

How Changes in Economic Projections Might Affect Budget Projections

The federal budget is highly sensitive to economic conditions. Revenues depend on the amount of taxable income, including wages and salaries, other (nonwage) income received by individuals, and corporate profits. Those types of income generally rise or fall with overall economic activity, although not necessarily in proportion. Spending for many mandatory programs depends on inflation, either through explicit cost-of-living adjustments or in other ways. In addition, the U.S. Treasury regularly refinances portions of the government’s outstanding debt—and issues more debt to finance new deficits—at market interest rates. Thus, the amount that the federal government spends for interest on its debt is directly tied to those rates.

To show how projections for the economy can affect projections of the federal budget, the Congressional Budget Office (CBO) has constructed simplified “rules of thumb.” The rules provide a rough sense of how differences in individual economic variables, taken in isolation, would affect the budget totals; however, those rules of thumb are not intended to substitute for a full analysis of the implications of alternative economic forecasts.

The rules of thumb have been developed for three variables:

- Growth of real (inflation-adjusted) gross domestic product (GDP),
- Interest rates, and
- Inflation.

All three rules of thumb are assumed to begin in January 2014.

CBO’s rule of thumb for the growth of real GDP shows the effects of growth rates that are 0.1 percentage point lower each year than the rates that underlie the agency’s baseline budget projections. (The budget projections are summarized in Chapter 1, and the economic projections are described in Chapter 2.) The rule of thumb for interest rates shows the effects of rates that are 1 percentage point higher each year than the rates used in the baseline; because inflation is held equal to its baseline projection in this rule of thumb, the results show the effects of higher *real* interest rates. Finally, the rule of thumb for inflation shows the effects of inflation that is 1 percentage point higher each year than is inflation in the baseline.

Each rule of thumb is roughly symmetrical. Thus, if economic growth was correspondingly higher or interest rates or inflation were correspondingly lower than CBO projects, the effects would be about the same as those shown here, but with the opposite sign.¹

CBO chose variations of 0.1 percentage point and 1 percentage point solely for simplicity. Those differences do not necessarily indicate the extent to which actual economic performance might differ from CBO’s projections. For example, although the rule of thumb for real GDP growth shows the effects of a difference of 0.1 percentage point, the standard deviation of the 10-year average of growth rates for real GDP is roughly seven times larger, or 0.7 percentage points.² And although the rules of

1. Interest rates on short-term Treasury securities could not be much lower in the near term. Those rates are currently near zero, and CBO does not project them to rise much until fiscal year 2016.

2. Standard deviation is a conventional measure of variability. In the case of real GDP growth, CBO calculated the extent to which actual growth over 10-year periods differed from the post-World War II average. The standard deviation is the size of the difference that was exceeded about one-third of the time.

thumb for real interest rates and inflation show the effects of a difference of 1 percentage point, the standard deviations of the 10-year averages of real interest rates for 10-year Treasury notes and inflation are 1.5 and 2.1 percentage points, respectively.

Lower Real Growth

Stronger economic growth improves the budget's bottom line, and weaker growth worsens it. The first rule of thumb illustrates the effects of economic growth that is slightly weaker than expected.³

CBO's baseline includes growth of real GDP of 2.7 percent in calendar year 2014, an average of 3.2 percent from 2015 to 2017, and an average of 2.2 percent from 2018 to 2024. If 0.1 percentage point was subtracted from each of those rates, by 2024 GDP would be roughly 1 percent smaller than the amount underlying CBO's baseline.

Slower GDP growth would have several effects on the budget. It would result in less growth in taxable income and thus lower tax revenues—\$1 billion less in 2014 and \$55 billion less in 2024 (see Table D-1). With a smaller amount of revenues, the federal government would need to borrow more and thus would incur higher interest costs. Additional payments to service federal debt would be very small during the first few years of the projection period but larger in later years, reaching \$11 billion by 2024. Mandatory spending, however, would be only marginally affected by a decline of 0.1 percentage point in economic growth: Medicare outlays would be slightly lower, but that decrease would be partially offset by higher outlays for the refundable portions of the earned income and child tax credits.⁴

3. A change in the rate of real economic growth could affect inflation and unemployment; however, CBO's rule of thumb does not include the effects of changes in those variables.

4. Medicare's payment rates for physicians' services are computed using a formula that compares annual spending with a target amount that partly reflects the growth of GDP. Slower GDP growth leads to a lower target and thereby smaller Medicare payments to physicians. Tax credits reduce a taxpayer's income tax liability; if a refundable credit exceeds a taxpayer's other liability, the excess may be refunded to the taxpayer, and that payment is recorded as an outlay in the budget.

All told, if growth of real GDP each year was 0.1 percentage point lower than in CBO's baseline projections, annual deficits would be larger by amounts that would climb to \$66 billion by 2024. The cumulative deficit for 2015 through 2024 would be \$311 billion higher.

Higher Interest Rates

The second rule of thumb illustrates the sensitivity of the budget to changes in interest rates, which affect the flow of interest payments to and from the federal government. When the budget is in deficit, the Treasury must borrow additional funds from the public to cover the shortfall. Moreover, the Treasury refinances a substantial portion of the nation's debt each year at market interest rates. Those rates also help determine how much the Federal Reserve remits to the Treasury.

If interest rates on all types of Treasury securities were 1 percentage point higher each year through 2024 than projected in the baseline, and all other economic variables were unchanged, the government's interest costs would be substantially larger. The difference would amount to only \$12 billion in 2014 (see Table D-1). However, most marketable government debt is in the form of Treasury notes, bonds, and inflation-protected securities, which have maturities greater than one year. As the Treasury replaced securities as they matured, the budgetary effects of higher interest rates would mount, climbing to an additional \$174 billion in 2024 under this scenario.

As part of its conduct of monetary policy, the Federal Reserve buys and sells Treasury securities and other securities, including, recently, a large amount of mortgage-backed securities. The Federal Reserve also pays interest on reserves. The interest that the Federal Reserve earns on its portfolio of securities and the interest that it pays on reserves affect the Federal Reserve's remittances to the Treasury, which are counted as revenues. If all interest rates were 1 percentage point higher for the coming decade than CBO projects, the Federal Reserve's remittances would be lower for a number of years because higher interest payments on reserves would outstrip additional interest earnings on its portfolio. However, over time, the current holdings in the portfolio would mature and be replaced with higher-yielding investments; CBO projects that by 2022 the Federal Reserve's remittances would be higher if projected interest rates were higher. Overall, between 2015 and 2024, those higher rates would reduce revenues by \$105 billion.

Table D-1.**How Selected Economic Changes Might Affect CBO's Baseline Budget Projections**

(Billions of dollars)

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | Total | |
|---|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| | | | | | | | | | | | | 2015- | 2015- |
| | | | | | | | | | | | | 2019 | 2024 |
| Growth Rate of Real GDP Is 0.1 Percentage Point Lower per Year | | | | | | | | | | | | | |
| Change in Revenues | -1 | -5 | -8 | -13 | -18 | -23 | -28 | -34 | -41 | -48 | -55 | -66 | -272 |
| Change in Outlays | | | | | | | | | | | | | |
| Mandatory spending | * | * | * | * | * | * | * | * | * | * | * | * | -1 |
| Debt service | * | * | * | 1 | 1 | 2 | 3 | 5 | 7 | 9 | 11 | 5 | 40 |
| Total | * | * | * | 1 | 2 | 2 | 3 | 5 | 6 | 9 | 11 | 5 | 40 |
| Change in the Deficit^a | -1 | -5 | -9 | -14 | -19 | -25 | -32 | -39 | -47 | -56 | -66 | -71 | -311 |
| Interest Rates Are 1 Percentage Point Higher per Year | | | | | | | | | | | | | |
| Change in Revenues | -18 | -26 | -24 | -21 | -17 | -13 | -7 | -3 | * | 2 | 3 | -100 | -105 |
| Change in Outlays | | | | | | | | | | | | | |
| Higher interest rates | 12 | 38 | 57 | 74 | 90 | 106 | 119 | 134 | 147 | 160 | 174 | 365 | 1,099 |
| Debt service | * | 1 | 5 | 10 | 16 | 24 | 31 | 40 | 49 | 60 | 72 | 56 | 308 |
| Total | 13 | 40 | 62 | 84 | 106 | 129 | 150 | 173 | 196 | 221 | 246 | 421 | 1,407 |
| Change in the Deficit^a | -30 | -66 | -85 | -105 | -123 | -142 | -157 | -176 | -197 | -219 | -242 | -521 | -1,512 |
| Inflation Is 1 Percentage Point Higher per Year | | | | | | | | | | | | | |
| Change in Revenues | -3 | 19 | 57 | 99 | 146 | 197 | 254 | 316 | 381 | 451 | 526 | 517 | 2,446 |
| Change in Outlays | | | | | | | | | | | | | |
| Discretionary spending ^b | 0 | 1 | 1 | 2 | 4 | 5 | 6 | 7 | 15 | 26 | 39 | 13 | 106 |
| Mandatory spending | 3 | 17 | 40 | 63 | 89 | 122 | 156 | 193 | 239 | 281 | 327 | 331 | 1,528 |
| Higher interest rates ^c | 23 | 53 | 74 | 94 | 114 | 132 | 149 | 169 | 185 | 202 | 220 | 468 | 1,393 |
| Debt service | * | 1 | 4 | 7 | 12 | 16 | 19 | 24 | 28 | 33 | 38 | 40 | 181 |
| Total | 27 | 72 | 120 | 167 | 218 | 274 | 331 | 394 | 467 | 542 | 623 | 851 | 3,208 |
| Change in the Deficit^a | -30 | -53 | -63 | -69 | -72 | -77 | -76 | -77 | -86 | -91 | -97 | -334 | -762 |
| Memorandum: | | | | | | | | | | | | | |
| Deficit in CBO's February 2014 Baseline | -514 | -478 | -539 | -581 | -655 | -752 | -836 | -912 | -1,031 | -1,047 | -1,074 | -3,005 | -7,904 |

Source: Congressional Budget Office.

Note: GDP = gross domestic product; * = between -\$500 million and \$500 million.

- Negative amounts indicate an increase in the deficit.
- Most discretionary spending through 2021 is governed by caps established by the Budget Control Act of 2011; in CBO's baseline, that spending would not be affected by changes in projected inflation.
- The change in outlays attributable to higher interest rates in this scenario differs from the estimate in the scenario for interest rates because the principal of inflation-protected securities issued by the Treasury grows with inflation.

The larger deficits generated by the increase in interest rates would require the Treasury to borrow more than is projected in the baseline. That extra borrowing would raise the cost of servicing the debt by amounts that would reach \$72 billion in 2024.

All together, if interest rates were 1 percentage point higher than projected in CBO's baseline, the budget's bottom line would worsen by amounts that would rise over the projection period, climbing from \$30 billion in 2014 to \$242 billion in 2024. The cumulative deficit would be \$1.5 trillion higher over the 2015–2024 period.

Higher Inflation

The third rule of thumb shows the budgetary effects of inflation that is 1 percentage point higher than is projected in the baseline. Although higher inflation increases both revenues and outlays, the net effect would be substantially larger budget deficits.

Larger increases in prices generally lead to greater wages, profits, and other income, which in turn generate larger collections of individual income taxes, payroll taxes, and corporate income taxes. The parameters in the individual income tax system that affect most taxpayers—including the income thresholds for both the regular and alternative minimum tax brackets, the standard deduction, and personal exemptions—are indexed for inflation. Therefore, the share of taxpayers' incomes taxed at certain rates does not change very much when incomes are higher because of higher inflation, so tax collections tend to rise roughly proportionally with incomes under those circumstances. However, some parameters of the individual income tax system are not indexed for inflation: For example, the income thresholds for the surtax on investment income are fixed in nominal dollars, so if incomes were higher because of higher inflation, the surtax would apply to a larger share of taxpayers' incomes.

For the payroll tax, rates are mostly the same across income levels, and the maximum amount of earnings subject to the Social Security tax rises with average wages in the economy, which generally rise more when inflation is higher; therefore, higher inflation leads to an increase in revenues that is roughly proportional to the increase in earnings. Also, although the tax brackets under the corporate income tax are not indexed for inflation, most profits are taxed at the top tax rate, so again higher inflation generates an increase in revenues that is roughly proportional to the increase in corporate profits.

Higher inflation also increases the cost of many mandatory spending programs. Benefits for many mandatory programs are automatically adjusted each year to reflect increases in prices. Specifically, benefits paid for Social Security, federal employees' retirement programs, Supplemental Security Income, disability compensation for veterans, the Supplemental Nutrition Assistance Program (formerly known as Food Stamps), and child nutrition programs, among others, are adjusted (with a lag) for changes in the consumer price index or one of its components. Many of Medicare's payment rates also are adjusted

annually for inflation. Spending for some other programs, such as Medicaid, is not formally indexed to price changes but tends to grow with inflation because the costs of providing benefits under those programs increase as prices rise. In addition, to the extent that initial benefit payments to participants in retirement and disability programs are linked to wages, increases in nominal wages as a result of higher inflation will boost future outlays for those programs.

In CBO's baseline, higher inflation would raise projections of future spending for discretionary programs by a fairly small amount. The Budget Control Act of 2011 (Public Law 112-25), as modified by subsequent legislation, imposes caps on most discretionary budget authority through 2021, and CBO's baseline incorporates the assumption that appropriations for most purposes will be equal to those caps. Higher inflation would not alter those caps and thus would have no effect on CBO's projections of those appropriations.

However, higher inflation would raise other projected appropriations in two ways. First, the law specifies that the caps may be adjusted to accommodate appropriations for certain purposes. In 2014, those adjustments include \$92 billion designated for overseas contingency operations (such as the war in Afghanistan), \$6 billion in funding provided for disaster relief, and \$1 billion for "program integrity" initiatives aimed at reducing improper benefit payments in the Disability Insurance and Supplemental Security Income programs. CBO's baseline extrapolates the funding provided for those purposes in 2014 with adjustments for inflation; if inflation was 1 percentage point higher, projected outlays from such funding would increase by \$56 billion between 2015 and 2024. Second, CBO's baseline projections incorporate the assumption that discretionary funding that is capped through 2021 increases with inflation in 2022, 2023, and 2024 from the amount of the cap in 2021; inflation that was 1 percentage point higher would boost projected outlays in those years by a total of \$50 billion.

Although the caps on discretionary appropriations are not indexed for inflation, higher inflation would gradually diminish the amount of goods that could be acquired and the benefits and services that could be provided under those fixed caps. If, over time, higher inflation led lawmakers to adjust the discretionary caps, the impact on spending would be greater and the net impact on the deficit would be even worse.

Inflation also has an impact on outlays for net interest because it affects interest rates. If inflation was 1 percentage point higher than CBO projects, for example, then interest rates would be 1 percentage point higher (all else being equal). As a result, new federal borrowing would incur higher interest costs, and outstanding inflation-indexed securities would be more costly for the federal government. In addition, higher interest rates would first

reduce and then increase revenues from the Federal Reserve's remittances to the Treasury.

If inflation each year was 1 percentage point higher than the rate underlying CBO's baseline, total revenues and outlays over the 10-year period would be about 6 percent and 7 percent greater, respectively, than in the baseline. Over the 2015–2024 period, the deficit would be \$762 billion higher (see Table D-1 on page 131).

