising down their share in the potential labor force, as CBO did, leads to a reduction in the estimate of the economywide natural rate of unemployment.

Capital Accumulation and Productivity

In addition to growth in the labor force and the number of hours worked, two other important factors affect the growth in output. One is the accumulation of capital, including physical structures, equipment, land, and inventories used in production, along with intangible capital such as computer software. The accumulated stock contributes a stream of services to production. The second is the growth of total factor productivity (TFP), which is the growth of real output per unit of combined labor and capital services—that is, the growth of output that is not explained by the growth of labor and capital. Combined, the growth rates projected for the labor supply, the capital stock, and TFP result in a projection of the average growth of labor force productivity.

Capital Services. Over the longer term, growth in the nation's stock of capital will be driven by private saving, federal borrowing, total factor productivity, the after-tax rate of return, and international flows of financial capital. Private saving and international capital flows tend to move with the after-tax rate of return on investment, which measures the extent to which investment in the stock of capital results in a flow of income. CBO's

18. Covered earnings are those received by workers in jobs subject to Social Security payroll taxes. Most workers pay payroll taxes on their earnings, although a small number—mostly in state and local government jobs or in the clergy—are exempt.

projection of that rate is consistent with the agency's projection that the real interest rate on 10-year Treasury notes will be 1.4 percent in 2029 and 2.2 percent in 2049 (see "Interest Rates" on page 60).

Total Factor Productivity. The annual growth of TFP in the nonfarm business sector is projected to increase from about 0.7 percent in 2019 to about 1.1 percent in 2022 and then to remain at that rate through 2049, yielding an average annual growth rate of roughly 1.1 percent from 2019 to 2049. That projected growth rate is about 0.3 percentage points slower than the average annual rate of 1.4 percent since 1950 and slightly slower than the average rate recorded since 1989.

The projected path for nonfarm business TFP reflects several considerations that, in CBO's assessment, suggest slower growth in coming decades than the long-term historical average. For example, with the exception of a period of rapid growth in the late 1990s and early 2000s, productivity has tended to grow more slowly in recent decades than it did during the 1950s and 1960s. That long-term trend suggests that projections for the next few decades should place greater weight on more recent, slower growth than on the relatively rapid growth of the more distant past. Thus, although CBO projects an acceleration of nonfarm business TFP growth from its unusually slow recent rate, the agency anticipates that growth will return to a rate that is slower than its long-term historical average.

A number of developments support projections of slower growth in nonfarm business TFP. One is the anticipated slowing of growth in labor quality, a measure of workers' skills that accounts for educational attainment and work experience that, in CBO's analysis, is implicitly a part of TFP. Following a relatively rapid rise during the 1980s and 1990s, growth in labor quality slowed after 2000. In CBO's assessment, that change results both from a gradual slowdown in the increase in average educational attainment and from the burgeoning retirement of a relatively large and skilled portion of the workforce—the baby-boom generation. In coming decades, however, the slowdown in the growth of labor quality is expected to be partly offset by the aging of those remaining in the labor force, especially as better health and longer life expectancy lead people to stay in the workforce longer than did members of previous generations. (An older workforce generally has a larger proportion of more highly educated workers because they tend to remain in the labor force longer than do workers with less education.) Nevertheless, CBO anticipates slower growth in labor quality than in the past.

Another factor that is projected to slow the growth of nonfarm business TFP is the projected reduction in spending for federal investment. Under the assumptions used for CBO's baseline, the government's nondefense discretionary spending is projected to decline over the next decade to a much smaller percentage of GDP than it has averaged in the past. About half of nondefense discretionary spending from the 1980s onward has consisted of federal investment in physical capital (such as roads and other infrastructure), education and training, and research and development—all of which, in CBO's judgment, contributed to TFP growth. Consequently, lower nondefense discretionary spending as a percentage of GDP would mean less federal investment, causing TFP to grow more slowly.

Labor Productivity. Taken together, the projections of the labor force, capital services, and TFP result in labor force productivity that is expected to grow on average by 1.4 percent annually over the 2019–2049 period. When projections of total hours worked are used instead, real GDP per hour worked is expected to grow by an annual average of 1.5 percent over the 2019–2049 period.

Changes in Projections of Capital Accumulation and Productivity Since Last Year. CBO has revised its analytic methods to account more fully for economic growth outside the nonfarm business sector—that is, in the farm, household, nonprofit, and government sectors. That revision, which affects only the projection beyond the 10-year budget window, yields a more comprehensive accounting of the growth of private-sector capital services. For example, capital services from more sectors outside the nonfarm business sector are now explicitly included in CBO's measure of capital services, in order to assess their contributions to GDP, whereas last year, those services only implicitly contributed to GDP. As a result, CBO's measure of capital services accounts for a greater share of overall production than was the case last year, and TFP accounts for less.

In addition, changes in historical data regarding the national income and product accounts that the Bureau of Economic Analysis reported in July 2018 led CBO to increase its projection of the growth in capital services and to lower its projection of the growth in TFP in the nonfarm business sector. (As a result, TFP growth in that sector is expected to be slightly slower than it was in last

year's projections.) Those revisions offset each other and have little net effect on projected labor productivity.

The updated data and CBO's revised analytic methods are reflected in its projection of labor force productivity over the 30-year projection period, which is lower than last year's projection. This year, CBO projects that the average annual rate of growth in labor force productivity would be roughly 1.4 percent from 2019 to 2048; last year, CBO projected that rate would be roughly 1.5 percent from 2019 to 2048.

Inflation

CBO projects rates of inflation for two categories: prices of consumer goods and services and prices of final goods and services.[19] Those rates influence nominal levels of interest rates and income (that is, the levels without adjustments to remove the effects of inflation) and thereby influence tax revenues, various types of federal expenditures that are indexed for inflation, and interest payments on federal debt.

Prices of Consumer Goods and Services. One measure of consumer price inflation is the annual rate of change in the consumer price index for all urban consumers (CPI-U). Over the 2019–2049 period, inflation in that measure averages 2.4 percent in CBO's projections. That long-term rate is slightly less than the average rate of inflation of 2.5 percent per year since 1990. CBO projects that, under a chained measure of CPI-U inflation, prices will grow at a rate 0.25 percentage points less than the annual increase in the consumer price index.[20]

Prices of Final Goods and Services. After 2019, the annual inflation rate for all final goods and services produced in the economy, as measured by the rate of increase in the GDP price index, is projected to average 0.4 percentage points less than the annual increase in the consumer price index. The GDP price index grows more slowly than the consumer price index because it is based on the prices of a different set of goods and services and a different method of calculation.

Changes in Projections of Inflation Since Last Year. Inflation in both measures of consumer prices is projected to be the same as the rates CBO projected last year for the 2018–2048 period.

Interest Rates

CBO projects the interest rates, both real and nominal, that apply to federal borrowing, including the rate on 10-year Treasury notes and special-issue Social Security bonds. It also projects the average nominal interest rates on federal debt held by the public and on the bonds held in the Social Security trust funds. Those rates influence the cost of the government's debt burden and the evolution of the trust funds.

After considering a number of factors, including slower growth in the labor force, slower growth in TFP, and higher government debt, CBO expects real interest rates on federal borrowing to be lower in the future than they have been, on average, over the past few decades. The real interest rate on 10-year Treasury notes (calculated by subtracting the rate of increase in the consumer price index from the nominal yield on those notes) averaged roughly 2.9 percent between 1990 and 2007.[21] That rate has averaged 0.8 percent since 2009 and is projected to be 1.4 percent in 2029. In CBO's projections, the rate continues to rise thereafter, reaching 2.2 percent in 2049. That rate is 0.7 percentage points below the average real interest rate on 10-year Treasuries over the 1990–2007 period. CBO's current projections of interest rates are lower than last year's.

Factors Affecting Interest Rates. Interest rates are determined by a number of factors. CBO projects the rates by comparing how the values of those factors are expected to differ in the long term relative to their average values in the past. However, conclusions from such analyses

19. Final goods and services include not only those purchased directly by consumers, but also by businesses (for investment) and governments, as well as net exports.

20. The chained CPI-U tends to grow more slowly than the standard CPI-U for two reasons. First, it uses a formula that better accounts for households' tendency to substitute similar goods and services for each other when relative prices change. Second, unlike the CPI-U, the chained CPI-U is little affected by statistical bias related to the sample sizes that the Bureau of Labor Statistics uses in computing each index. Historically, inflation as measured by the chained CPI-U has been 0.25 percentage points lower, on average, than inflation as measured by the CPI-U. CBO's projections reflect that average difference between the two measures.

21. Between 1970 and 2007, the real interest rate on 10-year Treasury notes averaged 2.8 percent; the average from 1954 to 2007 was 2.6 percent. Historical inflation rates are taken from the consumer price index, adjusted to account for changes over time in the way that the index measures inflation. See Bureau of Labor Statistics, "CPI Research Series Using Current Methods (CPI-U-RS)" (accessed on March 28, 2018), www.bls.gov/cpi/research-series/home.htm.

depend greatly on the period being considered, as some recent decades show: Real interest rates were low in the 1970s because of an unexpected surge in inflation. In the 1980s, when inflation declined at an unexpectedly rapid pace, real rates were high.[22] Interest rates fell sharply during the financial crisis and recession that began in 2007.

To avoid using any of those possibly less representative periods, CBO considered average interest rates and their determinants over the 1990–2007 period and then judged how different those determinants might be over the long term.[23] That period was chosen for comparison because it featured fairly stable expectations of inflation and no severe economic downturns or significant financial crises.

Some factors reduce interest rates; others increase them. In CBO's estimates for the 2019–2049 period, several factors tend to reduce interest rates on government securities relative to their 1990–2007 average:

- The labor force is projected to grow much more slowly than it did from 1990 to 2007. That slower growth in the number of workers would tend to increase the amount of capital per worker in the long term, reducing the return on capital and therefore also reducing the return on government bonds and other investments.[24]
- The share of total income received by higher-income households is expected to be larger in the future than during the 1990–2007 period. Higher-income households tend to save a greater proportion of their income, so the difference in the distribution of income is projected to increase the total amount of saving available for investment, other things being equal. As a consequence, the amount of capital per worker is projected to rise and interest rates are expected to be lower.
- TFP is projected to grow more slowly in the future than it did from 1990 to 2007. For a given rate of investment, lower productivity growth reduces the return on capital and results in lower interest rates, all else being equal.
- CBO expects investors' preferences for Treasury securities relative to riskier assets to remain elevated compared with inclinations over the 1990–2007 period. Investors began to have less appetite for risk in the early 2000s, and the demand for low-risk assets was strengthened by the economic fallout from the financial crisis, the slow subsequent recovery, and financial institutions' response to increased regulatory oversight. The rise in demand for Treasury securities from those factors contributed to lower returns (that is, to lower interest rates). CBO expects preferences for Treasury securities relative to riskier assets to gradually decline over the next three decades but to remain above their average levels from 1990 to 2007.

At the same time, in CBO's estimates, several factors tend to boost interest rates on government securities relative to their average over the 1990–2007 period:

- Under CBO's extended baseline, federal debt is projected to be much larger as a percentage of GDP than it was before 2007—reaching 93 percent by 2029 and 144 percent by 2049. The latter figure is more than three and a half times the average over the 1990–2007 period. Greater federal borrowing

22. CBO calculates real interest rates by subtracting expected rates of inflation from nominal interest rates. In general, borrowers and lenders agree to nominal interest rates after accounting for their expectations of what inflation will be. However, if inflation ends up being higher than was expected when the rates were agreed to, real interest rates will turn out to be lower than anticipated. If inflation ends up lower than expected, the opposite will occur. CBO uses the actual consumer price index, adjusted to account for changes over time in the way that the index measures inflation, as a proxy for both what expectations of inflation have been in the past and what they will be in the future. One drawback is that if inflation fluctuates rapidly over time, changes in expectations may lag behind changes in actual inflation. Although CBO's approach could mismeasure expectations of inflation and real interest rates in some years, the way inflation has varied over time suggests that CBO's approach is a useful proxy over long periods, on average.

23. A Bank of England study identified a similar set of determinants that account for the decline in real interest rates over the past 30 years. See Rachel Lukasz and Thomas D. Smith, *Secular Drivers of the Global Real Interest Rate*, Staff Working Paper 571 (Bank of England, December 2015), https://tinyurl.com/y3mrtoyv (PDF, 1.8 MB).

24. For more information about the relationship between the growth of the labor force and interest rates, see Congressional Budget Office, *How Slower Growth in the Labor Force Could Affect the Return on Capital* (October 2009), www.cbo.gov/publication/41325.

tends to crowd out private investment in the long term, reducing the amount of capital per worker and increasing both interest rates and the return on capital over time.

- The capital share of income—the percentage of total income that is paid to owners of capital—has been on an upward trend for the past few decades. That share is projected to decline over the next decade from its current, elevated level but remain higher than its average has been over recent decades. The factors that appear to have contributed to the rise in income for owners of capital (such as technological change and globalization) are likely to persist, keeping it above the historical average. In CBO's estimation, a larger share of income accruing to owners of capital would directly boost the return on capital and, thus, interest rates.

- The retirement of members of the baby-boom generation and slower growth of the labor force will reduce the number of workers in their prime saving years relative to the number of older people who are drawing down their savings, CBO projects. As a result, in CBO's estimates, the total amount of saving available for investment is less than it otherwise would be (all else being equal), which tends to reduce the amount of capital per worker and thereby push up interest rates. (CBO estimates that this effect will only partially offset the positive effect of increased income inequality on saving, leaving a net increase in savings available for investment.)

- CBO anticipates that emerging-market economies will attract a greater share of foreign investment in coming decades than they did in the 1990–2007 period. As economic and financial conditions in those economies continue to improve, they will become increasingly attractive destinations for foreign investment. CBO projects that development would put upward pressure on interest rates in the United States.

Some factors mentioned above are easier than others to quantify. For instance, the effect of labor force growth and rising federal debt can be estimated from available data, theoretical models, and estimates in the literature. The extent to which other factors will affect interest rates is more difficult to estimate. A shift in preferences for low- rather than high-risk assets is not directly observable, for example. And, although the distribution of income is observable, neither models nor empirical estimates offer much guidance for quantifying its effect on interest rates.

In light of those sources of uncertainty, CBO relies not only on economic models and findings from the research literature but also on information from financial markets to guide its assessments of the effects of various factors on interest rates over the long term. The current rate on 30-year Treasury bonds, for example, reflects market participants' judgments about the path that interest rates on short-term securities will take 30 years into the future. That market forecast informs CBO's assessment of market expectations for the risk premium—the premium paid to investors for the extra risk associated with holding longer-term bonds—and for investment opportunities in the United States and abroad, and it points to considerably lower interest rates well into the future than those of recent decades.

Projections of Interest Rates. The nominal interest rate on 10-year Treasury notes is projected to average 4.0 percent over the 2019–2049 period and to reach 4.6 percent in 2049. The real interest rate on 10-year Treasury notes is projected to average about 1.6 percent and, at the end of the period, to be 2.2 percent.

The average interest rate on all federal debt held by the public tends to be lower than the rates on 10-year Treasury notes because interest rates are generally lower on shorter-term debt than on longer-term debt and because Treasury securities are expected to mature, on average, over periods of less than 10 years.[25] CBO projects a 0.4 percentage-point difference between the rate on 10-year Treasury notes and the effective rate on federal debt over the 2030–2049 period. That difference is projected to average 0.6 percentage points over the next decade. The difference is larger over the coming decade than for later years because a significant portion of federal debt that will be outstanding during the next 10 years was issued at the very low interest rates prevailing in the aftermath of the 2007–2009 recession. (The average interest rate on all federal debt changes more slowly than the 10-year rate because only a portion of federal debt matures each year.) Thus, in CBO's

25. In particular, over the next decade, CBO expects the difference between the rate on 3-month Treasury bills and the rate on 10-year Treasury notes to average 0.8 percentage points.

projections, the average nominal interest rate on all federal debt held by the public is about 3.6 percent for the 2019–2049 period and reaches 4.2 percent in 2049.

The Social Security trust funds hold special-issue bonds that generally earn interest at rates that are higher than the average rate on federal debt. In CBO's projections, the nominal interest rate on bonds newly issued to the trust funds is equal to the rate on 10-year Treasury notes and averages 4.0 percent over the 2019–2049 period and reaches 4.6 percent in 2049. The corresponding real rates are 1.6 percent, on average, over the full period and 2.2 percent in 2049.

Because interest rates have been low for much of the past decade, CBO projects that the average interest rate earned by all bonds held by the Social Security trust funds (both new and previously issued) would be slightly lower than the interest rate on newly issued bonds over the next decade. The average interest rate on all bonds, which CBO uses to calculate the present value of future streams of revenues and outlays for those funds, is projected to average 3.8 percent over the 2019–2049 period.[26]

Changes in Projections of Interest Rates Since Last Year. CBO's current projections of interest rates are lower than last year's. The real rates on 10-year Treasury notes and the Social Security bonds are projected to average 1.6 percent over the 2019–2049 period and to be 2.2 percent in 2048. Last year, CBO projected that both rates would average 1.7 percent over the 2018–2048 period and would be 2.4 percent in 2048.

CBO's projections of interest rates are different from last year's mainly because they are now based on a more comprehensive assessment of how changes in private investment affect the capital stock and thus the return on capital. Changes in the return on capital are estimated to drive changes in interest rates across the economy. Previously, changes in CBO's measure of capital services owing to changes in investment in essence incorporated effects only on nonfarm business capital. Now, changes in capital services from changes in investment incorporate effects on a broader range of capital, including owner-occupied residential housing.

That modeling improvement results in a smaller estimated effect on capital services from a change in investment (because of larger deficits and more crowding out, for example). Because CBO now incorporates the effect of changes in a capital stock measure that is more comprehensive this year than it was last year, any given change in private investment results in a smaller percentage change in the agency's capital stock measure than it did last year. In addition, residential housing depreciates more slowly than most other forms of capital, so the immediate effect of residential investment on residential capital is relatively small. The smaller percentage effect on capital results in a smaller change in the return on capital and ultimately a smaller change in interest rates resulting from a change in investment.

Because of that modeling improvement, changes in deficits have a smaller effect on interest rates in this year's extended baseline projection. That occurs even though CBO has not changed its assessment of how changes in deficits affect private investment. In addition, slower growth in both the labor force and TFP imply slightly lower returns on capital and, in turn, lower interest rates. All told, the average projected interest rate on 10-year Treasury notes over the 2019–2048 period is 0.1 percentage point lower than CBO projected a year ago.

26. A present value is a single number that expresses a flow of past and future income or payments in terms of an equivalent lump sum received or paid at a specific time. The value depends on the rate of interest, known as the discount rate, that is used to translate past and future cash flows into current dollars at that time.

APPENDIX

B

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.

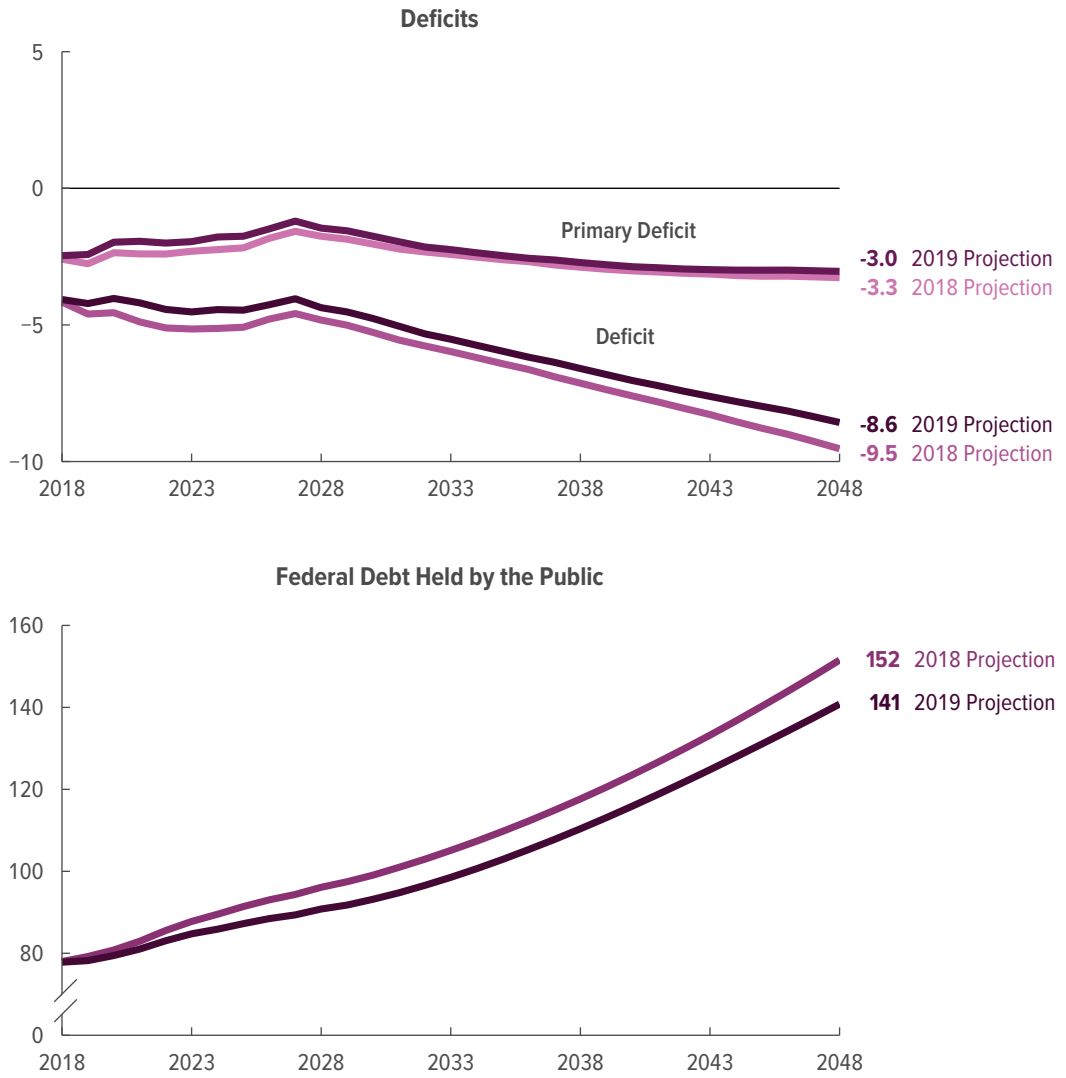
1. The extended baseline projections generally reflect current law, following CBO's 10-year baseline budget projections and then extending most of the concepts underlying those projections for the rest of the long-term projection period. For the 2018 extended baseline projections, see Congressional Budget 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



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.

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.

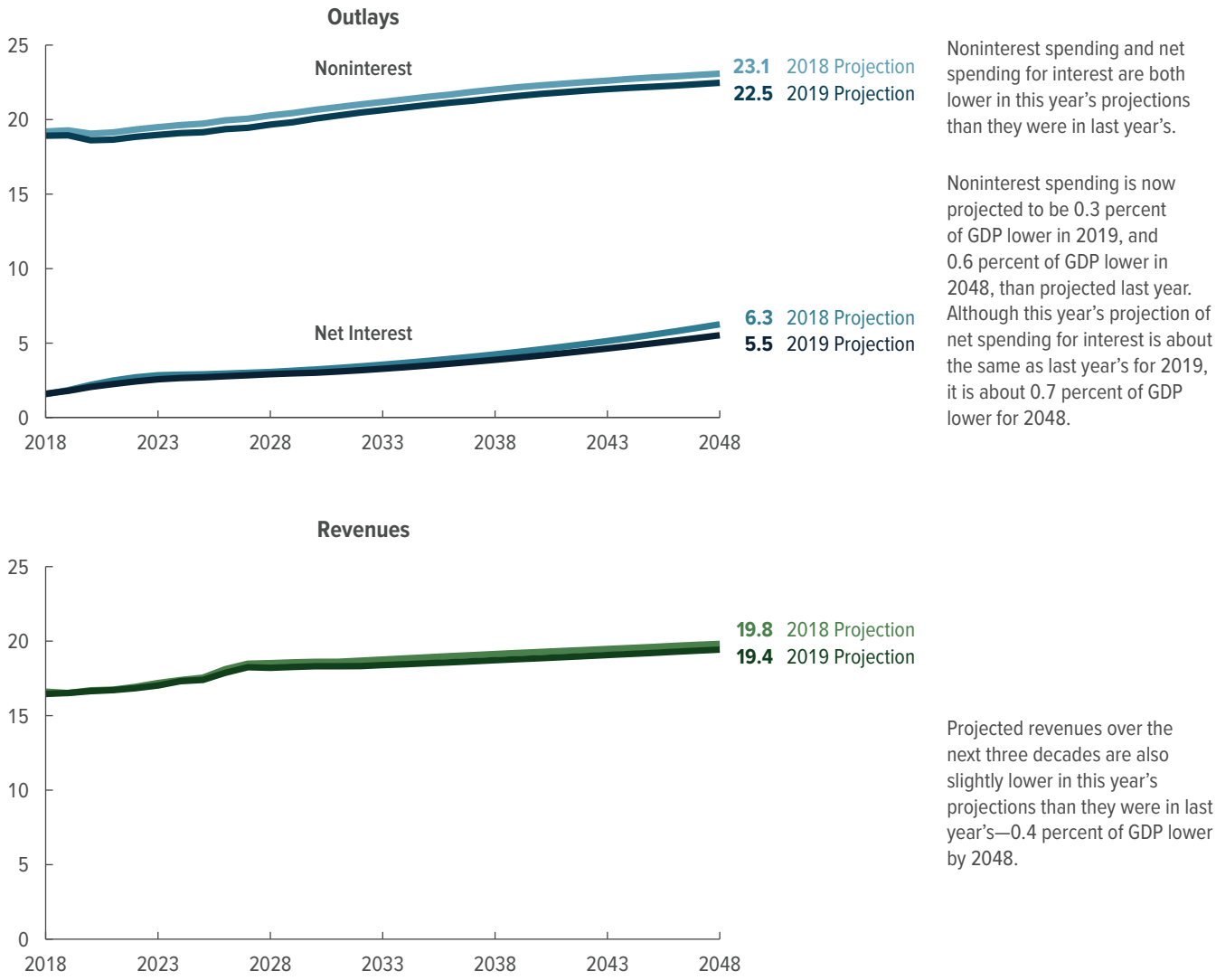
Noninterest Spending

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



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.

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

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

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]

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

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

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.

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

List of Tables and Figures

Tables

Figures

About This Document

This volume is one of a series of reports on the state of the budget and the economy that the Congressional Budget Office issues each year. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Overseen by Julie Topoleski and prepared with guidance from Devrim Demirel, Edward Harris, John Kitchen, John McClelland, David Weaver, and Jeff Werling, the report represents the work of many analysts at CBO. Xiaotong Niu prepared the visual summary. Ricci Reber wrote Chapter 1 with contributions from James Otterson. Jaeger Nelson and Kerk Phillips wrote Chapter 2. Aaron Betz and Ricci Reber wrote Appendix A with contributions from Gloria Chen, Edward Gamber, and Robert Shackleton. Marina Miller wrote Appendix B with contributions from Jaeger Nelson, James Otterson, and Kerk Phillips. Jessica Banthin, Barry Blom, Lori Housman, Jamease Kowalczyk, Noah Meyerson, Eamon Molloy, Sam Papenfuss, Lisa Ramirez-Branum, Dan Ready, Sarah Sajewski, Emily Stern, Robert Stewart, and Rebecca Yip contributed to the analysis.

Charles Pineles-Mark developed the long-term budget simulations with assistance from Nathaniel Milhous, Marina Miller, Xiaotong Niu, and Ricci Reber. Aaron Betz, Junghoon Lee, Jaeger Nelson, James Otterson, Kerk Phillips, and Robert Shackleton prepared the macroeconomic simulations with contributions from Mark Lasky. Edward Harris coordinated the revenue simulations, which were prepared by Kathleen Burke, Paul Burnham, Bayard Meiser, Shannon Mok, and Kurt Seibert. Jimmy Chin, Nathaniel Milhous, and Adam Staveski fact-checked the report. The report builds on the 10-year projections of the budget and economy that CBO released earlier this year, which reflected the contributions of more than 100 people at the agency.

Wendy Edelberg, Mark Hadley, Jeffrey Kling, and Robert Sunshine reviewed the report. Christine Bogusz, Bo Peery, Benjamin Plotinsky, and Elizabeth Schwinn edited it, and Robert Rebach prepared it for publication. Nathaniel Milhous, Marina Miller, and Charles Pineles-Mark prepared the supplemental data. The report is available on CBO's website (www.cbo.gov/publication/55331).

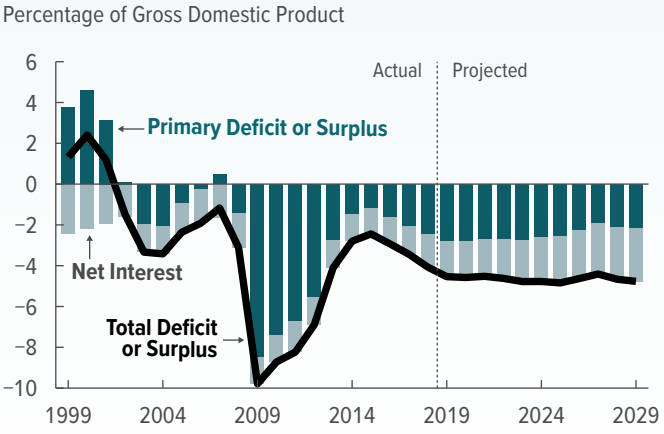
CBO continually seeks feedback to make its work as useful as possible. Please send any comments to communications@cbo.gov.

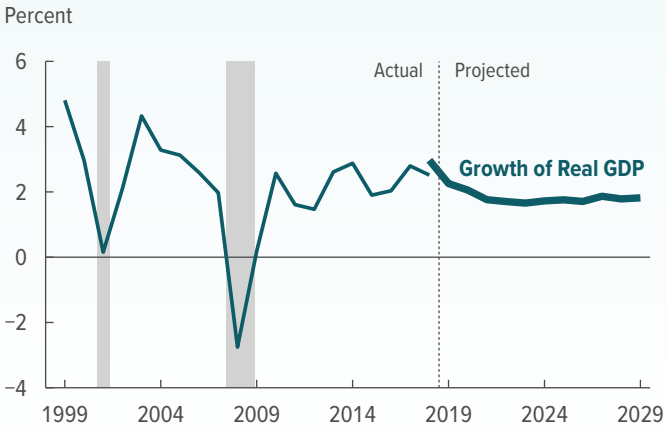
Phillip L. Swagel
Director
June 2019

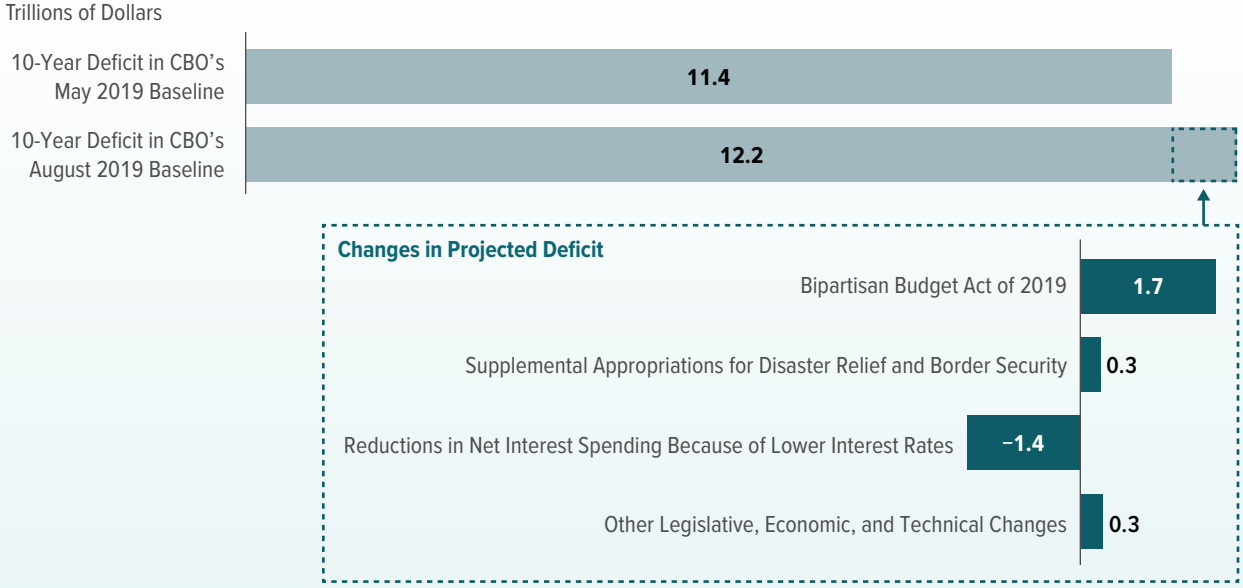
CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

CBO

An Update to the Budget and Economic Outlook: 2019 to 2029







AUGUST 2019

At a Glance

The Congressional Budget Office regularly publishes reports that present projections of what federal deficits, debt, revenues, and spending—and the economic path underlying them—would be for the current year and for the next 10 years if existing laws governing taxes and spending generally remained unchanged. This report is the latest in that series.

- **Deficits.** In CBO's projections, the federal budget deficit is $960 billion in 2019 and averages $1.2 trillion between 2020 and 2029. Over the coming decade, deficits (after adjustments to exclude the effects of shifts in the timing of certain payments) fluctuate between 4.4 percent and 4.8 percent of gross domestic product (GDP), well above the average over the past 50 years. Although both revenues and outlays grow faster than GDP over the next 10 years in CBO's baseline projections, the gap between the two persists.

- **Debt.** As a result of those deficits, federal debt held by the public is projected to grow steadily, from 79 percent of GDP in 2019 to 95 percent in 2029—its highest level since just after World War II (see Chapter 1).

- **The Economy.** Real (inflation-adjusted) GDP is projected to grow by 2.3 percent in 2019, supporting strong labor market conditions that feature low unemployment and rising wages. This year, real output is projected to exceed CBO's estimate of its potential (maximum sustainable) level. After 2019, consumer spending and purchases of goods and services by federal, state, and local governments are projected to grow at a slower pace, and annual output growth is projected to slow—averaging 1.8 percent over the 2020–2023 period—as real output returns to its historical relationship with potential output. From 2024 to 2029, both output and potential output are projected to grow at an average pace of 1.8 percent per year, which is less than the long-term historical average. That slowdown occurs primarily because the labor force is expected to grow more slowly than it has in the past (see Chapter 2).

- **Changes in CBO's Projections Since May 2019.** CBO's estimate of the deficit for 2019 is now $63 billion more—and its projection of the cumulative deficit over the 2020–2029 period, $809 billion more—than it was in May 2019. The agency's baseline projections of primary deficits (that is, deficits excluding net outlays for interest) for that period increased by a total of $1.9 trillion. Recently enacted legislation accounts for most of that change. In particular, incorporating the higher discretionary funding limits for 2020 and 2021 that were established in the Bipartisan Budget Act of 2019 increased CBO's projections of primary deficits for the 2020–2029 period by $1.5 trillion. (Those projections reflect the assumption—required by law—that future discretionary funding will grow at the rate of inflation after those limits expire.)

  Partly offsetting the increase in projected primary deficits is a net reduction of $1.1 trillion in the agency's projections of interest costs over that same period. The largest factor contributing to that change is that CBO revised its forecast of interest rates downward, which lowered its projections of net interest outlays by $1.4 trillion (including interest savings from the resulting reductions in deficits and debt). Taken together, other changes to the budget projections increased projected debt-service costs by nearly $0.3 trillion; $0.2 trillion of that amount is associated with the increase in projected spending stemming from the Bipartisan Budget Act (see Appendix A).

Contents

Notes

Unless this report indicates otherwise, all years referred to in describing the budget outlook are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end. Years referred to in describing the economic outlook are calendar years.

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

Some figures in this report have vertical bars that indicate the duration of recessions. (A recession extends from the peak of a business cycle to its trough.)

The Congressional Budget Office completed its current economic forecast on July 25, 2019. Unless this report indicates otherwise, the projections of economic variables are based on information that was available at that time. Thus, the projections do not reflect the comprehensive revisions to the national income and product accounts that the Bureau of Economic Analysis released on July 26. However, the actual and historical data shown in figures describing the economic forecast are based on those revisions, as are the discussions of recent economic events in the text.

CBO periodically reports to the Congress about the accuracy of its baseline projections of economic outcomes (www.cbo.gov/publication/53090) and about the accuracy of its projections of spending, revenues, and the deficit (www.cbo.gov/publication/54872). And CBO will soon publish a short report about how budget projections would differ if they were based on certain revenue and spending policies that differed from those underlying the agency's baseline projections.

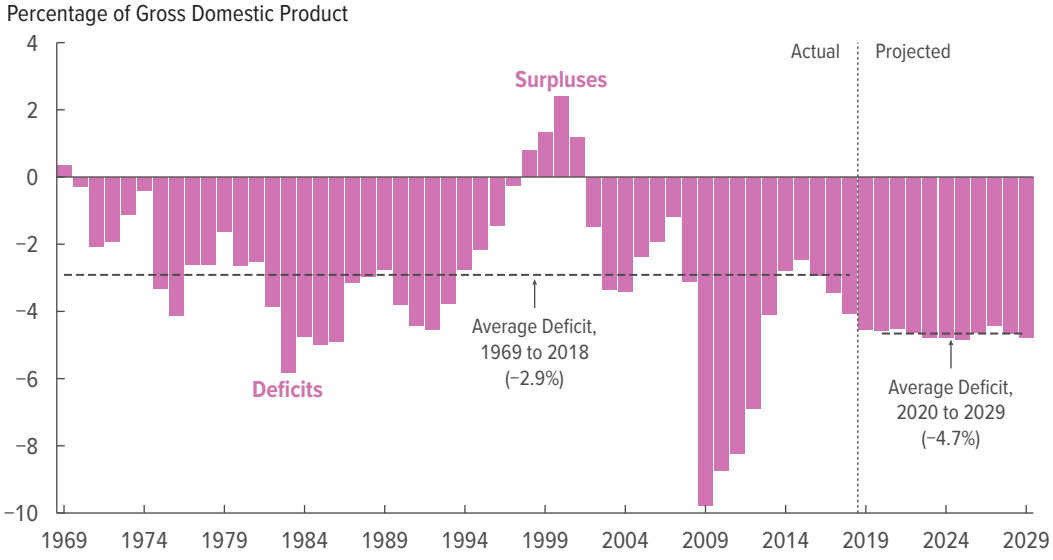
Supplemental data for this analysis are available on CBO's website (www.cbo.gov/publication/55551), as are a glossary of common budgetary and economic terms (www.cbo.gov/publication/42904), a description of how CBO prepares its baseline budget projections (www.cbo.gov/publication/53532), a description of how CBO prepares its economic forecast (www.cbo.gov/publication/53537), and previous editions of this report (https://go.usa.gov/xQrzS).

Visual Summary

In this report, the Congressional Budget Office provides projections of the federal budget and the U.S. economy under current law for this year and the decade that follows. Deficits in the current projections are larger than those in the projections that CBO published in May, primarily because recently enacted legislation raised the caps on discretionary funding for fiscal years 2020 and 2021. The budgetary effects of new legislation were partially offset by revisions that the agency has made to its economic forecast since it was last updated in January 2019. In particular, markedly lower projected interest rates reduced the agency's projections of borrowing costs. CBO also raised its projections of economic growth in the near term.

Deficits

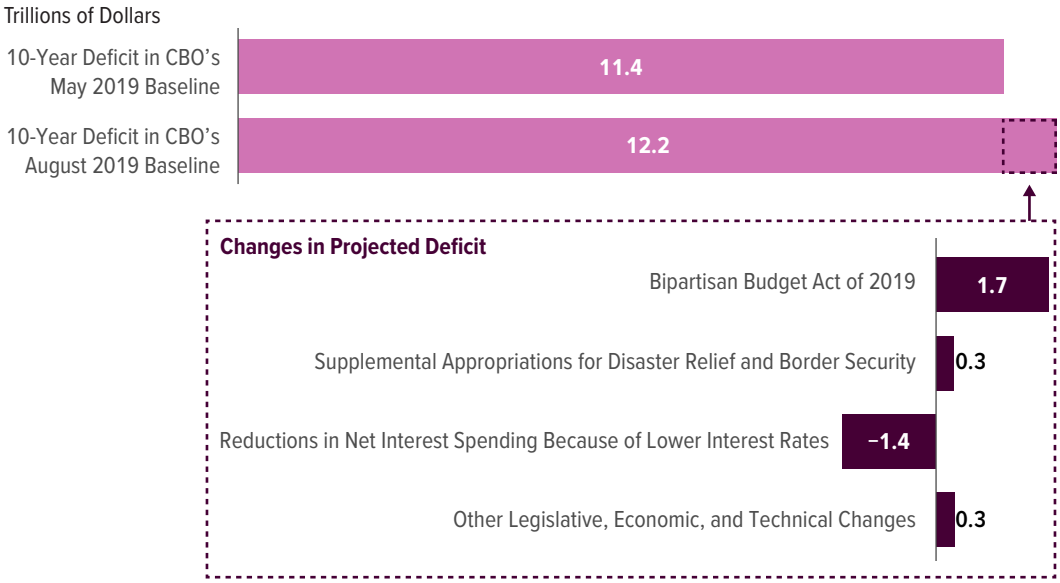
CBO estimates a 2019 deficit of $960 billion, or 4.5 percent of gross domestic product (GDP). The projected shortfall (adjusted to exclude the effects of shifts in the timing of certain payments) rises to 4.8 percent of GDP in 2029.



Over the 2020–2029 period, deficits are projected to average 4.7 percent of GDP, totaling $12.2 trillion. Such deficits would be significantly larger than the 2.9 percent of GDP that deficits averaged over the past 50 years.

See Figure 1-1

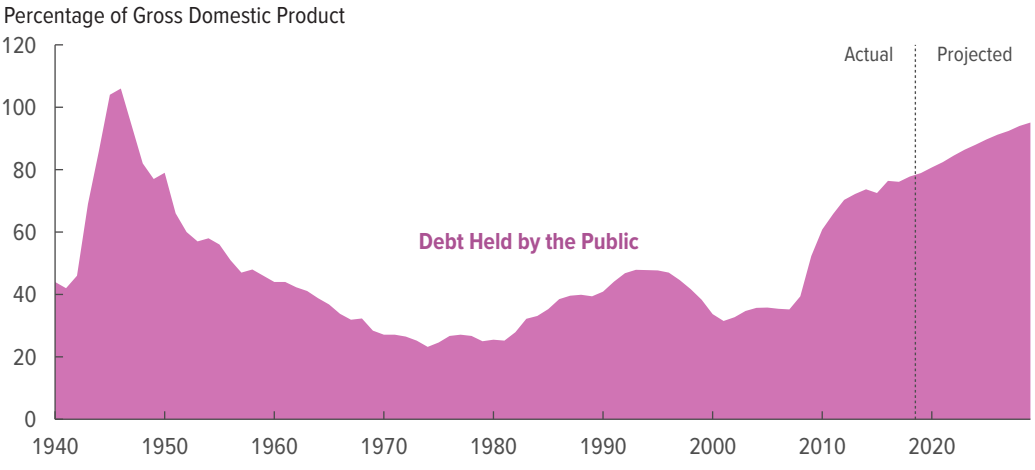
Deficits (Continued)



Since May 2019, CBO has increased its projection of the 10-year deficit by a total of $0.8 trillion. The largest factor in that revision was the Bipartisan Budget Act of 2019, which increased projected deficits for the 2020–2029 period by $1.7 trillion (including debt-service costs). A reduction in projected net interest outlays, which stemmed from lower projected interest rates than those in CBO's January 2019 forecast, offset much of that increase.

See Figure A-1

Debt Federal debt held by the public is projected to rise steadily over the coming decade, from 79 percent of GDP in 2019 to 95 percent of GDP in 2029. It would continue to grow after 2029.

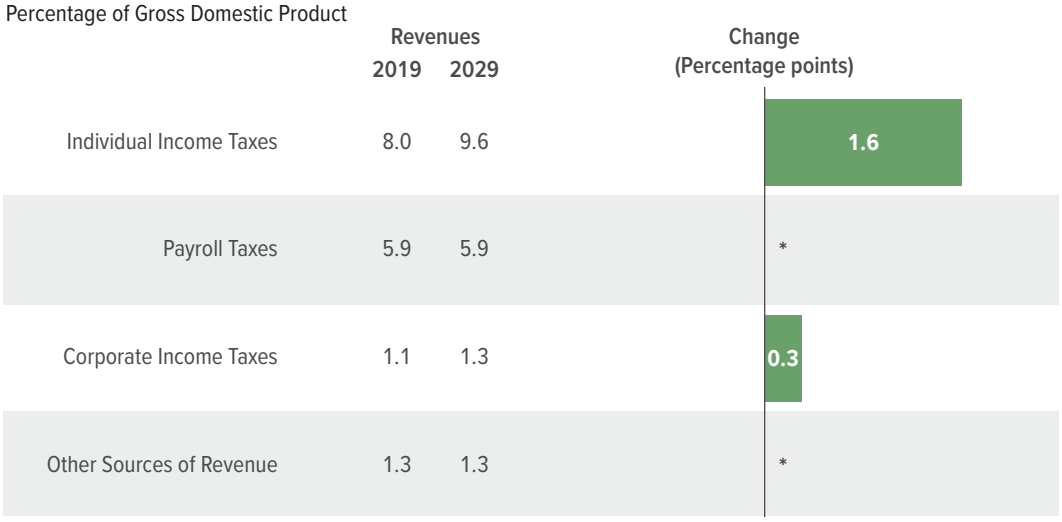


Relative to the size of the economy, federal debt in 2019 is projected to be nearly twice its average over the past 50 years. At the end of 2029, debt is projected to reach a higher level than it has at any point since just after World War II.

See Figure 1-4

Revenues

In CBO's baseline projections, revenues total $3.5 trillion in 2019, or 16.3 percent of GDP, and rise to 18.2 percent of GDP in 2029. Over the past 50 years, revenues averaged 17.4 percent of GDP.

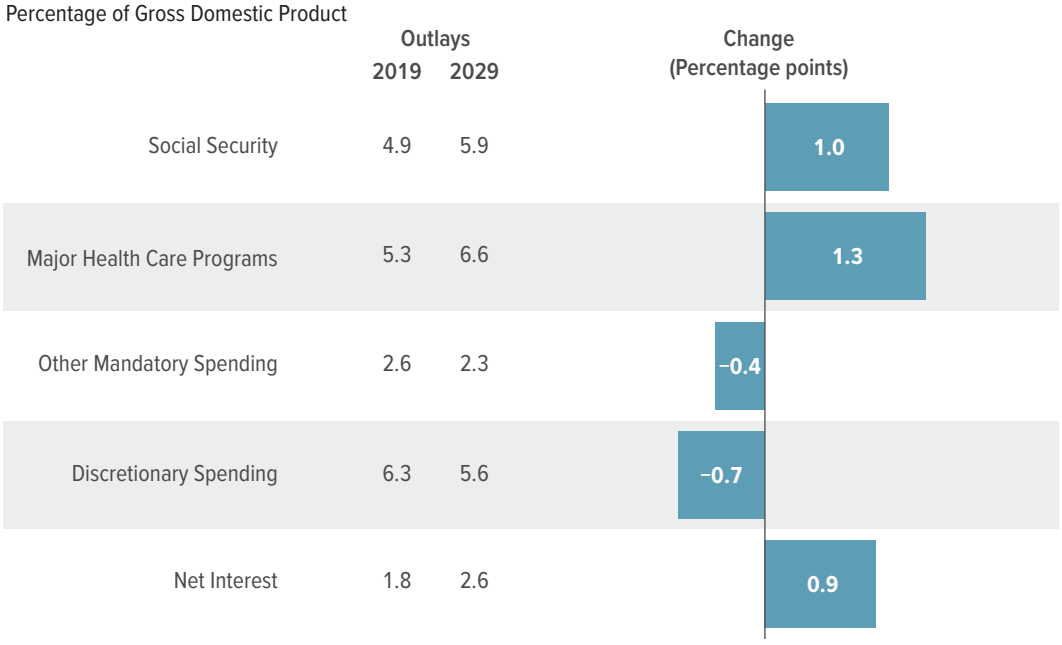


Total revenues as a share of GDP are projected to rise over the next decade, primarily because of increases in individual income taxes. The largest of those increases stem from the expiration of certain provisions of the 2017 tax act at the end of 2025 and from real bracket creep.

*See Figure 1-7; * = between zero and 0.05 percent of GDP*

Outlays

In 2019, CBO estimates, outlays will total $4.4 trillion, or 20.8 percent of GDP. In the agency's baseline projections, they rise to 23.0 percent of GDP in 2029 (after an adjustment to exclude the effects of certain timing shifts). Over the past 50 years, outlays averaged 20.3 percent of GDP.



The aging of the population and the rising costs of health care drive an increase in mandatory outlays (particularly for Social Security and Medicare).

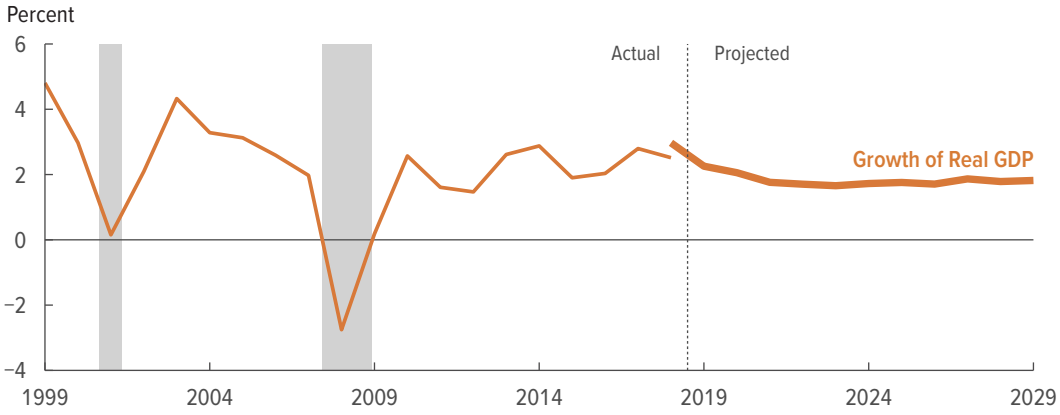
Outlays for discretionary programs fall in relation to GDP because rates of inflation, which are used to project future funding, are lower than the rate of economic growth.

Net interest costs rise because of accumulating debt and rising interest rates.

See Figure 1-5

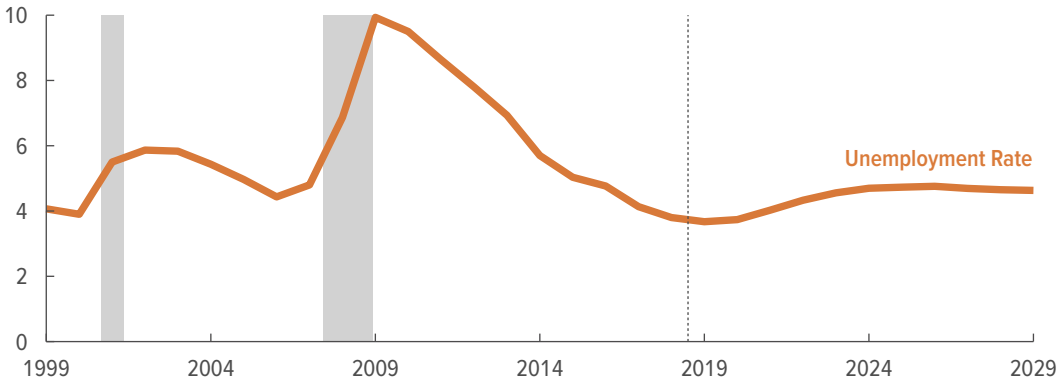
The Economy

The economy was strong in 2018 and the first half of 2019: Real (inflation-adjusted) GDP grew at an average annual rate of 2.5 percent, unemployment remained low, and wages rose. In CBO's forecast, the economy expands more slowly over the next decade than it did in 2018, growing at an annual rate of 1.8 percent, on average. That rate of output growth is below the long-run historical average, primarily because the labor force is expected to grow more slowly than it has in the past.



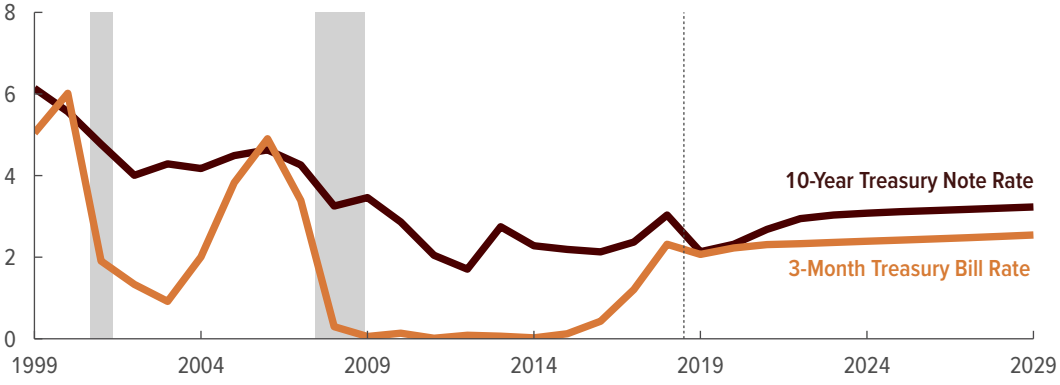
Real GDP growth is projected to slow from 2.3 percent in 2019 to an average of 1.8 percent over the 2020–2023 period, reflecting slower growth in consumer spending and government purchases as well as the effect of trade policies on business investment.

See Figure 2-1



In CBO's projections, the unemployment rate remains close to its current level of 3.7 percent through the end of 2020 and then rises to 4.6 percent by the end of 2023 as output growth slows.

See Figure 2-3



CBO expects the Federal Reserve to keep the target range for the federal funds rate at its current level through most of 2020 and then increase it at the end of that year. That increase, along with other factors, would put upward pressure on short-term and long-term interest rates.

See Figure 2-1

CHAPTER

1

The Budget Outlook

Overview

The Congressional Budget Office now estimates that, if no further legislation is enacted this year that affects revenues or outlays, the total federal budget deficit for fiscal year 2019 will be $960 billion, or 4.5 percent of gross domestic product (GDP). According to CBO's projections, the deficit would generally increase in nominal terms through 2029 and would remain a considerably larger share of GDP than its average over the past 50 years (see Figure 1-1). Such increases in deficits would lead to growth in debt held by the public: Under current law, the federal government is projected to borrow an additional $13.6 trillion from the end of 2018 through 2029, boosting debt held by the public to $29.3 trillion, or 95 percent of GDP, in that year—up from 79 percent now. Relative to the projections CBO published earlier this year, the agency's estimate of the deficit for 2019 is now $63 billion more—and its projection of the cumulative deficit over the 2020–2029 period, $809 billion more—than it was in May 2019 (see Appendix A).[1]

CBO's projections are created in accordance with provisions set forth in the Balanced Budget and Emergency Deficit Control Act of 1985 (Public Law 99-177, referred to here as the Deficit Control Act), and the Congressional Budget and Impoundment Control Act of 1974 (P.L. 93-344). Those laws require CBO to construct its baseline under the assumption that current laws will generally remain unchanged. Thus, CBO's baseline is not intended to provide a forecast of future budgetary outcomes; rather, it is meant to provide a benchmark that policymakers can use to assess the potential effects of future policy decisions. Future legislative action could lead to markedly different outcomes—but even if federal laws remained unaltered for the next decade, actual budgetary outcomes would probably differ from CBO's baseline, not only because of unanticipated economic conditions, but also as a result of the many other factors that affect federal revenues and outlays.

1. See Congressional Budget Office, *Updated Budget Projections: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151.

The Budget Outlook for 2019

In CBO's baseline projections, the 2019 budget deficit is $960 billion, which is $181 billion more than the shortfall recorded last year (see Table 1-1). That increase would be smaller if not for a shift in the timing of certain payments. The 2018 deficit was reduced by $44 billion because certain payments that would ordinarily have been made on October 1, 2017 (the first day of fiscal year 2018), were instead made in fiscal year 2017 because October 1 fell on a weekend. If not for that shift, last year's shortfall would have been $823 billion, and the estimated increase in the deficit in 2019 would be $137 billion, or 17 percent (see Table 1-2). (The discussion of CBO's projections in this chapter reflects adjustments to remove the effects of those timing shifts.)

Relative to the size of the economy, this year's deficit, at 4.5 percent of GDP, is also expected to exceed last year's shortfall of 4.1 percent. Estimated debt held by the public has also increased, to 78.9 percent of GDP from 77.8 percent in 2018. Outlays are estimated to rise as a percentage of GDP, from 20.5 percent in 2018 to 20.8 percent this year. In contrast, revenues are expected to fall slightly below their 2018 level relative to GDP, from 16.5 percent in that year to 16.3 percent in 2019.

Outlays

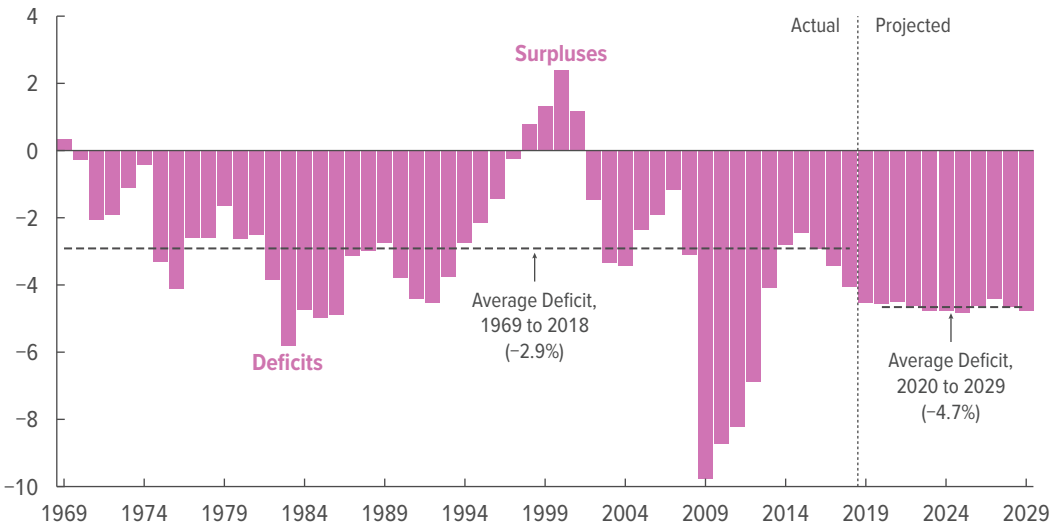
In CBO's projections, total federal outlays increase by $258 billion (or 6 percent) in 2019, to a total of $4.4 trillion. More than half of that growth is attributable to mandatory outlays, which are projected to rise by $144 billion, or 6 percent. Discretionary outlays are projected to increase from last year's amount—$1.3 trillion—by $67 billion, or 5 percent. The government's net interest costs are also anticipated to grow in 2019, increasing by $47 billion (or 14 percent), to $372 billion.

Federal outlays in 2019 are projected to be 0.5 percentage points of GDP above their 50-year average of 20.3 percent. That increase over historical amounts is

Figure 1-1.

Total Deficits and Surpluses

Percentage of Gross Domestic Product



Deficits as a percentage of gross domestic product are projected to remain relatively stable over the coming decade. They exceed their 50-year average throughout the 2020–2029 period.

Source: Congressional Budget Office.

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. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

largely attributable to significant growth in mandatory spending (net of the offsetting receipts that are credited against such outlays), which is expected to equal 12.8 percent of GDP in 2019, compared with its 9.9 percent average over the 1969–2018 period. As a share of GDP, the other major components of federal spending are estimated to fall below their 50-year averages: Discretionary outlays are projected to equal 6.3 percent of GDP this year, compared with their average of 8.4 percent over the past 50 years, and net outlays for interest are expected to equal 1.8 percent of GDP, compared with their 50-year average of 2.0 percent.

Mandatory Spending. Mandatory, or direct, spending includes outlays for some federal benefit programs and for certain other payments to people, businesses, nonprofit institutions, and state and local governments. Such outlays are generally governed by statutory criteria and are not normally constrained by the annual appropriation process.[2] Certain types of payments that federal agencies receive from the public and from other government agencies are classified as offsetting receipts and are accounted for in the budget as reductions in mandatory spending.

The Deficit Control Act requires CBO to construct baseline projections for most mandatory spending under the assumption that current laws continue unchanged.[3]

2. Each year, some mandatory programs are modified by provisions in annual appropriation acts. Such changes may increase or decrease spending for the affected programs for one or more years. In addition, some mandatory programs, such as Medicaid, the Supplemental Nutrition Assistance Program, and benefits for Coast Guard retirees and annuitants, are considered mandatory but require benefits to be paid from amounts provided in appropriation acts. Section 257 of the Deficit Control Act requires CBO to project outlays for those programs as if they were fully funded, regardless of the amounts actually appropriated.

3. Section 257 of the Deficit Control Act also requires CBO to assume that certain mandatory programs will continue beyond their scheduled expiration and that entitlement programs, including Social Security and Medicare, will be fully funded and thus will be able to make all scheduled payments even if the trust funds associated with those programs do not contain the funding to make full payments. Other rules that govern the construction of CBO's baseline have been developed by the agency in consultation with the House and Senate Committees on the Budget. For further details, see Congressional Budget Office, *How CBO Prepares Baseline Budget Projections* (February 2018), www.cbo.gov/publication/53532.

Table 1-1.

CBO's Baseline Budget Projections, by Category

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020–2024	Total 2020–2029
							In Billions of Dollars							
Revenues														
Individual income taxes	1,684	1,698	1,800	1,895	1,981	2,076	2,171	2,272	2,501	2,731	2,838	2,962	9,923	23,227
Payroll taxes	1,171	1,247	1,281	1,332	1,385	1,442	1,505	1,567	1,629	1,692	1,759	1,828	6,945	15,420
Corporate income taxes	205	228	245	268	298	335	371	400	409	398	407	415	1,517	3,547
Other	271	278	293	298	307	309	345	345	361	385	386	415	1,552	3,443
Total	**3,330**	**3,451**	**3,620**	**3,792**	**3,971**	**4,163**	**4,392**	**4,585**	**4,900**	**5,206**	**5,390**	**5,619**	**19,937**	**45,637**
On-budget	2,475	2,532	2,677	2,811	2,951	3,104	3,292	3,443	3,714	3,974	4,111	4,291	14,835	34,368
Off-budget[a]	855	919	943	981	1,020	1,059	1,100	1,142	1,186	1,231	1,279	1,328	5,103	11,269
Outlays														
Mandatory	2,523	2,707	2,838	2,962	3,192	3,326	3,446	3,682	3,900	4,101	4,405	4,454	15,764	36,306
Discretionary	1,262	1,332	1,400	1,446	1,481	1,513	1,543	1,584	1,622	1,661	1,706	1,736	7,382	15,690
Net interest	325	372	390	418	456	506	554	602	653	704	758	807	2,325	5,848
Total	**4,109**	**4,411**	**4,628**	**4,826**	**5,130**	**5,344**	**5,543**	**5,869**	**6,174**	**6,466**	**6,868**	**6,997**	**25,470**	**57,845**
On-budget	3,261	3,505	3,661	3,794	4,027	4,165	4,286	4,532	4,762	4,968	5,276	5,308	19,934	44,780
Off-budget[a]	849	906	967	1,032	1,103	1,179	1,257	1,337	1,412	1,498	1,592	1,690	5,537	13,065
Deficit (-) or Surplus	**-779**	**-960**	**-1,008**	**-1,034**	**-1,159**	**-1,181**	**-1,151**	**-1,284**	**-1,274**	**-1,260**	**-1,479**	**-1,378**	**-5,533**	**-12,208**
On-budget	-785	-972	-984	-983	-1,076	-1,061	-994	-1,090	-1,048	-994	-1,166	-1,016	-5,099	-10,412
Off-budget[a]	6	12	-24	-51	-83	-120	-157	-194	-227	-267	-313	-362	-434	-1,796
Debt Held by the Public	15,750	16,685	17,755	18,841	20,042	21,264	22,457	23,784	25,102	26,407	27,917	29,322	n.a.	n.a.
Memorandum:														
Gross Domestic Product	20,236	21,157	22,013	22,870	23,727	24,611	25,529	26,514	27,518	28,582	29,699	30,847	118,750	261,911
							As a Percentage of Gross Domestic Product							
Revenues														
Individual income taxes	8.3	8.0	8.2	8.3	8.4	8.4	8.5	8.6	9.1	9.6	9.6	9.6	8.4	8.9
Payroll taxes	5.8	5.9	5.8	5.8	5.8	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.8	5.9
Corporate income taxes	1.0	1.1	1.1	1.2	1.3	1.4	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.4
Other	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Total	**16.5**	**16.3**	**16.4**	**16.6**	**16.7**	**16.9**	**17.2**	**17.3**	**17.8**	**18.2**	**18.1**	**18.2**	**16.8**	**17.4**
On-budget	12.2	12.0	12.2	12.3	12.4	12.6	12.9	13.0	13.5	13.9	13.8	13.9	12.5	13.1
Off-budget[a]	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Outlays														
Mandatory	12.5	12.8	12.9	13.0	13.5	13.5	13.5	13.9	14.2	14.3	14.8	14.4	13.3	13.9
Discretionary	6.2	6.3	6.4	6.3	6.2	6.1	6.0	6.0	5.9	5.8	5.7	5.6	6.2	6.0
Net interest	1.6	1.8	1.8	1.8	1.9	2.1	2.2	2.3	2.4	2.5	2.6	2.6	2.0	2.2
Total	**20.3**	**20.8**	**21.0**	**21.1**	**21.6**	**21.7**	**21.7**	**22.1**	**22.4**	**22.6**	**23.1**	**22.7**	**21.4**	**22.1**
On-budget	16.1	16.6	16.6	16.6	17.0	16.9	16.8	17.1	17.3	17.4	17.8	17.2	16.8	17.1
Off-budget[a]	4.2	4.3	4.4	4.5	4.6	4.8	4.9	5.0	5.1	5.2	5.4	5.5	4.7	5.0
Deficit (-) or Surplus	**-3.9**	**-4.5**	**-4.6**	**-4.5**	**-4.9**	**-4.8**	**-4.5**	**-4.8**	**-4.6**	**-4.4**	**-5.0**	**-4.5**	**-4.7**	**-4.7**
On-budget	-3.9	-4.6	-4.5	-4.3	-4.5	-4.3	-3.9	-4.1	-3.8	-3.5	-3.9	-3.3	-4.3	-4.0
Off-budget[a]	*	0.1	-0.1	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-1.1	-1.2	-0.4	-0.7
Debt Held by the Public	77.8	78.9	80.7	82.4	84.5	86.4	88.0	89.7	91.2	92.4	94.0	95.1	n.a.	n.a.

Source: Congressional Budget Office.

n.a. = not applicable; * = between zero and 0.05 percent.

a. The revenues and outlays of the Social Security trust funds and the net cash flow of the Postal Service are classified as off-budget.

Table 1-2.

CBO's Baseline Projections of Outlays and Deficits, Adjusted to Exclude the Effects of Timing Shifts

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
						In Billions of Dollars						
Payments That Are Shifted in CBO's Baseline[a]	-44	0	0	0	62	5	-68	0	0	0	94	-93
Outlays Adjusted for Timing Shifts												
Mandatory	2,563	2,707	2,838	2,962	3,135	3,321	3,509	3,682	3,900	4,101	4,317	4,542
Discretionary	1,266	1,332	1,400	1,446	1,476	1,512	1,548	1,584	1,622	1,661	1,700	1,742
Net interest	325	372	390	418	456	506	554	602	653	704	758	807
Total	**4,153**	**4,411**	**4,628**	**4,826**	**5,067**	**5,339**	**5,610**	**5,869**	**6,174**	**6,466**	**6,775**	**7,090**
Deficit Adjusted for Timing Shifts	**-823**	**-960**	**-1,008**	**-1,034**	**-1,097**	**-1,176**	**-1,219**	**-1,284**	**-1,274**	**-1,260**	**-1,385**	**-1,471**
						As a Percentage of Gross Domestic Product						
Outlays Adjusted for Timing Shifts												
Mandatory	12.7	12.8	12.9	13.0	13.2	13.5	13.7	13.9	14.2	14.3	14.5	14.7
Discretionary	6.3	6.3	6.4	6.3	6.2	6.1	6.1	6.0	5.9	5.8	5.7	5.6
Net interest	1.6	1.8	1.8	1.8	1.9	2.1	2.2	2.3	2.4	2.5	2.6	2.6
Total	**20.5**	**20.8**	**21.0**	**21.1**	**21.4**	**21.7**	**22.0**	**22.1**	**22.4**	**22.6**	**22.8**	**23.0**
Deficit Adjusted for Timing Shifts	**-4.1**	**-4.5**	**-4.6**	**-4.5**	**-4.6**	**-4.8**	**-4.8**	**-4.8**	**-4.6**	**-4.4**	**-4.7**	**-4.8**
Memorandum:												
Baseline Deficit, Unadjusted												
In billions of dollars	-779	-960	-1,008	-1,034	-1,159	-1,181	-1,151	-1,284	-1,274	-1,260	-1,479	-1,378
As a percentage of GDP	-3.9	-4.5	-4.6	-4.5	-4.9	-4.8	-4.5	-4.8	-4.6	-4.4	-5.0	-4.5

Source: Congressional Budget Office.

GDP = gross domestic product.

a. 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. Those shifts primarily affect mandatory outlays; discretionary outlays are also affected, but to a much lesser degree. Net interest outlays are not affected. (For the 2018–2029 period, revenues are not affected by timing shifts.)

Therefore, CBO's baseline projections for mandatory spending reflect the estimated effects of economic influences, growth in the number of beneficiaries for certain mandatory programs, and other factors related to the costs of those programs, even for those that are set to expire under current law. The projections also incorporate a set of across-the-board reductions in budgetary resources (known as sequestration) that are required under current law for some mandatory programs.

In 2019, CBO estimates, total mandatory outlays (net of offsetting receipts) will amount to $2.7 trillion, up from $2.6 trillion in 2018. Most of that $144 billion increase is attributable to greater outlays for Social Security, Medicare, and higher education, moderated by an increase in offsetting receipts from Fannie Mae and Freddie Mac (among other, smaller and largely offsetting, changes):

- Social Security outlays will rise by $56 billion (or 6 percent) relative to those outlays in 2018, CBO estimates, reaching $1.0 trillion this year, or 4.9 percent of GDP. That increase stems from growth both in the number of beneficiaries and in the average benefit payment.
- Outlays for Medicare (net of offsetting receipts) will rise from $605 billion in 2018 to $636 billion in 2019, remaining at 3.0 percent of GDP. That increase results from growth both in the number of beneficiaries and in the amount and cost of services.

- Federal outlays for higher education will increase by $41 billion this year, primarily because the Department of Education made an upward revision to the estimated net subsidy costs of loans and loan guarantees issued in prior years.

- In the other direction, payments from Fannie Mae and Freddie Mac are estimated to increase by $15 billion in 2019. (Such receipts are recorded in the federal budget as offsetting receipts, which are reductions in outlays.)

Discretionary Spending. Discretionary spending encompasses an array of federal activities that are funded or controlled through annual appropriations. Such spending includes most outlays for national defense, elementary and secondary education, housing assistance, international affairs, and the administration of justice, as well as outlays for highways and other programs. In any year, some discretionary outlays arise from budget authority provided in the same year, and some arise from appropriations made in previous years.[4]

CBO's baseline incorporates all appropriations for 2019, which amount to $1.4 trillion, including both regular and supplemental appropriations.[5] CBO anticipates that, if no further appropriations are provided this year, discretionary outlays will total $1.3 trillion in 2019—$67 billion (or 5 percent) more than last year's amount.

Discretionary funding for defense for 2019 totals $719 billion, including $69 billion for overseas contingency operations (OCO) and $3 billion for activities designated as emergency requirements. Defense outlays, which amounted to $627 billion in 2018, will increase by $44 billion (or 7 percent), to $670 billion, according to CBO's estimates. Outlays are projected to increase by $16 billion (or 6 percent) for operation and maintenance, $10 billion (or 9 percent) for procurement, $5 billion (or 4 percent) for military personnel, and $11 billion (or 15 percent) for research and development.

For 2019, nondefense discretionary funding totals $658 billion. That amount includes $44 billion that is not limited by the caps on discretionary funding: $22 billion for activities designated as emergency requirements, $12 billion for disaster relief, $8 billion for OCO, $2 billion for program integrity initiatives, and $1 billion for programs authorized by the 21st Century Cures Act (P.L. 114-255).[6] CBO expects that nondefense discretionary outlays will increase by $23 billion (or 4 percent) in 2019, to $662 billion. Higher spending on veterans' benefits and services accounts for $6 billion of that increase in outlays. In addition, discretionary outlays for various health programs will increase by $5 billion, and outlays for federal law enforcement activities by $3 billion, CBO estimates.[7] The remaining growth in nondefense discretionary outlays is the result of a number of smaller increases in spending for various programs.

Net Interest. In 2019, net outlays for interest will rise to $372 billion (or 1.8 percent of GDP), from $325 billion last year, CBO estimates, primarily because interest rates on short-term debt have been higher in 2019 than in 2018 and because the amount of federal debt is larger than it was a year ago.

Revenues

On the basis of receipts through June 2019, CBO expects federal revenues to total $3.5 trillion this fiscal year, $121 billion (or 3.6 percent) more than in 2018. Because CBO anticipates that nominal GDP will grow at a faster rate (4.6 percent), revenues are projected to decrease relative to GDP.

Individual Income Taxes. CBO estimates that collections of individual income taxes will increase by $15 billion (or 1 percent) in 2019. That increase reflects income growth that is offset in part by the effects of changes in tax law and in part by reallocations the Treasury makes between income and payroll taxes.

Although wages and salaries are projected to grow by about 4 percent in 2019, individual income taxes

4. Budget authority is the funding provided by law to incur financial obligations that will result in immediate or future outlays of federal government funds. Outlays are the amount of money spent each year.

5. That amount does not include changes in mandatory programs included in supplemental appropriation acts.

6. Budgetary resources for 2019 include $60 billion in limitations on obligation authority for certain transportation programs.

7. Spending for most federal health care programs, such as Medicare and Medicaid, is mandatory. Spending for some health programs is discretionary; the largest recipients of discretionary funding include the Centers for Disease Control and Prevention, the National Cancer Institute, the National Institute of Allergy and Infectious Diseases, and the Indian Health Service.

withheld from paychecks will decrease by $18 billion (or 1 percent), in CBO's estimation. That decline reflects two factors: First, the Internal Revenue Service issued new withholding tables in January 2018 to reflect changes made by the 2017 tax act (P.L. 115-97). Those new withholding rates were in effect during all of this fiscal year but for only seven-and-a-half months of 2018. Second, withheld taxes classified as individual income taxes were boosted in 2018 and reduced in 2019 by reallocations made between income and payroll taxes. Specifically, the Treasury recategorized about $21 billion in collections from payroll to individual income taxes during 2018 and about $7 billion from individual income to payroll taxes so far in 2019. The Treasury does not observe a difference between amounts withheld for payroll and income taxes as they are collected, instead initially allocating withheld taxes to one source or the other on the basis of estimates. As detailed tax-return information becomes available, amounts are reallocated between payroll and income taxes. Even though those revisions amend allocations made in prior years, the reallocations are made in the current fiscal year.

Nonwithheld payments of individual income taxes are expected to rise by $9 billion (or 1 percent) in 2019. Those payments include both estimated and final payments for the 2018 tax year, as well as estimated payments for the 2019 tax year. Refunds, largely for the 2018 tax year, are expected to be $23 billion (or 9 percent) lower than last year, further boosting net receipts. The extent to which those changes reflect the effects of the 2017 tax act or other factors will become clearer as detailed tax-return data become available over the next several years. (For a discussion of what CBO has learned from recent data about the effects of the 2017 tax act, see Box 1-1.)

Payroll Taxes. CBO expects that receipts from payroll taxes—which primarily fund Social Security and Medicare's Hospital Insurance program—will increase by $76 billion (or 6 percent) this year. The expected increase in payroll taxes exceeds growth in wages and salaries, largely because of amounts reallocated between income and payroll taxes in 2018 and 2019.

Corporate Income Taxes. Income tax payments by corporations, net of refunds, are expected to grow by $24 billion (or 12 percent) in 2019. Collections in fiscal year 2019 include businesses' final tax payments for the 2018 tax year and their initial payments for 2019. During the first eight months of 2019, those payments declined by about 9 percent compared with amounts during the same period a year ago. At least some of that initial decline stems from provisions of the 2017 tax act, which lowered the corporate income tax rate to 21 percent from a top rate of 35 percent and expanded the tax rules allowing businesses to immediately deduct the value of qualifying business investments.

The decrease in 2019 may also partly reflect a continuation of unexplained weakness in income tax payments by corporations in recent years—a trend that only reversed in June, the first month in which receipts consisted predominantly of estimated payments for tax year 2019. Receipts in June 2019 rose by 35 percent compared with receipts in June 2018, and stronger payments are expected to persist through the remainder of the fiscal year. The specific reasons for the pattern of corporate receipts will become clearer as detailed information from corporate income tax returns becomes available over the next two years.

Other Revenues. CBO expects that other revenues will increase, on net, by $7 billion (or 2 percent) in 2019. Most of that increase stems from customs duties, which are anticipated to climb by $29 billion (or 70 percent) owing to new tariffs imposed by the Administration and in effect as of July 25, 2019. Partially offsetting those increases are smaller remittances from the Federal Reserve to the Treasury. Those remittances are expected to decline by $16 billion this year, because higher short-term interest rates in the early part of the fiscal year led the central bank to pay depository institutions more interest on their reserves. Estate and gift taxes are also expected to decrease this year—by $7 billion—largely as a result of a provision in the 2017 tax act that temporarily doubles the amount of the exemption. All other receipts are expected to increase by a combined $1 billion, on net.

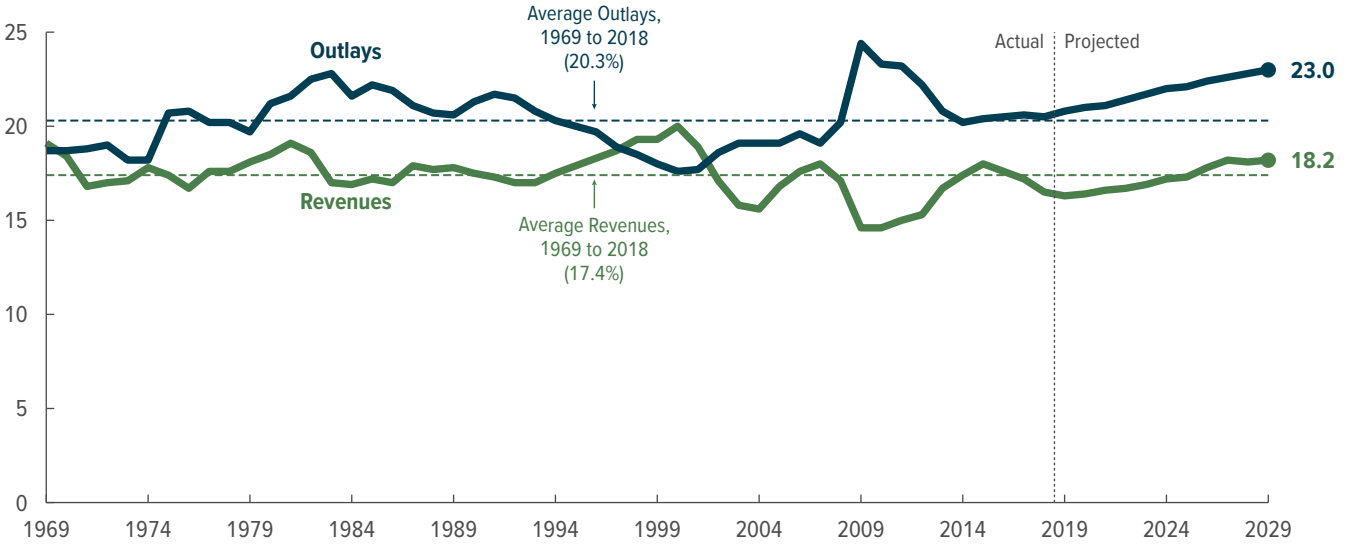
CBO's Baseline Budget Projections for 2020 Through 2029

Although both revenues and outlays are projected to grow faster than GDP over the next 10 years, CBO's baseline projections show a persistent gap between the two. Federal revenues rise, in CBO's projections, from 16.4 percent of GDP in 2020 to 18.2 percent of GDP in 2029. (The projected growth in revenues after 2025 is largely attributable to the scheduled expiration of nearly all of the individual income tax provisions of the

Figure 1-2.

Total Revenues and Outlays

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

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. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

2017 tax act.) Federal outlays, adjusted to exclude shifts in the timing of certain payments, are projected to climb from 21.0 percent of GDP in 2020 to 23.0 percent in 2029 (see Figure 1-2).

Deficits are projected to average 4.7 percent of GDP over the 2020–2029 period. Over the past 50 years, deficits have averaged 2.9 percent of GDP; and in years when the unemployment rate has been below 6 percent, deficits averaged just 1.5 percent of GDP.

Primary deficits—that is, deficits excluding net outlays for interest—are projected to decrease over time, averaging 2.7 percent of GDP from 2020 through 2024 and 2.2 percent from 2025 through 2029. At the same time, because of projected increases in interest rates and federal borrowing, net interest outlays grow steadily, from 1.8 percent of GDP in 2020 to 2.6 percent in 2029 (see Figure 1-3 on page 14).

Those deficits are projected to boost federal debt held by the public, which consists mostly of the securities that the Treasury issues to raise cash to fund federal activities and pay off the government's maturing liabilities. The net amount that the Treasury borrows by issuing those securities (calculated as the amounts that are sold minus the amounts that have matured) is influenced primarily by the annual budget deficit.

Consequently, under current law, debt held by the public would increase in upcoming years. In CBO's baseline, after accounting for all of the government's borrowing needs, debt held by the public rises from $17.8 trillion at the end of 2020 to $29.3 trillion at the end of 2029 (see Table 1-3 on page 15). As a percentage of GDP, that debt would increase from 79 percent in 2019 to 95 percent by the end of the projection period (see Figure 1-4 on page 16). At that point, such debt would be the largest since 1946 and more than twice the 50-year average.

Outlays

Over the coming decade, CBO projects, federal outlays would grow at an average annual rate of 5 percent, reaching $7.1 trillion in 2029 (adjusted to exclude the effects of timing shifts). Outlays for Social Security, Medicare, and net interest account for about two-thirds of that $2.7 trillion increase.

Box 1-1.

Recent Data About the Effects of the 2017 Tax Act on Revenues

In December 2017, major tax legislation, originally titled the Tax Cuts and Jobs Act and referred to here as the 2017 tax act, was enacted. The Congressional Budget Office, as part of its regular process of updating its baseline budget projections, has been monitoring the Treasury's implementation of that act and assessing its effects on revenues.

Currently, only limited information is available about tax returns filed this year for income earned in 2018—the first returns that reflect most of the changes made by the tax act. That information does not give a clear indication about whether the act's effects differed from those estimated by CBO and the staff of the Joint Committee on Taxation (JCT) when the Congress was considering the act in December 2017.[1] Even when more information becomes available, assessing the act's effect on receipts may not be possible, because it will be difficult to disentangle changes in revenues caused by the tax act from changes driven by other factors.

Receipts in 2018 and 2019

Data about revenues in fiscal year 2018 and the first 10 months of fiscal year 2019 are available, so those amounts can be compared with CBO's projections. CBO and JCT estimated in December 2017 that in fiscal years 2018 and 2019, the tax act would reduce revenues by $144 billion and $271 billion, respectively. In April 2018, CBO incorporated those projected reductions into its baseline budget projections, estimating that revenues would total $3,338 billion in fiscal year 2018 and $3,490 billion in fiscal year 2019.[2] The April 2018 projections of revenues also incorporated changes to the economic outlook that had taken place between June 2017 and early 2018, some of which reflected the effects of the tax act and some of which were driven by unrelated factors.

Actual revenues in 2018 totaled $3,330 billion, or $8 billion less than CBO projected in April 2018. Receipts from individual income taxes were 3 percent higher than CBO had projected, and receipts from corporate income taxes were 16 percent lower. As for fiscal year 2019, collections so far this year—and especially collections of corporate income taxes—have been lower than CBO expected in April 2018, so the agency now projects that 2019 revenues will total $3,451 billion, about 1 percent less than the estimate made in April 2018.

One likely reason for the lower-than-expected receipts is that some parts of the economy have been weaker than CBO projected in April 2018—but in CBO's assessment, that difference has not stemmed from errors in projecting the effects of the 2017 tax act on the economy. Some parts of the economy that CBO expected to be boosted by the tax act, such as investment in 2018, have proved consistent with CBO's April 2018 projections. CBO estimated that the tax act would increase the growth of real (inflation-adjusted) business fixed investment in 2018 by 2.1 percentage points. Incorporating that effect, CBO projected that investment would grow by 5.9 percent in 2018, and current data show that it did grow by 5.9 percent. And although investment in 2019 has been weaker so far than CBO had projected, a number of developments other than the tax act appear to have contributed to that weakness, including increases in tariffs, greater uncertainty about trade policy, and slower economic growth in the rest of the world.

Recent Data About Individual and Corporate Income Taxes

A full accounting of net individual income taxes that can be attributed to income earned in calendar year 2018 (including withholding in 2018 and payments and refunds in 2019) is consistent with the projections that CBO made in April 2018. Preliminary data related to one of the most significant changes resulting from the 2017 tax act are also consistent with CBO's expectations. CBO projected that itemized deductions would be reduced after the tax law was enacted, and the Internal Revenue Service's tabulations of tax returns filed through May 2019 have borne out that projection.[3] However, those preliminary tabulations do not help CBO assess the total effect of the tax act because they do not include the full population of tax filers; in particular, filers with high income and complicated tax returns are less likely to be included.

Tax receipts from withholding for individual income and payroll taxes in the first half of calendar year 2019 have been lower

1. See Congressional Budget Office, cost estimate for the conference agreement on H.R. 1 (December 15, 2017), www.cbo.gov/publication/53415.

2. For those projections, see Congressional Budget Office, *The Budget and Economic Outlook: 2018 to 2028* (April 2018), www.cbo.gov/publication/53651. For an explanation of the changes made by the 2017 tax act and their effects, see Appendix B of that report. The most significant changes of the 2017 tax act took effect after December 31, 2017, and therefore did not begin to influence receipts until partway through fiscal year 2018. The current fiscal year—fiscal year 2019—is thus the first to be covered largely by the new rules.

3. See Internal Revenue Service, "Filing Season Statistics" (June 28, 2019), www.irs.gov/statistics/filing-season-statistics.

Continued

Box 1-1. Continued

Recent Data About the Effects of the 2017 Tax Act on Revenues

than CBO projected in April 2018, but they are consistent with the slower growth in income that CBO currently projects. Taxpayers' estimated payments of individual income taxes have similarly been smaller than CBO expected in April 2018, but the degree to which that difference reflects the slower growth in income is not yet known. Another possible explanation is that taxpayers may have chosen to reduce their estimated payment amounts on the basis of information that they learned from filing their 2018 tax returns. For example, taxpayers whose tax liability was lower than expected may have applied part of their refund to future taxes and reduced their estimated payments in 2019.

The lower-than-expected corporate income tax receipts in fiscal year 2018 probably reflect the continuation of a poorly understood weakness in corporate receipts that predates the 2017 tax act. (Recent revisions to data about corporate income may explain some portion of the weakness; for more information, see Box 2-1 on page 30.) Recent data suggest a strengthening of receipts, however. Net corporate tax receipts were 35 percent larger in June 2019 than they were in June 2018. Those June 2019 receipts generally reflect 2019 income, and CBO's current projections of revenues in 2019 reflect that strengthening of receipts. But it is difficult to interpret recent data on corporate receipts, in part because corporations may calculate and pay taxes for a 12-month period other than the calendar year. As a result, provisions of the 2017 tax act became effective for different corporations at different times, so there is variation in when their payments began to fully reflect the changes made by the 2017 tax act.

Other Sources of Data

One provision of the 2017 tax act that affected some tax returns for 2017 was a onetime tax on previously untaxed foreign profits. Some corporations had to submit information to the Treasury about their total liability for that tax, along with the first installment of the tax, with their 2017 return. However, the information collected by the Treasury may not be complete—which would make it difficult to interpret the information in the 2017 returns.[4] Furthermore, other corporations did not have to submit information about their liability and their first installment until they filed their 2018 returns, so until information about those returns becomes available, it will not be possible to estimate the total amount of liability for the onetime tax.

Corporations' financial reports also provide some information about how the 2017 tax act affected them. The reports suggest that many corporations experienced a reduction in their effective tax rate—as calculated for financial reporting purposes—after the tax act was enacted.[5] Such reductions would be consistent with the effects of the act that CBO projected in April 2018, but because they are based on financial accounting rules rather than tax rules, they cannot be used to calculate the precise change in a company's federal tax payments. Companies also provide some information in their financial reports about how specific provisions affected their taxes, but for many reasons, that information cannot be used to estimate the effect of a provision on federal tax revenues.[6]

Considerations for the Future

CBO will be able to better assess the effects of the 2017 tax act as the Treasury continues to issue guidance and regulations and as more information about 2018 returns becomes available. The earliest that detailed information about those returns will be available to CBO is late 2020.

However, even as more data become available, challenges will remain. For example, how taxpayers responded to the new law in filing their 2018 tax returns may not accurately indicate how they will respond in 2019 and beyond. Also, part of the way in which the 2017 tax act affects the federal budget is through its effects on the economy. But the performance of the economy reflects not just the economic effects of the tax act but also the effects of other changes. As time passes, additional policy changes and unexpected economic developments that are unrelated to the tax act will occur, making it increasingly difficult to estimate the effects of the tax act on the economy.

4. See Treasury Inspector General for Tax Administration, *Implementation of the Tax Cuts and Jobs Act Deemed Repatriation Tax Presented Significant Challenges*, 2019-34-033 (May 2019), https://go.usa.gov/xytRA (PDF, 1.6 MB).

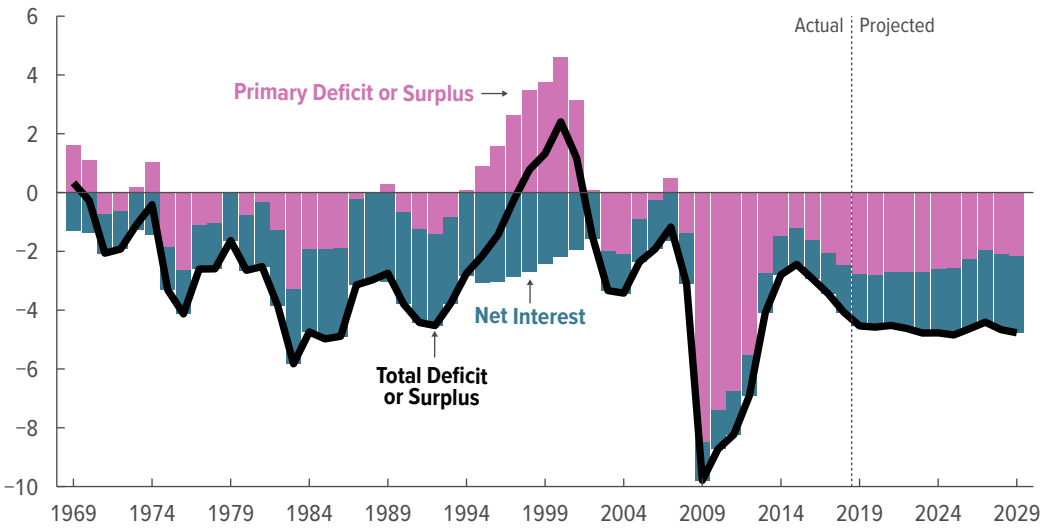
5. See, for example, Theo Francis and Richard Rubin, "After U.S. Tax Overhaul, Corporate Rates Fall but Unevenly," *Wall Street Journal* (July 21, 2019), https://tinyurl.com/yytcvtwj.

6. One important reason is that it accounts for only the effects directly attributed to that provision, not the resulting change in a company's *total* tax payments (for example, if actions taken by the company to reduce its liability under that provision wind up increasing its liability under other provisions).

Figure 1-3.

Total Deficit, Primary Deficit, and Net Interest

Percentage of Gross Domestic Product



In CBO's projections, primary deficits shrink as a percentage of gross domestic product, but total deficits grow because of rising interest costs.

Source: Congressional Budget Office.

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. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

Primary deficits or surpluses exclude outlays for net interest.

Relative to the size of the economy, federal outlays over the 2020–2029 period are projected to average 22.1 percent of GDP, higher than their 50-year average of 20.3 percent. That increase over the historical average is largely attributable to growth in mandatory spending; that spending (net of offsetting receipts) is expected to equal 12.9 percent of GDP in 2020 and grow to 14.7 percent of GDP by 2029 (compared with an average of 9.9 percent over the 1969–2018 period). In contrast, from 2020 to 2029, discretionary outlays are projected to decline from 6.4 percent of GDP to 5.6 percent, compared with an average of 8.4 percent over the previous 50 years. In CBO's projections, net outlays for interest in 2020 are equal to 1.8 percent of GDP, below their 50-year average of 2.0 percent, but they grow over the next decade, reaching 2.6 percent of GDP in 2029 (see Figure 1-5 on page 17).

Mandatory Spending. From 2020 to 2029, outlays for mandatory programs (net of offsetting receipts) are projected to rise by an average of about 5 percent per year, reaching $4.5 trillion by the end of the period (see Table 1-4 on page 18).

Much of the projected growth in mandatory spending over the coming decade is attributable to two factors. First, the share of the U.S. population that is age 65 or older, which has more than doubled over the past 50 years, is expected to expand by about one-third by 2029.

Second, although growth in the costs of health care (per person, adjusted to account for the aging of the population) has slowed in recent years, that growth is faster than projected growth in the economy over the long term. The reasons for that slowdown are not clear. In CBO's projections, per-enrollee spending in federal health care programs grows more rapidly over the coming decade, although it does not return to the higher rates of growth that were experienced previously.

The effects of those two long-term trends on federal spending are already apparent over the 10-year baseline period—especially for Social Security and Medicare—and will persist beyond that period (see Figure 1-6 on page 20).

Table 1-3.

CBO's Baseline Projections of Federal Debt

Billions of Dollars

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Debt Held by the Public at the Beginning of the Year	14,665	15,750	16,685	17,755	18,841	20,042	21,264	22,457	23,784	25,102	26,407	27,917
Changes in Debt Held by the Public												
Deficit	785	960	1,008	1,034	1,159	1,181	1,151	1,284	1,274	1,260	1,479	1,378
Other means of financing[a]	299	-25	63	52	42	41	41	43	44	44	32	27
Total	1,084	935	1,070	1,086	1,201	1,222	1,193	1,328	1,318	1,305	1,510	1,405
Debt Held by the Public at the End of the Year												
In billions of dollars	**15,750**	**16,685**	**17,755**	**18,841**	**20,042**	**21,264**	**22,457**	**23,784**	**25,102**	**26,407**	**27,917**	**29,322**
As a percentage of GDP	**77.8**	**78.9**	**80.7**	**82.4**	**84.5**	**86.4**	**88.0**	**89.7**	**91.2**	**92.4**	**94.0**	**95.1**
Memorandum:												
Debt Held by the Public Minus Financial Assets[b]												
In billions of dollars	13,975	14,934	15,942	16,976	18,135	19,316	20,467	21,752	23,026	24,286	25,765	27,143
As a percentage of GDP	69.1	70.6	72.4	74.2	76.4	78.5	80.2	82.0	83.7	85.0	86.8	88.0
Gross Federal Debt[c]	21,462	22,525	23,688	24,833	26,023	27,249	28,436	29,681	30,937	32,054	33,280	34,415
Debt Subject to Limit[d]	21,475	22,540	23,703	24,849	26,040	27,267	28,455	29,701	30,958	32,076	33,302	34,438
Average Interest Rate on Debt Held by the Public (Percent)	2.3	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.8	2.9	2.9	3.0

Source: Congressional Budget Office.

GDP = gross domestic product.

a. Factors not included in budget totals that also affect the government's need to borrow from the public. Those factors include cash flows associated with federal credit programs such as student loans (because only the subsidy costs of those programs are reflected in the budget deficit), as well as changes in the government's cash balances.

b. Debt held by the public minus the value of outstanding student loans and other credit transactions, cash balances, and various financial instruments.

c. Federal debt held by the public plus Treasury securities held by federal trust funds and other government accounts.

d. The amount of federal debt that is subject to the overall limit set in law. Debt subject to limit differs from gross federal debt mainly in that it excludes debt issued by the Federal Financing Bank and includes certain other adjustments that are excluded from gross debt. The debt limit was most recently set at $22.0 trillion but has been suspended through July 31, 2021. On August 1, 2021, the debt limit will be raised to its previous level plus the amount of federal borrowing that occurred while the limit was suspended. For more on the debt limit, see Congressional Budget Office, *Federal Debt and the Statutory Limit, February 2019* (February 2019), www.cbo.gov/publication/54987.

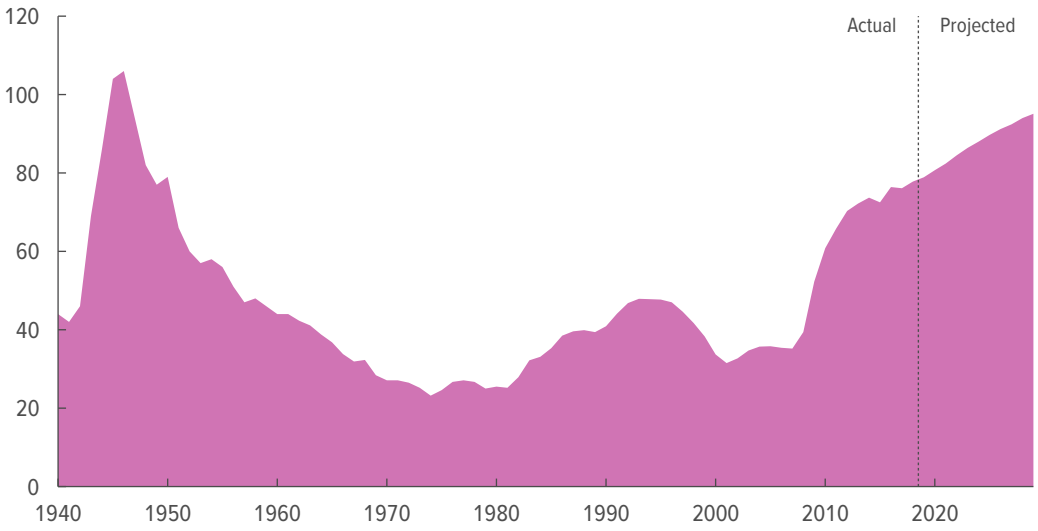
Social Security and the Major Health Care Programs. Outlays for Social Security and the major health care programs (Medicare, Medicaid, subsidies offered through the health insurance marketplaces established under the Affordable Care Act and related spending, and the Children's Health Insurance Program) account for more than 90 percent of the projected growth in nominal mandatory spending through 2029. Under current law, spending for those programs, net of offsetting receipts, would grow at an average annual rate of 6 percent over the coming decade, CBO estimates, increasing from 10.3 percent of GDP in 2020 to 12.5 percent in 2029.[8]

8. Offsetting receipts primarily include payments of premiums, recoveries of overpayments made to providers, and amounts paid by states from savings on Medicaid's prescription drug costs.

Figure 1-4.

Federal Debt Held by the Public

Percentage of Gross Domestic Product



As a percentage of gross domestic product, federal debt held by the public would increase from 79 percent in 2019 to 95 percent in 2029. At that point, such debt would be the largest since 1946 and more than twice the 50-year average.

Source: Congressional Budget Office.

Specifically, in CBO's current baseline:

- Outlays for Social Security total 5.0 percent of GDP in 2020 and then rise steadily thereafter, reaching 5.9 percent of GDP in 2029.
- Outlays for Medicare remain close to 3.0 percent of GDP through 2020 and then grow in each year through 2029, when they total 4.0 percent.
- Federal outlays for Medicaid are relatively stable as a percentage of GDP over the coming decade, averaging about 2 percent each year.
- Outlays for subsidies for health insurance purchased through the marketplaces and related spending are projected to average 0.2 percent of GDP per year through 2029.

Other Mandatory Programs. Aside from spending on Social Security and the major health care programs, all other mandatory spending is projected to decline as a share of GDP, falling from 2.6 percent in 2020 to 2.3 percent in 2029. That category includes spending on income support programs (such as unemployment compensation and the Supplemental Nutrition Assistance Program), military and civilian retirement programs, most veterans' benefits, and major agriculture programs. The projected decline in spending occurs in part because benefit amounts for many of those programs are adjusted for inflation each year, and inflation in CBO's economic forecast is estimated to be below the rate of growth in nominal GDP. (For more details about CBO's economic forecast, see Chapter 2.)

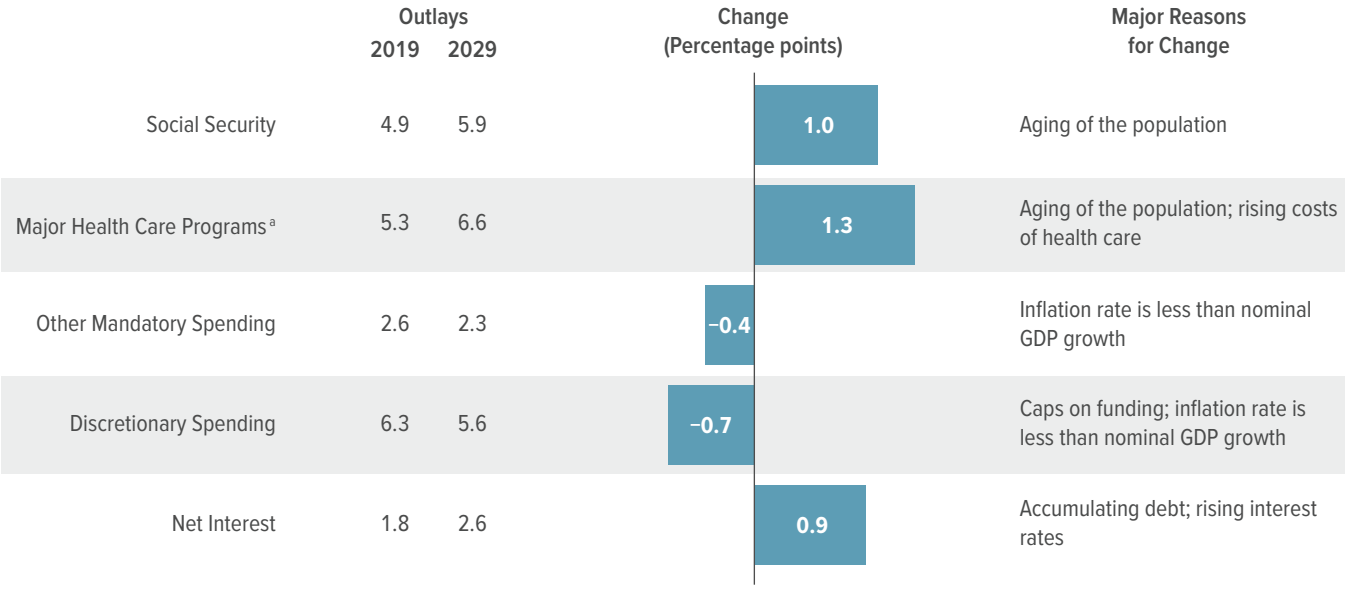
Discretionary Spending. Projections of discretionary spending for the 2020–2029 period are based on funding provided in 2019 (adjusted for inflation), taking into account limits on such funding required by law. The recently enacted Bipartisan Budget Act of 2019 (P.L. 116-37) raised the limits (or caps) on discretionary appropriations by a total of $171 billion for 2020 and by $153 billion for 2021.[9] CBO's baseline projections for

9. 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) and modified by subsequent legislation. Under current law, separate caps exist for defense and nondefense funding through 2021. If the total amount of discretionary funding provided in appropriation acts for a given year exceeds the cap for either category, the President must sequester—or cancel—a sufficient amount of budgetary resources (following procedures specified in the Budget Control Act) to eliminate the breach. See Congressional Budget Office, *CBO Estimate for the Bipartisan Budget Act of 2019* (July 2019), www.cbo.gov/publication/55478.

Figure 1-5.

Changes in Projected Outlays From 2019 to 2029

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

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. Outlays have been adjusted to exclude the effects of those shifts.

GDP = gross domestic product.

a. Consists of outlays 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.

those two years incorporate the new limits, and funding for those two years is projected to be at or slightly below those new caps (see Table 1-5 on page 21). For 2022 and later years, those projections reflect the assumption that funding constrained by the caps keeps pace with inflation. Some elements of discretionary funding are not constrained by the caps—in particular, appropriations designated for OCO, activities designated as emergency requirements, and some or all funding for disaster relief and some efforts to reduce overpayments in benefit programs.[10] In addition, in accordance with the 21st Century Cures Act, a portion of funding for certain authorized activities—up to amounts specified in law—is exempt from the caps. For those elements, funding is generally assumed to grow with inflation from the amounts provided in 2019.[11]

The Bipartisan Budget Act of 2019 raised the caps on discretionary appropriations subject to the limits to $1,288 billion in 2020. Discretionary funding is projected to grow at the rate of inflation, unless constrained by the caps; and between 2019 and 2020, projected inflation for defense funding is less than the rate of growth of the cap on such funding. Thus, in CBO's baseline, discretionary budget authority constrained by the caps is just below that amount, at $1,286 billion in 2020. By 2021, in CBO's baseline, discretionary budget authority constrained by the caps equals the combined defense and nondefense limits of $1,298 billion. The caps expire in 2021, so all budget authority after that

10. The caps are adjusted to accommodate funding for those activities. Beginning in 2020, funding for wildfire suppression and activities related to the 2020 census also will lead to an increase in the nondefense cap, subject to specified limits.

11. Spending for certain transportation programs is controlled by obligation limitations, which also are not constrained by the caps on discretionary spending.

Table 1-4.

Mandatory Outlays Projected in CBO's Baseline, Adjusted to Exclude the Effects of Timing Shifts

Billions of Dollars

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020–2024	Total 2020–2029
Social Security														
Old-Age and Survivors Insurance	838	893	950	1,008	1,072	1,139	1,209	1,282	1,356	1,435	1,522	1,610	5,377	12,583
Disability Insurance	144	145	147	152	158	165	173	180	189	198	203	210	795	1,774
Subtotal	982	1,038	1,097	1,160	1,230	1,304	1,381	1,462	1,545	1,633	1,725	1,820	6,172	14,356
Major Health Care Programs														
Medicare[a,b]	728	768	815	872	937	1,007	1,083	1,161	1,244	1,343	1,424	1,514	4,713	11,399
Medicaid	389	404	418	436	462	490	519	549	582	616	652	691	2,325	5,415
Health insurance subsidies and related spending[c]	49	57	55	56	58	61	63	67	70	71	72	75	293	647
Children's Health Insurance Program	17	18	16	14	14	15	16	16	17	18	18	19	76	164
Subtotal[b]	1,184	1,247	1,304	1,378	1,471	1,573	1,680	1,794	1,913	2,048	2,167	2,299	7,406	17,626
Income Security Programs														
Earned income, child, and other tax credits[d]	81	98	95	94	93	93	94	94	95	82	82	82	468	902
Supplemental Nutrition Assistance Program	68	63	63	62	63	64	65	65	66	67	69	71	317	656
Supplemental Security Income[a]	55	56	57	58	60	61	63	65	67	70	72	74	299	648
Unemployment compensation	29	28	29	33	38	46	50	50	52	54	56	58	196	465
Family support and foster care[e]	32	32	33	33	33	34	34	34	34	35	35	35	166	339
Child nutrition	24	24	26	27	28	29	30	31	33	34	36	37	139	310
Subtotal	290	301	302	306	314	327	335	340	347	341	349	357	1,585	3,320
Federal Civilian and Military Retirement														
Civilian[f]	103	106	109	114	118	122	126	129	133	137	141	145	587	1,273
Military[a]	59	61	63	65	67	68	70	72	74	76	78	79	332	711
Other	6	4	5	6	7	8	9	5	10	7	7	7	35	71
Subtotal	168	170	177	184	191	198	205	206	217	220	226	231	955	2,055
Veterans' Programs														
Income security[a,g]	93	100	104	107	109	114	120	123	127	131	135	141	553	1,210
Other	16	15	19	17	18	17	17	18	19	20	21	20	88	187
Subtotal	109	116	123	123	127	131	137	141	146	151	156	162	641	1,397
Other Programs														
Agriculture	16	23	29	16	15	16	16	16	16	16	17	16	91	172
Deposit insurance	-16	-9	-6	-6	-6	-6	-6	-7	-7	-8	-8	-8	-29	-67
MERHCF	10	10	11	11	12	13	13	14	15	15	16	17	60	137
Fannie Mae and Freddie Mac[h]	4	0	2	2	3	3	3	4	4	4	4	4	13	33
Higher education	-6	35	3	4	5	6	6	6	6	6	6	6	23	53
Other	82	57	70	70	72	71	69	69	68	68	68	69	352	694
Subtotal	90	116	108	97	101	102	101	101	101	101	103	105	510	1,021
Mandatory Outlays, Excluding the Effects of Offsetting Receipts[a]	**2,822**	**2,988**	**3,110**	**3,249**	**3,435**	**3,635**	**3,839**	**4,045**	**4,269**	**4,494**	**4,725**	**4,973**	**17,269**	**39,775**

Continued

Source: Congressional Budget Office.

Data on outlays for benefit programs in this table generally exclude administrative costs, which are discretionary.

MERHCF = Department of Defense Medicare-Eligible Retiree Health Care Fund (including TRICARE for Life); n.a. = not applicable;
* = between -$500 million and $500 million.

Table 1-4. Continued

Mandatory Outlays Projected in CBO's Baseline, Adjusted to Exclude the Effects of Timing Shifts

Billions of Dollars

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020–2024	Total 2020–2029
Offsetting Receipts														
Medicare[i]	-123	-133	-141	-151	-161	-174	-188	-202	-218	-237	-253	-271	-815	-1,996
Federal share of federal employees' retirement														
Civil service retirement and other	-36	-37	-39	-41	-42	-44	-46	-47	-49	-50	-52	-53	-212	-463
Military retirement	-18	-20	-22	-22	-23	-23	-24	-24	-25	-25	-26	-26	-113	-239
Social Security	-18	-18	-18	-19	-20	-20	-21	-22	-22	-23	-24	-24	-99	-214
Subtotal	-72	-75	-79	-82	-85	-87	-90	-93	-96	-99	-101	-104	-423	-916
Receipts related to natural resources[a]	-11	-14	-12	-12	-13	-12	-12	-13	-13	-13	-13	-14	-61	-126
MERHCF	-8	-8	-8	-9	-9	-10	-10	-11	-11	-12	-12	-13	-45	-104
Fannie Mae and Freddie Mac[h]	-13	-24	0	0	0	0	0	0	0	0	0	0	0	0
Other	-32	-28	-32	-33	-32	-32	-31	-44	-32	-32	-29	-29	-160	-327
Subtotal	-259	-281	-273	-287	-300	-315	-331	-362	-369	-392	-409	-431	-1,505	-3,469
Total Mandatory Outlays, Net of Offsetting Receipts[a]	**2,563**	**2,707**	**2,838**	**2,962**	**3,135**	**3,321**	**3,509**	**3,682**	**3,900**	**4,101**	**4,317**	**4,542**	**15,764**	**36,306**
Mandatory Outlays That Are Shifted in CBO's Baseline														
Medicare	-24	0	0	0	38	4	-41	0	0	0	64	-64	n.a.	n.a.
Supplemental Security Income	-4	0	0	0	5	0	-5	0	0	0	5	-5	n.a.	n.a.
Military retirement	-5	0	0	0	5	0	-5	0	0	0	6	-6	n.a.	n.a.
Veterans' income security	-7	0	0	0	10	1	-11	0	0	0	12	-12	n.a.	n.a.
Outer Continental Shelf	*	0	0	0	0	*	*	0	0	0	*	*	n.a.	n.a.
Total	-40	0	0	0	57	5	-63	0	0	0	88	-87	n.a.	n.a.
Total Mandatory Outlays Projected in CBO's Baseline	**2,523**	**2,707**	**2,838**	**2,962**	**3,192**	**3,326**	**3,446**	**3,682**	**3,900**	**4,101**	**4,405**	**4,454**	**15,764**	**36,306**
Memorandum:														
Outlays Adjusted to Remove the Effects of Timing Shifts, Net of Offsetting Receipts														
Medicare[a]	605	636	673	721	776	833	895	959	1,026	1,106	1,171	1,243	3,899	9,403
Major health care programs	1,061	1,114	1,163	1,226	1,310	1,399	1,493	1,591	1,695	1,811	1,914	2,028	6,591	15,630

a. 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. Outlays presented in this table for programs affected by such timing shifts have been adjusted to exclude the effects of those shifts.

b. Excludes the effects of Medicare premiums and other offsetting receipts. (Net Medicare spending, which includes those offsetting receipts, is shown in the memorandum section of the table.)

c. Consists of outlays to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and provided through the Basic Health Program, as well as spending to stabilize premiums for health insurance purchased by individuals and small employers.

d. Includes outlays for the American Opportunity Tax Credit and other credits.

e. Includes Temporary Assistance for Needy Families, Child Support Enforcement, Child Care Entitlements to States, and other programs that benefit children.

f. Includes benefits for retirement programs in the civil service, foreign service, and Coast Guard; benefits for smaller retirement programs; and annuitants' health care benefits.

g. Includes veterans' compensation, pensions, and life insurance programs. (Outlays for veterans' health care are classified as discretionary.)

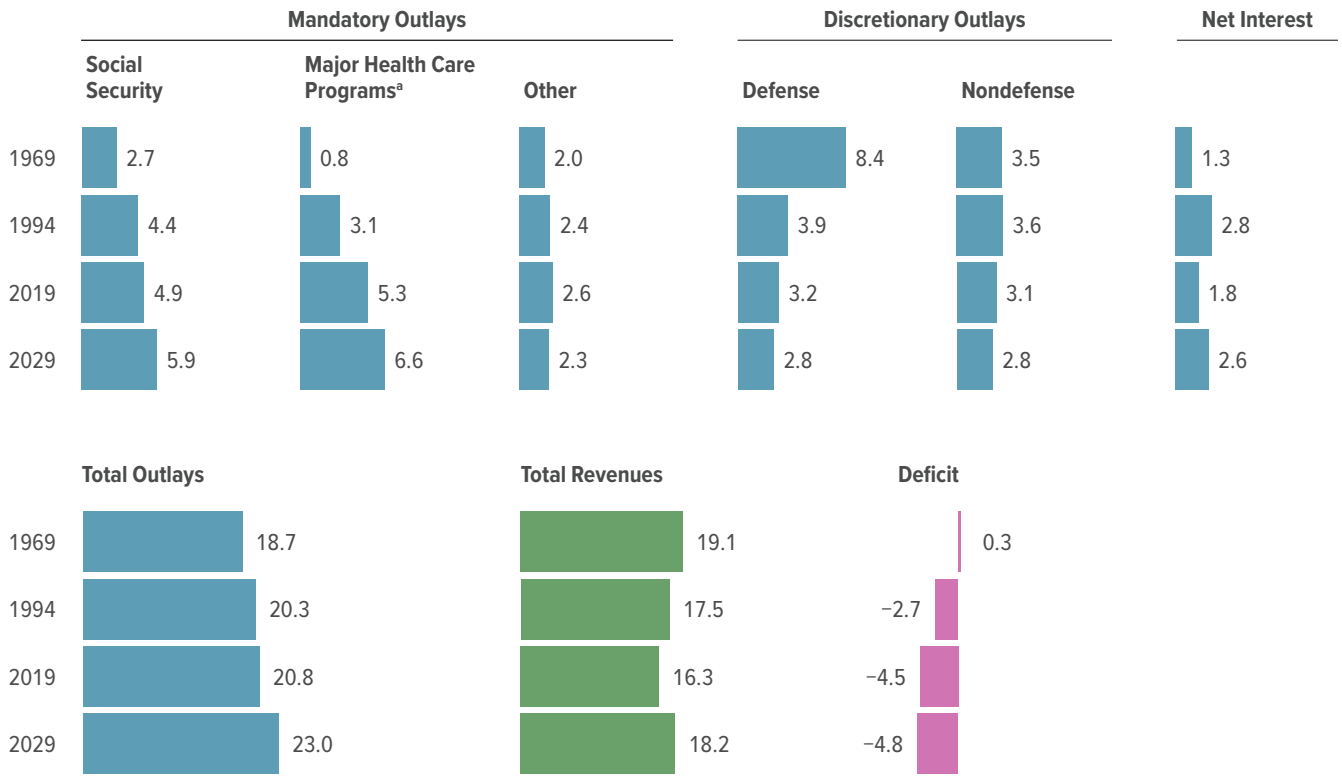
h. Cash payments from Fannie Mae and Freddie Mac to the Treasury are recorded as offsetting receipts in 2018 and 2019. Beginning in 2020, CBO's estimates reflect the net lifetime costs—that is, the subsidy costs adjusted for market risk—of the guarantees that those entities will issue and of the loans that they will hold. CBO counts those costs as federal outlays in the year of issuance.

i. Includes premium payments, recoveries of overpayments made to providers, and amounts paid by states from savings on Medicaid's prescription drug costs.

Figure 1-6.

CBO's Baseline Projections of Outlays and Revenues, Compared With Actual Values 25 and 50 Years Ago

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

In 2028, October 1 (the first day of fiscal year 2029) falls on a weekend, so certain payments that are due on that date will instead be made in September, thus boosting outlays in fiscal year 2028 and reducing them in 2029. Such shifts affect projections of outlays for the major health care programs, other mandatory outlays, defense discretionary outlays, total outlays, and the deficit. A similar shift boosted outlays in those categories in 1994. The data presented here have been adjusted to exclude the effects of those timing shifts.

a. Consists of outlays 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.

year is assumed to grow with inflation for the duration of the baseline projection period.

In addition to budget authority constrained by the caps, CBO projects funding of $121 billion in 2020 and in 2021 for overseas contingency operations and other activities not constrained by the caps. Included in those totals are amounts for emergency requirements—$25 billion in 2020 and $26 billion in 2021.[12] Those amounts are based on the $25 billion appropriated for emergencies in 2019, which is assumed to grow with inflation for the rest of the projection period. (For comparison, emergency funding averaged $25 billion per year from 2012 to 2018.)

Between 2020 and 2029, total discretionary budget authority is projected to rise by about 2 percent a year, on average. Measured in dollar terms, total discretionary outlays would climb from $1.4 trillion in 2020 to $1.7 trillion in 2029, for an average yearly increase of

12. See Congressional Budget Office, cost estimate for S. 1900, the Emergency Supplemental Appropriations for Humanitarian Assistance and Security at the Southern Border Act, 2019 (June 21, 2019), www.cbo.gov/publication/55389, and cost estimate for Senate Amendment 250 to H.R. 2157, the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (May 23, 2019), www.cbo.gov/publication/55289.

Table 1-5.

CBO's Baseline Projections of Discretionary Spending, Adjusted to Exclude the Effects of Timing Shifts

Billions of Dollars

													Total	
	Actual, 2018[a]	2019[a]	2020[b]	2021	2022	2023	2024	2025	2026	2027	2028	2029	2020–2024	2020–2029
Budget Authority														
Defense	701	719	737	746	764	783	802	822	842	862	883	905	3,833	8,147
Nondefense	722	658	669	672	689	706	724	741	760	779	798	818	3,460	7,356
Total	**1,423**	**1,377**	**1,407**	**1,419**	**1,453**	**1,489**	**1,526**	**1,563**	**1,602**	**1,641**	**1,681**	**1,722**	**7,293**	**15,502**
Outlays[c]														
Defense	627	670	700	721	740	758	776	795	814	834	854	874	3,695	7,866
Nondefense	639	662	700	724	737	755	771	789	808	827	846	868	3,686	7,825
Total	**1,266**	**1,332**	**1,400**	**1,446**	**1,476**	**1,512**	**1,548**	**1,584**	**1,622**	**1,661**	**1,700**	**1,742**	**7,382**	**15,690**
Memorandum:														
Caps in the Budget Control Act of 2011 (As Amended)														
Defense	629	647	667	672	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Nondefense	579	597	622	627	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	**1,208**	**1,244**	**1,288**	**1,298**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Adjustments to the Caps[d]														
Defense	72	72	73	75	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Nondefense	125	44	48	46	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	**197**	**116**	**121**	**121**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Congressional Budget Office.

CBO's current baseline projections incorporate the assumption that the caps on discretionary budget authority and the automatic enforcement procedures specified in the Budget Control Act of 2011 (as amended) remain in effect through 2021.

Nondefense discretionary outlays are usually greater than budget authority because of spending from the Highway Trust Fund and the Airport and Airway Trust Fund that is subject to obligation limitations set in appropriation acts. The budget authority for such programs is provided in authorizing legislation and is considered mandatory.

n.a. = not applicable.

a. The amount of budget authority for 2018 and for 2019 in CBO's baseline does not match the sum of the caps on funding plus adjustments to the caps, mostly because changes to mandatory programs included in appropriation acts for those years (including those assumed to be enacted for 2019) are credited against the caps. In the baseline, those changes (which reduce mandatory budget authority in both years) appear in their normal mandatory accounts.

b. The amount of budget authority for 2020 in CBO's baseline is less than the sum of the caps on funding plus adjustments to the caps because discretionary funding is projected to grow at the rate of inflation unless constrained by the caps; projected inflation for defense funding between 2019 and 2020 is less than the rate of growth of the cap on such funding.

c. When October 1 (the first day of the fiscal year) falls on a weekend, certain payments—mainly for military pay—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.

d. Some or all of the discretionary funding related to five types of activities is not constrained by the caps; for most of those activities, the caps are adjusted to accommodate such funding, up to certain limits. Specifically, appropriations designated for overseas contingency operations and activities designated as emergency requirements are assumed to grow with inflation after 2019, and the caps are adjusted accordingly. For two other activities—disaster relief and certain efforts to reduce overpayments in benefit programs—the extent to which the caps can be adjusted is subject to annual constraints, as specified in law. (Beginning in 2020, funding for wildfire suppression and the 2020 census also will lead to an increase in the nondefense caps, subject to specified limits.) Finally, CBO follows a similar approach in projecting a portion of funding to carry out the 21st Century Cures Act (Public Law 114-255), which requires that discretionary funding for certain authorized activities—up to amounts specified in law—be excluded from calculations of the caps.

about 2½ percent. Measured as a share of GDP, though, discretionary outlays would drop from 6.4 percent in 2020 to 5.6 percent in 2029. That 2029 percentage would be the smallest in any year since 1962 (the earliest year for which such data have been reported); by comparison, discretionary outlays averaged 8.4 percent of GDP over the past 50 years, although they were as low as 6.0 percent of GDP in 1999.

Defense. Budget authority for defense programs—including funding for OCO—is projected to equal $737 billion in 2020, which is $19 billion (or 3 percent) greater than it was in 2019.[13] After 2020, funding is estimated to grow by 2 percent a year, on average, reaching $905 billion in 2029. Outlays for defense programs are projected to be $670 billion in 2019 and $700 billion in 2020. They then grow at a rate similar to that of budget authority, rising to $874 billion in 2029. Despite that growth, discretionary defense outlays as a percentage of GDP are projected to fall from 3.2 percent in 2019 to 2.8 percent in 2029.

Nondefense. Budget authority for nondefense programs is also projected to rise in 2020. In CBO's projections, nondefense discretionary budget authority is $669 billion in that year, an increase of $11 billion (or 2 percent) over 2019 amounts. After 2020, funding is projected to grow by 2 percent a year, on average, reaching $818 billion in 2029. Discretionary outlays for nondefense programs are estimated to total $662 billion in 2019 and projected to be $700 billion in 2020; they would then follow the same trajectory as budget authority, increasing to $868 billion in 2029. Relative to the size of the economy, outlays for nondefense discretionary programs are projected to fall from 3.1 percent of GDP in 2019 to 2.8 percent of GDP in 2029.

Net Interest. In the budget, net interest outlays primarily encompass the government's interest payments on federal debt, offset by interest income that the government receives. Net outlays for interest are dominated by the interest paid to holders of the debt that the Treasury Department issues to the public. The Treasury also pays interest on debt issued to trust funds and other government accounts, but such payments are intragovernmental transactions that have no effect on the budget deficit.

In CBO's projections, net outlays for interest increase from $372 billion in 2019 to more than double that amount—$807 billion—by 2029. As a result, under current law, outlays for net interest are projected to grow from 1.8 percent of GDP in 2019 to an average of 2.5 percent from 2025 to 2029 (see Table 1-6). That amount is 0.5 percentage points higher than their 50-year average as a share of economic output. The primary factors that affect the federal government's net interest costs are the amount of debt held by the public and interest rates on Treasury securities.

The increase in federal borrowing projected in the baseline is the most significant factor affecting the projected growth in net interest costs. Those costs are also boosted by higher interest rates on federal borrowing as Treasury securities that were issued when interest rates were relatively low mature and are rolled over and as interest rates on Treasury securities rise over the next decade. In 2018, the average interest rate on debt held by the public was 2.3 percent; that rate is estimated to reach 3.0 percent in 2029. As a result, debt held by the public is projected to rise by 86 percent (in nominal terms) over the next 11 years, increasing from $15.8 trillion, or 78 percent of GDP, at the end of 2018 to $29.3 trillion, or 95 percent of GDP, in 2029.

Revenues

Under current law, revenues are projected to grow by $2.2 trillion over the projection period—an average annual increase of 5 percent, nearly the same rate of increase that CBO projects for outlays through 2029 (after adjusting for the timing of certain payments). As a share of GDP, total revenues are projected to rise from 16.3 percent this year to 18.2 percent in 2029. That growth mainly reflects an increase in revenues relative to GDP from individual income taxes and, to a lesser extent, from corporate income taxes. Other sources of revenues are projected to grow at the same pace as GDP (see Figure 1-7). The largest movements over the next decade are the following:

- Individual income tax receipts are projected to increase relative to GDP in each year from 2019 to 2029 because of the expiration of provisions of the 2017 tax act that have temporarily lowered receipts relative to taxable personal income, because of real bracket creep, and from other factors (explained in more detail, below).

13. If budget authority for defense programs was equal to the cap in 2020 and not slightly below it, funding in that year would be $21 billion (or 2.9 percent) greater than it was in 2019.

Table 1-6.

Key Projections in CBO's Baseline

Percentage of Gross Domestic Product

			Projected Annual Average	
	2019	2020	2021–2024	2025–2029
Revenues				
Individual income taxes	8.0	8.2	8.4	9.3
Payroll taxes	5.9	5.8	5.9	5.9
Corporate income taxes	1.1	1.1	1.3	1.4
Other	1.3	1.3	1.3	1.3
Total Revenues	**16.3**	**16.4**	**16.9**	**18.0**
Outlays				
Mandatory				
Social Security	4.9	5.0	5.2	5.7
Major health care programs[a]	5.3	5.3	5.6	6.3
Other	2.6	2.6	2.5	2.3
Subtotal	12.8	12.9	13.4	14.3
Discretionary	6.3	6.4	6.2	5.8
Net interest	1.8	1.8	2.0	2.5
Total Outlays	**20.8**	**21.0**	**21.5**	**22.6**
Deficit	**-4.5**	**-4.6**	**-4.7**	**-4.7**
Debt Held by the Public at the End of the Period	**79**	**81**	**88**	**95**
Memorandum:				
Social Security				
Revenues[b]	4.5	4.5	4.5	4.6
Outlays[c]	4.9	5.0	5.2	5.7
Contribution to the Federal Deficit[d]	-0.4	-0.5	-0.8	-1.2
Medicare				
Revenues[b]	1.4	1.4	1.5	1.5
Outlays[c]	3.6	3.7	4.0	4.7
Offsetting receipts	-0.6	-0.6	-0.7	-0.8
Contribution to the Federal Deficit[d]	-1.6	-1.6	-1.9	-2.3
Gross Domestic Product at the End of the Period (Trillions of dollars)	21.2	22.0	25.5	30.8

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.

a. Consists of outlays 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. Includes payroll taxes other than those paid by the federal government on behalf of its employees; those payments are intragovernmental transactions. Also includes income taxes paid on Social Security benefits, which are credited to the trust funds.

c. Does not include outlays related to administration of the program, which are discretionary. For Social Security, outlays do not include intragovernmental offsetting receipts stemming from the employer's share of payroll taxes paid to the Social Security trust funds by federal agencies on behalf of their employees.

d. The net increase in the deficit shown in this table differs from the change in the trust fund balance for the associated program. It does not include intragovernmental transactions, interest earned on balances, or outlays related to administration of the program.

Figure 1-7.

Changes in Projected Revenues From 2019 to 2029

Percentage of Gross Domestic Product

	Revenues 2019	Revenues 2029	Change (Percentage points)	Major Reasons for Change
Individual Income Taxes	8.0	9.6	1.6	Expiration of temporary tax provisions after 2025; real bracket creep[a]
Payroll Taxes	5.9	5.9	*	Not applicable
Corporate Income Taxes	1.1	1.3	0.3	Scheduled changes in tax rules enacted in the 2017 tax act; dissipation of temporary weakness in recent tax collections
Other Sources of Revenue	1.3	1.3	*	Not applicable

Source: Congressional Budget Office.

* = between zero and 0.05 percent of gross domestic product.

a. Real bracket creep occurs when more income is pushed into higher tax brackets because people's income is rising faster than inflation.

- Corporate income tax receipts are projected to increase relative to GDP in each year from 2019 to 2025 and then gradually decline. Those receipts are boosted over the next decade by scheduled changes in tax rules enacted by the 2017 tax act, as well as the expectation that recent unexplained weakness in collections will slowly dissipate. After 2025, corporate income taxes are projected to shrink as a share of the economy, mostly because of the end of the scheduled payments for a onetime tax on previously untaxed foreign profits.

- Estate and gift tax receipts are projected to increase slightly relative to GDP through 2026 and then increase greatly, as the provision in the 2017 tax act that doubled the exemption amount expires.

Individual Income Taxes. If current laws remain generally unchanged, receipts from individual income taxes would rise by 1.6 percentage points as a share of economic output over the next decade—from 8.0 percent in 2019 to 9.6 percent by 2029—CBO estimates.

Expiration of Temporary Tax Provisions After 2025. The most significant factor pushing up taxes relative to income is the scheduled expiration, after tax year 2025, of nearly all the individual income tax law changes made by the 2017 tax act. The provisions that are scheduled to expire include lower statutory tax rates, the higher standard deduction, the repeal of personal exemptions, and the expansion of the child tax credit. Those expirations would cause tax liabilities to rise in calendar year 2026, boosting individual income tax receipts relative to GDP by 0.8 percentage points.

Real Bracket Creep and Related Factors. The second most significant factor pushing up taxes relative to income arises from the way certain parameters of the tax system are scheduled to change over time in relation to growth in income, which reflects the effects of both real (inflation-adjusted) economic activity and inflation. The most important component of that effect, real bracket creep, occurs because the income tax brackets are indexed only to inflation. If income grows faster than inflation, as generally occurs when the economy is expanding, more income is pushed into higher tax brackets. Still other parameters of the tax system, including the amount of the child tax credit, are fixed in nominal dollars and are not adjusted for inflation. In CBO's baseline, those factors cause projected revenues measured as a percentage

of GDP to rise by 0.5 percentage points from 2019 to 2029.[14]

Other Factors. Over the next decade, other factors would raise projected receipts as a share of GDP by 0.3 percentage points, on net, in CBO's estimation. Several factors would boost individual income tax receipts relative to GDP. According to CBO's projections, taxable personal income, which includes wages and salaries, and taxable distributions from tax-deferred retirement accounts would both grow faster than GDP through 2029. CBO also expects wages and salaries to increase faster for people with higher earnings than for others during the next decade—as has been the case for the past several decades—pushing a larger share of income into higher tax brackets. Finally, in addition to the individual income tax provisions that are scheduled to expire after 2025, rules allowing accelerated depreciation deductions for certain business investments are scheduled to phase out between 2022 and 2027. Partially offsetting those tax increases is a projected decline in realizations of capital gains relative to the size of the economy. Those realizations are projected to gradually return to levels consistent with their historical average share of GDP (after accounting for differences in applicable tax rates) by 2029.

Corporate Income Taxes. Under current law, corporate income tax receipts would rise from 1.1 percent of GDP in 2019 to 1.5 percent of GDP in 2025 and then decline to 1.3 percent of GDP by 2029.

Provisions of the 2017 Tax Act. A number of provisions of the 2017 tax act will affect corporate taxes over the next decade, raising receipts as a share of GDP by 0.2 percentage points between 2019 and 2029, on net. Most significantly, provisions allowing firms to immediately deduct from their taxable income 100 percent of their investments in equipment are scheduled to phase out between 2023 and 2026. Several other provisions of the tax act will alter how businesses calculate their tax liability over the next decade and, as a result, will boost receipts. Among those provisions is a change in how taxable income is calculated, which results from new limits on the deductibility of interest expenses that take effect in 2022. Also in 2022, firms will be required to capitalize and amortize certain expenditures for research and experimentation as they are incurred over a five-year period, rather than immediately deducting them. Rules related to the taxation of profits abroad will also change in 2026, increasing revenues in subsequent years. Provisions with such rules include the tax on Global Intangible Low-Taxed Income, the deduction for Foreign-Derived Intangible Income, and the Base Erosion and Anti-Abuse Tax.[15]

Receipts will be further affected over the next decade by the end of the scheduled payments for a onetime tax on previously untaxed foreign profits. Taxes on those earnings, which are based on the value of those profits as of late 2017 (and which are unrelated to future business activity), can be paid in installments over the next eight years. Because the required installments are not equal in size, the effect of those receipts in CBO's baseline varies over the 2019–2026 period. As a result, those payments are projected to boost receipts to varying degrees from 2019 through 2026 but not in subsequent years, thereby contributing to the reduction in receipts in relation to GDP through 2029.

Temporary Weakness in Recent Tax Collections. Corporate tax collections in 2018 and early 2019 were weaker than can be explained by the available data on business activity. (After this analysis was completed, the Bureau of Economic Analysis released its annual revisions of historical economic data. Those revisions included significant reductions in estimated corporate profits for 2017 and 2018, which probably explain part of the weakness in observed collections. For a discussion of those revisions, see Box 2-1 on page 30.) The full set of factors responsible for that weakness, and the extent to which they relate to the 2017 tax act or other factors, will not become apparent until detailed information from tax returns becomes available over the next few years. Depending on the source, the effects of those factors on receipts might be expected to persist permanently, end abruptly, or even reverse. In CBO's projections, unexplained weakness is anticipated to continue temporarily and gradually dissipate over the next few years, boosting corporate income tax receipts by 0.1 percent of GDP from 2020 to 2029.

Estate and Gift Taxes. As a result of a provision in the 2017 tax act that temporarily doubles the amount of the estate and gift tax exemption through tax year 2025,

14. See Congressional Budget Office, "How Income Growth Affects Tax Revenues in CBO's Long-Term Budget Projections" (presentation, June 2019), www.cbo.gov/publication/55368.

15. For additional explanation of the tax provisions included in the 2017 tax act, see Congressional Budget Office, *The Budget and Economic Outlook: 2018 to 2028* (April 2018), pp. 108–110, www.cbo.gov/publication/53651.

revenues from that source are projected to drop in 2019 to less than 0.1 percent of GDP. In 2027 and later years, projected revenues from estate and gift taxes rise to just above 0.1 percent.

Receipts From Other Sources. Receipts from all other sources are expected to remain at about the same share of GDP over the next decade.

- Between 2019 and 2029, receipts from payroll taxes, which fund social insurance programs, are projected to rise only slightly as a share of the economy. Those receipts are expected to remain close to 5.9 percent of GDP throughout the next decade because workers' earnings, which constitute most of the payroll tax base, remain relatively stable as a share of GDP.

- Customs duties, which are assessed on certain imports, are projected to remain between 0.3 percent and 0.4 percent of GDP throughout the next decade. Those duties include tariffs implemented by the Administration during 2018 and 2019.[16] For example, in May 2019, tariffs were raised from 10 percent to 25 percent on $164 billion of imports from China. CBO's baseline incorporates the assumption that tariffs, along with any subsequent exemptions provided by the Administration, continue throughout the projection period at the rates in effect as of July 25, 2019.[17]

- The federal government also collects revenues in the form of excise taxes, remittances from the Federal Reserve, and miscellaneous fees and fines. CBO projects that, under current law, revenues from each of those sources would grow at the same pace as GDP through 2029.

Tax Expenditures. The tax rules that form the basis for CBO's projections include an array of exclusions, deductions, preferential rates, and credits. Those provisions reduce revenues for any given level of tax rates in both the individual and corporate income tax systems. Many of those provisions are called tax expenditures because, like government spending programs, they provide financial assistance for particular activities as well as to certain entities or groups of people.

Tax expenditures have a major effect on the federal budget. In fiscal year 2019, the value of the more than 200 tax expenditures in the individual and corporate income tax systems will total about $1.6 trillion—or 7.8 percent of GDP—if their effects on payroll as well as income taxes are included.[18] That amount, which was calculated by CBO on the basis of estimates prepared by the staff of the Joint Committee on Taxation, equals almost half of all federal revenues projected to be collected in 2019 and exceeds all projected discretionary outlays combined.[19]

Uncertainty in Budget Projections

CBO's baseline budget projections are intended to show what would happen to federal spending, revenues, and deficits and debt if current laws governing spending and taxes generally remained the same. Changes to laws—particularly those affecting fiscal policies—that cause them to differ from the laws underlying CBO's baseline projections could lead to budgetary outcomes that diverge considerably from those in the baseline.

Even if federal laws remained the same for the next decade, actual budgetary outcomes would differ from

16. The Administration's recent actions on tariffs were taken under authority granted in section 232 of the Trade Expansion Act of 1962 and sections 201 and 301 of the Trade Act of 1974.

17. Specifically, the baseline projections incorporate the assumption that, in cases in which the Administration exercises its broad authority to impose tariffs without legislative action, the tariffs in effect when the analysis was completed would continue permanently without planned or unplanned changes. The tariffs imposed during the past two years include those on imports of solar panels and certain appliances, which took effect on February 7, 2018; on steel and aluminum imports from most countries, which took effect on March 23, 2018; and on a range of products imported from China, the first of which took effect on July 6, 2018. On August 1, 2019, the President announced that tariffs would be imposed on an additional $300 billion of Chinese imports beginning on September 1, 2019; on August 13, the U.S. Trade Representative announced that those tariffs would be delayed on certain products. Those scheduled changes to tariffs are not included in CBO's current baseline projections.

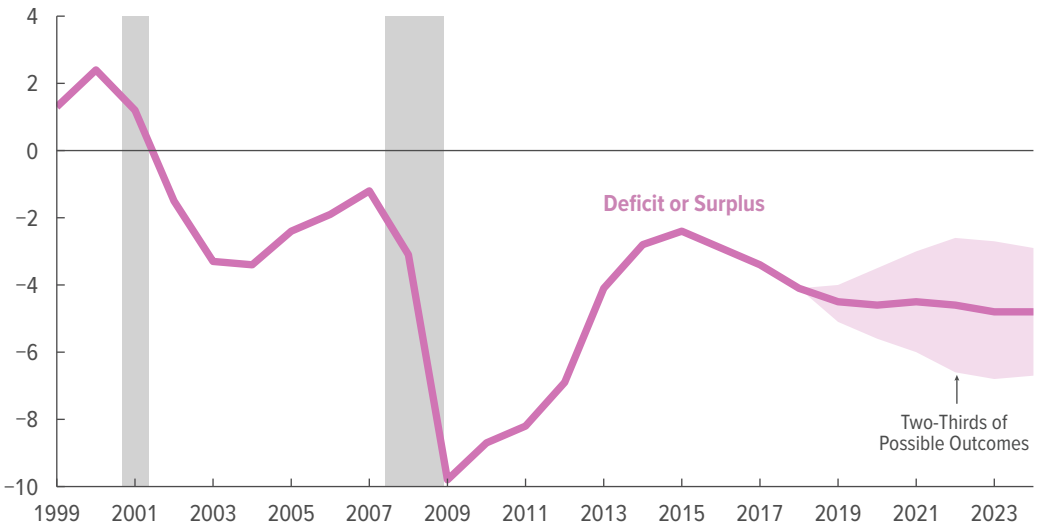
18. Most estimates of tax expenditures include only their effects on individual and corporate income taxes. However, tax expenditures can also reduce the amount of income subject to payroll taxes. Tax expenditures that reduce the tax base for payroll taxes will eventually decrease spending for Social Security by reducing the earnings base on which Social Security benefits are calculated.

19. For more information on how that total was determined, as well as estimates of the size of the 10 largest tax expenditures in 2019, see Congressional Budget Office, *The Budget and Economic Outlook: 2019 to 2029* (January 2019), pp. 99–102, www.cbo.gov/publication/54918.

Figure 1-8.

The Uncertainty of CBO's Baseline Projections of the Budget Deficit

Percentage of Gross Domestic Product



CBO estimates that there is a roughly two-thirds chance that in 2024, the deficit as a share of gross domestic product would be 1.9 percentage points smaller or larger than the agency projects.

Source: Congressional Budget Office.

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. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

CBO's baseline projections because of unanticipated changes in economic conditions and in other factors that affect federal spending and revenues. CBO's projections of outlays and revenues and, therefore, of deficits and debt depend in part on the agency's economic projections for the coming decade, which include forecasts for such variables as interest rates, inflation, and growth in productivity. Discrepancies between those forecasts and actual economic outcomes can cause significant differences between baseline budget projections and budgetary outcomes. Such differences might also be caused by unanticipated developments, such as new trends in spending on health care or a crisis in the financial sector. CBO aims for its projections to be in the middle of the distribution of possible outcomes, given the baseline assumptions about federal tax and spending policies, and recognizes that actual outcomes will typically differ to some degree from any such projections.

Historical experience gives some indication of the magnitude of the uncertainty of budget projections. On the basis of an analysis of its past projections, CBO estimates that there is approximately a two-thirds chance that in 2020 the deficit under current law would be between 3.5 percent and 5.6 percent of GDP. The range in 2024 would be larger: CBO estimates that, under current law, there is approximately a two-thirds chance that the deficit would be between 2.9 percent and 6.7 percent of GDP in that year (see Figure 1-8).

Errors in the projections of debt tend to compound over time, so the uncertainty surrounding those projections is greater. For example, in CBO's baseline, federal debt held by the public is projected to equal 88 percent of GDP in 2024. After analyzing its past projections, CBO estimates that there is approximately a two-thirds chance that, under current law, federal debt would be between 79 percent and 97 percent of GDP in that year.

The Long-Term Outlook for the Budget

Beyond the coming decade, the fiscal outlook is more challenging. Although long-term budget projections are highly uncertain, the aging of the population and growth in per capita spending on health care would almost certainly boost federal outlays significantly relative to GDP after 2029 if current laws generally remained in effect. Outlays would be further boosted by sizably higher interest costs, driven by projected increases in federal

borrowing. Although federal revenues would continue to rise relative to GDP under current law, they would not keep pace with outlays. As a result, CBO estimates, public debt would reach a higher percentage of GDP by 2049 (taking into account the effects of the rising debt on the economy) than has been previously recorded in the United States.[20] Moreover, debt is on track to grow even larger after 2049. 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, the significant increase in federal borrowing would elevate the risk of a fiscal crisis and would limit lawmakers' ability to adopt deficit-financed fiscal policies to respond to unforeseen events or for other purposes. Negative economic and financial effects that were less abrupt but still significant—such as higher inflation expectations or an increased burden of financing public and private activity in international markets—would also have a greater chance of occurring. Those effects would worsen the consequences associated with high and rising federal debt.

To put debt on a sustainable path, lawmakers will have to make significant changes to tax and spending policies—increasing revenues more than they would under current law, reducing spending below projected amounts, or adopting some combination of those approaches.

20. For more information, see Congressional Budget Office, *The 2019 Long-Term Budget Outlook* (June 2019), www.cbo.gov/publication/55331. CBO will next update its long-term projections in 2020.

CHAPTER

2

The Economic Outlook

Overview

If current laws governing federal taxes and spending generally remained in place, the economy would expand by 2.3 percent this year and then grow at an average annual rate of 1.8 percent over the next decade, the Congressional Budget Office projects. The current pace of job gains remains solid, the unemployment rate is near its lowest point in five decades, and wage growth has been strong. In CBO's projections, from 2019 to 2023, economic growth gradually slows as the growth of consumer spending subsides; as growth in purchases by federal, state, and local governments ebbs; and as trade policies weigh on economic activity, particularly business investment. From 2024 to 2029, economic growth is largely determined by underlying trends in the growth of the labor force and productivity.

The agency's economic forecast, which underlies its baseline budget projections, includes projections of real (inflation-adjusted) gross domestic product (GDP; also referred to as output or actual output), inflation, interest rates, and other key variables for 2019 through 2029. Considerable uncertainty stemming from recent and prospective policy changes and non-policy-related factors surrounds those projections. (CBO's economic projections were completed in late July and do not reflect subsequently released economic data; see Box 2-1.)

Fiscal and Trade Policies

Federal fiscal and trade policies under current law affect CBO's economic outlook in a variety of ways. CBO's economic projections incorporate the assumptions that new limits on discretionary funding contained in the Bipartisan Budget Act of 2019 (Public Law 116-37) will boost federal discretionary outlays and that many temporary provisions of the 2017 tax act (P.L. 115-97, originally called the Tax Cuts and Jobs Act) will phase out or expire. The increase in federal spending is projected to boost economic growth by providing fiscal stimulus over the next few years. In later years, the agency projects that high and rising levels of federal borrowing would reduce private investment activity. In addition, the expiration of the temporary provisions of the 2017 tax act—including the expiration of most of the provisions affecting individual income taxes at the end of 2025 and the phaseout of bonus depreciation by the end of 2026—is projected to temporarily slow economic growth.

CBO's economic projections also incorporate the assumption that U.S. tariffs imposed by the Administration and in effect as of July 25, 2019 (the day the agency completed its economic projections), and tariff increases on U.S. exports implemented by other countries will remain in place through 2029. Those tariffs affect CBO's projections of trade flows, prices, and U.S. output over the next decade. On balance, tariffs are projected to lower economic output, primarily by making consumer goods and investment goods (such as structures and equipment) more expensive. Uncertainty about future trade policies also reduces business investment. Those economic effects wane after 2020 as businesses make adjustments to their supply chains to mitigate the costs associated with the tariffs.

Projections for 2019 to 2023

In CBO's projections for the next five years, real GDP initially exceeds its maximum sustainable level and then falls below that level because of slower but still positive economic growth. That sustained economic growth continues to support the demand for labor, driving up employment and wages. After falling in 2019, interest rates are expected to increase in 2020 as wage growth, inflation, and foreign economic growth pick up.

Output. Compared with the 2.5 percent pace of growth in 2018, output growth under current law is expected to slow. Real GDP is projected to grow by 2.3 percent in 2019 and then by 1.8 percent per year, on average, over the 2020–2023 period (see Figure 2-1 on page 32).

The slowdown in growth this year largely results from slower growth of business fixed investment as the positive effects of the 2017 tax act on investment growth wane, lower oil prices than in 2018 reduce drilling activity,

Box 2-1.

Revisions to the National Income and Product Accounts

In late July, the Bureau of Economic Analysis (BEA) released its annual revision of the national income and product accounts (NIPAs), as well as new data about economic growth during the first half of 2019. The revision incorporated new data from various sources, as well as some changes in statistical methodology.

BEA revised its estimates of the annual growth of real gross domestic product (GDP) from 2014 to 2018, although the average annual growth rate over that entire period was unchanged. In addition, BEA increased its estimates of personal income in recent years and decreased its estimates of corporate income. The Congressional Budget Office completed its forecast before BEA released that new information, but an initial review does not suggest a substantial change to CBO's projections of economic growth.

Revisions to Historical Data

The largest change to GDP growth for an individual year (measured on a fourth-quarter-to-fourth-quarter basis) was a downward revision to the rate of growth in 2018 to 2.5 percent from the previously published 3.0 percent. Because BEA increased its estimates of GDP growth in 2014, 2016, and 2017, there was no net reduction in the average annual growth rate for the 2014–2018 period.

BEA's estimates of total national income were little changed, but significant revisions occurred for domestic corporate profits and for wages and salaries, which together make up the bulk of taxable income. In particular, domestic corporate profits were revised downward by $99 billion for 2017 and by $205 billion for 2018; wages and salaries were revised upward by $67 billion for 2018. In addition, BEA increased its estimate of disposable personal income for 2018 by $220 billion, in part because of the revision to wages and salaries and also because of an upward revision of $86 billion to personal interest receipts. As a result of the higher estimates of disposable personal income, the personal saving rate was also revised upward.

Key price indexes in the NIPAs—including for GDP, personal consumption expenditures (PCE), and core PCE (which excludes changes in food and energy prices)—were largely unchanged.

Growth in 2019

BEA also revised its estimate of GDP for the first quarter of 2019 and released its initial estimate of growth for the second quarter. The new data indicate that real GDP grew at an annual rate of 2.6 percent in the first half of 2019—higher than the 2.4 percent CBO incorporated into its economic forecast. That difference reflects more consumer spending and fixed investment, partly offset by lower net exports. An initial review of that new data indicates that CBO's projection of economic growth of 2.3 percent between the fourth quarter of 2018 and the fourth quarter of 2019, although made before the publication of the new data, remains a reasonable prospect.

Consistent with the revisions to income for 2017 and 2018, the new data show an upward revision of $199 billion to wages and salaries in the first quarter of 2019 and a downward revision of $252 billion to domestic corporate profits in that quarter. For 2019 as a whole, wages and salaries are now likely to be stronger and corporate profits weaker than in CBO's projection.

slower growth in demand reduces businesses' incentive to expand their capacity, tariffs make new structures and equipment more expensive, and uncertainty about trade policies leads some businesses to delay investments or forgo them entirely.

From 2020 to 2023, in CBO's projections, the growth of output slows further because of slower growth in consumer spending and in the purchases of goods and services by federal, state, and local governments. Increased tariffs on certain imported and exported goods, on balance, are expected to have a small negative effect on output over the next few years. Additionally, businesses' uncertainty about trade policies is expected to continue to weigh on private investment and, thus, output.

Output Gap. CBO estimates that GDP has exceeded potential GDP since early 2018. (Potential GDP is an estimate of the maximum sustainable output of the economy.) As a result of robust economic growth throughout 2018 and early 2019, the output gap—the difference between actual and potential GDP, expressed as a percentage of potential GDP—peaked earlier this year. When GDP is above its potential (as it is now), it indicates that the demand for goods and services exceeds the economy's maximum sustainable level of production, which leads to heightened demand for labor as well as

upward pressure on inflation and interest rates. Real GDP is expected to grow more slowly than its potential over the next few years, falling below the level of real potential GDP by the end of 2022. That development would reduce the upward pressure on inflation and interest rates.

Labor Market. The labor market carried momentum from 2018 into the first half of 2019 and is expected to continue to grow at a healthy, albeit slower, pace over the next several years. In CBO's projections, the unemployment rate averages 3.7 percent in 2019 and 2020 and then steadily rises to 4.6 percent by the end of 2023 as output growth slows. Employment rose above its potential, or maximum sustainable, level in 2018 and is expected to remain above its potential level over the entire 2019–2023 period. The labor force participation rate is projected to remain stable through 2020 before falling gradually toward its long-run trend. Wage growth has accelerated and become increasingly broad-based in recent years, with low-wage earners experiencing particularly robust gains in their hourly wages. In CBO's projections, wage growth picks up further before slowing in 2021.

Inflation and Interest Rates. Inflation, as measured by the growth rate of the price index for personal consumption expenditures (PCE), remained below the Federal Reserve's 2 percent long-run objective in early 2019. The Federal Reserve reduced its target range for the federal funds rate (the interest rate that financial institutions charge each other for overnight loans of their monetary reserves) in late July—at least in part because of low inflation and increased risks to U.S. economic growth stemming from international trade tensions and slower foreign economic growth.

After 2019, CBO expects a number of factors to temporarily push inflation above the Federal Reserve's 2 percent long-run objective. CBO expects the Federal Reserve to maintain its current target range for the federal funds rate through most of 2020 and then increase that range at the end of next year, which would put upward pressure on other interest rates.

Projections for 2024 to 2029

CBO's projections of GDP, unemployment, inflation, and interest rates for 2024 through 2029 are based mainly on the agency's projections of underlying trends in the factors that determine those variables. Over most of that period, in CBO's forecast, real GDP tends to grow at the same rate as potential GDP, which is determined by factors such as the size of the labor force, the average number of labor hours per worker, capital investment, and productivity. In analyzing those factors, CBO takes into account the effects of federal tax and spending policies—as well as trade and other public policies—embodied in current law. In some cases, the agency expects that policies would change the output gap not only by affecting potential output but also by influencing the overall demand for goods and services.

In CBO's projections, potential output grows more quickly over the next decade than it has since the 2007–2009 recession, mainly because potential labor force productivity grows more quickly than it has since then. Nevertheless, the growth of potential output is projected to be slower than its long-term historical average since 1950 because the working-age population (and hence the potential lab or force) and productivity are expected to grow more slowly than they did, on average, in the past. From 2024 to 2029, growth of potential output is about 1.8 percent per year.

The agency expects inflation, as measured by the growth rate of the PCE price index, to average 2.0 percent from 2024 to 2029. Over that period, in CBO's projections, interest rates gradually rise in response to increases in federal debt as a percentage of GDP, as well as continued improvements in the global economy.

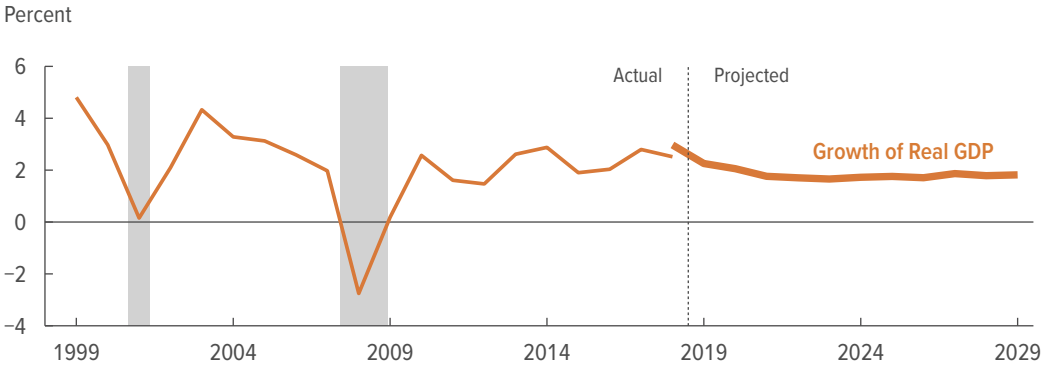
Uncertainty

A range of developments, such as unexpected changes in international conditions, business confidence, or productivity growth, could make economic outcomes differ significantly from CBO's projections. Prospective changes in U.S. trade policies and possible retaliatory actions by U.S. trading partners add to that uncertainty. If trade disputes were resolved such that trade barriers were lowered or removed, economic growth would be faster than CBO projects. Conversely, if trade barriers increased, economic growth would be slower than CBO projects.

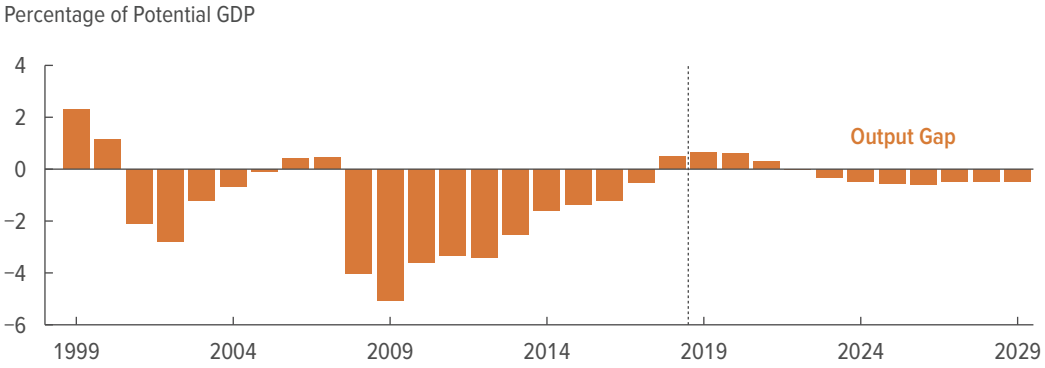
The agency constructs its projections so that they represent the average of a distribution of possible outcomes under current law. For example, CBO projects that real GDP will grow at an average annual rate of 2.0 percent (on a calendar year basis) over the 2019–2023 period. However, CBO also estimates that—if the errors in the agency's current economic forecast are similar to those in its previous forecasts—there is approximately a

Figure 2-1.

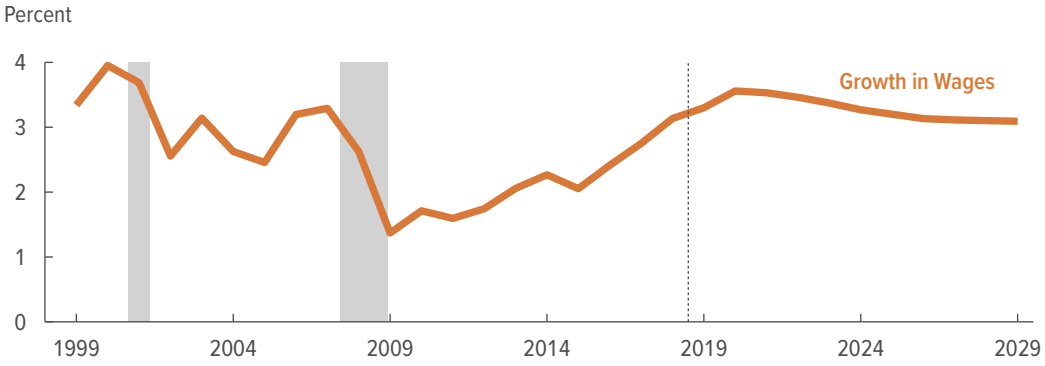
CBO's Economic Forecast in Brief



In CBO's forecast, the growth of output slows over the next few years as growth in consumer spending subsides; as growth in purchases by federal, state, and local governments ebbs; and as trade policies weigh on economic activity.



As the growth of output slows, the gap between GDP and its potential narrows, easing the upward pressure on wages and prices, and GDP ultimately falls below its potential in 2022.



Wage growth, which tends to lag movements in output growth, is expected to pick up further in the next few years before slowing.

Sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. The growth of real GDP is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Potential GDP is CBO's estimate of the maximum sustainable output of the economy. The output gap is the difference between GDP and potential GDP, expressed as a percentage of potential GDP. A positive value indicates that GDP exceeds potential GDP; a negative value indicates that GDP falls short of potential GDP. Values for the output gap are for the fourth quarter of each year.

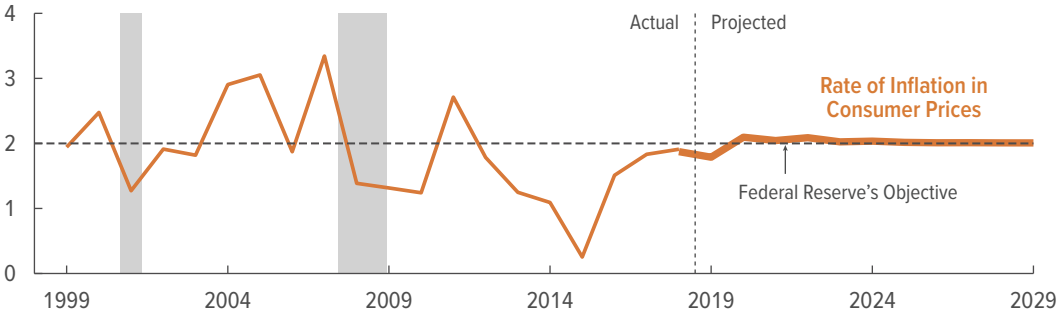
Wages are measured using the employment cost index for wages and salaries of workers in private industry. Growth in wages is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Continued

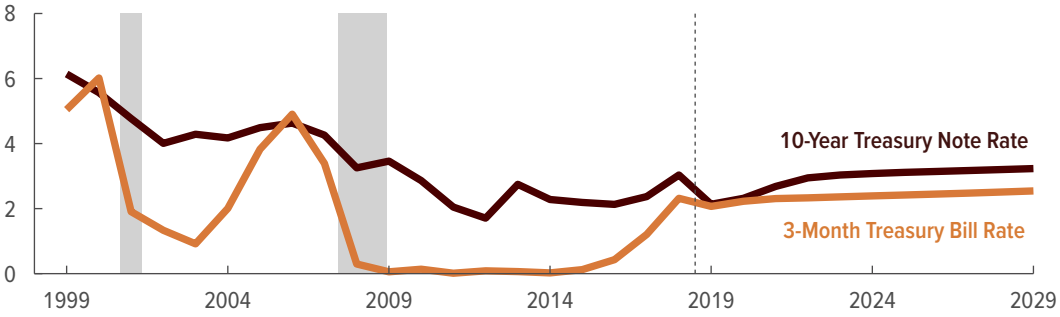
Figure 2-1. Continued

CBO's Economic Forecast in Brief

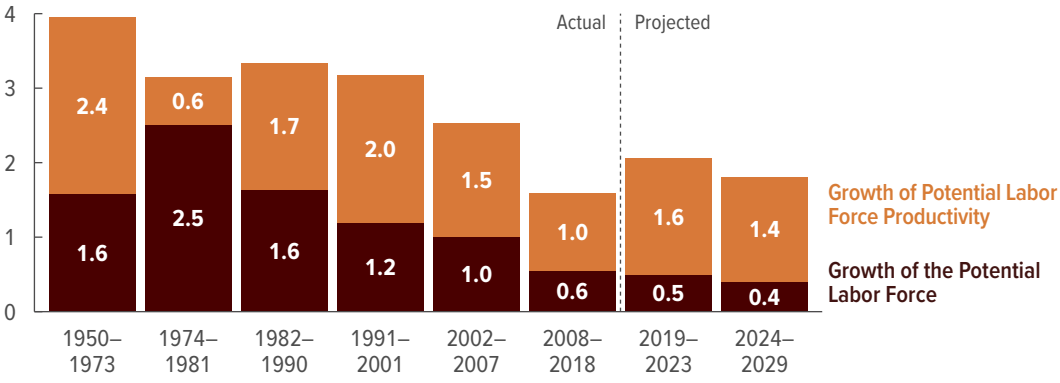
Percent



After 2019, CBO expects a number of factors, including strong demand for labor, to temporarily push inflation above the Federal Reserve's 2 percent long-run objective.



CBO expects the Federal Reserve to keep the target range for the federal funds rate at its current level through most of 2020 and then increase it at the end of that year, putting upward pressure on short-term and long-term interest rates.



In the coming decade, real potential GDP—the sum of the growth of the potential labor force and the growth of potential labor force productivity—is projected to grow faster than it has since the 2007–2009 recession but slower than it has in previous periods.

Consumer price inflation is based on the price index for personal consumption expenditures and is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

The federal funds rate is the interest rate that financial institutions charge each other for overnight loans of their monetary reserves. The data for interest rates are fourth-quarter values.

The potential labor force is an estimate of the size of the labor force that has been adjusted to exclude the effects of business-cycle fluctuations. Potential labor force productivity is the ratio of real potential GDP to the potential labor force. The bars show average annual growth rates over the specified periods, calculated using calendar year data.

Values for real GDP growth and inflation in consumer prices from 1999 to 2018 (the thin line in the top panel on each page) reflect revisions to the national income and product accounts that the Bureau of Economic Analysis released on July 26, 2019. Values from 2018 to 2029 (the thick lines) reflect the data available when the projections were made earlier in July.

GDP = gross domestic product.

two-thirds chance that the average annual growth rate will be between 0.7 percent and 3.3 percent.

Comparison With CBO's Previous Projections and Other Economic Projections

CBO's current economic forecast has some notable differences from the forecast the agency published in January. In particular, CBO has lowered its projections of interest rates in response to new data and recent guidance from the Federal Reserve regarding its outlook for monetary policy. Projected average annual economic growth over the 2020–2023 period was revised upward because of the Bipartisan Budget Act of 2019 (which led CBO to increase its projections of federal discretionary spending over the next decade) and recent economic developments.

CBO's economic projections in this forecast do not differ significantly from those of other forecasters. In particular, they are generally within the range of the forecasts for 2019 and 2020 by the private-sector economists who contributed to the August 2019 *Blue Chip Economic Indicators*, as well as the latest forecasts for 2019 through 2021 contained in the Federal Reserve's *Summary of Economic Projections*.

Fiscal and Trade Policies

CBO's economic projections reflect federal fiscal and trade policies under current law. Federal fiscal policies affect the economy not only through government purchases, which contribute directly to the overall demand for goods and services, but also through the federal tax code and federal transfer programs (such as Social Security and Medicare), which affect both overall demand and the supply of resources. Changes to trade policies—such as increases in tariffs on certain imported and exported goods—can also affect economic activity through changes to domestic prices and through uncertainty about future changes in trade policies, which, in turn, influence trade flows, business investment, and real output and income. (See Box 2-2 for a discussion of the effects of changes in trade policies.)

In addition, fiscal policy and tariffs both have important implications for federal deficits and debt. Changes in deficits and debt affect CBO's long-run projections of potential GDP by altering national saving (the total amount of saving by households, businesses, and governments) and, in turn, the funds that are available for private investment in productive capital (such as office buildings, factories, and equipment).

Fiscal Policies

The fiscal stimulus created by the 2017 tax act and by the increase in federal discretionary spending now projected as a result of recent legislation is estimated to diminish over the next several years. CBO expects that the positive effects of the tax act on investment growth will moderate over time and that the projected increase in discretionary spending will boost economic growth over the next few years but that the resulting increase in federal deficits will lower growth in later years.

As noted in its April 2018 report, CBO expects the 2017 tax act to have a positive net effect on investment, employment, and output over the next decade.[1] The act lowered marginal income tax rates and increased incentives for business investment, which boosted growth in both consumption and business fixed investment in 2018 and 2019. Those positive effects are projected to diminish as households and firms adjust to the increase in their after-tax income and the incentive effects on investment growth wane. In later years, as temporary provisions of the tax act phase out or expire, growth of actual GDP is projected to temporarily fall below the growth of potential output.

The Bipartisan Budget Act of 2019 led CBO to increase its projections of federal discretionary spending over the next decade by $1.5 trillion (see Appendix A). That law raised the caps on discretionary appropriations in fiscal years 2020 (which starts in the final quarter of calendar year 2019) and 2021 (which starts in the final quarter of calendar year 2020) by $171 billion and $153 billion, respectively. As a result, federal purchases of goods and services are projected to be higher than CBO previously estimated. In CBO's forecast, those additional purchases boost economic activity over the next few years. Under the assumptions that govern CBO's baseline projections, the increased spending persists over the entire projection period. Greater federal borrowing as a result of the larger deficits reduces the resources available for private investment in later years.

1. See Congressional Budget Office, *The Budget and Economic Outlook: 2018 to 2028* (April 2018), www.cbo.gov/publication/53651.

Table 2-1.

U.S. Imports Affected by Tariffs Recently Imposed by the United States

Billions of Dollars

		Value of Imports Affected by Tariffs						
Category of Goods	Value of Imports in 2017	Tariff on Solar Panels	Tariff on Washing Machines	Tariff on Steel	Tariff on Aluminum	Tariffs on Chinese Goods	All Recent Tariffs	Share of Category Affected by Tariffs (Percent)
Food, Feed, and Beverages	138	0	0	0	0	5	5	3.6
Industrial Supplies and Materials	507	0	0	14	9	34	57	11.2
Capital Goods, Except Automotive	641	6	*	2	*	116	125	19.5
Automotive Vehicles, Parts, and Engines	359	1	0	0	0	19	19	5.4
Consumer Goods	602	0	2	0	*	55	57	9.5
Other Goods	95	0	0	0	0	0	*	**
Total	**2,342**	**7**	**2**	**16**	**9**	**229**	**263**	11.2
Share of Total Imports (Percent)	100.0	0.3	0.1	0.7	0.4	9.8	11.2	n.a.

Source: Congressional Budget Office, using information from the Census Bureau and the Office of the U.S. Trade Representative.

n.a. = not applicable; * = between zero and $500 million; ** = between zero and 0.05 percent.

Trade Policies

Since January 2018, the United States has imposed tariffs on 11 percent of goods imported into the country, measured as a share of the value of all U.S. imports in 2017.[2] Some of those tariffs apply to imports from nearly all U.S. trading partners, including tariffs on washing machines, solar panels, and steel and aluminum products (see Table 2-1). A few countries are exempted from certain tariffs. For example, Canadian and Mexican imports were granted exemptions from the tariffs on steel and aluminum products. Other tariffs affect only imports from China, covering about half of U.S. imports from China and targeting mostly intermediate goods (items used for the production of other goods and services) and capital goods (such as computers and other equipment).

In response to the tariffs, U.S. trading partners have retaliated with their own tariffs. As of July 25, 2019, retaliatory tariffs had been imposed on 7 percent of all goods exported by the United States—primarily industrial supplies and materials as well as agricultural products (see Table 2-2 on page 38).

CBO's analysis incorporates the assumption that the tariffs on U.S. imports and exports in effect as of July 25, 2019—the day the agency completed its economic projections—will remain in place through 2029.[3]

In CBO's projections, those tariffs reduce U.S. economic activity in three ways. First, they make consumer goods and capital goods more expensive, thereby reducing the purchasing power of U.S. consumers and businesses. Second, they increase businesses' uncertainty about future barriers to trade. Such uncertainty leads some U.S. businesses to delay or forgo new investments or make costly adjustments to their supply chains. Third, they prompt retaliatory tariffs by U.S. trading partners, which reduce U.S. exports by making them more expensive for foreign purchasers. All of those effects lower U.S. output. However, U.S. consumers and businesses are expected

2. The values and shares of affected goods are measured relative to their values and shares in 2017—the year before those tariffs were imposed.

3. The agency's economic projections incorporate the assumption that, in cases in which the Administration exercises its broad authority to impose tariffs without legislative action, the tariffs in effect when the analysis was completed would continue permanently without planned or unplanned changes. On August 1, 2019, the President announced that tariffs would be imposed on an additional $300 billion of Chinese imports beginning on September 1, 2019; on August 13, the U.S. Trade Representative announced that those tariffs would be delayed on certain products. Those scheduled changes to tariffs are not included in CBO's current economic projections.

Box 2-2.

The Economic Effects of Changes in Trade Policies

In early 2018, the United States and its trading partners began imposing higher trade barriers—in particular, increases in tariff rates (see Table 2-1 and Table 2-2). In May 2019, the United States increased the tariff rate from 10 percent to 25 percent on a $183 billion tranche of Chinese imports that were first targeted in September 2018. In that same month, the United States exempted Canadian and Mexican steel and aluminum products from tariffs affecting those imports. In response to those changes, China raised its tariff rates on roughly $51 billion of imported U.S. products, whereas Canada and Mexico eliminated retaliatory tariffs they had imposed on U.S. products.[1]

On balance, in the Congressional Budget Office's projections, the trade barriers imposed since January 2018 reduce the level of real (inflation-adjusted) U.S. gross domestic product (GDP) by about 0.1 percent and the level of real household income by 0.2 percent by 2029. (CBO's analysis reflects the assumption that the tariffs remain in place through 2029.) Those estimated economic effects are small because the value of imports subject to the tariffs is less than 2 percent of the value of all goods and services purchased by U.S. consumers and businesses. However, CBO's estimates of the economic effects of the trade barriers are subject to considerable uncertainty.

Evidence of the Effects of Changes in Trade Policies Since January 2018

The tariffs implemented since January 2018 have altered the pattern of U.S. trade flows. For example, between the first quarter of 2017 and the first quarter of 2019, the value of all categories of imported Chinese goods targeted by the tariffs has declined by $46 billion, or about 22 percent. At the same time, the value of U.S. imports of those goods from other trading partners has increased by $116 billion, or 10 percent. The increased value of imports from other trading partners is partly attributable to the replacement of imports that would have come from China. It also reflects an increase in the prices paid for those products.

Retaliatory tariffs imposed by U.S. trading partners have also affected U.S. export flows. For example, since the imposition of Chinese retaliatory tariffs, U.S. exports of targeted products to China have fallen by $21 billion, or about 24 percent, and U.S. exports of those same products to other trading partners have risen by $93 billion, or 9 percent. That increase in exports to unaffected countries partly reflects the diversion of exports that would have gone to China, in addition to other economic factors that have boosted U.S. exports.

Although the tariffs imposed since January 2018 have increased domestic prices paid for targeted goods, their effect on overall prices is less apparent. Since the tariffs have been implemented, the prices of some of the targeted products, such as washing machines and electrical equipment, have risen. However, for other targeted products and for products indirectly affected by the tariffs (such as those made with steel and aluminum), the effects on domestic prices are harder to observe.[2] That is because the targeted products represent a small share of all investment goods (such as computers and other equipment) and consumer goods. Moreover, in CBO's assessment, tariffs on U.S. imports strengthen the U.S. dollar, which should dampen their effect on the prices of imports.

The tariffs have probably weakened business investment in the United States. Changes in trade policies have increased businesses' uncertainty about future barriers to trade and thus their perceptions of risks associated with investment

1. The U.S. Department of Commerce also approved tariff exemption requests for a number of U.S. firms, mostly for imports of steel and aluminum products.

2. See Aaron B. Flaaen, Ali Hortaçsu, and Felix Tintelnot, *The Production Relocation and Price Effects of U.S. Trade Policy: The Case of Washing Machines,* Working Paper 25767 (National Bureau of Economic Research, April 2019), www.nber.org/papers/w25767; and Mary Amiti, Stephen J. Redding, and David Weinstein, *The Impact of the 2018 Trade War on U.S. Prices and Welfare,* Working Paper 25672 (National Bureau of Economic Research, March 2019), www.nber.org/papers/w25672.

Continued

Box 2-2. Continued

The Economic Effects of Changes in Trade Policies

in the United States and abroad.[3] Uncertainty about future barriers to trade reduces the incentive for businesses to make long-term adjustments to their supply chains because changes in trade policies might affect the costs of their operations. The increased risk of such changes has probably led some businesses to delay investments or forgo them entirely. In addition, CBO estimates that the tariffs have suppressed investment growth by raising the prices of investment goods.

CBO's Estimates of the Tariffs' Effects on the U.S. Economy

CBO expects the changes in U.S. and foreign trade policies since January 2018 to reduce the level of real U.S. GDP by about 0.3 percent by 2020. Tariffs reduce domestic GDP chiefly by raising domestic prices, which reduces the purchasing power of U.S. consumers and increases the cost of business investment. In CBO's projections, the tariffs also reduce real income for the average U.S. household by 0.4 percent by 2020.

That projected reduction in U.S. output is partly explained by changes to U.S. trade flows. By 2020, in CBO's projections, the changes to tariffs since early 2018 lower real U.S. exports by 1.7 percent and lower real imports by 2.6 percent. The negative effect on output from reduced exports is partly offset by an expected boost in the production of domestic goods to replace a small portion of the forgone imports.

The remainder of the reduction in U.S. output can be explained by declines in real consumption and investment. CBO expects that higher prices for investment and consumer goods and greater business uncertainty will reduce real consumption by 0.3 percent and real private investment by 1.3 percent by 2020. Beyond 2020, CBO expects those effects to wane as businesses adjust their supply chains.

In CBO's projections, real investment continues to be dampened over the decade, which lowers potential (maximum sustainable) output. The reduction in investment is partly offset because the increase in revenues from the tariffs reduces government deficits, boosting the resources available for private investment. It is also partly offset because CBO expects the production of some goods targeted by tariffs to be relocated from other countries to the United States. On balance, in CBO's projections, tariffs reduce the level of potential output by 0.1 percent in 2029.

Revisions to CBO's Estimates

CBO has increased its estimates of the effects of the changes in trade policies since January 2018 on the U.S. economy. CBO now expects those changes to reduce real U.S. GDP by 0.3 percent by 2020—0.1 percentage point more than the agency expected earlier this year. The revisions to the long-run effects are more modest.

The revision to the projection for 2020 is mostly attributable to a larger projected decrease in real investment. In particular, real investment is now expected to be 1.3 percent lower by 2020 in response to the tariffs, compared with 0.4 percent lower in CBO's January projections. That change in CBO's projection is the net effect of the higher tariff rates on certain Chinese imports as of May 2019, an increase in the expected size of the effects of businesses' uncertainty about future barriers to trade, and the increase in the value of imports that have been exempted from tariffs. The larger projected reduction in investment also reflects recent studies showing that a larger share of the cost of the tariffs than previously estimated is passed along to U.S. importers.

Uncertainty in CBO's Estimates

CBO's estimates of the economic effects of the tariffs implemented since January 2018 are uncertain for many reasons. The estimated short-run effects on trade flows are uncertain because it is difficult to predict how foreign exporters might adjust their prices in response to the tariffs and associated changes in the value of the dollar. Similarly, it is difficult to predict the extent to which domestic importers will pass along the increase in costs to their domestic customers. The magnitude of the long-run effects on investment is also uncertain because it is difficult to project how changes to tariffs and businesses' concerns about further changes to trade policies will affect long-run investment by companies that rely on global supply chains.

3. See David Altig and others, "Tariff Worries and U.S. Business Investment, Take Two," *Macroblog* (Federal Reserve Bank of Atlanta, February 25, 2019), https://tinyurl.com/y36oacs6; and Federal Reserve Bank of Dallas, "Texas Business Outlook Surveys" (June 24, 2019), https://tinyurl.com/yxbnn5vs.

Table 2-2.

U.S. Exports Affected by Tariffs Recently Imposed by Other Countries

Billions of Dollars

Category of Goods	Value of Exports in 2017	Value of Exports Affected by Tariffs: Tariffs Imposed by China	Value of Exports Affected by Tariffs: Tariffs Imposed by Rest of World	Value of Exports Affected by Tariffs: All Recent Tariffs	Share of Category Affected by Tariffs (Percent)
Food, Feed, and Beverages	133	20	1	21	15.9
Industrial Supplies and Materials	465	35	2	37	8.0
Capital Goods, Except Automotive	533	23	*	23	4.3
Automotive Vehicles, Parts, and Engines	158	22	*	22	14.2
Consumer Goods	198	5	2	7	3.5
Other Goods	60	*	0	0	**
Total	**1,546**	**104**	**6**	**110**	7.1
Share of Total Exports (Percent)	100.0	6.7	0.4	7.1	n.a.

Source: Congressional Budget Office, using information from the Census Bureau and the Office of the U.S. Trade Representative.

n.a. = not applicable; * = between zero and $500 million; ** = between zero and 0.05 percent.

to replace certain imported goods with goods produced in the United States, which would offset some of that decline. In addition, tariff revenues, by reducing the deficit, increase the resources available for private investment in later years.

On balance, CBO expects trade barriers to reduce U.S. output. The effects of the tariffs on trade flows, prices, and output are projected to rise over the next year. By 2020, in CBO's projections, those tariffs reduce the level of real U.S. GDP by roughly 0.3 percent and reduce average real household income by $580 (in 2019 dollars). Beyond 2020, CBO expects those effects to wane as businesses adjust their supply chains. By 2029, in CBO's projections, the tariffs lower the level of real U.S. GDP by 0.1 percent.

The Economic Outlook for 2019 to 2023

CBO expects real GDP to grow by 2.3 percent in 2019 and by an average of 1.8 percent per year between 2020 and 2023 (see Table 2-3). Economic growth in CBO's forecast over the next five years is largely driven by consumer spending and, to a lesser extent, by business and residential investment.

In CBO's projections, the gap between actual GDP and potential GDP and the gap between employment and potential employment narrow over the next few years.[4] (Both output and employment started to exceed their potential levels in early 2018, in CBO's assessment.) Economic growth slows after this year, but actual GDP remains above potential GDP until the end of 2022, and employment, which tends to lag behind movements in output, remains above its potential level over the entire 2019–2023 period. When GDP and employment are above their potential levels, over time there is upward pressure on inflation, interest rates, and wages.

CBO's projections of the economy over the next five years reflect anticipated fluctuations in the components of final demand (such as consumption and investment), projected changes in supply-side factors (such as growth in productivity and the labor supply), and the interactions between them.[5] In CBO's forecast, short-run fluctuations in economic activity are determined

4. Potential employment is CBO's estimate of the maximum sustainable level of employment. It is the number of people who would be employed if the unemployment rate equaled its natural rate and if the labor force participation rate—that is, the percentage of people in the civilian noninstitutionalized population who are at least 16 years old and are either working or seeking work—equaled its potential rate.

5. See Robert W. Arnold, *How CBO Produces Its 10-Year Economic Forecast*, Working Paper 2018-02 (Congressional Budget Office, February 2018), www.cbo.gov/publication/53537.

primarily by demand-side developments but are also influenced by supply-side factors. For example, if an increase in demand pushed GDP beyond its maximum sustainable level, then one would expect upward pressure on inflation and interest rates, which would limit the increase in GDP growth. However, if the increase in demand was matched by an equivalent boost to potential output, then GDP would not exceed its maximum sustainable level and there would be no additional upward pressure on inflation or interest rates and, in turn, no additional restraint on economic activity.

Output

CBO expects the growth of real GDP to slow to 2.3 percent in 2019, down from 2.5 percent in 2018, as some of the factors that supported growth in output last year begin to taper off. On the one hand, strong growth in households' real disposable income (reflecting, among other things, rising labor income) is expected to support growth in consumer spending in 2019, and real purchases by federal, state, and local governments are projected to boost real GDP growth. On the other hand, CBO expects slower growth in business fixed investment, which contributed almost one-third of the GDP growth in 2018, as the effects of the 2017 tax act on investment moderate and the growth in demand for goods and services slows.

After 2019, economic growth is expected to slow further, averaging 1.8 percent per year from 2020 through 2023. In CBO's projections, both consumer spending and business fixed investment continue to grow but at rates that are lower, on average, than their respective growth rates since the end of the last recession. Real government purchases are also projected to grow more slowly after 2019.

Consumer Spending. CBO expects modest growth in consumer spending on goods and services to be the primary contributor to the growth of GDP over the remainder of 2019. In the agency's projections, real consumer spending on goods and services grows by 2.3 percent in 2019 (down from 2.6 percent in 2018), contributing 1.6 percentage points to the 2.3 percent growth rate of real GDP this year (see Table 2-4 on page 42). The projected growth in households' real disposable income for the year, at 2.0 percent, is weaker than the growth reported in 2018, when reductions in personal taxes provided a boost.[6]

In CBO's projections, annual growth in consumer spending slows further to an average of 2.0 percent per year from 2020 through 2023. The effects of the 2017 tax act on that growth in consumption are projected to diminish because households will have already increased their spending in response to the step up in their after-tax income. Over that same period, CBO expects higher inflation (resulting in part from an elevated output gap and the increased tariffs on imported goods) to reduce the growth of real household income. That reduction in the growth of real household income, combined with an expected slowdown in the growth of equity and housing wealth, would restrain the growth of household spending. Increases in interest rates after this year are also expected to moderate the expansion of consumer credit.

Business Investment. In CBO's projections, real growth in business fixed investment slows this year, from 5.9 percent in 2018 to 2.2 percent in 2019. Several factors supported strong investment during 2018: increased incentives for investment under the 2017 tax act; accelerated growth of output, stemming in part from the tax act and from legislated increases in federal outlays; greater incentives for oil exploration and development created by higher oil prices; rising stock prices for much of the year, which reduced the cost of capital; and the easing of regulations coupled with a slowdown in new regulatory activity, which boosted businesses' confidence in making investments.

CBO expects many of those factors to diminish or reverse in 2019. Although provisions in the 2017 tax act have continued to increase incentives for investment, that effect is expected to be smaller in 2019 than it was in 2018; as a result, CBO projects growth in investment to drop by more than a percentage point in

6. The revisions to the national income and product accounts published in late July (see Box 2-1 on page 30) showed that growth in real disposable income, including wages and salaries, has been significantly stronger than previously estimated, particularly since 2017. That new evidence, which also includes higher estimates of the personal saving rate, indicates that household finances are healthier than previously thought. Therefore, the risk of weaker consumer spending in the near term is probably smaller than CBO expected when making its projections.

Table 2-3.

CBO's Economic Projections for Calendar Years 2019 to 2029

	Actual, 2018	2019	2020	2021	Annual Average 2022–2023	Annual Average 2024–2029
	Percentage Change From Fourth Quarter to Fourth Quarter					
Gross Domestic Product						
Real[a]	2.5	2.3	2.1	1.8	1.7	1.8
Nominal	4.9	3.9	4.0	3.8	3.7	3.9
Inflation						
PCE price index	1.9	1.8	2.1	2.0	2.1	2.0
Core PCE price index[b]	1.9	1.9	2.2	2.1	2.0	2.0
Consumer price index[c]	2.2	2.2	2.4	2.4	2.5	2.3
Core consumer price index[b]	2.2	2.3	2.6	2.6	2.4	2.3
GDP price index	2.3	1.7	1.9	2.0	2.0	2.0
Employment Cost Index[d]	3.1	3.3	3.6	3.5	3.4	3.2
	Fourth-Quarter Level (Percent)					
Unemployment Rate	3.8	3.7	3.7	4.0	4.6[e]	4.6[f]
	Percentage Change From Year to Year					
Gross Domestic Product						
Real[a]	2.9	2.6	2.1	1.8	1.7	1.8
Nominal	5.4	4.2	4.1	3.8	3.7	3.8
Inflation						
PCE price index	2.1	1.6	2.1	2.1	2.1	2.0
Core PCE price index[b]	1.9	1.7	2.2	2.1	2.0	2.0
Consumer price index[c]	2.4	1.9	2.4	2.5	2.5	2.3
Core consumer price index[b]	2.1	2.2	2.6	2.6	2.4	2.3
GDP price index	2.4	1.7	1.9	2.0	2.0	2.0
Employment Cost Index[d]	3.0	3.2	3.5	3.5	3.4	3.2

Continued

2019 compared with 2018. More moderate GDP growth and a decrease in oil prices, which rose in 2018, both slow the projected growth of business fixed investment in 2019. Higher costs of imported capital goods due to tariffs and businesses' uncertainty about trade policies are also projected to restrain investment this year.

From 2020 through 2023, in CBO's projections, slower GDP growth causes the growth of real business fixed investment to slow further to an average of 2.1 percent per year. In addition, the tax code's treatment of equipment and of research and development becomes less favorable in 2022 and 2023. However, CBO expects tariff rates and businesses' uncertainty about future trade policies to stop increasing by 2020, which would limit one factor restraining the growth of investment in 2019. To the extent that a halt to increases in tariffs reduced businesses' uncertainty about future trade policies, investment growth would no longer be dampened by that factor in later years. In addition, CBO does not expect continued reductions in oil prices after 2021.

Residential Investment. In CBO's projections, real residential investment, which declined in 2018 and is expected to grow moderately in 2019, grows faster than overall GDP in 2020 and 2021. Specifically, real residential investment grows by 1.4 percent in 2019 (after declining by 4.4 percent in 2018) and by an average of 4.7 percent per year in 2020 and 2021 before slowing in 2022 and later years. In CBO's assessment, the decline in residential investment in 2018 resulted in part from provisions in the 2017 tax act that reduced incentives to own homes and from higher mortgage interest rates. The anticipated pickup in growth from 2019 through 2021, by contrast, mainly reflects continued strength

Table 2-3. Continued

CBO's Economic Projections for Calendar Years 2019 to 2029

	Actual, 2018	2019	2020	2021	Annual Average 2022–2023	Annual Average 2024–2029
			Calendar Year Average			
Unemployment Rate (Percent)	3.9	3.7	3.7	3.9	4.4	4.7
Payroll Employment (Monthly change, in thousands)[g]	221	148	100	50	21	46
Interest Rates (Percent)						
Three-month Treasury bills	1.9	2.2	2.1	2.3	2.3	2.5
Ten-year Treasury notes	2.9	2.3	2.2	2.5	2.9	3.1
Tax Bases (Percentage of GDP)						
Wages and salaries	43.0	42.8	43.1	43.4	43.6	43.8
Domestic corporate profits[h]	8.7	8.4	8.5	8.5	8.3	8.1

Sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.

b. Excludes prices for food and energy.

c. The consumer price index for all urban consumers.

d. The employment cost index for wages and salaries of workers in private industry.

e. Value for the fourth quarter of 2023.

f. Value for the fourth quarter of 2029.

g. The average monthly change in the number of employees on nonfarm payrolls, calculated by dividing by 12 the change in payroll employment from the fourth quarter of one calendar year to the fourth quarter of the next.

h. Adjusted to remove distortions in depreciation allowances caused by tax rules and to exclude the effects of changes in prices on the value of inventories.

in household formation, lower mortgage interest rates than in 2018, and further easing of mortgage lending standards.

Government Purchases. If current laws governing federal taxes and spending generally remained in place, real purchases of goods and services by federal, state, and local governments would increase by 2.8 percent in 2019—up from 1.5 percent in 2018—and then by 0.7 percent per year, on average, from 2020 through 2023, CBO estimates.

Those estimates reflect an increase in federal purchases in fiscal years 2020 (which starts in the final quarter of calendar year 2019) and 2021 (which starts in the final quarter of calendar year 2020). Specifically, in CBO's projections, real purchases by the federal government grow by 3.5 percent in 2019 and by 1.8 percent in 2020. CBO's baseline projections for federal purchases beyond fiscal year 2021 incorporate the assumption that discretionary funding will grow at the rate of inflation.[7]

Real purchases by state and local governments are projected to increase by 2.4 percent this year, led by a surge in infrastructure investment. From 2020 through 2023, they are expected to grow by an average of 0.7 percent per year as state and local investment moderates.

Net Exports. Real net exports, which have declined since 2014, are projected to continue falling in 2019 as the growth of both real imports and real exports slows.

7. CBO's projections are made in accordance with provisions set forth in the Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177) and the Congressional Budget and Impoundment Control Act of 1974 (P.L. 93-344). See Chapter 1 for a discussion of the agency's discretionary funding projections.

Table 2-4.

Projected Growth of Real GDP and Its Components

	Actual, 2018	2019	2020	2021	Annual Average 2022–2023	Annual Average 2024–2029
	Projected Growth of Real GDP and Its Components (Percent)					
Real GDP	2.5	2.3	2.1	1.8	1.7	1.8
Components of Real GDP						
Consumer spending[a]	2.6	2.3	1.9	1.9	2.0	2.0
Business investment[b]	9.8	0.5	3.1	1.9	1.5	2.7
Business fixed investment[c]	5.9	2.2	3.2	2.1	1.5	2.7
Residential investment[d]	-4.4	1.4	5.5	4.0	1.7	0.5
Purchases by federal, state, and local governments[e]	1.5	2.8	1.1	0.5	0.6	0.6
Federal	2.7	3.5	1.8	0.1	0.4	0.5
State and local	0.9	2.4	0.7	0.7	0.7	0.6
Exports	0.4	2.1	3.2	2.9	2.8	2.6
Imports	3.2	1.1	3.2	2.4	2.7	2.7
	Contributions to Growth of Real GDP (Percentage points)					
Components of Real GDP						
Consumer spending[a]	1.8	1.6	1.3	1.3	1.4	1.4
Business investment[b]	1.1	0.1	0.4	0.3	0.2	0.4
Business fixed investment[c]	0.8	0.3	0.4	0.3	0.2	0.4
Residential investment[d]	-0.2	0.1	0.2	0.2	0.1	*
Purchases by federal, state, and local governments[e]	0.3	0.5	0.2	0.1	0.1	0.1
Federal	0.2	0.2	0.1	*	*	*
State and local	0.1	0.3	0.1	0.1	0.1	0.1
Exports	*	0.3	0.4	0.4	0.3	0.3
Imports	-0.5	-0.2	-0.5	-0.4	-0.4	-0.4

Source: Congressional Budget Office.

Real values are nominal values that have been adjusted to remove the effects of changes in prices.

Data are annual. Changes are measured from the fourth quarter of one calendar year to the fourth quarter of the next.

GDP = gross domestic product; * = between zero and 0.05 percentage points.

a. Personal consumption expenditures.

b. Business fixed investment and investment in inventories.

c. Purchases of equipment, nonresidential structures, and intellectual property products.

d. The construction of single-family and multifamily structures, manufactured homes, and dormitories; spending on home improvements; and brokers' commissions and other ownership-transfer costs.

e. Based on data from the national income and product accounts.

In CBO's projections, growth of real imports slows in 2019 for two reasons. The first reason is slower growth of domestic consumption and investment, which reduces the demand for imported consumption goods and investment goods. Because that decline in the growth of imports is a direct result of slower growth in domestic purchases, U.S. output growth is unaffected. (In other circumstances, a slowdown in the growth of imports might contribute to stronger GDP growth.)

The second reason import growth is projected to slow in 2019 is tariffs imposed since January 2018 (see Box 2-2 on page 36). In CBO's assessment, those tariffs raised the prices that consumers and businesses pay for imported goods. CBO expects those higher prices to lead to some

reduction in domestic purchases but also to encourage U.S. consumers and businesses to replace the imports subject to the tariffs with domestically sourced goods, boosting domestic output, all else being equal. That substitution explains a small portion of the projected weakness in import growth.

After 2019, growth of real imports is expected to rebound, albeit only slightly, as businesses begin making adjustments to their global supply chains in response to tariffs, increasing imports from unaffected countries. For example, CBO expects some manufacturing to shift from China to other trading partners.

The growth of real exports in 2019 is also expected to be weak relative to historical rates, reflecting slow growth in the economies of major U.S. trading partners, which reduces the demand for U.S. exports, and the strength of the U.S. dollar, which makes U.S. exports less competitive in foreign markets.[8] Moreover, tariffs imposed by some of the United States' trading partners in 2018 are expected to reduce the growth of real exports in the near term by making certain U.S. goods more costly for foreign purchasers. After 2019, the growth of real exports is expected to rebound slightly as the dollar falls, making U.S. exports more competitive.

CBO's projection of real export growth is based partly on the expected pace of economic activity among the United States' leading trading partners. CBO expects growth in those economies to be lower in 2019 than it was in 2017 and 2018. In 2020 and beyond, growth in the economies of the United States' leading trading partners is expected to rebound but remain slow relative to the (trade-weighted) average rates of growth in those economies over the past 20 years. That slow rate of growth abroad is expected to reduce demand for U.S. goods and services and to contribute to slow growth in real U.S. exports relative to average real U.S. export growth over the past 20 years.

Also contributing to CBO's projection of real export growth, the exchange value of the dollar rose substantially during 2018 and is expected to remain relatively high in 2019 and fall only gradually over the following years. The strength of the dollar in 2018 and 2019 can be attributed to a relatively strong U.S. economy, to tighter monetary policy in the United States than in its major trading partners, and to an increase in the demand for dollars resulting from increases in tariff rates. As U.S. economic growth ebbs after 2019, demand for dollar-denominated assets and the value of the dollar are projected to fall slightly.

Potential Output and the Output Gap

In the agency's projections, potential output—a measure of the economy's fundamental capacity to supply goods and services—grows by an average of 2.1 percent per year from 2019 through 2023 (see Figure 2-2). That projected growth is still faster than the average rate of growth since the end of 2007, mostly because of a projected acceleration in the growth of total factor productivity in the nonfarm business sector.[9] However, it is slower than the average rate of growth of potential output since 1950, largely because of the aging of the population.

CBO's estimates imply that the output gap reached a cyclical peak of 0.8 percent of potential GDP earlier this year. Starting in 2020, in CBO's projections, the output gap declines steadily, turning negative in 2022 and reaching its long-run average of –0.5 percent of potential GDP after 2023.

The Labor Market

Strong demand for goods and services over the past several years boosted the demand for labor and caused labor market conditions to strengthen steadily. As of mid-2019, many indicators point to a healthy labor market:

- Growth in employment has maintained a healthy pace. In CBO's estimation, employment reached its potential level by early 2018 and has since risen above it (see Figure 2-3).

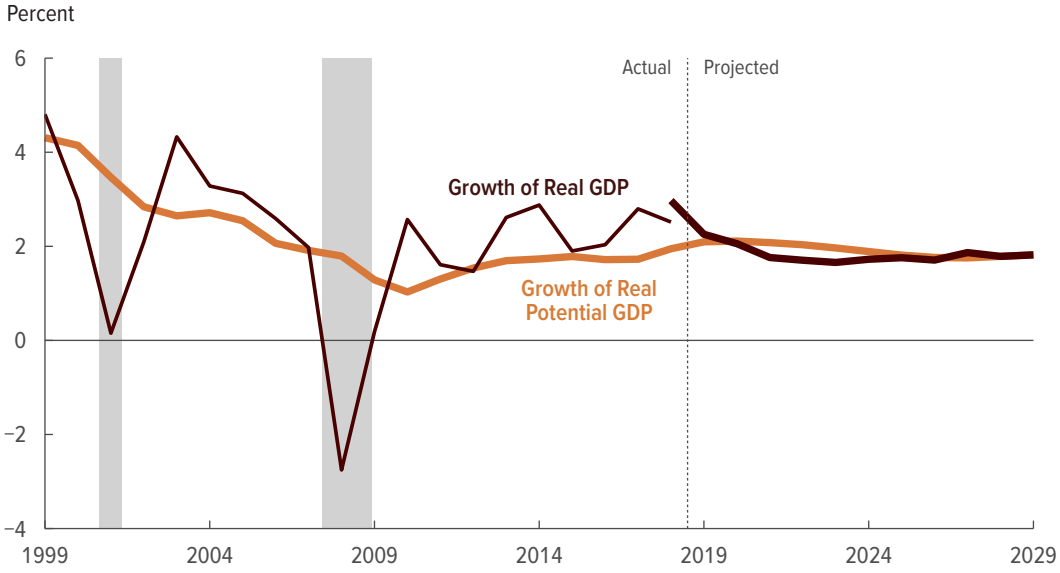
- The labor force participation rate among prime-age workers (those between the ages of 25 and 54) has rebounded since 2015, adding about 1.5 million workers to the labor force and offsetting downward pressure on labor force participation from the retirement of baby boomers (those born between 1945 and 1960).

8. CBO's measure of the exchange value of the dollar is an export-weighted average of the exchange rates between the dollar and the currencies of leading U.S. trading partners.

9. The growth of total factor productivity is the growth of real output that is not explained by the growth of inputs of labor and capital services—the services provided by capital goods that constitute the actual input in the production process.

Figure 2-2.

The Growth of GDP and Potential GDP



In CBO's projections, the growth of real GDP slows over the next few years, largely because of slower growth in consumer spending. The growth of real potential GDP is faster than its average rate since the end of 2007, mostly because of accelerated productivity growth.

Sources: Congressional Budget Office; Bureau of Economic Analysis.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Potential GDP is CBO's estimate of the maximum sustainable output of the economy. The growth of real GDP and of real potential GDP is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

Values for real GDP growth from 1999 to 2018 (the thin line) reflect revisions to the national income and product accounts that the Bureau of Economic Analysis released on July 26, 2019. Values from 2018 to 2029 (the thick line) reflect the data available when the projections were made earlier in July.

GDP = gross domestic product.

- The number of initial claims for unemployment insurance benefits is at its lowest level since the 1970s. The U-6 unemployment rate—which includes not only unemployed workers but also marginally attached workers (those who are not looking for work now but have looked for it in the past 12 months) and workers employed part time for economic reasons—is the lowest it has been since late 2000.[10]

- Wage growth has picked up meaningfully over the past few years, and the gains have been increasingly broad-based, with low-wage earners seeing particularly robust growth in their hourly wages.

Some aspects of the labor market still show signs of slack, supporting an outlook of further job gains. For example, the share of the long-term unemployed (workers who have been out of work for 27 weeks or longer) among all unemployed workers remains elevated relative to its prerecession level.

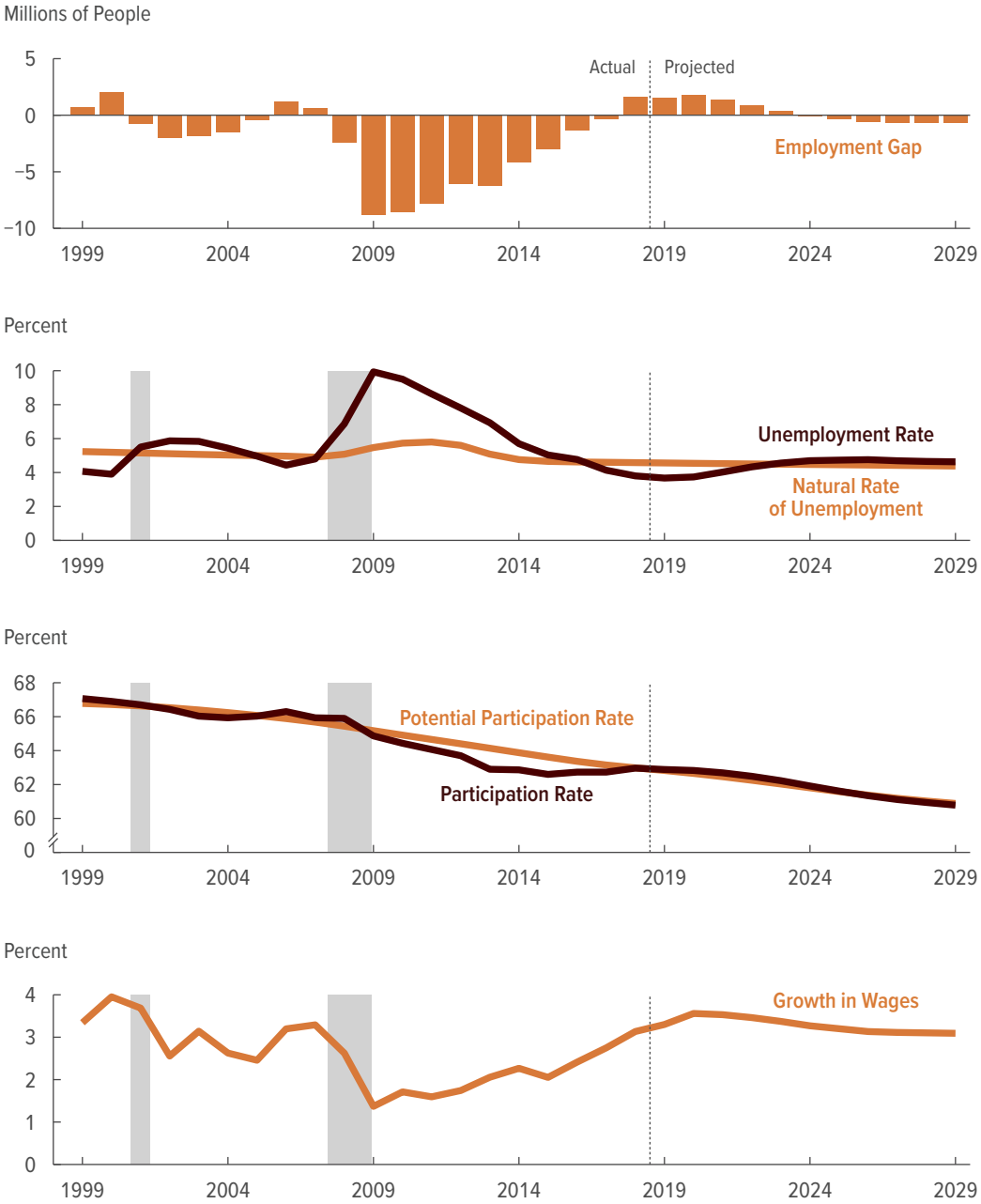
In CBO's projections, the demand for goods and services continues to boost the demand for labor and employment continues to grow, although the pace of that growth slows down, particularly after 2020. As the labor market remains relatively tight (as indicated by employment being above its potential), employers are expected to bid up the price of labor to recruit and retain workers, putting further upward pressure on wages and salaries and other forms of labor compensation in the coming years.

From 2020 to 2023, in CBO's projections, employment remains above its potential level, unemployment remains below its natural rate, and labor force participation

10. The U-6 measure, which is reported by the Bureau of Labor Statistics, is the number of unemployed workers, marginally attached workers, and workers employed part time for economic reasons as a percentage of the labor force plus all marginally attached workers. By contrast, the unemployment rate that is generally reported in the news—the U-3 unemployment rate—is the number of unemployed workers as a percentage of the labor force.

Figure 2-3.

The Labor Market



The employment gap is expected to narrow after 2020 as the growth of output slows. By the end of 2024, employment is projected to fall below its maximum sustainable amount.

The unemployment rate is expected to rise steadily, reaching and surpassing its natural rate of 4.5 percent in 2023 before settling into its long-term trend in later years.

The labor force participation rate is expected to respond more slowly to the projected slowdown in output growth, remaining above its potential for the next five years.

Wage growth is expected to peak in 2020 before slowing thereafter.

Sources: Congressional Budget Office; Bureau of Labor Statistics.

The employment gap is the difference between the number of employed people and the number who would be employed in the absence of fluctuations in the overall demand for goods and services.

The unemployment rate is the number of jobless people who are available for and seeking work, expressed as a percentage of the labor force. The natural unemployment rate is CBO's estimate of the rate of unemployment arising from all sources except fluctuations in the overall demand for goods and services.

The labor force participation rate is the percentage of people in the civilian noninstitutionalized population who are at least 16 years old and either working or seeking work. The potential labor force participation rate is the rate that has been adjusted to exclude the effects of business-cycle fluctuations.

For the labor force participation and unemployment rates, data are fourth-quarter values.

Wages are measured using the employment cost index for wages and salaries of workers in private industry. Growth in wages is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

remains above its potential rate. (The natural rate of unemployment is the rate arising from all sources other than fluctuations in the overall demand for goods and services, including normal job turnover and the structural mismatch between the skills that jobs require and those that job seekers possess.) Over that period, employment growth slows as labor compensation rises and the growth of output moderates.

Employment. Job growth in the first half of 2019 was slower than in 2018 but still relatively strong. Specifically, nonfarm payroll employment grew by an average of 165,000 jobs per month in the first half of 2019, an increase that was below the average of 223,000 jobs gained per month in 2018 but well above the growth of potential nonfarm payroll employment, in CBO's estimation. In CBO's projections, nonfarm payroll employment continues to grow by an average of 116,000 jobs per month in the second half of 2019 and by 100,000 jobs per month in 2020.[11] After 2020, job growth is expected to slow sharply, averaging just 31,000 jobs per month between 2021 and 2023, as labor compensation rises further and output growth slows.

CBO expects employment to remain above its long-run potential level over the entire 2019–2023 period. In CBO's projections, the number of people employed exceeds its potential level by an average of 1.4 million in 2019 and 1.7 million in 2020. After 2020, the gap between employment and its long-run potential starts to narrow as higher wages and slower output growth dampen the demand for labor, causing employment to grow more slowly than its potential.

Unemployment. After a temporary uptick in the first quarter of 2019—owing largely to the five-week partial shutdown of the federal government that ended on January 25 and to slightly above-trend labor force participation—the unemployment rate resumed its downward trend in the second quarter of this year. As of July 2019, it stands at 3.7 percent, near its lowest point since the 1960s and about a percentage point below the agency's estimate of the natural rate of unemployment.

One reason for the relatively low unemployment rate is a decline in the natural rate of unemployment. In CBO's estimation, the natural rate of unemployment has fallen from more than 6.0 percent in the early 1980s to 4.6 percent now. That decline has occurred because the workforce has shifted toward older workers, who tend to have lower unemployment rates, and away from less-educated workers, who tend to have higher unemployment rates. Because the natural rate of unemployment has fallen, the cyclical strength of the current labor market—and the amount of inflationary pressure it implies—is less pronounced than the historically low unemployment rate would otherwise suggest.

In CBO's projections, the unemployment rate remains low—around 3.7 percent—for the rest of this year and next year. After 2020, as economic growth slows further, the unemployment rate is expected to rise steadily, reaching and surpassing its natural rate of 4.5 percent in 2023 before settling into its long-term trend (roughly a quarter of a percentage point higher than the natural rate) in later years.

Labor Force Participation. The labor force participation rate, which has hovered around 62.8 percent since 2014, remains close to that rate through the next year or so, in CBO's projections. That continued stability reflects the balancing of two opposing forces: sustained economic growth, which encourages additional workers to enter and existing workers to stay in the labor force, and long-run shifts in demographics (particularly the aging of the population), which have led to a downward trend in the potential labor force participation rate. (In CBO's estimation, the potential labor force participation rate fell from 64.0 percent in 2014 to 63.0 percent in 2018.) Because the actual rate of labor force participation has been stable while the potential rate has continued to fall, the gap between the two rates has narrowed steadily in recent years. In CBO's projections, that gap closes this year and then turns positive in subsequent years because of continued strength in overall demand.

Starting in 2021, as the pace of economic growth drops below the growth of potential output, downward pressure from demographic shifts is expected to dominate, pushing down the labor force participation rate. In CBO's projections, the labor force participation rate falls from 62.9 percent in 2020 to 62.3 percent by 2023, in line with its potential rate, which falls from 62.7 percent to 62.1 percent during that period. Driven by the decline of labor force participation, the share of employed workers in the civilian noninstitutionalized population

11. Part of the strength in nonfarm payroll growth in 2020 is associated with the temporary increase in federal employees needed to conduct the 2020 Census.

also falls, from 60.6 percent in 2019 and 60.5 percent in 2020 to 59.4 percent by the end of 2023.

Labor Compensation. Wage growth has accelerated in the past year or so. As the labor market remains relatively strong, employers are expected to bid up the price of labor to recruit and retain workers, putting further upward pressure on wages and salaries and other forms of labor compensation in the coming years.

In CBO's projections, the annual increase in the employment cost index for wages and salaries of workers in private industry is 3.3 percent in 2019, 3.6 percent in 2020, and 3.5 percent from 2021 to 2023—slightly greater than its 3.1 percent pace in 2018 and considerably greater than the 2.0 percent average from 2009 to 2017. Other measures of labor compensation, such as the average hourly earnings of production and nonsupervisory workers in private industry, are also expected to grow more rapidly than in recent years. The faster pace of wage growth is expected to restrain the demand for labor, slowing the pace of wage growth in later years.

In addition to accelerated growth in overall measures of wages, data from surveys show that recent gains in hourly wages have become increasingly broad-based. For low-wage earners in particular, wage growth has been especially strong since late 2016. That development is consistent with historical experience, which indicates that further strengthening of an already strong labor market tends to confer extra benefits—in terms of higher wages and more opportunities for employment—to people in lower income groups.[12] (Another factor that may have contributed to wage growth among low-wage earners is recent increases in minimum wages at the state and local level.) Strong and more broad-based wage growth supports a healthy outlook for consumption and output growth.

Inflation and Interest Rates

The growth rate of the price index for personal consumption expenditures—the measure that the Federal Reserve uses to define its 2 percent long-run objective for inflation—slipped below that objective in late 2018 and early 2019. The traditional measure of core PCE price inflation, which excludes food and energy prices because they tend to be volatile, also fell below 2 percent.

Many analysts have been surprised that core inflation has remained below the Federal Reserve's long-run objective despite a strong labor market. The strength in the labor market has raised wage growth, but that higher wage growth has not led to higher inflation. However, evidence suggests that the recent decline in the traditional measure of core inflation is probably the result of temporary factors. Alternative measures of core inflation that are designed to eliminate the effects of short-lived factors (other than food and energy prices) remain close to 2 percent.[13] CBO expects the effects of those factors to wear off over the remainder of the year.

In response, at least in part, to muted inflationary pressures and to increased risks to U.S. economic growth stemming from international trade tensions and slower foreign economic growth, the Federal Reserve reduced the target range for the federal funds rate in late July. CBO expects the Federal Reserve to raise the target range late next year as inflationary pressures and foreign growth pick up.

Over the next few years, a number of factors are expected to continue putting upward pressure on prices and wages. Those factors include the recent reduction in the federal funds rate, continued tight labor market conditions, and—particularly in 2019 and 2020—tariffs. On balance, in CBO's estimation, tariffs increase the core PCE price index by 0.3 percent from the beginning of 2018 to the end of 2020. That effect on prices is expected to be somewhat drawn out as businesses respond to recently imposed tariffs only gradually, in part because of uncertainty about future changes in trade policies.

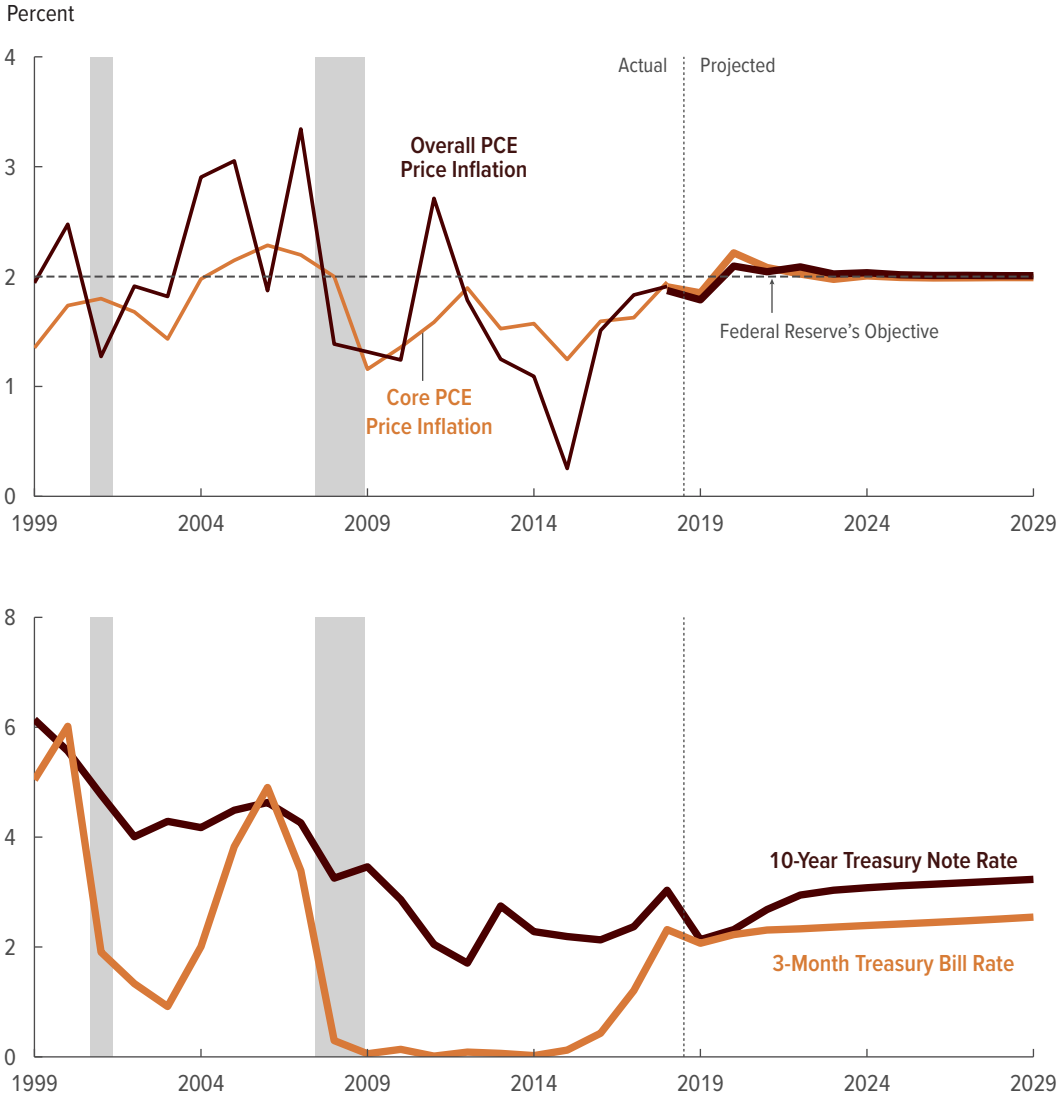
In CBO's projections, growth in the core PCE price index rises from 1.9 percent in 2019 to 2.2 percent in 2020 (see Figure 2-4). The core consumer price index for urban households (CPI-U), which tends to grow faster than the PCE price index, rises by 2.3 percent in 2019 and 2.6 percent in 2020. The agency expects the

12. For example, see Arthur Okun, "Upward Mobility in a High-Pressure Economy," *Brookings Papers on Economic Activity* (Spring 1973), https://tinyurl.com/y4h7fvtz. For a more recent study, see Stephanie Aaronson and others, "Okun Revisited: Who Benefits Most From a Strong Economy?" *Brookings Papers on Economic Activity* (Spring 2019), https://tinyurl.com/yyd6zjn9.

13. For an assessment of the relative strengths of such measures, see Jim Dolmas and Evan F. Koenig, *Two Measures of Core Inflation: A Comparison*, Working Paper 1903 (Federal Reserve Bank of Dallas, February 2019), www.dallasfed.org/research/papers/2019/wp1903.

Figure 2-4.

Inflation and Interest Rates



In CBO's projections, a number of factors, including strong labor market conditions, cause growth in the core PCE price index to rise from 1.9 percent in 2019 to 2.2 percent in 2020.

CBO expects both short-term and long-term interest rates to remain near their current levels through most of 2020 and then to rise gradually as inflation stabilizes at 2 percent—the Federal Reserve's long-run objective.

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

The overall inflation rate is based on the price index for personal consumption expenditures; the core rate excludes prices for food and energy.

Values for inflation from 1999 to 2018 (the thin lines in the top panel) reflect revisions to the national income and product accounts that the Bureau of Economic Analysis released on July 26, 2019. Values from 2018 to 2029 (the thick lines) reflect the data available when the projections were made earlier in July.

Inflation is measured from the fourth quarter of one calendar year to the fourth quarter of the next.

For interest rates, data are fourth-quarter values.

Federal Reserve to increase its target range for the federal funds rate late in 2020 partly in response to a pickup in inflation during that year, thereby putting downward pressure on inflation in later years; for that reason, in CBO's projections, core PCE inflation stabilizes at about 2.0 percent after 2020. CBO expects the average federal funds rate to rise from 2.2 percent in 2020 to 2.5 percent by the end of 2023.

The interest rate on 3-month Treasury bills is expected to fall slightly in the second half of 2019, partly in response to the reduction of the federal funds rate and partly in

response to a deceleration in economic growth. In CBO's projections, the interest rate on 3-month Treasury bills falls from 2.3 percent in the first half of 2019 to 2.1 percent by the end of the year. CBO expects short-term interest rates to remain at their current levels through most of 2020 and then to rise again as foreign economic growth improves and the Federal Reserve raises rates at the end of next year. The interest rate on 3-month Treasury bills is projected to rise to 2.4 percent by the end of 2023.

CBO expects long-term interest rates to remain near their current levels through early 2020 and then to rise for several reasons. First, long-term interest rates reflect investors' expectations about short-term interest rates. Second, CBO expects the term premium (the premium paid to bondholders for the extra risk associated with holding longer-term bonds) to increase over the next few years as a number of factors that have recently pushed it to historically low levels dissipate. Two such factors are investors' heightened concerns about relatively weak global economic growth and the increased demand for long-term bonds as a hedge against unexpectedly low inflation.

In CBO's projections, as foreign economic growth improves and the rate of inflation reaches the Federal Reserve's 2 percent long-run objective, investors' demand for long-term bonds weakens slightly, putting upward pressure on long-term interest rates. CBO also expects faster foreign growth to put upward pressure on the interest rates on foreign governments' debt. (Many of those interest rates were negative during the first half of 2019.) That would lessen the demand for, and therefore push up the interest rates on, U.S. Treasury securities. The interest rate on 10-year Treasury notes is projected to rise to 3.0 percent by the end of 2023.

The Economic Outlook for 2024 to 2029

CBO's projections of the economy for 2024 through 2029 are based mainly on its projections of underlying trends in key variables, such as the size of the labor force, the average number of labor hours per worker, capital investment, and productivity.[14] In addition, CBO considers how the federal tax and spending policies—as well as trade and other public policies—embodied in current law would affect those variables.

In some cases, policies might be projected not only to affect potential output but also to influence overall demand for goods and services, causing the gap between actual output and potential output to change. For example, the expiration of temporary provisions in current law—including the expiration of most of the provisions affecting individual income taxes at the end of 2025 and the phaseout of bonus depreciation by the end of 2026—is projected to slow real GDP growth and to lower real GDP in relation to its potential in those years.

Potential Output and Actual Output

In CBO's projections, potential output grows at an average rate of 1.8 percent per year over the 2024–2029 period, driven by average annual growth of about 0.4 percent in the potential labor force and about 1.4 percent in potential labor force productivity (see Table 2-5). That annual 1.8 percent growth of potential output is nearly one-quarter of a percentage point slower than the expected growth of more than 2.0 percent per year from 2019 to 2023. About two-fifths of that slowdown results from slower growth of the potential labor force; the remaining three-fifths results from slower growth in potential labor force productivity.

The slowdown in growth is expected to be slightly more pronounced in the nonfarm business sector, which produces roughly three-quarters of domestic output, than in other sectors of the economy. Annual growth of potential output in that sector is projected to slow by about a quarter of a percentage point, from more than 2.3 percent over the 2019–2023 period to about 2.1 percent over the 2024–2029 period. The contribution to potential output growth from potential hours worked falls from nearly 0.4 percentage points per year, on average, in the first half of the projection period to 0.2 percentage points in the second half. The contribution from capital services drops from an average of more than 0.9 percentage points per year to about 0.7 percentage points. (By itself, that reduction would lead to slower growth in labor force productivity.)

The slower growth of potential hours worked and capital services reflects underlying long-run trends—such as the aging of the population and other demographic shifts—as well as the expiration of temporary tax provisions under current law. (Changes in trade policies are

14. See Robert Shackleton, *Estimating and Projecting Potential Output Using CBO's Forecasting Growth Model*, Working Paper 2018-03 (Congressional Budget Office, February 2018), www.cbo.gov/publication/53558.

Table 2-5.

Key Inputs in CBO's Projections of Real Potential GDP

Percent

	Average Annual Growth							Projected Average Annual Growth		
	1950–1973	1974–1981	1982–1990	1991–2001	2002–2007	2008–2018	Total, 1950–2018	2019–2023	2024–2029	Total, 2019–2029
Overall Economy										
Real Potential GDP	4.0	3.2	3.4	3.2	2.5	1.6	3.2	2.1	1.8	1.9
Potential Labor Force	1.6	2.5	1.6	1.2	1.0	0.6	1.4	0.5	0.4	0.4
Potential Labor Force Productivity[a]	2.4	0.6	1.7	2.0	1.5	1.0	1.7	1.6	1.4	1.5
Nonfarm Business Sector										
Real Potential Output	4.1	3.5	3.6	3.6	2.8	1.8	3.4	2.4	2.1	2.2
Potential Hours Worked	1.4	2.3	1.8	1.2	0.4	0.5	1.3	0.6	0.3	0.4
Capital Services[b]	3.7	3.8	3.5	3.8	2.9	2.3	3.4	2.7	2.2	2.4
Potential Total Factor Productivity[c]	1.9	1.0	1.3	1.5	1.6	0.7	1.4	1.0	1.1	1.1
Contributions to the Growth of Real Potential Output (Percentage points)										
Potential hours worked	1.0	1.6	1.2	0.8	0.2	0.3	0.9	0.4	0.2	0.3
Capital input	1.2	0.9	1.1	1.3	0.9	0.8	1.1	1.0	0.7	0.8
Potential total factor productivity	1.9	1.0	1.3	1.5	1.6	0.7	1.4	1.0	1.1	1.1
Total Contributions	4.0	3.5	3.6	3.6	2.8	1.8	3.4	2.4	2.1	2.2
Potential Labor Productivity[d]	2.7	1.2	1.8	2.3	2.4	1.3	2.1	1.8	1.8	1.8

Source: Congressional Budget Office.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Potential GDP is CBO's estimate of the maximum sustainable output of the economy.

The table shows average annual growth rates over the specified periods, calculated using calendar year data.

GDP = gross domestic product.

a. The ratio of potential GDP to the potential labor force.

b. The services provided by capital goods (such as computers and other equipment) that constitute the actual input in the production process.

c. The average real output per unit of combined labor and capital services, excluding the effects of business cycles.

d. The ratio of potential output to potential hours worked in the nonfarm business sector.

expected to have a small negative effect on potential output in the long run, although considerable uncertainty surrounds that assessment. See Box 2-2 on page 36 for more details.)

Unlike the growth of potential hours worked and capital services, the annual growth of potential total factor productivity (the average real output per unit of combined labor and capital services, excluding the effects of business cycles) in the nonfarm business sector accelerates in CBO's forecast, from slightly more than 1.0 percent in the first half of the projection period to over 1.1 percent in the second half. That acceleration somewhat offsets the slowdown in the growth of other inputs to production. The increase in potential total factor productivity growth also plays a key role in making potential output grow faster than its estimated average rate of nearly 1.6 percent per year since 2007, when the last recession began.

Typically, in CBO's forecasts, the growth of actual output and the growth of potential output converge in the second half of the 11-year projection period, and the level of actual output stays about 0.5 percent below that of potential output, which is consistent with the

long-term relationship between the two measures.[15] However, that convergence is interrupted in the current forecast because the expiration of temporary provisions of the 2017 tax act not only diminishes the growth of potential output by reducing the supply of labor but also temporarily slows the growth of overall demand.

As a consequence, actual output temporarily falls relative to potential output. It then rises until the relationship between actual and potential output reaches its long-run average in the final years of the projection period. Correspondingly, the average growth of actual output during the 2024–2029 period is close to, but slightly slower than, that of potential output.

The Labor Market

CBO expects the natural rate of unemployment to decline slowly over the next decade, from 4.6 percent in 2019 to 4.4 percent by 2029. That slow decline reflects the continuing shift in the composition of the workforce toward older workers, who tend to have lower rates of unemployment (when they participate in the labor force), and away from less-educated workers, who tend to have higher ones.

In CBO's projections, the unemployment rate reaches 4.7 percent in 2024, and the difference between the unemployment rate and the natural rate reaches its long-term average of about 0.25 percentage points in 2025.[16] As the natural rate of unemployment declines slowly from 2024 to 2029, the unemployment rate also falls, except in 2025 and 2026, when it rises slightly. That temporary increase occurs because the slowdown in the growth of demand for goods and services caused by the expiration of certain provisions of the 2017 tax act also slows the growth in the demand for labor. The projected unemployment rate is 4.6 percent in 2029, slightly below its level of 4.7 percent in 2024.

CBO expects the labor force participation rate to follow its long-term trend and fall to about 61 percent by 2029, roughly a percentage point below the agency's projection for 2024. CBO attributes most of the decline from 2024 to 2029 to the aging of the population (because older people tend to participate less in the labor force than younger people do).[17]

The growth in employment and wages is projected to be moderate over the 2024–2029 period. In particular, nonfarm payroll employment increases by an average of 46,000 jobs per month during those years, in CBO's projections. The employment-to-population ratio (the share of employed workers as a percentage of the civilian noninstitutionalized population) falls from 59.1 percent in 2024 to 58.0 percent in 2029, primarily reflecting the decline in potential labor force participation. Real compensation per hour in the nonfarm business sector, a measure of labor costs that is a useful gauge of longer-term trends, grows at an average annual rate of 1.9 percent from 2024 to 2029—the same rate as projected growth in labor productivity in that sector.

Inflation and Interest Rates

Between 2024 and 2029, in CBO's forecast, the overall and core PCE price indexes increase by an average of 2.0 percent per year, which is in line with the Federal Reserve's long-run objective for inflation. Inflation in the overall and core CPI-U measures averages 2.3 percent annually in those years. Those projections reflect the historical difference between the growth rates of the PCE price indexes and CPI-U measures.

CBO projects that the interest rates on 3-month Treasury bills and 10-year Treasury notes will average 2.5 percent and 3.1 percent, respectively, over the 2024–2029 period. Those projected rates are below the securities' average rates from 1990 to 2007, a period that CBO uses for comparison because expectations about inflation during that time were fairly stable and there were no significant financial crises or severe economic downturns.

In CBO's analysis, a number of factors act to push interest rates on Treasury securities below their averages from 1990 to 2007: lower average inflation, slower growth of the labor force (which reduces the return on capital), slightly slower growth of productivity (which

15. See Congressional Budget Office, *Why CBO Projects That Actual Output Will Be Below Potential Output on Average* (February 2015), www.cbo.gov/publication/49890. Actual output is below potential output, on average, in the latter part of the projection period so that inputs to the budget projections (such as income and interest rates) are consistent with historical averages.

16. That projected gap is consistent with the long-term relationship between actual GDP and potential GDP.

17. See Joshua Montes, *CBO's Projections of Labor Force Participation Rates*, Working Paper 2018-04 (Congressional Budget Office, March 2018), www.cbo.gov/publication/53616.

also reduces the return on capital), a greater share of total income among high-income households (which tends to increase saving), and a higher risk premium on risky assets (which increases the relative demand for risk-free Treasury securities, boosting their prices and thereby lowering their interest rates). Other factors offset some of that downward pressure on interest rates: a larger amount of federal debt as a percentage of GDP; smaller net inflows of capital from other countries as a percentage of GDP (which reduce the supply of funds available for borrowing); and a higher share of income going to the owners of capital (which increases the return on capital assets with which Treasury securities compete, reducing the demand for those securities). On balance, interest rates on Treasury securities are projected to be lower, on average, over the 2024–2029 period than they were between 1990 and 2007.

Nevertheless, interest rates are projected to rise over the 2024–2029 period. In particular, rising federal debt in relation to GDP and an improving global economy are projected to exert upward pressure on short- and long-term interest rates. CBO expects the federal funds rate to rise from 2.5 percent in 2024 to 2.7 percent in 2029. Similarly, the rates for 3-month Treasury bills and 10-year Treasury notes are expected to rise from 2.4 percent and 3.1 percent to 2.5 percent and 3.2 percent, respectively, over that period. CBO expects the term premium on long-term bonds to increase slightly over that period as global economic growth continues to improve and the risk of unexpectedly low inflation continues to diminish.

Projections of Income for 2019 to 2029

Economic activity and federal tax revenues depend not only on the amount of total income in the economy but also on how that income is divided among labor income, domestic profits, proprietors' income, income from interest and dividends, and other categories. (Labor income includes wages and salaries as well as other forms of compensation, such as employer-paid benefits and a fraction of proprietors' income.) The shares for wages and salaries and for domestic profits are of particular importance for projecting federal revenues because those types of income are taxed at higher rates than others.

Labor income as a share of GDP fell from 58.6 percent in 2008 to 57.1 percent in 2010 but rebounded to 57.8 percent in 2017. CBO expects labor income as a share of GDP to continue its recovery over the entire projection period, consistent with the agency's forecasts for employment and compensation, and to ultimately reach 58.5 percent by the end of 2029 (see Figure 2-5). In particular, wages and salaries are expected to grow more quickly than other kinds of income throughout the 11-year projection period; their share of total income rises from 43.2 percent of GDP in 2018 to 43.8 percent in 2029 in CBO's projections.

Longer-term factors have depressed labor income as a share of GDP, however, and CBO expects those factors to continue to have an influence. Since the early 2000s, labor income as a share of GDP has fallen below 60.4 percent—its average between 1947 and 2000. In CBO's assessment, factors contributing to that decline include technological change, which may have increased returns to capital more than it has increased returns to labor, and globalization, which has increased international competition in goods-producing industries, putting downward pressure on workers' compensation.[18] Some income has also gone toward the returns on intangible capital, such as brand identity arising from advertising, which may have reduced the share of income that has gone toward labor.[19] Increased market power might also have allowed some firms to raise their prices relative to their labor costs, possibly reflecting the rise in many industries of "superstar" firms with higher efficiency and hence lower costs than their competitors.[20] The relative importance and persistence of the factors that have depressed labor income as a share of GDP remain unclear, but some of them are expected to persist.

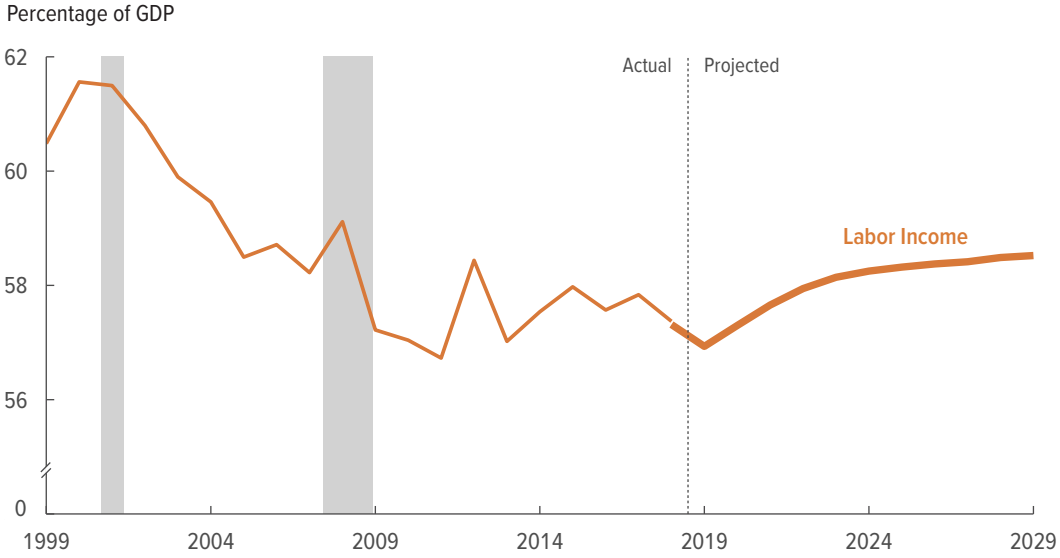
18. The role of technological change has been examined by some economists who investigated the role of information technology in lowering the cost of capital goods, which may have induced firms to shift away from the use of labor toward the use of capital. See, for example, Loukas Karabarbounis and Brent Neiman, "The Global Decline of the Labor Share," *Quarterly Journal of Economics*, vol. 129, no.1 (October 2013), pp. 61–103, https://bit.ly/2SHF5SH. The role of globalization was examined by Michael Elsby, Bart Hobijn, and Aysegul Sahin, "The Decline of the U.S. Labor Share," *Brookings Papers on Economic Activity* (Fall 2013), https://brook.gs/2VCVbyx.

19. For a discussion about determining the value of intangible assets, see Congressional Budget Office, *How Taxes Affect the Incentive to Invest in New Intangible Assets* (November 2018), www.cbo.gov/publication/54648.

20. On the rise in market power, see Jan De Loecker and Jan Eeckhout, *The Rise of Market Power and the Macroeconomic Implications*, Working Paper 23687 (National Bureau of Economic Research, August 2017), www.nber.org/papers/w23687. On the rise of superstar firms, see David Autor and others, *The Fall of the Labor Share and the Rise of Superstar Firms*, Working Paper 23396 (National Bureau of Economic Research, May 2017), www.nber.org/papers/w23396.

Figure 2-5.

Labor Income



CBO expects labor income as a share of GDP to rise over the projection period, consistent with the agency's forecasts for employment and compensation. However, that share is not expected to reach previous historical averages.

Sources: Congressional Budget Office; Bureau of Economic Analysis.

Labor income is the sum of employees' compensation and CBO's estimate of proprietors' income that is attributable to labor.

Values for labor income from 1999 to 2018 (the thin line) reflect revisions to the national income and product accounts that the Bureau of Economic Analysis released on July 26, 2019. Values from 2018 to 2029 (the thick line) reflect the data available when the projections were made earlier in July.

Data are fourth-quarter values.

GDP = gross domestic product.

As a result, CBO does not expect that share to reach its previous historical average.

Domestic corporate profits as a share of GDP average 8.3 percent over the projection period, falling about 0.3 percentage points in the early years to reach 8.1 percent in 2026 and thereafter. That decline mostly reflects the projected rise in wages and salaries, but it also reflects an increase in corporate interest payments stemming from rising interest rates.

Some Uncertainties in the Economic Outlook

Significant uncertainty surrounds CBO's economic forecast, which the agency constructed to be the average of the distribution of possible outcomes if, through 2029, the federal policies embodied in current law were generally unchanged and the trade policies in effect when CBO completed its projections remained in place. If federal fiscal policies or trade policies changed, then economic outcomes would probably differ from CBO's economic projections.

Even if no changes were made to federal fiscal policies or trade policies, economic outcomes would still probably differ from CBO's projections because of non-policy-related factors. Some uncertainty surrounds fundamental aspects of the economy (such as underlying trends in productivity and labor force growth), and some uncertainty surrounds households' and businesses' responses to policies under current law. Changes to trade policies since January 2018 and the prospect of further changes compound that uncertainty because it is particularly difficult to project how businesses will alter their investment activity or adjust their global supply chains in response.

Uncertainties for 2019 to 2023

Many developments—such as unexpected changes in the labor market, business confidence, the housing market, and international conditions—could cause economic

growth and other variables to differ considerably from CBO's projections. In the agency's view, CBO's economic forecast balances the risks of those potential developments, on average, over the 2019–2023 period, so that outcomes could differ from the forecast in either direction.

On the one hand, the agency's current forecast of employment and output for the near term may be too pessimistic. For example, data on employment through the first half of 2019 show that hiring remains strong; moreover, many newly hired workers were previously not classified as being in the labor force, so the labor force participation rate has increased without an increase in the unemployment rate. Moreover, although wage growth has accelerated, inflation remains relatively low. If the combination of strong hiring, robust wage growth, and subdued inflation continued longer than in CBO's projections, real income and household consumption would increase by more than CBO expects.

On the other hand, CBO's forecast for 2019 through 2023 may be too optimistic. A number of international factors pose significant risks to CBO's economic outlook over the next five years. For instance, a disorderly exit of the United Kingdom from the European Union or a government debt crisis in Europe could weaken the U.S. economic outlook by disrupting the international financial system, interfering with international trade, and weakening domestic business and consumer confidence. Slower growth in China—relating to the ongoing trade disputes with the United States and other issues within the country—could worsen China's credit markets, sparking even larger declines in the demand for U.S. exports.

Recent actions related to U.S. trade policy, particularly increases in tariffs, create further uncertainty about the current economic outlook. Because broad tariff increases in developed economies have been rare in recent history, existing empirical research sheds little light on how businesses and consumers in the United States and its trading-partner countries might respond.

Changes in trade policies have increased the risks associated with investments made by U.S. exporters and businesses that rely heavily on imported goods. To make investment decisions, businesses need to predict how trade policies might change in the future and how those changes will affect the cost of production and demand for their products in the United States and abroad. Uncertainty stemming from the possibility of additional changes in trade policies makes it difficult for businesses to plan long-term investments and may cause them to postpone or reduce their investments. Because there is little recent evidence on how businesses react to uncertainty about future barriers to trade, CBO's projections of those reactions are inherently uncertain. (See Box 2-2 on page 36 for details on how changes in trade policies affect the economy.)

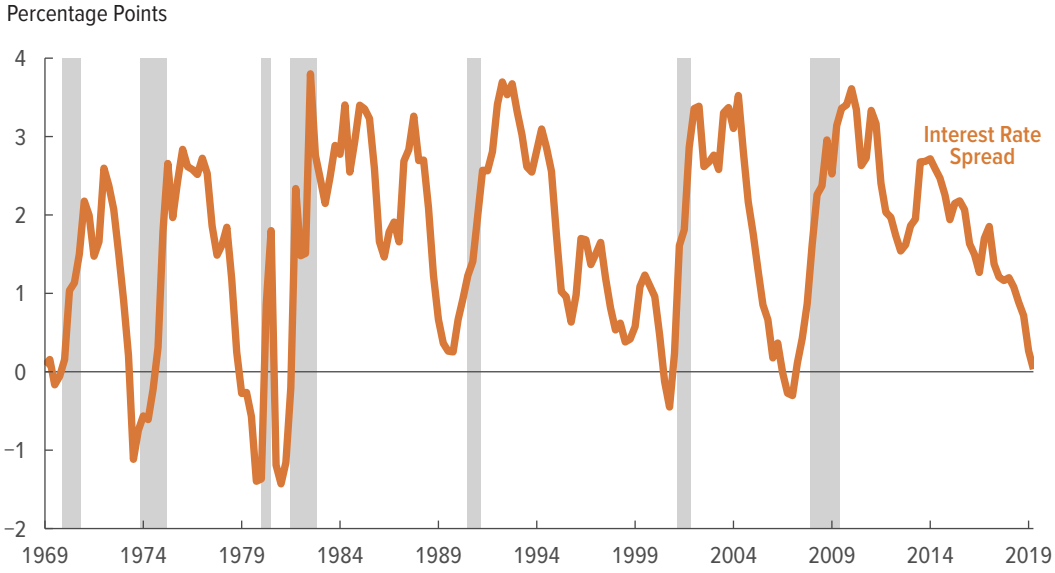
CBO's projections of the economic effects of those trade-policy changes may prove too pessimistic. If the tariffs facilitated new trade agreements that lowered trade barriers between the U.S. and its trading partners, domestic inflation would probably decline, trade flows and investment would rise, and GDP growth would be faster than projected. If those agreements also established stronger protections for intellectual property among U.S. trading partners, U.S. corporate profits and investment in research would probably increase. In addition, if the cost increases associated with the tariffs turned out to be smaller than expected or if trade tensions eased, then domestic inflation would be lower and the tariffs' negative effect on trade and GDP growth would be less than CBO currently projects.

Conversely, CBO's projections of the economic effects of changes in trade policies may be too optimistic. If businesses were less able to absorb the cost increases and therefore had to pass a greater share of them on to consumers, then domestic inflation would be higher and the negative effect on trade and GDP growth would be greater than CBO currently projects. If trade barriers rose further, domestic investment and output would probably be weaker than projected.

The outlook for monetary policy and interest rates is also uncertain, particularly in light of unexpectedly low inflation and interest rates. If the factors holding inflation below the Federal Reserve's 2 percent long-run objective were more persistent than expected, or if expectations about future inflation were to decline, then the Federal Reserve would probably respond by lowering its target range for the federal funds rate further and keeping it lower for longer than expected. Consequently, short- and long-term interest rates would probably be lower than in CBO's projections. Conversely, a sudden jump in inflation would probably prompt the Federal Reserve to increase the target range for the federal funds rate sooner

Figure 2-6.

The Spread Between Long-Term and Short-Term Interest Rates



The spread between long-term and short-term interest rates on Treasury securities is near zero, probably in part because of market participants' concerns about weak future economic growth.

Sources: Congressional Budget Office; Federal Reserve.

The interest rate spread is defined as the 10-year Treasury note rate minus the 3-month Treasury bill rate.

Data are quarterly values.

than CBO currently expects, causing short- and long-term interest rates to be higher than projected.

Over the next few years, in CBO's projections, economic growth moderates but remains positive as actual GDP moves closer to its potential. But there have been some recent signs of elevated short-run risks to the economy. For example, the spread between long-term and short-term interest rates on Treasury securities is near zero, which probably reflects market participants' concerns about weakness in future economic growth, among other factors (see Figure 2-6). The current baseline projections account for such indicators, reflecting the agency's consideration of the risks and effects of possible recessions in both the near and the long term.

In particular, in CBO's assessment, there is a significant chance that output growth will be slower than projected in the near term, and that assessment includes the possibility of a recession over the next few years. However, there is also a significant chance that output growth will be faster than projected. The agency has constructed its baseline projection of economic growth in the near term to reflect the average of those possible outcomes.

Uncertainties for 2024 to 2029

Recent and prospective policy changes, as well as non-policy-related factors, add to the uncertainty in the economic outlook for the later years in CBO's projection period. The scheduled expiration of key provisions of the 2017 tax act is one source of such uncertainty. Individuals and businesses could respond more (or less) to those changes than CBO anticipates, resulting in slower (or faster) economic growth after 2024 than the agency forecasts.

If federal debt as a percentage of GDP continued to rise at the pace that CBO projects it would under current law, that debt path would ultimately pose significant risks to the fiscal and economic outlook, although those risks are not currently apparent in financial markets. In particular, that path would increase the risk of a fiscal crisis in which the interest rate on federal debt rose abruptly because investors lost confidence in the U.S. government's fiscal position. It would also increase the likelihood of less abrupt, but still significant, negative economic and financial effects, such as expectations of higher inflation and more difficulty financing public and private activity in international markets.

Other policy-related factors include recent shifts toward deregulation and a looser regulatory environment, which are expected to boost investment in the near term and thus potential output in the long term. For instance, a shift toward deregulation in the energy sector has resulted in the approval of pipeline applications that had been pending and increased access to oil and gas exploration in the Gulf of Mexico. Similarly, prohibitions against drilling for oil and gas in the Arctic National Wildlife Refuge have been eliminated. If the effects of deregulation are greater (or less) than CBO expects, then economic growth could be stronger (or weaker) than projected.

How businesses respond to changes in trade policies could also affect CBO's longer-term projections through effects on business investment and potential output. If businesses concluded that the recent escalation of trade tensions had subsided or if trade policies otherwise stopped weighing on investment activity, then business investment, and thus potential output, would be higher than CBO projects. If, however, businesses felt that trade tensions were escalating, then their uncertainty about future barriers to trade would probably increase, and investment, and thus potential output, would be lower than projected.

Economic growth in the later years of the projection period could also be faster or slower than CBO projects for reasons unrelated to policy. If, for example, the labor force grew more quickly than expected—say, because older workers chose to stay in the labor force longer or immigration was greater than anticipated—the economy could grow more quickly than projected.[21] By contrast, if the growth of labor productivity did not exceed its average pace since the end of the 2007–2009 recession, as it does in CBO's projections, the growth of GDP might be weaker than the agency projects.

Further, substantial uncertainty exists about the growth of overall total factor productivity and related prospects for long-run growth. If growth of total factor productivity remained close to its estimated trend since the end of the last recession, about 0.7 percent per year, annual growth of output would be about 0.3 percentage points slower than CBO projects. Conversely, if it returned to its more rapid longer-run average rate of growth, annual growth of output would be about one-quarter of a percentage point faster.

Estimates of the long-run neutral rate of interest—the rate at which inflation is stable and monetary policy is neither boosting nor constraining economic growth—underpin CBO's projection of interest rates in the latter years of the projection period. Those estimates are highly uncertain. A higher or lower rate would imply higher- or lower-than-projected short- and long-term interest rates. Forecasts of the term premium, which affects long-term interest rates, are also highly uncertain. For reasons detailed above, CBO expects the term premium to rise from its current historically low level but to remain lower than its level over the previous three decades. A higher or lower term premium would imply higher or lower long-term interest rates than CBO projects.

CBO expects little change in income inequality over the projection period. However, unexpectedly strong and persistent income gains at the bottom or the top of the income distribution could cause income inequality to increase or decline by more than CBO projects.

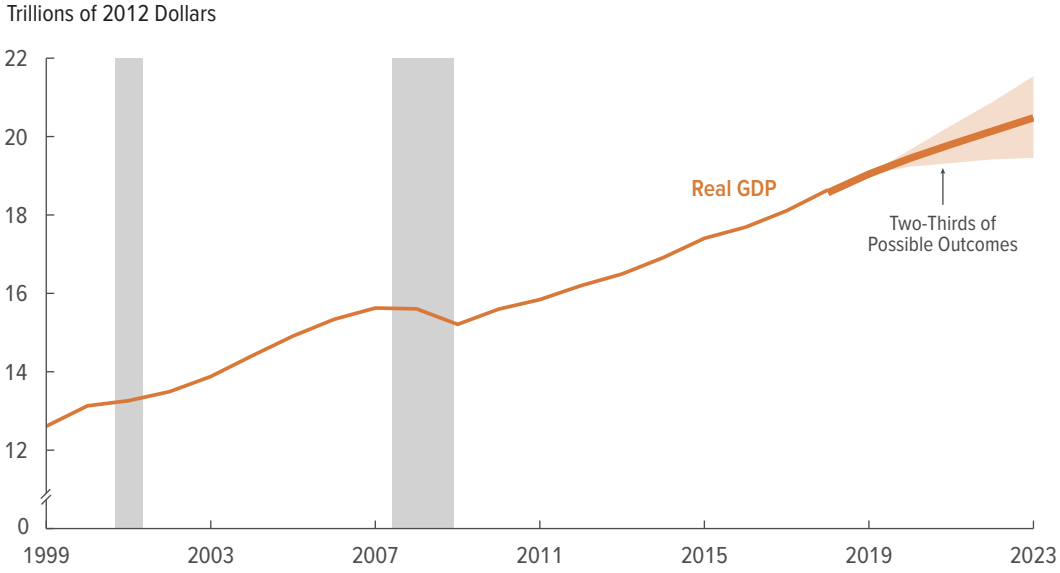
Income inequality's effect on economic growth, an issue on which economists' theories and empirical results have been mixed, is another source of uncertainty in CBO's longer-run projections.[22] Some studies have concluded that income inequality leads to faster growth, others that it slows growth, and still others that it does not affect growth. Moreover, the effect could work in the opposite direction: Economic growth could directly increase or decrease income inequality. When a study concludes

21. As birth rates in the native-born population have declined over time, immigration has become an increasingly important part of growth in the total U.S. population and labor force. In 2018, immigration accounted for over 40 percent of the growth in the U.S. population and labor force. Foreign-born people accounted for 17.4 percent of the U.S. civilian labor force in 2018, compared with 13.3 percent in 2000.

22. See, for example, Pedro C. Neves, Óscar Afonso, and Sandra T. Silva, "A Meta-Analytic Reassessment of the Effects of Inequality on Growth," *World Development,* vol. 78 (February 2016), pp. 386–400, https://bit.ly/2LVeOOc; Jonathan Ostry, Andrew Berg, and Charalambos Tsangarides, *Redistribution, Inequality, and Growth* (International Monetary Fund, 2014), https://bit.ly/13kLuIN (PDF, 1.34 MB); Stephen Knowles, "Inequality and Economic Growth: The Empirical Relationship Reconsidered in the Light of Comparable Data," *Journal of Development Studies,* vol. 41, no.1 (September 2005), pp. 135–159, https://bit.ly/2BYP9Q2; and Mark D. Partridge, "Is Inequality Harmful for Growth? Comment," *American Economic Review,* vol. 87, no. 5 (December 1997), pp. 1019–1032, www.jstor.org/stable/2951339.

Figure 2-7.

The Uncertainty of CBO's Projections of Real GDP



CBO estimates that—if the errors in the agency's current economic forecast are similar to those in its previous forecasts—there is approximately a two-thirds chance that the average annual rate of real GDP growth will be between 0.7 percent and 3.3 percent over the next five years.

Sources: Congressional Budget Office; Bureau of Economic Analysis.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. The shaded area around CBO's baseline projection of real GDP illustrates the uncertainty of that projection. The area is based on the errors in CBO's one-, two-, three-, four-, and five-year projections of the average annual growth rate of real GDP for calendar years 1976 through 2018.

Values for real GDP from 1999 to 2018 (the thin line) reflect revisions to the national income and product accounts that the Bureau of Economic Analysis released on July 26, 2019. Values from 2018 to 2029 (the thick line) reflect the data available when the projections were made earlier in July.

GDP = gross domestic product.

that a relationship exists between inequality and growth, that conclusion usually depends on factors specific to the time and place being studied. Economists continue to examine the issue, and CBO will update its analysis if research yields a more definitive conclusion.

Quantifying the Uncertainty in CBO's Projections

To quantify the uncertainty surrounding its projections for the next five years, CBO analyzed its past forecasts of real GDP growth.[23] On the basis of that analysis, CBO estimates that—if the errors in the agency's current economic forecast are similar to those in its previous forecasts—there is approximately a two-thirds chance that the average annual rate of real GDP growth (on a calendar year basis) will be between 0.7 percent and 3.3 percent over the next five years (see Figure 2-7).[24]

That range reflects some of the uncertainty inherent in CBO's estimates of the growth in real potential GDP, given that the errors in CBO's longer-horizon forecasts of real GDP growth are partly due to the agency's past underestimates (for example, during the late 1990s) or overestimates (for example, during the early 2010s) of potential GDP growth. To illustrate how changes in the factors underlying potential GDP might contribute to growth averaging 0.7 percent or 3.3 percent over the next five years, CBO examined scenarios in which the growth rates of total factor productivity and the size of the labor force varied.

For example, CBO estimates that if total factor productivity in the nonfarm business sector grew, on average, 1.1 percentage points slower than projected over the next five years (and thus remained roughly unchanged)

23. See Congressional Budget Office, *CBO's Economic Forecasting Record: 2019 Update* (forthcoming).

24. The root mean square error of CBO's five-year projections of the average annual growth rate of real GDP since 1976 is 1.3 percentage points. For more on the inherent uncertainty underlying economic forecasts, see Congressional Budget Office, *CBO's Economic Forecasting Record: 2019 Update* (forthcoming).

and the labor force grew, on average, 0.8 percentage points slower than projected (and thus shrank), then real GDP growth would be 1.3 percentage points lower, on average, than the 2.0 percent growth (on a calendar year basis) in CBO's economic projections.[25] Conversely, if productivity in the nonfarm business sector grew, on average, 1.1 percentage points faster over the next five years and the labor force grew, on average, 0.8 percentage points faster, then real GDP growth would be 1.3 percentage points higher, on average, than CBO projects.

Comparison With CBO's January 2019 Projections

CBO's current economic projections have some notable differences from the set of projections the agency published in January (see Table 2-6).[26] In particular, CBO's current projections of interest rates over the 2019–2029 period are markedly lower. In the near term, those differences are driven by developments in financial markets and guidance from the Federal Reserve regarding its outlook for monetary policy. In the latter years of the projection period, the downward revisions are mainly due to CBO's reassessment of factors that influence the long-run neutral rate of interest and the premium on longer-term Treasury securities. The agency also raised its projection of economic growth in the near term as a result of the recent increases to the caps on federal discretionary funding. In addition, CBO's projections of inflation and wage growth have been lowered as a result of weakness indicated by recent data.

The agency now expects short- and long-term interest rates over the coming decade to be lower, on average, by 0.5 percentage points and 0.8 percentage points, respectively. The downward revision to short-term interest rates partly reflects the agency's expectation that the Federal Reserve will maintain the current target range for the federal funds rate until late 2020 and then gradually increase it in later years. CBO decreased its projections of the federal funds rate in the near term in response to lower inflation in its forecast, lower foreign economic growth, and greater uncertainty about future trade barriers affecting the United States and its trading partners. That revision to the federal funds rate was also informed by statements from Federal Reserve officials, as well as changes in financial markets and outside forecasts.

CBO also lowered its forecast of the federal funds rate over the latter years of the projection period. That revision stemmed from CBO's reassessment of the long-run neutral rate of interest. Since January, CBO has lowered its estimate of that rate because of slower anticipated global growth, which CBO expects to reduce global demand for investment and put downward pressure on interest rates. Downward revisions to projections of the long-run neutral rate by the Federal Reserve and outside forecasters were additional factors in CBO's downward revision.

The downward revision to long-term interest rates in CBO's projections partly reflects the downward revision to short-term interest rates. In addition, CBO now expects the premium on risky assets, which has been elevated since the 2007–2009 recession, to decline more slowly than previously expected, remaining elevated throughout the coming decade. In general, a higher premium on risky assets implies lower rates of return on Treasury securities. The downward revision to long-term interest rates also reflects an updated assessment of the size of the Federal Reserve's holdings of Treasury and other securities. In March of this year, the Federal Reserve announced that it would continue to hold more of those securities than previously expected. That larger balance is expected to push the term premium below previous expectations. For that reason, CBO's downward revision to long-term interest rates is larger than its revision to short-term interest rates and extends throughout the projection period.

CBO also reduced its projection of average CPI and PCE inflation over the early years of the projection period because of data indicating lower-than-expected inflation. However, in CBO's assessment, the weakness in inflation was mainly caused by transitory factors. In CBO's forecast, that downward revision to consumer price inflation was partly offset by an upward revision to the estimated

25. Because the nonfarm business sector produces roughly three-quarters of domestic output, the 1.1 percentage points slower total factor productivity growth in that sector would, on its own, reduce the growth in potential labor force productivity by 0.8 percentage points each year. By contrast, the reduction in the growth of the labor force would, on its own, boost potential labor force productivity. On balance, growth in potential labor force productivity would be roughly 0.5 percentage points lower than in CBO's baseline projection. That reduction, along with the 0.8 percentage-point reduction in labor force growth, underlies the 1.3 percentage-point reduction in real GDP growth.

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

effect of tariffs on the prices of consumer goods. The estimate of those effects was increased because a higher tariff rate was imposed on certain Chinese imports in May 2019 and because recent research suggested that a larger share of the cost of the tariffs on U.S. imports are passed along to U.S. consumers and businesses. (See Box 2-2 on page 36 for more details.)

CBO's projection of real GDP growth in 2019 is unchanged but reflects offsetting effects. CBO now expects slower growth of real consumption than it did in January, in part because wages have been rising more slowly than expected given the strength of the labor market; less real business investment, primarily because of increased uncertainty about future trade policies and higher tariffs on imported capital goods; and weaker export growth as a result of slower projected economic growth in major U.S. trading partners. However, those downward revisions are offset by an upward revision to real government purchases, primarily because of an increase in projected federal discretionary spending, and a downward revision to real imports resulting from consumers' and businesses' expected substitution of domestically produced goods for imported consumption and investment goods.

CBO's projection of average annual real GDP growth over the 2020–2023 period has been revised upward for two main reasons. First, CBO projects more purchases by the federal government. Second, the agency anticipates greater growth of business fixed investment as a result of downward revisions to the cost of corporate debt and equity, which more than offsets the negative effects on investment from recent increases in tariffs. The stronger projected output growth led the agency to reduce its projections of the unemployment rate over the 2020–2023 period.

In the current forecast, the size of the potential labor force over the 2019–2029 period is slightly smaller—and its growth rate is slightly slower—than the agency projected in January. In the near term, the projected potential labor force is smaller mainly because the agency lowered the projected size of the population as a result of recent population data. After 2024, the projected potential labor force is smaller mainly because the agency reduced the potential labor force participation rate after reassessing trends in participation rates for each demographic group.

Despite CBO's projection of a smaller potential labor force, the agency now expects overall growth in potential output over the 2019–2029 period to increase slightly faster than in the January forecast. That more rapid growth is due to a number of minor technical adjustments in the projection. Those adjustments resulted in faster projected growth of capital services in nonfarm businesses and in owner-occupied housing, which more than offset slightly slower growth of potential total factor productivity in the nonfarm business sector.

CBO's projections of total national income have been reduced by an average of 0.2 percent per year over the 2019–2029 period, reflecting downward revisions to projections of various types of income, including total labor compensation and proprietors' income—downward revisions that were partly offset by upward revisions to the agency's projections of corporate profits and net income from foreign assets. Because of data showing that hourly compensation growth in the last quarter of 2018 and the first quarter of 2019 was lower than CBO expected, the agency lowered its projections of hourly compensation growth in 2019 without projecting a strong rebound in later years. That revision, along with other factors, led the agency to lower its projections of total labor compensation over the entire 2019–2029 period. Changes to other components of national income result from revised projections of other key economic variables. For example, CBO lowered its estimates of net interest paid by domestic businesses over most of the projection period as a result of downward revisions to interest rates. Higher estimates of corporate profits result from lower projections of interest costs and total labor compensation.

Comparison With Other Economic Projections

CBO's projections of the economy for the next two years are slightly more optimistic than the consensus view of the private-sector economists whose forecasts were published in the August 2019 *Blue Chip Economic Indicators* but are within the range of those forecasts (see Figure 2-8). In particular, CBO's projections of real GDP growth are above the middle two-thirds of the range of *Blue Chip* forecasts for 2019 and at the high end of that range for 2020. CBO's projections of the unemployment rate are in line with the consensus view of private-sector economists, but the agency's projections of GDP price inflation are lower than the consensus for 2019 and at the lower end of the middle two-thirds of

Table 2-6.

Current and Previous Economic Projections for 2019 to 2029

				Annual Average		
	2019	2020	2021	2019–2023	2024–2029	Total, 2019–2029
	Percentage Change From Fourth Quarter to Fourth Quarter					
Real GDP[a]						
August 2019	2.3	2.1	1.8	1.9	1.8	1.8
January 2019	2.3	1.7	1.6	1.8	1.8	1.8
Nominal GDP						
August 2019	3.9	4.0	3.8	3.8	3.9	3.8
January 2019	4.3	3.8	3.6	3.9	3.9	3.9
PCE Price Index						
August 2019	1.8	2.1	2.0	2.0	2.0	2.0
January 2019	2.0	2.2	2.1	2.1	2.0	2.0
Core PCE Price Index[b]						
August 2019	1.9	2.2	2.1	2.0	2.0	2.0
January 2019	2.2	2.2	2.1	2.1	2.0	2.0
Consumer Price Index[c]						
August 2019	2.2	2.4	2.4	2.4	2.3	2.4
January 2019	2.2	2.6	2.5	2.5	2.3	2.4
Core Consumer Price Index[b]						
August 2019	2.3	2.6	2.6	2.5	2.3	2.4
January 2019	2.6	2.7	2.6	2.5	2.3	2.4
GDP Price Index						
August 2019	1.7	1.9	2.0	1.9	2.0	2.0
January 2019	2.0	2.0	2.0	2.0	2.1	2.0
Employment Cost Index[d]						
August 2019	3.3	3.6	3.5	3.4	3.2	3.3
January 2019	3.5	3.7	3.5	3.5	3.1	3.3
Real Potential GDP[a]						
August 2019	2.1	2.1	2.1	2.1	1.8	1.9
January 2019	2.2	2.1	2.0	2.0	1.8	1.9

Continued

the range for 2020. The agency's projections of consumer price inflation and interest rates for both 2019 and 2020 are within the full range of the *Blue Chip* forecasts, although CBO's forecasts for consumer price inflation and the interest rate for 3-month Treasury bills are both above the middle two-thirds of the *Blue Chip* forecasts' range for 2020.

Compared with the middle two-thirds of the range of forecasts made by Federal Reserve officials and reported at the June 2019 meeting of the Federal Open Market Committee, CBO's projections suggest a slightly stronger economic outlook for 2019, a similar outlook for 2020, and a slightly weaker outlook for 2021 and the longer term (see Figure 2-9).[27] The full range of Federal Reserve forecasts is based on the highest and lowest forecasts made by the members of the Board of Governors of the Federal Reserve System and the presidents of the Federal Reserve Banks. CBO's projections of real GDP growth and the federal funds rate are within the range of the forecasts by Federal Reserve officials for 2019, 2020, 2021, and the longer term. However, the agency's projection of PCE price inflation is above the range for 2019, and the agency's projection of the unemployment rate is above the range for the longer term. In addition,

27. See Board of Governors of the Federal Reserve System, "Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents Under Their Individual Assessments of Projected Appropriate Monetary Policy, June 2019" (June 19, 2019), https://go.usa.gov/xV3Pe.

Table 2-6. Continued

Current and Previous Economic Projections for 2019 to 2029

				Annual Average		
	2019	2020	2021	2019–2023	2024–2029	Total, 2019–2029
			Calendar Year Average			
Unemployment Rate (Percent)						
August 2019	3.7	3.7	3.9	4.0	4.7	4.4
January 2019	3.5	3.7	4.2	4.2	4.8	4.5
Interest Rates (Percent)						
Three-month Treasury bills						
August 2019	2.2	2.1	2.3	2.3	2.5	2.4
January 2019	2.8	3.2	3.2	3.1	2.8	2.9
Ten-year Treasury notes						
August 2019	2.3	2.2	2.5	2.6	3.1	2.9
January 2019	3.4	3.6	3.7	3.6	3.7	3.7
Tax Bases (Percentage of GDP)						
Wages and salaries						
August 2019	42.8	43.1	43.4	43.3	43.8	43.6
January 2019	43.3	43.6	43.7	43.6	44.1	43.9
Domestic corporate profits[e]						
August 2019	8.4	8.5	8.5	8.4	8.1	8.3
January 2019	8.9	8.4	8.1	8.2	8.0	8.1

Sources: Congressional Budget Office; Bureau of Labor Statistics; Federal Reserve.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.

b. Excludes prices for food and energy.

c. The consumer price index for all urban consumers.

d. The employment cost index for wages and salaries of workers in private industry.

e. Adjusted to remove distortions in depreciation allowances caused by tax rules and to exclude the effects of changes in prices on the value of inventories.

CBO's projections of core PCE price inflation are above the range in both 2019 and 2020.

At least part of the discrepancy between CBO's projections and those of other forecasters is probably attributable to differences in the economic data available when the forecasts were completed and to differences in the economic and statistical models used to prepare them. In addition, other forecasters may assume that certain changes in federal policies or trade policies will occur, whereas CBO's projections are based on current law and incorporate the assumption that the trade policies in effect when CBO completed its projections will remain in place through 2029.

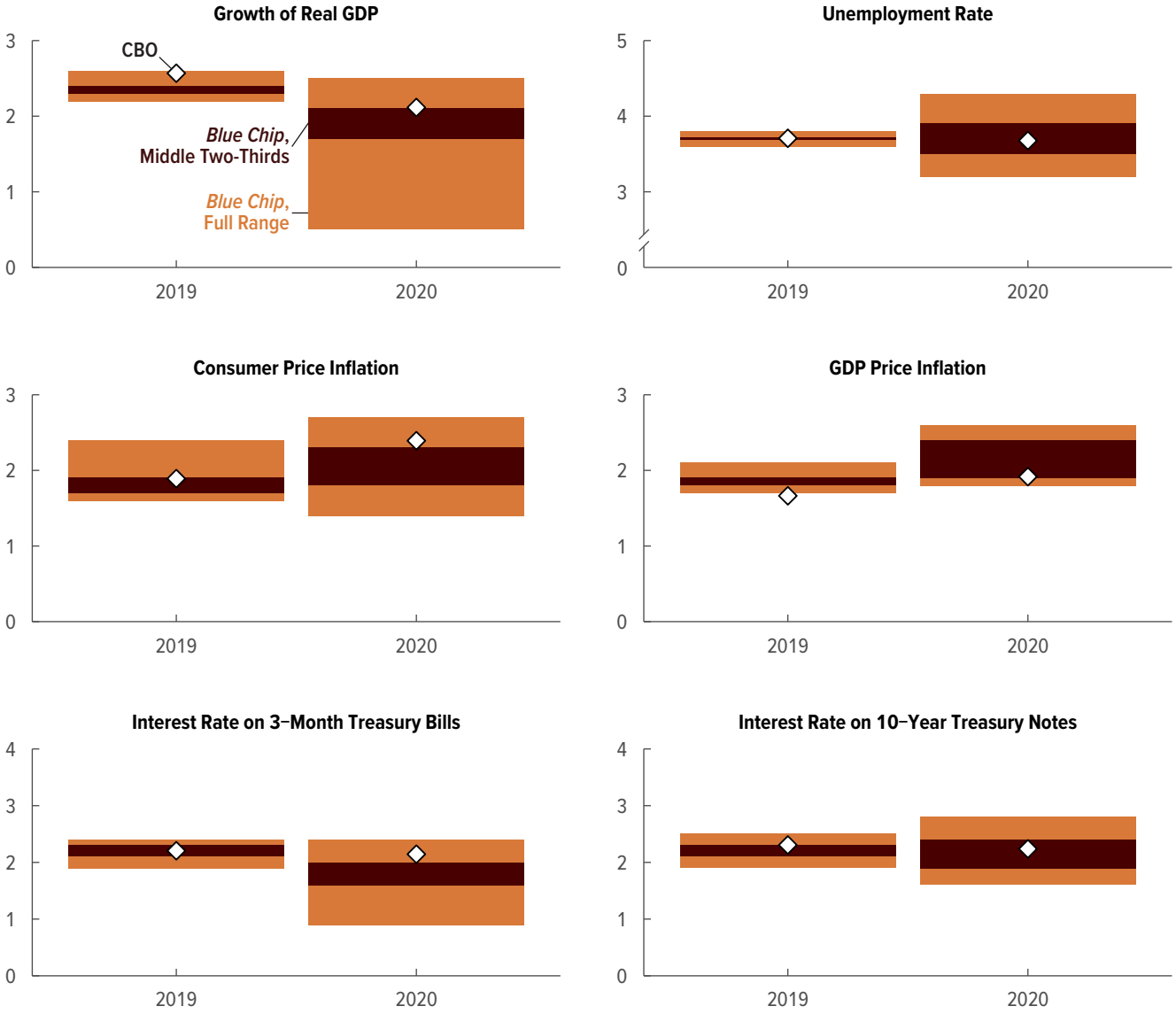
A key difference between CBO's economic projections and those made by Federal Reserve officials is that CBO reports the average of a distribution of possible outcomes under current law. Each individual Federal Reserve official, by contrast, reports the mode—the most likely outcome—of a distribution of possible outcomes under each official's individual assessment of appropriate monetary policy.

Figure 2-8.

Comparison of CBO's Economic Projections With Those From the *Blue Chip* Survey

CBO's projections for the next two years are slightly more optimistic than the consensus view of the private-sector economists in the *Blue Chip* survey.

Percent



Sources: Congressional Budget Office; Wolters Kluwer, *Blue Chip Economic Indicators* (August 9, 2019).

The full range of forecasts from the *Blue Chip* survey is based on the highest and lowest of the roughly 50 forecasts. The middle two-thirds of that range omits the top one-sixth and the bottom one-sixth of the forecasts.

Real values are nominal values that have been adjusted to remove the effects of changes in prices. Consumer price inflation is based on the consumer price index for all urban consumers. The growth of real GDP and inflation rates are measured from the average of one calendar year to the next.

The unemployment rate is the number of jobless people who are available for and seeking work, expressed as a percentage of the labor force. The unemployment rate and interest rates are calendar year averages.

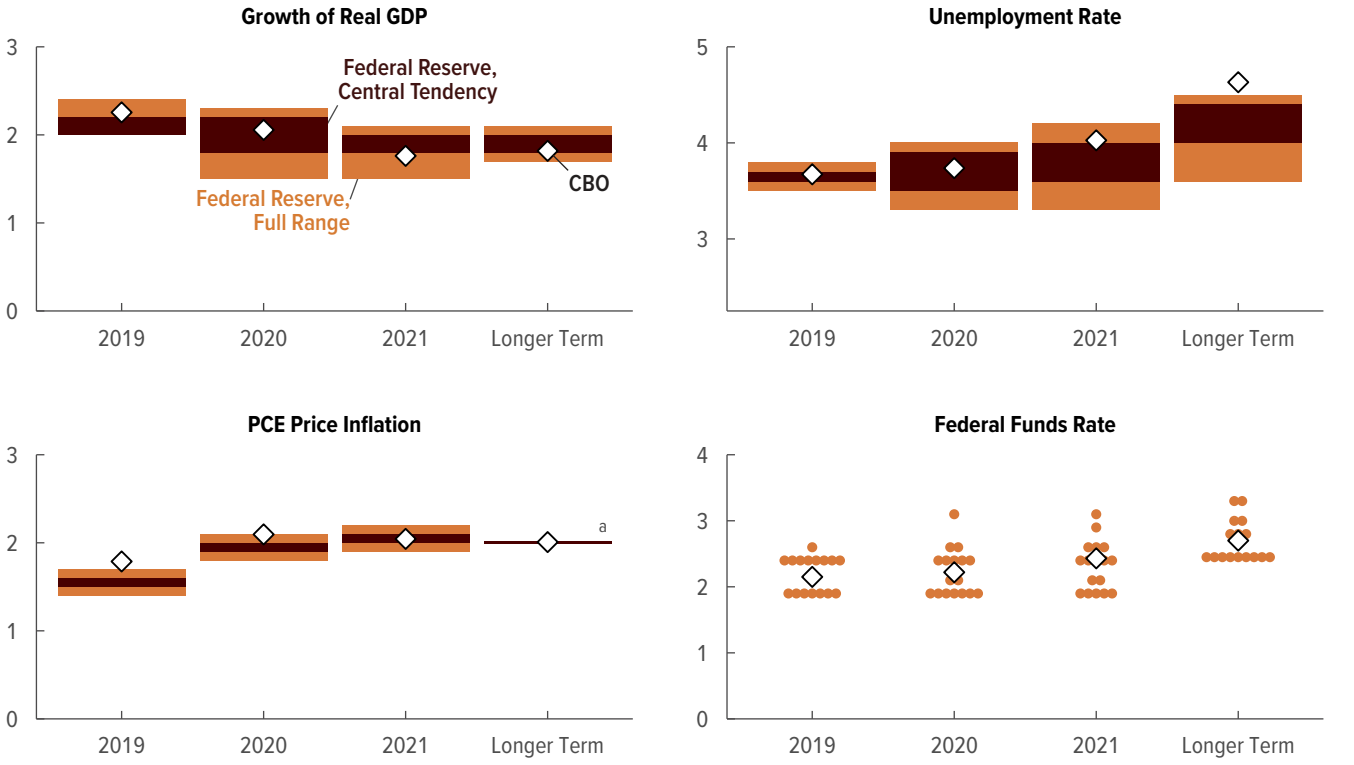
GDP = gross domestic product.

Figure 2-9.

Comparison of CBO's Economic Projections With Those by Federal Reserve Officials

Compared with the forecasts made by Federal Reserve officials, CBO's projections suggest a slightly stronger economic outlook for 2019, a similar outlook for 2020, and a slightly weaker outlook for 2021 and the longer term.

Percent



Sources: Congressional Budget Office; Board of Governors of the Federal Reserve System, "Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents Under Their Individual Assessments of Projected Appropriate Monetary Policy, June 2019" (June 19, 2019), https://go.usa.gov/xVq34.

The full range of forecasts from the Federal Reserve is based on the highest and lowest of the 15 projections by the Board of Governors and the presidents of the Federal Reserve banks. (One Federal Reserve official did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate.) The central tendency is, roughly speaking, the middle two-thirds of the full range, formed by removing the 3 highest and 3 lowest projections.

Each of the data points for the federal funds rate represents a forecast made by one of the members of the Federal Reserve Board or one of the presidents of the Federal Reserve banks in June 2019. The Federal Reserve officials' forecasts of the federal funds rate are for the rate at the end of the year, whereas CBO's forecasts are fourth-quarter values.

For CBO, longer-term projections are values for 2029. For the Federal Reserve, longer-term projections are described as the value at which each variable would settle under appropriate monetary policy and in the absence of further shocks to the economy.

Real values are nominal values that have been adjusted to remove the effects of changes in prices.

The unemployment rate is the number of jobless people who are available for and seeking work, expressed as a percentage of the labor force.

The growth of real GDP and inflation rates are measured from the fourth quarter of one calendar year to the fourth quarter of the next. The unemployment rate is a fourth-quarter value.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. For PCE price inflation in the longer term, the range and central tendency equal 2 percent.

APPENDIX

A

Changes in CBO's Baseline Projections

Overview

The Congressional Budget Office estimates that if no new legislation affecting spending and revenues is enacted, the budget deficit for fiscal year 2019 will total $960 billion. That amount is $63 billion larger than the $896 billion deficit the agency estimated in May 2019, when it last updated its baseline budget projections.[1] CBO also now projects that if current laws generally remained in place, the cumulative deficit for the 2020–2029 period would be about $12.2 trillion—$0.8 trillion more than the $11.4 trillion in the agency's May 2019 baseline projections. All told, outlays over that period are about 0.6 percent larger in CBO's current projections than they were in May, and revenues are about 1.0 percent smaller.

That increase in the cumulative deficit is primarily the net result of three changes in CBO's baseline projections. First, to account for the Bipartisan Budget Act of 2019 (Public Law 116-37), CBO added a total of $1.7 trillion to its projection of the 10-year deficit (see Figure A-1). That law increased discretionary funding limits for 2020 and 2021, and CBO's baseline projections reflect the assumption that the increased funding in 2021 will continue and grow at the rate of inflation in future years. Second, supplemental appropriations for disaster relief and border security for this year, which are also projected to grow with inflation in future years, added $255 billion to the cumulative deficit for 2020 to 2029. Partially offsetting those increases was a third change: Downward revisions to CBO's forecast of interest rates reduced the agency's projections of interest costs for the period (including the debt-service savings from the resulting reductions in deficits and debt), and thus its projections of deficits, by a total of $1.4 trillion.

When CBO updates its baseline budget projections, it groups the revisions it makes into three categories:

- Legislative changes, which result from laws enacted since the agency published its previous baseline projections and which generally reflect the budgetary effects reported in CBO's cost estimates when the legislation was enacted;
- Economic changes, which arise from changes the agency has made to its economic forecast (including those made to incorporate the macroeconomic effects of recently enacted legislation); and
- Technical changes, which are revisions to projections that are neither legislative nor economic.

Of the $63 billion increase in the projected deficit for 2019, $6 billion is attributable to legislative changes, $29 billion to economic changes, and $29 billion to technical changes. The legislative and economic revisions that CBO has made to its projections for the 2020–2029 period were largely offsetting: Legislative changes increased projected deficits by a total of $1.9 trillion, while economic changes reduced deficits by $1.4 trillion. On net, technical updates to the agency's projections of revenues and outlays increased* deficits over the period by a total of $250 billion.

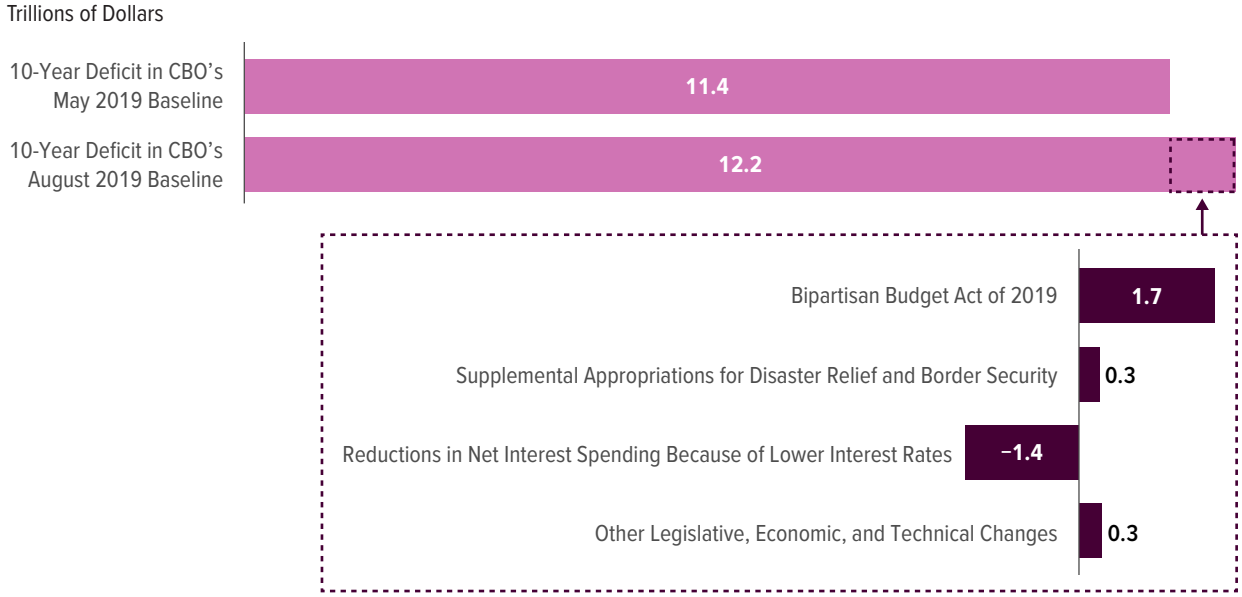
As a result of those changes, over the 2020–2029 period, *primary* deficits—that is, deficits excluding net outlays for interest—are now projected to be a total of $1.9 trillion greater than they were in CBO's May 2019 baseline projections. That increase in projected primary deficits is offset by a reduction of $1.1 trillion in the agency's projections of interest costs over that same period. Because projected interest rates are now lower than they were in May, debt held by the public in CBO's projections has not risen as much as it would have if the economic forecast had not changed. In May, the agency projected that debt held by the public would be $28.5 trillion (or 92 percent of gross domestic product, or GDP) at the end of 2029; CBO now projects that the debt would reach $29.3 trillion (or 95 percent of GDP) that year if current laws generally remained unchanged.

[*Corrected on August 22, 2019]

1. See Congressional Budget Office, *Updated Budget Projections: 2019 to 2029* (May 2019), www.cbo.gov/publication/55151.

Figure A-1.

Changes in CBO's Baseline Projection of the 10-Year Deficit Since May 2019



Source: Congressional Budget Office.

The amounts shown include the costs or savings in debt service resulting from the changes in deficits.

Legislative Changes

The largest changes CBO has made since May to its projections of deficits over the 2019–2029 period stem from recently enacted legislation. Almost all of those changes—$6 billion this year and $1.9 trillion over the 2020–2029 period—were to projected outlays (see Table A-1). The largest change was an increase in projections of discretionary outlays that stemmed from the higher limits on discretionary funding put in place by the Bipartisan Budget Act of 2019. Additional appropriations for disaster relief and border security also led CBO to increase its projections of outlays. Other legislation enacted since May has had a minor effect on CBO's projections.

Bipartisan Budget Act of 2019

Of the 10-year increase in projected outlays attributable to new legislation, $1.7 trillion stems from the enactment of the Bipartisan Budget Act of 2019 (see Table A-2 on page 70). That law raised the caps on defense and nondefense discretionary appropriations for fiscal year 2020 by $171 billion and for fiscal year 2021 by $153 billion.[2] CBO's projections of discretionary outlays reflect the assumption that funding in 2020 and 2021 will be at or just below the new, higher caps set for those years and that it will grow with inflation thereafter.[3] (In accordance with section 257 of the Deficit Control Act, CBO projects funding for individual accounts in future years by applying the specified inflation rate to the most recent appropriations for those accounts.) As a result, CBO now projects higher discretionary funding through 2029. Accordingly, CBO raised its projections of outlays for the entire 2020–2029 period by $1.5 trillion—$0.3 trillion resulting directly from the additional appropriations projected under the new caps for 2020 and 2021, and $1.2 trillion stemming from the higher projections for 2022 to 2029, which are based on the new 2021 funding limits.

2. The caps on discretionary appropriations were originally set by the Budget Control Act of 2011 (P.L. 112-25), as amended.

3. CBO projects that discretionary budget authority will be just below the caps in 2020. That authority is not projected to reach the new limits because inflation for defense funding from 2019 to 2020 is projected to be less than the rate of growth of the cap on such funding. For a detailed explanation, see "CBO's Baseline Budget Projections for 2020 Through 2029" on page 10.

CBO estimated that the Bipartisan Budget Act of 2019 would also reduce mandatory outlays for 2027 to 2029 by $55 billion.[4] Most of that reduction—$39 billion—is attributable to the extension of a set of across-the-board reductions (known as sequestration) on spending for certain mandatory programs (primarily Medicare) that are required under current law. The law extended that mandatory sequestration, which was set to expire in 2027, through fiscal year 2029. The rest of the reduction in projected mandatory outlays stems from a $16 billion increase in estimated collections of customs user fees for the 2027–2029 period. Collections of those fees—which apply to vessels, vehicles, and passengers and include a merchandise processing fee—are recorded as reductions in direct spending. The fees were set to expire in 2026, but the law extended them through September 30, 2029.

All told, before debt service is taken into account, the changes that CBO made to its projections to account for the enactment of the Bipartisan Budget Act of 2019 increased the cumulative deficit for the 2020–2029 period by $1.5 trillion. The additional federal borrowing stemming from the larger annual deficits added $200 billion to CBO's projection of total outlays for interest on federal debt over that period.

Supplemental Appropriations for Disaster Relief and Border Security

Two other laws enacted since May had a significant effect on CBO's projections of outlays. Those two laws provided funding for 2019 that was not constrained by the caps on discretionary funding because it was designated as an emergency requirement. Although those laws provided funding only for this year, in accordance with the statutory rules that govern CBO's projections of discretionary outlays, the agency projects that funding equal to the amount provided by those appropriations (adjusted for inflation) will continue to be provided each year from 2020 to 2029.

The first law, the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (P.L. 116-20), provided $19 billion in additional emergency funding in 2019 for several federal agencies to respond to natural disasters.[5] As a result of that funding increase, CBO raised its estimate of discretionary outlays for 2019 by $5 billion and its projections for the 2020–2029 period by a total of $171 billion. That law also will result in $1 billion in additional spending on mandatory programs between 2019 and 2029, primarily on the Supplemental Nutrition Assistance Program (SNAP, which helps people in low-income households to purchase food).

The second law, the Emergency Supplemental Appropriations for Humanitarian Assistance and Security at the Southern Border Act, 2019 (P.L. 116-26), provided $5 billion in emergency funding this year to expand federal agencies' capacity to respond to foreign nationals who attempt to enter the United States through the southern border and to provide them humanitarian assistance—including food, shelter, and medical services.[6] To account for that increase in funding, CBO raised its estimate of discretionary outlays for 2019 by $1 billion and its projections for the 2020–2029 period by a total of $52 billion.

All told, as a result of those two laws, CBO increased its projection of outlays for the 2020–2029 period by a total of $224 billion. The increase in federal borrowing stemming from those two laws would add a total of $31 billion to outlays for interest on federal debt over the 10-year period, CBO estimates.

Economic Changes

The economic forecast that underlies CBO's baseline budget projections includes the agency's projections of GDP, income, the unemployment rate, interest rates, inflation, and other factors that affect federal spending and revenues. The current projections are based on the latest economic forecast, which was completed in July 2019; the agency's May 2019 budget projections were based on the economic forecast published in January 2019. The current economic forecast includes the agency's estimates of the effects of the Bipartisan Budget Act of 2019 on the economy.

4. Mandatory spending is governed by statutory criteria and is not normally controlled by the annual appropriation process.

5. See Congressional Budget Office, cost estimate for Senate Amendment 250 to H.R. 2157, the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (May 23, 2019), www.cbo.gov/publication/55289.

6. See Congressional Budget Office, cost estimate for S. 1900, the Emergency Supplemental Appropriations for Humanitarian Assistance and Security at the Southern Border Act, 2019 (June 21, 2019), www.cbo.gov/publication/55389.

Table A-1.

Changes in CBO's Baseline Projections of the Deficit Since May 2019

Billions of Dollars

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020–2024	Total 2020–2029
Deficit in CBO's May 2019 Baseline	-896	-892	-962	-1,116	-1,122	-1,071	-1,189	-1,179	-1,162	-1,399	-1,310	-5,162	-11,399
Legislative Changes													
Changes in Revenues	0	*	*	*	*	*	*	*	*	*	*	*	*
Changes in Outlays													
Mandatory outlays	*	1	*	*	*	*	*	*	6	-24	-37	1	-54
Discretionary outlays													
Defense	1	52	69	77	83	86	89	91	93	96	98	367	834
Nondefense	5	56	77	86	91	94	97	99	102	105	107	404	914
Subtotal, discretionary	6	108	147	163	173	180	185	191	195	200	205	771	1,748
Debt service	*	1	4	8	13	18	24	30	37	44	50	45	232
Total Change in Outlays	6	110	151	171	186	198	210	221	239	220	218	817	1,926
Increase (-) in the Deficit From Legislative Changes	**-6**	**-110**	**-151**	**-171**	**-186**	**-198**	**-210**	**-221**	**-239**	**-220**	**-218**	**-817**	**-1,926**
Economic Changes													
Changes in Revenues													
Payroll taxes	-11	-11	-9	-8	-10	-11	-13	-14	-15	-15	-16	-50	-123
Individual income taxes	-20	-9	6	12	14	10	5	5	5	4	4	33	55
Corporate income taxes	-8	-8	-3	-1	-2	-4	-5	-3	-1	-1	*	-18	-28
Other	2	10	-1	-6	-9	-13	-14	-15	-14	-14	-14	-19	-90
Total Change in Revenues	-38	-19	-7	-3	-7	-18	-28	-27	-25	-25	-26	-54	-186
Changes in Outlays													
Mandatory outlays													
Social Security	0	-2	-6	-8	-9	-10	-10	-11	-12	-12	-13	-35	-93
Student loans	0	-5	-5	-4	-4	-4	-4	-4	-4	-5	-4	-22	-43
Medicare	*	*	*	*	1	2	3	3	4	5	6	3	24
Medicaid	-1	-1	-1	-2	-2	-2	-2	-2	-2	-3	-2	-8	-20
Unemployment compensation	1	*	-5	-8	-1	1	-1	-1	-1	-1	-1	-12	-17
Other	1	1	*	*	-1	-1	-1	-2	-2	-2	-2	*	-9
Subtotal, mandatory	1	-7	-16	-21	-15	-14	-16	-17	-18	-18	-17	-74	-158
Discretionary outlays	0	-1	-1	*	*	*	*	-1	-1	-1	-1	-2	-5
Net interest													
Effect of interest rates and inflation	-10	-69	-103	-127	-135	-136	-131	-130	-131	-133	-136	-570	-1,231
Debt service	*	*	-2	-5	-9	-13	-17	-21	-26	-30	-35	-30	-159
Subtotal, net interest	-10	-69	-105	-132	-145	-150	-148	-152	-156	-163	-171	-599	-1,389
Total Change in Outlays	-9	-76	-122	-153	-160	-164	-165	-169	-174	-182	-189	-675	-1,553
Increase (-) or Decrease in the Deficit From Economic Changes	**-29**	**57**	**115**	**150**	**153**	**145**	**137**	**142**	**149**	**156**	**162**	**621**	**1,367**

Continued

Table A-1. Continued

Changes in CBO's Baseline Projections of the Deficit Since May 2019

Billions of Dollars

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020–2024	Total 2020–2029
Technical Changes													
Changes in Revenues													
Corporate income taxes	-9	-21	-22	-21	-21	-24	-23	-15	-10	-17	-13	-108	-186
Individual income taxes	-33	-23	-18	-17	-16	-14	-13	-16	-16	-18	-20	-88	-172
Payroll taxes	25	12	12	11	10	11	14	14	15	16	16	56	131
Other	-4	-10	-7	-4	-2	-2	-2	-2	-2	-2	-2	-26	-37
Total Change in Revenues	-22	-42	-35	-30	-29	-29	-24	-19	-14	-22	-18	-166	-263
Changes in Outlays													
Mandatory outlays													
Medicare	5	2	-5	-12	-7	-7	-8	-10	-12	-13	-13	-28	-84
Student loans	0	3	4	3	3	3	3	3	4	4	4	16	34
Other	5	13	*	-2	-1	-1	-2	-2	-3	-4	-4	8	-5
Subtotal, mandatory	10	19	-1	-12	-6	-5	-7	-8	-11	-13	-13	-4	-56
Discretionary outlays	-3	*	*	*	*	*	*	*	*	*	*	*	-1
Net interest													
Debt service	*	1	2	3	4	5	5	6	6	7	7	15	47
Other	*	1	*	-1	-1	-1	*	*	*	*	-1	-2	-4
Subtotal, net interest	*	2	2	2	3	4	5	6	6	7	7	13	44
Total Change in Outlays	7	21	1	-9	-3	-2	-2	-2	-5	-6	-6	9	-13
Increase (-) in the Deficit From Technical Changes	**-29**	**-63**	**-36**	**-21**	**-26**	**-28**	**-22**	**-17**	**-9**	**-16**	**-12**	**-174**	**-250**
All Changes													
Increase (-) in the Deficit	**-63**	**-116**	**-72**	**-42**	**-60**	**-81**	**-95**	**-96**	**-98**	**-80**	**-68**	**-371**	**-809**
Deficit in CBO's August 2019 Baseline	-960	-1,008	-1,034	-1,159	-1,181	-1,151	-1,284	-1,274	-1,260	-1,479	-1,378	-5,533	-12,208
Memorandum:													
Changes in Revenues and Outlays													
Revenues	-60	-61	-42	-33	-37	-48	-52	-46	-39	-48	-44	-220	-449
Outlays	4	55	31	9	23	33	43	50	60	32	24	151	360
Changes in Primary Deficit and Net Interest													
Primary deficit	-73	-181	-171	-164	-188	-208	-214	-211	-211	-192	-182	-912	-1,923
Net interest	10	65	98	121	128	127	119	115	113	113	114	541	1,114

Source: Congressional Budget Office.

* = between -$500 million and $500 million.

The changes that CBO has made to its economic forecast since January have increased its estimate of the deficit for 2019 by $29 billion and decreased its projections of deficits for the 2020–2029 period by a total of $1.4 trillion. A decrease in projected net interest outlays, slightly offset by a decrease in projected revenues, accounts for most of the latter change.

Table A-2.

Effects of the Bipartisan Budget Act of 2019 on CBO's Baseline Projections of the Deficit

Billions of Dollars

												Total	
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2020–2024	2020–2029
Increase in the Caps on Discretionary Funding													
Defense outlays	0	51	68	27	11	7	3	0	0	0	0	164	167
Nondefense outlays	0	45	60	27	10	6	3	0	0	0	0	148	151
Subtotal	0	95	128	54	22	13	6	0	0	0	0	312	318
Increase in Projected Funding After 2021													
Defense outlays	0	0	0	48	69	76	83	88	90	93	95	193	642
Nondefense outlays	0	0	0	39	60	68	73	78	80	82	84	167	565
Subtotal	0	0	0	87	129	144	156	166	171	175	179	360	1,207
Mandatory Outlays													
Extension of customs user fees	0	0	0	0	0	0	0	0	-1	-7	-8	0	-16
Extension of mandatory sequestration	0	0	0	0	0	0	0	0	7	-17	-29	0	-39
Subtotal	0	0	0	0	0	0	0	0	6	-24	-37	0	-55
Increase in Debt-Service Costs	0	1	4	7	11	16	21	26	32	38	44	39	200
Increase in the Deficit	**0**	**97**	**132**	**149**	**162**	**173**	**183**	**192**	**209**	**189**	**186**	**711**	**1,670**

Source: Congressional Budget Office.

Changes in Outlays

The revisions that CBO made to its economic forecast lowered its estimate of outlays for the current year by $9 billion and decreased its projections of outlays for the 2020–2029 period by $1.6 trillion (or 3 percent). Most of the reduction in outlays over that period stems from the downward revision in the agency's forecast of interest rates, which reduced its projections of net interest costs by $1.2 trillion before the change in debt service associated with the smaller projected deficits is accounted for. When those debt-service savings are included, the revisions to the economic forecast lowered net interest costs by $1.4 trillion.

Mandatory Outlays. Because of changes the agency made to its economic forecast, CBO increased its estimate of mandatory spending for 2019 by $1 billion and decreased its projections for the 2020–2029 period by $158 billion. The largest economic changes were in CBO's projections for Social Security.

Social Security. Projected outlays for Social Security over the 2020–2029 period declined by a total of $93 billion (or 1 percent), primarily because CBO reduced its estimates of the cost-of-living adjustments (COLAs) that will be made to beneficiaries' payments each January over that period. Social Security's COLAs are based on changes in the consumer price index for urban wage earners and clerical workers (CPI-W). Because of changes CBO made to its inflation forecast, it reduced its projections of the COLAs for 2020 and 2021 by 0.3 percentage points (or roughly 14 percent and 12 percent, respectively) and its projection for 2022 by 0.1 percentage point (or 4 percent). CBO also reduced its projection of wages, which led to lower projected Social Security benefits for new recipients.

Student Loans. CBO reduced its projection of the costs of student loans for the 2020–2029 period by a total of $43 billion because it now forecasts lower interest rates on federal borrowing than it did in January. As prescribed by the Federal Credit Reform Act of 1990 (FCRA), CBO estimates the net cost of student loans to the federal government by discounting the value of expected future loan payments to express the value of those payments in today's dollars and then subtracting

that present-value amount from the loan disbursement.[7] Those values are computed using interest rates on federal borrowing as the discount rates.[8] When those interest rates go down, the value of future payments to the federal government increases, thus reducing the net cost of the loans. (That reduction was largely offset by a $34 billion increase in costs for student loans that stems from technical changes; that increase is discussed below.)

Medicare. CBO increased its projections of Medicare spending for the 2020–2029 period by $24 billion (or 0.3 percent) because of revisions it made to its economic forecast. Under current law, payment rates for much of Medicare's fee-for-service sector (such as hospital care and services provided by home health agencies and skilled nursing facilities) are updated automatically. Those updates are based on changes in the prices of the labor, goods, and services that health care providers purchase and include an adjustment to account for economywide gains in productivity (the ability to produce the same output using fewer inputs, such as hours of labor) over a 10-year period. CBO now anticipates slightly larger updates between 2020 and 2029 than it did previously—a change that increases Medicare outlays in CBO's baseline projections.

Medicaid. The agency lowered its projections of federal Medicaid spending for the 2020–2029 period by $20 billion because it reduced its forecasts of unemployment and of inflation. The unemployment rate in CBO's current forecast is lower than it was in the agency's January forecast in every year of the 2020–2029 period, and especially in 2022 and 2023. In those years, the unemployment rate is now projected to be 4.1 percent and 4.4 percent instead of 4.5 percent and 4.8 percent, respectively. CBO also revised downward its projections of growth in the consumer price index for urban households (CPI-U) and in the employment cost index (ECI) over the first few years of the projection period because new data indicate that inflation will be weaker than previously anticipated. Fewer people are expected to enroll in Medicaid when unemployment is lower, and average benefit costs are projected to be smaller as a result of lower inflation.

Unemployment Compensation. CBO lowered its projection of spending on unemployment benefits for the 2020–2029 period by $17 billion primarily because it reduced its projections of the unemployment rate.

Other Mandatory Programs. The agency updated its projections of outlays for a number of other mandatory programs to reflect changes it made to its economic forecast that resulted in both upward and downward adjustments to such outlays. On net, those changes decreased projected outlays for the 2020–2029 period by a total of $9 billion.

Discretionary Outlays. CBO's baseline projections generally reflect the assumption that funding for discretionary programs keeps pace with inflation. Changes to the measures of inflation that CBO is required to use to develop its baseline projections of discretionary funding drove the economic changes in discretionary outlays. For discretionary funding related to federal personnel, the agency uses the employment cost index for wages and salaries to prepare its projections; for other types of discretionary funding, the agency uses the GDP price index. As a result of reductions in the agency's forecasts of those measures, discretionary funding over the 2020–2029 period is now projected to be slightly lower than previously projected, and outlays for that period are $5 billion less in the agency's current baseline projections than they were in the May 2019 projections.

Net Interest. Economic changes have reduced CBO's baseline projections of net interest costs for the 2020–2029 period by $1.4 trillion. The main reason for that reduction is that CBO has lowered its forecasts of both short- and long-term interest rates on Treasury securities since January. CBO decreased projected interest rates for 2020 to 2024 in its economic forecast by an average of nearly 100 basis points (or nearly 30 percent) each year. The agency also lowered projected interest rates for the 2025–2029 period, though by smaller amounts; on average, rates projected for those years decreased by about 50 basis points (or roughly 15 percent). (For further

7. See Justin Humphrey, analyst, Congressional Budget Office, "How the Government Budgets for Student Loans" (presentation at the Postsecondary National Policy Institute, January 25, 2018), www.cbo.gov/publication/53511.

8. An alternative method would be to use market-based discount rates; such an approach is referred to as a fair-value method. The discount rate is higher under the fair-value method, so the value of future payments is lower and the estimated costs of student loans higher than under the FCRA method. In CBO's view, the fair-value approach provides a more comprehensive measure than FCRA estimates of the costs of student loans. See Congressional Budget Office, *Fair-Value Estimates of the Cost of Federal Credit Programs in 2020* (May 2019), www.cbo.gov/publication/55278.

explanation of those revisions, see "Comparison With CBO's January 2019 Projections" on page 58.) As a result, CBO lowered the projected average interest rate on debt held by the public over the 2020–2029 period by roughly 70 basis points. Primarily because of the lower projected interest rates, CBO decreased its projection of net interest outlays (and thus of deficits) for the 2020–2029 period by $1.2 trillion before accounting for the resulting change in the amount of federal debt. Those debt-service savings associated with the smaller projected deficits are estimated to amount to $159 billion, bringing the total reduction in net interest outlays for the 2020–2029 period from economic changes to $1.4 trillion.

Changes in Revenues

As a result of revisions the agency made to its economic forecast, CBO reduced its estimate of revenues for 2019 by $38 billion (or 1 percent) and its projections for 2020 through 2029 by a total of $186 billion (or less than 1 percent). The reduction in revenues for 2019 stems primarily from lower estimates of wages and salaries and of proprietors' income, which brought down projections of individual income and payroll taxes. In addition, CBO reduced its estimate of corporate tax receipts for the year because it lowered its projection of domestic economic profits in 2019.

The $186 billion reduction in projected revenues for 2020 through 2029 stems mostly from lower projections of the growth of GDP and of associated taxable incomes—primarily wages and salaries and proprietors' income. In addition, CBO lowered its projections of interest rates and of imports and increased its projections of domestic and foreign profits; those updates to the agency's economic forecast also affected the baseline revenue projections. Over the next decade, the total percentage reduction in CBO's projections of revenues that is attributable to economic factors (0.4 percent) is about the same as the downward revision in the agency's GDP forecast (0.4 percent).

Payroll Taxes. Incorporating the latest economic forecast in its budget projections, CBO lowered its projection of payroll tax revenues for the 2020–2029 period by $123 billion (or less than 1 percent). Nearly all of that reduction stems from the agency's lowering its projections of wages and salaries and of proprietors' income for the next 10 years by $1.7 trillion.

Individual Income Taxes. Economic changes raised CBO's projection of total individual income tax revenues over the next decade by $55 billion (or less than 1 percent). The largest sources of the revisions to individual income taxes were the reductions in projections of wages and salaries and of proprietors' income, but taken together, other smaller changes that the agency has made to its economic forecast since January more than offset those reductions over the next decade. CBO lowered its projection of interest paid on owner-occupied housing by about $700 billion, which in turn reduced its projections of deductions for mortgage interest and raised income tax receipts. The agency increased its estimates of the expected returns on assets in retirement plans, boosting projections of taxable withdrawals over the next decade by almost $400 billion. Moreover, CBO lowered its forecast of inflation; because the tax brackets and other parameters of the individual income tax system are indexed to inflation, lower inflation would push a larger portion of any given amount of taxable income into higher tax brackets and thus raise income tax receipts.

Corporate Income Taxes. CBO lowered its projection of corporate income tax revenues for 2020 to 2029 by $28 billion (or 1 percent). Corporate profits, both domestic and foreign, for most of the next decade are larger in CBO's current economic forecast than they were in the previous forecast. The increase in projections of domestic corporate profits boosted projected revenues, but those increases in revenues were more than offset by the combined effects of other changes in CBO's current economic forecast, particularly higher foreign profits and lower interest rates. The increase in projected foreign profits would result in corporations' claiming larger credits for their foreign earnings, and the lower interest rates would mean that a larger portion of corporations' net interest expenses would fall below the new limitation on such expenses and thus be deductible from their current income tax liability.

Other Revenues. In response to announcements made by the Federal Open Market Committee (FOMC) since January 2019, CBO increased its projection of the amount of Treasury securities that the Federal Reserve will purchase early in the forecast period.[9] Those additional purchases would, all else being equal, increase

9. The analysis does not incorporate changes that would result from the FOMC's announcement on July 31, 2019, that provided additional detail regarding the composition of assets that the Federal Reserve would purchase. That announcement was made after the analysis for this publication was completed. CBO expects that incorporating that detail into its baseline would lower its projection of the Federal Reserve's remittances for the 2020–2029 period.

interest earned by the central bank on its assets over the forecast period and the amount of interest that it pays to financial firms on the reserves they hold at the Federal Reserve. The lower interest rates in CBO's current economic forecast would partially offset those increases. On net, the additional expenses exceed the increase in interest income in CBO's projections. That change, along with other factors, lowered remittances from the Federal Reserve to the Treasury by $69 billion (or 10 percent) over the 10-year period.

The agency also lowered its projections of imports over the 10-year period by a total of $1 trillion (or 3 percent). That change in the economic forecast reduced CBO's projections of revenues from customs duties for 2020 through 2029 by $38 billion (or 4 percent). (That reduction was largely offset by the technical changes to customs duties discussed below.)

Technical Changes

Technical changes—that is, changes that are neither legislative nor economic—increased CBO's estimate of the deficit in 2019 by $29 billion and its projections of deficits over the 2020–2029 period by a total of $250 billion. A downward revision in the agency's projections of revenues accounts for most of that change.

Changes in Revenues

For various technical reasons, CBO lowered its projections of revenues in 2019 by $22 billion (or less than 1 percent). Tax collections from individual and corporate income taxes have been smaller in recent months than CBO estimated in January—and by more than the currently available economic data can explain. The main factors responsible for the shortfall will become clearer as additional data from tax returns and other sources become available. In addition, CBO has reduced the projection of other receipts in 2019 to reflect the fact that collections from the penalty on some employers that have at least 50 full-time equivalent employees and that do not offer health insurance coverage that meets certain standards have been less than anticipated.

All told, the technical changes that CBO has made have lowered its revenue projections for 2020 through 2029 by a total of $263 billion. Again, reductions in projected income taxes and collections of penalties were two of the main factors contributing to that downward revision, but those changes were partially offset by increases in projected payroll taxes and customs duties.

Corporate Income Taxes. CBO has lowered its projections of corporate income tax receipts for the next decade by a total of $186 billion because of modeling changes and new data from corporate tax returns on deductions and income for 2017. The most significant modeling changes are intended to better reflect the historical relationships between the corporate income and expenses accounted for in the national income and product accounts (NIPAs) and the income and expenses reported by businesses on their tax returns. Previously, most differences between the NIPA measure of profit and the tax measure were estimated by projecting those items to grow with broad measures of economic activity; now CBO models those differences in greater detail.

Collections of corporate income taxes in 2019 have been less than they were projected to be in January. The extent to which those smaller collections (as well as the recent weakness in individual income tax collections) are related to underlying economic activity, the effects of the 2017 tax act, or other factors is not yet known. (For a discussion of what CBO has learned from recent data about the effects of the 2017 tax act, see Box 1-1 on page 12.) Alternative causes of the weakness would have differing implications for future receipts. For example, if the weakness results from an underlying change in the relationship between aggregate economic income and reported taxable income, it may be expected to persist permanently.[10] By contrast, if provisions of the 2017 tax act caused businesses to take more deductions in the current year than CBO anticipated rather than delay them for future use, the present weakness in collections would not be expected to persist; indeed, if businesses were accelerating deductions, it would suggest that receipts of corporate income taxes would be stronger in future years. Until the underlying causes are known, CBO anticipates that the unexplained weakness will persist and gradually dissipate over the next several years; the agency has reduced its projections of corporate income taxes during the first half of the decade accordingly.

Individual Income Taxes. The agency has lowered its projections of individual income tax receipts over the 2020–2029 period by $172 billion. Part of that

10. After CBO completed this analysis, the Bureau of Economic Analysis released its annual revision of historical economic data. That revision included significant reductions in estimated corporate profits for 2017 and 2018, which probably explain part of the weakness in corporate income tax collections. For a discussion of the revisions, see Box 2-1 on page 30.

revision results from new data from the Social Security Administration that indicate that the share of taxes withheld from workers' paychecks in 2018 that went to payroll taxes (instead of income taxes) was larger than anticipated. As a result, CBO lowered its estimate of the amount of income taxes that were collected in 2018 and its projections of such collections in future years. Those changes were mostly offset by the upward revision to payroll taxes described below.

Further reducing CBO's projections of individual income tax receipts over the next several years are weaker-than-anticipated estimated payments for 2019 taxes. The recent payment data are difficult to interpret because taxpayers have discretion to adjust their estimated payments for various reasons. For example, some may have adjusted those payments to reflect recent changes in income, and some may have adjusted their withholding or estimated payment amounts after being surprised by the size of their final tax payment or refund when filing their 2018 return. Furthermore, taxpayers with higher income often take advantage of automatic six-month filing extensions and thus will not file their 2018 tax returns until October 2019.

The most significant factor leading CBO to lower its projections of individual income tax receipts in the latter half of the decade was that the agency reduced its projections of taxable withdrawals from retirement accounts, in response to recent data indicating that assets in retirement accounts are worth less than previously anticipated.

Payroll Taxes. The agency has increased its projections of payroll taxes throughout the next decade by a total of $131 billion. That revision was made primarily because new data from the Social Security Administration indicate that the payroll tax base in 2018 was larger than CBO had projected.

Other Revenues. CBO lowered its projection of revenues from other sources for the 2020–2029 period by $37 billion. The most significant change among those revenue sources was a reduction in the projected collections of penalties from some employers that have at least 50 full-time-equivalent employees and that do not offer health insurance coverage that meets certain standards. Although that penalty went into effect for coverage in 2015, the first penalties were not collected until 2019, and thus far, those collections have been lower than CBO anticipated. Consequently, CBO has reduced its projections of the collections of those penalties for the 2020–2029 period by $48 billion.

The agency has also increased its projections of customs duties for the next decade by a total of $33 billion for technical reasons. That change reflects actions by the Administration that increased tariffs on a large share of imports from China from 10 percent to 25 percent in May 2019. In addition, the Administration has made certain types of products and products from certain countries exempt from tariffs; most notably, the Administration has exempted Canada and Mexico from tariffs on steel and aluminum that were imposed in 2018. CBO's projections of customs duties incorporate the assumption that the tariffs in place as of July 25, 2019, will continue permanently, without any changes.[11]

Changes in Outlays

Because of technical updates—largely for mandatory spending programs—CBO increased its estimate of outlays in 2019 by $7 billion and decreased its projections of outlays over the 2020–2029 period by a total of $13 billion.

Mandatory Outlays. Technical changes made by CBO increased its estimate of mandatory outlays in the current year by $10 billion and decreased its projections of such outlays for the 2020–2029 period by $56 billion (or less than 1 percent).

Medicare. On the basis of actual outlays through June, CBO now estimates that net Medicare spending in fiscal year 2019 will exceed its previous projections by about $5 billion (or 1 percent). Two factors account for that difference: higher-than-expected spending for Medicare Advantage stemming from annual payment adjustments to account for unanticipated spending increases in the current and previous calendar years, and less-than-projected receipts of premiums paid by Medicare beneficiaries. Additionally, CBO lowered its projection of outlays for Medicare Part D (prescription drug coverage) over the 2020–2029 period by $85 billion because the Administration withdrew its proposed rule that would

11. On August 1, 2019, the President announced that tariffs would be imposed on an additional $300 billion of Chinese imports beginning on September 1, 2019; on August 13, the U.S. Trade Representative announced that those tariffs would be delayed on certain products. Those scheduled changes to tariffs are not included in CBO's current baseline projections.

have eliminated the existing safe-harbor provision for pharmaceutical rebates.[12]

Student Loans. For technical reasons, CBO increased its projections of the costs of student loans over the 2020–2029 period by $34 billion. That increase, which stems largely from changes to projections of the characteristics and income of borrowers in income-driven repayment plans, mostly offsets the $43 billion decrease in projected student loan costs attributable to economic changes (discussed above).

Other Mandatory Programs. Technical changes increased CBO's estimate of outlays for other mandatory programs in 2019 by $5 billion but decreased projections of such outlays for the 10-year period by $5 billion. The largest of those changes was a $15 billion increase in projected spending by the Commodity Credit Corporation in 2020 resulting from the Administration's announcement that it would take actions to assist farmers in response to retaliatory tariffs imposed on their goods by U.S. trading partners and other trade disruptions.[13] Technical changes reduced the agency's projections of spending for most other mandatory programs by small amounts, resulting in the net decrease in projections of other mandatory outlays for the 2020–2029 period.

Discretionary Outlays. Technical updates reduced CBO's estimate of discretionary outlays in 2019 by $3 billion and its projections of such outlays over the 2020–2029 period by $1 billion. Those changes stem from adjustments made to better reflect the recent rates at which funding for various discretionary programs has been spent.

Net Interest. Technical changes increased CBO's projections of net interest outlays for the 2020–2029 period by $44 billion. That increase results from two partly offsetting effects. Technical changes to revenues and other outlays boosted projected deficits by $203 billion, and the resulting higher debt-service costs added a total of $47 billion to projected deficits over the 2020–2029 period. But interest costs for that period are now projected to be $4 billion less than they were in CBO's May 2019 baseline projections because the agency has made slight changes to its projections of the mix of securities that the Treasury will use in its borrowing on the basis of actual debt issuance since that baseline was published.

12. The existing safe harbor is for rebates paid by pharmaceutical manufacturers to health plans and pharmacy benefit managers (PBMs) in Medicare Part D and Medicaid managed care. It protects those parties from liability or penalty in specific situations defined in regulations implementing the anti-kickback statute, which prohibits offering or accepting payments to induce use of services reimbursable under federal health care programs. Eliminating the safe harbor would have effectively made it illegal for drug manufacturers to pay rebates to health plans or PBMs in those programs in return for coverage or preferred treatment of their drug. After the Administration withdrew the rule, CBO also lowered its projections of Medicaid spending over the 2020–2029 period by $4 billion. For more information, see Congressional Budget Office, "Incorporating the Effects of the Proposed Rule on Safe Harbors for Pharmaceutical Rebates in CBO's Budget Projections—Supplemental Material for *Updated Budget Projections: 2019 to 2029*" (May 2019), www.cbo.gov/publication/55151.

13. See Department of Agriculture, "USDA Announces Support for Farmers Impacted by Unjustified Retaliation and Trade Disruption" (press release, May 23, 2019), https://go.usa.gov/xyuw2.

APPENDIX

B

CBO's Economic Projections for 2019 to 2029

The tables in this appendix show the Congressional Budget Office's economic projections for each year from 2019 to 2029. Table B-1 shows the projections by calendar year, and Table B-2 shows them by fiscal year.

Table B-1.

CBO's Economic Projections, by Calendar Year

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
						Percentage Change From Year to Year[a]						
Gross Domestic Product												
Real[b]	2.9	2.6	2.1	1.8	1.7	1.7	1.7	1.8	1.7	1.8	1.8	1.8
Nominal	5.4	4.2	4.1	3.8	3.7	3.7	3.8	3.9	3.8	3.9	3.9	3.9
Inflation												
PCE price index	2.1	1.6	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Core PCE price index[c]	1.9	1.7	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Consumer price index[d]	2.4	1.9	2.4	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.3
Core consumer price index[c]	2.1	2.2	2.6	2.6	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3
GDP price index	2.4	1.7	1.9	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0
Employment Cost Index[e]	3.0	3.2	3.5	3.5	3.5	3.4	3.3	3.2	3.2	3.1	3.1	3.1
						Calendar Year Average						
Unemployment Rate (Percent)	3.9	3.7	3.7	3.9	4.2	4.5	4.7	4.7	4.8	4.7	4.7	4.6
Payroll Employment (Monthly change, in thousands)[f]	221	148	100	50	24	18	21	37	39	57	63	57
Interest Rates (Percent)												
Three-month Treasury bills	1.9	2.2	2.1	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5
Ten-year Treasury notes	2.9	2.3	2.2	2.5	2.9	3.0	3.1	3.1	3.1	3.2	3.2	3.2
Tax Bases (Percentage of GDP)												
Wages and salaries	43.0	42.8	43.1	43.4	43.6	43.7	43.7	43.7	43.8	43.8	43.8	43.8
Domestic corporate profits[g]	8.7	8.4	8.5	8.5	8.3	8.2	8.2	8.2	8.1	8.1	8.1	8.1
Tax Bases (Billions of dollars)												
Wages and salaries	8,888	9,149	9,589	10,020	10,434	10,850	11,268	11,706	12,156	12,631	13,134	13,650
Domestic corporate profits[g]	1,573	1,798	1,895	1,955	1,992	2,049	2,108	2,190	2,257	2,346	2,440	2,525
Nominal GDP (Billions of dollars)	20,580	21,360	22,231	23,083	23,946	24,836	25,769	26,765	27,775	28,860	29,981	31,141

Source: Congressional Budget Office.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. See Table 2-3 for changes that are instead measured from the fourth quarter of one year to the fourth quarter of the next.*

b. Real values are nominal values that have been adjusted to remove the effects of changes in prices.

c. Excludes prices for food and energy.

d. The consumer price index for all urban consumers.

e. The employment cost index for wages and salaries of workers in private industry.

f. The average monthly change in the number of employees on nonfarm payrolls, calculated by dividing by 12 the change in payroll employment from the fourth quarter of one calendar year to the fourth quarter of the next.

g. Adjusted to remove distortions in depreciation allowances caused by tax rules and to exclude the effects of changes in prices on the value of inventories.

[*Corrected on August 22, 2019]

Table B-2.

CBO's Economic Projections, by Fiscal Year

	Actual, 2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
						Percentage Change From Year to Year						
Gross Domestic Product												
Real[a]	3.0	2.7	2.2	1.9	1.7	1.7	1.7	1.8	1.7	1.8	1.8	1.8
Nominal	5.4	4.6	4.0	3.9	3.7	3.7	3.7	3.9	3.8	3.9	3.9	3.9
Inflation												
PCE price index	2.1	1.6	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Core PCE price index[b]	1.9	1.7	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Consumer price index[c]	2.4	1.9	2.3	2.5	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3
Core consumer price index[b]	2.0	2.2	2.5	2.6	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3
GDP price index	2.3	1.8	1.9	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0
Employment Cost Index[d]	2.9	3.1	3.4	3.6	3.5	3.4	3.3	3.2	3.2	3.1	3.1	3.1
						Fiscal Year Average						
Unemployment Rate (Percent)	4.0	3.7	3.7	3.8	4.1	4.4	4.6	4.7	4.7	4.7	4.7	4.6
Payroll Employment (Monthly change, in thousands)[e]	212	175	108	62	26	20	17	35	38	52	64	59
Interest Rates (Percent)												
Three-month Treasury bills	1.7	2.3	2.1	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5
Ten-year Treasury notes	2.7	2.5	2.2	2.4	2.8	3.0	3.1	3.1	3.1	3.2	3.2	3.2
Tax Bases (Percentage of GDP)												
Wages and salaries	43.2	42.8	43.1	43.3	43.5	43.7	43.7	43.7	43.8	43.8	43.8	43.8
Domestic corporate profits[f]	8.6	8.5	8.5	8.5	8.3	8.3	8.2	8.2	8.1	8.1	8.1	8.1
Tax Bases (Billions of dollars)												
Wages and salaries	8,801	9,054	9,477	9,914	10,331	10,746	11,163	11,595	12,043	12,509	13,006	13,520
Domestic corporate profits[f]	1,553	1,796	1,872	1,947	1,978	2,038	2,088	2,172	2,239	2,320	2,420	2,501
Nominal GDP (Billions of dollars)	20,336	21,157	22,013	22,870	23,727	24,611	25,529	26,514	27,518	28,582	29,699	30,847

Source: Congressional Budget Office.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.

b. Excludes prices for food and energy.

c. The consumer price index for all urban consumers.

d. The employment cost index for wages and salaries of workers in private industry.

e. The average monthly change in the number of employees on nonfarm payrolls, calculated by dividing by 12 the change in payroll employment from the fourth quarter of one fiscal year to the fourth quarter of the next.

f. Adjusted to remove distortions in depreciation allowances caused by tax rules and to exclude the effects of changes in prices on the value of inventories.

List of Tables and Figures

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About This Document

This volume is one of a series of reports on the state of the budget and the economy that the Congressional Budget Office issues each year. It satisfies the requirement of section 202(e) of the Congressional Budget Act of 1974 for CBO to submit to the Committees on the Budget periodic reports about fiscal policy and to provide baseline projections of the federal budget. In keeping with CBO's mandate to provide objective, impartial analysis, this report makes no recommendations.

CBO's Panel of Economic Advisers commented on an early version of the economic forecast underlying this report. Members of the panel are Katharine Abraham, Alan Auerbach, David Autor, Olivier Blanchard, Markus Brunnermeier, Seth Carpenter, Steven Davis, Kathryn Dominguez, Robert Hall, Jan Hatzius, Donald Kohn, Nellie Liang, Gregory Mankiw, Emi Nakamura, Jonathan Parker, James Poterba, Valerie Ramey, Brian Sack, Robert Shimer, James Stock, Kevin Warsh, and Mark Zandi. Erik Brynjolfsson, Julia Coronado, John Friedman, Avi Goldfarb, Desmond Lachman, and Jeromin Zettelmeyer attended the panel's meeting as guests. Enhancements to the report this year were also made on the basis of comments about previous versions of it that were provided by Martin Neil Baily of the Brookings Institution and James Poterba of the Massachusetts Institute of Technology. Although CBO's outside advisers provided considerable assistance, they are not responsible for the contents of this report.

The following pages list the CBO staff members who contributed to this report by preparing the economic, revenue, and spending projections; writing the report; reviewing, editing, fact-checking, and publishing it; compiling the supplemental materials posted along with it on CBO's website (www.cbo.gov/publication/55551); and providing other support.

CBO continually seeks feedback to make its work as useful as possible. Please send any comments to communications@cbo.gov.

Phillip L. Swagel
Director
August 2019

Economic Projections

The economic projections were prepared by the Macroeconomic Analysis Division, with contributions from analysts in other divisions. That work was supervised by Jeffrey Werling, Robert Arnold, and John Kitchen.

Yiqun Gloria Chen	Labor markets
Erin Deal	Research assistance
Michael Falkenheim	Financial markets
Daniel Fried	Net exports, exchange rates, energy prices
Edward Gamber	Interest rates, monetary policy, current-quarter analysis
Ronald Gecan	Energy prices
Mark Lasky	Business investment, housing
Michael McGrane	Financial markets
Sarah Robinson	Research assistance, model and data management
Jeffrey Schafer	Inflation, house prices
John Seliski	Federal, state, and local government spending and revenues
Robert Shackleton	Potential output, productivity
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Christopher Williams	Consumer spending, incomes

Revenue Projections

The revenue projections were prepared by the Tax Analysis Division, supervised by John McClelland, Joseph Rosenberg, Joshua Shakin, and Edward Harris. In addition, the staff of the Joint Committee on Taxation provided valuable assistance.

Kathleen Burke	Individual income taxes, wage distribution
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Madeleine Fox	Customs duties
Nathaniel Frentz	Federal Reserve System earnings, miscellaneous fees and fines
Bilal Habib	Tax modeling
Bayard Meiser	Excise taxes
Shannon Mok	Estate and gift taxes
Kevin Perese	Tax modeling
Molly Saunders-Scott	International taxation, business taxation
Kurt Seibert	Payroll taxes, depreciation, tax modeling
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Naveen Singhal	Capital gains realizations, tax modeling
Ellen Steele	Refundable tax credits
James Williamson	Business taxation

Spending Projections

The spending projections were prepared by the Budget Analysis Division, with contributions from analysts in other divisions. That work was supervised by Theresa Gullo, Leo Lex, Sam Papenfuss, Christina Hawley Anthony, Tom Bradley, Megan Carroll, Kim Cawley, Chad Chirico, Sheila Dacey, and David Newman of the Budget Analysis Division, as well as by David Weaver, Jessica Banthin, and Alexandra Minicozzi of the Health, Retirement, and Long-Term Analysis Division and Sebastien Gay of the Financial Analysis Division.

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Sunita D'Monte	International affairs
Ann Futrell	Veterans' health care and employment training services, international food assistance
Raymond Hall	Defense (research and development, stockpile sales, atomic energy, Navy procurement, military construction, and family housing)
Paul Holland	Veterans' education benefits, reservists' education benefits
William Ma	Defense (operation and maintenance, procurement, compensation for radiation exposure and energy employees' occupational illness, other defense programs)
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Dawn Sauter Regan	Defense (military personnel)
Matthew Schmit	Military health care
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Philippa Haven	Medicare, Public Health Service
Lori Housman	Medicare, Federal Employees Health Benefits program
Jamease Kowalczyk	Medicare
Sarah Masi	Health
Kevin McNellis	Health insurance marketplaces, other programs
Ezra Porter	Health insurance coverage
Lisa Ramirez-Branum	Medicaid, health insurance coverage
Lara Robillard	Medicare
Sarah Sajewski	Medicare

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Rebecca Yip	Medicare, Public Health Service
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Tia Caldwell	Child Care and Development Block Grant, refugee assistance
Meredith Decker	Unemployment insurance, training programs, Administration on Aging, Smithsonian Institution, arts and humanities
Elizabeth Cove Delisle	Housing assistance
Jennifer Gray	Supplemental Nutrition Assistance Program and other nutrition programs, Social Services Block Grant, support programs for children and families
Justin Humphrey	Student loans, higher education
Wendy Kiska	Pension Benefit Guaranty Corporation
Leah Koestner	Elementary and secondary education, Pell grants
Justin Latus	Supplemental Security Income
Susanne Mehlman	Temporary Assistance for Needy Families, Child Support Enforcement program, foster care, child care programs, Low Income Home Energy Assistance Program
Noah Meyerson	Old-Age and Survivors Insurance, Social Security trust funds, Pension Benefit Guaranty Corporation
Emily Stern	Disability Insurance
Natural and Physical Resources	
Tiffany Arthur	Agriculture
Michael Falkenheim	Federal Deposit Insurance Corporation
Mark Grabowicz	Administration of justice, Postal Service, homeland security
Kathleen Gramp	Energy, Outer Continental Shelf receipts, spectrum auction receipts, Orderly Liquidation Fund
David Hughes	Recreational resources, Commerce, Small Business Administration, Universal Service Fund
Wendy Kiska	Federal Deposit Insurance Corporation
Erik O'Donoghue	Agriculture
Jeffrey Perry	Fannie Mae and Freddie Mac, Federal Housing Administration
Matthew Pickford	General government, legislative branch, air and water transportation

Natural and Physical Resources (Continued)

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Robert Reese	Other natural resources, highways, mass transit, Amtrak, Federal Housing Administration
Mitchell Remy	Fannie Mae and Freddie Mac, Federal Housing Administration
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Jon Sperl	Judicial branch, community and regional development, Federal Emergency Management Agency, Bureau of Indian Affairs
Aurora Swanson	Water resources, Fannie Mae and Freddie Mac

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Shane Beaulieu	Computer support
Barry Blom	General budget projections
Joanna Capps	Appropriation bills (Labor, Health and Human Services, and Education; Legislative Branch)
Aaron Feinstein	Other interest, monthly Treasury data, historical data
Avi Lerner	Interest on the public debt, automatic budget enforcement and sequestration, Troubled Asset Relief Program
Amber Marcellino	Federal civilian retirement
George McArdle	Appropriation bills (Military Construction and Veterans Affairs; State and Foreign Operations)
Dan Ready	Various federal retirement programs, national income and product accounts, federal pay
Justin Riordan	Appropriation bills (Commerce, Justice, and Science; Financial Services and General Government)
Mark Sanford	Appropriation bills (Agriculture and Food and Drug Administration; Defense)
Esther Steinbock	Appropriation bills (Energy and Water Development; Transportation and Housing and Urban Development)
J'nell Blanco Suchy	Appropriation bills (Interior and Environment; Homeland Security), authorization bills
Patrice Watson	Computer applications and data systems

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Christine Bogusz, Christine Browne, Bo Peery, and Benjamin Plotinsky edited the report; Casey Labrack and Robert Rebach prepared it for publication; and Annette Kalicki, Adam Russell, and Simone Thomas published it on CBO's website.

Erin Deal, Ann Futrell, Stuart Hammond, Paul Holland, Justin Latus, Bayard Meiser, Aldo Prosperi, Sarah Robinson, and Logan Smith fact-checked the report. Dan Ready coordinated the preparation of figures of budget projections. Jeffrey Schafer coordinated the preparation of figures of economic projections. Bayard Meiser, Dan Ready, and Sarah Robinson compiled data and supplemental information. Bo Peery and Simone Thomas coordinated the presentation of those materials.

SURVEY OF PROFESSIONAL FORECASTERS

Release Date: March 22, 2019

FIRST QUARTER 2019

Lower Near-Term Output Growth

The U.S. economy looks weaker now in the next few quarters than it did four months ago, according to 38 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The forecasters predict real GDP will grow at an annual rate of 1.5 percent this quarter and 2.4 percent next quarter, down from the previous estimates of 2.4 percent and 2.7 percent, respectively. On an annual-average over annual-average basis, the forecasters predict real GDP to grow 2.4 percent in 2019, 2.0 percent in 2020, and 1.8 percent in 2021. The projection for 2019 is 0.3 percentage point lower than the estimate of four months ago, while the projections for 2020 and 2021 are roughly unchanged.

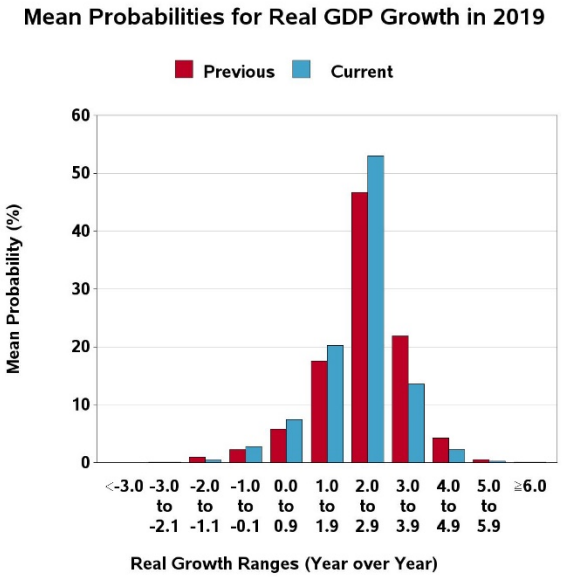
A slightly weaker outlook for the unemployment rate for the next few quarters accompanies the weaker outlook for near-term output growth. The forecasters predict the unemployment rate will average 3.7 percent in 2019 and 2020, 4.0 percent in 2021, and 4.2 percent in 2022.

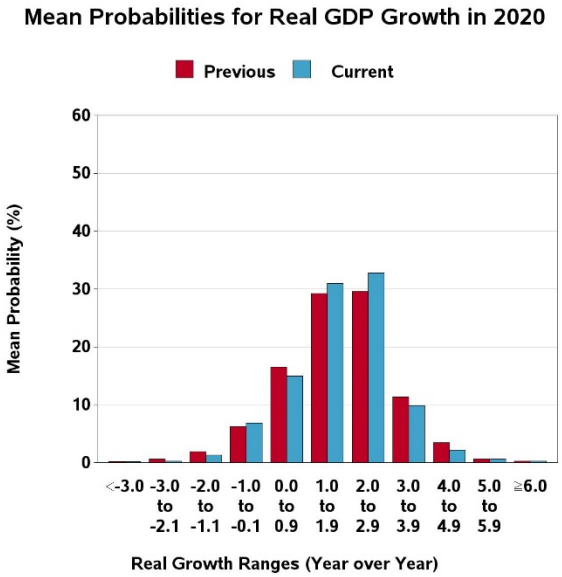
The panelists, however, see somewhat stronger growth in employment this year than they predicted previously. The projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 191,800 in 2019, up from the previous estimate of 181,900. (These annual-average estimates are computed as the year-to-year change in the annual-average level of nonfarm payroll employment, converted to a monthly rate.)

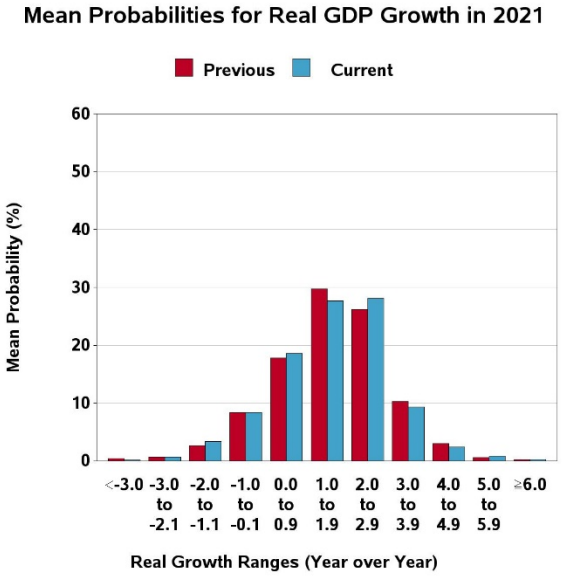
Median Forecasts for Selected Variables in the Current and Previous Surveys

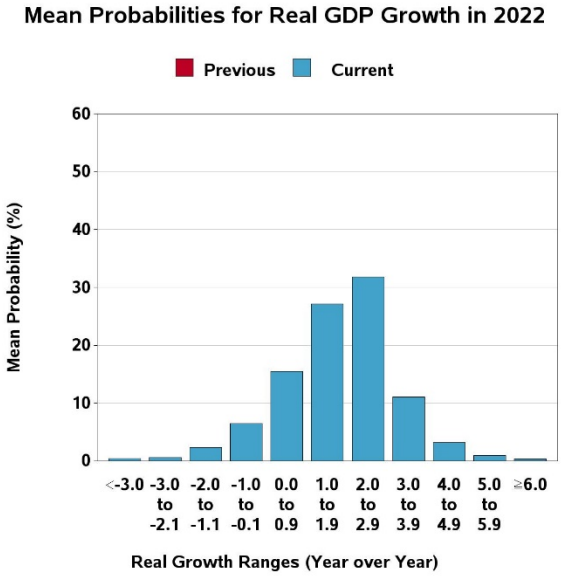
	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
Quarterly data:						
2019:Q1	2.4	1.5	3.7	3.9	172.4	198.9
2019:Q2	2.7	2.4	3.6	3.7	168.1	156.8
2019:Q3	2.4	2.2	3.6	3.7	159.7	168.5
2019:Q4	2.2	2.2	3.6	3.7	142.9	142.1
2020:Q1	N.A.	2.1	N.A.	3.7	N.A.	143.6
Annual data (projections are based on annual-average levels):						
2019	2.7	2.4	3.7	3.7	181.9	191.8
2020	2.1	2.0	3.8	3.7	N.A.	123.2
2021	1.7	1.8	4.0	4.0	N.A.	N.A.
2022	N.A.	2.1	N.A.	4.2	N.A.	N.A.

The charts below provide some insight into the degree of uncertainty the forecasters have about their projections for the rate of growth in the annual-average level of real GDP. Each chart (except the one for 2022) presents the forecasters' previous and current estimates of the probability that growth will fall into each of 11 ranges. The charts show the forecasters have revised downward their estimates of the probability that real GDP will grow above 3.0 percent in any of the next three years, especially in 2019.

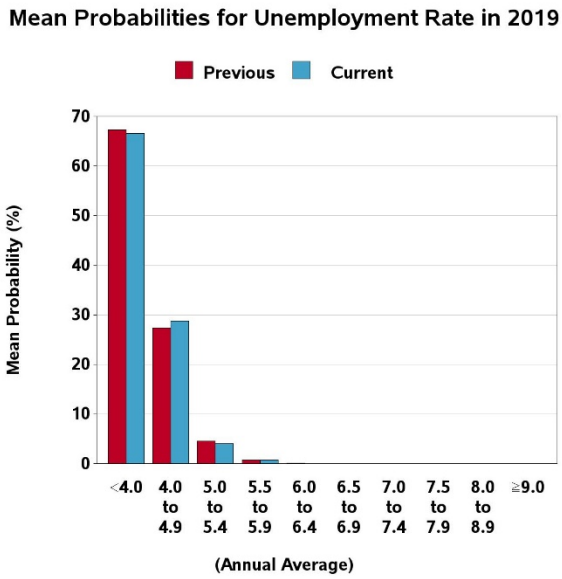


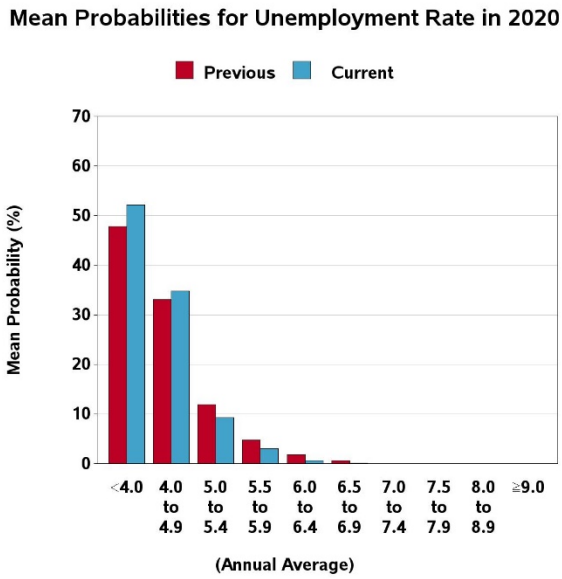


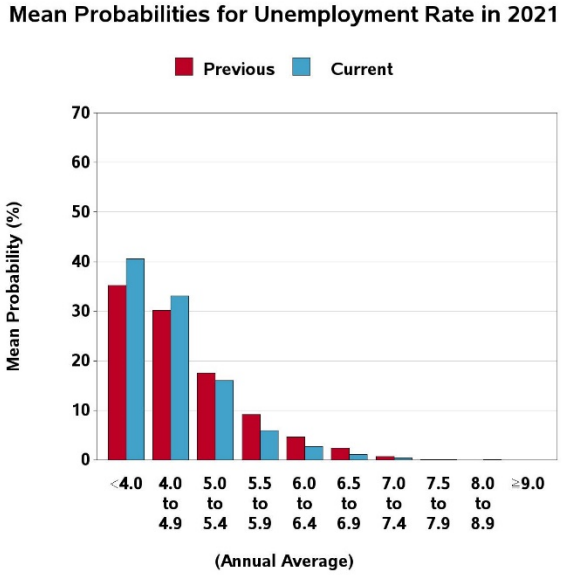


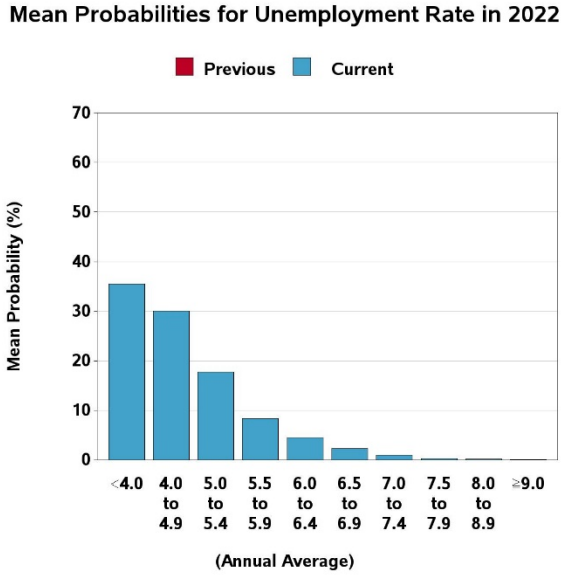


The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart presents the forecasters' estimates of the probability that unemployment will fall into each of 10 ranges. The charts show that the estimates of uncertainty about the unemployment rate over the next three years have changed little from those in the previous survey.









Downward Revisions to 2019 Headline Inflation

The forecasters expect current-quarter headline CPI inflation to average 1.1 percent, down from 2.4 percent in the last survey, and 2.0 percent in 2019, down from 2.3 percent previously. Headline PCE inflation for the current quarter will be 1.4 percent, down 0.8 percentage point from the previous estimate. For 2019, the panelists see headline PCE inflation at 1.9 percent, marking a downward revision from 2.1 percent.

The projections for core CPI and PCE inflation at all horizons are little changed from those of the previous survey. Measured on a fourth-quarter over fourth-quarter basis, core CPI inflation is expected to average 2.3 percent in each of the next three years. The projections for core PCE inflation are 2.0 percent for 2019, 2.1 percent for 2020, and 2.0 percent for 2021.

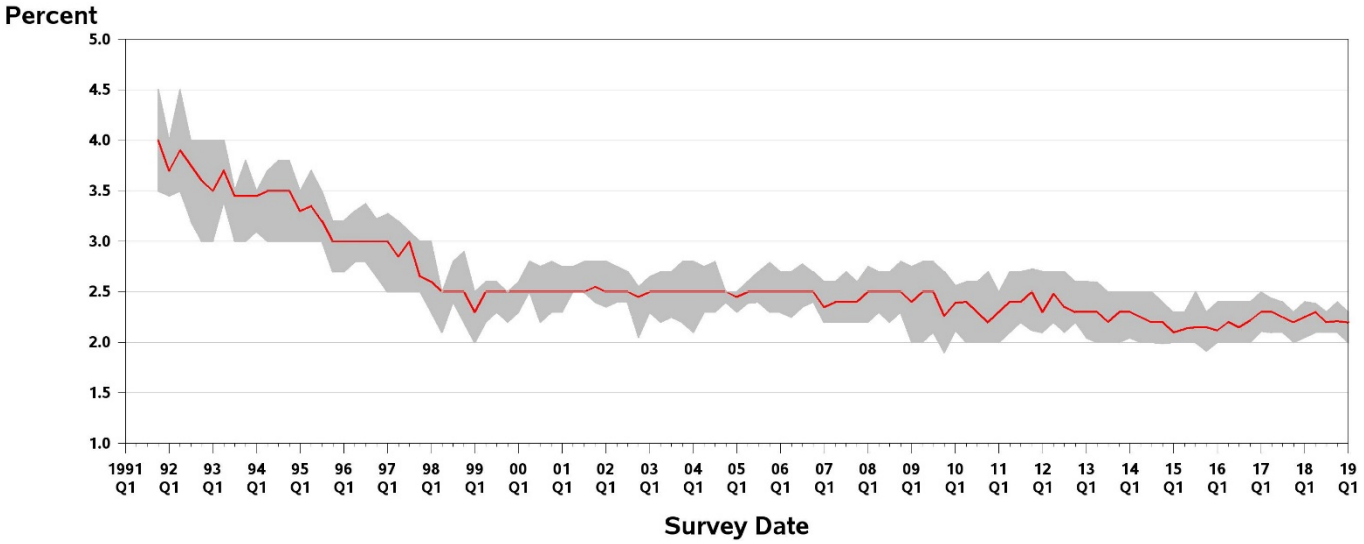
Over the next 10 years, 2019 to 2028, the forecasters expect headline CPI inflation to average 2.20 percent at an annual rate. The corresponding estimate for 10-year annual-average PCE inflation is 2.00 percent.

Median Short-Run and Long-Run Projections for Inflation (Annualized Percentage Points)

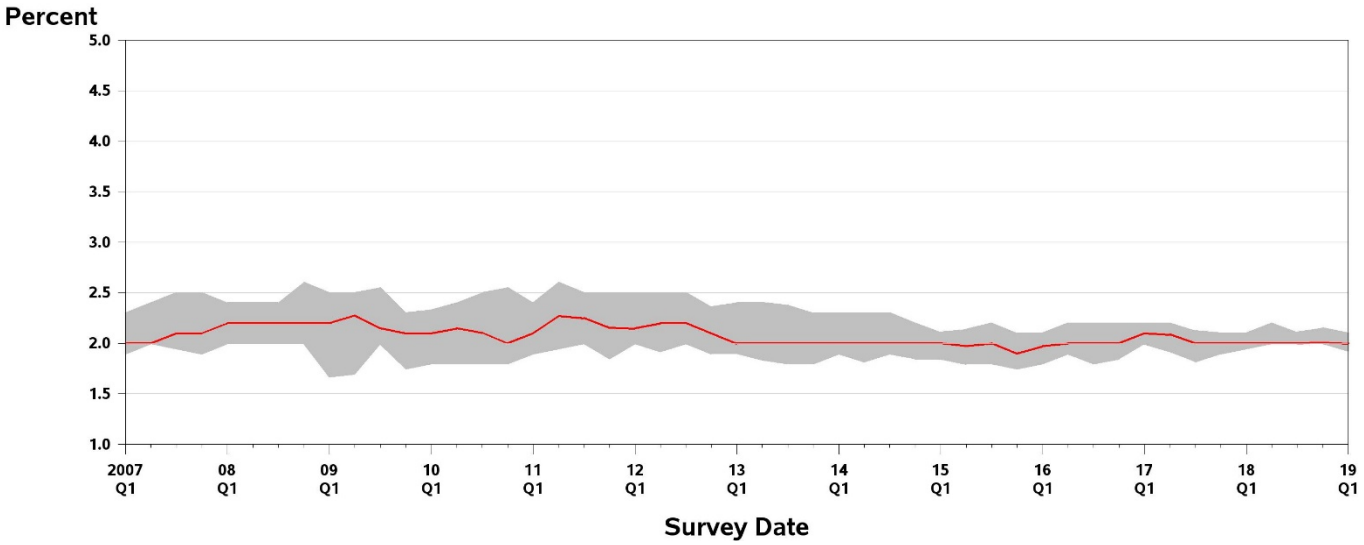
	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
Quarterly								
2019:Q1	2.4	1.1	2.3	2.4	2.2	1.4	2.1	2.0
2019:Q2	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.0
2019:Q3	2.3	2.3	2.4	2.3	2.1	2.1	2.1	2.0
2019:Q4	2.4	2.2	2.4	2.3	2.1	2.1	2.1	2.0
2020:Q1	N.A.	2.3	N.A.	2.3	N.A.	2.2	N.A.	2.1
Q4/Q4 Annual Averages								
2019	2.3	2.0	2.4	2.3	2.1	1.9	2.1	2.0
2020	2.3	2.2	2.4	2.3	2.1	2.0	2.1	2.1
2021	N.A.	2.2	N.A.	2.3	N.A.	2.1	N.A.	2.0
Long-Term Annual Averages								
2018-2022	2.25	N.A.	N.A.	N.A.	2.10	N.A.	N.A.	N.A.
2019-2023	N.A.	2.13	N.A.	N.A.	N.A.	2.00	N.A.	N.A.
2018-2027	2.21	N.A.	N.A.	N.A.	2.01	N.A.	N.A.	N.A.
2019-2028	N.A.	2.20	N.A.	N.A.	N.A.	2.00	N.A.	N.A.

The charts below show the median projections (the red line) and the associated interquartile ranges (gray areas around the red line) for the projections for 10-year annual-average CPI and PCE inflation. The charts highlight the nearly unchanged projections for the long-term CPI and PCE inflation, compared with those of the previous survey.

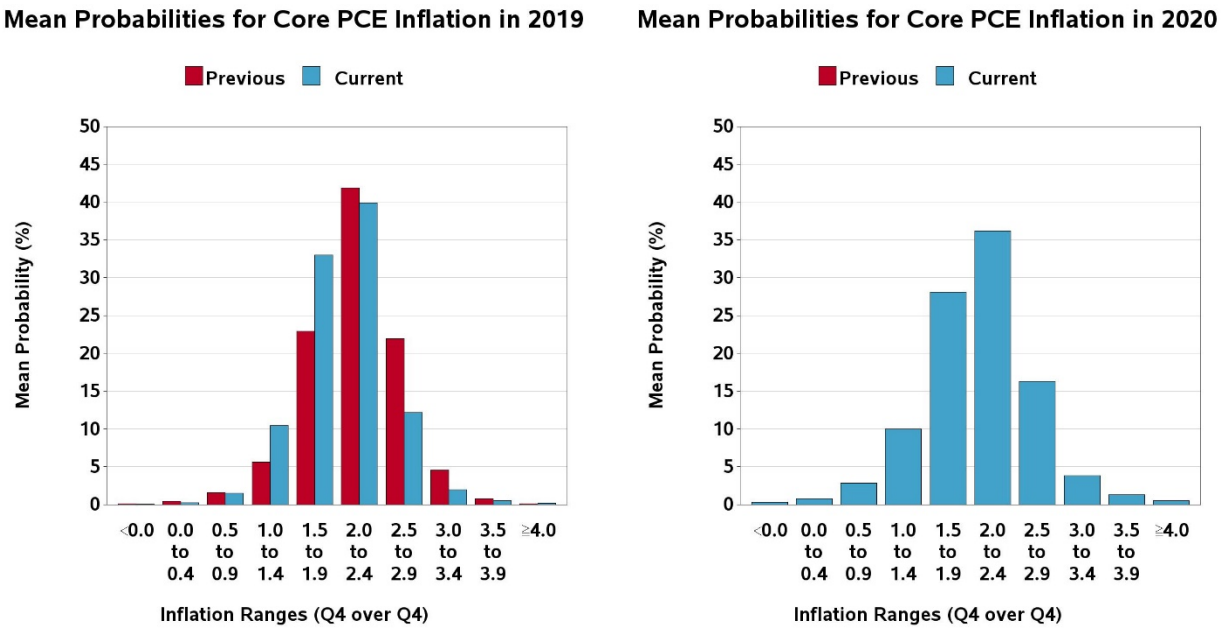
Projections for the 10-Year Annual-Average Rate of CPI Inflation
(Median and Interquartile Range)



Projections for the 10-Year Annual-Average Rate of PCE Inflation
(Median and Interquartile Range)



The figures below show the probabilities that the forecasters are assigning to the possibility that fourth-quarter over fourth-quarter core PCE inflation in 2019 and 2020 will fall into each of 10 ranges. For 2019, the forecasters have increased the probability that core PCE inflation will be below 2.0 percent, compared with their estimates in the survey of three months ago.



Lower Risk of a Negative Quarter Beyond the Current Quarter

The forecasters have revised downward the chance of a contraction in real GDP in any of the three quarters following the first quarter of 2019. For the current quarter, the forecasters predict a 16.7 percent chance of negative growth, up from 10.6 percent in the previous survey.

Risk of a Negative Quarter (%)
Survey Means

Quarterly data:	Previous	New
2019:Q1	10.6	16.7
2019:Q2	13.6	11.2
2019:Q3	19.1	14.5
2019:Q4	22.8	17.9
2020:Q1	N.A.	21.9

Forecasters State Their Views on House Price Growth over the Next Two Years

In a special question in this survey, panelists were asked to provide their forecasts for fourth-quarter over fourth-quarter growth in house prices, as measured by a number of alternative indices. The panelists were allowed to choose their measure from a list of indices or to write in their own index. For each index of their choosing, the panelists provided forecasts for growth in 2019 and 2020.

Twenty panelists answered the special question. Some panelists provided projections for more than one index. The table below provides a summary of the forecasters' responses. The number of responses (N) is low for each index. The median estimates for the six house-price indices listed in the table below range from 3.9 percent to 4.7 percent in 2019 and from 2.6 percent to 4.0 percent in 2020.

Projections for Growth in Various Indices of House Prices
Q4/Q4, Percentage Points

Index	2019 (Q4/Q4 Percent Change)			2020 (Q4/Q4 Percent Change)		
	N	Mean	Median	N	Mean	Median
S&P CoreLogic Case-Shiller: U.S. National	8	4.5	4.7	8	3.0	3.2
S&P CoreLogic Case-Shiller: Composite 10	5	3.8	3.9	5	3.9	4.0
S&P CoreLogic Case-Shiller: Composite 20	5	3.8	4.3	5	3.1	2.6
FHFA: Purchase Only (U.S. Total)	12	4.1	4.2	12	3.0	3.1
CoreLogic: National HPI, incl. Distressed Sales (Single Family Combined)	4	4.6	4.6	4	3.8	4.0
NAR Median: Total Existing	3	3.7	4.0	3	3.6	3.7

Forecasters See Lower 10-Year Growth in Output and Productivity and in Returns to Financial Assets

In our first-quarter surveys, the forecasters provide their 10-year annual-average projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets.

As the table below shows, the forecasters have cut their estimates for the annual-average rate of growth in real GDP over the next 10 years. Currently, the forecasters expect real GDP to grow at an annual-average rate of 1.99 percent over the next 10 years, down from their projection of 2.15 percent in the first-quarter survey of 2018. Ten-year annual-average productivity growth is now expected to be 1.35 percent, down from 1.50 percent previously.

Downward revisions to the return on the financial assets accompany the current outlook. The forecasters predict the S&P 500 returning an annual-average 5.35 percent over the next 10 years, down from 6.00 percent. The forecasters see the rate on 10-year Treasuries averaging 3.50 percent over the next 10 years, down from 3.70 percent in last year's first-quarter survey. Three-month Treasury bills will return an annual-average 2.75 percent over the next 10 years, unchanged from last year's first-quarter survey.

Median Long-Term (10-Year) Forecasts (%)

	First Quarter 2018	*Current Survey*
Real GDP Growth	2.15	1.99
Productivity Growth	1.50	1.35
Stock Returns (S&P 500)	6.00	5.35
Rate on 10-Year Treasury Bonds	3.70	3.50
Bill Returns (3-Month)	2.75	2.75

Technical Notes

Moody's Aaa and Baa Historical Rates
The historical values of Moody's Aaa and Baa rates are proprietary and, therefore, not available in the data files on the Bank's website or on the tables that accompany the survey's complete write-up in the PDF.

The release of the first quarter 2019 Survey of Professional Forecasters on March 22, 2019, is later than usual due to the partial federal government shutdown late last year through early this year.

The Federal Reserve Bank of Philadelphia thanks the following forecasters for their participation in recent surveys:

Lewis Alexander, Nomura Securities; **Scott Anderson**, Bank of the West (BNP Paribas Group); **Robert J. Barbera**, Johns Hopkins University Center for Financial Economics; **Peter Bernstein**, RCF Economic and Financial Consulting, Inc.; **Jay Bryson**, Wells Fargo; **Christine Chmura**, **Ph.D.**, and **Xiaobing Shuai**, **Ph.D.**, Chmura Economics & Analytics; **Gary Ciminero**, **CFA**, GLC Financial Economics; **Nathaniel Curtis**, Ankura Consulting Group, LLC; **Gregory Daco**, Oxford Economics USA, Inc.; **Rajeev Dhawan**, Georgia State University; **Bill Diviney**, ABN AMRO Bank NV; **Gabriel Ehrlich**, **Daniil Manaenkov**, **Owen Nie**, and **Aditi Thapar**, RSQE, University of Michigan; **Michael R. Englund**, Action Economics, LLC; **J.D. Foster**, U.S. Chamber of Commerce; **Michael Gapen**, Barclays Capital; **Sacha Gelfer**, Bentley University; **James Glassman**, JPMorgan Chase & Co.; **Jan Hatzius**, Goldman Sachs; **Keith Hembre**, Nuveen Asset Management; **Peter Hooper**, Deutsche Bank Securities, Inc.; **Fred Joutz**, Benchmark Forecasts; **Sam Kahan**, Kahan Consulting Ltd. (ACT Research LLC); **N. Karp**, BBVA Research USA; **Walter Kemmsies**, Jones Lang LaSalle; **Jack Kleinhenz**, Kleinhenz & Associates, Inc.; **Thomas Lam**, Sim Kee Boon Institute, Singapore Management University; **L. Douglas Lee**, Economics from Washington; **John Lonski**, Moody's Capital Markets Group; **Macroeconomic Advisers**, **IHS Markit**; **Robert McNab**, Old Dominion University; **R. Anthony Metz**, Pareto Optimal Economics; **R. M. Monaco**, TitanRM; **Michael Moran**, Daiwa Capital Markets America; **Joel L. Naroff**, Naroff Economic Advisors; **Mark Nielson, Ph.D.**, MacroEcon Global Advisors; **Luca Noto**, Anima Sgr; **Brendon Ogmundson**, BC Real Estate Association; **Arun Raha** and **Maira Trimble**, Eaton Corporation; **Philip Rothman**, East Carolina University; **Chris Rupkey**, MUFG Union Bank; **Sean M. Snaith**, **Ph.D.**, University of Central Florida; **Constantine G. Soras, Ph.D.**, CGS Economic Consulting/Montclair State University; **Stephen Stanley**, Amherst Pierpont Securities; **Charles Steindel**, Ramapo College of New Jersey; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **James Sweeney**, Credit Suisse; **Thomas Kevin Swift**, American Chemistry Council; **Mark Zandi**, Moody's Analytics; **Ellen Zentner**, Morgan Stanley.

This is a partial list of participants. We also thank those who wish to remain anonymous.

SUMMARY TABLE
SURVEY OF PROFESSIONAL FORECASTERS
MAJOR MACROECONOMIC INDICATORS

	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2019	2020	2021	2022
						(YEAR-OVER-YEAR)			
PERCENT GROWTH AT ANNUAL RATES									
1. REAL GDP (BILLIONS, CHAIN WEIGHTED)	1.5	2.4	2.2	2.2	2.1	2.4	2.0	1.8	2.1
2. GDP PRICE INDEX (PERCENT CHANGE)	2.0	2.2	2.1	2.1	2.0	2.0	2.1	N.A.	N.A.
3. NOMINAL GDP ($ BILLIONS)	3.2	4.6	4.3	4.4	4.2	4.4	4.0	N.A.	N.A.
4. NONFARM PAYROLL EMPLOYMENT									
(PERCENT CHANGE)	1.6	1.3	1.3	1.1	1.1	1.5	1.0	N.A.	N.A.
(AVG MONTHLY CHANGE)	198.9	156.8	168.5	142.1	143.6	191.8	123.2	N.A.	N.A.
VARIABLES IN LEVELS									
5. UNEMPLOYMENT RATE (PERCENT)	3.9	3.7	3.7	3.7	3.7	3.7	3.7	4.0	4.2
6. 3-MONTH TREASURY BILL (PERCENT)	2.4	2.5	2.6	2.6	2.7	2.5	2.7	2.7	2.7
7. 10-YEAR TREASURY BOND (PERCENT)	2.8	2.9	2.9	3.0	3.1	2.9	3.1	3.3	3.4

	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2019	2020	2021
						(Q4-OVER-Q4)		
INFLATION INDICATORS								
8. CPI (ANNUAL RATE)	1.1	2.3	2.3	2.2	2.3	2.0	2.2	2.2
9. CORE CPI (ANNUAL RATE)	2.4	2.2	2.3	2.3	2.3	2.3	2.3	2.3
10. PCE (ANNUAL RATE)	1.4	2.1	2.1	2.1	2.2	1.9	2.0	2.1
11. CORE PCE (ANNUAL RATE)	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0

Note: The figures on each line are medians of 38 forecasters.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2019.

SURVEY OF PROFESSIONAL FORECASTERS

First Quarter 2019

Tables

Note: Data in these tables listed as "actual" are the data that were available to the forecasters when they were sent the survey questionnaire on February 28, 2019; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before March 12, 2019.

TABLE ONE
MAJOR MACROECONOMIC INDICATORS
MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST			
		2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2018 ANNUAL	2019 ANNUAL	2020 ANNUAL	2021 ANNUAL	2022 ANNUAL
1. GROSS DOMESTIC PRODUCT (GDP) ($ BILLIONS)	36	20891	21055	21294	21520	21752	21976	20501	21405	22272	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	37	111.16	111.70	112.32	112.91	113.49	114.05	110.34	112.60	114.94	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES ($ BILLIONS)	22	N.A.	2101.6	2128.6	2151.2	2154.2	2172.3	N.A.	2134.2	2195.6	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	36	3.8	3.9	3.7	3.7	3.7	3.7	3.9	3.7	3.7	4.0	4.2
5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS)	33	150057	150654	151124	151630	152056	152487	149064	151366	152844	N.A.	N.A.
6. INDUSTRIAL PRODUCTION (2012=100)	32	109.8	110.1	110.6	111.2	111.7	112.2	107.9	110.9	112.8	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	32	1.17	1.23	1.25	1.27	1.27	1.27	1.24	1.26	1.29	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	33	2.32	2.44	2.50	2.57	2.65	2.70	1.94	2.54	2.73	2.68	2.68
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	24	N.A.	3.90	4.02	4.13	4.20	4.30	N.A.	4.09	4.30	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	25	N.A.	5.04	5.17	5.30	5.35	5.49	N.A.	5.23	5.63	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	37	3.03	2.75	2.85	2.90	2.97	3.08	2.91	2.88	3.11	3.25	3.40
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	36	18785	18853	18963	19067	19173	19271	18571	19019	19394	19742	20162
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	34	13044.2	13104.5	13193.1	13273.4	13344.2	13424.6	12890.6	13229.5	13525.5	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	2768.0	2795.7	2825.0	2848.6	2875.8	2902.9	2714.8	2834.9	2919.4	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	602.3	601.5	602.0	603.6	605.3	607.7	609.6	602.5	609.5	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	34	1239.5	1247.0	1255.2	1262.0	1268.3	1273.6	1227.8	1258.5	1281.3	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	34	1955.0	1961.7	1969.3	1974.6	1979.3	1985.5	1948.9	1971.0	1992.9	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	31	97.1	75.0	62.7	66.7	65.4	59.1	45.1	66.2	57.6	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	33	-963.2	-966.7	-977.7	-989.9	-1003.1	-1014.0	-914.1	-983.3	-1020.5	N.A.	N.A.

* The historical values of Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, First Quarter 2019.

TABLE TWO
MAJOR MACROECONOMIC INDICATORS
PERCENTAGE CHANGES AT ANNUAL RATES

	NUMBER OF FORECASTERS	Q4 2018 TO Q1 2019	Q1 2019 TO Q2 2019	Q2 2019 TO Q3 2019	Q3 2019 TO Q4 2019	Q4 2019 TO Q1 2020	2018 TO 2019	2019 TO 2020	2020 TO 2021	2021 TO 2022
1. GROSS DOMESTIC PRODUCT (GDP) ($ BILLIONS)	36	3.2	4.6	4.3	4.4	4.2	4.4	4.0	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	37	2.0	2.2	2.1	2.1	2.0	2.0	2.1	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES ($ BILLIONS)	22	1.4	5.2	4.3	0.6	3.4	4.8	2.9	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	36	0.1	-0.2	-0.0	0.0	0.0	-0.2	0.0	0.3	0.2
5. NONFARM PAYROLL EMPLOYMENT										
(PERCENT CHANGE)	33	1.6	1.3	1.3	1.1	1.1	1.5	1.0	N.A.	N.A.
(AVG MONTHLY CHANGE)	33	198.9	156.8	168.5	142.1	143.6	191.8	123.2	N.A.	N.A.
6. INDUSTRIAL PRODUCTION (2012=100)	32	1.0	2.1	2.0	2.1	1.5	2.8	1.7	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	32	25.2	4.4	6.0	1.1	0.0	1.0	2.5	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	33	0.12	0.06	0.07	0.08	0.05	0.60	0.19	-0.05	0.00
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	24	N.A.	0.12	0.11	0.07	0.11	N.A.	0.21	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	25	N.A.	0.13	0.13	0.05	0.14	N.A.	0.40	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	37	-0.28	0.10	0.05	0.07	0.11	-0.04	0.23	0.14	0.15
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	36	1.5	2.4	2.2	2.2	2.1	2.4	2.0	1.8	2.1
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	34	1.9	2.7	2.5	2.1	2.4	2.6	2.2	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	4.1	4.3	3.4	3.9	3.8	4.4	3.0	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	33	-0.5	0.3	1.1	1.1	1.6	-1.2	1.2	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	34	2.4	2.6	2.2	2.0	1.7	2.5	1.8	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	34	1.4	1.6	1.1	1.0	1.3	1.1	1.1	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	31	-22.1	-12.3	4.0	-1.3	-6.3	21.1	-8.7	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	33	-3.5	-10.9	-12.3	-13.2	-10.9	-69.1	-37.3	N.A.	N.A.

* The historical values of Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Note: Figures for unemployment rate, 3-month Treasury bill rate, Moody's Aaa corporate bond yield, Moody's Baa corporate bond yield, and 10-year Treasury bond yield are changes in these rates, in percentage points. Figures for change in private inventories and net exports are changes in billions of chain-weighted dollars. All others are percentage changes at annual rates.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, First Quarter 2019.

TABLE THREE
MAJOR PRICE INDICATORS
MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST(Q/Q)					ACTUAL	FORECAST(Q4/Q4)		
		2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2018 ANNUAL	2019 ANNUAL	2020 ANNUAL	2021 ANNUAL
1. CONSUMER PRICE INDEX (ANNUAL RATE)	36	1.5	1.1	2.3	2.3	2.2	2.3	2.2	2.0	2.2	2.2
2. CORE CONSUMER PRICE INDEX (ANNUAL RATE)	36	2.2	2.4	2.2	2.3	2.3	2.3	2.2	2.3	2.3	2.3
3. PCE PRICE INDEX (ANNUAL RATE)	35	1.5	1.4	2.1	2.1	2.1	2.2	1.9	1.9	2.0	2.1
4. CORE PCE PRICE INDEX (ANNUAL RATE)	34	1.7	2.0	2.0	2.0	2.0	2.1	1.9	2.0	2.1	2.0

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, First Quarter 2019.

TABLE FOUR
YIELD SPREADS
MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST			
		2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2018 ANNUAL	2019 ANNUAL	2020 ANNUAL	2021 ANNUAL	2022 ANNUAL
1. TBOND MINUS TBILL (PERCENTAGE POINTS)	33	0.72	0.31	0.31	0.38	0.35	0.42	0.97	0.37	0.41	0.45	0.52
2. AAA MINUS TBOND (PERCENTAGE POINTS)	24	N.A.	1.14	1.14	1.13	1.14	1.14	N.A.	1.13	1.20	N.A.	N.A.
3. BAA MINUS TBOND (PERCENTAGE POINTS)	25	N.A.	2.29	2.24	2.26	2.30	2.30	N.A.	2.30	2.31	N.A.	N.A.
4. BAA MINUS AAA (PERCENTAGE POINTS)	24	N.A.	1.14	1.12	1.10	1.13	1.14	N.A.	1.11	1.13	N.A.	N.A.

Notes:

TBOND is the rate on 10-year Treasury bonds.
TBILL is the rate on 3-month Treasury bills.
AAA is the rate on Moody's Aaa corporate bonds.
BAA is the rate on Moody's Baa corporate bonds.

The historical values for interest rate spreads for Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Each interest rate spread is computed as the median value of the forecasters' spreads. These median values may differ from those computed as the difference between the median values of each interest rate in the spread.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, First Quarter 2019.

TABLE FIVE
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

ESTIMATED PROBABILITY (CHANCES IN 100)	Q4 2018 TO Q1 2019	Q1 2019 TO Q2 2019	Q2 2019 TO Q3 2019	Q3 2019 TO Q4 2019	Q4 2019 TO Q1 2020
	NUMBER OF FORECASTERS				
10 OR LESS	14	20	11	7	3
11 TO 20	11	12	21	18	17
21 TO 30	5	2	2	8	11
31 TO 40	3	0	0	1	3
41 TO 50	0	0	0	0	0
51 TO 60	1	0	0	0	0
61 TO 70	0	0	0	0	0
71 TO 80	0	0	0	0	0
81 TO 90	0	0	0	0	0
91 AND OVER	0	0	0	0	0
NOT REPORTING	4	4	4	4	4
MEAN AND MEDIAN					
MEDIAN PROBABILITY	15.00	10.00	15.00	20.00	20.00
MEAN PROBABILITY	16.70	11.24	14.45	17.93	21.90

Note: Total number of forecasters reporting is 34.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2019.

TABLE SIX
MEAN PROBABILITIES

MEAN PROBABILITY ATTACHED TO POSSIBLE
CIVILIAN UNEMPLOYMENT RATES:
(ANNUAL AVERAGE)

	2019	2020	2021	2022
9.0 PERCENT OR MORE	0.00	0.00	0.00	0.05
8.0 TO 8.9 PERCENT	0.00	0.00	0.06	0.20
7.5 TO 7.9 PERCENT	0.00	0.00	0.09	0.33
7.0 TO 7.4 PERCENT	0.00	0.02	0.42	0.99
6.5 TO 6.9 PERCENT	0.00	0.10	1.09	2.33
6.0 TO 6.4 PERCENT	0.04	0.57	2.68	4.49
5.5 TO 5.9 PERCENT	0.69	3.00	5.96	8.35
5.0 TO 5.4 PERCENT	3.99	9.32	16.07	17.75
4.0 TO 4.9 PERCENT	28.73	34.80	33.10	30.03
LESS THAN 4.0 PERCENT	66.56	52.18	40.55	35.48

MEAN PROBABILITY ATTACHED TO POSSIBLE
PERCENT CHANGES IN REAL GDP:
(ANNUAL-AVERAGE OVER ANNUAL-AVERAGE)

	2018-2019	2019-2020	2020-2021	2021-2022
6.0 PERCENT OR MORE	0.04	0.22	0.30	0.38
5.0 TO 5.9 PERCENT	0.23	0.60	0.83	0.97
4.0 TO 4.9 PERCENT	2.25	2.17	2.45	3.16
3.0 TO 3.9 PERCENT	13.56	9.85	9.36	11.09
2.0 TO 2.9 PERCENT	53.01	32.75	28.11	31.81
1.0 TO 1.9 PERCENT	20.23	30.92	27.71	27.18
0.0 TO 0.9 PERCENT	7.40	15.00	18.59	15.51
-1.0 TO -0.1 PERCENT	2.77	6.79	8.42	6.52
-2.0 TO -1.1 PERCENT	0.40	1.27	3.34	2.33
-3.0 TO -2.1 PERCENT	0.06	0.28	0.71	0.60
LESS THAN -3.0 PERCENT	0.04	0.14	0.18	0.45

MEAN PROBABILITY ATTACHED TO POSSIBLE
PERCENT CHANGES IN GDP PRICE INDEX:
(ANNUAL-AVERAGE OVER ANNUAL-AVERAGE)

	2018-2019	2019-2020
4.0 PERCENT OR MORE	0.00	0.48
3.5 TO 3.9 PERCENT	0.33	0.95
3.0 TO 3.4 PERCENT	3.08	4.33
2.5 TO 2.9 PERCENT	15.48	17.52
2.0 TO 2.4 PERCENT	44.19	38.48
1.5 TO 1.9 PERCENT	27.44	25.78
1.0 TO 1.4 PERCENT	7.21	8.11
0.5 TO 0.9 PERCENT	1.80	2.93
0.0 TO 0.4 PERCENT	0.42	1.07
LESS THAN 0.0 PERCENT	0.05	0.35

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2019.

TABLE SEVEN
MEAN PROBABILITY OF CORE CPI AND CORE PCE INFLATION (Q4/Q4)

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

	18Q4 TO 19Q4	19Q4 TO 20Q4
4.0 PERCENT OR MORE	0.38	1.13
3.5 TO 3.9 PERCENT	0.93	2.09
3.0 TO 3.4 PERCENT	4.38	7.69
2.5 TO 2.9 PERCENT	19.57	21.78
2.0 TO 2.4 PERCENT	45.89	38.34
1.5 TO 1.9 PERCENT	22.77	19.98
1.0 TO 1.4 PERCENT	4.79	6.39
0.5 TO 0.9 PERCENT	0.87	1.77
0.0 TO 0.4 PERCENT	0.29	0.51
LESS THAN 0.0 PERCENT	0.14	0.33

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

	18Q4 TO 19Q4	19Q4 TO 20Q4
4.0 PERCENT OR MORE	0.17	0.49
3.5 TO 3.9 PERCENT	0.53	1.30
3.0 TO 3.4 PERCENT	1.94	3.80
2.5 TO 2.9 PERCENT	12.19	16.27
2.0 TO 2.4 PERCENT	39.89	36.16
1.5 TO 1.9 PERCENT	33.03	28.09
1.0 TO 1.4 PERCENT	10.45	10.01
0.5 TO 0.9 PERCENT	1.50	2.82
0.0 TO 0.4 PERCENT	0.23	0.77
LESS THAN 0.0 PERCENT	0.07	0.29

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2019.

TABLE EIGHT
LONG-TERM (5-YEAR AND 10-YEAR) INFLATION FORECASTS

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2019-2023

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	1.83	MINIMUM	1.67
LOWER QUARTILE	2.00	LOWER QUARTILE	1.90
MEDIAN	2.13	MEDIAN	2.00
UPPER QUARTILE	2.25	UPPER QUARTILE	2.01
MAXIMUM	3.00	MAXIMUM	2.60
MEAN	2.18	MEAN	2.02
STD. DEVIATION	0.26	STD. DEVIATION	0.23
N	32	N	31
MISSING	6	MISSING	7

ANNUAL AVERAGE OVER THE FOLLOWING 5 YEARS: 2024-2028

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	1.80	MINIMUM	1.60
LOWER QUARTILE	2.00	LOWER QUARTILE	2.00
MEDIAN	2.25	MEDIAN	2.00
UPPER QUARTILE	2.40	UPPER QUARTILE	2.20
MAXIMUM	3.40	MAXIMUM	2.90
MEAN	2.26	MEAN	2.09
STD. DEVIATION	0.30	STD. DEVIATION	0.23
N	31	N	30
MISSING	7	MISSING	8

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2019-2028

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	1.90	MINIMUM	1.80
LOWER QUARTILE	2.00	LOWER QUARTILE	1.93
MEDIAN	2.20	MEDIAN	2.00
UPPER QUARTILE	2.30	UPPER QUARTILE	2.10
MAXIMUM	3.20	MAXIMUM	2.70
MEAN	2.22	MEAN	2.06
STD. DEVIATION	0.27	STD. DEVIATION	0.20
N	31	N	30
MISSING	7	MISSING	8

Note: The summary statistics for each forecast horizon are computed on a sample of panelists that may differ from one horizon to the next. The usual identity linking the 10-year horizon to the two underlying five-year horizons may not hold in the results.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2019.

TABLE NINE
ADDITIONAL LONG-TERM (10-YEAR) FORECASTS

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2019-2028

REAL GDP GROWTH RATE		PRODUCTIVITY GROWTH RATE	
MINIMUM	1.50	MINIMUM	0.90
LOWER QUARTILE	1.80	LOWER QUARTILE	1.20
MEDIAN	1.99	MEDIAN	1.35
UPPER QUARTILE	2.30	UPPER QUARTILE	1.60
MAXIMUM	2.75	MAXIMUM	2.85
MEAN	2.05	MEAN	1.49
STD. DEVIATION	0.34	STD. DEVIATION	0.49
N	28	N	22
MISSING	10	MISSING	16

STOCK RETURNS (S&P 500)		BOND RATE (10-YEAR)		BILL RETURNS (3-MONTH)	
MINIMUM	3.43	MINIMUM	2.50	MINIMUM	1.75
LOWER QUARTILE	4.32	LOWER QUARTILE	3.25	LOWER QUARTILE	2.40
MEDIAN	5.35	MEDIAN	3.50	MEDIAN	2.75
UPPER QUARTILE	6.00	UPPER QUARTILE	3.90	UPPER QUARTILE	3.00
MAXIMUM	10.00	MAXIMUM	4.80	MAXIMUM	3.60
MEAN	5.38	MEAN	3.57	MEAN	2.72
STD. DEVIATION	1.59	STD. DEVIATION	0.52	STD. DEVIATION	0.44
N	16	N	21	N	22
MISSING	22	MISSING	17	MISSING	16

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, First Quarter 2019.