

## How Changes in Economic Projections Might Affect Budget Projections

**T**he federal budget is highly sensitive to economic conditions. Revenues depend on the amount of taxable income, including wages and salaries, other 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 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; they are not, however, substitutes 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 reflect alternative assumptions about economic conditions beginning in January 2015.

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 projected in the baseline.

Each rule of thumb is roughly symmetrical. Thus, if instead economic growth was 0.1 percentage point higher than in CBO’s baseline, or if interest rates or inflation were 1 percentage point lower, the effects would be about the same as those shown here, but with the opposite sign.<sup>1</sup>

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 0.7 percentage points.<sup>2</sup> And

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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.

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

CBO's baseline includes real GDP growth of between 2.7 percent and 3.0 percent for the next three calendar years and an average of 2.1 percent from 2018 to 2025. If 0.1 percentage point was subtracted from each of those rates, by 2025 GDP would be roughly 1 percent smaller than the amount underlying CBO's baseline.

Slower GDP growth would have several effects on the budget. If growth was 0.1 percentage point lower per year, it would result in less growth in taxable income and thus lower tax revenues—\$2 billion less in 2015 and \$59 billion less in 2025 (see Table C-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 2025. Mandatory spending, however, would be only slightly affected by a decline in economic growth of that magnitude: Medicare outlays would be somewhat lower, but that decrease would be partially offset by higher outlays for the refundable portions of the earned income and child tax credits.<sup>3</sup>

3. 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 therefore to smaller Medicare payments to physicians. Tax credits reduce a taxpayer's income tax liability; if a refundable credit exceeds a taxpayer's other liability, all or a portion of the excess is refunded to the taxpayer and 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 \$69 billion by 2025. The cumulative deficit for 2016 through 2025 would be \$326 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, each year the Treasury refinances a substantial portion of the nation's outstanding debt 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 2025 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 2015 because most marketable government debt is in the form of securities that have maturities greater than one year. As the Treasury replaced maturing securities, however, the budgetary effects of higher interest rates would mount, climbing to an additional \$198 billion in 2025 under this scenario (see Table C-1).

As part of its conduct of monetary policy, the Federal Reserve buys and sells Treasury securities and other securities, including, over the past few years, a large amount of mortgage-backed securities. The Federal Reserve also pays interest on reserves (deposits that banks hold at the central bank). The interest that the Federal Reserve earns on its portfolio of securities and the interest that it pays on reserves affect its 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 2023 the Federal Reserve's remittances would be higher if projected interest rates were higher. Overall, rates that were 1 percentage point higher than in CBO's baseline would

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

Billions of Dollars

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total	
												2016-2020	2016-2025
<b>Growth Rate of Real GDP Is 0.1 Percentage Point Lower per Year</b>													
Change in Revenues	-2	-5	-9	-14	-19	-24	-30	-36	-43	-50	-59	-71	-288
Change in Outlays													
Mandatory spending	*	*	*	*	*	*	*	-1	-1	-1	-1	*	-4
Debt service	*	*	*	<u>1</u>	<u>2</u>	<u>2</u>	<u>4</u>	<u>5</u>	<u>7</u>	<u>9</u>	<u>11</u>	<u>5</u>	<u>41</u>
Total	*	*	*	<u>1</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>	<u>5</u>	<u>37</u>
<b>Change in the Deficit<sup>a</sup></b>	<b>-2</b>	<b>-5</b>	<b>-9</b>	<b>-14</b>	<b>-20</b>	<b>-26</b>	<b>-33</b>	<b>-41</b>	<b>-49</b>	<b>-59</b>	<b>-69</b>	<b>-75</b>	<b>-326</b>
<b>Interest Rates Are 1 Percentage Point Higher per Year</b>													
Change in Revenues	-23	-28	-24	-17	-15	-9	-6	-3	1	3	5	-93	-93
Change in Outlays													
Higher interest rates	12	40	66	92	112	131	146	161	175	188	198	440	1,307
Debt service	*	<u>2</u>	<u>5</u>	<u>11</u>	<u>18</u>	<u>26</u>	<u>35</u>	<u>45</u>	<u>56</u>	<u>68</u>	<u>79</u>	<u>63</u>	<u>345</u>
Total	12	42	71	103	130	157	181	206	230	256	277	503	1,653
<b>Change in the Deficit<sup>a</sup></b>	<b>-35</b>	<b>-70</b>	<b>-95</b>	<b>-120</b>	<b>-145</b>	<b>-166</b>	<b>-187</b>	<b>-209</b>	<b>-230</b>	<b>-253</b>	<b>-272</b>	<b>-596</b>	<b>-1,745</b>
<b>Inflation Is 1 Percentage Point Higher per Year</b>													
Change in Revenues	-6	21	63	109	155	208	264	323	388	459	536	555	2,526
Change in Outlays													
Discretionary spending <sup>b</sup>	0	1	1	2	3	4	5	13	24	36	50	11	139
Mandatory spending	3	15	34	57	86	116	150	191	229	270	325	308	1,473
Higher interest rates <sup>c</sup>	17	54	83	112	135	157	175	194	210	228	241	540	1,589
Debt service	*	<u>2</u>	<u>4</u>	<u>7</u>	<u>11</u>	<u>15</u>	<u>20</u>	<u>24</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>39</u>	<u>188</u>
Total	20	72	122	178	235	292	350	422	493	569	656	899	3,389
<b>Change in the Deficit<sup>a</sup></b>	<b>-27</b>	<b>-50</b>	<b>-60</b>	<b>-70</b>	<b>-80</b>	<b>-85</b>	<b>-86</b>	<b>-99</b>	<b>-104</b>	<b>-110</b>	<b>-120</b>	<b>-344</b>	<b>-863</b>
<b>Memorandum:</b>													
Deficit in CBO's January 2015 Baseline	-468	-467	-489	-540	-652	-739	-814	-948	-953	-951	-1,088	-2,887	-7,641

Source: Congressional Budget Office.

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

- Negative numbers 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.

(holding all else equal) cause revenues to be \$93 billion lower between 2016 and 2025.

raise the cost of servicing the debt by amounts that would reach \$79 billion in 2025.

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

All told, if interest rates were 1 percentage point higher than projected in CBO's baseline, the deficit would worsen progressively over the projection period by

amounts increasing from \$35 billion in 2015 to \$272 billion in 2025. The cumulative deficit would be \$1.7 trillion higher over the 2016–2025 period.

## Higher Inflation

The third rule of thumb shows the budgetary effects of inflation that is 1 percentage point higher than is projected in CBO’s baseline—with no differences in other economic variables except for interest rates, as described below. 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’ income taxed at certain rates does not change very much when income is higher because of higher inflation, so tax collections tend to rise roughly proportionally with income 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 income was higher because of higher inflation, the surtax would apply to a larger share of taxpayers’ income.

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. Similarly, because the brackets under the corporate income tax are not indexed for inflation and nearly all corporate profits are taxed at the top rate, an increase in profits due to higher inflation generates a roughly proportional increase in corporate tax revenues.

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, 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 resulting from higher inflation boost future outlays for those programs.

Higher inflation would raise CBO’s baseline projections of future spending for discretionary programs, but only by a 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 for two reasons. First, the law specifies that the caps may be adjusted to accommodate appropriations for certain purposes. In 2015, those adjustments include \$74 billion designated for overseas contingency operations, \$6 billion in funding provided for disaster relief, \$5 billion in emergency funding for responding to the outbreak of the Ebola virus, and \$1.5 billion for initiatives aimed at enhancing program integrity by reducing improper payments from certain benefit programs. CBO’s baseline extrapolates the funding provided for those purposes in future years on the basis of the 2015 amount with adjustments for inflation; if inflation was 1 percentage point higher, projected outlays from such funding would increase by \$48 billion between 2016 and 2025. Second, CBO’s baseline projections incorporate the assumption that the discretionary funding that is capped through 2021 will increase thereafter with inflation (from the amount of the cap in 2021); inflation that was 1 percentage point higher than in the baseline would boost projected outlays in those years by a total of \$92 billion.

Although the caps on discretionary appropriations are not indexed for inflation, higher inflation would 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 more severe.

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, as explained above.

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 2016–2025 period, the deficit would be \$863 billion higher (see Table C-1).