The Federal Budget Outlook: An Update

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ABSTRACT

We examine the federal fiscal outlook in light of the most recent Congressional Budget Office (CBO) projections. While the CBO projects that the ratio of federal debt to GDP will rise from 98% currently to 181% in 2053 under current law, we show that under current-policy adjustments (including extending the temporary provisions of the 2017 Tax Cuts and Jobs Act and maintaining government services), debt would rise to 221% in 2053. Under either projection, net interest payments rise to exceed either Social Security and Medicare outlays by 2053 and debt would be expected to continue to rise thereafter. By any measure, the federal budget outlook is unsustainable and will eventually require federal action. Under current law projections, the current debt-to-GDP ratio could be achieved in 2053 with immediate and permanent spending cuts or tax increases equaling 2.73% of GDP – equivalent to a 28 percent increase in income tax revenues or a 20% cut in spending, other than Social Security, Medicare, and interest payments – or with larger changes enacted later. (Under current-policy projections, the required reductions are roughly 50% higher.) How quickly actions are needed will depend on many factors, including the path of interest rates.

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I. Introduction

In light of recent economic trends and the most recent Congressional Budget Office projections (CBO 2023a, 2023b), we offer new perspectives on the medium- and long-term fiscal outlook, updating our previous work, most recently in Auerbach and Gale (2022 and 2023a). The basic story is familiar. Low revenues, coupled with rising outlays on health-related programs and Social Security, drive permanent, rising primary deficits as a share of the economy. Net interest payments also rise substantially relative to GDP due to high pre-existing debt, rising primary deficits, and gradually increasing interest rates. Unified deficits and public debt rise accordingly.

Under current law for the next 10 years, the CBO's projections imply that persistent primary deficits will average 2.6% of GDP. Net interest payments will rise from 2.5% of GDP currently to 3.6% in 2033, which would represent an all-time high. The unified deficit and even the cyclically adjusted deficit will exceed 6% of GDP by the end of decade. Debt will rise from 98% of GDP currently to 115% by 2033, another all-time high.

Over the following two decades, the projected trends are even less auspicious. Primary deficits rise further as spending on Social Security and health-related programs continue to grow faster than GDP and revenue growth remains anemic. The average nominal interest rate on government debt rises to exceed the nominal economic growth rate by 2046, setting off the possibility of explosive debt dynamics. By 2053, relative to GDP, annual net interest payments exceed 6.7%, the unified deficit exceeds 10%, and the public debt stands at 181%. All these figures would be all-time highs (except for deficits during World War II and in the first two years of the Covid-19 pandemic) and would continue to grow after 2053.

Budget outcomes would be even worse under "current-policy" projections that

incorporate more realistic policy choices than those required by the baseline calculations. Making temporary tax provisions – such as those in the Tax Cut and Jobs Act of 2017 – permanent and making plausible assumptions about future discretionary spending would drive the debt-to-GDP ratio to 221% by 2053.

Fiscal gap calculations indicate the magnitude of the changes required to meet a future fiscal target. For example, starting from the current-law baseline, we estimate that to keep the debt-to-GDP ratio at its current level (98%) in 2053 would require a combination of permanent spending cuts or tax increases equaling 2.73% of GDP if implemented starting in 2024. This represents about $716 billion in today's economy, or about 28% of current income tax revenues, 15% of all current tax revenues, 13% of current non-interest spending, or 20% of current non-interest spending other than Social Security and Medicare. Delaying the implementation of the actions would raise the size of the intervention needed.

The 10-year fiscal outlook has deteriorated over the past year, despite the recent Fiscal Responsibility Act (FRA) of 2023 (i.e., the debt ceiling deal), which reduced the projected cumulative deficit from 2023 to 2032 by $1.3 trillion (CBO 2023e). The cumulative deficit for 2023-2032 has risen by about $1.9 trillion relative to the 2022 current-law projections, with other legislation and higher interest payments accounting for most of the net difference. On the other hand, the long-term fiscal outlook has improved, with the 2052 debt-to-GDP ratio falling from 185% last year to about 177% in the current projection. The reduction in the long-term shortfall is due to lower projected Medicare spending, lower projected long-term interest rates, and the FRA (CBO 2023b).

Long-term budget projections, of course, are sensitive to parameter choices in general, and to interest rate projections in particular. But it would take enormous and unlikely favorable

variation from baseline parameters to put fiscal policy on a sustainable course.

Section II describes the construction of different budget baselines. Section III summarizes how projections for gross domestic product (GDP) and interest rates have changed over the past year. Section IV examines the 10- and 30-year current-law budget projections as of February 2023 and compares them to the July 2022 baseline. Section V estimates the effects of current-policy adjustments relative to current law. Section VI discusses cyclically adjusted deficits and sensitivity analysis. Section VII calculates fiscal gaps under various scenarios. Section VIII concludes with a discussion of a variety of perspectives on and interpretations of the budget outlook.

II. Constructing Budget Baselines

A. Ten-year outlook

To provide perspective on both the current budget outlook and how it has changed over the past year, we examine three baselines.[1] The "2022 current-law" baseline is based entirely on projections that the Congressional Budget Office (CBO 2022a) made in May 2022. The "2023 current-law" baseline is embodied in the most long-term budget outlook (CBO 2023b), which modifies the May 2023 baseline (CBO 2023a) to incorporate the effects of the Fiscal Responsibility Act of 2023 (CBO 2023e). These projections – by law and convention – assume that Congress does (almost) nothing in the way of new programs or tax changes for the next 10 years. Current-law projections serve an important purpose – they show where the government is headed in the absence of almost any action.[2]

[1] Appendix Tables 1, 2, and 3 provide details on the key budgetary aggregates – in billions of dollars and as a percentage of GDP – in the three baselines.

[2] The current-law projections do assume that Congress increases or suspends the debt limit as needed to carry out the tax and spending programs in the baseline, that temporary entitlement programs (like SNAP and TANF) are reauthorized on schedule, and that outlays for discretionary spending programs remain constant in real terms over

Another way to proceed, however, is to ask where the government is headed if policy makers continue to make choices like they have in the past. Constructing a baseline along these lines – typically characterized as "2023 current policy" – clearly requires judgment calls to project the consequences of Congress following a "business as usual" approach. Our current-policy projections start with the February 2023 current-law projections and make a series of adjustments (based largely on CBO data). These adjustments simply show the effects of what, in our judgment, can be viewed as a continuation of current policies. Given the wide array of provisions enacted in the last few years due to the COVID-19 pandemic, judgments about what constitutes current policy are particularly difficult under present circumstances, so we take a conservative approach and focus narrowly on items that are conventionally included in "current-policy" estimates.

To adjust taxes, we assume that, as it has often done in the past, Congress makes temporary tax-cut provisions permanent, including the temporary provisions in the 2017 Tax Cuts and Jobs Act.[3]

To adjust discretionary spending, we find the peak ratio of spending/GDP in the current-law baseline and then assume that government maintains current services relative that figure. In the current-law baseline, non-defense discretionary spending (NDDS) peaks as a share of GDP in 2024 and then declines over the rest of the decade. We adjust NDDS in the remainder of the 10-year budget period to maintain the real, per capita spending level that is projected to occur in

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the decade, unless such authority is governed by a specific law. Also, current-law projections assume that when the Social Security, Disability, and Medicare (part A) trust funds are exhausted, Congress will (a) authorize full payment of promised benefits and (b) cover any shortfalls with general revenue.

[3]CBO (2023c, Tables 1, 2, and 3). Some of the expirations in TCJA have already begun. For example, 100 percent bonus depreciation (i.e., expensing) of business investment in qualifying equipment only applied through January 1, 2023 and is currently being phased down. Likewise, R&D expenses, which were previously expensed, now face an amortization schedule. The vast bulk of the individual income tax provisions expire at the end of 2025.

2024, because maintaining current services for these programs is likely to require a population adjustment.

In contrast, defense spending, which largely provides a non-rival public good, plausibly can maintain current services over the relatively short 10-year horizon without a population adjustment. In the current-law baseline, real defense spending peaks as a share of GDP in 2024 and then declines for the rest of the budget period. We maintain the 2024 real level of spending in subsequent years.

We assume all provisions of COVID-era legislation are allowed to expire as scheduled. We calculate the added net interest payments based on CBO data.[4]

B. 30-year outlook

Looking only at the next 10 years gives an incomplete picture of the fiscal outlook, even with adjustments made to characterize current policy. Projections covering 30 years are generally sufficient to capture most long-term trends. The long-term 2023 current-law and current-policy projections use data from CBO (2023b) for GDP, revenues, and outlays for social security and health-related programs.

For the current-policy projections, we set "other" mandatory spending (mandatory spending not including Social Security and health-related programs) and discretionary spending equal to their 2033 share of the economy for 2033-2053. For revenues, we start with the 2033 value under the current-policy scenario and have it grow at the same rate as revenues in the current-law baseline; i.e., the revenue paths differ only because of the different 2033 starting

[4] We calculate the change in net interest payments as follows: For revenue changes through 2032, we use the information on added interest payments reported in CBO (2023c, Tables 1-3). For revenue changes in 2033, we assume that revenue changes remain a constant share of GDP and calculate the change in net interest payments using the calculated average nominal government interest rate. We similarly allow non-defense discretionary spending to remain constant in real, per-capita terms and calculate changes in net interest using the calculated average nominal government interest rate.

values. These specifications, and the current-policy adjustments during the first 10 years, cause primary deficits to differ from the current-law baseline during years after 2033.

To calculate the change in net interest payments for 2033-2053, we first calculate, using parameters from the current-law baseline, the average interest rate on government debt, defined as the ratio of (a) net interest payments in a given year to (b) the sum of (i) half of the primary deficit in that year plus (ii) debt at the end of the previous year. Then, in the current-policy projections, we apply this interest rate to changes in the primary deficit to calculate net interest payments, the unified deficit (as the primary deficit plus net interest), and the debt (as the previous year's debt plus the current year's unified deficit).

III. Economic Projections

Figure 1 shows that the 2023 current-law baseline projects real GDP to be lower in the next few years but very similar in the medium-term (5-10 years) to the 2022 current-law baseline. Figure 2 shows that the 2023 current-law baseline projects interest rates to be higher in the next five years than in the 2022 current-law baseline and then somewhat lower in the long term.

Over the longer term, one of the key assumptions has to do with the relationship between the average nominal government interest rate and the nominal economic growth rate. Figure 3 shows that the average nominal interest rate is projected to rise gradually and remain below the nominal growth rate for about 20 years, and then to exceed the growth rate starting in 2046. (Presumably, this growth in the interest rate in CBO's economic forecast is at least partially attributable to the rising debt-GDP ratio.) These economic projections help drive the budget outcomes discussed below. In the 2023 current-law baseline, the average nominal government interest rate exceeds the nominal economic growth rate by 0.41 percentage points in 2053.

IV. Current-Law Baselines: 2022 and 2023

A. The 2023 Current-Law Baseline

Under the 2023 current-law baseline, revenues are 18.3% of GDP in 2023. Tax revenues fall in the short run from a high level of individual income taxes in 2023 and then slowly rise to 18.1% in 2033 and eventually to 19.1% of GDP in 2053 (Figure 4). Income tax revenues increase after 2025 due to the expiration of provisions in the Tax Cuts and Jobs Act of 2017 and in the long term due to bracket creep.

Non-interest spending is 21.6% of GDP in 2023, staying relatively constant through 2033 and subsequently rising to 22.4% of GDP in 2053 (Figure 5). More than 100% of this increase is due to rising outlays for mandatory programs such as Social Security and health programs (Medicare, Medicaid, CHIPS, and exchange subsidies).

The primary deficit is 3.3% of GDP in 2023, declines somewhat over most of the rest of the 2020s, and then rises gradually back to 3.3% in 2053 (Figure 6). This long uninterrupted stretch of large primary deficits suggests that the government budget is fundamentally out of balance.

Net interest payments rise by one fifth as a share of the economy in just five years (from 2.5% of GDP in 2023 to 3.0% in 2028) and then grow to 3.6% of GDP in 2033, and 6.7% in 2053 (Figure 7). By comparison, the peak historical share of net interest in the economy was 3.2% in 1991.

Unified deficits, which combine the effects of primary deficits and net interest payments, rise gradually from 5.8% of GDP in 2023, to 6.4% in 2033, and 10% in 2053 under current law (Figure 8). Over the next 30 years, net interest is projected not only to rise faster than other programs but to become the biggest single expenditure item (Figure 9).

Indeed, as Figure 10 shows, with relatively constant primary deficits, virtually the entire increase in the unified deficit through 2053 is due to increases in net interest payments, which rise, in turn, because of both higher debt levels and higher interest rates on that debt.

Debt is projected to be 98% at the end of 2023 and 115% at the end of 2033 (Figure 11). After 2030, debt accumulates more rapidly and reaches almost 181% in 2053, due to both rising primary deficits and rising interest payments.

B. Comparisons with the 2022 Current-Law Baseline

Over the period from 2023 to 2032, the 2023 current-law baseline shows $1.9 trillion more in cumulative deficits than the 2022 current-law baseline, despite the enactment of the Fiscal Responsibility Act of 2023, which reduced deficits by $1.3 trillion (CBO 2023e) over the same period. Some of the increase is due to other legislation, with the biggest components being the Honoring Our Pact Act for veterans and increases in projected defense spending. The rest is due to economic and technical changes, the majority of which is due to higher projected interest rates.

Over the 30-year horizon, the 2023 projections show a slight decline in debt relative to the 2022 projections. Projected debt in 2052 is 185% of GDP in the 2022 current-law baseline and 177% in the 2023 current-law baseline. The difference arises because of lower outlay projections for Medicare, interest payments (because of lower projected rates later in the 30-year projection period) and discretionary spending (because of FRA).

V. 2023 Current Law Versus 2023 Current Policy

While comparing the 2022 current-law baseline to the 2023 current-law baseline shows the continuing impact of the pandemic and associated policies and economic developments, comparing the 2023 current-law baseline to 2023 current-policy projections shows the impact of

certain "business as usual" changes that Congress tends to make. These differences occur during the first 10 years, given our process for generating projections, but they have ramifications for longer-term outcomes as well because we assume that the differences persist.

Making the temporary provisions of the Tax Cuts and Jobs Act permanent, extending other expiring tax provisions, and providing modest adjustments to spending causes the primary deficit to diverge sharply from its current-law values starting in 2025. The long-term effects are quite substantial. By 2053, revenues would be just 17.9% of GDP, compared to 19.1% under current law (Figure 4); the primary deficit would rise to 4.8% of GDP and interest payments would rise to 8.2% of GDP, compared to 3.3 and 6.7%, respectively, under current law (Figures 6 and 7). Under current policy, the 2053 debt-to-GDP ratio would be 221% compared to 181% under current law (Figure 11). The current-policy projections use the same interest rate assumptions as the current-law projections; incorporating any upward impact of higher debt in the current-policy projections on interest rates would raise debt by additional amounts.

VI. Extensions and Sensitivity Analysis

A. Cyclically Adjusted Deficits

Figure 12 shows that projected actual GDP and potential GDP are close to each other in the second half of the decade. The ratio of actual to projected GDP over that period is 0.995. Using the approximate relationship between the output gap and the size of automatic stabilizers reported in CBO (2022c), we show historical and projected future cyclically adjusted deficits in Figure 13.[5] The figure clearly shows that the projected cyclically adjusted deficits would be high

[5]CBO (2020) reports the cyclically adjusted deficit, the output gap, and the size of automatic stabilizers (all as a share of GDP) for historical data from 1965-2019 and for projected data for 2020-2030. Regressing the size of automatic stabilizers on the output gap yields a coefficient of about 0.4 (with a t-statistic of about 50), for a sample using the historical data, the projected data, or the combined data (with or without a constant term, which is estimated very precisely to be zero). We use the historical data on cyclically adjusted deficits for 2000-2021. For 2022-2033 we use CBO (2022c) data on actual GDP in 2027, projected GDP for 2022-2033 and estimates of

and persistent relative to prior values outside the Great Recession and the COVID pandemic. At the end of the decade, we estimate a cyclically adjusted deficit exceeding 6% of GDP.

B. Variation in Economic Parameters

The projections above are sensitive to a variety of economic parameters. We report the sensitivity of the budget projections over a 10-year horizon for the May 2023 baseline using the CBO workbook (2023d), and over a 30-year horizon for the July 2022 Long Term Budget Outlook (2022b).

As CBO (2023d) reports, if annual productivity growth rates were lower than projected by 0.1 percentage points for each of the next 10 years, the debt-to-GDP ratio would rise by 2.1% of GDP by 2033 under current law. If labor force growth rates were 0.1 percentage points lower than predicted over the next 10 years, the debt-to-GDP ratio would lower by 1.1% of GDP by 2032 under current law. If interest rates were 0.1 percentage point higher than predicted over the next 10 years, the debt-to-GDP ratio would be higher by 0.8% of GDP by 2032 under current law. If both interest rates and inflation were higher by 0.1 percentage point, debt-to-GDP would rise by 0.8% of GDP by 2032 under current law.

CBO (2023f) reports sensitivity analysis over a 30-year period. For example, if total factor productivity in the non-farm business sector were 0.5 percentage points higher than in the baseline, federal debt would be 44 percent of GDP lower by 2053 relative to the current-law projections. If the average nominal government interest rate were boosted by a differential starting at 5 basis points in 2023 and rising by 5 basis points each year (before macroeconomic responses), 2053 debt would increase by 50 percent of GDP, again relative to the current-law

potential GDP for 2020-2033. We estimate the output gap for each year, apply the coefficient noted above to generate the size of automatic stabilizers in that year, which we subtract from the projected unified deficit to generate an estimate of the cyclically-adjusted deficit.

projections. If a dollar of public debt crowds out twice as much private investment as CBO typically assumes (that is, 66 cents per dollar instead of the typical 33 cents assumption), the debt-to-GDP ratio would exceed 250% by 2053.

As an extreme example of how results might differ at the 30-year horizon, we estimate a scenario under current law where the average nominal interest rate paid by the government remains constant through 2053 at the 2023 level projected in the June 2023 long-term outlook. In that scenario, debt rises to 162% of GDP by 2053 and net interest payments rise to 4.4% of GDP. These figures are lower than the 181% debt-to-GDP ratio and 6.7% net interest-to-GDP ratio projected under the current-law baseline with rising interest rates, but they are still substantially higher than the current values of debt and net interest.

C. 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 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 fund balances run 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 incoming revenue.

In the current projections, the Social Security (Old-Age and Survivors Insurance) Trust Fund is scheduled to be depleted by 2032 according to CBO (2023b), and 2034 according to the

Social Security trustees (Board of Trustees, Federal Old Age and Survivors Insurance and Federal Disability Insurance Trust Funds 2023). The Disability Insurance Trust Fund is scheduled to be depleted by 2052 according to CBO (2023b), while it is projected to be able to adequately pay full benefits through the 75-year projection period, according to the Social Security trustees. The budget projections above assume that Social Security continues to pay scheduled benefits (i.e., what retirees have earned) even when the combined OASDI trust fund is exhausted, which is projected to occur in 2033. CBO (2023f) estimates that the 2053 debt-GDP ratio would be 49 percentage points lower in 2053 – at 132% of GDP – if only payable benefits were made than it would be if scheduled benefits were paid.

According to the CBO (2023b), the Medicare Part A (Hospital Insurance) Trust Fund appears likely to hit a similar constraint by 2035; according to the Medicare Trustees the constraint will occur in 2031 (Board of Trustees, Federal Hospital Insurance and Federal Supplementary Medical Trust Funds 2023). Each of those dates may prompt at least limited fiscal action. In each case, legislators will be forced to reduce benefits, raise taxes, make interfund transfers, or allow for general revenue funding. In contrast, the Medicare Part B (Supplementary Medical Insurance) and Part D (Prescription Drug Coverage) trust funds receive substantial general revenue funding and do not have the constraint that spending can be financed only by trust fund payments.

VII. Fiscal Gap

In addition to projecting debt and deficits over the 30-year horizon, we also present estimates of the "fiscal gap," an accounting measure that is intended to reflect the long-term budgetary status of the government.[6] The fiscal gap answers the question: if one starts a policy

[6] Auerbach (1994). Auerbach et al. (2003) discuss the relationship between the fiscal gap, generational accounting,

change in a given year to reach a given fiscal target in a given future year, what is the size of the annual, constant-share-of-GDP increase in taxes 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-share-of-GDP policy change would be needed to obtain some debt-to-GDP target in 2053.[7] Or, one might ask what constant share-of-GDP change would be required, starting in 2029 to achieve a real net interest-to-GDP ratio of 2% by 2053.

Results are presented in Table 1. We begin with current-law projections and policy actions beginning in 2024. Under those circumstances, obtaining a debt-to-GDP ratio in 2053 equal its 2023 level of approximately 98% would (ignoring any macroeconomic feedback effects) require permanent tax increases or non-interest spending cuts equaling 2.73% of GDP. This would equal about $716 billion in today's economy and would be the equivalent to a sustained tax increase equal to about 28% of current income tax revenues or 15% of all current tax revenues, or a 13% reduction in current non-interest spending, or a 20% reduction in all non-interest spending other than Social Security and Medicare.

Policy makers could choose a net-interest-to-GDP target instead of a debt target. To hold 2053 interest payments equal to 3.2% of GDP – the historical maximum for this ratio, obtained in 1991 – would require policy changes equal to about 3.16% of GDP starting in 2024 under

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accrual accounting, and other ways of accounting for government. Note that estimates of the fiscal gap do not in any way imply that level reductions as a share of GDP are the best way to achieve a given fiscal target, rather than, say, level reductions as a share of primary deficits (which in the present circumstance would imply a growing path of primary deficit reductions). The fiscal gap measure just provides one convenient way to think about the magnitude of a fiscal shortfall, given a future fiscal goal.

[7] Implementing the adjustments indicated by the fiscal gap does not stabilize debt after the target year; it only adjusts tax and spending trajectories so that the debt hits a target by the target year (e.g., 2053). Under all the scenarios considered in this paper, the debt-to-GDP ratio would continue rising after hitting the specified target in a specified year.

current law.

Furman and Summers (2020) argue that real net interest payments of 2% of GDP would be an appropriate target to stay below to ensure fiscal sustainability. To achieve that goal by 2053 would require fiscal retrenchment of 0.40% of GDP. Furman and Summers also suggest that 150% would be an appropriate debt-to-GDP ratio to stay below. To achieve that target by 2053 would require spending cuts or tax increases equal to 1.01% of GDP.

As Table 1 shows, all the required policy changes to reach a given target would be larger under the current-policy scenario. Likewise, the fiscal gaps are larger if policy makers delay action, because the debt must be brought down to meet the assumed target over fewer years.[8]

VIII. Perspectives[9]

If projected trends continue, the US will soon be in uncharted fiscal waters. From the nation's founding until about 1980, debt as a share of the economy rose only when we were at war or in recession, and it only rose temporarily. After the war or recession ended, the debt-GDP ratio fell rapidly as policy makers ran primary surpluses and interest rates stayed low.

Starting in 1981, Ronald Reagan's tax cuts and defense spending increases raised the debt-GDP ratio during peacetime prosperity. A series of tax increases and budget deals from 1990 to 1997, along with the "peace dividend" associated with the breakup of the Soviet Union helped turn persistent deficits into surpluses by the end of the century.

Since 2000, however, policy makers appear largely to have gradually lost interest in addressing long-term fiscal issues, even as economic events also pushed deficits higher. Tax cuts

[8] Note that delaying the adjustments would still increase the size of the required adjustment even if the debt were to be brought down over 30 years, if the target date were moved later, because of the growing deficit-GDP ratio.

[9] This section is based in part on Auerbach et al. (2019), Auerbach et al. (2020), Auerbach and Gale (2022), and Gale (2019a, 2019b).

and spending increases under George W. Bush and Donald Trump raised deficits. The Great Recession and the associated temporary stimulus under Barack Obama boosted debt further. The pandemic and associated fiscal responses caused debt to rise again. The Biden Administration has advocated and obtained several additional pieces of legislation that boost deficits further. The debt-to-GDP ratio rose from 39% in 2008 to 70% by 2012 and from 79% in 2019 to 100% in 2020 and has hovered just under that level since then, due to strong growth and low interest rates.

The 21 percentage-point rise in the debt-to-GDP ratio during the pandemic was sizable but not unprecedented. The ratio rose by 30 percentage points over three years during the coupling of World War I with the 1918 flu pandemic and it rose by 64 percentage points over six years during World War II. And as noted above, the ratio rose by 31 percentage points in four years during and after The Great Recession.

But the current economic and budget situation is different than in the past. Relative to pre-1980 debt, current projected debt-to-GDP ratios are higher, and the upward trend in this ratio is permanent. There is no war or recession that will end and let the budget adjust.

Relative to the early 1980s or even more recent periods, we now face a much higher initial debt level and the headwinds generated by demographics. As a share of GDP, debt was just over a quarter as large in 1981 as it is today (and was less than 40% as large as today just 15 years ago). During previous decades, the economy benefitted from the steady influx of baby boomers and women into the labor market. Now, boomers are retiring en masse and women's labor force participation has plateaued, suggesting that future growth prospects are dimming, even if immigration rises again to its pre-pandemic levels.

Policymakers have never had to address the projected permanent imbalances between

non-interest spending and taxes, coupled with such high pre-existing debt. The closest historical antecedent occurred after World War II, when the United States faced a debt-to-GDP ratio of 106%. The ratio gradually dwindled to 25% over the ensuing 35 years, aided by three factors between 1945 and 1980: Defense spending declined precipitously as a share of GDP, interest rates on government debt were often below the economic growth rate, and the federal government maintained balanced primary budgets on average over the 1945-1980 period. In contrast, we project sizable, growing, and permanent primary deficits as a share of GDP. These primary deficits are sufficiently large to cause debt to grow inexorably relative to GDP through 2053 despite low (but rising) interest rates, and there is nothing in the projections to suggest that primary deficits or interest rates will fall after 2053.

Approaching a balanced primary budget through reductions in spending would be much more challenging now than in the earlier post-war period, because of differences in demographics and budget composition. In 1945 and the years that followed, defense spending was an important part of the federal budget, expenditures on Social Security were small, and Medicare and Medicaid did not exist. In fiscal year 2023, federal spending on defense was just 3.0% of GDP, while spending on the three major entitlement programs accounted for 10.5% of GDP and nearly half of non-interest federal spending. Moreover, spending on the entitlement programs is projected to grow faster than GDP over the next three decades, due to population aging and health care cost growth. At the same time, with greater inequality than during the period ending in 1980, there is stronger support for increased spending on social services. One may also conjecture that demand will increase for health insurance coverage, a stronger social safety net, and more redistribution, given the differential impact of both COVID illness itself and the associated economic burdens. In short, the upward pressure on federal spending is much

stronger now than in the past.

Reducing the primary deficit through tax increases may prove difficult politically, but there is room to maneuver. If TCJA and other temporary provisions are extended, revenues are projected to average 16.4% between 2023 and 2053, smaller than the previous fifty years prior to 2023 when revenues averaged 17.4% of GDP, and well below the value of 19.6% (18.3%) reached in 2022 (2023).

Future interest rates are a key determinant of the fiscal outlook. Lower rates unambiguously reduce net interest payments – which, as documented above, are projected to grow rapidly – and improve the federal government's overall fiscal stance – because it is a net borrower. Low interest rates also undermine claims that current debt levels will cause a financial crisis. More generally, to the extent that low interest rates indicate a reduced marginal private return to capital, the opportunity cost of government borrowing falls, making it more attractive to pursue new programs, particularly investments. But if borrowing rises when interest rates are low, and interest rates subsequently rise, the result will be higher interest rates on higher levels of debt (Ball et al.1998) particularly if the rise in interest rates is not accompanied by a sufficiently large increase in the rate of productivity growth (Sheiner 2022).[10]

Finally, the willingness of investors to hold U.S. federal debt at low interest rates depends on their continued confidence as creditors and their perception of Treasury securities as safe assets, even as the debt-GDP ratio climbs well beyond its historical peak. As stressed by Mian, Sufi, and Straub (2022), the feasibility of the government's fiscal trajectory depends in part on

[10] Mankiw (2022) and Reinhart (2022) provide recent explanations of why interest rates have remained so low for so long. Lower interest rates will also make pre-funding of Social Security and Medicare more difficult. In the past, policymakers have chosen to pre-fund a certain share of these obligations. With lower interest rates, any level of pre-funding will be more difficult to achieve; i.e., it will require higher taxes or lower spending than with higher interest rates. Policymakers will have to choose between imposing higher burdens to reach a given level of prefunding or pre-funding these programs to a lesser extent than in the past.

how additional borrowing influences the interest rate investors are willing to accept. The CBO projections already incorporate feedback from rising debt to interest rates based on their historical relationship, but there is nothing to ensure that this relationship will not worsen as the debt-GDP ratio heads beyond historical experience.

Although it seems unlikely that the economics of rising US debt will create a crisis anytime soon, policymakers could create an emergency by forcing a default on the country's debt, as some Congressional Republicans threatened to bring about during the debt ceiling standoffs in 2011 and 2013 (Bartlett 2013; Weisman 2013) and are threatening to do now (Rappeport 2023). An intentional debt default would turn out poorly, of course, and would make it harder, not easier, to address the fiscal situation, because it would raise the interest rates that the government had to pay. But even if politicians do not manufacture a crisis, the United States still faces a debt problem. It's just one that's growing gradually. This may be less exciting than a crisis, but it can still be very damaging.

Although the long-term fiscal outlook has not been particularly damaged by recent events, it remains unsustainable and will eventually require federal action. How quickly those actions are needed will depend on many factors, including the path of interest rates.

References

Auerbach, Alan J. 1994. "The U.S. Fiscal Problem: Where We Are, How We Got Here, and Where We're Going." NBER Macroeconomics Annual 9: 141–86.

Auerbach, Alan J, William G. Gale, and Peter Orszag. 2003. "Reassessing the Fiscal Gap: The Role of Tax-Deferred Saving." *Tax Notes*, July 28, 2003.

Auerbach, Alan J, William G. Gale, and Aaron Krupkin. 2019. "Revisiting the Federal Budget Outlook." *Tax Notes*, August 5, 2019.

Auerbach, Alan J, William G. Gale, Byron Lutz, and Louise Sheiner. 2020. "Fiscal Effects of COVID-19." *Brookings Papers on Economic Activity* Fall 2020: 229–78.

Auerbach, Alan, and William G. Gale. 2022. "The COVID Pandemic and the Federal Budget." *The Brookings Institution*, August 4, 2022. https://www.brookings.edu/research/the-covid-pandemic-and-the-federal-budget

Ball, Laurence, Douglas Elmendorf, and N. Gregory Mankiw. 1998. "The Deficit Gamble." *Journal of Money, Credit, and Banking* 30 (4): 699–720.

Bartlett, Bruce. 2013. "The Dangers of Debt Limit Brinkmanship." *Tax Notes*, September 30, 2013, sec. Policy Perspectives.

Board of Trustees, Federal Hospital Insurance and Federal Supplementary Medical Trust Funds. 2023. "2023 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds." https://www.cms.gov/oact/tr/2023

Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds. 2023. "2023 Annual Report of the Boards of Trustees of the Federal Old-

Age and Survivors Insurance and Federal Disability Insurance Trust Funds." https://www.ssa.gov/OACT/TR/2023/tr2023.pdf

Congressional Budget Office. 2020. "Automatic Stabilizers in the Federal Budget: 2020 to 2030." https://www.cbo.gov/publication/56095

Congressional Budget Office. 2022a. "The Budget and Economic Outlook: 2022 to 2032." https://www.cbo.gov/publication/57950

Congressional Budget Office. 2022b. "The 2022 Long Term Budget Outlook." https://www.cbo.gov/system/files/2022-07/57971-LTBO.pdf

Congressional Budget Office. 2023a. "An Update to the Budget Outlook: 2023 to 2033." https://www.cbo.gov/publication/59096

Congressional Budget Office. 2023b. "The 2023 Long-Term Budget Outlook" https://www.cbo.gov/publication/59014

Congressional Budget Office. 2023c. "Budgetary Outcomes Under Alternative Assumptions About Spending and Revenues" https://www.cbo.gov/publication/59154

Congressional Budget Office. 2023d. "How Changes in Economic Conditions Might Affect the Federal Budget: 2023 to 2033." https://www.cbo.gov/publication/58605

Congressional Budget Office. 2023e. "How The Fiscal Responsibility Act of 2023 Affects CBO's Projections of Federal Debt." https://www.cbo.gov/publication/59260

Congressional Budget Office. 2023f. "The Long-Term Budget Outlook Under Alternative Scenarios for the Budget and the Economy." https://www.cbo.gov/publication/59233

Furman, Jason, and Lawrence Summers. 2020. "A Reconsideration of Fiscal Policy in the Era of Low Interest Rates." Unpublished manuscript. Harvard University and Peterson Institute for International Economics. https://www.piie.com/system/files/documents/furman-

summers2020-12-01paper.pdf

Gale, William G. 2019a. Fiscal Therapy: Curing America's Debt Addiction and Investing in the Future. New York: Oxford University Press.

Gale, William G. 2019b. "Fiscal Policy with High Debt and Low Interest Rates." In Maintaining the Strength of American Capitalism, edited by Melissa S. Kearney and Amy Ganz. Washington: Aspen Institute, Economic Strategy Group. https://www.economicstrategygroup.org/publication/fiscal-policy-with-high-debt-and-low-interest-rates/.

Mankiw, N. Gregory. 2022. "Government Debt and Capital Accumulation in an Era of Low Interest Rates." w30024. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w30024.

Mian, Atif, Ludwig Straub, and Amir Sufi. 2022. "A Goldilocks Theory of Fiscal Deficits." w29707. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w29707.

Rappeport, Alan. 2023. "In Debt Limit Fight, Republicans Won't Say What Spending Cuts They Want." *The New York Times*. January 23, 2023. https://www.nytimes.com/2023/01/31/us/politics/republicans-spending-debt-ceiling.html

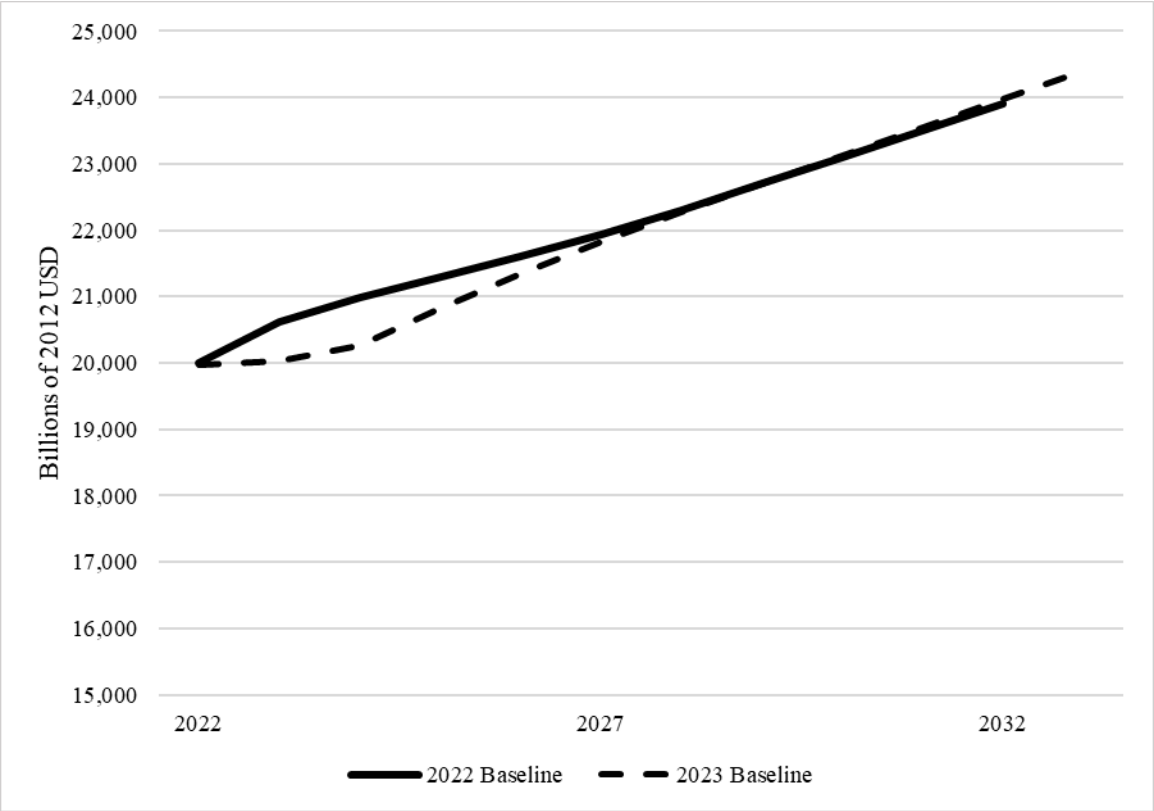
Reinhart, Carmen. 2022. "Fiscal Policy and Budget Deficits Following the Pandemic." Comments at the Brookings Papers on Economic Activity Conference, March 25, 2022. https://www.brookings.edu/wp-content/uploads/2022/01/1b_Reinhart_BPEA_March_2022.pdf.

Sheiner, Louise. 2018. "Effects of Low Productivity Growth on Fiscal Sustainability in the United States." Working Paper 18–9. Peterson Institute for International Economics.

https://www.piie.com/publications/working-papers/effects-low-productivity-growth-fiscal-sustainability-united-states.

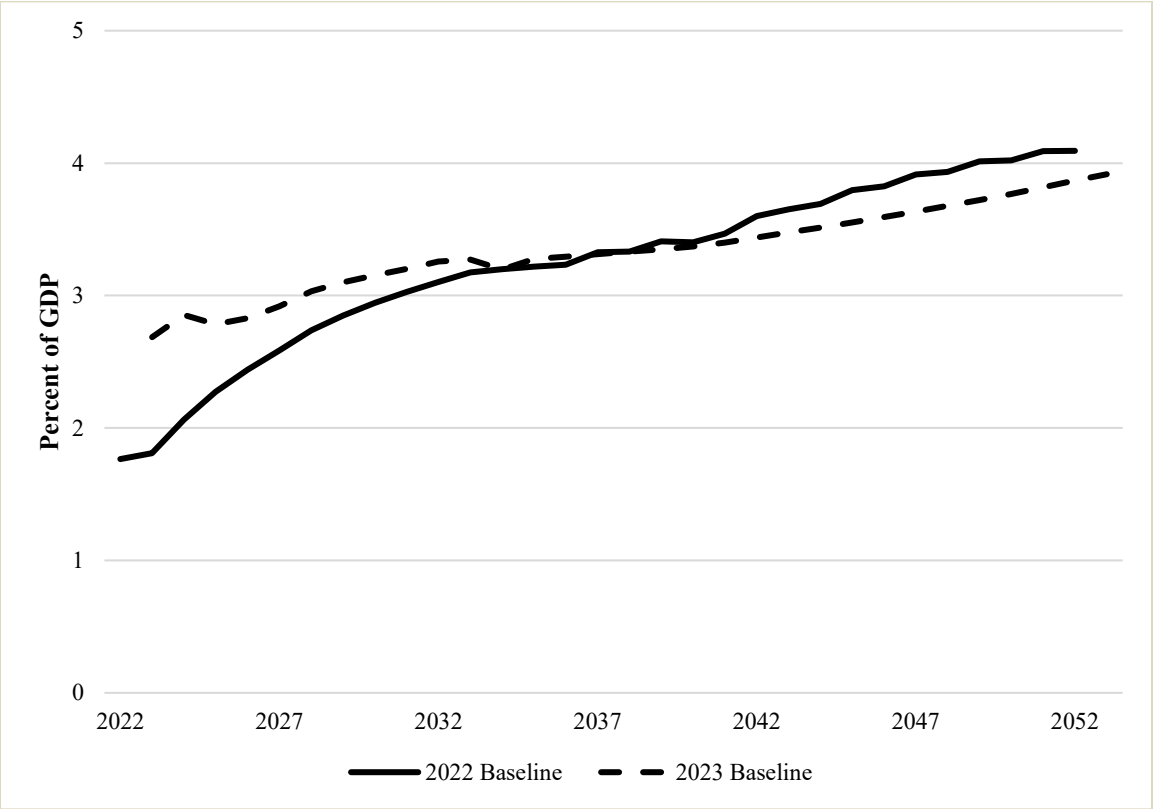
Weisman, Jonathan. 2013. “House Vote Sidesteps an Ultimatum on Debt.” *The New York Times*, January 23, 2013, sec. Politics.

Figure 1 - Real GDP, 2022 - 2033



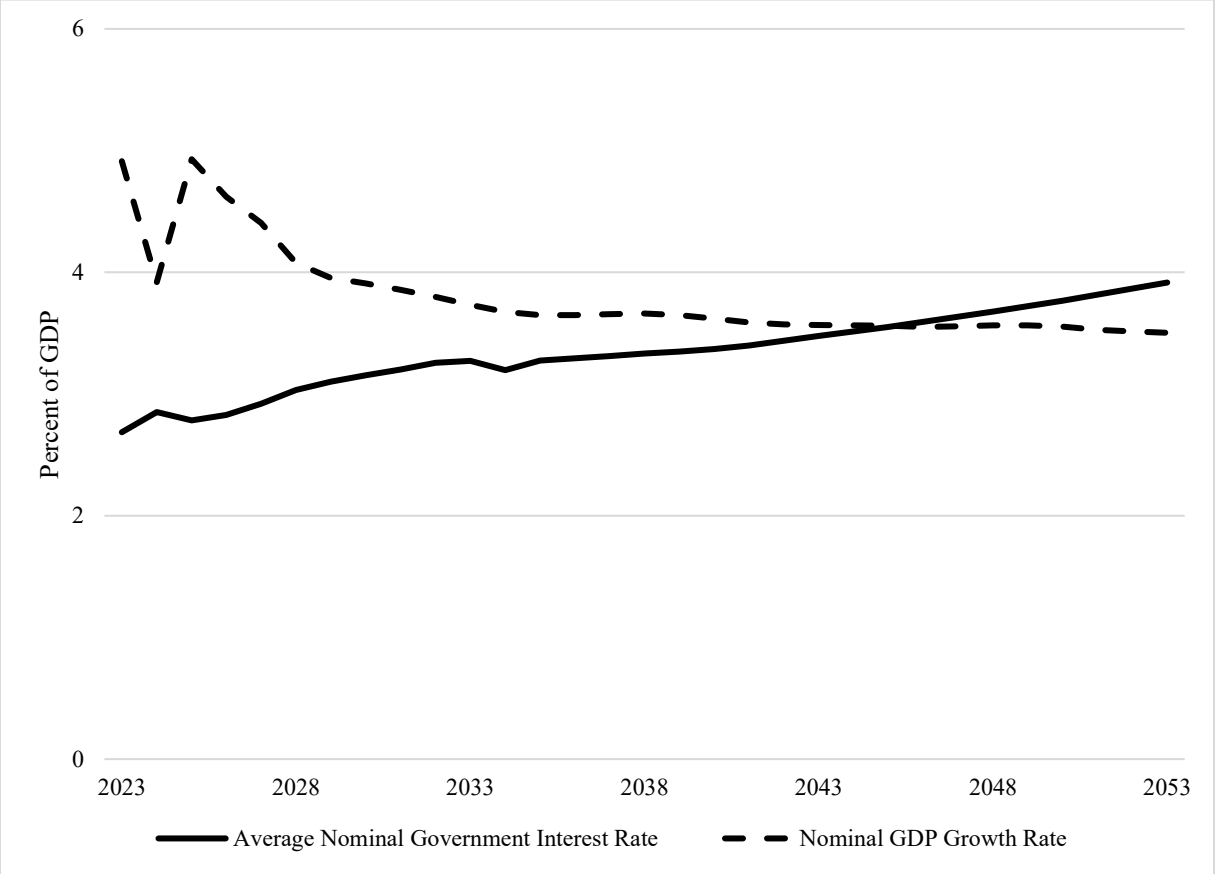
Source: CBO (2022a, 2023a)

Figure 2 - Average Nominal Government Interest Rate, 2022 - 2053



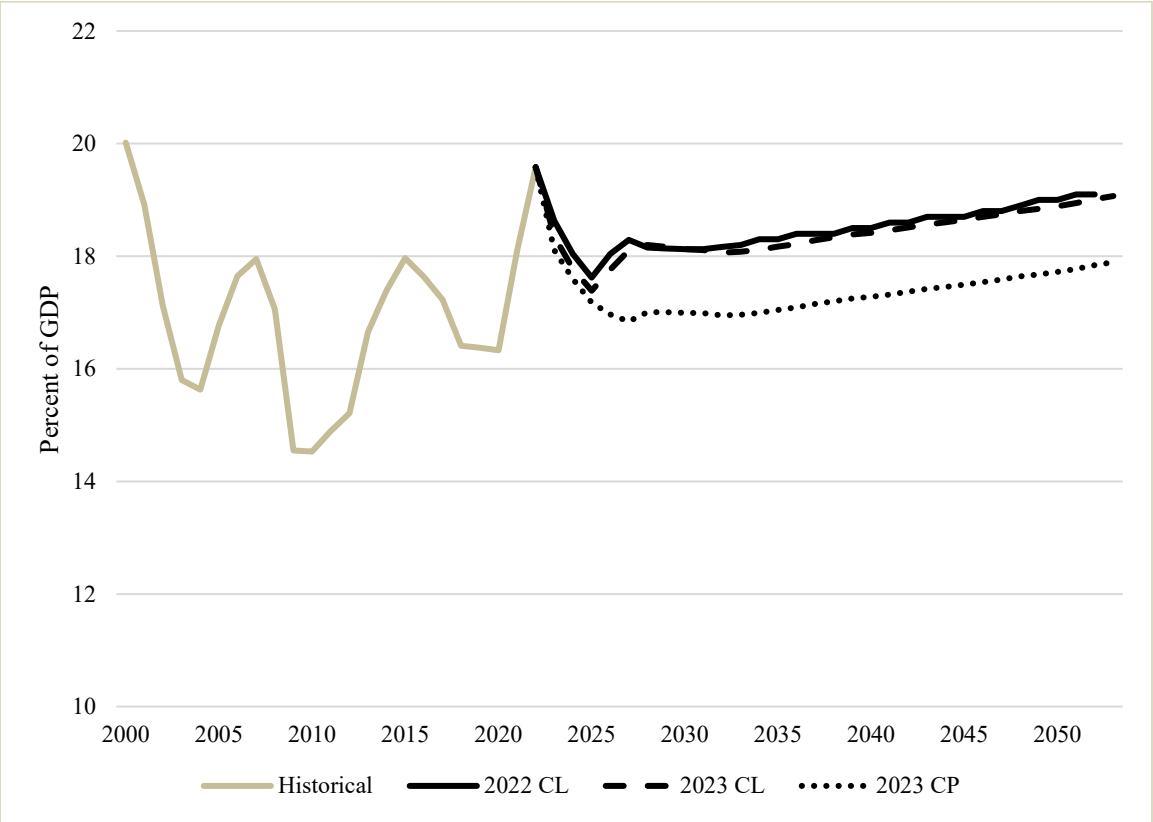
Source: CBO (2023b) and authors' calculations.
Note: Nominal interest rate on government debt is calculated as the ratio of net interest payments to the sum of (a) debt at the end of the prior year and (b) one-half of the primary deficit in the given year.

Figure 3: Nominal Average Government Interest Rate and GDP Growth, 2023 – 2053



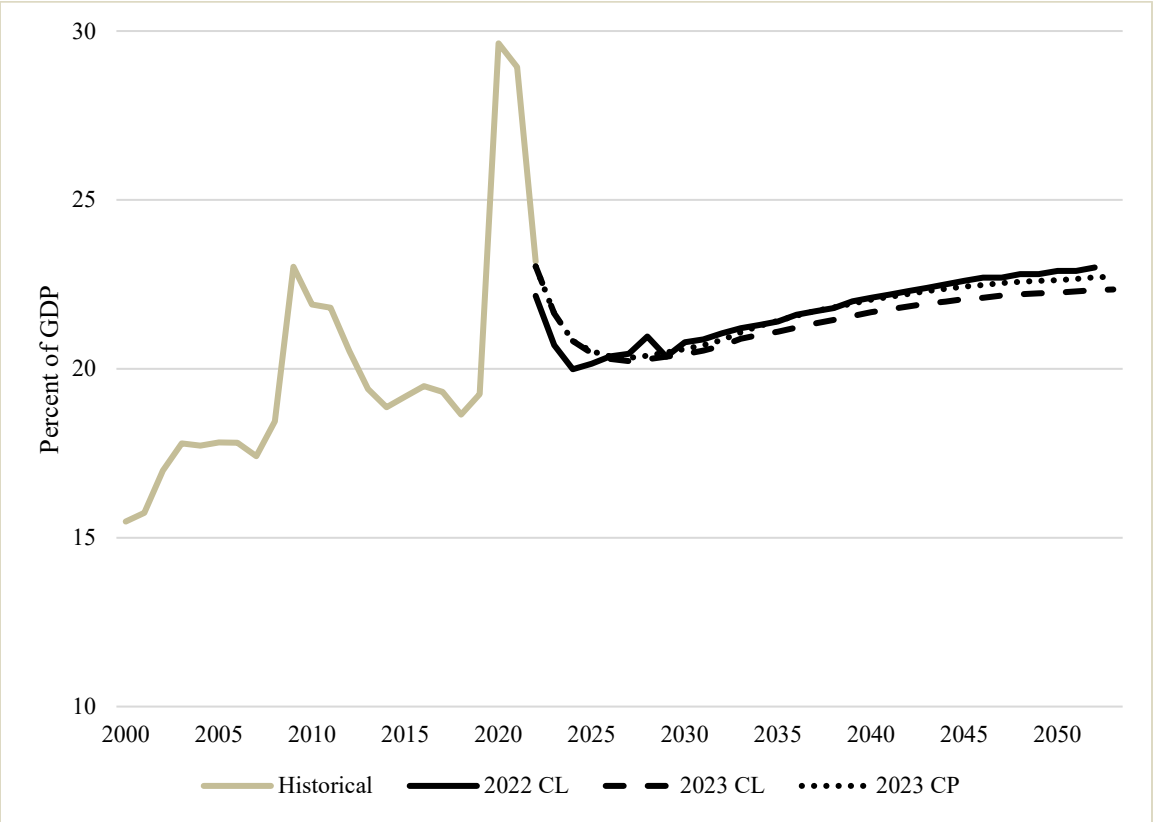
Source: CBO (2022a, 2023b) and authors' calculations.
Note: Nominal interest rate on government debt is calculated as the ratio of net interest payments to the sum of (a) debt at the end of the prior year and (b) one-half of the primary deficit in the given year.

Figure 4: Total Revenue, 2000 – 2053



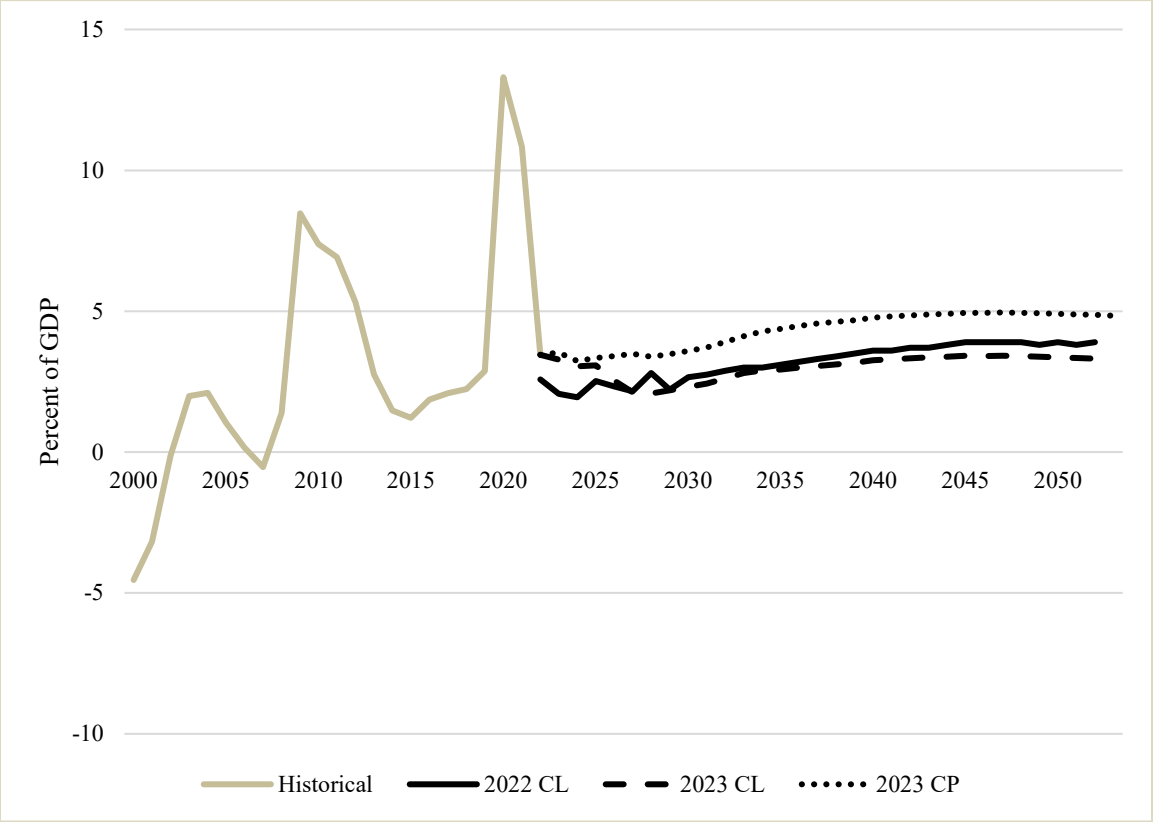
Source: CBO (2022b, 2023b) and authors' calculations.

Figure 5: Non-Interest Spending, 2000 – 2053



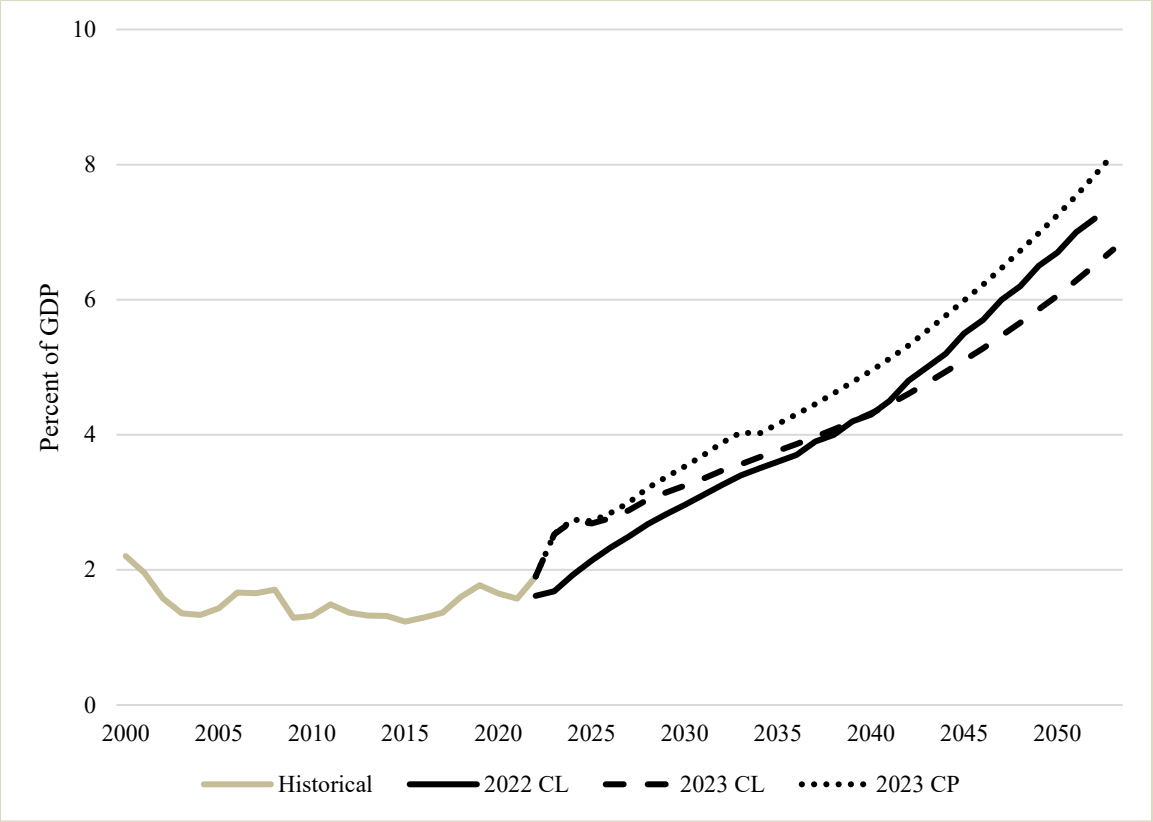
Source: CBO (2022b, 2023b) and authors' calculations.

Figure 6: Primary Deficit, 2000 - 2053



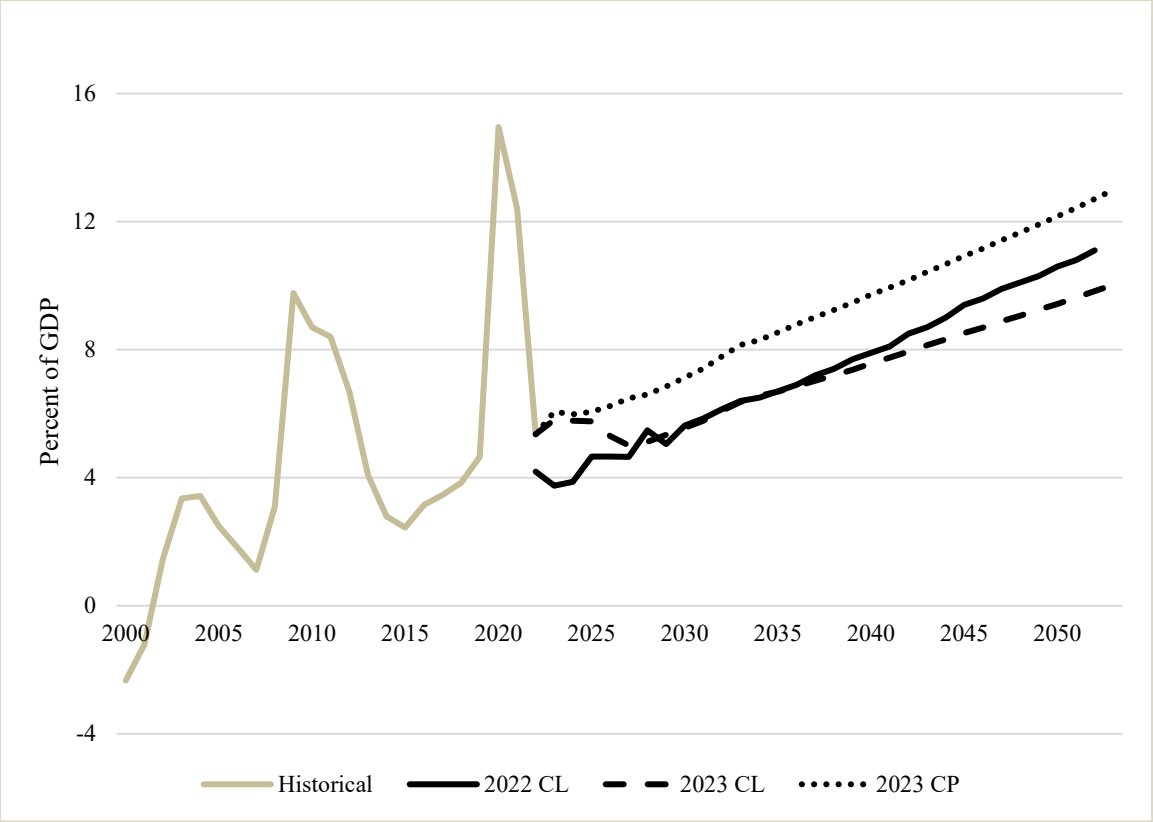
Source: CBO (2022b, 2023b) and authors' calculations.

Figure 7: Net Interest Payments, 2000 - 2053



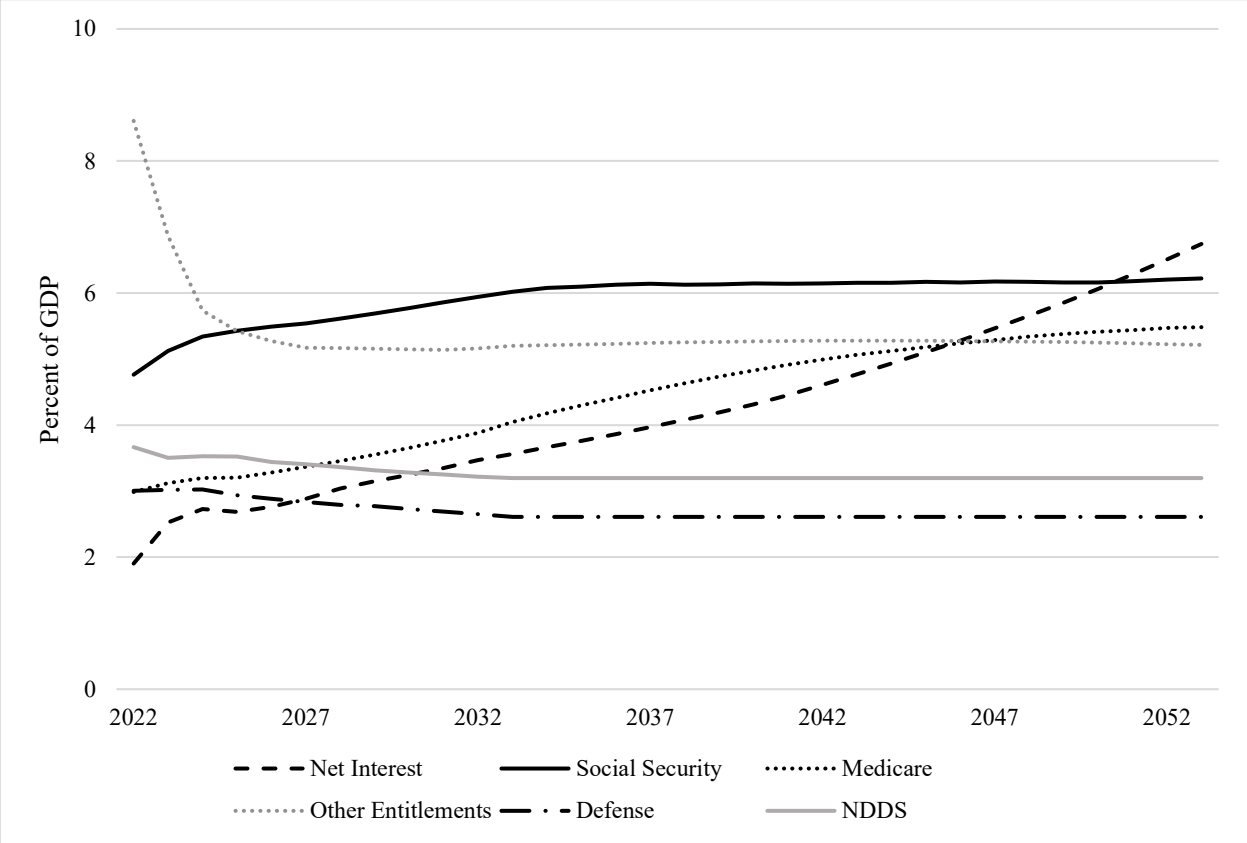
Source: CBO (2022b, 2023b) and authors' calculations.

Figure 8: Unified Deficit, 2000 - 2053



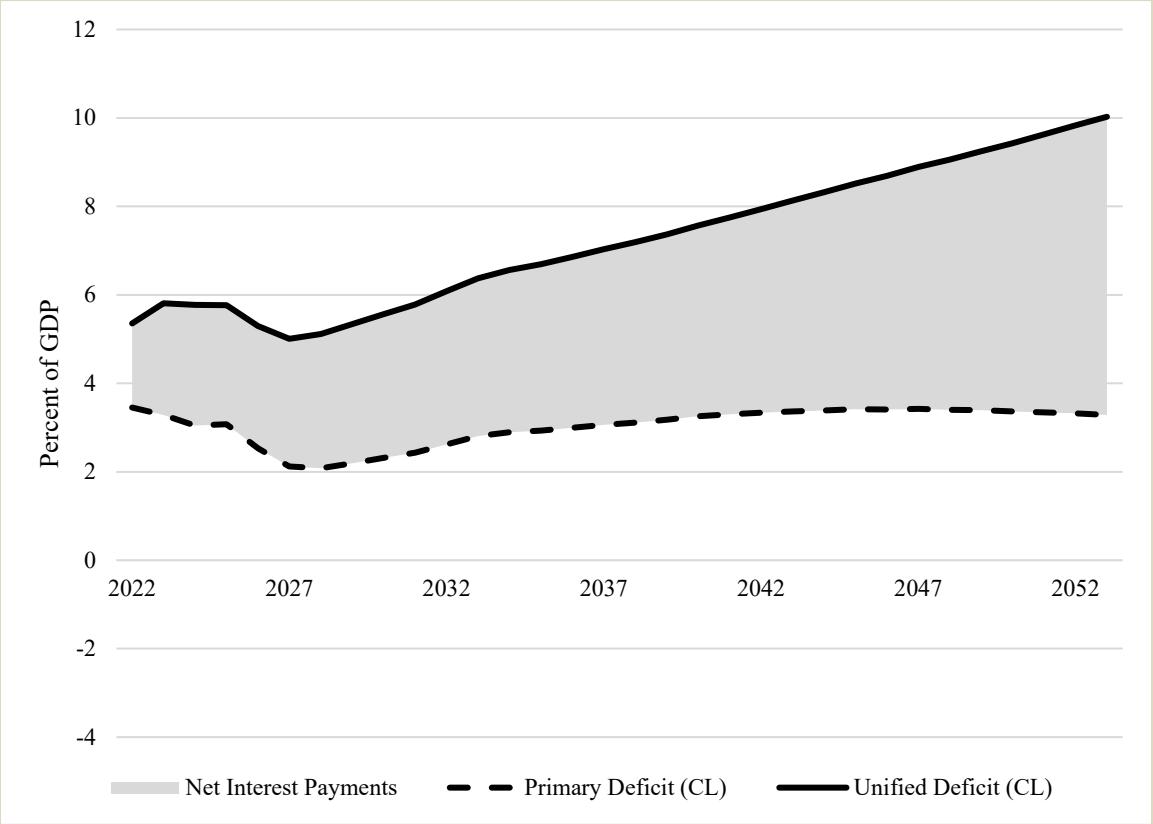
Source: CBO (2022b, 2023b) and authors' calculations.

Figure 9: Major Spending Categories



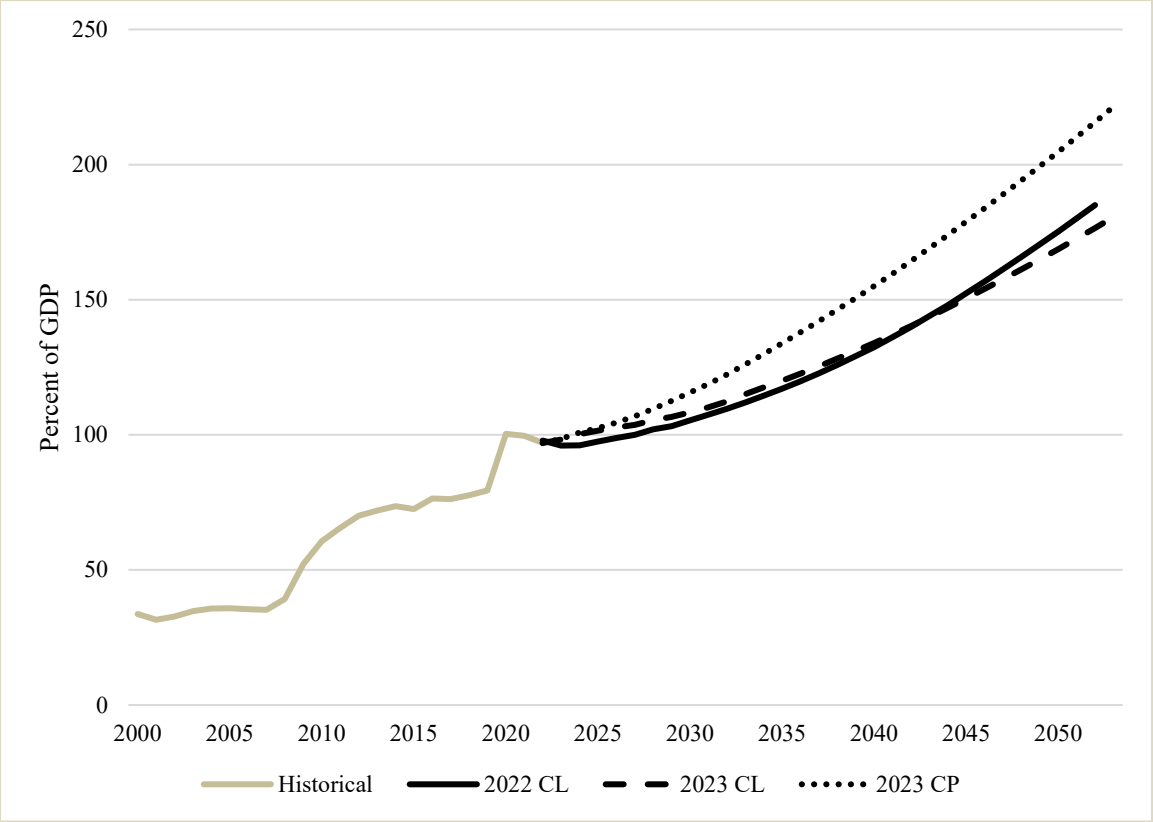
Source: CBO (2023a) and authors' calculations.

Figure 10: Primary and Unified Deficit, 2022-2053



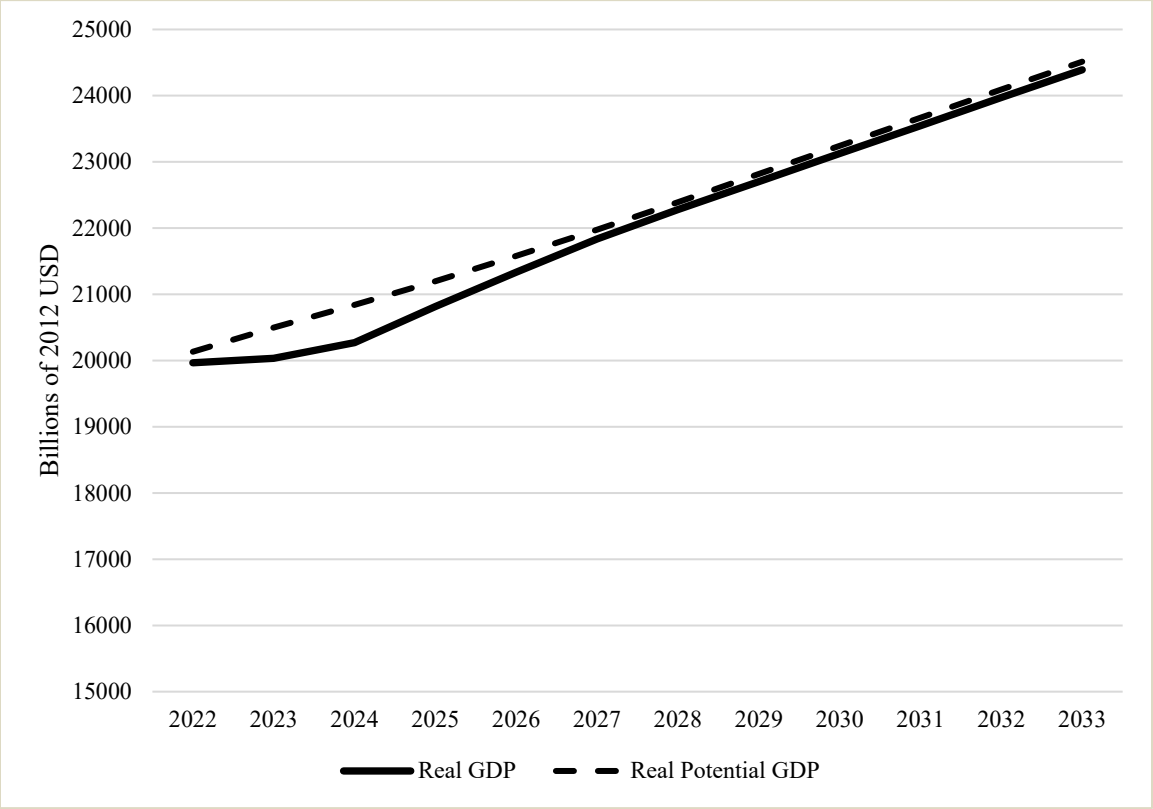
Source: CBO (2022a, 2023), authors' calculations

Figure 11: Public Debt, 2000 - 2053



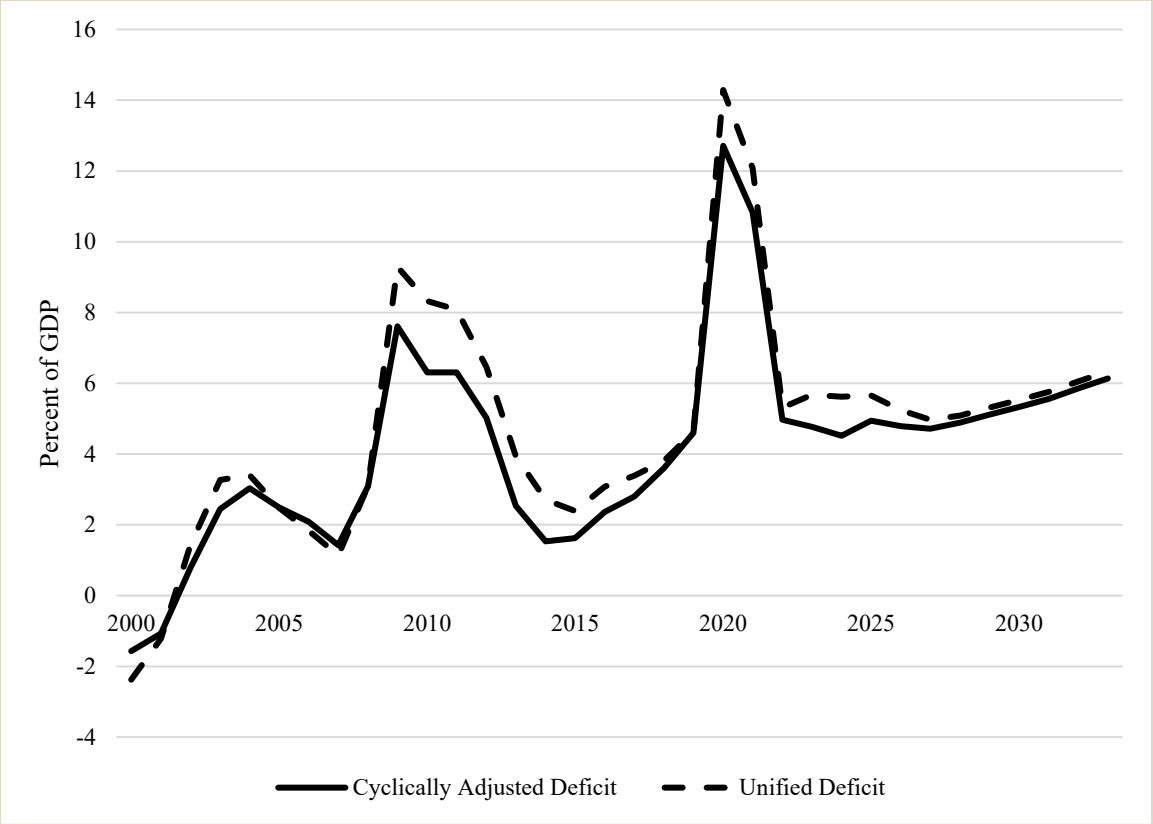
Source: CBO (2022b, 2023b) and authors' calculations.

Figure 12: Real and Potential GDP, 2022- 2033



Source: CBO (2023b) and authors' calculations.

Figure 13: Cyclically Adjusted and Unified Deficit, 2000 - 2033



Source: CBO (2022a, 2023), authors' calculations
Notes: CBO (2022a) reports the output gap and the size of the automatic stabilizers (both variables as a share of potential GDP) for the historical data from 1970 – 2021 and for projected data from 2022 – 2032. Regressing the size of the automatic stabilizers on the output gap yields a coefficient of about 0.4, for a sample using the historical data, the projected data, or the combined data (with or without a constant term, which is estimated very precisely to be zero). Thus, using CBO (2023) data on historical and projected GDP and potential GDP for 2022 – 2033, we estimate the output gap for each year, apply the coefficient noted above to generate the size of the automatic stabilizer in that year, which we subtract from the projected unified deficit to generate an estimate of the cyclically-adjusted deficit.

Table 1: Fiscal Gaps to Reach 2053 Targets

	Current law beginning		*Current policy beginning*	
Target	*2024*	*2029*	*2024*	*2029*
Debt = 98% of GDP	2.73	3.24	4.10	4.86
Debt = 150% of GDP	1.01	1.20	2.38	2.82
Net Interest = 3.2% of GDP	3.16	3.76	4.53	5.39
(Net Interest/GDP) – Inflation = 2%	0.40	0.50	1.76	2.12

Appendix Table 1: 2022 Current-Law Baseline*

Year	Non-Interest Spending	Total Spending	Total Revenue	Net Interest	Primary Deficit	Unified Deficit	Public Debt
2022	5,472.8 (22.163)	5,871.8 (23.778)	4,836.0 (19.584)	399.04 (1.616)	636.8 (2.579)	1,035.8 (4.195)	24,172.6 (97.888)
2023	5,431.4 (20.699)	5,873.6 (22.384)	4,889.6 (18.634)	442.22 (1.685)	541.8 (2.065)	984.0 (3.75)	25,192.8 (96.01)
2024	5,454.7 (19.987)	5,979.8 (21.911)	4,923.9 (18.042)	525.08 (1.924)	530.8 (1.945)	1,055.9 (3.869)	26,217.0 (96.066)
2025	5,695.7 (20.146)	6,299.8 (22.283)	4,981.5 (17.621)	604.11 (2.137)	714.2 (2.526)	1,318.3 (4.663)	27,561.1 (97.489)
2026	5,962.4 (20.373)	6,643.5 (22.7)	5,279.7 (18.04)	681.11 (2.327)	682.7 (2.333)	1,363.8 (4.66)	28,925.1 (98.833)
2027	6,201.3 (20.445)	6,957.8 (22.939)	5,548.4 (18.292)	756.49 (2.494)	652.9 (2.152)	1,409.4 (4.646)	30,326.0 (99.981)
2028	6,598.5 (20.957)	7,440.7 (23.631)	5,715.6 (18.153)	842.21 (2.675)	882.9 (2.804)	1,725.1 (5.479)	32,105.1 (101.964)
2029	6,660.1 (20.357)	7,584.8 (23.184)	5,934.0 (18.138)	924.64 (2.826)	726.1 (2.22)	1,650.8 (5.046)	33,760.0 (103.191)
2030	7,066.2 (20.785)	8,073.6 (23.748)	6,161.3 (18.124)	1,007.40 (2.963)	904.8 (2.662)	1,912.2 (5.625)	35,808.0 (105.329)
2031	7,370.6 (20.87)	8,469.2 (23.98)	6,401.8 (18.126)	1,098.57 (3.111)	968.8 (2.743)	2,067.4 (5.854)	37,949.3 (107.451)
2032	7,721.7 (21.051)	8,915.3 (24.306)	6,662.1 (18.163)	1,193.64 (3.254)	1,059.6 (2.889)	2,253.3 (6.143)	40,212.9 (109.633)
2033	8,073.2 (21.200)	9,367.9 (24.600)	6,930.7 (18.200)	1,294.75 (3.400)	1,142.4 (3.000)	2,437.2 (6.400)	42,650.7 (112.000)
2034	8,417.5 (21.300)	9,800.7 (24.800)	7,232.0 (18.300)	1,383.17 (3.500)	1,185.6 (3.000)	2,568.7 (6.500)	45,209.7 (114.400)

2035	8,773.1 (21.400)	10,249.0 (25.000)	7,502.3 (18.300)	1,475.86 (3.600)	1,270.9 (3.100)	2,746.7 (6.700)	47,965.3 (117.000)
2036	9,183.0 (21.600)	10,756.0 (25.300)	7,822.6 (18.400)	1,573.02 (3.700)	1,360.4 (3.200)	2,933.5 (6.900)	50,931.8 (119.800)
2037	9,564.1 (21.700)	11,282.9 (25.600)	8,109.6 (18.400)	1,718.89 (3.900)	1,454.4 (3.300)	3,173.3 (7.200)	54,078.8 (122.700)
2038	9,958.2 (21.800)	11,785.4 (25.800)	8,405.1 (18.400)	1,827.20 (4.000)	1,553.1 (3.400)	3,380.3 (7.400)	57,465.4 (125.800)
2039	10,413.7 (22.000)	12,401.8 (26.200)	8,757.0 (18.500)	1,988.07 (4.200)	1,656.7 (3.500)	3,644.8 (7.700)	61,109.5 (129.100)
2040	10,836.7 (22.100)	12,945.2 (26.400)	9,071.5 (18.500)	2,108.51 (4.300)	1,765.3 (3.600)	3,873.8 (7.900)	64,971.4 (132.500)
2041	11,273.6 (22.200)	13,558.8 (26.700)	9,445.5 (18.600)	2,285.19 (4.500)	1,828.2 (3.600)	4,113.3 (8.100)	69,114.3 (136.100)
2042	11,725.6 (22.300)	14,249.5 (27.100)	9,780.1 (18.600)	2,523.89 (4.800)	1,945.5 (3.700)	4,469.4 (8.500)	73,560.8 (139.900)
2043	12,195.2 (22.400)	14,917.4 (27.400)	10,180.8 (18.700)	2,722.15 (5.000)	2,014.4 (3.700)	4,736.5 (8.700)	78,343.5 (143.900)
2044	12,683.7 (22.500)	15,615.0 (27.700)	10,541.6 (18.700)	2,931.34 (5.200)	2,142.1 (3.800)	5,073.5 (9.000)	83,430.6 (148.000)
2045	13,191.8 (22.600)	16,402.3 (28.100)	10,915.4 (18.700)	3,210.41 (5.500)	2,276.5 (3.900)	5,486.9 (9.400)	88,899.0 (152.300)
2046	13,720.8 (22.700)	17,166.1 (28.400)	11,363.5 (18.800)	3,445.31 (5.700)	2,357.3 (3.900)	5,802.6 (9.600)	94,715.7 (156.700)
2047	14,208.8 (22.700)	17,964.5 (28.700)	11,767.7 (18.800)	3,755.64 (6.000)	2,441.2 (3.900)	6,196.8 (9.900)	100,901.5 (161.200)
2048	14,779.9 (22.800)	18,799.0 (29.000)	12,251.7 (18.900)	4,019.09 (6.200)	2,528.1 (3.900)	6,547.2 (10.100)	107,478.2 (165.800)

2049	15,306.1 (22.800)	19,669.7 (29.300)	12,755.1 (19.000)	4,363.58 (6.500)	2,551.0 (3.800)	6,914.6 (10.300)	114,460.1 (170.500)
2050	15,918.7 (22.900)	20,576.1 (29.600)	13,207.7 (19.000)	4,657.44 (6.700)	2,711.0 (3.900)	7,368.5 (10.600)	121,788.5 (175.200)
2051	16,481.1 (22.900)	21,519.0 (29.900)	13,746.3 (19.100)	5,037.90 (7.000)	2,734.9 (3.800)	7,772.8 (10.800)	129,618.0 (180.100)
2052	17,136.2 (23.000)	22,500.5 (30.200)	14,230.5 (19.100)	5,364.36 (7.200)	2,905.7 (3.900)	8,270.1 (11.100)	137,834.3 (185.000)

*The table reports values in billions of dollars and (percent of GDP).

Appendix Table 2: 2023 Current-Law Baseline*

Year	Non-Interest Spending	Total Spending	Total Revenue	Net Interest	Primary Deficit	Unified Deficit	Public Debt
2022	5,760.7 (23.034)	1,886.4 (7.543)	4,897.4 (19.583)	475.9 (1.903)	863.3 (3.452)	1,339.2 (5.355)	24,252.4 (96.975)
2023	5,676.9 (21.636)	2,044.2 (7.791)	4,814.7 (18.350)	662.5 (2.525)	862.1 (3.286)	1,524.7 (5.811)	25,762.8 (98.189)
2024	5,678.7 (20.827)	2,114.8 (7.756)	4,847.5 (17.779)	743.5 (2.727)	831.2 (3.048)	1,574.7 (5.775)	27,313.7 (100.175)
2025	5,854.5 (20.463)	2,217.3 (7.750)	4,974.5 (17.387)	768.8 (2.687)	880.0 (3.076)	1,648.8 (5.763)	29,059.5 (101.571)
2026	6,075.0 (20.296)	2,325.1 (7.768)	5,316.9 (17.763)	827.6 (2.765)	758.1 (2.533)	1,585.7 (5.298)	30,735.7 (102.685)
2027	6,321.5 (20.228)	2,454.1 (7.853)	5,658.1 (18.105)	901.0 (2.883)	663.4 (2.123)	1,564.3 (5.006)	32,402.6 (103.685)
2028	6,595.7 (20.279)	2,590.0 (7.963)	5,919.3 (18.199)	987.8 (3.037)	676.5 (2.080)	1,664.3 (5.117)	34,276.5 (105.385)
2029	6,882.6 (20.356)	2,732.9 (8.083)	6,142.3 (18.166)	1,064.7 (3.149)	740.3 (2.190)	1,805.0 (5.339)	36,047.3 (106.614)
2030	7,180.8 (20.439)	2,884.8 (8.211)	6,367.8 (18.125)	1,140.4 (3.246)	813.1 (2.314)	1,953.5 (5.560)	38,059.2 (108.329)
2031	7,493.9 (20.538)	3,043.1 (8.340)	6,606.8 (18.107)	1,222.7 (3.351)	887.1 (2.431)	2,109.8 (5.782)	40,209.8 (110.200)
2032	7,832.0 (20.679)	3,210.6 (8.477)	6,841.4 (18.064)	1,314.6 (3.471)	990.5 (2.615)	2,305.1 (6.086)	42,532.9 (112.301)
2033	8,205.7 (20.886)	3,379.9 (8.603)	7,102.3 (18.077)	1,399.8 (3.563)	1,103.4 (2.809)	2,503.3 (6.372)	45,180.8 (114.999)
2034	8,555.8 (21.005)	3,542.9 (8.698)	7,377.4 (18.112)	1,493.2 (3.666)	1,178.4 (2.893)	2,671.6 (6.559)	47,848.7 (117.472)

2035	8,908.4 (21.101)	3,696.2 (8.755)	7,670.6 (18.169)	1,587.8 (3.761)	1,237.8 (2.932)	2,825.7 (6.693)	50,670.9 (120.022)
2036	9,284.1 (21.217)	3,860.3 (8.822)	7,972.3 (18.219)	1,689.9 (3.862)	1,311.9 (2.998)	3,001.8 (6.860)	53,671.8 (122.656)
2037	9,681.2 (21.344)	4,025.1 (8.874)	8,293.7 (18.285)	1,801.2 (3.971)	1,387.5 (3.059)	3,188.7 (7.030)	56,859.9 (125.358)
2038	10,084.2 (21.447)	4,183.3 (8.897)	8,620.5 (18.334)	1,918.8 (4.081)	1,463.7 (3.113)	3,382.5 (7.194)	60,243.6 (128.126)
2039	10,507.3 (21.560)	4,355.9 (8.938)	8,960.4 (18.386)	2,043.5 (4.193)	1,546.8 (3.174)	3,590.3 (7.367)	63,833.6 (130.981)
2040	10,944.6 (21.673)	4,537.3 (8.985)	9,300.9 (18.418)	2,179.0 (4.315)	1,643.7 (3.255)	3,822.8 (7.570)	67,657.0 (133.977)
2041	11,382.4 (21.759)	4,713.2 (9.010)	9,657.1 (18.461)	2,328.9 (4.452)	1,725.2 (3.298)	4,054.1 (7.750)	71,710.5 (137.085)
2042	11,835.1 (21.844)	4,900.0 (9.044)	10,029.8 (18.512)	2,496.6 (4.608)	1,805.3 (3.332)	4,301.9 (7.940)	76,012.4 (140.296)
2043	12,306.5 (21.932)	5,096.1 (9.082)	10,417.8 (18.566)	2,675.4 (4.768)	1,888.7 (3.366)	4,564.2 (8.134)	80,576.8 (143.600)
2044	12,779.4 (21.991)	5,293.4 (9.109)	10,810.0 (18.602)	2,866.1 (4.932)	1,969.4 (3.389)	4,835.5 (8.321)	85,412.4 (146.979)
2045	13,278.3 (22.064)	5,505.4 (9.148)	11,222.6 (18.648)	3,070.4 (5.102)	2,055.8 (3.416)	5,126.2 (8.518)	90,539.3 (150.445)
2046	13,774.8 (22.104)	5,707.1 (9.158)	11,651.6 (18.697)	3,290.4 (5.280)	2,123.2 (3.407)	5,413.6 (8.687)	95,952.9 (153.973)
2047	14,305.5 (22.167)	5,932.7 (9.193)	12,096.4 (18.744)	3,527.5 (5.466)	2,209.0 (3.423)	5,736.5 (8.889)	101,688.4 (157.571)
2048	14,841.6 (22.206)	6,152.9 (9.206)	12,567.8 (18.804)	3,780.9 (5.657)	2,273.8 (3.402)	6,054.7 (9.059)	107,743.6 (161.206)

2049	15,388.1 (22.231)	6,377.1 (9.213)	13,041.6 (18.841)	4,052.8 (5.855)	2,346.5 (3.390)	6,399.3 (9.245)	114,142.8 (164.901)
2050	15,951.4 (22.254)	6,613.8 (9.227)	13,538.0 (18.887)	4,345.2 (6.062)	2,413.4 (3.367)	6,758.6 (9.429)	120,901.0 (168.670)
2051	16,540.2 (22.289)	6,870.9 (9.259)	14,058.7 (18.945)	4,662.5 (6.283)	2,481.5 (3.344)	7,144.0 (9.627)	128,044.4 (172.548)
2052	17,156.1 (22.334)	7,139.3 (9.294)	14,605.8 (19.014)	5,001.5 (6.511)	2,550.3 (3.320)	7,551.8 (9.831)	135,596.4 (176.521)
2053	17,771.4 (22.352)	7,412.4 (9.323)	15,161.2 (19.069)	5,361.2 (6.743)	2,610.2 (3.283)	7,971.4 (10.026)	143,568.2 (180.573)

*The table reports values in billions of dollars and (percent of GDP).

Appendix Table 3: 2023 Current-Policy Baseline*

Year	Non-Interest Spending	Total Spending	Total Revenue	Net Interest	Primary Deficit	Unified Deficit	Public Debt
2022	5,760.7 (23.029)	6,236.6 (24.931)	4,897.4 (19.577)	475.9 (1.902)	863.3 (3.451)	1,339.2 (5.353)	24,252.4 (96.949)
2023	5,676.9 (21.636)	6,340.5 (24.165)	4,750.7 (18.106)	663.6 (2.529)	926.1 (3.530)	1,589.7 (6.059)	25,817.5 (98.398)
2024	5,678.7 (20.827)	6,426.6 (23.570)	4,797.5 (17.595)	747.9 (2.743)	881.2 (3.232)	1,629.1 (5.975)	27,496.8 (100.846)
2025	5,870.2 (20.518)	6,648.0 (23.237)	4,914.5 (17.177)	777.8 (2.719)	955.7 (3.340)	1,733.5 (6.059)	29,327.3 (102.507)
2026	6,097.4 (20.371)	6,946.5 (23.208)	5,078.9 (16.968)	849.1 (2.837)	1,018.5 (3.403)	1,867.6 (6.240)	31,285.0 (104.520)
2027	6,351.1 (20.323)	7,287.2 (23.318)	5,263.1 (16.841)	936.2 (2.996)	1,088.0 (3.481)	2,024.1 (6.477)	33,411.6 (106.914)
2028	6,632.4 (20.392)	7,675.4 (23.598)	5,530.3 (17.003)	1,043.0 (3.207)	1,102.1 (3.389)	2,145.1 (6.595)	35,652.2 (109.615)
2029	6,926.3 (20.485)	8,067.5 (23.861)	5,750.3 (17.007)	1,141.2 (3.375)	1,176.1 (3.478)	2,317.2 (6.854)	38,048.7 (112.533)
2030	7,231.9 (20.584)	8,472.9 (24.117)	5,969.8 (16.992)	1,241.0 (3.532)	1,262.1 (3.592)	2,503.1 (7.125)	40,610.2 (115.590)
2031	7,552.9 (20.700)	8,902.0 (24.397)	6,198.8 (16.989)	1,349.1 (3.697)	1,354.1 (3.711)	2,703.2 (7.408)	43,354.4 (118.818)
2032	7,898.8 (20.855)	9,369.3 (24.738)	6,418.4 (16.947)	1,470.6 (3.883)	1,480.4 (3.909)	2,950.9 (7.791)	46,323.3 (122.309)
2033	8,280.4 (21.076)	9,865.4 (25.111)	6,663.5 (16.961)	1,585.0 (4.034)	1,616.9 (4.116)	3,201.9 (8.150)	49,520.6 (126.045)

2034	8,664.2 (21.271)	10,301.4 (25.291)	6,921.8 (16.993)	1,637.2 (4.020)	1,742.4 (4.278)	3,379.7 (8.297)	52,896.5 (129.865)
2035	9,044.0 (21.422)	10,799.9 (25.581)	7,196.9 (17.047)	1,755.9 (4.159)	1,847.2 (4.375)	3,603.0 (8.534)	56,496.9 (133.822)
2036	9,440.4 (21.574)	11,323.4 (25.877)	7,479.9 (17.094)	1,883.0 (4.303)	1,960.5 (4.480)	3,843.5 (8.784)	60,339.1 (137.893)
2037	9,850.9 (21.718)	11,871.7 (26.173)	7,781.5 (17.156)	2,020.7 (4.455)	2,069.4 (4.562)	4,090.2 (9.018)	64,429.6 (142.047)
2038	10,260.1 (21.821)	12,430.7 (26.438)	8,088.1 (17.202)	2,170.6 (4.616)	2,172.0 (4.619)	4,342.6 (9.236)	68,772.9 (146.266)
2039	10,689.6 (21.934)	13,019.0 (26.714)	8,407.0 (17.251)	2,329.4 (4.780)	2,282.6 (4.684)	4,612.0 (9.463)	73,385.1 (150.580)
2040	11,133.6 (22.047)	13,631.6 (26.994)	8,726.5 (17.281)	2,498.0 (4.947)	2,407.1 (4.767)	4,905.1 (9.713)	78,290.9 (155.035)
2041	11,578.1 (22.133)	14,259.1 (27.258)	9,060.7 (17.321)	2,681.0 (5.125)	2,517.4 (4.812)	5,198.4 (9.937)	83,488.7 (159.601)
2042	12,037.8 (22.218)	14,920.1 (27.538)	9,410.4 (17.369)	2,882.3 (5.320)	2,627.5 (4.849)	5,509.8 (10.169)	88,998.4 (164.264)
2043	12,516.5 (22.306)	15,623.6 (27.844)	9,774.4 (17.419)	3,107.1 (5.537)	2,742.1 (4.887)	5,849.2 (10.424)	94,847.9 (169.033)
2044	12,996.9 (22.365)	16,343.9 (28.125)	10,142.4 (17.453)	3,347.0 (5.760)	2,854.5 (4.912)	6,201.5 (10.672)	101,050.1 (173.889)
2045	13,503.5 (22.438)	17,106.7 (28.425)	10,529.5 (17.496)	3,603.2 (5.987)	2,974.1 (4.942)	6,577.2 (10.929)	107,628.0 (178.840)
2046	14,008.0 (22.478)	17,885.6 (28.701)	10,932.0 (17.542)	3,877.7 (6.222)	3,076.0 (4.936)	6,953.6 (11.158)	114,581.6 (183.866)
2047	14,547.0 (22.541)	18,720.3 (29.008)	11,349.4 (17.586)	4,173.3 (6.467)	3,197.6 (4.955)	7,370.9 (11.422)	121,951.6 (188.970)

2048	15,091.7 (22.580)	19,583.9 (29.301)	11,791.7 (17.643)	4,492.2 (6.721)	3,300.0 (4.938)	7,792.3 (11.659)	129,744.4 (194.123)
2049	15,647.1 (22.605)	20,480.5 (29.588)	12,236.1 (17.677)	4,833.4 (6.983)	3,411.0 (4.928)	8,244.4 (11.911)	137,988.7 (199.351)
2050	16,219.7 (22.628)	21,419.6 (29.883)	12,701.9 (17.721)	5,200.0 (7.255)	3,517.8 (4.908)	8,717.7 (12.162)	146,706.6 (204.672)
2051	16,817.9 (22.663)	22,412.6 (30.202)	13,190.5 (17.775)	5,594.7 (7.539)	3,627.5 (4.888)	9,222.2 (12.427)	155,928.3 (210.123)
2052	17,443.5 (22.708)	23,467.1 (30.550)	13,703.8 (17.840)	6,023.6 (7.842)	3,739.8 (4.868)	9,763.4 (12.710)	165,691.8 (215.700)
2053	18,068.9 (22.726)	24,551.5 (30.880)	14,224.9 (17.891)	6,482.5 (8.153)	3,844.1 (4.835)	10,326.6 (12.988)	176,018.9 (221.388)

*The table reports values in billions of dollars and (percent of GDP).