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## **THE FEDERAL BUDGET OUTLOOK: EVEN CRAZIER AFTER ALL THESE YEARS**

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## ABSTRACT

We examine the budget outlook, given new Congressional Budget Office (CBO) projections that reflect the recently enacted tax bill and spending deals. The prospect of routine trillion-dollar deficits has dominated public response to CBO's report, but the underlying problem is even more serious. First, the projections assume that the economy is at full employment, on average, over the next decade. If (when?) we face a recession, the medium-term fiscal outlook may look significantly worse. Second, under a "current policy" scenario similar to CBO's alternative fiscal scenario – in which policy makers routinely extend temporary provisions – we project a debt-GDP ratio of 106.5 percent in 2028, which would be the highest ratio in U.S. history. This compares to CBO's current-law debt-GDP projection of 96 percent in that year. Third, the situation only gets worse after the first decade. Under current policy, we find that to ensure the debt-GDP ratio 30 years from now does not exceed the current ratio would require a combination of immediate and permanent spending cuts and/or tax increases totaling 4.0 percent of GDP. This represents about a 21 percent cut in non-interest spending or a 24 percent increase in tax revenues relative to current levels. To put this in perspective, the 2017 tax cuts and 2018 spending deals will raise the deficit by slightly more than 2 percent of GDP in 2019. The required adjustments to keep long-term debt at its current ratio to GDP are about twice as big and in the opposite direction.

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## I. INTRODUCTION

This paper examines the budget outlook, given new Congressional Budget Office (CBO) projections that incorporate the 2017 tax act and the 2018 spending deals.<sup>1</sup> On balance, the medium-term (10-year) outlook has worsened over the past year. The 2017 tax cut, the 2018 spending deals, and higher projected interest rates raise projected deficits and debt, while expectations of a stronger economy (in part attributable to the fiscal stimulus from policy changes) and lower health care spending work in the opposite direction. The net effect is that CBO now projects a debt-GDP ratio of 94.5 percent in 2027 under current law, compared to a similar projection of 91.2 percent last June.<sup>2</sup> Nevertheless, the fiscal situation, already very problematic, has become more so.

First, in an odd twist, the strong projected economy makes the projections of large deficits more worrisome. CBO projects that cumulative actual and potential GDP will be equal, on average, over the 2018-2028 period. The strong projected economic performance is due in part to the implementation of the tax legislation. But it also means that the higher projected deficits and debt are essentially full-employment deficits. If (when?) the economy falls into recession, the medium-term fiscal outlook is likely to look significantly worse.

Second, under a “current policy” scenario, the problem is considerably worse, as CBO acknowledges. Whereas current-law projections examine the impact of Congress essentially making no legislative changes over the projection period, “current policy” projections estimate the impact of what might be termed “business-as-usual” assumptions regarding tax and spending choices – in particular, that policy makers routinely extend temporary provisions.<sup>3</sup> Under current law, CBO projects a debt-GDP ratio of 96.2 percent by 2028. Under current policy, we project a debt-GDP ratio of 106.5 percent in that year, which would be the highest ratio in U.S. history.

Third, the situation only gets worse after 2028. The “fiscal gap” measures the tax and spending changes needed to bring the debt-GDP ratio to a specified level in a specified year. For example, under current policy, we find that to ensure the debt-GDP ratio 30 years from now does not exceed the current level would require a combination of immediate and permanent spending cuts and/or tax increases totaling 4.0 percent of GDP. This represents about a 21 percent cut in non-interest spending or a 24 percent increase in tax revenues relative to current levels. To put this in perspective, the 2017 tax cuts and 2018 spending deals will raise the deficit by slightly more than 2 percent of GDP in 2019. The required adjustments to keep debt at its current ratio to GDP in 2048 are about twice as big and in the opposite direction. The longer policy makers wait to institute changes, the larger those adjustments would have to be to hit a given debt target in a given year. Moreover, over a longer horizon, the required annual adjustments are much larger, because the projected fiscal trajectory under current policy continues to deteriorate.

Sustained federal deficits and rising federal debt that are used to finance consumption or transfer payments will crowd out future investment and reduce prospects for economic growth. Rising debt levels also make it

more difficult to conduct routine policy, address major new priorities, or deal with the next recession or emergencies, and impose substantial burdens on future generations. The nation's debt-GDP ratio rose by about 35 percentage points in the most recent recession. It is hard to believe that policy makers or financial markets would look kindly on the U.S. needing to borrow another 35 percent of GDP should another recession hit. While it is not well understood how high a country's debt can go without precipitating a crisis, especially for a country that borrows in its own currency, there is no doubt that a rising debt-GDP ratio can't go on forever.

Section II discusses the 10-year outlook. Section III discusses the outlook over longer horizons. Section IV summarizes our findings.

## II. THE 10-YEAR BUDGET OUTLOOK

### A. CURRENT LAW

CBO is constrained in how it projects the budget. It is required to assume that expiring tax provisions are allowed to expire, that mandatory programs are reauthorized as scheduled, and that discretionary spending follows the caps set forth in the Budget Control Act of 2011 (which were modified in subsequent legislation) through 2021 and remains constant in real terms thereafter. Figures 1 and 2 and Appendix Table 1 display deficits and debt under current law. CBO projects the current-law deficit will rise from 4.0 percent of GDP in 2018 to 5.1 percent in 2028. End-of-year debt rises from 78 percent of GDP to 96 percent of GDP over the same period.<sup>4</sup>

### B. CURRENT POLICY

We construct alternative 10-year projections by starting with the CBO's April 2018 current-law baseline (CBO 2018) and then making a series of adjustments. In many cases, we are able to utilize estimates that CBO itself provides of alternative policy options. Appendix Table 1 outlines the size of the adjustments relative to the CBO baseline. We emphasize that these adjustments are not policy recommendations; they simply show the effects of what we view as a continuation of current policies.

We assume that major temporary tax-cut provisions are made permanent, including those in the 2017 tax act. This includes "100 percent bonus depreciation" (expensing of business investment in equipment) and the personal income tax cuts scheduled to expire after 2025.<sup>5</sup>

We also assume that enacted tax provisions for which implementation has already been delayed will be permanently delayed (i.e., will not take effect). This includes certain postponed or suspended health care taxes in the Affordable Care Act (ACA), such as the medical device excise tax and the tax on high-premium insurance (the "Cadillac Tax"). With bipartisan support, the implementation of these taxes was postponed by two years in the Protecting Americans from Tax Hikes Act in December 2015 and by another two years in the January 2018 short-term continuing resolution.

On the spending side, CBO sets discretionary spending through 2021 at the levels created by the discretionary spending caps and sequestration procedures (as imposed in the Budget Control Act of 2011 and modified by the Bipartisan Budget Acts of 2013, 2015, and 2018) and then allows them rise with inflation. In our specification, we allow defense spending to rise with inflation, starting in 2019, so that real defense expenditures remain constant at 2018 levels.<sup>6</sup> We allow non-defense discretionary spending to rise with the rate of inflation and the rate of population growth, so that real per-capita spending remains constant at 2018 levels.

Both assumptions are meant to reflect a rough approximation of a budget that maintains current services. For defense, largely a non-rival public good, it seems reasonable to assume that current services can be maintained without regard to population over the short-term. For non-defense programs, it is more likely that maintaining current services requires a population adjustment.

Additionally, we let non-defense emergency funding fall to its historical average, removing the extrapolation of funds for recent hurricanes and wildfires in CBO's baseline.

Deficits and debt under current policy are reported in Figures 1 and 2 and in Appendix Table 1. Deficits rise from 4.0 percent of GDP in 2018 to 7.4 percent of GDP by 2028. The debt-GDP ratio grows slowly to 81.5 percent of GDP by 2020, after which it starts rising more rapidly to reach 106.5 percent by 2028.

## C. DISCUSSION

### **Deficits**

Over next decade, deficits average 4.9 percent of GDP under current law and 6.1 percent of GDP under current policy. In the post-war period, the U.S. has had deficits above 4.9 percent in only a handful of years: a few years in the mid-1980s during a steep recession and 2009-2012 following the financial crisis and Great Recession. The deficit exceeded 6.1 percent of GDP only from 2009-2012.

The projected deficits are, on average, full-employment deficits, since cumulative actual GDP is projected to equal cumulative potential GDP over the period.<sup>7</sup> This gives a strong sense of how large the fiscal imbalance is. The average full-employment deficit between 1965 and 2017 was just 2.6 percent of GDP.<sup>8</sup>

Figure 1 shows that the primary (ex-interest) deficit is positive under both current law and current policy scenarios and rises over time as a share of GDP under current policy.

### **Debt**

At 77 percent of GDP, publicly held federal debt is already higher than at any time in U.S. history other than a seven-year period around World War II. From 1957 to 2007, the ratio never exceeded 50 percent and averaged just 36 percent of GDP. In 2007, the last year before the financial crisis and the Great Recession, the ratio was 35 percent.

The debt-GDP ratio rises by more than 28 percentage points from 2018 to 2028 under current policy. By 2028, the debt-GDP ratio under current policy is projected to be the highest ever, edging out a figure of 106.1 percent in 1946. As shown below, the ratio is projected to rise further in subsequent years. This highlights a key difference between the current situation and previous high-debt episodes in U.S. history. In such episodes – the Civil War, World War I, and World War II – the debt-GDP ratio was cut in half roughly 10 to 15 years after the war ended.<sup>9</sup> In our current situation, however, we are facing a chronic imbalance between revenues and spending, due in considerable part to the aging of the population, rather than a one-time spike in



spending due to a war. In addition, we are unlikely to achieve the economic growth rates we experienced post-WWII.

### **Spending**

Total spending under current policy rises from 20.6 percent of GDP in 2018 to 24.7 percent by 2028 (Figure 3). Total spending averaged 20.4 percent of GDP from 1965 to 2017 (weighted). As a share of GDP, net interest and mandatory spending are projected to rise, while discretionary spending is slated to decline.

Net interest payments rise from 1.6 percent of GDP in 2018 to 3.4 percent in 2028. CBO assumes that interest rates will rise as the economy expands.<sup>10</sup> From 1965-2017, by comparison, net interest averaged 1.9 percent of GDP.

Overall non-interest spending rises from 19.0 percent of GDP in 2018 to 21.3 percent by 2028 (Figure 3), considerably above the average (weighted) value from 1965 to 2017, of about 18.6 percent.

Mandatory spending is projected to rise from 12.7 percent of GDP in 2018 to 15.2 percent in 2028, a big part of this growth due to Social Security (about 1.1 percent of GDP) and net Medicare spending (1.3 percent of GDP). Among the remaining programs, Medicaid benefits, CHIP, and exchange subsidies rise by about 0.3 percent of GDP, offset in part by a decline of 0.2 percent of GDP in spending on other entitlements (Figure 4).

Discretionary spending falls from 6.4 percent of GDP in 2018 to 6.1 percent in 2028, even under current policy. Within that category, defense spending declines from 3.1 percent in 2018 to 2.9 percent in 2028, while non-defense discretionary spending falls from 3.3 percent of GDP in 2018 to 3.2 percent of GDP in 2028. All of these shares are low relative to historical figures. Since 1965, the lowest discretionary spending share of GDP occurred in 1999, at 6.0 percent. The lowest share for defense spending was 2.9 percent of GDP in 1999-2001. The lowest nondefense discretionary spending share of GDP was 3.1 percent in 1998-1999.

### **Revenues**

Revenue are projected to increase from 16.6 percent of GDP in 2018 to 17.3 percent of GDP in 2028 under current policy. (Under current law, revenues rise to 18.5 percent of GDP by 2028.) Revenues averaged 17.2 percent of GDP from 1965 to 2017 (weighted). Notably, individual income tax revenues are projected to rise from 8.2 percent of GDP currently to 8.9 percent of GDP by 2028 under current policy. The increase in individual income tax revenues is paired with a small increase in corporate tax revenues from 1.2 percent of GDP in 2018 to 1.4 percent of GDP in 2028 and a smaller increase in payroll tax revenues. Other revenues are projected to drop as a share of the economy over the period.

## **D. TRUST FUNDS**

The federal government runs several trust funds, most notably for Social Security (Old Age and Survivors Insurance), Disability Insurance, Medicare (two separate funds), civilian and military retirement, and

transportation spending. All of the projections highlighted above integrate the trust funds into the overall budget. These projections also assume that scheduled benefit payments will be made even if trust funds run their balances to zero. However, many of the trust funds are not legally allowed to pay out benefits that draw their balances below zero.

This is not just an academic concern. This trust fund constraint was one of the proximate causes of Social Security reform in 1983; the trust fund literally had almost run out of money, an eventuality that would have required cuts in promised benefits so that they would not exceed the revenues coming in. The Social Security (Old Age and Survivors Insurance) trust fund is currently scheduled to have to make forced adjustments by 2035 (according to the Social Security Trustees, 2031 according to CBO). The disability insurance (DI) trust fund is scheduled to have to make forced adjustments by 2028 (according to the Social Security Trustees, 2025 according to CBO).<sup>11</sup> The Medicare Part A (hospital insurance) fund appears, according to the 2017 Trustees Report, likely to hit a similar constraint by 2029 (2026 according to CBO).<sup>12</sup> Each of these dates may prompt at least limited fiscal action. In each case, legislators will be forced to override the rules regarding trust funds, make inter-fund transfers, reduce benefits, or raise taxes. In contrast, Medicare parts B (Supplementary Medical Insurance) and D (Prescription Drug Coverage) do not have the constraint that spending can only be financed by trust fund payments.

Although low trust fund balances may require action, low balances and actions to address them relate to individual programs and the nature of their funding sources. They also provide an incomplete picture of the federal government's overall fiscal position over the longer term, an issue to which we now turn our attention.

### III. THE LONG-TERM BUDGET OUTLOOK

As shown above, deficits are projected to rise relative to GDP over the next decade. This suggests that looking only at the next 10 years gives an incomplete and overly optimistic picture of the fiscal outlook, even with our adjustments made in characterizing current policy. In this section, we examine the fiscal outlook over longer horizons. We report fiscal gaps and debt-GDP ratios under various scenarios.

#### A. DEFINITIONS AND ASSUMPTIONS

The fiscal gap is an accounting measure that is intended to reflect the long-term budgetary status of the government.<sup>13</sup> The fiscal gap answers the question: if you want to start a policy change in a given year and reach a given debt-GDP target in a given future year, what is the size of the annual, constant-share-of-GDP increase in taxes and/or reductions in non-interest expenditures (or combination of the two) that would be required, holding projected economic performance unchanged? For example, one might ask what immediate and constant policy change would be needed to obtain the same debt-GDP in 2048 as exists today.<sup>14</sup> Alternatively, one might ask what constant share-of-GDP change would be required, starting in 2021, to achieve a debt-GDP ratio of 60 percent by 2048.

For our base case, we use the current policy projections developed above for the first 10 years, assume that policy makers start making fiscal adjustments in 2018, and set a debt-GDP target for the future equal to the ratio at the beginning of fiscal-year 2018, 76.5 percent.

We use long-term economic growth assumptions implied in CBO (2017a). Over the 2029-2047 period, the average nominal economic growth rate is 4.15 percent. After 2047, we assume that the economy grows at its 2047 rate of 4.13 percent. This is due to CBO (2017a) only reporting growth rates through 2047.

We assume the weighted average nominal interest rate on government debt rises gradually from 3.4 percent in 2029 to 4.0 percent in 2047, following CBO (2017a), adjusted for changes from the ten-year outlook (CBO 2018). After 2047, we gradually increase the interest rate to 5.0 percent by 2093, consistent with the long-term nominal interest rate projected by the Board of Trustees (2017), adjusted for differences in economic growth between the Trustees' Report and the CBO Long-Term Budget Outlook (CBO 2017a).

For Medicare and OASDI, we project all elements of spending and dedicated revenues (payroll taxes, income taxes on benefits, premiums and contributions from states) using the growth rates in the intermediate projections in the 2017 Trustees reports for the period between 2029 and 2091.<sup>15</sup> For Medicaid, CHIP, and exchange subsidies, we use growth rates implied by CBO's most recent long-term static projections (CBO 2017a) through 2047. After 2047, the growth rate is determined by the ratio of pre-2047 annual growth in CBO (2015) versus CBO (2017a), applied to post-2047 annual growth in CBO (2015).<sup>16</sup>

We assume that all other revenues, all other mandatory spending, and all discretionary spending remains constant as its 2028 share of GDP. This implicitly assumes that policy makers will make a series of (small) tax cuts and discretionary spending increases over time.

After 2093, all non-interest spending and all revenues are assumed to be constant as a share of GDP, in all of the scenarios.

We also undertake the following sensitivity analyses:<sup>17</sup>

- Use the current-law baseline for the first 10 years;
- Assume that policy makers delay changes until 2021 or 2025;
- Assume the debt-GDP target is 60 percent, a ratio proposed by at least two budget commissions;<sup>18</sup>
- Require interest rates on government debt to remain at their 2018 levels throughout the period in question;
- Allow income tax revenues to rise as a share of GDP after 2028 due to bracket creep and rising withdrawals from retirement plans, in accordance with CBO's most recent long-term budget outlook and the recent switch to using the chained CPI to index the income tax for inflation.<sup>19</sup>
- Have certain forms of spending fall as a share of GDP after 2028, by adjusting mandatory spending (other than Social Security, Medicare, and Medicaid) and non-defense discretionary spending for inflation and population, and defense spending only for inflation. As noted earlier, this assumption would essentially maintain current services.
- Allow Medicare spending to rise faster than under the base case. As noted, our base case uses the intermediate projections of the Medicare Trustees,<sup>20</sup> which have for many years incorporated the assumption that Medicare growth will eventually slow in the future. Starting in the 2010 report, however, the Trustees' official Medicare projections have assumed a much stronger slowdown, as a consequence of provisions in the ACA. These assumptions, though they may be consistent with the impact of the bill's provisions should they remain in force over the long term, are not adopted by other forecasters, who have a more pessimistic outlook. The illustrative scenario in the Boards of Trustees (2017) and the extended baseline in CBO (2017a) include projections showing faster spending growth.

## **B. RESULTS**

Under our base case, the debt-GDP ratio, after reaching 106 percent in 2028, would rise to 148 percent in 2038 and 196 percent in 2048, if policy makers do not take corrective fiscal actions. The first entry on the first row of Table 1 shows that it would require immediate and permanent tax increases or spending cuts totaling 4.0

percent of GDP starting in 2018 to bring the debt-GDP ratio in 2048 down to 76.5 percent, the level at the end of 2017.

The first row of Table 1 also shows that the analogous figure through 2093 is 5.2 percent of GDP. On a permanent basis, the required adjustment is 6.2 percent of GDP. The rest of the table offers sensitivity analyses, in terms of deviations from the baseline results.<sup>21</sup>

Using the current-law baseline assumptions over the first ten years instead of the current-policy baseline reduces the 2048 debt-GDP ratio by 48 percentage points and reduces the 2048 fiscal gap by 1.6 percent of GDP. As noted, the longer policy makers wait to make the adjustments, the larger the eventual adjustments will have to be. The required adjustments to meet a 2048 target would be 0.4 percent of GDP larger if implementation is delayed until 2021 and 1.2 percent of GDP larger if delayed until 2025.

Through 2048, the differences in the fiscal gaps implied by the different healthcare scenarios are relatively small. Over longer periods, however, the differences are much larger.

If baseline outlays for non-defense discretionary and other mandatory programs are held constant in real, per capita terms after 2028 and defense spending remains constant in real terms (instead of each item being a constant share of GDP), the fiscal gap falls by about 0.6 percent of GDP through 2048, 2.2 percent of GDP through 2093, and about 3.6 percent of GDP on a permanent basis.

If baseline income tax revenues grow with bracket creep and retirement withdrawals after 2028 (instead of remaining a constant share of GDP), the fiscal gap falls by 0.3 percent of GDP through 2048, 1.9 percent of GDP through 2093, and 3.8 percent of GDP on a permanent basis.

Holding the interest rate constant at its implied 2018 level reduces the fiscal gap by 0.9 percent of GDP through 2048.

Finally, setting the debt-GDP target at 60 percent raises the fiscal gap by about 0.5 percent of GDP through 2048 and 0.2 percent of GDP through 2093.

## IV. DISCUSSION

The nation is now on course for routine trillion-dollar annual deficits, and the highest debt-GDP ratio in our history is within sight – in 2028 under current policy. However, there is worse news. Beyond the next decade, deficits and debt are projected to rise steadily, due to rising entitlement spending and net interest payments and, as of yet, an unwillingness to provide the revenues needed to finance such outlays.

The adjustments needed to put the nation on a sustainable and stable path are more substantial than anything discussed in the current political arena. It is useful to emphasize that even if the main driver of long-term fiscal imbalances is the growth of entitlement benefits, this does not mean that the only solutions are some combination of benefit cuts now and benefit cuts in the future. For example, when budget surpluses began to emerge in the late 1990s, President Clinton devised a plan to use the funds to “Save Social Security First.” Without judging the merits of that particular plan, our point is that Clinton recognized that Social Security faced long-term shortfalls and, rather than ignoring those shortfalls, aimed to address the problem in a way that went beyond simply cutting benefits. A more general point is that addressing entitlement funding imbalances can be justified precisely because one wants to preserve and enhance the programs, not just because one might want to reduce the size of the programs. Likewise, addressing these imbalances may also involve reforming the structure of other spending, raising or restructuring revenues, or creating new programs. Nor do spending cuts or tax changes need to be uniform across the board. Given the magnitude of the necessary overall adjustments, it is likely to be a much better approach, if not a politically easy one, to make choices among programs. For example, one could provide more investment in infrastructure or children’s programs even in the context of overall spending reductions. And the aging of the population and the requisite rise in spending will necessitate higher taxes as a share of GDP.

Clearly, there is substantial uncertainty regarding budget projections. Nevertheless, a range of reasonable estimates implies an unsustainable fiscal path that will generate significant problems if not addressed. How should the presence of that uncertainty affect when and how we make policy changes?<sup>22</sup> One argument is that we should wait; after all, the fiscal problem could go away. However, uncertainty can cut both ways, and the greater the uncertainty, the more we should want to address at least part of the problem now. There are benefits to getting the deficit under control – including economic growth and fiscal flexibility. If carrying high debt were costless economically and politically, many more countries would have done so before the Great Recession. In fact, very few had net debt to GDP ratios above 70 percent. Addressing the issue now does not necessarily mean cutting back on current expenditures or raising current taxes; rather, it may involve addressing future spending and revenue flows now, in a credible manner. However, the longer we wait to act, the larger and more disruptive the eventual policy solutions will need to be.



Table 1

Fiscal Gaps (Percent of GDP)

	2048 Fiscal Gap	2093 Fiscal Gap	Permanent Fiscal Gap
<b>Central Estimate</b>			
Current Policy Baseline*	3.99	5.18	6.16
<b>Alternative Options (Incremental Effects Relative to Current Policy Baseline)</b>			
Current Law for the First Ten Years	-1.63	-1.84	-1.92
Start in 2021	0.45	0.22	0.07
Start in 2025	1.18	0.53	0.15
CMS Illustrative Alternative Health Spending	0.25	1.23	2.25
CBO Extended Baseline Health Spending	0.36	2.13	4.39
NDDS and Other Mandatory Grows with Inflation and Population, Defense Grows with Inflation	-0.63	-2.21	-3.57
Income Tax Grows with Bracket Creep and Retirement Withdrawals	-0.34	-1.89	-3.75
Low Interest Rates	-0.90	-1.14	**
Debt Target = 60% of GDP	0.46	0.16	***

Source: Authors' calculations

\* Uses current policy for the first ten years, Medicare Trustees for Medicare

\*\* The fiscal gap is not defined in this case

\*\*\* Less than 0.01

FIGURE 1

# Alternative Deficit Projections, 2018-2028



Percent of GDP

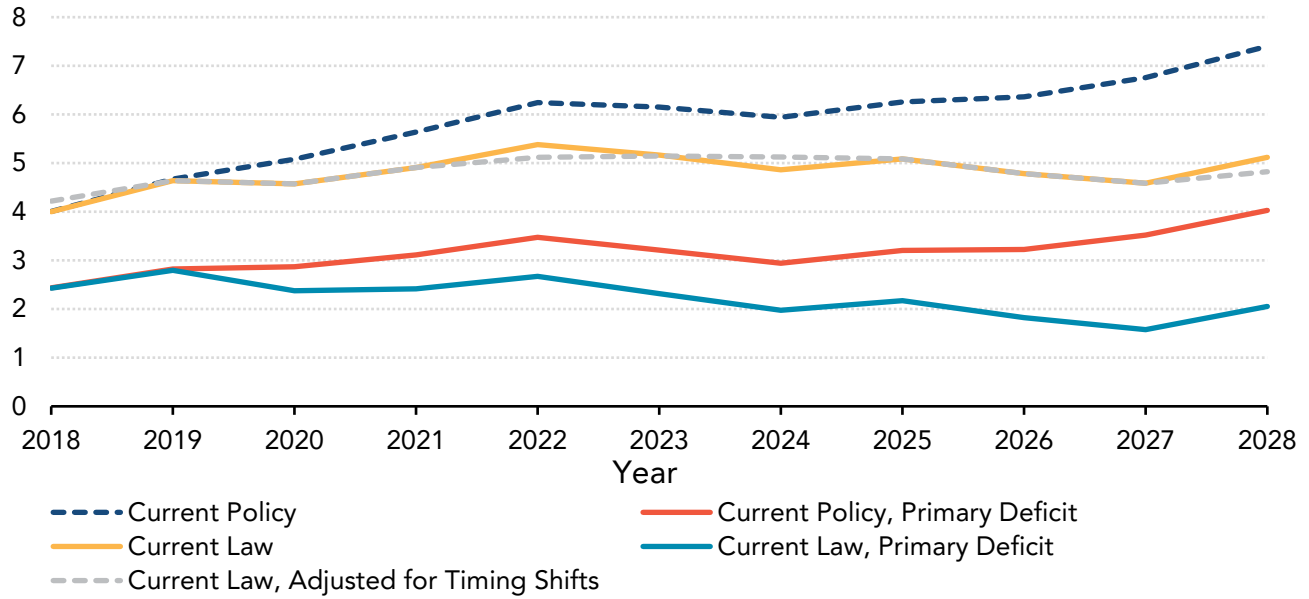


FIGURE 2

# Debt Projections, 2018-2028



Percent of GDP

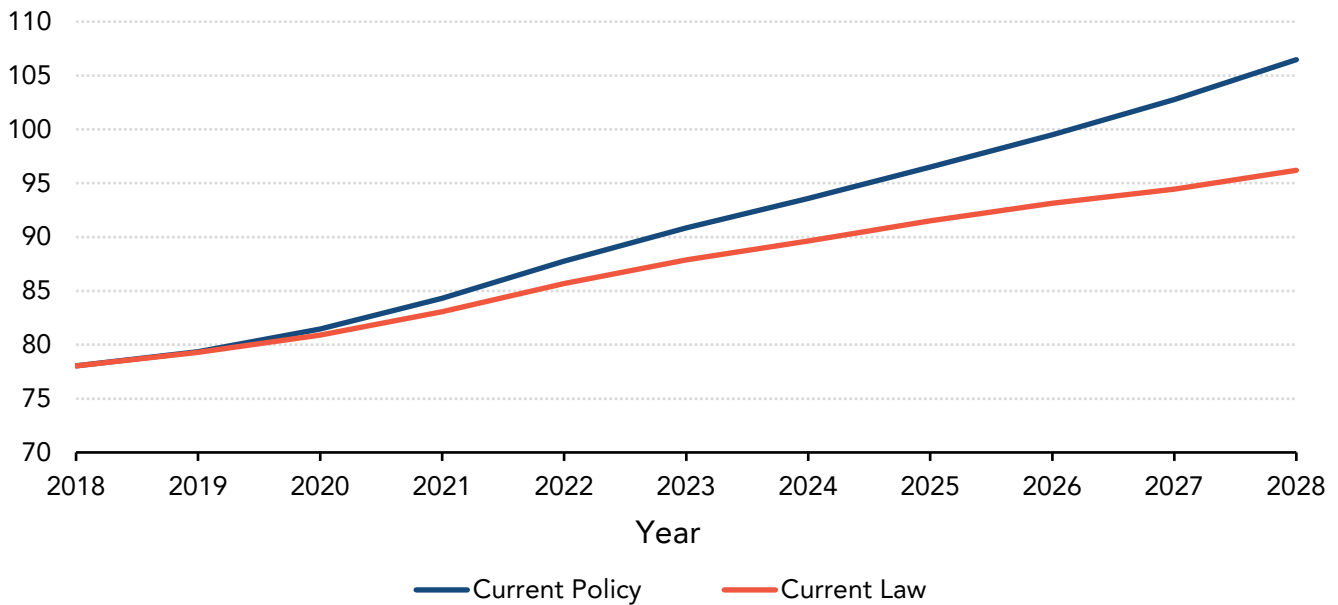




FIGURE 3

# Spending, Revenue, and Deficits under Current Policy, 2018-2028



Percent of GDP

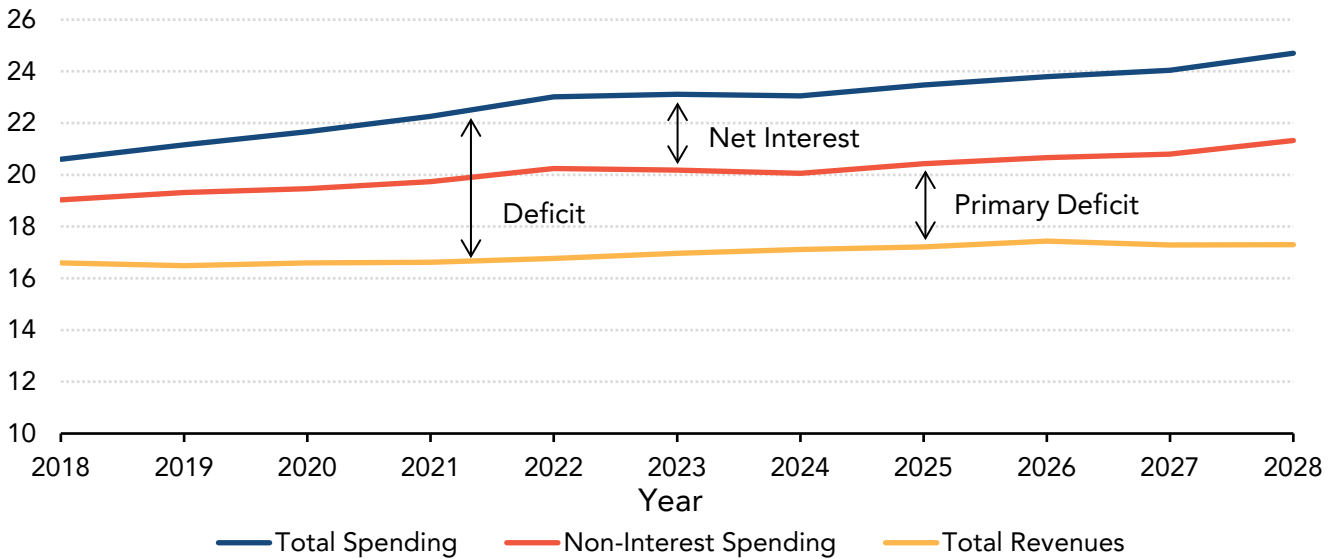
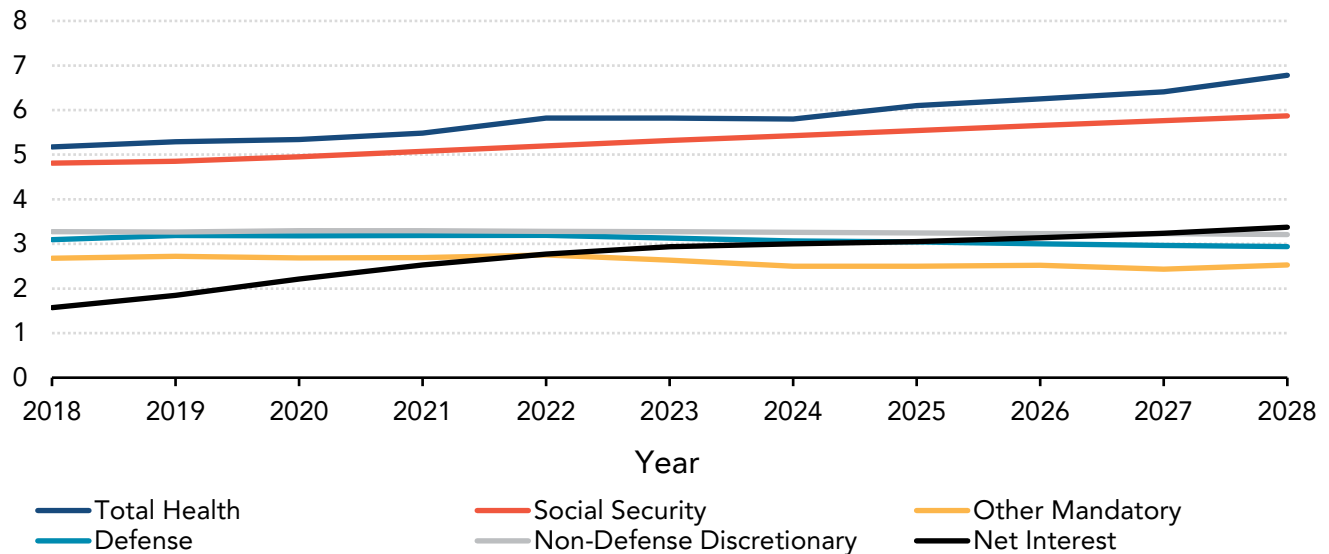


FIGURE 4

# Composition of Spending under Current Policy, 2018-2028



Percent of GDP



## Federal Budget Deficit

CBO Baseline and Current Policy, 2018-2028<sup>1, 2</sup>

	Deficit (\$ billions)											
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2019-28
<b>CBO Baseline</b>	804	981	1,008	1,123	1,276	1,273	1,244	1,352	1,320	1,316	1,526	12,418
as percent of nominal GDP	4.0	4.6	4.6	4.9	5.4	5.2	4.9	5.1	4.8	4.6	5.1	4.9
<b>Adjustments for tax policy</b>												
Extend temporary provisions in the Tax Cuts and Jobs Act	0	0	3	4	4	11	20	32	129	277	291	771
Repeal certain postponed or suspended health taxes <sup>3</sup>	0	0	15	16	24	32	37	41	47	53	60	324
Extend other expiring tax provisions	1	4	5	5	6	8	9	10	11	12	13	85
Subtotal	1	5	22	25	34	51	66	84	187	343	364	1,180
Net interest	0	0	1	2	3	4	6	9	13	22	37	96
<b>Total adjustments for tax policy</b>	1	5	23	27	37	55	72	92	200	364	402	1,276
as percent of nominal GDP	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.7	1.3	1.3	0.5
<b>Adjustments for spending policy</b>												
Increase non-defense discretionary spending with inflation and population	0	11	67	100	120	136	152	164	177	191	203	1,322
Increase defense with inflation	0	4	51	74	85	91	96	99	102	105	108	816
Maintain emergency funding at historical average	0	-14	-30	-40	-49	-58	-66	-73	-79	-81	-86	-577
Subtotal	0	2	88	135	156	169	182	191	200	214	225	1,561
Net interest	0	0	2	6	12	18	23	29	36	44	53	223
<b>Total adjustments for spending policy</b>	0	2	90	141	168	187	205	220	236	258	278	1,784
as percent of nominal GDP	0.0	0.0	0.4	0.6	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.7
<b>Current Policy</b>	<b>805</b>	<b>987</b>	<b>1,120</b>	<b>1,290</b>	<b>1,481</b>	<b>1,515</b>	<b>1,520</b>	<b>1,665</b>	<b>1,757</b>	<b>1,938</b>	<b>2,206</b>	<b>15,478</b>
<b>as a percent of nominal GDP</b>	<b>4.0</b>	<b>4.7</b>	<b>5.1</b>	<b>5.6</b>	<b>6.2</b>	<b>6.2</b>	<b>5.9</b>	<b>6.3</b>	<b>6.4</b>	<b>6.8</b>	<b>7.4</b>	<b>6.1</b>
GDP	20,103	21,136	22,034	22,872	23,716	24,621	25,583	26,595	27,608	28,677	29,803	252,646

<sup>1</sup>Columns may not sum to total due to rounding.<sup>2</sup>The source of these estimates is CBO (2018) "The Budget and Economic Outlook: 2018 to 2028."<sup>3</sup>These include the Cadillac tax, the medical device tax, and the tax on health insurance providers.

## NOTES

- 1 CBO (2018).
- 2 CBO (2017b, 2018).
- 3 CBO's current-law projections assume that some actions are taken: the debt ceiling is raised, existing programs are reauthorized, and Social Security and Medicare programs pay scheduled benefits, even if their respective trust funds are depleted.
- 4 The Congressional Budget Office (2018, page 3) explains that the deficit for fiscal year 2018 will be about \$44 billion lower than would otherwise be expected because October 1, 2017 (the beginning of fiscal year 2018) fell on a weekend, thus pushing some October payments up to the end of September in the previous fiscal year. The same issue raises the deficit in 2022 and reduces it 2024. In addition, and for similar reasons, the deficit in 2028 will be about \$89 billion larger than otherwise expected. Accounting for this shift would reduce spending in 2028 and simultaneously increase spending in 2029 relative to the baseline and would thus have very little net effect on our fiscal gap estimates. As an extreme case, if the entire timing shift were due to Medicare payments – which grows faster on average than primary spending – and if we simply eliminated \$89 billion of Medicare payments in 2028, rather than assigning them to later years, the estimated fiscal gap through 2048 would fall to 3.76 percent of GDP, as compared to our base case (current policy) estimate of 3.99 percent, which is shown in Table 1.
- 5 Examples of major expiring provisions in the 2017 tax act include the top marginal income tax rate of 37 percent, the increased standard deduction, the repeal of personal exemptions, and the 20 percent deduction for certain pass-through income. Examples of expiring provisions outside of the 2017 tax act include the section 48 energy investment credit, the credit for alternative fuel vehicle refueling property, and empowerment zone tax incentives. For a complete list, see tab 7 of the supplemental revenue projection file that accompanies CBO (2018).
- 6 CBO (2018) uses a mix of the employment cost index and the GDP price index to measure inflation.
- 7 CBO (2018).
- 8 This figure is a weighted average, where the weight is GDP. The unweighted average is 2.3 percent.
- 9 Many observers believe the economy has entered a new era of permanently lower interest rates (Elmendorf and Sheiner 2017; Summers 2016). To test the effect of interest rate assumptions on the budget outlook, we ran a sensitivity analysis that we believe to be extremely optimistic (for budgetary purposes) – namely, that a weighted average of nominal interest rates on all government debt stays constant at its implied 2018 value (2.1 percent). This interest rate is calculated by dividing the estimated net interest payments in 2018 from CBO (2018) by the debt at the end of 2017. We thank Richard Kogan for developing a matrix that allows us to estimate the effects of constant interest rates over time. Under this scenario, still assuming current policy for tax and spending programs, we find that in 2028, the deficit would be 6.0 percent of GDP and debt would be about 95 percent of GDP.
- 10 The three-month Treasury bill rate rises to 3.8 percent in 2021 compared to 1.6 percent in 2018. The 10-year Treasury note rate rises to 4.2 percent in 2021 compared to 2.8 percent in 2018. Various measures of the inflation rate such as the Consumer Price Index are expected to rise around 0.3 percentage points over the same period; the remainder of the interest-rate increases represents changes in real interest rates. The interest rates are projected to fall to 2.8 and 3.7 percent, respectively, by 2028. Note, though that this moderation is in part attributable to the removal of fiscal stimulus under current law through the expiration of tax provisions and very low discretionary spending growth – factors not present under our current-policy scenario.
- 11 Board of Trustees (2017); CBO (2018).
- 12 Boards of Trustees (2017); CBO (2018).
- 13 Auerbach (1994). Auerbach et al. (2003) discuss the relationship between the fiscal gap, generational accounting, accrual accounting, and other ways of accounting for government.
- 14 Over an infinite planning horizon, this requirement is equivalent to assuming that the debt-to-GDP ratio does not explode (Auerbach 1994, 1997). For the current value of the national debt, we use publicly-held debt. An alternative

## NOTES

might be to subtract government financial assets from this debt measure, but the impact on our long-term calculations would be small (reducing the fiscal gaps by less than 0.1 percent of GDP).

- 15 Details of these computations are available from the authors upon request. The 2017 Medicare Trustees Report is at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TR2017.pdf>. The 2017 OASDI Trustees Report is at <https://www.ssa.gov/OACT/tr/2017/tr2017.pdf>. These figures are adjusted upward to match CBO totals in 2028.
- 16 CBO (2015) includes a 75-year projection, while CBO (2017a) only has a 30-year projection. This procedure aims to extend the data in CBO (2017a) for the other 45 years. These figures are adjusted downward to match CBO totals in 2028.
- 17 Kamin (2012) and Kogan, Ruffing, and Van de Water (2013) provide additional perspective on these assumptions.
- 18 See Debt Reduction Task Force (2010) and Peterson-Pew Commission on Budget Reform (2009).
- 19 Based on analyses by the Joint Committee on Taxation (2017) and CBO (2016), we assume that the switch to chained CPI indexing in the 2017 tax act will raise revenues by an additional 0.01 percent of GDP per year, above and beyond the bracket creep and revenue increase that would have occurred under CPI indexing.
- 20 Boards of Trustees (2017).
- 21 The results are roughly additive across scenarios. For example, the fiscal gap through 2048 of a scenario with current law for the first ten years, lower spending, higher revenue, and the CMS Medicare baseline could be approximated by the base case gap plus the incremental gaps to generate an approximate fiscal gap through 2048 of 1.65 percent of GDP (=  $3.99 - 1.63 - 0.63 - 0.34 + 0.25$ , with rounding). A formal estimate that explicitly incorporates all those factors generates a fiscal gap of 1.68 percent of GDP.
- 22 Auerbach (2014).

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