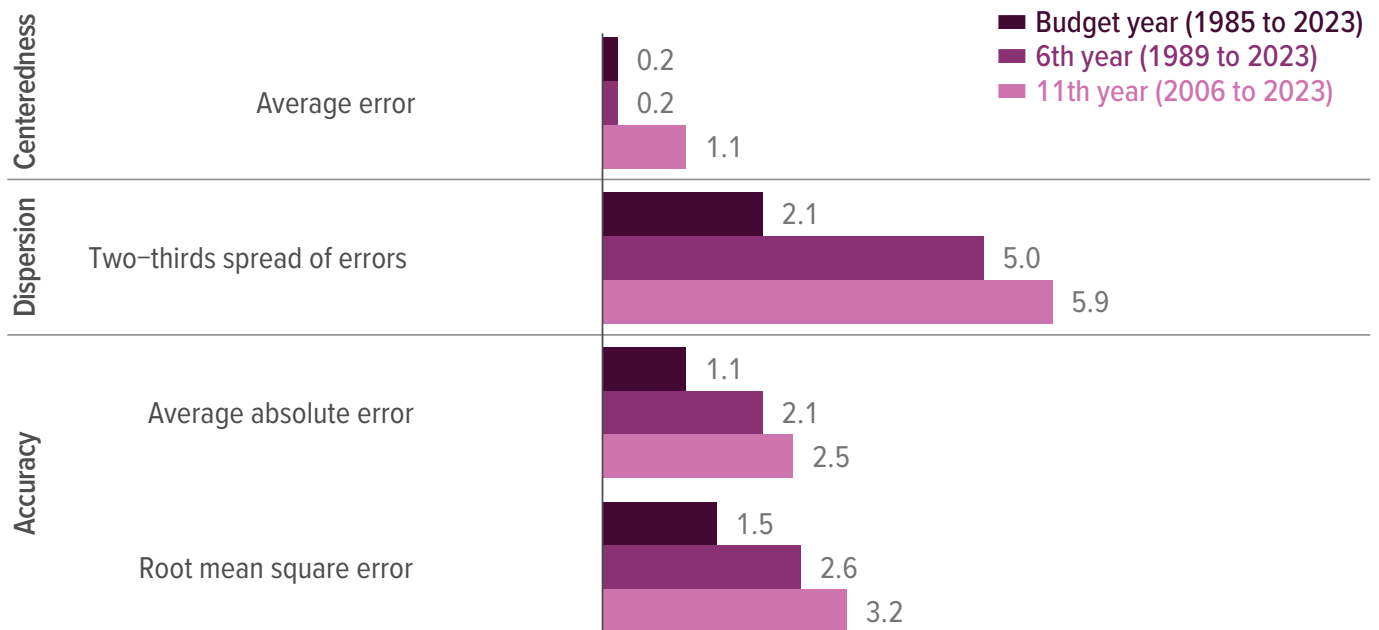


An Evaluation of CBO's Projections of Deficits and Debt From 1984 to 2023

Measures of the Quality of CBO's Deficit Projections

Percentage of GDP



At a Glance

In this report, the Congressional Budget Office assesses the quality of the baseline projections of deficits and debt that it has made each spring from 1984 to 2023. Since its inception, CBO has regularly published a budget baseline—projections of federal revenues, spending, deficits or surpluses, and debt held by the public—along with a forecast of the nation’s economy. As required by law, the baseline reflects the assumption that current laws governing taxes and spending will generally remain unchanged.

The projections are not predictions of budgetary outcomes; rather, they give lawmakers a benchmark for measuring the effects of policy options or proposed legislation. The projections encompass the current year—the year in which the projections are made—and a period of 10 years in the future (or 5 years in the case of baseline projections made before December 1995).

To assess the quality of its projections, CBO has adjusted them to account for the estimated effects of legislation enacted after the projections were developed. That way, the focus is on the projection errors: The resulting differences between projected and actual deficits and debt exclude the effects of subsequent legislation.

CBO measures the quality of its projections by their tendency to be overestimates or underestimates (centeredness), by the spread in the size of errors (dispersion), and by how much actual outcomes differ from projected ones (accuracy).

The results of CBO’s evaluation are as follows:

- **Deficits.** CBO has tended to overestimate deficits. Projections for the budget year have been more accurate than those for the 6th and 11th years, mainly because changes in the economy and a variety of other factors are more difficult to anticipate over longer time horizons.
- **Debt.** The agency’s debt projections have been centered for the budget year and 6th year but have tended to be overestimates for the 11th year. The projections have been less accurate over longer time horizons. The dispersion of errors has been much larger for debt projections than for deficit projections because errors in annual debt projections compound over the projection period. As a result, CBO’s projections of debt are more uncertain than the agency’s projections of deficits.
- **Comparison With the Administration’s Projections.** For years for which comparable projections are available, 1993 to 2023, errors in CBO’s budget-year projections of deficits were similar to errors in budget-year projections of deficits made by the Office of Management and Budget.
- **Effects of Enacted Legislation.** On average, errors in CBO’s deficit projections have been substantially smaller than the estimated budgetary effects of legislation enacted after the projections were made.

Notes About This Report

All years referred to are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end.

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

The Congressional Budget Office is the source of data for all figures in this report. Some of the figures use shaded vertical bars to indicate recessions, which begin just after a peak in economic activity and run through the subsequent trough.

Discretionary spending is controlled by appropriation acts that provide funding or otherwise specify how much money can be obligated for certain government programs in specific years. Such appropriations fund a broad array of government activities. Synonymous with direct spending, mandatory spending is the budget authority provided by laws other than appropriation acts and the outlays that result from that budget authority.

Supplemental data for this analysis are available on CBO's website at www.cbo.gov/publication/60664#data.

To review the data that CBO uses to evaluate the accuracy of its projections of outlays, revenues, deficits, and debt, see Congressional Budget Office, "Evaluating CBO's Projections of Components of the Federal Budget" (GitHub, updated December 2024), <https://github.com/US-CBO/eval-projections>.

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An Evaluation of CBO's Projections of Deficits and Debt From 1984 to 2023

Since its inception, the Congressional Budget Office has regularly published a budget baseline—projections of federal revenues, outlays, deficits or surpluses, and debt held by the public—along with a forecast of the nation's economy. Those projections reflect the assumption that current laws governing spending and revenues will generally remain unchanged. In most years, the agency develops budget projections and an economic forecast for a report (*The Budget and Economic Outlook*) issued in the winter. That report is often followed by updated projections in the spring and summer.

Projections in that spring update, also known as the spring baseline, typically underlie budget resolutions prepared by the House and Senate Budget Committees, as well as CBO's cost estimates for proposed legislation. Baseline projections can be useful to policymakers who are seeking to identify and address budgetary trends that are likely to play out over the coming years, if current laws remain in place.

As part of the process of preparing its current-law projections, CBO regularly assesses the quality of its past projections of federal outlays, revenues, deficits, and debt, as well as the forecasts of the economic variables that help guide those projections. Those assessments help the agency refine its methods and improve the accuracy of future projections.

This analysis updates CBO's 2019 assessment of its baseline projections of deficits and debt (available at www.cbo.gov/publication/55234). Like that earlier report, this one focuses on projections made for the 2nd year of the projection period (referred to as the budget year), which usually begins several months after a spring baseline is released, and for the 6th year (counting the year that projections were made as the 1st year). But unlike that earlier report and previous editions of it, this one also evaluates projections made for the 11th year.

Before 1995, CBO projected outlays for the current year and 5 years into the future; starting in December 1995, the agency extended its projections for 10 years beyond the current year. The first spring baseline with 11 years of projections was released in 1996 and is therefore the first baseline used in the analysis of 11th-year projections. Thus, this analysis encompasses budget-year projections for 1985 to 2023, 6th-year projections for 1989 to 2023, and 11th-year projections for 2006 to 2023.

Assessing the Quality of CBO's Projections

CBO constructs its baseline projections of federal outlays and revenues—and the resulting deficits and debt—under the assumption that current laws will generally remain unchanged. Those current-law projections are not intended to predict budgetary outcomes. Rather, they reflect CBO's best assessment of what the economy and the budget would look like in future years under existing laws. A deficit results when outlays exceed revenues, and a surplus results when revenues exceed outlays. In 35 of the 39 years examined in this analysis, the federal government incurred a deficit. For the sake of simplicity, this report refers to the projection of a surplus or deficit as a deficit projection.

CBO's current-law projections do not include forecasts of future changes in law. Therefore, to compare those projections with actual outcomes, the agency adjusts them to include the estimated effects of legislation enacted after the projections were developed. (See Appendix A for details about CBO's method for assessing its projections.) Typically, those effects reflect costs or savings that CBO estimated around the time that the relevant legislation was enacted.

To assess the quality of its projections, CBO focuses on the resulting differences—the projection errors—between projected and actual deficits and debt. The projection errors are related to CBO's economic forecast or to other factors, referred to as technical factors. Because the effects of legislation may differ from the adjustments CBO made to add them to the projections, those technical factors include differences between the actual effects of legislation and the estimated effects.

In this analysis, in addition to accounting for the estimated effects of legislation, the agency excluded outlays for the housing entities Fannie Mae and Freddie Mac from its projections and from the actual amounts reported by the Treasury. That is because CBO and the Administration account for those entities' transactions differently. And finally, because of their unusual size and nature, the estimated budgetary cost of the Administration's planned cancellation of outstanding student loans for many borrowers, announced in 2022, and the budgetary savings from the Supreme Court's subsequent decision prohibiting the Administration from implementing that plan were excluded from this analysis.

Measures of the Quality of CBO's Projections

To assess the quality of its projections of deficits and debt, CBO measured three of their characteristics: centeredness, dispersion, and accuracy. To make those measures easier to compare over time, the agency calculated them as a percentage of gross domestic product (GDP).

CBO also assessed how errors in projections of revenues, outlays, primary deficits, and net interest outlays (all measured as a percentage of GDP) contributed to errors in deficit projections. (Primary deficits exclude the government's net outlays for interest.)

- To measure **centeredness**, the agency calculated the average error—that is, the average of the annual projection errors. Those errors are expressed as a percentage that is calculated by dividing the difference between projected deficits or debt and actual deficits or debt by the actual amounts of GDP; a positive number indicates an overestimate.
- To measure **dispersion**, CBO calculated the two-thirds spread of errors, measured as the difference between the endpoints of the range of the errors after removing the one-sixth of errors furthest above the median, or midpoint of the errors, and the one-sixth furthest below the median.
- To measure **accuracy**, CBO used the average absolute error and the root mean square error (RMSE). The average absolute error is the average of the errors without regard to whether they are overestimates or underestimates (the negative signs are removed from underestimates before averaging), so errors in different directions do not offset each other. The RMSE also measures the size of errors after removing the negative signs but, by squaring the errors, places a greater weight on larger deviations. The mean square error is equal to the sum of a measure of centeredness (the square of the average error) plus a measure of dispersion (the square of the standard deviation of the errors). (The standard deviation is a common measure used to describe the variability in a particular estimate.)

Characteristics That CBO Measures to Assess the Quality of Its Projections

Characteristic	Definition	Measures
Centeredness	Degree to which projected values are above or below actual values, on average	Average error
Dispersion	Degree to which projected values vary around actual values	Two-thirds spread of errors
Accuracy	Degree to which projected values differ from actual values	Average absolute error Root mean square error

CBO uses measures of centeredness and accuracy when assessing potential changes to future baseline projections. The agency uses measures of dispersion to help illustrate the uncertainty of its projections.

Assessment of Deficit Projections

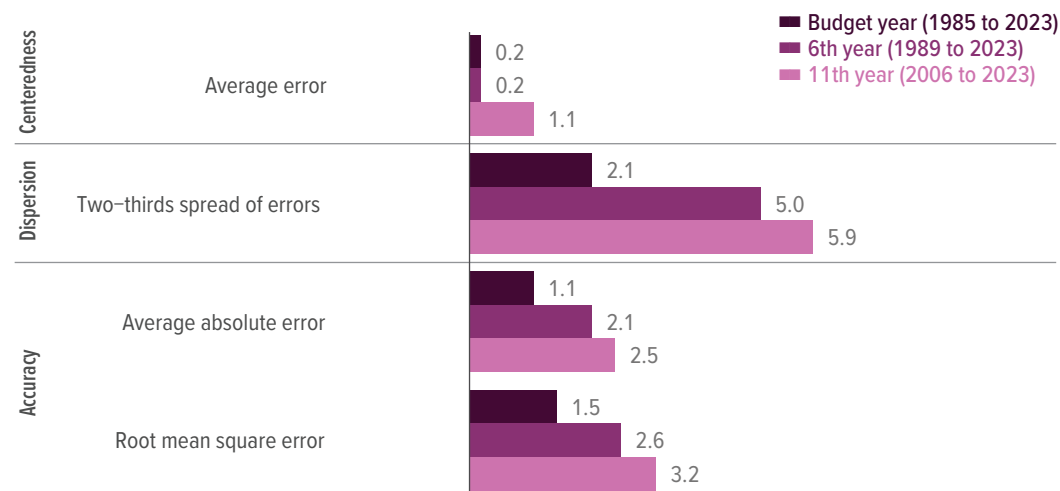
In projections of deficits for the budget year and the 6th year, overestimates and underestimates largely offset each other, resulting in small average errors. The average absolute errors were larger, ranging from 1.1 percent of GDP for the budget year to 2.5 percent for the 11th year. Actual deficits have averaged 3.9 percent of GDP since 1985. Budget-year projections of deficits were more accurate than the longer-term projections, mainly because changes in the economy and a variety of other factors are more difficult to anticipate over longer time horizons.

Contribution of Outlay and Revenue Errors to Deficit Errors. Two key factors contributed to the differences between CBO's projections and actual deficits: whether a projection was made at the start of a recession and whether the errors in the underlying revenue and outlay projections had offsetting effects. Budget-year projections made at the start of a recession were usually significant underestimates. For most budget-year and 6th-year deficit projections, outlay errors and revenue errors partly offset each other, leading to smaller errors in deficit projections.

Contribution of Primary Deficit and Net Interest Outlay Errors to Deficit Errors. CBO's projections of primary deficits are more accurate than its projections of overall deficits. The latter include projections of net interest outlays, which have historically been the agency's least accurate projections. Ninety-six percent of the 6th-year projections of net interest outlays were overestimates, as were all of the 11th-year projections. That is largely because the agency overestimated long-term interest rates. Those overestimates of net interest outlays substantially affected the centeredness of CBO's deficit projections.

Measures of the Quality of CBO's Deficit Projections

Percentage of GDP



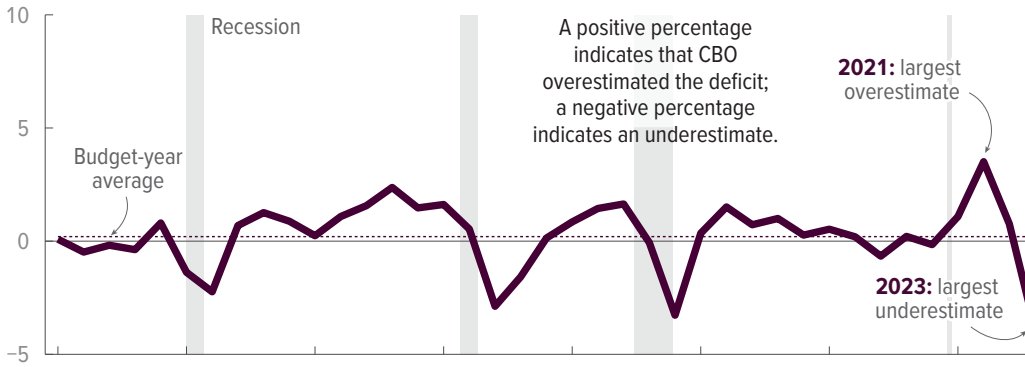
The average errors in the budget-year and 6th-year projections were both close to zero; the average error for the 11th year was larger. The two-thirds spread of errors for the 6th-year projections was more than double that for the budget-year projections, and the two-thirds spread for the 11th-year projections was nearly three times that for the budget-year projections.



Errors in CBO's Deficit Projections

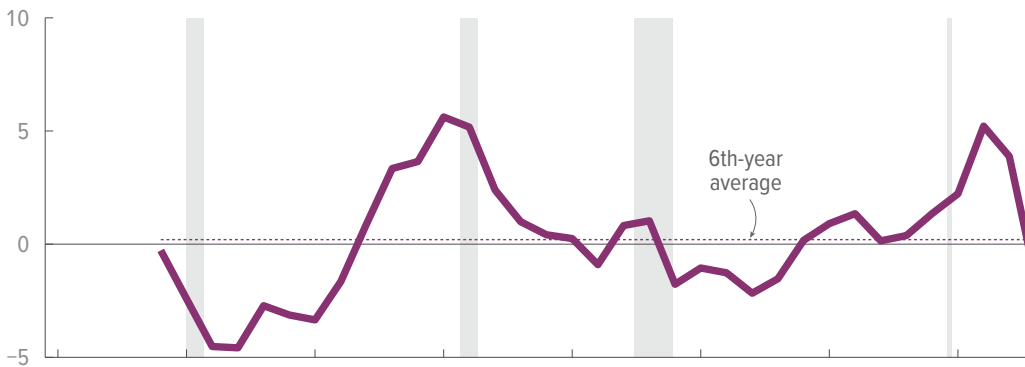
Percentage of GDP

Budget year | 39 projections analyzed (1985 to 2023)



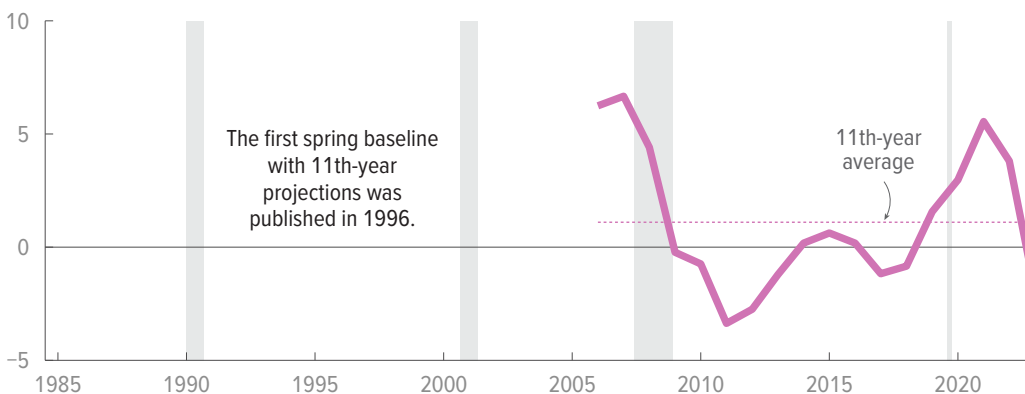
The three recessions between 1990 and 2010 led to significant underestimates of budget-year deficits. Since the coronavirus pandemic, errors in such projections have varied more, resulting in the largest overestimate (for 2021) and the largest underestimate (for 2023) in the agency's record. That dispersion is partly the result of misestimates of the timing of the effects of pandemic-related legislation.

6th year | 35 projections analyzed (1989 to 2023)



The quality of CBO's 6th-year projections has generally improved since 2001. For the years 1989 to 2001, overestimates and underestimates resulted in an average absolute error of 3.2 percent of GDP. From 2002 to 2019, misestimates were about one-third the size and resulted in an average absolute error of 1.0 percent.

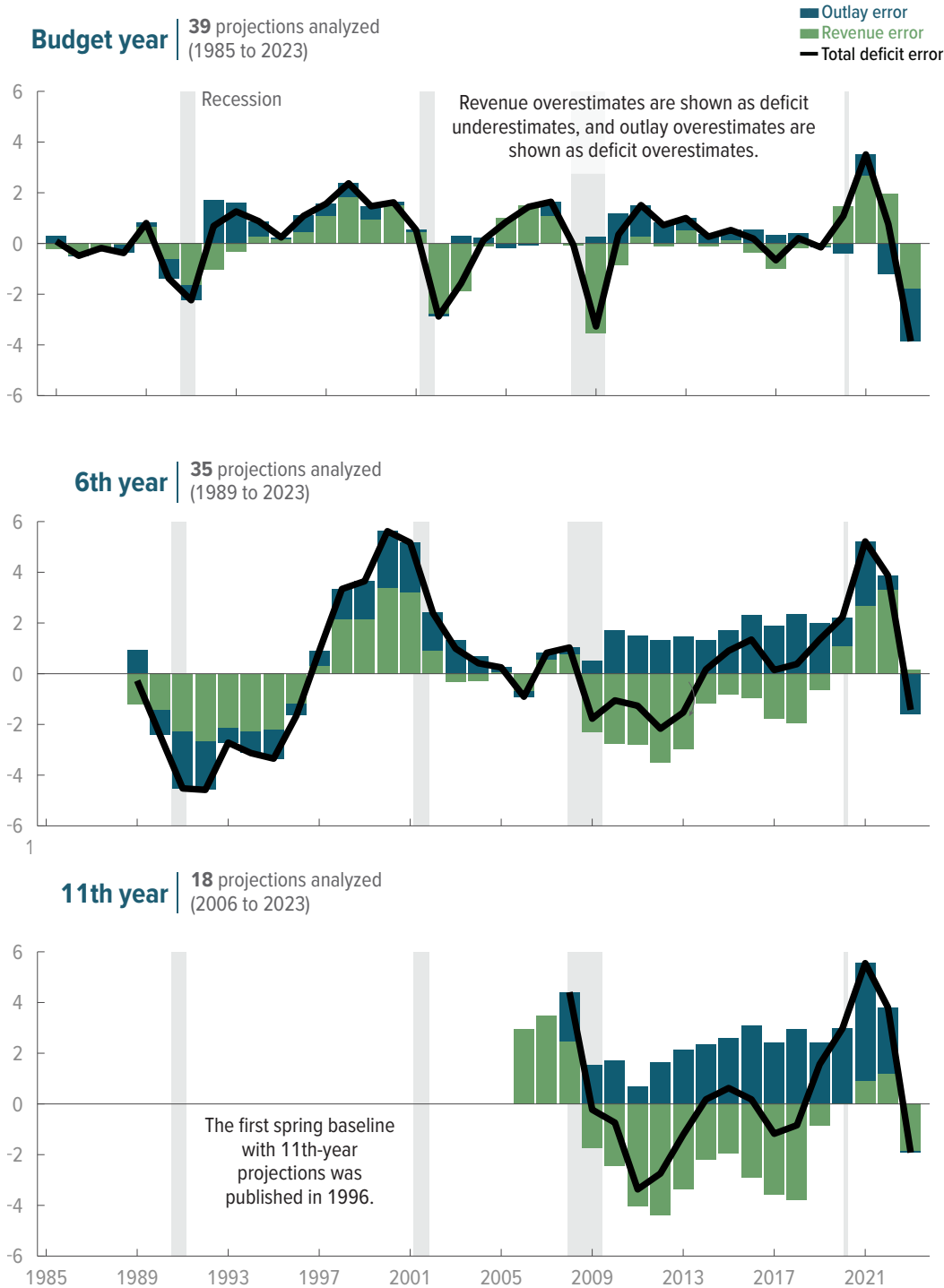
11th year | 18 projections analyzed (2006 to 2023)



Because changes in the economy and various other factors are more difficult to anticipate over longer time horizons, CBO's 11th-year deficit projections have generally been more dispersed than the shorter-term projections, reflecting larger underestimates and overestimates.

Contribution of Outlay and Revenue Errors to Deficit Errors

Percentage of GDP



Underestimates in budget-year projections of the deficit for 1991, 2002, and 2009 averaged 2.8 percent of GDP, driven by revenue overestimates averaging 2.7 percent of GDP. Each of those projections was made near the start of a recession. The average error in budget-year deficit projections for all other projection years was 0.5 percent of GDP.

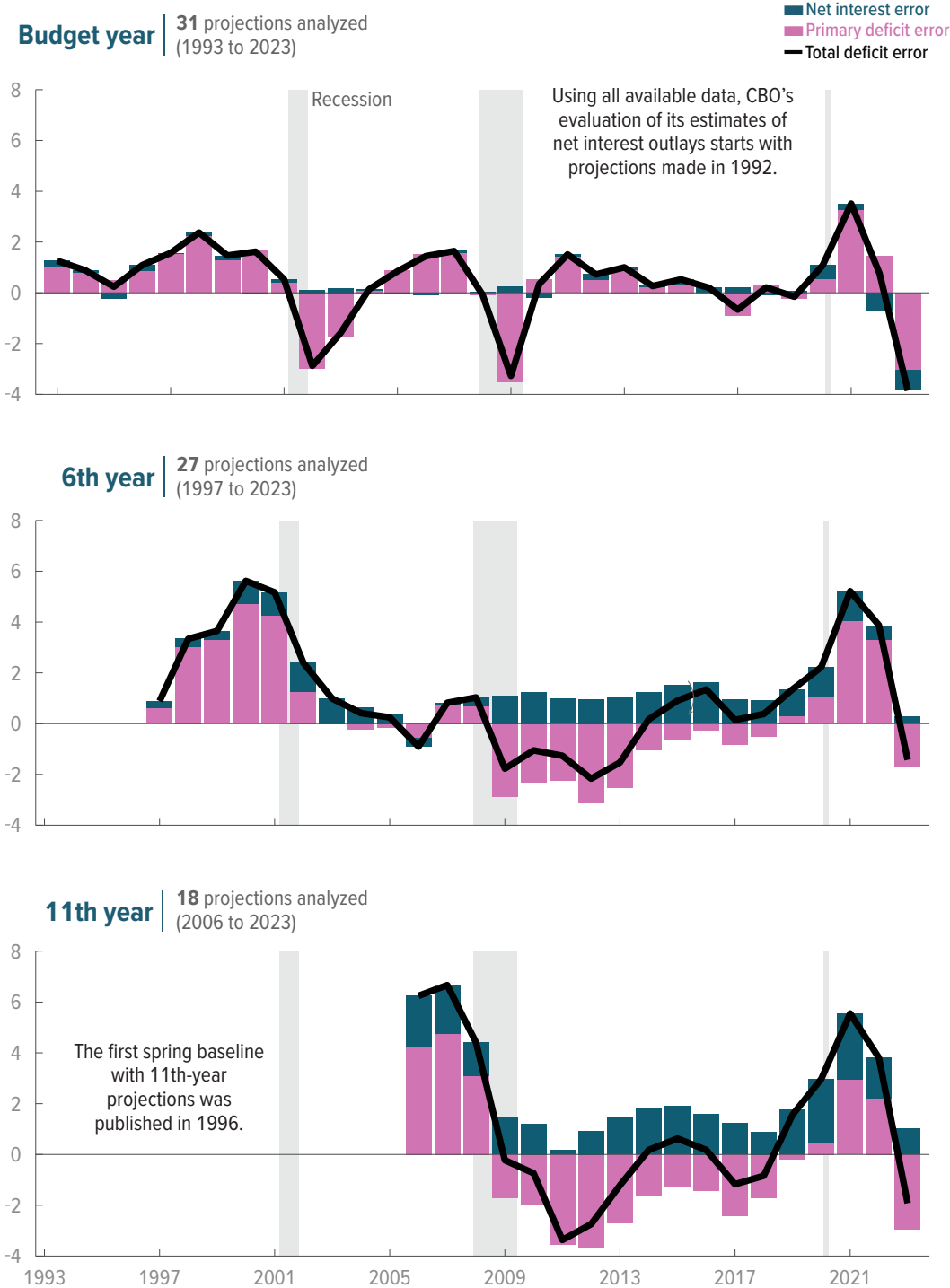
In the 6th-year deficit projections for 1989 to 2002, outlay and revenue errors compounded, leading to an average absolute error of 3.1 percent of GDP. In such projections for 2009 to 2019, outlay and revenue errors partly offset each other, and the average absolute error was 1.1 percent of GDP.

In the 11th-year deficit projections for 2009 to 2019, outlay and revenue errors partly offset each other. The average absolute error during that period was 1.2 percent of GDP.



Contribution of Primary Deficit and Net Interest Outlay Errors to Deficit Errors

Percentage of GDP



Errors in projections of net interest outlays only minimally affected budget-year projections of total deficits.

In its 6th-year projections, CBO's misestimates of primary deficits were larger than its misestimates of net interest outlays. But the former were a combination of overestimates and underestimates, resulting in a small average error of 0.3 percent of GDP. Consistent overestimates of net interest outlays, averaging 0.8 percent of GDP, made the agency's projections of total deficits less centered, on average, than its projections of primary deficits.

CBO overestimated deficits in its 11th-year projections by an average of 1.1 percent of GDP. Those overestimates were driven by overestimates of net interest outlays, which averaged 1.5 percent of GDP. CBO underestimated primary deficits by an average of 0.4 percent of GDP.

Assessment of Debt Projections

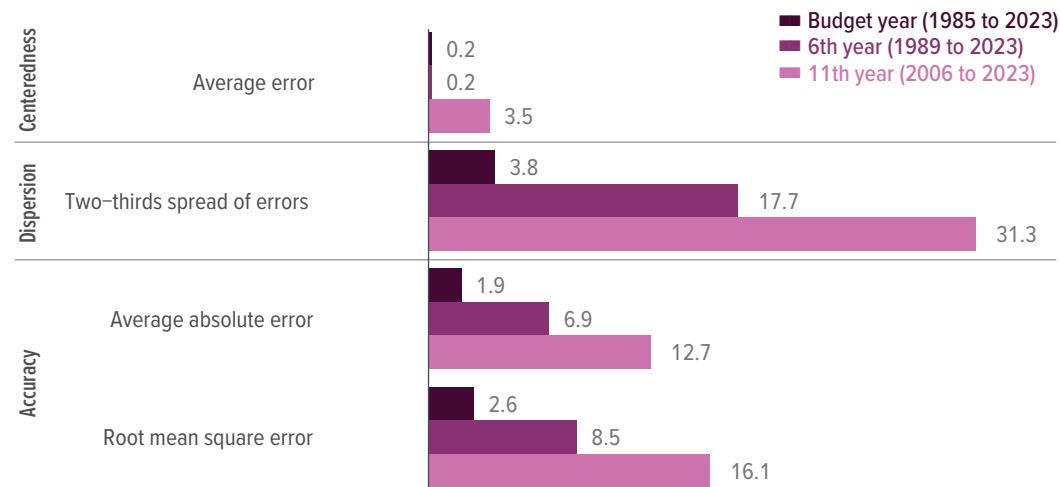
CBO's projections of debt held by the public for the budget year and the 6th year were more centered than those for the 11th year. The average error for the budget-year and 6th-year projections was 0.2 percent of GDP, whereas the average error for the 11th-year projections was about 3.5 percent of GDP.

The longer-term projections were much less accurate. Actual debt differed from the 11th-year projections by an average of roughly 13 percent of GDP, compared with an average absolute error of about 7 percent of GDP for the 6th-year projections and 2 percent of GDP for the budget-year projections.

CBO's debt projections were much less accurate than its deficit projections, and the errors in the debt projections were more dispersed. That is because debt projection errors are largely the cumulative result of deficit projection errors. An error in the first year of the debt projection will make the starting point of the debt projection in the second year incorrect. Thus, a series of consecutive deficit projection errors that are either positive or negative (in other words, a series of consecutive underestimates or overestimates) compound, and the debt projection error in the final year in the series roughly equals the sum of the deficit projection errors for each year. (CBO's projections have exhibited a tendency for such consecutive overestimating and underestimating, especially the longer-term projections.) For example, in CBO's sixth-year projections, the sum of the six deficit errors (for the current year, the budget year, and the following four years) roughly equals the error in the sixth-year debt projection.

Measures of the Quality of CBO's Debt Projections

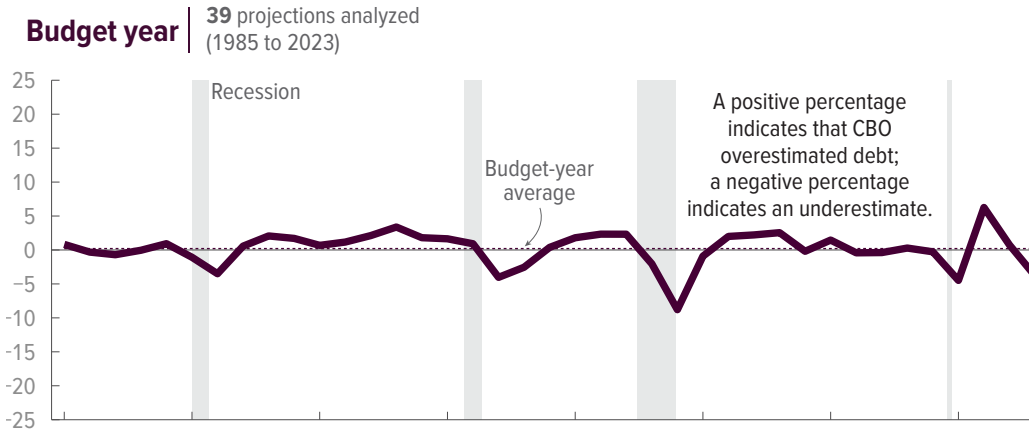
Percentage of GDP



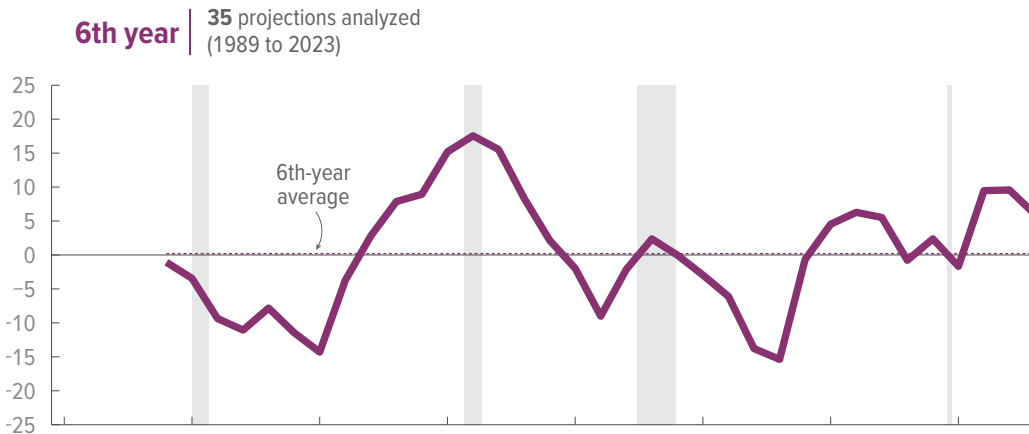
As with CBO's longer-term deficit projections, its longer-term debt projections have been less centered, more dispersed, and less accurate than its shorter-term debt projections. The average error is much greater for the 11th-year debt projections than for the budget-year and 6th-year projections—a difference that may be partly attributable to the smaller number of 11th-year projections.

Errors in CBO's Debt Projections

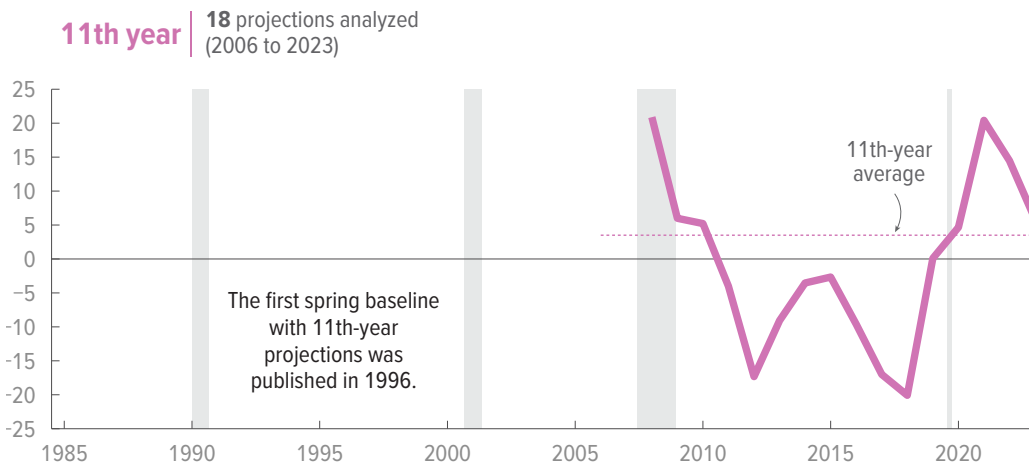
Percentage of GDP



Budget-year debt projections were close to actual amounts, but errors were larger in projections made around the time of recessions. Before the pandemic, those errors were typically underestimates caused by overestimates of revenues. During and after the pandemic, the errors mainly stemmed from misestimates of the effects of legislation.



Unlike the budget-year debt projections, the 6th-year debt projections for years in which recessions occurred did not generally exhibit larger errors. But 6th-year debt projections for years about half a decade after recessions began tended to exhibit the largest underestimates.



Errors in 11th-year debt projections fluctuated between large overestimates and large underestimates, underscoring the greater amount of uncertainty in longer-term projections of debt.

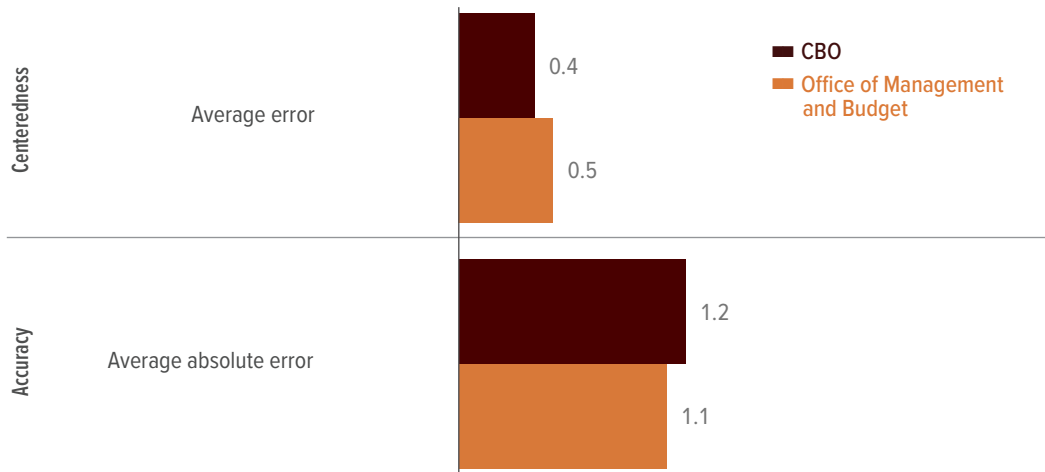
Comparing CBO's and the Administration's Deficit Projections

In addition to assessing the quality of its own deficit projections, CBO compared its budget-year projections with those released by the Administration. In the *Analytical Perspectives* volume that it publishes annually along with the budget, the Administration provides information about differences between its budget-year baseline projections and actual outlays and revenues for broad categories in the budget. That comparison allows CBO to isolate which differences are attributable to the estimated effects of legislation and which are attributable to errors in budget-year projections made by the Office of Management and Budget (OMB).

The Administration does not provide comparable baseline estimates or the details necessary to make its 6th- or 11th-year projections comparable with CBO's projections. Therefore, CBO could compare only its budget-year projections with those of the Administration.

Comparison of Average Errors in CBO's and the Administration's Budget-Year Deficit Projections

Percentage of GDP



For 1992 to 2023, the years for which comparable projections are available, errors in CBO's budget-year projections of deficits were similar to errors in such projections by OMB. Over that period, both the average error and the average absolute error were similar for CBO and the Administration.



Effects of Enacted Legislation

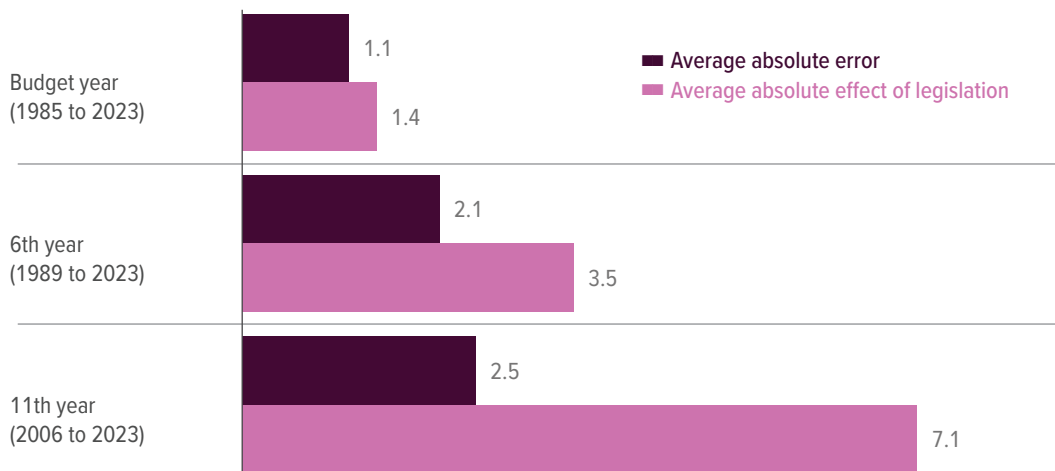
The difference between CBO's current-law projections, unadjusted for subsequent legislation, and actual outcomes has two components—the errors in those projections (described above) and the effects of legislation. What are the relative magnitudes of those two components?

For budget-year projections of deficits, the estimated average absolute effects of legislation (that is, the average effects without regard to whether the legislation increased or decreased deficits) have been slightly greater than the average absolute projection errors. For budget-year projections of debt, those measures have been about the same.

But for longer-term projections, the estimated effects of legislation have been larger than the projection errors. For the 6th-year projections of deficits and debt, the average absolute effects of legislation were more than one and one-half times the size of the projection errors. For the 11th-year projections of deficits and debt, that ratio was nearly 3 to 1. The allocation between those two factors is imperfect because the actual effects of legislation, which are generally not known, may differ from the estimated effects. (For details about the effects of legislation on deficits, see Appendix B.)

Projection Errors and Estimated Effects of Legislation on Deficits

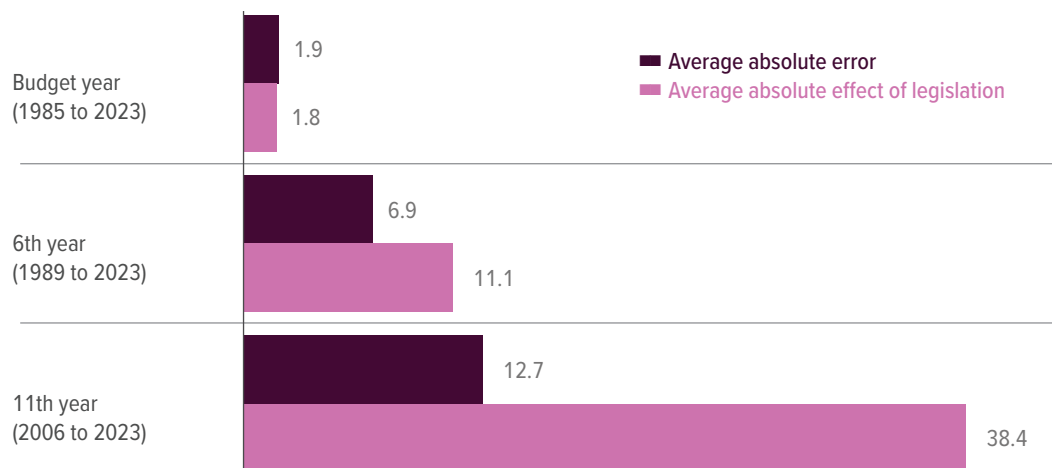
Percentage of GDP



The estimated effects of legislation enacted after baseline projections were made are the main reason that actual deficits differed from the amounts that CBO projected under current law—particularly for longer-term projections.

Projection Errors and Estimated Effects of Legislation on Debt

Percentage of GDP



For longer-term debt projections, the estimated effects of legislation are much larger than the projection errors. The effects of legislation are the main reason for the difference between actual amounts and 6th-year and 11th-year debt projections.

Effects of Administrative Actions

To evaluate its baseline projections, CBO adjusts them to account for the estimated budgetary effects of legislation enacted after the projections were developed. However, the agency does not make adjustments to account for the estimated budgetary effects of nonroutine administrative actions taken after projections are developed. As a result, such actions can contribute to projection errors.

Federal agencies undertake administrative actions each year to execute laws and implement programs under their jurisdictions. Those actions include rulemaking, guidance, agency letters, directives, notices, and other similar activities. Routine actions are anticipated in CBO's projections, but the agency does not attempt to project the effects of nonroutine actions. In each baseline update, CBO accounts for the effects of routine administrative actions that substantively differed from what was expected and for the effects of nonroutine administrative actions. (Those effects are categorized as technical changes in the agency's baseline updates.) Because CBO does not adjust the projections to account for subsequent administrative actions, those actions can contribute to projection errors.

Although most administrative actions have a negligible effect on the federal budget, some have significant effects and therefore can affect measures of the quality of CBO's projections considerably. Because CBO has not tracked the estimated effects of past administrative actions, the agency cannot generally quantify the actions' budgetary effects, as it can the effects of legislation. However, some major administrative actions and their estimated effects are identifiable. In particular, the following administrative actions have significantly affected the quality of CBO's projections in recent years:

- **Customs Duties.** In its January 2019 baseline, CBO increased its estimates of revenues from customs duties by about \$30 billion for 2019 and by nearly \$400 billion for the 2019–2028 period. Those increases largely stemmed from new tariffs implemented by the Administration.
- **Administrative Actions Affecting Student Loans.** Through administrative actions, the Administration suspended student loan repayment, the accrual of interest, and involuntary collections of student loans from October 2020 to August 2023. The Administration recorded the cost of those actions, which had not been reflected in CBO's projections, as about \$130 billion on a net-present-value basis. (A present value summarizes a series of projected values in the future as a single value in the present.) Additionally, in March 2023, CBO estimated, on a net-present-value basis, that the Administration's new income-driven repayment plan for federal student loans (announced in January 2023) would cost about \$276 billion over the 2023–2033 period.
- **Clean Vehicle and Energy-Related Tax Credits.** In its February 2024 baseline, CBO increased its estimate of the cost of the energy-related provisions of the 2022 reconciliation act (Public Law 117-169) by roughly \$400 billion for the 2024–2033 period. That increase was the result of a rule proposed by the Administration that would change standards for vehicle emissions, as well as public guidance from the Treasury about certain provisions of the 2022 reconciliation act, and market developments.

Effects of Legislation Enacted in Response to the Coronavirus Pandemic

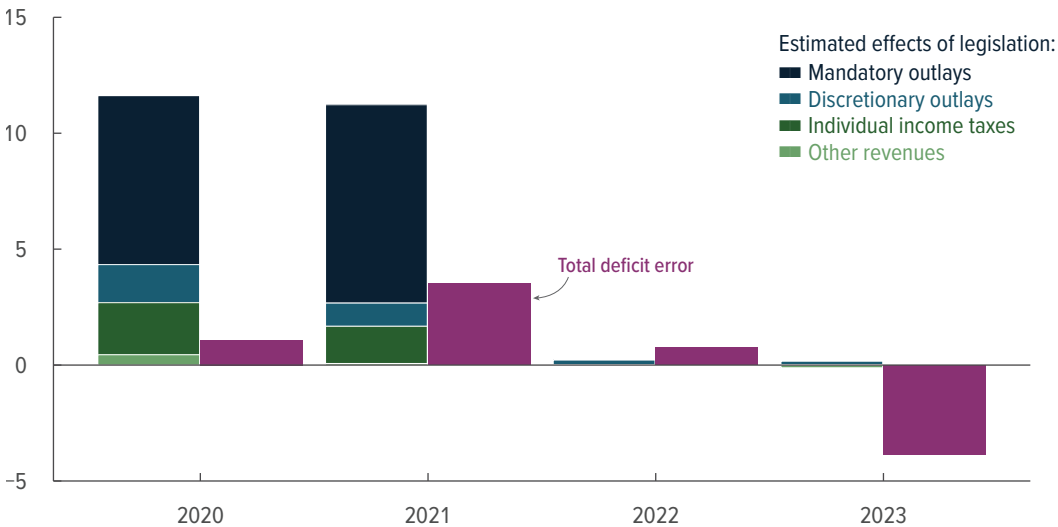
The actual budgetary effects of legislation often differ from the effects that are estimated around the time the legislation is enacted. In this analysis, such differences are reflected as errors in the baseline projections. Legislation enacted in response to the coronavirus pandemic significantly increased deficits and, in 2021 and 2023, contributed to CBO's two largest projection errors.

CBO underestimated revenues from individual income taxes in 2021 by \$500 billion. That underestimate stemmed, in part, from the fact that people did not use tax credits enacted in response to the pandemic (such as the employee retention tax credit, or ERTC) as much as was initially anticipated. Additionally, CBO overestimated Medicare outlays for 2021 by about \$150 billion because the Medicare program began recouping the up-front payments made to providers in 2020 (in advance of expected health care claims) faster than CBO anticipated when that policy was enacted. Those misestimates contributed to the largest overestimate of the budget-year deficit that CBO has recorded.

In 2023, some of those misestimates of the effects of legislation were reversed and contributed to CBO's largest underestimate on record. CBO overestimated income tax revenues for 2023 by about \$400 billion (or 1.5 percent of GDP), in part because the initial estimate for the ERTC reflected the assumption that the tax credit would have no budgetary effect in that year. But the ERTC increased the deficit by \$120 billion in 2023. Additionally, CBO underestimated outlays for both Medicaid and the Supplemental Nutrition Assistance Program because the effects of pandemic-era policies on those programs were larger and lasted longer than originally anticipated.

Projection Errors and Estimated Effects of Enacted Legislation on CBO's Budget-Year Deficit Projections, 2020 to 2023

Percentage of GDP



CBO overestimated the budget-year deficit for 2021 by 3.5 percent of GDP and underestimated it for 2023 by 3.9 percent of GDP. Those large errors were partly attributable to misestimates of the size and timing of the effects of legislation enacted in response to the pandemic. Those legislative effects were by far the largest during the period covered by this analysis.

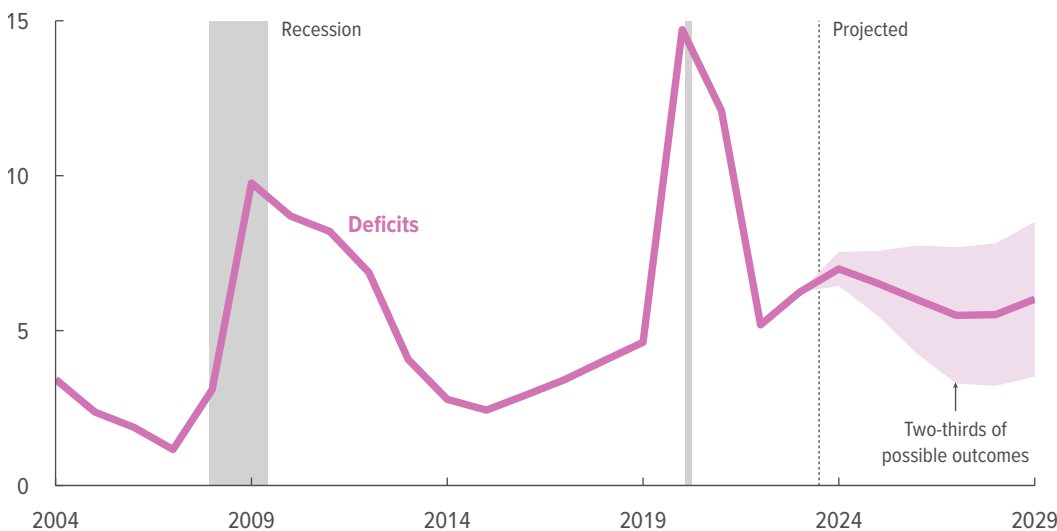
Uncertainty of Projections

Analyzing the errors in its projections of deficits and debt allows CBO to better quantify the uncertainty of its baseline budget projections. Although those baseline projections are point estimates (that is, they specify values for each year), the agency typically presents a range of deficit and debt projections based on historical errors in its baseline projections. The intent of presenting that range is to emphasize the uncertainty inherent in budget projections and to attempt to quantify and help readers better understand the magnitude of that uncertainty.

Projections of net outlays for interest have historically been the least accurate component of CBO's budget projections, which means that there is greater uncertainty in those projections than in any other category. Therefore, as net outlays for interest constitute a greater share of deficits, the uncertainty of deficit projections increases. From 1962 to 2023, net interest outlays averaged 1.9 percent of GDP. In CBO's June 2024 baseline projections, such outlays reach 4.1 percent of GDP.

Uncertainty of CBO's Deficit Projections

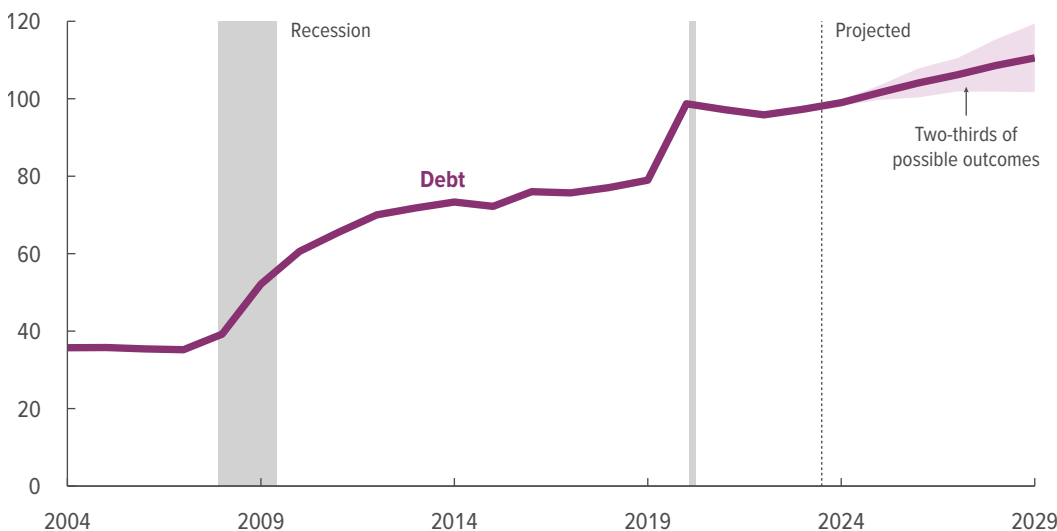
Percentage of GDP



In CBO's most recent baseline projections, published in June 2024, the deficit in 2029 is 6.0 percent of GDP. There is roughly a two-thirds chance that, under current law, the deficit in that year would be between 3.5 percent and 8.5 percent of GDP, CBO estimates.

Uncertainty of CBO's Debt Projections

Percentage of GDP



In CBO's June 2024 baseline projections, debt held by the public at the end of 2029 is 110 percent of GDP. There is roughly a two-thirds chance that, under current law, debt at the end of that year would be between 102 percent and 119 percent of GDP, CBO estimates. Future legislation could change that range significantly.



Appendix A: Details About CBO's Method for Assessing Its Projections of Deficits and Debt

To assess its past projections of deficits and debt, the Congressional Budget Office compared them with actual amounts recorded in the budget and attempted to determine the sources of any differences. Because the agency intentionally does not incorporate the effects of possible legislative changes into its baseline projections, this report's assessments focus on the differences between projected and actual deficits that result from factors other than legislation. This appendix provides additional details about the data that CBO used for this analysis and how the agency calculated differences between actual and projected amounts.

Since its inception, CBO has regularly published baseline budget projections. However, the number of years covered by those projections has expanded over time. Between 1984 (the earliest year included in this evaluation) and April 1995, CBO's projections covered the current year and the next 5 fiscal years. Since that time, the agency's baseline projections have covered the fiscal year in progress and the following 10 fiscal years. For example, in March 2020 CBO released projections of deficits for fiscal year 2020 (the current year), 2021 (the budget year), and each of the next 9 years. The Department of the Treasury reports the actual deficit and debt each October, shortly after the fiscal year ends (see Figure A-1). Those actual amounts are subject to later revisions, which are typically small.

Adjusting for Legislation

To adjust the projections of deficits and debt to account for the effects of subsequent legislation, this analysis relies on the legislative changes to CBO's budget projections that are described in the annual *Budget and Economic Outlook* and updates to that report that are published each year. Those changes typically reflect costs or savings estimated by the agency around the time the relevant legislation was enacted but sometimes include

subsequent updates. The actual budgetary effects of legislation may have differed from those estimates. If so, those differences are reflected in this analysis as errors in the baseline projections.

Excluding Outlays Associated With Fannie Mae and Freddie Mac and the Administration's 2022 Plan to Cancel Outstanding Student Loans

For the purposes of this analysis, CBO removed outlays for the housing entities Fannie Mae and Freddie Mac from its projections and the actual amounts reported by the Treasury because CBO and the Administration account for those entities' transactions differently.

Because of their unusual size and nature, the estimated budgetary costs of the Administration's 2022 planned cancellation of outstanding student loans for many borrowers were excluded from this analysis, as were the budgetary savings that were recorded as a result of the Supreme Court's subsequent decision prohibiting the Administration from implementing that plan. Excluding those effects changed the amounts of deficits used to evaluate projection errors, decreasing the amount of the deficit in 2022 and increasing it in 2023.

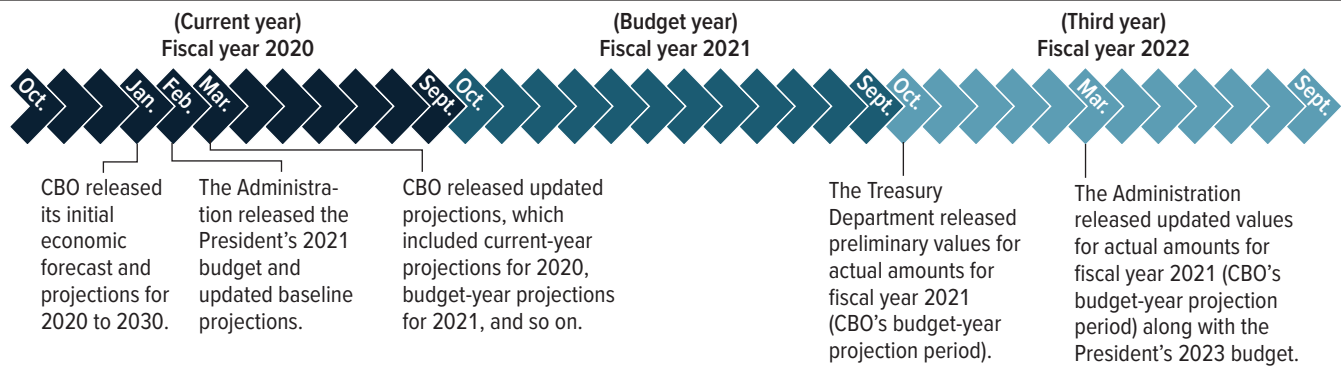
Calculating Differences Between Projected and Actual Deficits

After accounting for the estimated effects of enacted legislation and excluding certain outlays discussed earlier, CBO calculated the errors in its projections by subtracting the adjusted projections from actual deficits and dividing that difference by actual gross domestic product (GDP) for each year.¹ In those calculations, deficits are expressed as negative numbers. Calculating the projection errors as a percentage of GDP makes the deficit

1. Actual GDP reflects the latest revisions to GDP as of this report's publication.

Figure A-1.

Sample Time Line for Measuring Errors in CBO's Projections for the Budget Year



Data source: Congressional Budget Office.

Dates for the budget-year projections for 2021 are used in this time line for illustrative purposes. The time lines for measuring errors in all budget-year projections of outlays are similar, although CBO does not release such projections on this schedule each year, and the President's budget is not always released in February.

errors easier to compare across years. Moreover, scaling outlay and revenue errors to GDP helps to illustrate how those errors contribute to deficit errors.

Thus, the errors are expressed as percentages of GDP, with negative values representing underestimates and positive values, overestimates. For example, in March 2016, CBO released baseline projections for 2016 to 2026. The agency projected that outlays in the budget year, 2017, would total nearly \$4.1 trillion under current law (excluding outlays related to Fannie Mae and Freddie Mac) and that revenues would total \$3.5 trillion, with a projected deficit of \$547 billion. After CBO adjusted those March 2016 projections to account for the estimated \$19 billion increase in outlays resulting from laws enacted after the baseline was completed, the projected deficit increased to \$566 billion. (No adjustment was made for revenues because they were not affected by legislation.) That projection was \$128 billion less than the actual deficit in 2017. Dividing that amount (\$128 billion) by GDP in 2017 (\$19.4 trillion) yields a projection error of -0.7 percent of GDP (an underestimate).

Calculating Differences Between Projected and Actual Debt

To assess its past projections of debt held by the public, CBO compared them with actual amounts and attempted to determine the sources of any differences. Again, the analysis focuses on differences between projected and actual debt held by the public that result from nonlegislative factors only. CBO calculated the errors in its projections by subtracting actual debt from the projections adjusted for the effects of legislation and dividing that difference by actual GDP for each year.

The adjustment for the effects of legislation on CBO's debt projections for a given year differs from the adjustment for its deficit projections for that year. For CBO's deficit projections, the effects of legislation are applied to individual years (see Table A-1). For the sixth-year projection made in May 2018, for example, legislation increased the deficit by an estimated \$378 billion. For debt, by contrast, the effects of subsequent legislation are cumulative across all six projection years, so the estimated increase in debt resulting from legislation totals \$6.2 trillion—boosting the projected debt from \$21.6 trillion to \$27.8 trillion.

Table A-1.

An Example of the Adjustments Made to CBO's Deficit and Debt Projections to Account for the Effects of Enacted Legislation

Billions of dollars

	2018 (Current year)	2019 (Budget year)	2020 (Third year)	2021 (Fourth year)	2022 (Fifth year)	2023 (Sixth year)
May 2018 baseline projection of the deficit	-798	-970	-1,002	-1,118	-1,273	-1,271
May 2018 baseline projection of debt	15,676	16,743	17,804	18,970	20,290	21,609
Estimated effects of subsequent legislation enacted in each period						
May 2018 to January 2019		13	34	47	64	74
January 2019 to May 2019		-5	-3	-1	-1	-1
May 2019 to August 2019		-6	-110	-151	-171	-186
August 2019 to January 2020		-2	-49	-35	-36	-38
January 2020 to March 2020			-1	-5	-6	-7
March 2020 to September 2020			-2,317	-579	78	152
September 2020 to February 2021				-891	-59	-87
February 2021 to July 2021				-1,115	-500	-172
July 2021 to May 2022					-47	-100
May 2022 to February 2023					-2	-17
February 2023 to May 2023						0
May 2023 to February 2024						3
Total deficit adjustments	0	*	-2,446	-2,731	-681	-378
Total cumulative debt adjustments	0	*	-2,446	-5,177	-5,858	-6,235
Adjusted May 2018 projection of the deficit	-798	-970	-3,448	-3,849	-1,954	-1,648
Adjusted May 2018 projection of debt	15,676	16,743	20,250	24,147	26,148	27,844

Data source: Congressional Budget Office. See www.cbo.gov/publication/60664#data. * = between zero and \$500 million.

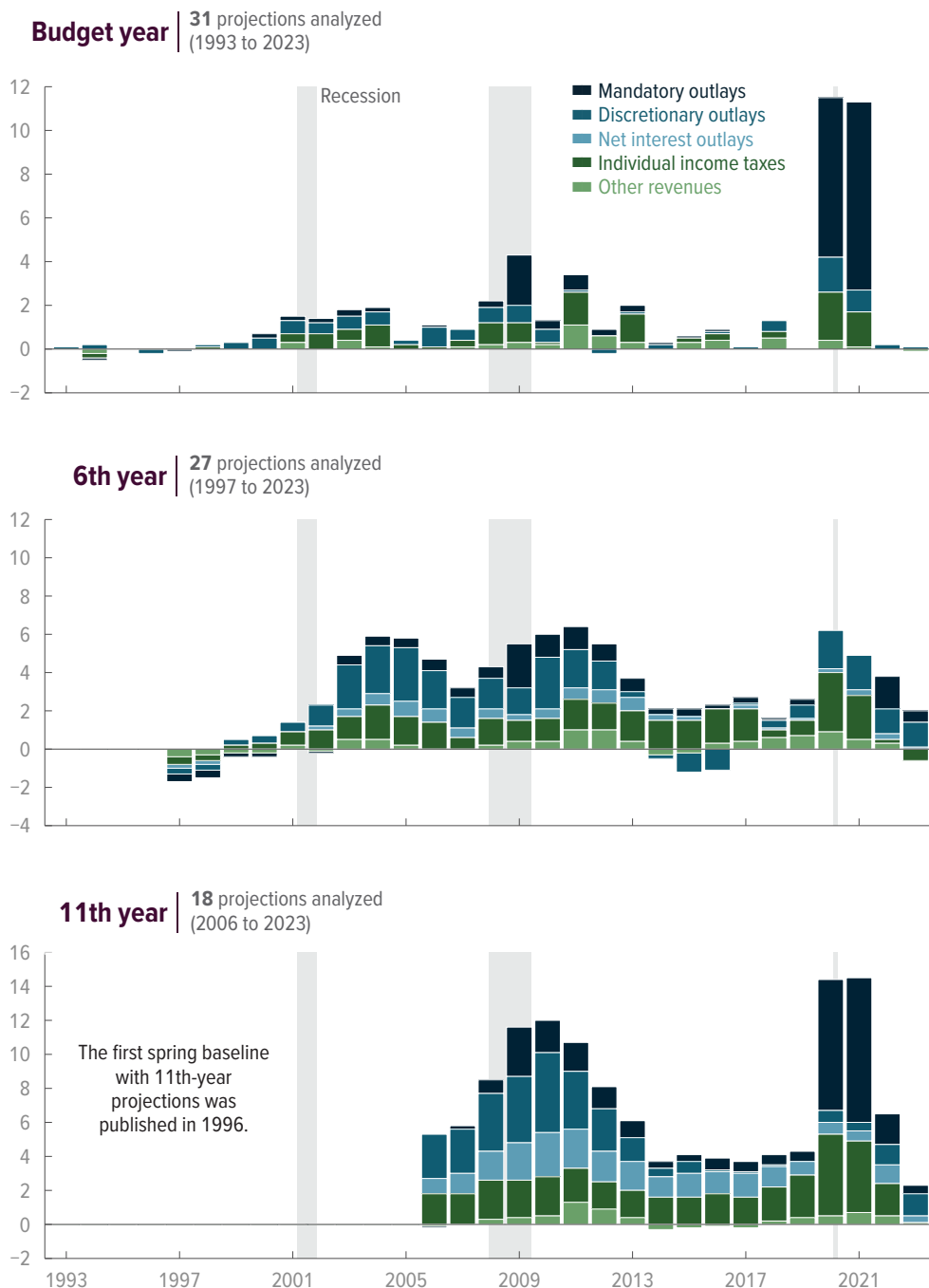
Appendix B: Components of Effects of Legislation on Deficits

To analyze the difference between the Congressional Budget Office’s baseline projections, which do not reflect subsequent legislation, and actual amounts, the agency calculated how much of the difference is attributable to the estimated effects of legislation and how much stems from projection errors (see Figure B-1). That way, the agency can determine how the effects of legislation were distributed across major categories of outlays and revenues. That, in turn, provides insights into how the legislation has affected deficits over certain periods and how lawmakers have responded to economic downturns.

Figure B-1.

Estimated Effects of Enacted Legislation on Deficits, by Component

Percentage of GDP



Since 2000, for budget-year deficit projections not following recessions, the largest effects of enacted legislation were to increase discretionary outlays and decrease revenues from individual income taxes. Following the 2007–2009 recession and the coronavirus pandemic, the largest legislative effects were increases in mandatory outlays.

Enacted legislation generally had similar effects on deficit projections for the 6th year and the budget year, but the effects of legislation on discretionary outlays and income tax revenues were significantly larger in most of the 6th-year projections.

The effects of enacted legislation on net interest outlays were much larger in the 11th-year projections than for the other time horizons because the increase in net interest outlays stemming from legislation compounds over the projection period.

Data source: Congressional Budget Office. See www.cbo.gov/publication/60664#data.

About This Document

Each winter, the Congressional Budget Office issues a report on the state of the budget and the economy, which is often updated in the spring and summer. The first set of updated projections typically serves as the basis for CBO's estimates of the budgetary effects of legislation, as well as the Congress's budget resolution for the year to come. This document provides information about the centeredness, dispersion, and accuracy of the projections of deficits and debt included in those reports. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Aaron Feinstein wrote the report with guidance from Christina Hawley Anthony, Barry Blom, Chad Chirico, and Sam Papenfuss. Ann E. Futrell and Robert Sunshine offered comments. Breanna Browne-Pike and Youstiena Shafeek fact-checked the report.

Jeffrey Kling reviewed the report, Scott Craver edited it, and Jorge Salazar created the graphics and prepared the text for publication. The report is available on CBO's website at www.cbo.gov/publication/60664.

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



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Director
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