

CBO

**The Deficit
Reductions
Necessary to Meet
Various Targets for
Federal Debt**



AUGUST 2018

Notes

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

Numbers may not add up to totals because of rounding.



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The Deficit Reductions Necessary to Meet Various Targets for Federal Debt

Summary

Lawmakers have asked what changes in federal budget deficits would be necessary to reduce federal debt held by the public to various targets over the long term. The Congressional Budget Office has examined a number of illustrative scenarios in which the federal government does that by means of two broad strategies. The first strategy is for policymakers to reduce the primary deficit—that is, the deficit excluding net outlays for interest—by an amount equal to a constant share of gross domestic product (GDP) and to maintain that same percentage reduction each year throughout the period in question. For example, policymakers might choose to reduce the primary deficit so that it is 3 percent of GDP lower than in the extended baseline in each year of the period. Those scenarios are called *constant-share scenarios* in this report. The other strategy is to reduce the primary deficit by a growing percentage of GDP over time. Those scenarios are called *growing-share scenarios*.

In this report, the reductions in deficits are measured in relation to CBO's extended baseline projections. (The extended baseline generally reflects current law; it follows CBO's 10-year baseline projections through 2028 and then extends most of the concepts underlying those baseline projections through 2048.)

What Reductions in the Primary Deficit Would Be Necessary to Meet Various Debt Targets?

CBO analyzed the primary deficit reductions necessary to meet three different debt targets over four different time frames. The three targets are federal debt equaling 41 percent of GDP (the average over the past 50 years), 78 percent of GDP (the current amount), and 100 percent of GDP. The four time frames begin in 2019 and extend to 2033, 2038, 2044, and 2048. (In CBO's extended baseline, debt held by the public grows to 152 percent of GDP in 2048.)

For example, if lawmakers wanted to reduce debt to 41 percent of GDP by 2048, and if they did so by

keeping the primary deficit a constant share of GDP below its level in the extended baseline in each year, they would need to cut noninterest spending, increase revenues, or both (before the economic effects of those changes were taken into account) by a total of 3.0 percent of GDP in 2019 and maintain that percentage reduction over the following 29 years (see Figure 1). In 2019, that change would equal \$640 billion. (In CBO's baseline projections, the primary deficit in that year equals \$591 billion.)

A higher debt target would require smaller changes. For example, if lawmakers wanted to use a similar approach to meet a debt target of 100 percent of GDP in 2048, they would need to reduce primary deficits by 1.3 percent of GDP (which would equal \$270 billion in 2019).

The largest constant-share reduction analyzed in this report is 3.9 percent of GDP (\$830 billion in 2019), which would bring debt down to 41 percent of GDP in 2033. The smallest is 0.3 percent of GDP (\$60 billion in 2019), which would reduce debt to 100 percent of GDP in 2033, only slightly lower than what is projected in the extended baseline.

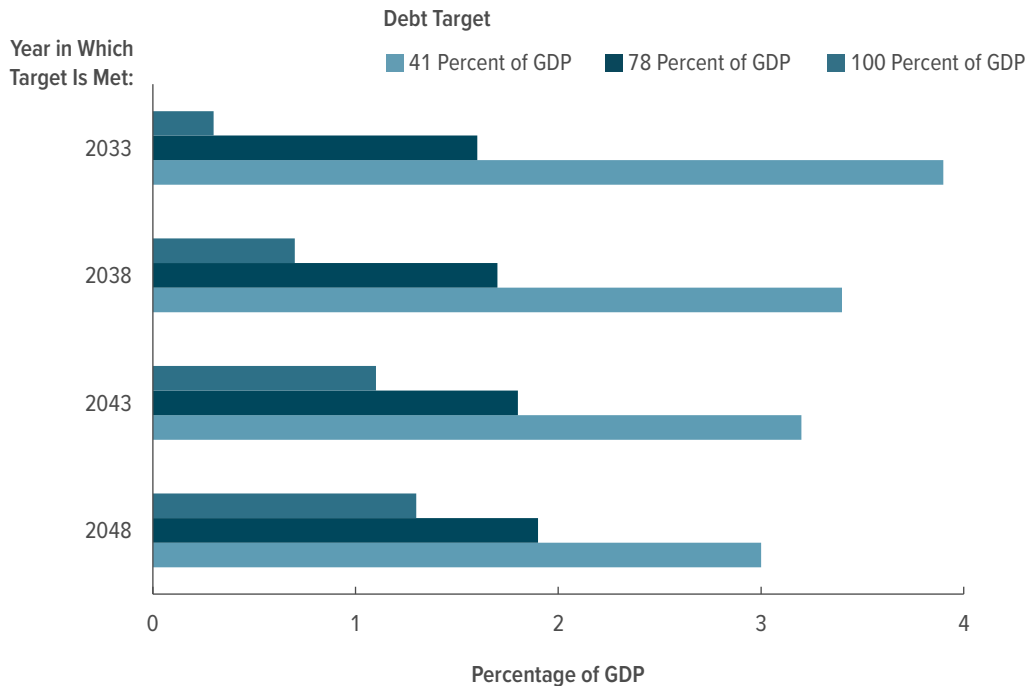
If instead lawmakers wanted to reduce primary deficits by a growing share of GDP each year, all of those reductions in primary deficits would be smaller than the corresponding constant-share reductions initially, but larger in later years.

What Economic Effects Are Reflected in CBO's Analysis?

CBO's analysis accounts for the fact that less federal borrowing would leave more money available for private investment and thereby make output higher and interest rates lower. For example, under the illustrative scenario in which policymakers chose a debt target of 41 percent of GDP in 2048, real (inflation-adjusted) gross national product (GNP) per person in that year would be higher than in CBO's extended baseline by about 6 percent, or \$6,000 in 2019 dollars. That is the largest increase in

Figure 1.

Necessary Reductions in Primary Deficits to Meet Debt Targets, by Year in Which Target Is Met (Constant-Share Scenarios)



The annual reductions in primary deficits, starting in 2019, that are needed to meet certain targets for federal debt depend on the year in which the target is met.

Source: Congressional Budget Office.

The primary deficit is the deficit excluding net outlays for interest.

These projections do not include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

GDP = gross domestic product.

GNP in the various scenarios considered here. Under the scenario in which the debt target was 100 percent of GDP in 2048, GNP per person in that year would be higher by about 3 percent, or \$3,000 in 2019 dollars. Those increases in output, as well as the lower interest rates, would further reduce deficits and debt by increasing revenues and lowering interest costs and other spending as a percentage of GDP.

What Are the Limitations of CBO's Analysis?

This analysis is narrow in scope and therefore has significant limitations. For example, as the point of comparison, it uses CBO's extended baseline, which incorporates the assumption that current laws generally remain unchanged. As a result, to the extent that policymakers have in mind a different point of comparison, the analysis is less informative. Also, the analysis does

not incorporate the negative short-term effects of large, abrupt changes in noninterest spending or revenues on economic growth and income. In addition, the estimates presented here do not incorporate the ways in which changes in fiscal policy can affect people's incentives to work or save or can affect productivity growth, other than through those changes' effects on federal borrowing. This analysis gives estimates of overall economic effects, not the effects on particular income groups. And significant uncertainty surrounds both the extended baseline projections and the economic effects of the illustrative scenarios examined here.

How Do the Illustrative Scenarios Compare With Each Other?

A number of patterns emerge when one considers the illustrative scenarios' estimated effects on the federal

budget and the economy. For example, reductions in primary deficits in the constant-share scenarios rather than in the growing-share scenarios result in larger changes in deficits in the near term but smaller changes later on. In some scenarios with lower debt targets, postponing the year in which a debt target is met necessitates smaller changes to deficits. In addition, larger cuts to primary deficits ultimately result in larger reductions in interest payments and bigger effects on economic output. And in some scenarios, the deficit reductions would be so large that surpluses would result.

Background

If lawmakers wanted to meet various targets for debt, they could do so by cutting noninterest spending, raising revenues, or both. The reductions in spending or increases in revenues could occur in countless ways; the scenarios described in this report are merely illustrative.

Those reductions or increases are in relation to CBO's baseline and extended baseline projections. The extended baseline shows the budget's long-term path under most of the same assumptions that the agency uses, in accordance with statutory requirements, in constructing its 10-year baseline. Both baselines incorporate the assumptions that current law generally remains unchanged but that some mandatory programs are extended after their authorizations lapse and that spending for Medicare and Social Security continues as scheduled even if their trust funds are exhausted. In those projections, total revenues average 17.5 percent of GDP over the next 10 years, and noninterest outlays average 19.7 percent of GDP. The primary deficit therefore averages 2.2 percent of GDP over the next 10 years, and it grows to 3.3 percent by 2048.

In the extended baseline, debt held by the public—which represents the amount that the federal government has borrowed in financial markets by issuing Treasury securities to pay for its operations and activities—equals 105 percent of GDP in 2033, 118 percent in 2038, 133 percent in 2043, and 152 percent in 2048.¹ Measuring quantities as percentages of GDP is particularly useful for comparing amounts of debt in different years. That approach accounts for changes in price levels,

1. See Congressional Budget Office, *The 2018 Long-Term Budget Outlook* (June 2018), www.cbo.gov/publication/53919. That report describes the extended baseline in greater detail; starting on page 24, it presents estimates for two of the scenarios analyzed here.

population, output, and income—all of which affect the nation's ability to finance the debt. By placing discussions about debt in the context of the nation's resources, measuring debt as a percentage of GDP provides a simple and meaningful way to assess the budget's sustainability.

In the scenarios described in this report, the necessary reductions in primary deficits would begin in 2019. The projected effects on debt include both the direct effects of those changes and the effects of the faster economic growth and lower interest rates that would result, which would further reduce deficits. However, the estimates of faster economic growth reflect only the results of the reduction in federal borrowing, not the results of any particular policies that would change spending or revenues. CBO has made no assumptions about what those policies would be. Because particular policies can significantly alter incentives to work, save, and invest, the effects could be very different, depending on those specifics.

Necessary Reductions in Primary Deficits to Meet Various Debt Targets

CBO has analyzed a number of illustrative scenarios in which the federal government meets various debt targets. In some of those scenarios, the necessary reduction in primary deficits (before the economic effects of that change are taken into account) is a constant share of GDP throughout the period in question. In others, primary deficits are reduced by a growing share of GDP each year.

Reducing Primary Deficits by Constant Shares of GDP Each Year

To reduce debt, lawmakers might choose to keep primary deficits a constant share of GDP smaller each year than in the extended baseline. The smaller the amount of debt that lawmakers wanted the government to have in any given year, the larger the cuts in primary deficits would have to be each year until then.

Reductions by 2048. To meet the three debt targets considered in this report by 2048, lawmakers could adopt policies that reduced primary deficits (in relation to CBO's extended baseline) by the following percentages of GDP:

- 3.0 percent of GDP to meet a debt target of 41 percent of GDP;

- 1.9 percent of GDP to meet a debt target of 78 percent of GDP; and
- 1.3 percent of GDP to meet a debt target of 100 percent of GDP.

The larger the necessary reduction in the deficit, the larger the necessary changes to spending, revenues, or both. For example, the 1.3 percent of GDP reduction in the primary deficit necessary to meet a 100 percent debt target would equal 7 percent of noninterest outlays or 8 percent of revenues in 2019. The 3.0 percent of GDP reduction necessary to achieve a 41 percent debt target would equal 16 percent of noninterest outlays or 18 percent of revenues in 2019.

Because GDP is projected to grow, those percentages of GDP would constitute rising dollar amounts over time. For example, 3.0 percent of GDP would equal \$630 billion in 2019 but \$1.1 trillion (in 2019 dollars) in 2048—or \$1,900 per person in 2019 but \$2,800 per person in 2048 (see Table 1).² The increase from \$630 billion to \$1.1 trillion is proportionally greater than the increase from \$1,900 to \$2,800 because the population is projected to grow.

This report shows both the necessary reductions in the primary deficit that lawmakers would have to maintain and the total deficit reductions that would result. Those two quantities are not the same, because the reductions that lawmakers made would be amplified in two ways. First, any given reduction in primary deficits would boost economic growth—resulting in more revenues and less noninterest spending as a share of GDP, and therefore still smaller primary deficits. Second, a reduction in primary deficits would result in lower interest payments on the government’s debt, both because that debt would be smaller and because interest rates would be lower. The result would be smaller *total* deficits—that is, deficits including those interest costs. (The effect on the budget from changes in economic growth and interest rates is called economic feedback.) In the end, the reductions in deficits would therefore be larger than the reductions that lawmakers made, and it is those eventual reductions

2. In the extended baseline, real GNP per person is projected to be \$64,000 in 2019 and \$92,000 in 2048. The projected population is the same in the illustrative scenarios as in the extended baseline.

Table 1.

Necessary Reductions in Primary Deficits to Meet Debt Targets (Constant-Share Scenarios)

Year in Which Target Is Met	Debt Target		
	41 Percent of GDP	78 Percent of GDP	100 Percent of GDP
Reduction in 2019 in Billions of 2019 Dollars			
2033	830	340	60
2038	720	360	150
2043	670	380	220
2048	630	400	270
Reduction in 2019 in 2019 Dollars per Person			
2033	2,500	1,000	200
2038	2,200	1,100	500
2043	2,000	1,100	700
2048	1,900	1,200	800
Reduction in Final Year in Billions of 2019 Dollars			
2033	1,060	430	80
2038	1,020	500	220
2043	1,040	590	350
2048	1,090	690	470
Reduction in Final Year in 2019 Dollars per Person			
2033	2,900	1,200	200
2038	2,700	1,300	600
2043	2,700	1,600	900
2048	2,800	1,800	1,200

Source: Congressional Budget Office.

The primary deficit is the deficit excluding net outlays for interest.

These projections do not include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

GDP = gross domestic product.

that would allow the federal government to meet the debt targets analyzed here.

For example, to reach debt of 41 percent of GDP by 2048, lawmakers would have to maintain primary deficits that are 3.0 percent of GDP lower than under

the extended baseline each year. Economic feedback would amplify that change, and the resulting reduction in the primary deficit would equal 3.8 percent of GDP in 2048. As a result, the budget *excluding interest costs* would be in surplus in 2048 (see Figure 2). Moreover, that 3.8 percentage-point reduction in the primary deficit would be accompanied by a reduction in interest costs equal to 4.9 percent of GDP, resulting in a reduction in the total deficit equal to 8.6 percent of GDP (see Figure 3 on page 7 and Table 2 on page 8).

If the debt target was 41 percent, debt would decline as a percentage of GDP each year (see Figure 4 on page 9). If instead lawmakers chose to meet a higher target in 2048, the necessary reductions in the primary deficit and the resulting changes in the total deficit would be smaller. In addition, debt as a percentage of GDP would be rising in at least some years.

Reductions by an Earlier Year. Meeting a debt target earlier than 2048 would alter the necessary changes to primary deficits. For example, to meet the various targets 15 years from now, in 2033, lawmakers could adopt policies that reduced the primary deficit (in relation to CBO's extended baseline) by the following percentages of GDP each year:

- 3.9 percent of GDP to meet a debt target of 41 percent of GDP;
- 1.6 percent of GDP to meet a debt target of 78 percent of GDP; and
- 0.3 percent of GDP to meet a debt target of 100 percent of GDP.

In 2019, those reductions would amount to \$2,500, \$1,000, and \$200 per person (see Table 1 on page 4).

If lawmakers wanted debt to equal 41 percent of GDP, shifting the target date to 2033 would require a larger change in the primary deficit than what would be needed to meet the same target in 2048 (3.9 percent of GDP rather than 3.0 percent). The size of the necessary changes is influenced by the target date for two opposing reasons. On the one hand, an earlier target date increases the size of those changes because there would be less time to reduce debt to the desired level. On the other hand, an earlier target date reduces the size of those changes because the changes are in relation to CBO's extended baseline, in which debt as a share of GDP keeps rising

over time. (For more explanation, see "Date That Debt Target Is Met" below.) In this case, taking those two factors together results in larger necessary changes in primary deficits. After economic feedback and changes to interest costs were accounted for, the total deficit in 2033 would be 6.7 percent of GDP smaller than in CBO's extended baseline, and the budget would show a surplus equal to 0.7 percent of GDP in that year.

In contrast, if lawmakers wanted to meet the less ambitious 78 percent target in 2033, the necessary changes to the primary deficit would be *smaller* than those needed to meet it in 2048 (1.6 percent of GDP rather than 1.9 percent). In this case, the effect of having fewer years in which to meet the target would be outweighed by the effect of growing debt in CBO's extended baseline. Similarly, if lawmakers wanted to meet the 100 percent debt target in 2033 rather than in 2048, the necessary changes would total 0.3 percent of GDP rather than 1.3 percent. Although debt in that scenario is modestly lower than CBO projects under the extended baseline, it would still be rising as a percentage of GDP over time.

Reducing Primary Deficits by Growing Shares of GDP Each Year

Alternatively, lawmakers could meet the debt targets with reductions in the primary deficit that grew over time. That approach would involve smaller changes than in the corresponding constant-share scenarios in the near term but significantly larger changes later.

Reductions by 2048. To meet the three debt targets by 2048, lawmakers could adopt policies that reduced the primary deficit by the following percentages of GDP:

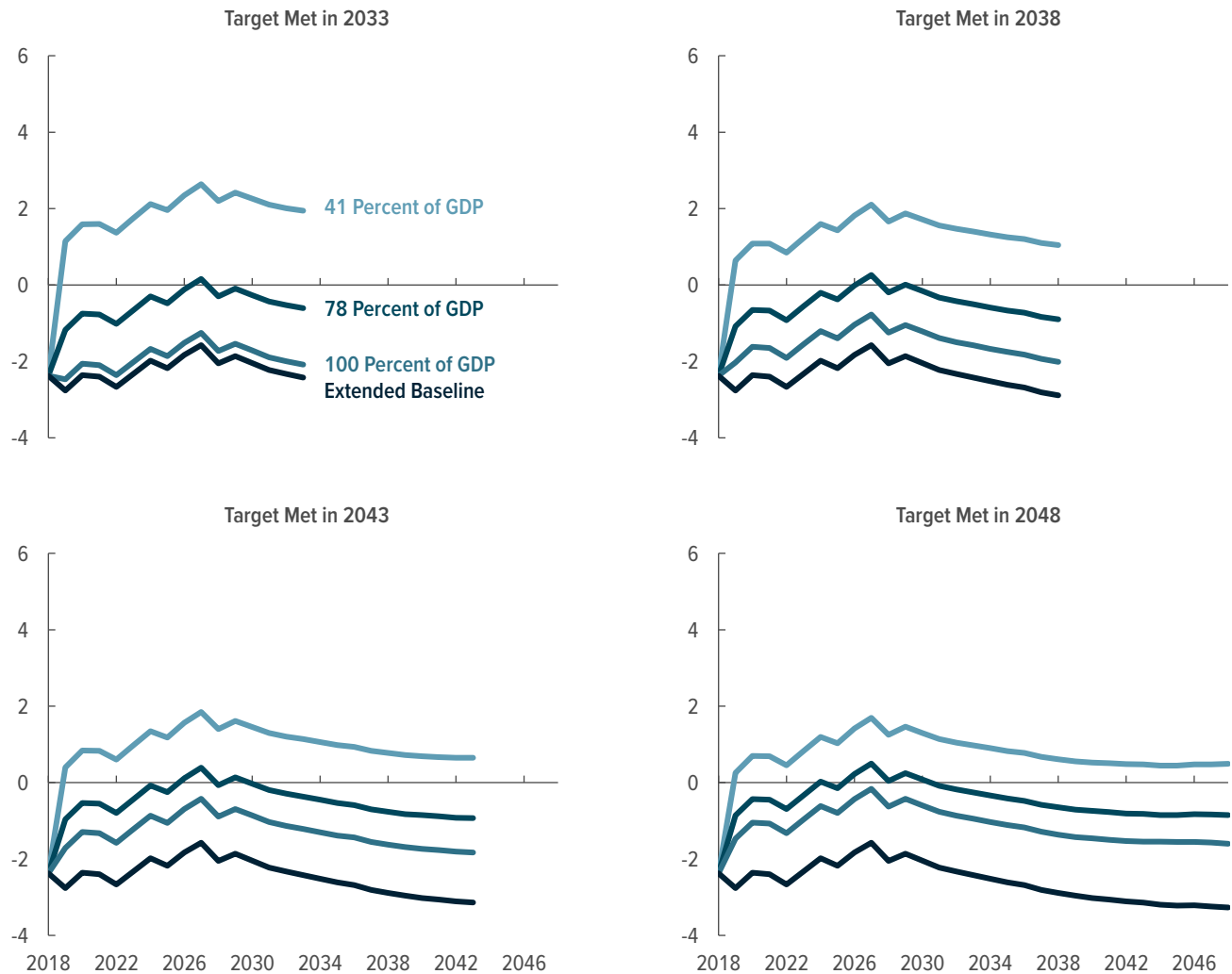
- 0.2 percent of GDP in 2019, rising to 5.9 percent of GDP in 2048, to meet a debt target of 41 percent of GDP;
- 0.1 percent of GDP in 2019, rising to 3.8 percent of GDP in 2048, to meet a debt target of 78 percent of GDP; and
- 0.1 percent of GDP in 2019, rising to 2.6 percent of GDP in 2048, to meet a debt target of 100 percent of GDP.

For example, if lawmakers wanted debt to equal 41 percent of GDP in 2048, they could reduce the primary deficit by 0.2 percent of GDP (before economic feedback was

Figure 2.

Primary Deficits (–) or Surpluses (Constant-Share Scenarios)

Percentage of GDP



Source: Congressional Budget Office.

The primary deficit or surplus excludes net outlays for interest.

These projections include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

GDP = gross domestic product.

taken into account) in 2019 and then increase the size of the reduction by 0.2 percentage points every year. The reduction in the primary deficit would equal 5.9 percent of GDP by 2048 (see Table 3 on page 10). The reductions would grow in real terms partly because real GDP would rise, as in the earlier scenarios, but more because the changes would be growing by 0.2 percentage points

each year. In 2019, 0.2 percent of GDP would equal \$40 billion, or \$120 per person; in 2048, 5.9 percent of GDP would equal \$2.1 trillion, or about \$5,500 per person in 2019 dollars (see Table 4 on page 11). That \$2.1 trillion would equal about 26 percent of noninterest spending projected in CBO’s extended baseline in that year, or about 30 percent of projected revenues.

Figure 3.

Total Deficits (–) or Surpluses (Constant-Share Scenarios)

Percentage of GDP



Source: Congressional Budget Office.

These projections include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

GDP = gross domestic product.

Once again, deficits would shrink by larger amounts than the changes specified because of economic feedback and reduced borrowing needs (see Figure 5 on page 12 and Figure 6 on page 13). And even with the ambitious debt target of 41 percent, debt as a share of GDP would rise for a time before falling because the changes to the primary deficit would be relatively small in the early years (see Figure 7 on page 14).

If instead lawmakers wanted debt in 2048 to equal 78 percent or 100 percent of GDP, the necessary changes in primary deficits in relation to the extended baseline would be smaller—rising to 3.8 percent and 2.6 percent of GDP, respectively, by 2048. With a debt target of 78 percent, debt would rise for some years before declining, and with a target of 100 percent of GDP, debt would increase each year.

Table 2.

Reductions in the Final Year in Deficits, Debt, and Net Outlays for Interest (Constant-Share Scenarios)

Percentage of GDP

	Debt Target		
	41 Percent of GDP	78 Percent of GDP	100 Percent of GDP
		Target Met in 2033	
Reduction in Primary Deficit Before Economic Feedback	3.9	1.6	0.3
Reduction in Primary Deficit Resulting From Economic Feedback	0.5	0.2	0.0
Reduction in Net Interest	2.3	1.1	0.2
Reduction in Deficit	6.7	2.9	0.5
Reduction in Debt Held by the Public	64	27	5
		Target Met in 2038	
Reduction in Primary Deficit Before Economic Feedback	3.4	1.7	0.7
Reduction in Primary Deficit Resulting From Economic Feedback	0.5	0.3	0.2
Reduction in Net Interest	3.0	1.6	0.8
Reduction in Deficit	6.9	3.6	1.6
Reduction in Debt Held by the Public	77	40	18
		Target Met in 2043	
Reduction in Primary Deficit Before Economic Feedback	3.2	1.8	1.1
Reduction in Primary Deficit Resulting From Economic Feedback	0.6	0.4	0.2
Reduction in Net Interest	3.8	2.4	1.5
Reduction in Deficit	7.6	4.6	2.8
Reduction in Debt Held by the Public	93	55	33
		Target Met in 2048	
Reduction in Primary Deficit Before Economic Feedback	3.0	1.9	1.3
Reduction in Primary Deficit Resulting From Economic Feedback	0.8	0.5	0.4
Reduction in Net Interest	4.9	3.4	2.5
Reduction in Deficit	8.6	5.9	4.2
Reduction in Debt Held by the Public	111	74	52

Source: Congressional Budget Office.

The primary deficit is the deficit excluding net outlays for interest.

Economic feedback is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

In CBO's extended baseline, projected deficits as a percentage of GDP equal 6.0 percent, 7.1 percent, 8.3 percent, and 9.5 percent, respectively, in 2033, 2038, 2043, and 2048. Debt held by the public equals 105 percent, 118 percent, 133 percent, and 152 percent.

GDP = gross domestic product.

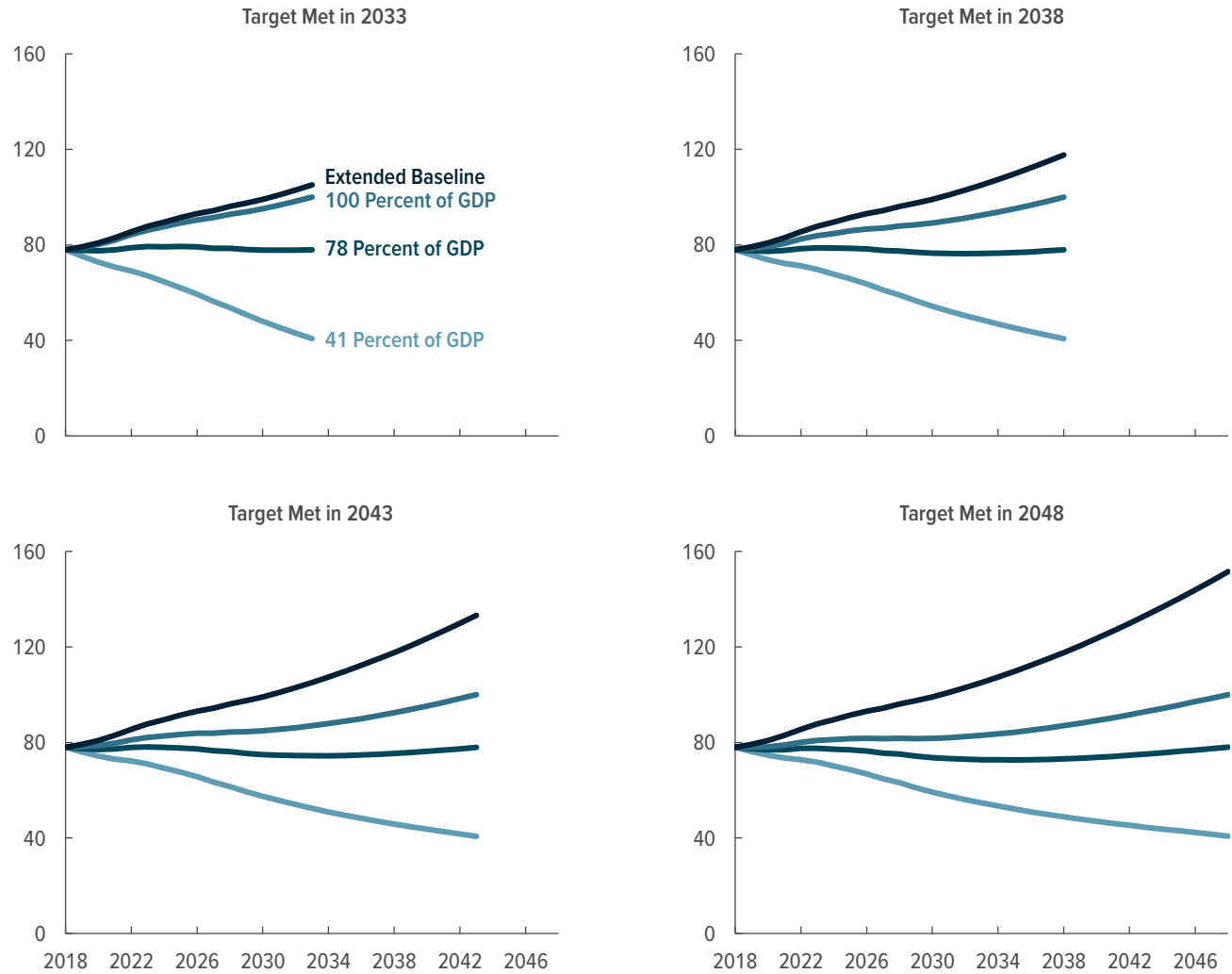
Reductions by an Earlier Year. Meeting a debt target earlier than 2048 would once again alter the necessary changes to primary deficits. For example, to meet the targets in 2033, lawmakers could reduce the primary deficit by the following percentages of GDP:

- 0.5 percent of GDP in 2019, rising to 7.4 percent of GDP in 2033, to meet a debt target of 41 percent of GDP;
- 0.2 percent of GDP in 2019, rising to 3.0 percent of GDP in 2033, to meet a debt target of 78 percent of GDP; and
- A very small percentage of GDP in 2019, rising to 0.6 percent of GDP in 2033, to meet a debt target of 100 percent of GDP.

Figure 4.

Debt Held by the Public (Constant-Share Scenarios)

Percentage of GDP



Source: Congressional Budget Office.

These projections include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

GDP = gross domestic product.

If lawmakers wanted debt to equal 41 percent of GDP, shifting the target date to 2033 would require larger changes in the primary deficit than what would be needed to meet the same target in 2048 because there would be less time to reduce debt to the desired level. The necessary reduction of 0.5 percent of GDP in 2019 would equal \$100 billion, or \$310 per person; by

2033, the necessary reduction of 7.4 percent of GDP would equal \$2.0 trillion, or about \$5,500 per person in 2019 dollars.

In contrast, if lawmakers wanted to meet the less ambitious 78 percent target in 2033, the necessary changes in the target year would be smaller than those needed to

Table 3.

Necessary Reductions in Primary Deficits to Meet Debt Targets, by Year in Which Target Is Met (Growing-Share Scenarios)

	Debt Target		
	41 Percent of GDP	78 Percent of GDP	100 Percent of GDP
Target Met by 2033			
Reduction in . . .			
2019	0.5	0.2	*
2033	7.4	3.0	0.6
Target Met by 2038			
Reduction in . . .			
2019	0.3	0.2	0.1
2033	4.9	2.5	1.1
2038	6.6	3.3	1.4
Target Met by 2043			
Reduction in . . .			
2019	0.2	0.1	0.1
2033	3.7	2.1	1.3
2038	4.9	2.8	1.7
2043	6.2	3.5	2.1
Target Met by 2048			
Reduction in . . .			
2019	0.2	0.1	0.1
2033	3.0	1.9	1.3
2038	3.9	2.5	1.7
2043	4.9	3.1	2.2
2048	5.9	3.8	2.6

Source: Congressional Budget Office.

The primary deficit is the deficit excluding net outlays for interest.

These projections do not include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the growing-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a growing share of GDP each year.

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

meet it in 2048 because the amount of debt reduction necessary in the earlier year would be relatively small, outweighing the fact that there would be fewer years in which to meet the target. Similarly, the changes necessary to meet the 100 percent target in 2033 would be smaller than those necessary to meet that target in 2048.

Economic Effects in CBO's Analysis

CBO's analysis accounts for the fact that reducing spending or increasing revenues to shrink deficits would result in less federal borrowing, which would leave more money available for private investment. As a result, output would be higher and interest rates lower than projected in the extended baseline. In addition, a greater share of private investment would be financed by domestic savings, because the reduced federal borrowing would cause net inflows of foreign capital and net payments of interest and profits to foreigners to be smaller than they would be otherwise. Those changes would lower deficits and debt further—particularly in two ways. First, the increased output would boost taxable profits and wages, thereby boosting federal revenues and lowering non-interest spending as a share of GDP. Second, the lower interest rates would reduce federal interest payments.

In assessing the long-term effects of tax and spending policies on output, CBO focuses on effects on GNP rather than on the more commonly cited GDP. GNP consists of the income that U.S. residents earn abroad and excludes the income that foreigners earn from domestic sources; thus, GNP is a better measure than GDP of the resources available to U.S. households.³

Under the extended baseline, even with the reductions in output and income that would tend to occur because of rising debt, the continued growth of productivity projected would make future output and income higher than they are now. Expressed in 2019 dollars, real GNP per person is projected to be about \$64,000 in 2019, \$75,000 in 2033, and \$92,000 in 2048 under the extended baseline. In all of the debt-reduction scenarios discussed in this report, real GNP per person would ultimately be even greater.

3. The difference between GNP and GDP is particularly important in analyzing the long-term effects of fiscal policies. When the federal government runs larger budget deficits, more capital tends to flow into the United States from other countries, offsetting some of the crowding out of investment that government borrowing produces. However, over time, a growing amount of income must be paid to foreign investors as profits or interest on that invested capital. Therefore, other things being equal, increases in debt reduce GNP (and the income of U.S. households) more than they reduce GDP, and decreases in debt increase GNP more than GDP.

Table 4.

Necessary Reductions in Primary Deficits to Meet Debt Targets (Growing-Share Scenarios)

Year in Which Target Is Met	Debt Target		
	41 Percent of GDP	78 Percent of GDP	100 Percent of GDP
Reduction in 2019 in Billions of 2019 Dollars			
2033	100	40	10
2038	70	30	20
2043	50	30	20
2048	40	30	20
Reduction in 2019 in 2019 Dollars per Person			
2033	310	130	20
2038	210	100	50
2043	160	90	50
2048	120	80	50
Reduction in Final Year in Billions of 2019 Dollars			
2033	2,020	830	150
2038	1,960	980	430
2043	2,020	1,170	690
2048	2,140	1,370	930
Reduction in Final Year in 2019 Dollars per Person			
2033	5,500	2,300	400
2038	5,200	2,600	1,100
2043	5,300	3,000	1,800
2048	5,500	3,500	2,400

Source: Congressional Budget Office.

The primary deficit is the deficit excluding net outlays for interest.

These projections do not include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the growing-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a growing share of GDP each year.

GDP = gross domestic product.

Reducing Primary Deficits by Constant Shares of GDP Each Year

In the constant-share scenarios, real GNP per person would be higher than in CBO's extended baseline, and the difference would increase over time (see Figure 8 on page 15). For instance, in the illustrative scenario in

which a 41 percent debt target was met in 2048, real GNP per person would be 3.0 percent higher than in the extended baseline (or about \$2,300 higher in 2019 dollars) by 2033, CBO estimates, and 6.4 percent higher than in the extended baseline (or about \$5,900 higher in 2019 dollars) by 2048. However, for each debt target and in any given year, the differences in GNP per person if the time frame is varied are not large. For example, if the debt target remained 41 percent of GDP but lawmakers wanted to reach it not in 2048 but in 2033, real GNP per person in 2033 would be 3.8 percent higher than in CBO's extended baseline (about \$2,900 in 2019 dollars)—not very different from the 3.0 percent of GDP just mentioned.

The positive effects on GNP would be smaller in the illustrative scenarios in which the debt target was higher. In essence, the larger the change to primary deficits, the larger the boost to real GNP per person. For example, in the scenario in which a debt target of 100 percent of GDP was met in 2033, the amount of debt reduction and the necessary cuts to primary deficits would be relatively small. As a result, GNP per person would be raised by only 0.3 percent in 2033.

Reducing Primary Deficits by Growing Shares of GDP Each Year

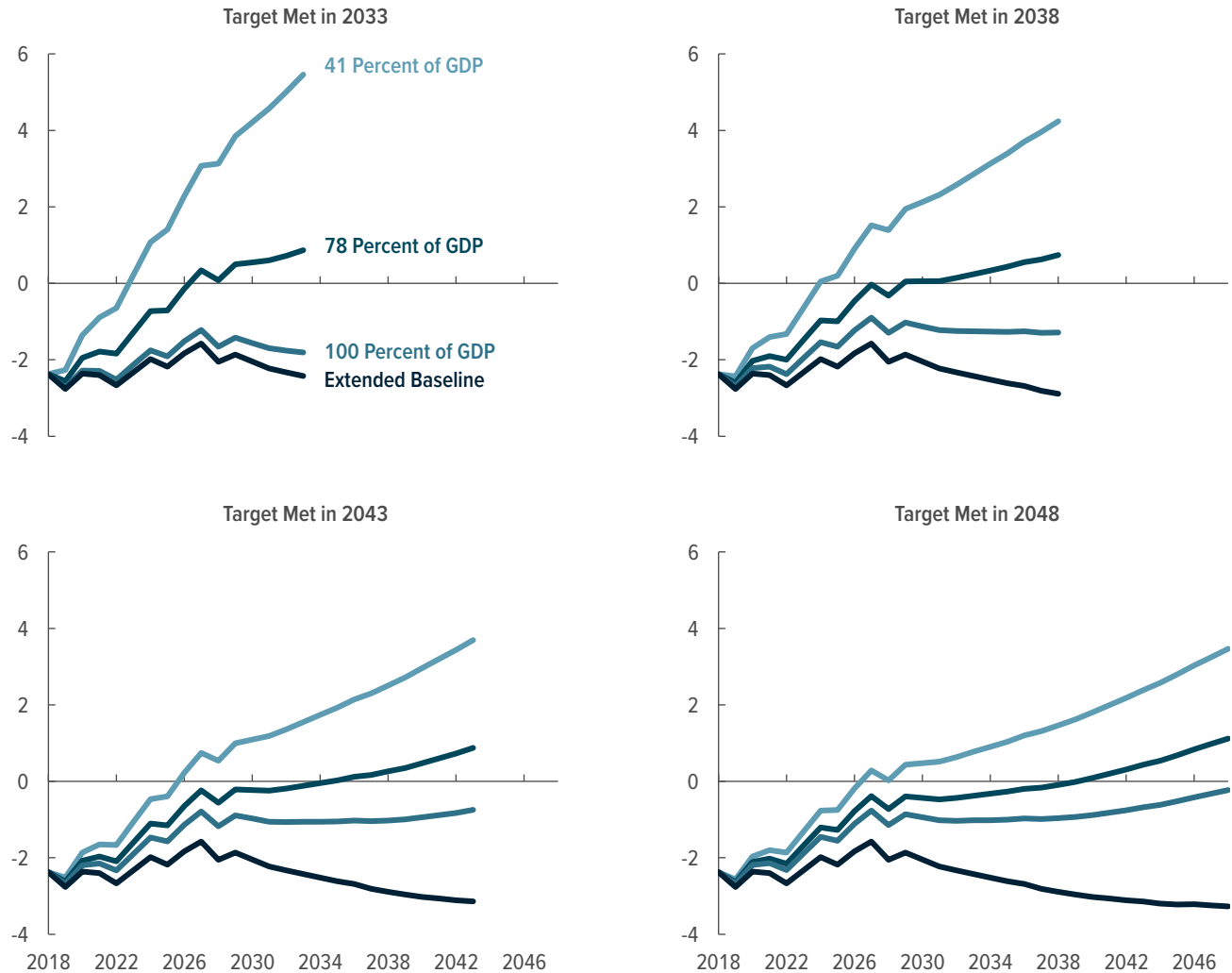
As in the scenarios just discussed, in the illustrative scenarios in which the reductions in primary deficits increased each year as a share of GDP, real GNP per person would be higher than in CBO's extended baseline, and the difference would increase over time (see Figure 9 on page 16). Because the reductions in deficits as a share of GDP in a particular year would generally be larger in scenarios in which the target was met sooner, the boosts to GNP per person in that year would depend strongly on when the target was met. For example, if the debt target was 41 percent of GDP and it was met in 2048, real GNP per person in 2033 would be higher than in CBO's extended baseline by 1.6 percent (about \$1,200 in 2019 dollars). If instead the same target was met in 2033, real GNP per person would be 3.8 percent higher (about \$2,900) higher in 2033.

Once again, the positive effects on GNP would be smaller in the illustrative scenarios with higher debt targets. For example, under the scenarios in which the debt target was met in 2048, real GNP per person in that year would be 6.8 percent higher (about \$6,200) if the target was 41 percent of GDP, 4.5 percent higher

Figure 5.

Primary Deficits (–) or Surpluses (Growing-Share Scenarios)

Percentage of GDP



Source: Congressional Budget Office.

The primary deficit or surplus excludes net outlays for interest.

These projections include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the growing-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a growing share of GDP each year.

GDP = gross domestic product.

(about \$4,100) if the target was 78 percent of GDP, and 3.2 percent higher (about \$2,900) if the target was 100 percent of GDP.

Limitations of the Analysis

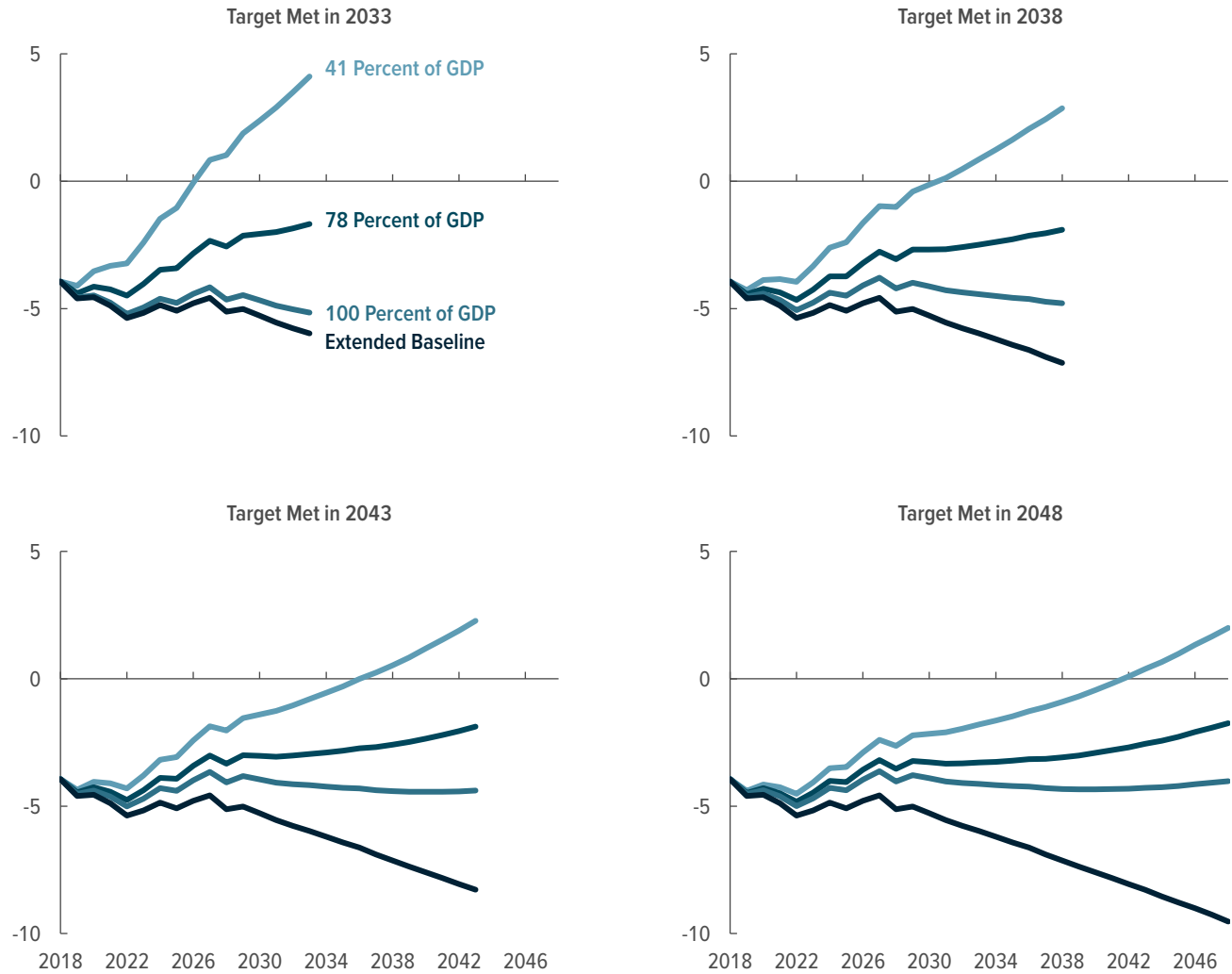
One limitation of this analysis is that the reductions in primary deficits that would be necessary to achieve

reductions in debt are shown in relation to just one point of comparison: CBO’s extended baseline. The necessary changes would be smaller or larger in relation to different paths. For example, what CBO calls its extended alternative fiscal scenario differs from the extended baseline by maintaining certain major policies that are now in place

Figure 6.

Total Deficits (–) or Surpluses (Growing-Share Scenarios)

Percentage of GDP



Source: Congressional Budget Office.

These projections include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the growing-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a growing share of GDP each year.

GDP = gross domestic product.

but that are scheduled to change under current law.⁴ In the extended alternative fiscal scenario, debt as a share of GDP would reach 148 percent in 2038 and continue rising, surpassing 200 percent during the following decade.

In relation to that alternative fiscal scenario, larger reductions in primary deficits than the ones described in this report would be necessary to meet a given debt target.

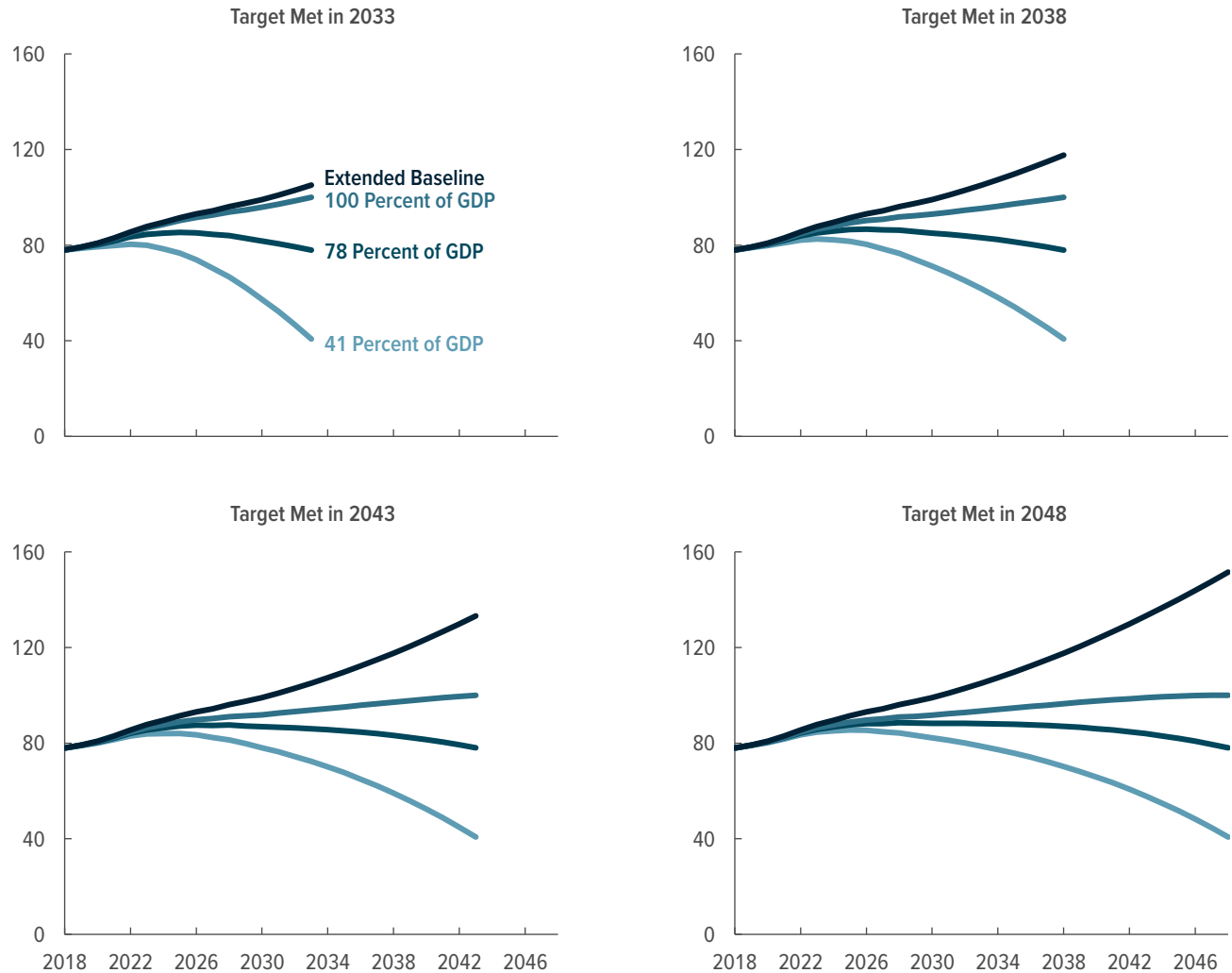
4. See Congressional Budget Office, *The Long-Term Budget Outlook Under Alternative Scenarios for Fiscal Policy* (August 2018), www.cbo.gov/publication/54325.

This analysis is also narrow in scope because it accounts only for economic feedback resulting from changes in private investment. Other kinds of economic feedback

Figure 7.

Debt Held by the Public (Growing-Share Scenarios)

Percentage of GDP



Source: Congressional Budget Office.

These projections include economic feedback, which is the effect on the budget from the increases in economic growth and decreases in interest rates that result from the reductions in primary deficits.

In the growing-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a growing share of GDP each year.

GDP = gross domestic product.

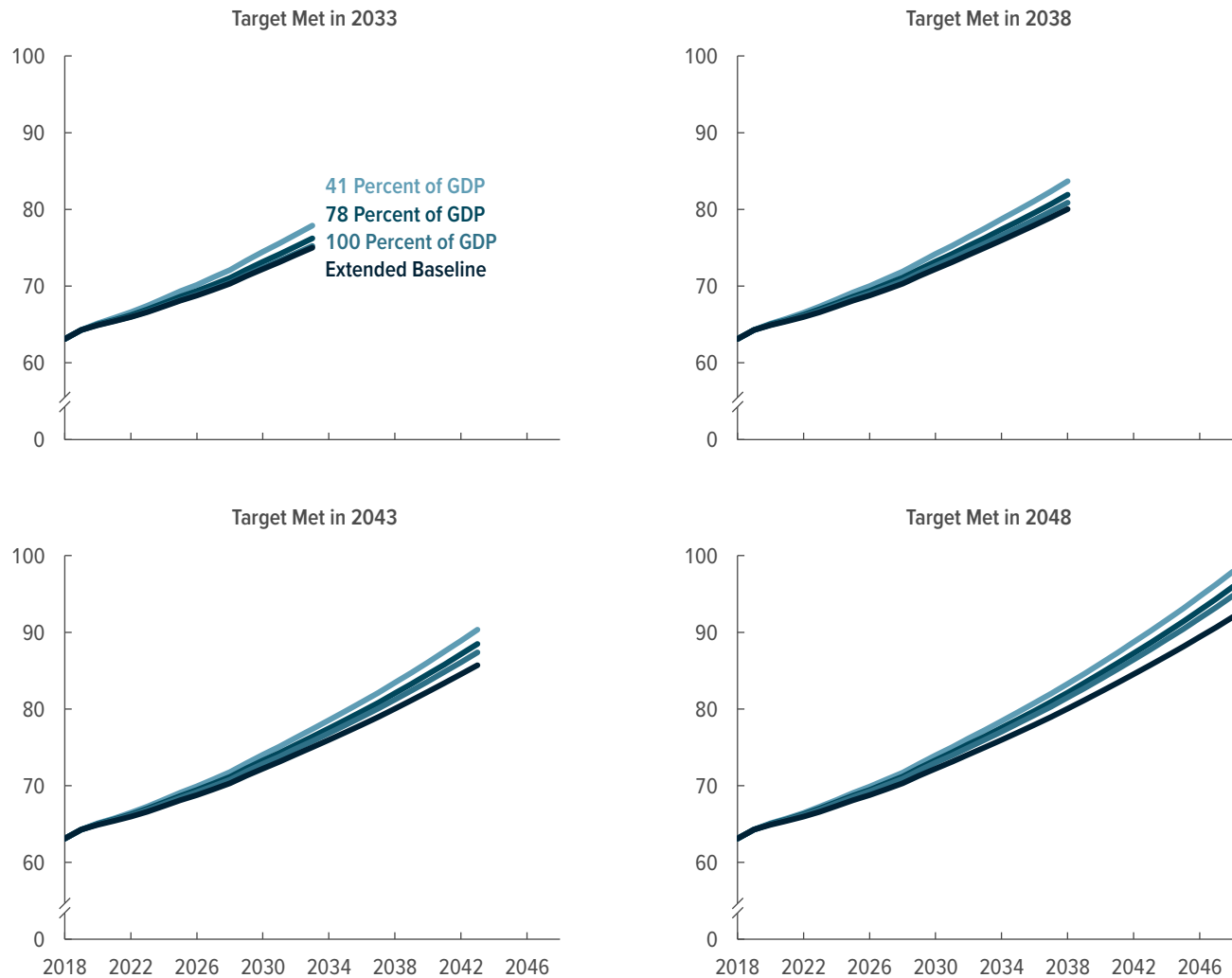
exist, however. For example, if federal spending were lower or revenues were higher than projected under CBO’s baseline, total demand for goods and services would be dampened in the short term, in the agency’s view. As a result, economic output would be lower than projected in CBO’s baseline over the next few years. That reduction in output would reduce revenues and boost spending in the near term.

Another limitation of this analysis is that it does not specify the policies that would result in the necessary reductions in primary deficits. Because many of the scenarios considered here would require large changes in primary deficits relative to current law, policymakers would probably need to consider an array of policies. For each Congress, CBO produces a report that brings

Figure 8.

Real Gross National Product per Person (Constant-Share Scenarios)

Thousands of 2019 Dollars



Source: Congressional Budget Office.

In the constant-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a constant share of GDP each year.

GDP = gross domestic product.

together a wide range of options for reducing the deficit.⁵ The options are derived from many sources, and in keeping with CBO’s mandate to provide objective analysis without making recommendations, each option includes arguments for and against it. CBO has also discussed the general trade-offs of different approaches to deficit

reduction—which involve such matters as the role that the federal government would play in society and who would bear the burden of proposed changes in tax and spending policies—at length in other publications.⁶

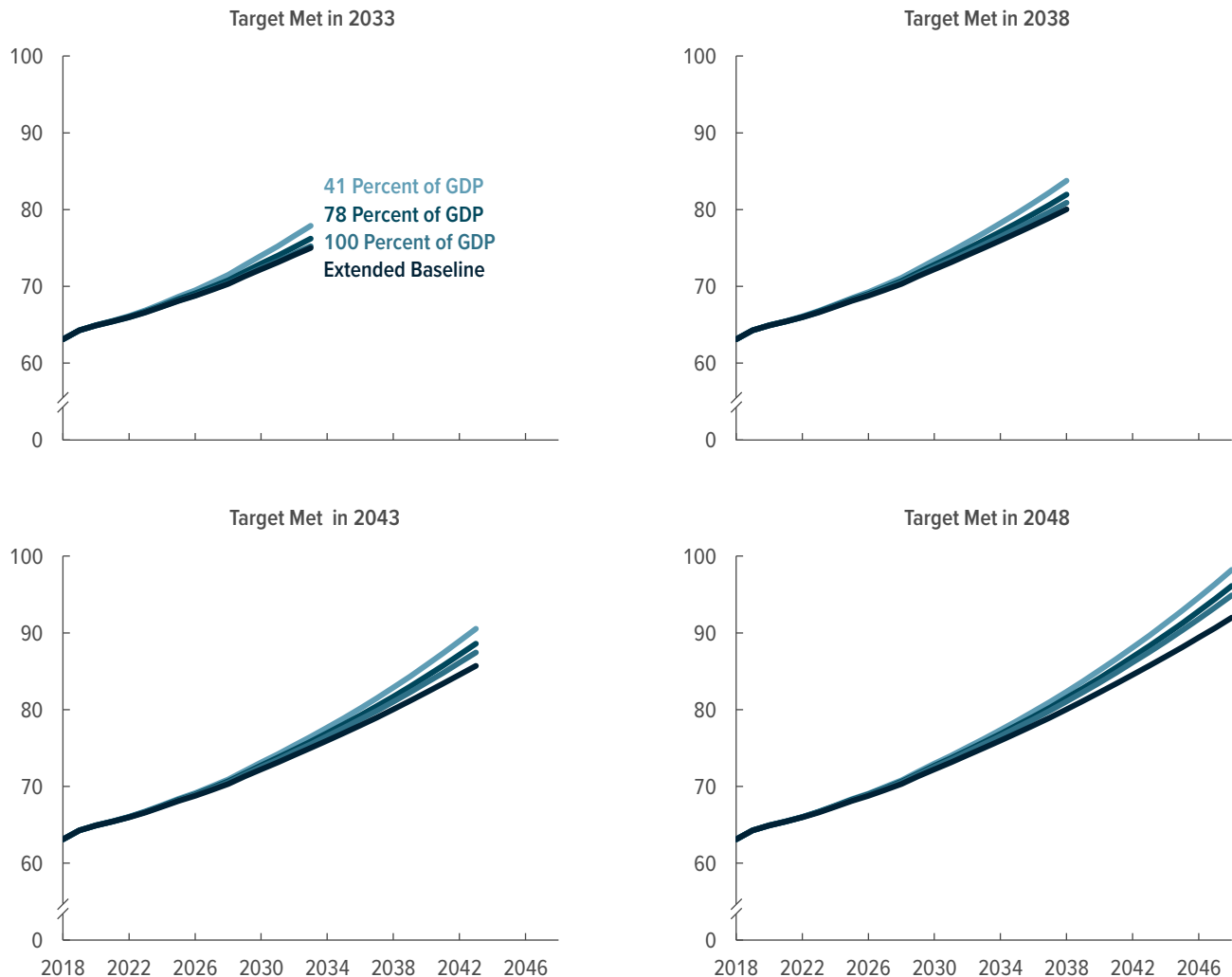
5. Congressional Budget Office, *Options for Reducing the Deficit: 2017 to 2026* (December 2016), www.cbo.gov/publication/52142.

6. For example, see Congressional Budget Office, *Choices for Deficit Reduction: An Update* (December 2013), www.cbo.gov/publication/44967.

Figure 9.

Real Gross National Product per Person (Growing-Share Scenarios)

Thousands of 2019 Dollars



Source: Congressional Budget Office.

In the growing-share scenarios, the reductions in primary deficits before economic feedback is accounted for equal a growing share of GDP each year.

GDP = gross domestic product.

Because CBO did not analyze specific policies in making the estimates presented here, it did not account for the ways in which changes in taxes or transfer payments might affect people's incentives to work or save. CBO assumed, for example, that effective marginal tax rates (the percentage of an additional dollar of income that is unavailable to a person because it is paid in taxes or offset by reductions in benefits) would not change. For the same reason, this analysis does not account for the fact that such significant changes in fiscal policy would

almost certainly involve changing the amount of federal investment—that is, spending that is expected to increase private-sector productivity. Those and other changes to fiscal policy would alter people's incentives to work and save, thereby affecting output.

In addition, although this analysis incorporates the positive effects on taxable income of increases in revenues or decreases in noninterest spending, it does not examine the ways in which such changes in fiscal

policy would affect families' disposable income (that is, their income after federal transfer payments and taxes). The effects could differ among families: Some could receive more income, and others could receive less. The effects would depend on how the particular policies adopted compared with the policies under current law. Moreover, the policies adopted could affect people's well-being in ways not related to changes in disposable income.

This analysis also does not detail the benefits that such significant declines in federal debt would have beyond their effects on output and the budget. For example, policymakers would have more leeway to use tax and spending policies to respond to economic downturns or other contingencies, such as wars, and the risk of a fiscal crisis would therefore be much smaller. In addition, decisions about policy changes that would reduce future debt in relation to the extended baseline could reduce uncertainty about future fiscal policy and enhance businesses' and consumers' confidence.

All of the estimates described in this report are subject to significant uncertainty. To begin with, economic and budgetary projections under CBO's extended baseline are extraordinarily uncertain because those projections extend so far into the future. If debt were lower under current law than CBO projects (because of unexpectedly low interest rates, for example), smaller reductions in primary deficits would be needed to achieve particular debt targets. Moreover, the estimated reductions in deficits are themselves subject to uncertainty. For example, if lower deficits wound up boosting private investment more strongly than CBO estimates, the economic and budgetary effects of the specified reductions in primary deficits would be larger than described in this analysis.

Comparison of Results

The different scenarios' effects on the federal budget and the economy make clear a number of patterns.

- Cutting primary deficits under the constant-share scenarios rather than under the growing-share scenarios results in larger changes in the near term, but smaller changes in later years.
- Larger cuts to primary deficits result in larger reductions in interest payments.
- In some scenarios with lower debt targets, postponing the year in which a debt target is met results in smaller changes to deficits.
- Larger cuts to deficits ultimately result in more positive effects on economic output.
- In order to meet debt targets in some scenarios, policymakers would need to move the federal budget from being in deficit to being in surplus.

Steepness of Deficit Reductions

In all of the scenarios considered in this report, the reductions in the primary deficit needed to reduce debt increase in real dollar terms over time. In the constant-share scenarios, that increase results from growing real GDP; for example, the real dollar value of 3.0 percent of GDP is larger in 2033 than in 2019. In the growing-share scenarios, that increase also results partly from GDP growth but more because the shares grow each year.

The dollar value of the deficit reductions is larger at first in the constant-share scenarios than in the growing-share scenarios; then that relationship reverses itself. For example, under the two scenarios in which a debt target of 41 percent of GDP is met in 2033, the deficit reduction is about \$720 billion larger in the constant-share scenario than in the growing-share scenario in 2019, but about \$960 billion smaller in 2033 (in 2019 dollars).

As a result of the larger deficit reductions (and smaller deficits) in earlier years under the constant-share scenarios, boosts to investment would increase GNP by a greater amount than in the corresponding growing-share scenarios in most years before the target was met. For example, the constant-share scenario in which a debt target of 41 percent of GDP is met in 2048 is projected to boost GNP per person in 2033 by about \$1,100 more than the corresponding growing-share scenario. As a result, the cumulative increase in GNP is larger in every year when the target is met by cutting primary deficits by a constant share of GDP. For example, the constant-share scenario just described would boost cumulative GNP between 2019 and 2048 by about one-third more than the corresponding growing-share scenario would.

However, the effects on GNP under the two types of scenarios would be similar in the year in which the target was met. Eventually, when the reductions in primary

deficits in a growing-share scenario become larger than those in the corresponding constant-share scenario, the gap in the positive effects on GNP begins to shrink. That occurs because larger cuts to primary deficits lead to greater reductions in interest rates, greater private investment, and ultimately bigger boosts to economic output. Indeed, for some debt targets, the cuts to primary deficits in the growing-share scenarios finally become so large that GNP in the target year is somewhat higher than in the constant-share scenarios. For example, in the scenarios in which a 41 percent debt target is met in 2048, the boost to real GNP per person in 2048 is about \$6,200 in the growing-share scenario and about \$5,900 for the constant-share scenario. That is the case even though cumulative GNP over the entire period is considerably higher under the constant-share scenario.

The trajectory of debt also differs between the constant-share and the growing-share scenarios. For example, if the debt target is 41 percent of GDP, debt is on a downward trajectory in every year in the constant-share scenarios. But in the growing-share scenarios, debt as a percentage of GDP initially rises and then declines until it reaches 41 percent.

Role of Interest Payments

Larger reductions in primary deficits would result in larger reductions in interest payments on the debt. For example, a constant 3.9 percentage-point reduction in the primary deficit before economic feedback is taken into account would reduce net interest costs by 2.3 percent of GDP in 2033. By contrast, a constant 1.6 percentage-point reduction in the primary deficit before economic feedback is taken into account would reduce net interest costs by 1.1 percentage points in that year (see top section of Table 2 on page 8).

Furthermore, in the growing-share scenarios, in which changes to noninterest spending and revenues are larger in later years, reductions in interest payments on the debt are smaller. For example, in the scenarios in which a debt target of 41 percent of GDP is met in 2033, the cumulative interest savings between 2019 and 2033 in the growing-share scenario are roughly two-thirds as large as in the constant-share scenario.

Date That Debt Target Is Met

Postponing the year in which the debt target is met creates two partly offsetting effects on the reductions in deficits that would be necessary. On the one hand, a later

year allows more time to meet any given target, suggesting that the necessary deficit reductions in any given year could be smaller. On the other hand, a later year generally implies a larger reduction in debt as a percentage of GDP in relation to CBO's extended baseline, requiring larger changes. For example, under the extended baseline, debt rises from 105 percent of GDP in 2033 to 152 percent in 2048. Meeting a debt target of 41 percent implies a reduction in that share of 64 percentage points in 2033; in 2048, the reduction would be a much larger 111 percentage points.

The relative impact of those two effects varies from scenario to scenario. For example, with a debt target of 41 percent of GDP in a constant-share scenario, the first effect predominates: Extending the target date from 2033 to 2048 would allow the necessary deficit reduction to be smaller (3.0 percent of GDP rather than 3.9 percent). In contrast, with a debt target of 78 percent in a constant-share scenario, the second effect predominates: Extending the target date from 2033 to 2048 would require the necessary deficit reduction to be larger (1.9 percent of GDP rather than 1.6 percent; see Table 2 on page 8).

In the scenarios in which the debt target is 100 percent of GDP, the necessary changes are notably smaller when the target is met in earlier years (0.3 percent of GDP for a 2033 target, rather than 1.3 percent for a 2048 target). That is because a debt target of 100 percent is only modestly lower than the extended baseline projection of 105 percent in 2033 but significantly lower than the extended baseline projection of 151 percent in 2048.

In the growing-share scenarios, postponing the year in which the target is met generally results in smaller necessary reductions to deficits at first. For example, in scenarios in which the debt target is 41 percent of GDP, postponing the target date from 2033 to 2048 reduces the necessary changes to noninterest spending or revenues in 2019 by about 60 percent. (The one exception to that pattern is the scenario in which the target is 100 percent of GDP; a target year of 2033 instead of later requires relatively small changes since it implies such a small reduction in relation to CBO's extended baseline projection in that year.)

Magnitude of Deficit Reductions

In both the constant-share scenarios and the growing-share scenarios, larger cuts lead to larger economic

effects. Other things being equal, the effects on GNP are roughly proportional to the change in primary deficits. For example, consider the constant-share scenarios in which the debt target is achieved in 2033. Meeting a 41 percent target requires changes to primary deficits that are 2.5 times larger than meeting a 78 percent target. The resulting boost to GNP is about 2.4 times larger.

Role of Surpluses

In some scenarios, the deficit reductions would be so large that surpluses would result. For example, to lower debt to 41 percent of GDP in a constant-share scenario, policymakers would need to achieve a primary surplus (which, like a primary deficit, excludes interest costs) in all years. After including interest costs, the

federal budget would be in surplus in most years in the scenario in which the target was met in 2033 but would generally be in deficit in the scenarios in which the target was met in later years. Meeting a debt target of 78 percent or 100 percent of GDP by making constant changes to primary deficits would generally not necessitate surpluses.

Meeting a debt target of 41 percent or 78 percent of GDP by making growing reductions to deficits would eventually require primary surpluses. After including interest costs, the federal budget would still be in surplus in the scenarios in which the debt target was 41 percent of GDP but not in the scenarios in which the debt target was 78 percent of GDP.



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About This Document

This report was prepared at the request of Co-Chair Womack of the Joint Select Committee on Budget and Appropriations Process Reform. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the report makes no recommendations.

Wendy Edelberg, Michael Simpson, and Julie Topoleski prepared the report. Aaron Betz, Sebastien Gay, Theresa Gullo, John McClelland, David Weaver, and Jeffrey Werling provided useful comments. Jimmy Chin handled the fact-checking.

Mark Hadley, Jeffrey Kling, and Robert Sunshine reviewed the report, Benjamin Plotinsky edited it, and Casey Labrack and Jorge Salazar prepared it for publication. An electronic version of the report is available on CBO's website (www.cbo.gov/publication/54181).

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

Keith Hall
Director
August 2018