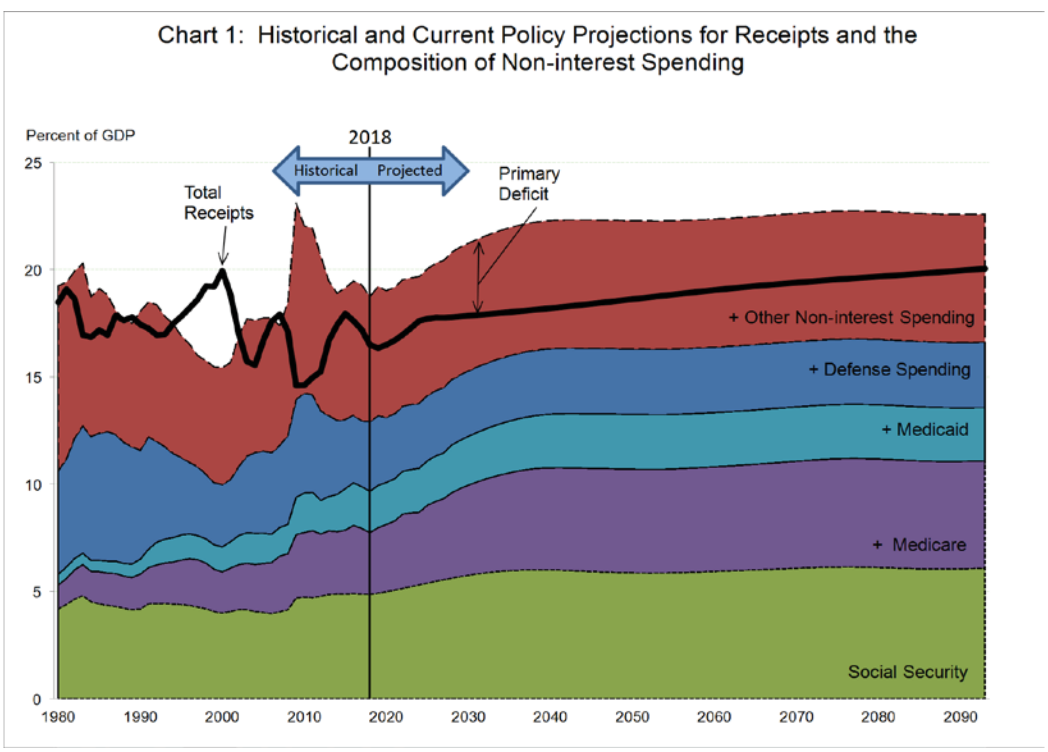
United States Government Required Supplementary Information (Unaudited) For the Fiscal Years Ended September 30, 2018, and 2017

The Sustainability of Fiscal Policy

One of the important purposes of the *Financial Report* is to help citizens and policymakers assess whether current fiscal policy is sustainable and, if it is not, the urgency and magnitude of policy reforms necessary to make fiscal policy sustainable. A sustainable policy is one where the ratio of debt held by the public to GDP (the debt-to-GDP ratio) is ultimately stable or declining.

As discussed below, the projections in this report indicate that current policy is not sustainable. If current policy is left unchanged, the projections show the debt-to-GDP ratio will rise from 78 percent in 2018 to 84 percent by 2022, to over 100 percent by 2030, and to 530 percent in 2093. For comparison, under the 2017 projections, the debt-to-GDP ratio fell about 4 percentage points between 2017 and 2023 before commencing a steady rise, exceeding its 2017 level by 2029, exceeding 100 percent by 2037, and reaching 297 percent in 2092.

These conclusions are rooted in the projected trends in receipts, spending, and deficits in the context of current law and policy, although, as described in the following pages, there is considerable uncertainty surrounding these projections. The projections are on the basis of policies currently in place and are neither forecasts nor predictions. Changes in policy – from repealing the ACA and increasing border security and infrastructure, to more routine developments such as changes in aggregate funding for discretionary program – could have a significant effect on eventual fiscal outcomes.



Current Policy Projections for Primary Deficits

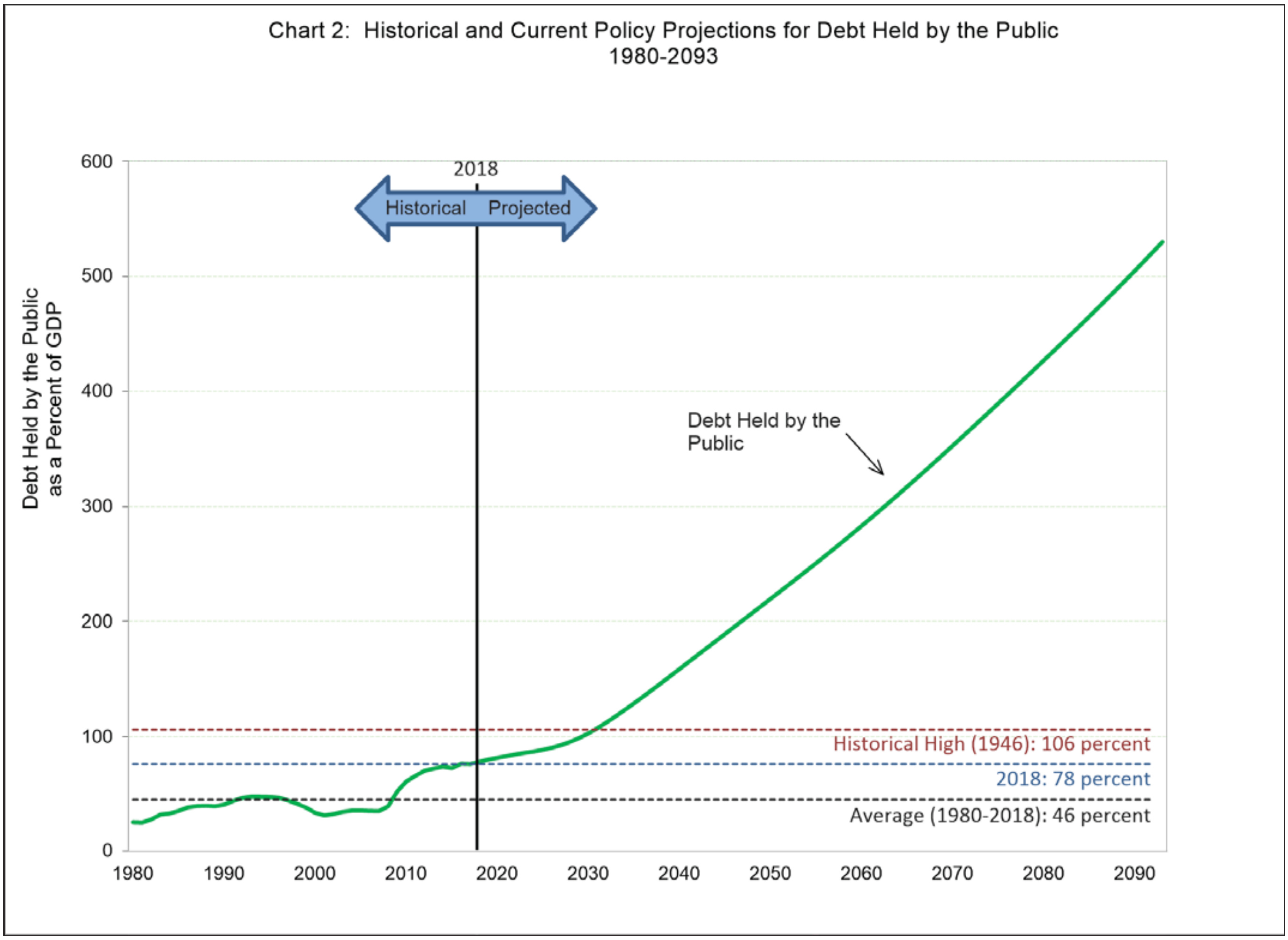
A key determinant of growth in the debt-to-GDP ratio and hence fiscal sustainability is the ratio of the primary deficit-to-GDP. The primary deficit is the difference between non-interest spending and receipts, and the primary deficit-to-GDP ratio is the primary deficit expressed as a percent of GDP. As shown in Chart 1, the primary deficit-to-GDP ratio spiked during 2009 through 2012 due to the 2008-09 financial crisis and the ensuing severe recession, as well as the increased spending and temporary tax reductions enacted to stimulate the economy and support recovery. These elevated primary deficits resulted in a sharp increase in the ratio of debt to GDP, which rose from 39 percent at the end of 2008 to 70 percent at the end of 2012. As an economic recovery took hold, the primary deficit ratio fell, averaging 1.9 percent of GDP over 2013 through 2018. This deficit level was still high enough that the debt held by the public increased further relative to GDP, ending 2018 at 78 percent. The primary deficit ratio is projected to rise to 2.9 percent in 2019 and then shrink slightly as the economy grows. After 2024, however, increased spending for Social Security and health programs due in part to the continued retirement of the baby boom generation is projected to result in increasing primary deficits that reach 3.0 percent of GDP in 2028. The primary deficit peaks at 4.1 percent of GDP in 2039, gradually decreases beyond that point as the aging of the population continues at a slower pace, and reaches 2.5 percent in 2093.

Trends in the primary deficit are heavily influenced by tax receipts. The receipt share of GDP was markedly depressed in 2009 through 2012 because of the recession and tax reductions enacted as part of the ARRA and the *Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010*. The share subsequently increased to 18 percent of GDP by 2015 then decreased to 16.5 percent by 2018, after enactment of the TCJA of 2018 and below its 30-year average of 17.3 percent. Receipts are projected to grow slightly more rapidly than GDP over the projection period as increases in real (i.e., inflation-adjusted) incomes cause more taxpayers and a larger share of income to fall into the higher individual income tax brackets. Other possible paths for the receipts-to-GDP ratio and the implications for projected debt held by the public are analyzed in the “Alternative Scenarios” section.

On the spending side, the non-interest spending share of GDP is projected to rise gradually from 18.7 percent in 2018 to 21.0 percent of GDP in 2029 and ends at 22.6 percent in 2093, the end of the projection period. Beginning in 2020, these increases are principally due to faster growth in Medicare, Medicaid, and Social Security spending (see Chart 1). The aging of the baby boom generation over the next 25 years, among other factors, is projected to increase the Social Security, Medicare, and Medicaid spending shares of GDP by about 1.0 percentage points, 1.7 percentage points, and 0.6 percentage points, respectively. After 2035, the Social Security and Medicaid spending shares of GDP remain relatively stable, while the Medicare spending share of GDP continues to increase, albeit at a slower rate, due to projected increases in health care costs and population aging.

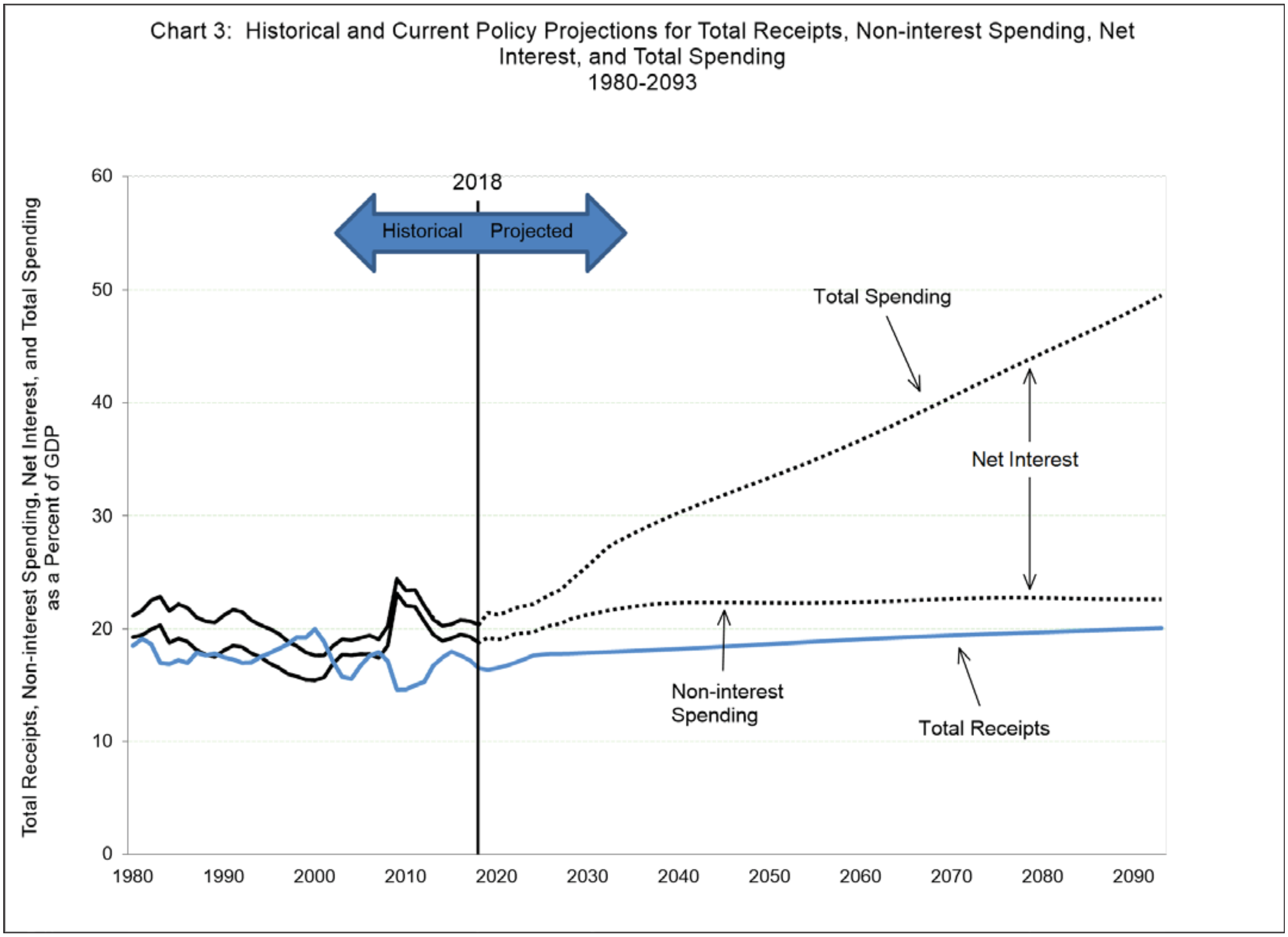
Current Policy Projections for Debt and Interest Payments

The primary deficit projections in Chart 1, along with projections for interest rates and GDP, determine the projections for the debt-to-GDP ratio shown in Chart 2. That ratio was 78 percent at the end of fiscal year 2018, and under current policy is projected to be 84 percent by 2022, over 100 percent by 2030, and 530 percent in 2093. The continuous rise of the debt-to-GDP ratio indicates that current policy is unsustainable.



The change in debt held by the public from one year to the next is approximately equal to the budget deficit, the difference between total spending and total receipts.[1] Total spending is non-interest spending plus interest spending. Chart 3 shows that the rapid rise in total spending and the unified deficit (Total Receipts less Total Spending) is almost entirely due to projected net interest, which results from the growing debt. As a percent of GDP, interest spending was 1.6 percent in 2018, and under current policy is projected to reach 7.4 percent in 2038 and 26.9 percent in 2093.

[1] The change in debt each year is also affected by certain transactions not included in the budget deficit, such as changes in Treasury's cash balances and the non-budgetary activity of federal credit financing accounts. These transactions are assumed to hold constant at about 0.4 percent of GDP each year, with the same effect on debt as if the primary deficit was higher by that amount.



Another way of viewing the change in the financial outlook in this year's report relative to previous years' reports is in terms of the projected debt-to-GDP ratio in 2091, the last year of the 75-year projection period used in the fiscal year 2016 report. This ratio is projected to reach 513 percent in the fiscal year 2018 projections, which compares with 293 percent projected in the fiscal year 2017 projections and 252 percent projected in the fiscal year 2016 projections.[2]

The Cost of Delay in Closing the 75-Year Fiscal Gap

The longer policy action to close the fiscal gap[3] is delayed, the larger the post-reform primary surpluses must be to achieve the target debt-to-GDP ratio at the end of the 75-year period. This can be illustrated by varying the years in which reforms closing the fiscal gap are initiated while holding the target ratio of debt to GDP in 2093 equal to the 2018 ratio (78 percent). Three timeframes for reforms are considered, each one beginning in a different year, and each one increasing the primary surplus relative to current policy by a fixed percent of GDP starting in the reform year. The analysis shows that the longer policy action is delayed, the larger the post-reform primary surplus must be to bring the debt-to-GDP ratio to 78 percent of GDP in 2093. Future generations are burdened by delays in policy changes because delay necessitates higher primary surpluses during their lifetimes, and those higher primary surpluses must be achieved through some combination of lower spending and higher taxes and other receipts.

As previously shown in Chart 1, under current policy, primary deficits occur throughout the projection period. Table 1 shows primary surplus changes necessary to make the debt-to-GDP ratio in 2093 equal to its level in 2018 under each of the three timeframes. If reform begins in 2019, then it is sufficient to raise the primary surplus share of GDP by 4.1 percentage

[2] For further information on changes from the 2016 projections, see the unaudited RSI in the 2017 *Financial Report*.

[3] The fiscal gap reflects how much the primary surplus (receipts less non-interest spending) must increase to maintain the debt-to-GDP ratio at the 2018 level of 78 percent. See Note 23 for a more complete discussion of the fiscal gap.

points in every year between 2019 and 2093 in order for the debt-to-GDP ratio in 2093 to equal its level in 2018 (78 percent). This policy raises the average 2019-2093 primary surplus-to-GDP ratio from -3.5 percent to +0.8 percent.

Table 1
Costs of Delaying Fiscal Reform

Timing of Reforms	Required Change in Average Primary Surplus	
Reform in 2019 (No Delay)	4.1	percent of GDP between 2019 and 2093
Reform in 2029 (Ten-Year Delay)	4.9	percent of GDP between 2029 and 2093
Reform in 2039 (Twenty-Year Delay) .	6.0	percent of GDP between 2039 and 2093

Note: Reforms taking place in 2018, 2028, and 2038 from the 2017 Financial Report were 2.0, 2.4, and 3.0 percent of GDP, respectively.

In contrast to a reform that begins immediately, if reform begins in 2029 or 2039, then the primary surpluses must be raised by 4.9 percent and 6.0 percent of GDP, respectively, in order for the debt-to-GDP ratio in 2093 to equal 78 percent. The difference between the primary surplus increase necessary if reform begins in 2029 or 2039 and the increase necessary if reform begins in 2019, an additional 0.8 and 1.9 percentage points, respectively, is a measure of the additional burden policy delay would impose on future generations. The costs of delay are due to the additional debt that accumulates between 2018 and the year reform is initiated, in comparison to the scenario in which reform begins immediately.

Alternative Scenarios

The long-run projections are highly uncertain. This section illustrates this inherent uncertainty by presenting alternative scenarios for the growth rate of health care costs, interest rates, discretionary spending, and receipts. (Not considered here are the effects of alternative assumptions for long-run trends in birth rates, mortality, and immigration.)

The population is aging rapidly and will continue to do so over the next several decades, which puts pressure on programs such as Social Security, Medicare, and Medicaid. A shift in projected fertility, mortality, or immigration rates could have important effects on the long-run projections. Higher-than-projected immigration, fertility, or mortality rates would improve the long-term fiscal outlook. Conversely, lower-than-projected immigration, fertility, or mortality rates would result in deterioration in the long-term fiscal outlook.

Effect of Changes in Health Care Cost Growth

One of the most important assumptions underlying the projections is the future growth of health care costs. These future growth rates – both for health care costs in the economy generally and for federal health care programs such as Medicare, Medicaid, and ACA exchange subsidies – are highly uncertain. In particular, enactment of the ACA in 2010 and the MACRA in 2015 established cost controls for Medicare hospital and physician payments whose long-term effectiveness is still to be demonstrated. The Medicare spending projections in the long-term fiscal projections are based on the projections in the 2018 Medicare Trustees' Report, which assume the ACA and MACRA cost control measures will be effective in producing a substantial slowdown in Medicare cost growth. As discussed in Note 22—Social Insurance, the Medicare projections are subject to much uncertainty about the ultimate effects of these provisions to reduce health care cost growth. For the long-term fiscal projections, that uncertainty also affects the projections for Medicaid and exchange subsidies, because the cost per beneficiary in these programs grows at the same reduced rate as Medicare cost growth per beneficiary.

As an illustration of the dramatic effect of variations in health care cost growth rates, Table 2 shows the effect on the size of reforms necessary to close the fiscal gap of per capita health care cost growth rates that are one percentage point higher or two percentage points higher than the growth rates in the base projection, as well as the effect of delaying closure of the fiscal gap.[4] As indicated earlier, if reform is initiated in 2019, eliminating the fiscal gap requires that the 2019-2093 primary surplus increase by an average of 4.1 percent of GDP in the base case. However, that figure increases to 7.3 percent of GDP if per capita health cost growth is assumed to be 1.0 percentage point higher, and 12.5 percent of GDP if per capita

[4] The base case health cost growth rates are derived from the projections in the 2018 Medicare trustees' report. These projections are summarized and discussed in Note 22 (see Table 1B in particular) and the "Medicare Projections" section of the unaudited RSI for the SOSI.

health cost growth is 2.0 percentage points higher. The cost of delaying reform is also increased if health care cost growth is higher, due to the fact that debt accumulates more rapidly during the period of inaction. For example, the lower part of Table 2 shows that delaying reform initiation from 2019 to 2029 requires that 2029-2093 primary surpluses be higher by an average of 0.8 percent of GDP in the base case, 1.4 percent of GDP if per capita health cost growth is 1.0 percentage point higher, and 2.4 percent of GDP if per capita health cost growth is 2.0 percentage points higher. The dramatic deterioration of the long-run fiscal outlook caused by higher health care cost growth shows the critical importance of managing health care cost growth.

Table 2
Impact of Alternative Health Cost Scenarios on Cost of Delaying Fiscal Reform

Scenario	Primary Surplus Increase (% of GDP) Starting in: 2019	2029	2039
Base Case	4.1	4.9	6.0
1.0 p.p. higher per person health cost growth	7.3	8.7	10.8
2.0 p.p. higher per person health cost growth	12.5	14.9	18.6

	Change in Primary Surplus Increase if Reform is Delayed From 2019 to: 2029	2039
Base Case	0.8	2.0
1.0 p.p. higher per person health cost growth	1.4	3.5
2.0 p.p. higher per person health cost growth	2.4	6.1

Note: Increments may not equal the subtracted difference of the components due to rounding. "p.p." means percentage point(s).

Effects of Changes in Interest Rates

A higher debt-to-GDP ratio is likely to increase the interest rate on government debt, making it more costly for the government to service its debt. Table 3 displays the effect of several alternative scenarios using different nominal (and real) interest rates than assumed in the base case on the size of reforms to close the fiscal gap as well as the effect of delaying closure of the fiscal gap. If reform is initiated in 2019, eliminating the fiscal gap requires that the 2019-2093 primary surplus increase by an average of 4.1 percent of GDP in the base case, 4.7 percent of GDP if the interest rate is 1.0 percentage point higher in every year, and 3.4 percent of GDP if the interest rate is 1.0 percentage point lower in every year. The cost of delaying reform is also increased if interest rates are higher, due to the fact that interest paid on debt accumulates more rapidly during the period of inaction. For example, the lower part of Table 3 shows that delaying reform initiation from 2019 to 2029 requires that 2029-2093 primary surpluses be higher by an average of 0.8 percent of GDP in the base case, 1.2 percent of GDP if the interest rate is 1.0 percentage point higher in every year, and 0.5 percent of GDP if the interest rate is 1.0 percentage point lower in every year.

Table 3
Impact of Alternative Interest Rate Scenarios on Cost of Delaying Fiscal Reform

	Primary Surplus Increase (% of GDP) Starting in:		
Scenario	**2019**	**2029**	**2039**
Base Case: Average of 5.0 percent over 75 years..........	4.1	4.9	6.0
1.0 p.p. higher interest rate in each year........................	4.7	5.9	7.9
1.0 p.p. lower interest rate in each year..........................	3.4	3.9	4.6

	Change in Primary Surplus Increase if Reform is Delayed From 2019 to:	
	2029	**2039**
Base Case: Average of 5.0 percent over 75 years................................	0.8	2.0
1.0 p.p. higher interest rate in each year..	1.2	3.1
1.0 p.p. lower interest rate in each year..	0.5	1.2

Note: Increments may not equal the subtracted difference of the components due to rounding.

Effects of Changes in Discretionary Spending Growth

The growth of discretionary spending has a large impact on long-term fiscal sustainability. The current base projection for discretionary spending assumes that spending stays within the statutory caps that apply through 2019 under the BBA, grows with GDP from the cap level after that point, and remains subject to the reductions required by the Joint Committee[5]. The implications of two alternative scenarios are shown in Table 4. The first alternative scenario allows discretionary spending to grow with inflation and population after 2019 so as to hold discretionary spending constant on a real per capita basis. (This growth rate assumption is slower than growth with GDP but is still higher than the standard 10-year budget baseline assumption, which assumes that discretionary spending grows with inflation but not with population.) The second alternative scenario sets discretionary spending from 2019 onward to statutory cap levels prior to Joint Committee reductions and grows with GDP from that point forward. As shown in Table 4, if discretionary spending grows with inflation and population, eliminating the fiscal gap requires that the 2019-2093 primary surplus increase by an average of 1.9 percent of GDP. If discretionary spending rises to the levels prior to Joint Committee sequestration and grows with GDP, the fiscal gap increases to 4.4 percent of GDP. The cost of delaying reform is greater when discretionary spending levels are higher. Initiating reforms in 2029 requires that the primary surplus increase by an average of 0.9 percent of GDP per year in the base case, and increase by 0.9 percent of GDP if discretionary levels return to pre-Joint Committee sequestration levels in 2020. If delayed until 2039, the primary surplus must increase by an average of 2.0 percent of GDP in the base case, and increase by 2.1 percent of GDP at pre-sequestration levels.

[5] The BCA of 2011 established statutory caps on discretionary spending for fiscal years 2012 through 2021 and established a Joint Committee tasked with identifying $1.2 trillion in deficit reduction. The failure of the Joint Committee to propose and Congress to enact legislation sufficient to reduce the deficit triggers automatic spending reductions through adjustments to the discretionary spending limits and sequestration of mandatory spending. Mandatory sequestration has been extended in various statutes and currently extends through 2027. After 2027, the projections assume the automatic reductions continue as a constant share of projected GDP.

Table 4
Impact of Alternative Discretionary Spending Growth Scenarios on Cost of Delaying Fiscal Reform

Scenario	Primary Surplus Increase (% of GDP) Starting in: 2019	2029	2039
Base Case: Discretionary spending growth with GDP after 2019	4.1	4.9	6.0
Growth with inflation and population after 2019	1.9	2.3	2.8
Growth with GDP after 2019, pre-Joint Committee sequester levels	4.4	5.2	6.5

	Change in Primary Surplus Increase if Reform is Delayed From 2019 to: 2029	2039
Base Case: Discretionary spending growth with GDP after 2019	0.8	2.0
Growth with inflation and population after 2019	0.4	0.9
Growth with GDP after 2019, pre-Joint Committee sequester levels	0.8	2.1

Note: Increments may not equal the subtracted difference of the components due to rounding.

Effects of Changes in Individual Income Receipt Growth

The growth rate of receipts, specifically individual income taxes, is another key determinant of long-term sustainability. The base projections assume growth in individual income taxes over time to account primarily for the slow shift of individuals into higher tax brackets due to real wage growth ("real bracket creep"). This assumption approximates the long-term historical growth in individual income taxes relative to wages and salaries and is consistent with current policy without change, as future legislation would be required to prevent real bracket creep. As an illustration of the effect of variations in individual income tax growth, Table 5 shows the effect on the size of reforms necessary to close the fiscal gap and the effect of delaying closure of the fiscal gap if long-term receipt growth as a share of wages and salaries is 0.1 percentage point higher than the base case, as well as 0.1 percentage point lower than the base case. If reform is initiated in 2019, eliminating the fiscal gap requires that the 2019-2093 primary surplus increase by an average of 4.1 percent of GDP in the base case, only 3.0 percent of GDP if receipt growth is 0.1 percentage point higher, but 5.2 percent of GDP if receipt growth is 0.1 percentage point lower. The cost of delaying reform is also affected if receipt growth assumptions change, much as was the case in the previous alternative scenarios.

Table 5
Impact of Alternative Revenue Growth Scenarios on Cost of Delaying Fiscal Reform

Scenario	Primary Surplus Increase (% of GDP) Starting in: 2019	2029	2039
Base Case: Individual income tax bracket creep of 0.1% of wages and salaries per year	4.1	4.9	6.0
0.2% of wages and salaries per year after 2028	3.0	3.6	4.4
0.0% of wages and salaries per year after 2028 (no bracket creep)	5.2	6.1	7.7

	Change in Primary Surplus Increase if Reform is Delayed From 2019 to: 2029	2039
Base Case: Individual income tax bracket creep of 0.1% of wages and salaries per year	0.8	2.0
0.2% of wages and salaries per year after 2028	0.6	1.4
0.0% of wages and salaries per year after 2028 (no bracket creep)	1.0	2.5

Note: Increments may not equal the subtracted difference of the components due to rounding.

Fiscal Projections in Context

In this report, a sustainable fiscal policy has been defined as one where the federal debt-to-GDP ratio is stable or declining. However, this definition does not indicate what a sustainable debt-to-GDP ratio might be. Any particular debt ratio is not the ultimate goal of fiscal policy. Rather, the goals of fiscal policy are many. They include financing public goods, such as infrastructure and government services; promoting a strong and growing economy; and managing the debt so that it is not a burden on future generations. These goals are interrelated, and readers should consider how policies intended to affect one might depend on or affect another.

This report shows that current policy is not sustainable. In evaluating policies that could make policy sustainable, note that debt may play roles in both facilitating and hindering a healthy economy. For example, government deficit spending supports demand and allows economies to emerge from recessions more quickly. Debt may also be a cost-effective means of financing capital investment that promotes future economic growth, which may in turn make future debt levels more manageable. However, economic theory also suggests that high levels of debt may contribute to higher interest rates, leading to lower private investment and a smaller capital stock which the economy can use to grow. Unfortunately, it is unclear what debt-to-GDP ratio would be sufficiently high to produce these negative outcomes, or whether the key concern is the level of debt per se, or a trend that shows debt increasing over time.

While several empirical studies have attempted to discern a definite relationship between debt and economic growth from the past experience of countries, the evidence is mixed. One study suggested that as advanced countries' debt-to-GDP ratios exceeded 90 percent it had significant negative consequences for real GDP growth through rising interest rates, crowding out of private investment, and reduced capital formation.[6] Real GDP growth is generally lower by about 1 percent when the countries' debt-to-GDP ratios are above 90 percent relative to the times when they are below 90 percent.[7] However,

[6] Reinhart, Carmen M., and Kenneth S. Rogoff. 2010. "Growth in a Time of Debt." *American Economic Review*, 100(2): 573-78.
[7] Errata: "Growth in a Time of Debt," Carmen M. Reinhart and Kenneth S. Rogoff. Harvard University, 2013.

after removing sample countries with very high indebtedness – those with debt-to-GDP ratios of more than 120 percent – and very low indebtedness – those with debt-to-GDP ratios of less than 30 percent – the negative relationship between growth and debt is difficult to determine. Another study reports that differences in average GDP growth in countries with debt-to-GDP ratios between 30-60 percent, 60-90 percent, and 90-120 percent cannot be statistically distinguished.[8] Some countries with high debt-to-GDP ratios have been observed to experience lower-than-average growth, while other countries with similarly high debt ratios have continued to enjoy robust growth. Analogously, low debt-to-GDP ratios are no guarantee of strong economic growth. Moreover, the direction of causality is unclear. High debt may undermine growth through increased interest rates and lower business confidence, or low growth may contribute to high debt by depressed tax revenues and increased deficit spending on social safety net programs.

Nevertheless, to put the current and projected debt-to-GDP ratios in context, it is instructive to examine how the United States experience compares with that of other countries. The U.S. government's debt as a percent of GDP is relatively large compared with central government debt of other countries, but far from the largest among developed countries. Based on historical data as reported by the International Monetary Fund (IMF) for 28 advanced economies, the debt-to-GDP ratio in 2016 ranged from 6.3 percent of GDP to 192.2 percent of GDP.[9] The United States is not included in this set of statistics, which underscores the difficulty in calculating debt ratios under consistent definitions, but the projections in this report show the 2018 debt-to-GDP ratio as 78 percent. Despite using consistent definitions where available, these debt measures are not strictly comparable due to differences in the share of government debt that is debt of the central government, how government responsibilities are shared between central and local governments, how current policies compare with the past policies that determine the current level of debt, and how robustly each economy grows.

The historical experience of the U.S. may also provide some perspective. As Chart 4 shows, the debt-to-GDP ratio was highest in the 1940s, following the debt buildup during World War II. In the projections in this report, the U.S. would reach the previous peak debt ratio in 2030. However, the origins of current and future federal debt are quite different from the wartime debt of the 1940s, which limits the pertinence of past experience.

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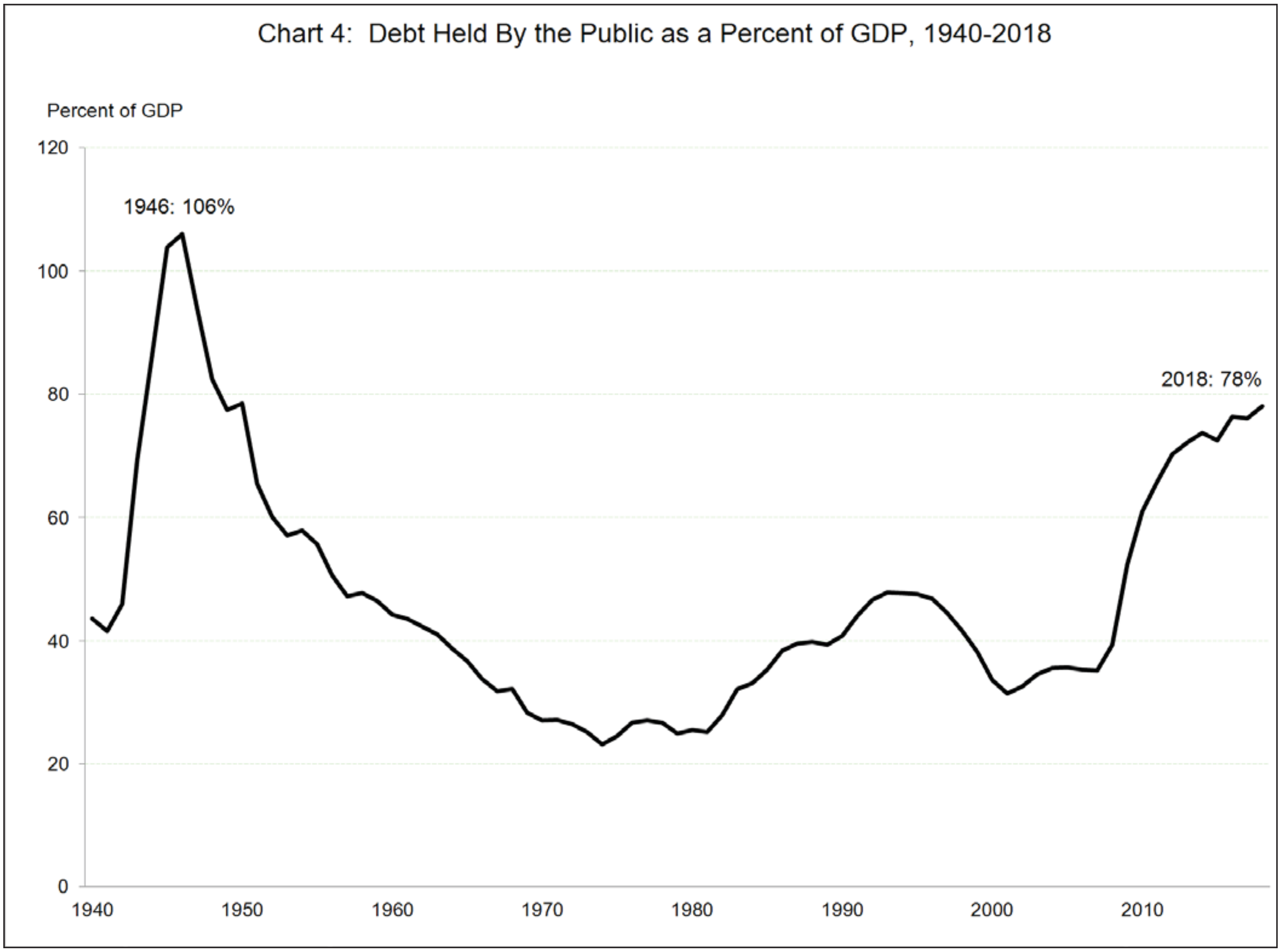
[8] Herndon, Thomas, Michael Ash, and Robert Pollard, "Does High Public Debt Consistently Stifle Economic Growth? A Critique of Reinhart and Rogoff," *Cambridge Journal of Economics*, 2013.

[9] Government Finance Statistics Yearbook, Main Aggregates and Balances, available at https://data.imf.org. Data is for D1 debt liabilities for the central government, excluding social security funds, for Advanced Economies.



As the cross-country and historical comparisons suggest, there is a very imperfect relationship between the current level of central government debt and the sustainability of overall government policy. Past accrual of debt is certainly important, but current policies and their implications for future debt accumulation are as well.

Conclusion

The past 11 years saw debt held by the public nearly double as a share of GDP, bringing it to a level not seen since shortly after World War II. The projections in this *Financial Report* indicate that if policy remains unchanged, the debt-to-GDP ratio will steadily increase and soon far exceed historical levels, which implies current policy is not sustainable and must ultimately change. Subject to the important caveat that policy changes are not so abrupt that they slow economic growth, the sooner policies are put in place to avert these trends, the smaller are the adjustments necessary to return the nation to a sustainable fiscal path, and the lower the burden of the debt will be to future generations.