

The COVID Pandemic and the Federal Budget

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ABSTRACT

The COVID-19 pandemic and the associated policy responses generated large federal budget deficits in recent years. The good news is that these factors are expected to have mainly short-term effects on the long-term federal budget outlook. The bad news is that – as the pandemic recedes, the associated policies expire, and the economy transitions to a more normal state of affairs – the government inherits a much larger national debt than was projected before the pandemic, and other fiscal parameters return more or less to their pre-COVID trajectories, which already were and still are unsustainable and will eventually require federal action. How quickly those actions are needed will depend on many factors, including the path of interest rates.

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I. Introduction

The COVID-19 pandemic and the associated policy responses generated large federal budget deficits in recent years. In light of those events and the most recent Congressional Budget Office projections (CBO 2022a, c), we offer new perspectives on the medium- and long-term fiscal outlook.

The good news is that the pandemic and the massive fiscal policy responses are expected to have mainly short-term effects on the federal budget. The bad news is that – as the pandemic recedes, the associated policies expire, and the economy transitions to a more normal state of affairs – the government inherits a much larger national debt than was projected before the pandemic, and other fiscal parameters return more or less to their pre-COVID trajectories, which already were and still are unsustainable.

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 relative to GDP due to higher 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 the debt-to-GDP ratio, net interest as a share of GDP, and cyclically-adjusted budget deficits will rise gradually and reach all-time highs. Debt will rise from 98% of GDP currently to 110% by 2032. Net interest payments will double relative to GDP – from 1.6% currently to 3.3% in 2032. We estimate that cyclically-adjusted deficits will rise to around 6% by the end of the decade and continue to grow thereafter.

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 2042, setting off the possibility of explosive debt dynamics. By 2052, relative to GDP, net interest exceeds 7%, the unified deficit exceeds 11% and the public debt stands at 185%. All these figures would be all-time highs by a large margin and would continue to grow after 2052.

Budget outcomes would be even worse under “current policy” projections that model more realistic policy choices than those required by the baseline calculations. Allowing minor adjustments to discretionary spending to maintain current services and making several temporary tax provisions – such as those in the Tax Cut and Jobs Act of 2017 – permanent would drive the debt-to-GDP ratio to 232% by 2052.

Fiscal gap calculations indicate that to keep the debt-to-GDP ratio at its current level (98%) in 2052 would require a combination of permanent spending cuts or tax increases equaling 2.87% of GDP (roughly \$700 billion in today’s economy) if implemented starting in 2023 and 3.38% of GDP if action is delayed until 2028. Likewise, to keep 2052 net interest payments equal to their previous highest share of GDP – 3.2% (in 1991) – would require policy changes equal to 3.37% of GDP if implemented in 2023.

Furman and Summers (2020) propose, as a fiscal target, that real net interest payments should not exceed 2% of GDP. To reach that target in 2052 would require fiscal retrenchment equal to 1.13% of GDP if implemented starting in 2023. Furman and Summers also suggest 150% as a reasonable long-term target for the ratio of debt-to-GDP. Reaching that goal by 2052 would require immediate and permanent fiscal retrenchment equal 1.16% of GDP.

Perhaps surprisingly, the current long-term projections are actually slightly more optimistic now than in the pre-COVID baseline. Under current law, the 2050 debt-to-GDP ratio

fell from 180% in the pre-COVID projections to 175% in the most recent projections. In both baselines, of course, the debt-to-GDP ratio would continue rising thereafter. The recent long-term projections are lower, despite the recent massive deficits, because the COVID-related policies are largely temporary and because actual values and projections of the average real and nominal interest rates on government debt for the next five years fell dramatically during the pandemic, offsetting the higher initial debt-GDP ratio.

Long-term budget projections, of course, are sensitive to parameter choices, and in particular are sensitive to interest rate projections. But it would take enormous favorable variation from baseline parameters to put fiscal policy on a sustainable course.

We discuss several aspects of these results, – including how the current episode compares to past debt changes; the role of historically low interest rates and recent Federal Reserve Board policies; and different views about how concerning the current situation should be. Because of the macro-stabilization effects of fiscal tightening, and because low interest rates create “breathing room” for fiscal policy, we do not see the large, short-run debt accumulation resulting from the current pandemic as necessitating any immediate offsetting response, under current projections. But the long-term projections show that significant fiscal imbalances remain and will eventually require attention.

Section II describes the construction of three different baselines – a pre-COVID measure of current law; a 2022 measure of current law; and a 2022 measure of current policy. Section III summarizes how projections for gross domestic product (GDP), interest rates, and inflation have changed since the beginning of the pandemic. Section IV examines the 10- and 30-year current-law budget projections as of July 2022 and compares them to the pre-COVID 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 discusses a variety of perspectives and interpretations on the budget outlook. Section IX concludes.

II. Constructing Budget Baselines

A. Ten-year outlook

To provide perspective on both the current budget outlook and how it was affected by the COVID pandemic, we examine three baselines.¹ The “pre-COVID” baseline is based entirely on current law projections that the Congressional Budget Office (CBO 2020a) made in January 2020, pre-dating any consideration of the impact of COVID on the economy.

The “current law” baseline is embodied in the CBO’s most recent (May 2022) 10-year budget projection (CBO 2022a). 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

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 “current policy” – clearly requires judgment calls to project the consequences of Congress following a “business as usual” approach. Our current policy

¹ Appendix Tables 1, 2, and 3 provide details on the key budgetary aggregates – in 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 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.

projections start with the May 2022 current law projections and make a series of adjustments (based 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 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.

Specifically, we assume that, as it has done in the past, Congress makes temporary tax-cut provisions permanent, including the temporary provisions in the 2017 Tax Cuts and Jobs Act.³ We allow real non-defense discretionary spending to rise with population growth, rather than remaining constant over time, as CBO assumes in its current law baseline, 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.⁴ We assume all provisions of COVID-era legislation are implemented and then allowed to expire as scheduled. We use CBO’s estimates of the added net interest payments

³ CBO 2022a, Tables 5-2 and 5-3. Examples of major expiring provisions in the 2017 tax act include “100 percent bonus depreciation” (expensing of business investment in qualifying equipment), the marginal individual rate cuts, the increased standard deduction, the repeal of personal exemptions, the increased estate and gift tax exemption, the cap on state and local tax deductions, and the 20 percent deduction for certain pass-through income. Examples of expiring provisions outside of the 2017 tax act include tax credits for biodiesel and alternative fuel mixtures and the deduction for mortgage insurance premiums. Table 5-3 provides estimates for changes in revenue and net interest payments if other expiring tax provisions were extended.

⁴ The 10-year current-law projections for discretionary spending are uncertain because the law does not specify appropriations over the whole period. Thus, one might argue that not all non-defense discretionary spending requires a population adjustment, implying that our projections are too high. On the other hand, defense spending depends not just on maintaining current services but also responding to the actions of our political adversaries, and so our projections may be too low given the current international environment. There is no way to know for sure, so we follow rules-of-thumb that are both plausible and easy to understand.

associated with the spending and revenue adjustments.⁵

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. Data for the pre-COVID long-term baseline is taken from CBO (2020a). The long-term “current law” projections use data from CBO (2022a, c) for GDP, revenues, and outlays for social security, health-related programs, other programs, and net interest.

For the long-term “current policy” projections, we adjust “other” mandatory spending (mandatory spending not including Social Security and health-related programs), discretionary spending, revenues, and net interest for the period 2032-2052. We hold other mandatory spending constant at its 2032 share of GDP in the current policy scenario (which is the same as it is under the current law scenario). We hold discretionary spending constant at its 2032 share of GDP in the current policy scenario. For revenues, we use the 2032 value under the current policy scenario and have it grow at the same rate as revenues in the current law baseline. These changes, and the current policy adjustments during the first 10 years, cause primary deficits to differ from the current law baseline. To calculate the change in net interest payments for 2032-2052, 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.

⁵ To calculate the change in net interest payments due to the changes in taxes and spending, we use data reported in CBO (2022a, Table 5-2, 5-3) for the tax policy adjustments and multiply the estimates in CBO (2022a, Table 5-1) by the ratio of our spending adjustment – allowing non-defense discretionary spending to remain constant in real, per-capita terms – to CBO’s spending adjustment – allowing all discretionary spending to remain constant as a share of nominal GDP.

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

Despite the recent gyrations in the size and structure of the economy, Figure 1 shows that real GDP is projected to be almost exactly the same in the medium-term (5-10 year) projections in the current law baseline and in the pre-COVID baseline. In contrast, Figure 2 shows that the projection of interest rates on government debt over the next five years dropped considerably in the current law projections relative to the pre-COVID baseline.

Over the longer-term, one of the key assumptions has to do with the relationship between the average nominal interest rates and the nominal economic growth rate. Figures 3 and 4 show that, in both baselines, the average nominal interest rate is projected to rise gradually, to remain below the nominal growth rate for about 20 years, and then to exceed the growth rate at the end of the budget period. These economic projections help drive the budget outcomes discussed below.

IV. Comparing Current Law Baselines: Pre-COVID and 2022

Non-interest spending spiked in 2020 and 2021, mostly due to legislation, and has since fallen significantly relative to GDP (Figure 5). By 2026, non-interest spending under the current law baseline will be about the same as under the pre-COVID baseline. After that, non-interest spending gradually rises by 2.6 (2.8)% of GDP through 2050 under current law (the pre-COVID baseline). More than 100% of the increase in non-interest spending relative to GDP is due to rising outlays for health care (Medicare, Medicaid, CHIPS, and exchange subsidies) and, to a lesser extent, Social Security.

Relative to the pre-COVID baseline, actual revenues in 2020 were similar and those in 2021 were actually higher as a share of GDP, and projected current-law revenues in 2022 are substantially higher (Figure 6). Current-law revenue remains above, but falls to close to, pre-COVID baseline shares of GDP by the middle of the decade. Thereafter, revenues are projected to rise slowly, reaching 19.0% of GDP in 2050 under current law compared to 18.6% under the pre-COVID baseline.

In both baselines, non-interest spending rises faster than revenues. Under current law, for example, projected revenues rise by less than 1% of GDP from 2032 to 2052, while non-interest spending rises by 2.6% of GDP. As a result, the primary deficit rises under both scenarios, though by less under current law. Under current law, the primary deficit rises gradually from 2.1% of GDP in 2023 to 3.0% in 2032 to 3.9% in 2050 (Figure 7). Under the pre-COVID baseline, the corresponding figures are 2.6, 3.2, and 4.6, respectively. Thus, while the current law path of primary deficits is unprecedented in its persistence, it is actually less adverse than projected under the pre-COVID baseline.

Large, permanent, and gradually rising projected primary deficits are accompanied by exponentially rising net interest payments. While net interest payments are currently relatively low, they rise by more than 50% as a share of the economy in just five years under the current law baseline (from 1.6% of GDP in 2022 to 2.5% in 2027) and then grow rapidly to 3.2% of GDP in 2032, 6.7% in 2050, and 7.2% in 2052 (Figure 8). Despite this remarkable growth, the current law baseline projects lower interest payments relative to the economy in 2050 than the pre-COVID baseline did. Both baselines, however, project interest payments far in excess of the peak historical level of 3.2% of GDP in 1991.

The unified deficit, combining the effects of primary deficits and interest payments,

reached 15% of GDP in 2020 – more than 10% of GDP larger than was predicted in the pre-COVID baseline, and much higher than even the peak deficit in the Great Recession – about 10% of GDP (Figure 9). The effect is temporary, though. After declining rapidly over the last year or two, unified deficits return to roughly their pre-COVID projected share of GDP in the next few years. After that, unified deficits rise gradually from 4.7% of GDP in 2025, to 6.5% in 2032, 10.6% in 2050, and 11.1% in 2052 under current law. As with the primary deficit, these figures are unprecedented but are not as extreme as those in the pre-COVID baseline.

From the pre-COVID baseline (January 2020) to May 2022, the deficit for the years 2022 to 2030 rose by \$0.36 trillion, which was driven by legislative changes. Excluding net interest, legislative changes added \$2.79 trillion to the projected deficit. The effects of macroeconomic changes decreased the deficit by \$1.8 trillion, while technical changes decreased the deficit by \$1.3 trillion more. Net interest payments are projected to be lower by \$0.7 trillion because of sharply lower projected interest rates.⁶

Figure 10 shows projections of the public debt as a share of GDP. Before the pandemic, the US already had historically high debt as a share of GDP – the highest since just after the end of World War II. Under the pre-COVID baseline, the stock of outstanding public debt would have been 84% of GDP at the end of fiscal year 2022 and 103% by the end of fiscal year 2032. Now, analogous current law projections are 98% and 110%, respectively. After 2030, rates of debt accumulation pick up, because of rising primary deficits and rising interest payments. By 2050, the debt rises to 175% of GDP under current law compared to 180% in the pre-COVID baseline. Thus, the COVID pandemic and the associated fiscal policies had a substantial impact on short-term budget outcomes but over longer periods, the effects largely disappear, both

⁶ We calculate these changes using data from the March 2020, September 2020, February 2021, July 2021, and May 2022 10-year projections (CBO 2020c, 2020d, 2021a, 2021b, 2022a).

because the policies were temporary and because the pandemic and monetary policies reduced interest rates for a significant period of time.

V. Current Law Versus Current Policy

While comparing the pre-COVID baseline to current law shows the impact of the pandemic and associated policies and economic developments, comparing the current law baseline to 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. Under current policy, the 2052 debt-to-GDP ratio would be 232% compared to 185% under current law (Figure 10). By 2052, revenues would be just 17.8% of GDP, compared to 19.1% under current law (Figure 6); the primary deficit would rise to 5.9% of GDP and interest payments would rise to 9.0% of GDP, compared to 3.9 and 7.2%, respectively, under current law (Figures 7 and 8). 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.⁷

VI. Extensions and Sensitivity Analysis

⁷ CBO (2022c) provides three “current policy” scenarios. The first, in which discretionary spending remains at its 2022 share of GDP (7.0%) for the next 30 years, would result in a debt/GDP ratio of 218 percent in 2052. The second scenario builds on the first by assuming that revenues follow current law until 2026 and are held constant at their 2026 share of GDP (18.0 percent) thereafter, which would generate a 2052 debt-to-GDP ratio of 233 percent. In the third scenario, discretionary spending is the same as in the first. Tax revenue follows current law through 2025 and is set at its long-term average share of GDP (17.3 percent) in subsequent years. The debt-GDP ratio would be 262 percent in 2052.

A. Cyclically Adjusted Deficits

Figure 11 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 (2020b), we show historical and projected future cyclically-adjusted deficits in Figure 12.⁸ The figure clearly shows that the projected cyclically-adjusted deficits would be extremely high and extremely persistent relative to prior values outside the Great Recession and the COVID pandemic.

B. Variation in Economic Parameters

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

As CBO (2022b) reports, if annual productivity growth rates were higher (lower) than projected by 0.5 percentage points for each of the next 10 years, the debt-to-GDP ratio would fall (rise) by 10 (11)% of GDP by 2031 under current law. If labor force growth rates were 0.75 percentage points higher (lower) than predicted over the next 10 years, the debt-to-GDP ratio would be higher (lower) by 8 (8)% of GDP by 2031 under current law. If interest rates were 1

⁸CBO (2020b) 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 1965-2019. For 2020-2032 we use CBO (2022a) data on actual GDP in 2020 and 2021, projected GDP for 2022-2032 and estimates of potential GDP for 2020-2032. 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.

percentage point higher (lower) than predicted over the next 10 years, the debt-to-GDP ratio would be higher (lower) by 8 (8)% of GDP by 2031 under current law. If inflation were higher (lower) by 1 percentage point, debt-to-GDP would fall (rise) by 11 (13)% of GDP by 2031 under current law. If both interest rates and inflation were higher by 1 percentage point, debt-to-GDP would fall by 4% of GDP by 2031 under current law.

CBO (2002c) reports that if total factor productivity in the non-farm business sector was 0.5 percentage points higher (lower) than in the baseline, federal debt held by the public would be 140 (234) percent of GDP in 2052, compared to the 185 percent of GDP projected under the Long-Term Baseline. If the average nominal government interest rate is boosted by a differential starting at 5 basis points in 2022 and increases by 5 basis points each year (before macroeconomic responses), publicly held debt increases by 50 percentage points to 235 percent of GDP from 185 percent of GDP. On the other hand, if the average nominal government interest rate is decreased by the same differential as above, publicly held debt decreases by 38 percentage points to 147 percent of GDP from 185 percent of GDP.

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 2052 at the 2023 level projected in the May 2022 baseline. In that scenario, debt rises to 134% of GDP by 2052 and net interest payments rise to 2.3% of GDP. These figures are substantially lower than the 185% debt-to-GDP ratio and 7.0% 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. We note that, unlike the analysis in CBO (2022c), our alternative baseline does not incorporate macroeconomic feedback. Given that the Fed raised interest rates by 75 basis points in June, the assumption underlying this

scenario is, in our view, extremely unlikely to occur.

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 have to make forced adjustments by 2033 according to both the Social Security trustees and the CBO. The Disability Insurance Trust Fund is scheduled to have to make forced adjustments by 2057 according to the Social Security trustees (CBO did not release an insolvency date).⁹

According to the CBO, the Medicare Part A (Hospital Insurance) Trust Fund appears likely to hit a similar constraint by 2030 (2028 according to the Medicare Trustees). Each of those dates may prompt at least limited fiscal action. In each case, legislators will be forced to override the rules regarding trust funds, make interfund transfers, reduce benefits, or raise taxes.

⁹ The combined Old-Age, Survivors, and Disability Insurance program is scheduled to have to make forced adjustments by 2035 according to the Social Security Trustees.

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.¹⁰ The fiscal gap answers the question: if one starts a policy 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 2052.¹¹ Or, one might ask what constant share-of-GDP change would be required, starting with a delay, say in 2025, or to achieve a net interest-to-GDP ratio of 2% by 2052.

Results are presented in Table 1. We begin with current law projections and policy actions taken beginning in 2023. Under those circumstances, obtaining a debt-to-GDP ratio in 2052 equal its 2022 level of 98% would (ignoring any macroeconomic feedback effects) require permanent tax increases or non-interest spending cuts equaling 2.85% of GDP.

¹⁰ Auerbach (1994). Auerbach et al. (2003) discuss the relationship between the fiscal gap, generational accounting, 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.

¹¹ Implementing the adjustments indicated by the fiscal gap does not stabilize debt after the target year—say 2050; it only adjusts tax and spending trajectories so that the debt hits a target by 2050. 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.

This would equal about \$700 billion in today's economy and would be the equivalent to a sustained tax increase equal to about 53% of current income tax revenues, or a 14% increase in all current tax revenues, or a 13% reduction in current non-interest spending.

Policy makers could choose a net-interest-to-GDP target instead of a debt target. To hold 2050 interest payments equal to 3.2% of GDP – the historical maximum for this ratio, obtained in 1991 – would require policy changes equal to about 3.37% of GDP starting in 2023 under 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 2052 would require fiscal retrenchment of 1.13% 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 2052 would require spending cuts or tax increases equal to 1.16% of GDP.

As Table 1 shows, all of 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.

VIII. Discussion¹²

A. Historical Perspectives

How did we get here? 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.

¹² This section is based in part on Auerbach, Gale, Krupkin (2019), Auerbach, Gale, Lutz, and Sheiner (2020), and Gale (2019a, 2019b).

Starting in 1981, Ronald Reagan's tax cuts and defense spending increases raised debt during peacetime prosperity. A series of largely bipartisan 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, tax cuts and spending increases under Presidents George W. Bush and Donald Trump raised deficits. The Great Recession and the associated temporary stimulus under Barack Obama boosted debt further, and the pandemic and associated fiscal responses caused debt to rise again. The debt-to-GDP ratio rose from 39% in 2008 to 70 by 2012 and from 79% in 2019 to 100% in 2021.

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 debt 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 only 38% as large as today just 14 years ago). During the last several 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.

In many ways, we are in uncharted territory now. We have never had to address the projected permanent imbalances between 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 28% 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 2052 despite low (but rising) interest rates, and there is nothing in the projections to suggest that the growth of primary deficits or interest rates will slow after 2052.

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 2019, the last pre-pandemic fiscal year, federal spending on defense was just 3.2% of GDP, while spending on the three major entitlement programs accounted for 10.5% of GDP and over 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. As a share of GDP, federal revenues equaled 16% in 2020. If TCJA and other temporary provisions are extended in the usual manner, revenues are projected to average just 17.4% over the 2022-2052 period, very much in line with the past. In the fifty years prior to 2020, revenues averaged 17.3% of GDP and reached a high of 20.0% of GDP in 2000.

B. The role of interest rates and monetary policy

Future interest rates are a key determinant of the fiscal outlook. Lower rates unambiguously improve the federal government's overall fiscal stance – because it is a net borrower. Mankiw (2022) and Reinhart (2022) provide recent explanations of why interest rates have remained so low for so long. Low interest rates also undermine claims that current debt levels will cause a financial crisis. More generally, low rates reduce the fiscal cost of debt accumulation. 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 government programs, particularly investments.

But there are three caveats. First, we can certainly borrow more and consume more with low interest rates and not hurt future generations (who can in turn borrow more from later generations). But the optimality of this pattern may fall apart if interest rates subsequently rise, resulting in higher interest rates on higher levels of debt (Ball, Elmendorf, and Mankiw (1998)) particularly if this rise in interest rates is not accompanied by a sufficiently large increase in the

rate of productivity growth. If the increase in interest rates is in response to higher productivity, the effect on debt sustainability is unclear (Sheiner 2018).

Second, lower interest rates will 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.

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 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.

The path of interest rates will also depend in part on monetary policy. But the relevance of the Fed to the fiscal picture goes well beyond its role in the determination of interest rates. Most immediately, the Fed's current attempts to control inflation could push the economy into recession, which would worsen shorten budget outcomes.

In addition, since the Great Recession, the Fed has sharply expanded its balance sheet since the onset of the pandemic, acquiring large quantities of the new government debt being issued. Brooks and Pingle (2022) report that the Fed purchased \$2.7 trillion of Treasury debt

during the first year of the pandemic (56% of all issuances). They estimate that the more than \$3.3 trillion in U.S. Treasury debt that the Fed eventually purchased during the pandemic reduced rates by at least 70 basis points. Of course, the Fed's recent moves to begin unloading its portfolio will create pressure for higher interest rates, which would affect future outcomes.

The Fed has also taken on the debts of companies and state and local governments, through facilities created under its emergency lending authority. Some have argued that these facilities, which were utilized in response to the financial crisis and expanded in scope in the current situation, signify a growing role of the Fed in conducting fiscal policy (e.g., Plosser 2012, Warsh 2020). Alternatively, however, the facilities can be viewed as an extension of the Fed's traditional lender of last resort role which reflect the relative shift in financial activity since the Fed's creation away from bank loans toward securities traded in capital markets (Labonte 2021). Moreover, the facilities can only address temporary interruptions to liquidity via loans. Addressing solvency issues, which requires fiscal spending authority, has been left to Congress and the Administration (Powell 2020).

Nonetheless, the previously sharp lines between monetary policy, fiscal policy, and debt management policy have arguably blurred somewhat in recent years (Greenwood, Hanson, Rudolph, and Summers 2014). With the Federal Reserve's adoption of paying interest on reserves held by banks, bank balance sheets have become functionally similar to Treasury bills. And there may be concerns over the extent to which the Treasury can use changes in the federal debt's maturity structure as a debt management tool while the Fed is pursuing its own policies to influence the term structure of interest rates. Finally, as the Fed's tool kit has expanded in recent years, so too may the pressure to use those tools to implement fiscal or debt management objectives (e.g., Plosser 2012, Warsh 2020).

C. How Concerning is the Situation?

1. Related problems

It is worth highlighting and distinguishing two distinct but related fiscal problems. The first, of course, is the overall fiscal outlook. If we don't rein in the debt, it will slowly but surely make it harder for the economy to grow and boost our living standards, and for the government to respond to wars or recessions, address social needs, and maintain our role as a global leader. Rising red ink is often described as a spending problem, but it isn't intrinsically a spending problem or a tax problem, any more than one side of the scissors does the cutting. It's the imbalance between the two that creates rising debt. To be realistic, addressing the debt challenge will require both slowing the spending trajectory and raising taxes.

In addition, however, how the government spends its revenues and collects its taxes matters. The nation has increasingly split into parts of a fractured society with groups separated by disparities in income, education, and opportunity. This growing divide is both inequitable and, to the extent that disparate outcomes reflect lost opportunities, inefficient. To make Americans more productive and expand opportunity, we need more public investment – in education, health, childcare, nutrition, public infrastructure, and scientific research. But public investments in these areas (other than health care) are slated to shrink as a share of the economy over time. And we need to improve the tax system to finance public investment, encourage growth, and distribute tax burdens fairly both within and across generations. The concern with rising debt would be lessened if the spending were being used for investment – for example, to combat climate change rather than largely financing current consumption – not just because of the additional federal revenues that such investments will generate in the future, but because of their contributions to intergenerational and intragenerational equity.

2. Are we headed for a crisis?

In recent decades, prominent economists and leading Wall Street figures of both political parties have expressed concern that America could experience a kind of “hard landing” or crisis, similar to what happened in Greece. Nevertheless, we doubt that we’ll see a sudden scenario in the United States in the foreseeable future, for several reasons. Current low interest rates indicate that markets are absorbing recent increases in government debt without fear of future capital flight or default. The United States undoubtedly has the resources to pay our debt for decades to come. We issue bonds in our own currency (as do Britain and Japan), giving us an important lever of control over our debt, and the dollar is the world’s reserve currency. The United States remains the world’s safest place to invest; even after the financial crisis that began here in 2007 and spread across the world, investors flooded U.S. markets in search of safe assets, helping to keep interest rates low.

To be sure, 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). An intentional default would be a big mistake. A financial crisis would turn out poorly, of course, and it would make the need to address the fiscal challenge even more compelling.

But focusing solely on the potential for a crisis is misleading, in two ways. First, it seems like an extremely remote possibility. Second, it implicitly suggests that the potential to cause a crisis is the reason we should care about debt. In contrast, a key point is that even if a crisis does not materialize, 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 plenty damaging.

3. But we owe it to ourselves

An extreme alternative to the “crisis” view is the argument that “we owe it to ourselves” so what is the problem? By this statement, people mean that public debt is money that one generation borrows and owes to another. How, they ask, can the nation become poorer by owing money to ourselves? The answer has two parts. First, the substantial historical evidence that persistent deficits reduce growth, national saving, and investment, and raise interest rates refers – at least in the US case – to debt that the country, indeed, largely owed to ourselves. Those deficits and debt affected economic performance, through the standard economic channels.

Second, future generations will have to finance that debt via higher taxes or lower spending, and those steps will cause pain, especially if we design the policies poorly. Third, to some extent, we don’t owe it to ourselves; we also owe it to investors around the world. At the end of 2021, foreign investors held 33% of all publicly held debt, an amount equal to 33% of our annual GDP (Labonte and Leubsdorf 2022). Those figures are substantially higher than in 1980, when foreign investors held about 18% of US public debt.

A related argument suggesting that our fiscal situation is not a problem is that we print and borrow in our own currency and so can never be forced to default. For instance, in 2011 Warren Buffet said, “the United States is not going to have a debt crisis as long as we keep issuing our debts in our own currency” (Wood, 2011). However, this does not mean that a fiscal crisis cannot happen; in 1976, the government of the United Kingdom, which borrows in its own currency, was forced to borrow \$3.9 billion from the International Monetary Fund when the pound rapidly fell in value (“Sterling devalued” nd).

The key issue is the costs and benefits of additional debt accumulation, not the limits of federal borrowing. In a recent University of Chicago survey of prominent economists, not one

agreed that a country that issues debt in its own currency does not have to worry about deficits (IGM Forum 2019). Even adherents to modern monetary theory, in post-survey comments, believed that a government that printed its own currency needed to be concerned with its level of debt (Mitchell 2019).

4. An Intermediate View

Between the “Chicken Little” view that the sky is falling and the Mad Magazine “What, Me Worry?” stance, lies an intermediate level of concern that emphasizes both economic and political aspects of the situation.

Optimistic Assumptions

First, the CBO projection shows rising debt-to-GDP ratios, permanent and rising ratios of primary-deficits-to-GDP and persistent, extremely high full-employment deficits. It is worth emphasizing that the projections above are based on relatively optimistic economic and policy assumptions. The economy grows steadily; interest rates stay below the economic growth rate for a long time; there are no unusual or deep recessions; defense spending grows only with inflation – there are no new wars; climate change does not have a disruptive impact on the economy; there are no new major spending initiatives; and domestic spending other than for Social Security and health care falls significantly relative to the size of the economy.

Future generations may not be better off than their parents

Besides its impact on overall macroeconomic performance, issuing debt shifts the burden of financing government to future generations (assuming the increase in debt is financing government consumption or transfer payments that will largely raise private consumption as opposed to investments that will pay dividends in the future). There is a natural tendency to think that future generations will be better off than we are, and therefore that pushing the debt forward

would simply be asking more affluent people than ourselves to bear the burden.

It is not clear, however, how much better off future generations will be relative to current generations. As Figure 13 shows, absolute income mobility has been declining over the last few decades. Among people born in 1940, more than 90% had higher real income as (young) adults than their parents did. Among those born in 1980, only slightly more than half had higher real income than their parents (Chetty et al., 2017). Chetty et al. (2017) estimate that most of this trend occurs, despite rising productivity, because of a widening distribution of income. If that pattern continues, many members of future generations will be worse off in absolute terms than their parents and thus will be less well-prepared to address a higher debt burden than earlier generations.

Political concerns

High and rising debt can affect political choices as well. In the face of fiscal pressures, policymakers will naturally be less willing to raise debt or deficits further and perhaps more willing to impose PAYGO requirements on new programs (Romer and Romer 2017). This makes it harder to enact new initiatives that respond to economic, social, military, or other needs. For example, countries with low debt-to-GDP ratios at the beginning of a financial crisis tended to have smaller declines in output than countries with higher debt loads because they were more willing to enact expansionary policies (Romer and Romer, 2019).

Other countries historically don't run up debt

Finally, apart from all the specific arguments, a broader view might be constructive. Although the interest rate on government debt has been less than the economic growth rate more often than not historically in the United States (Blanchard 2019a, 2019b) and in other countries (Mauro, Romeu, Binder, & Zaman 2015), it appears to be a long-standing convention that

governments do not voluntarily run up their debt. This would be odd if debt were costless, because, after all, politicians and citizens love lower taxes and the benefits of higher spending. Yet countries avoid high and rising debt-to-GDP ratios whenever they can. In 2007, for example, before the financial crisis raised debt levels everywhere, only two OECD countries (Greece and Italy) had general government net financial liabilities in excess of 75 percent of GDP and both of them had net financial liabilities below 90 percent of GDP (OECD 2022). Keeping a lid on debt may be simply an outdated, prudish norm that does not apply to the economic situation facing the United States today. Alternatively, there might be very good reasons for this behavior – the desire to maintain “fiscal space,” a concern that high debt reduces growth and imposes burdens on future generations, etc. – and therefore some wisdom embedded in those established government practices.

IX. Conclusion

The COVID pandemic and the associated policy responses to it had an enormous effect on short-term federal budget dynamics but the long-term effects appear to be likely to be quite small. Although spending policies were substantial, they were also temporary, and lower interest rates have helped ease the burden for a government with debt equal to almost 100% of GDP.

Although the long-term fiscal outlook has not been particularly damaged by the recent turn of 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.

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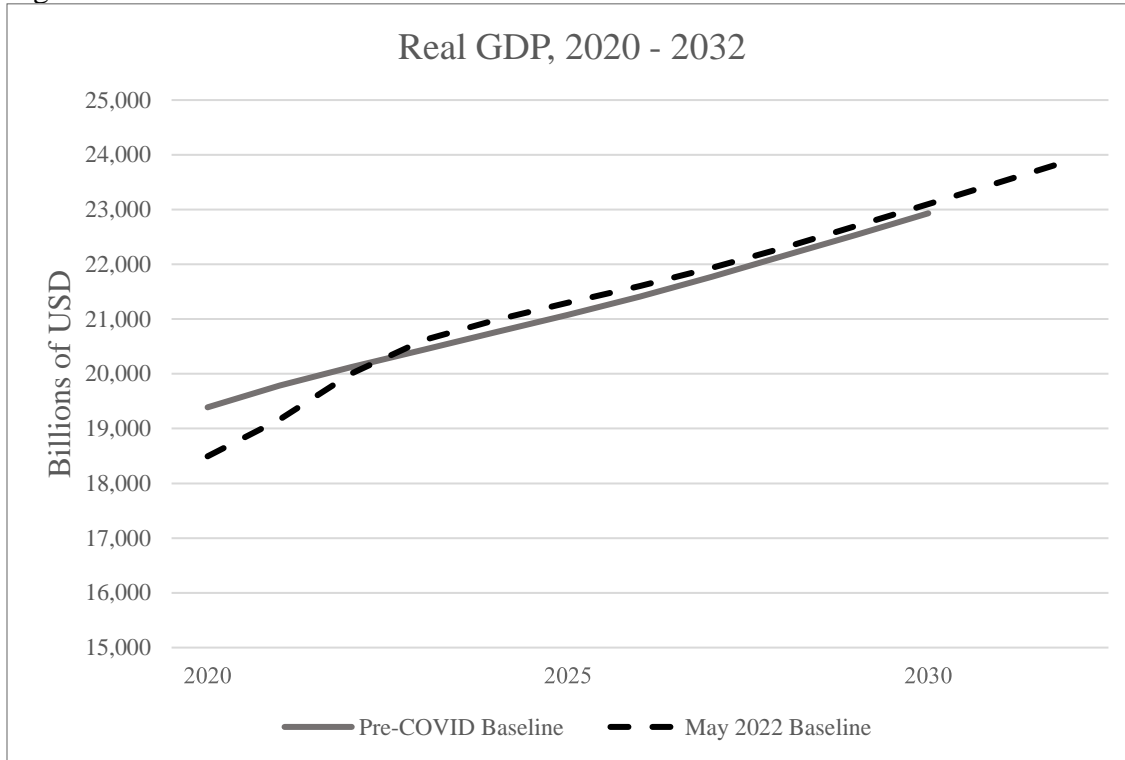
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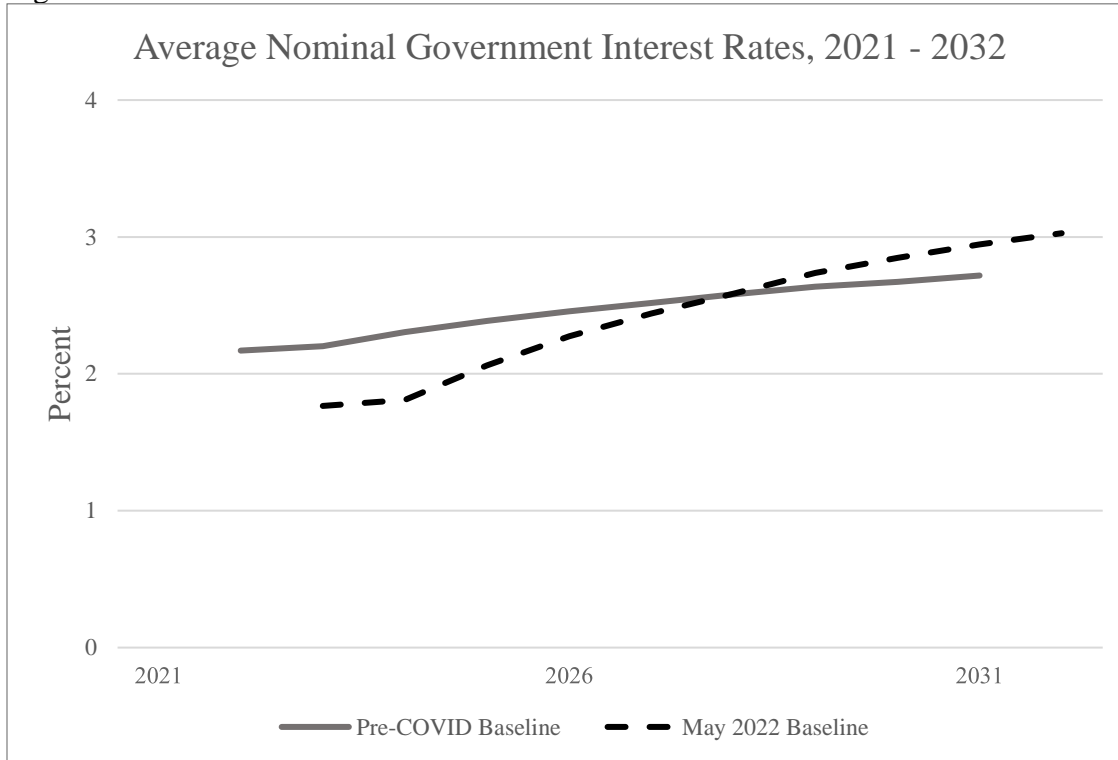
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Figure 1



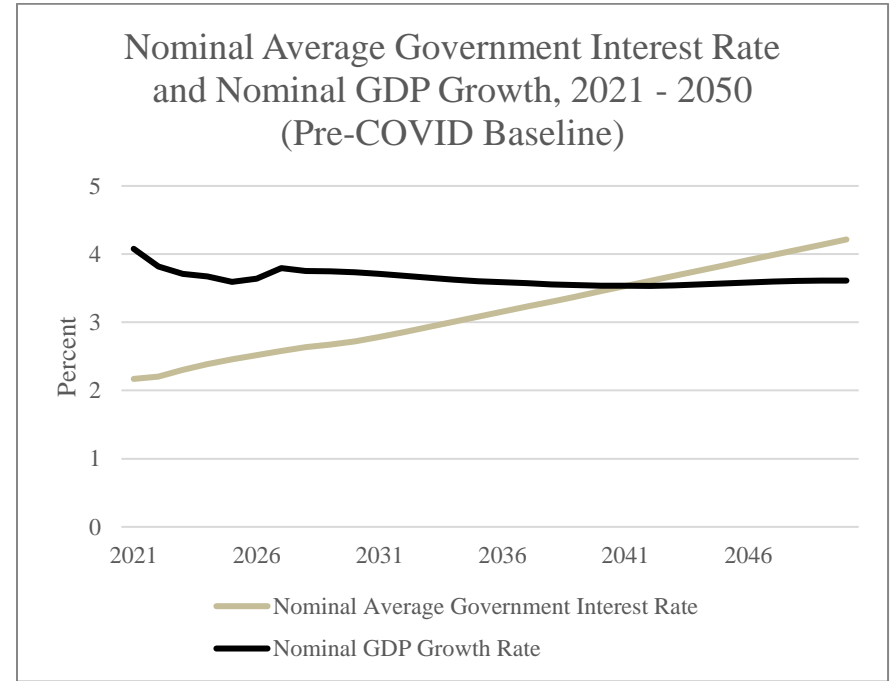
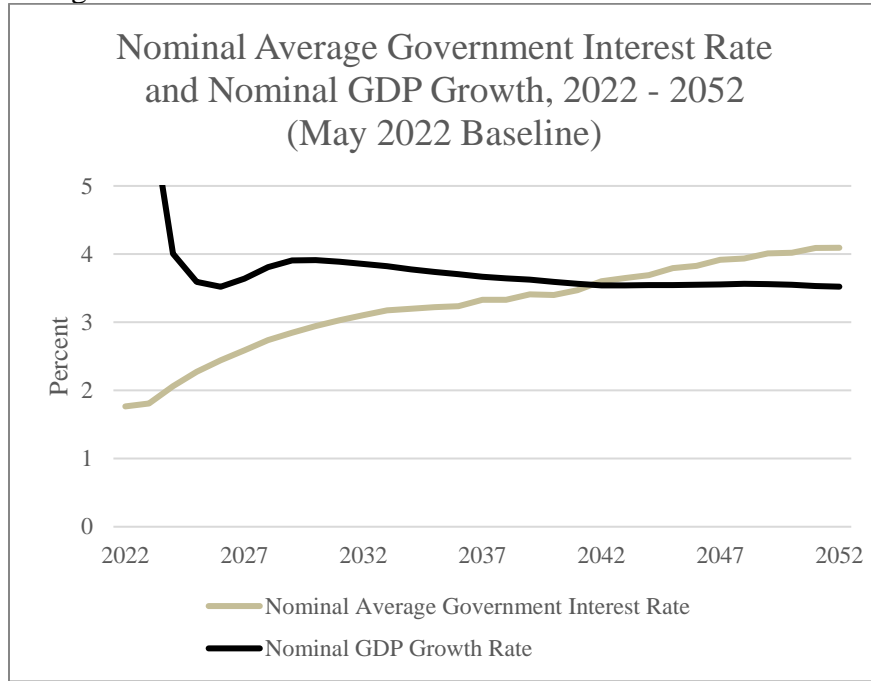
Source: CBO (2020a, 2022)

Figure 2



Source: CBO (2020a, 2022) and authors' calculations

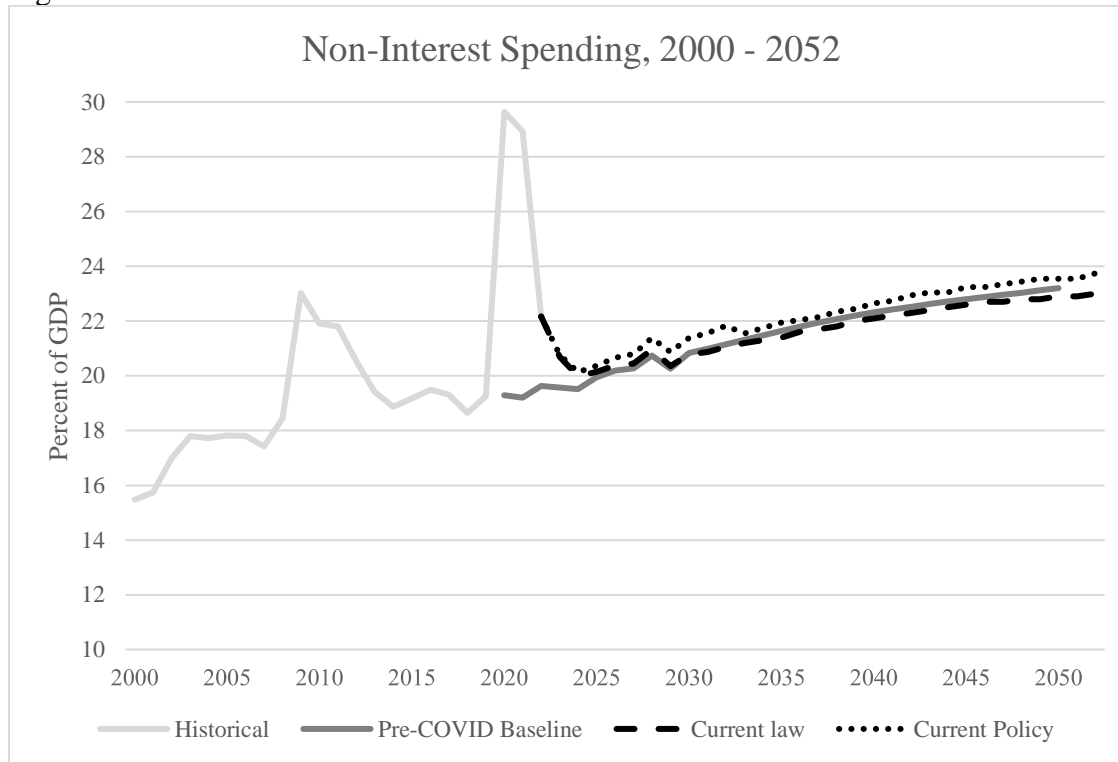
Figures 3 and 4*



Source: CBO (2020a, 2022) and authors' calculations

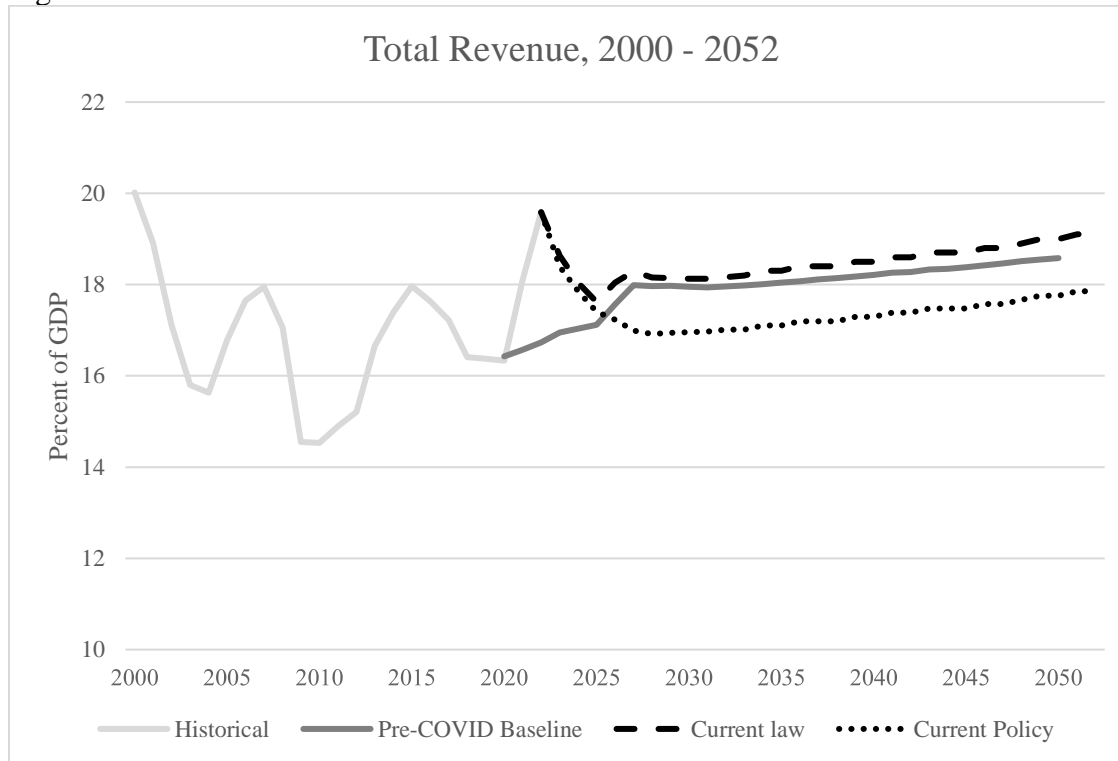
* Nominal interest rate on government debt is calculated as the ratio of net interest payments to the sum of (a) debt at the end of the prior year and (b) one-half of the primary deficit in the given year.

Figure 5



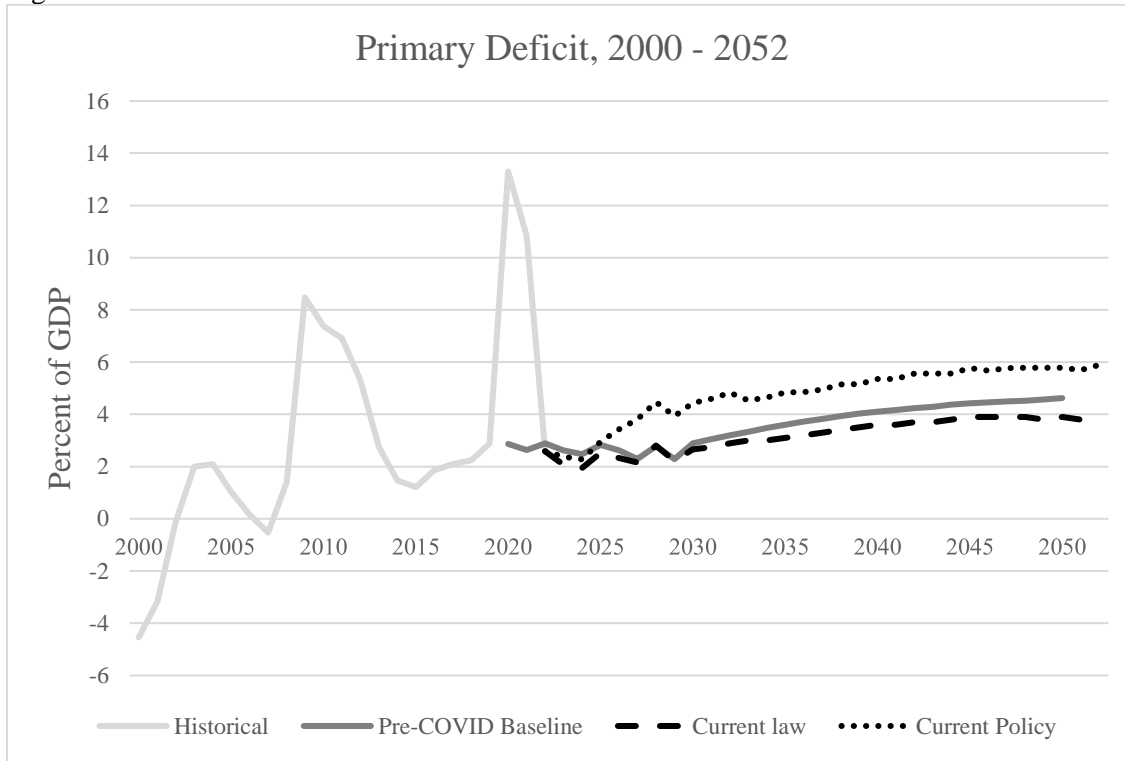
Source: CBO (2020a, 2022) and authors' calculations

Figure 6



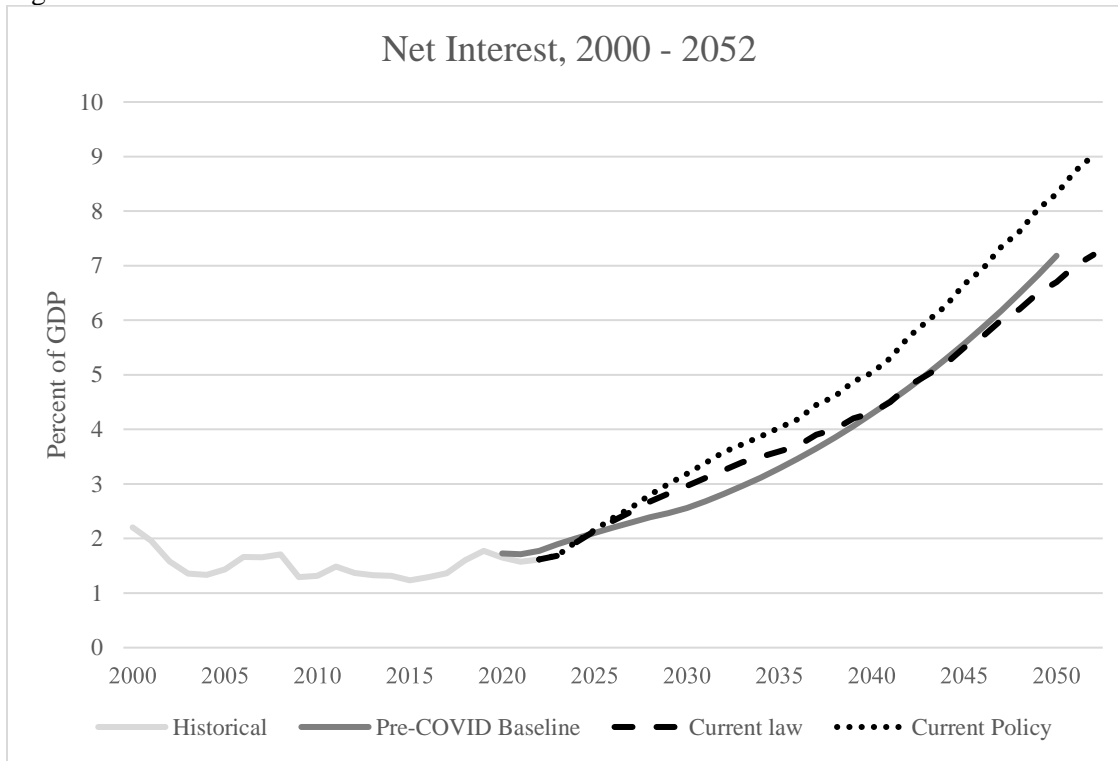
Source: CBO (2020a, 2022) and authors' calculations

Figure 7



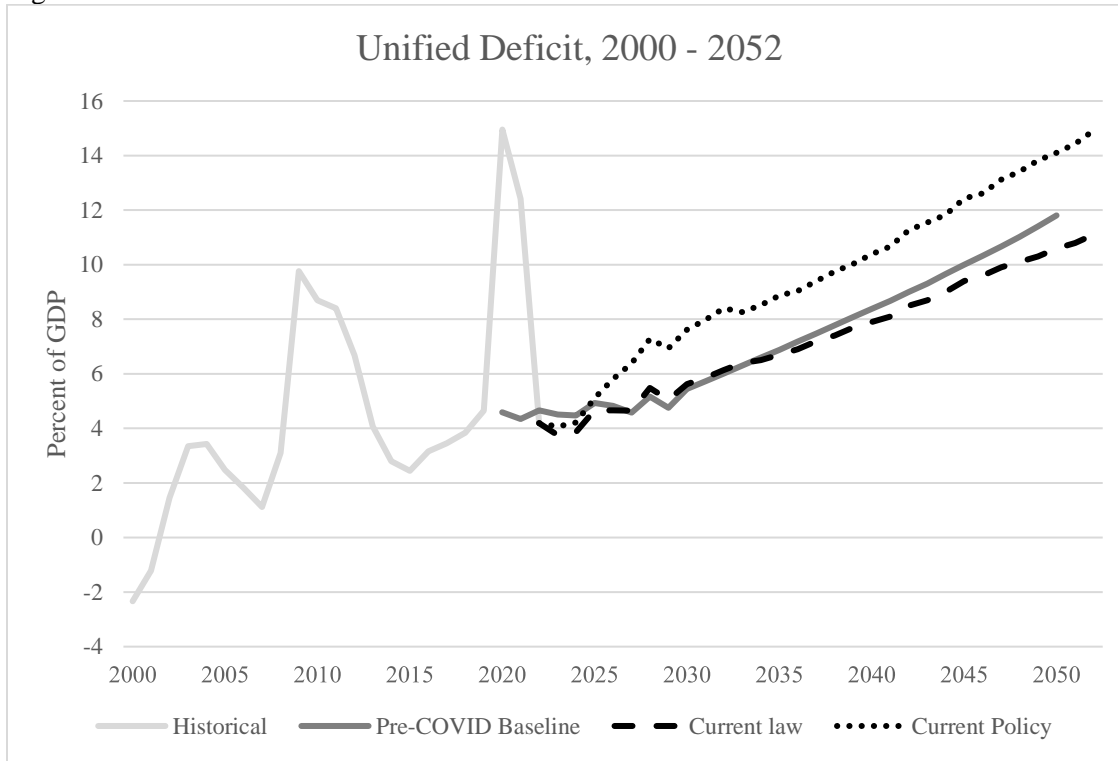
Source: CBO (2020, 2022a) and authors' calculations

Figure 8



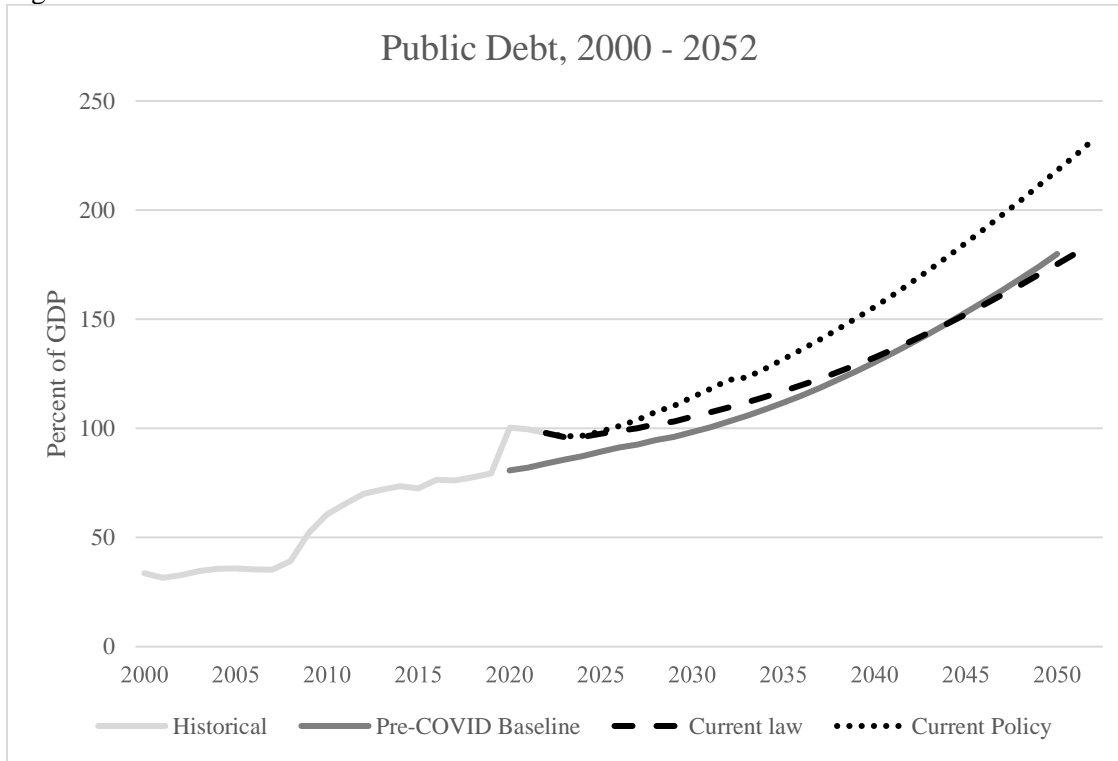
Source: CBO (2020, 2022) and authors' calculations

Figure 9



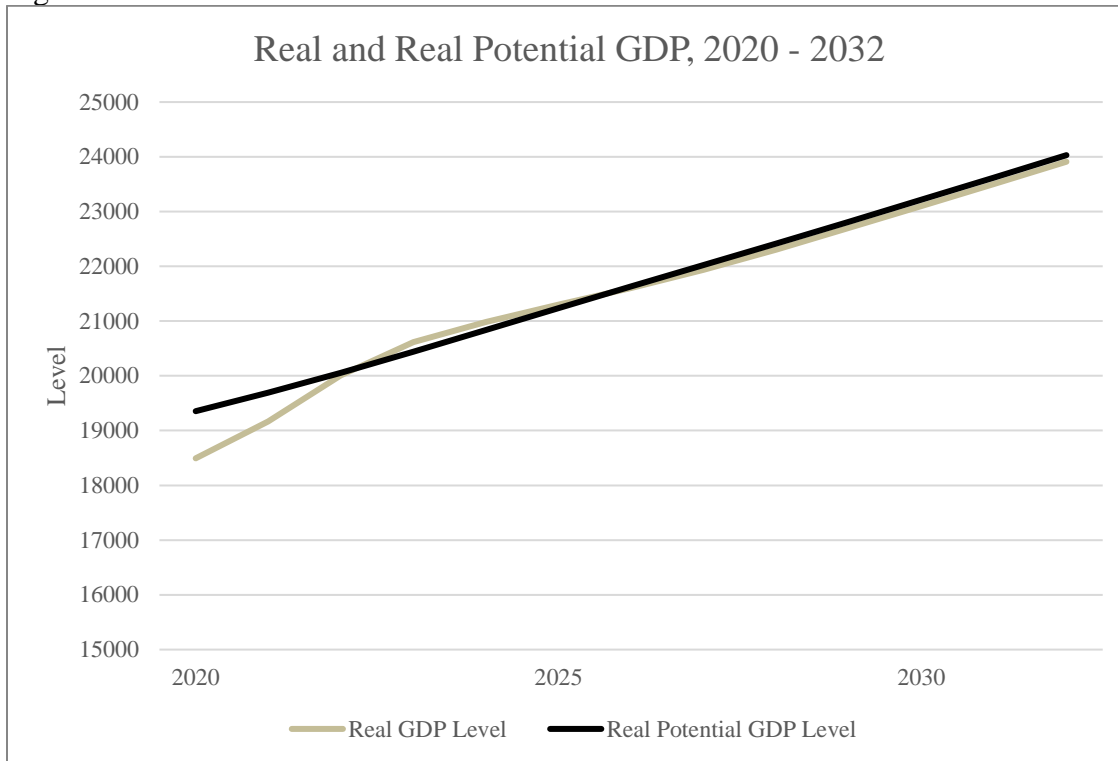
Source: CBO (2020a, 2022) and authors' calculations

Figure 10



Source: CBO (2020a, 2022) and authors' calculations

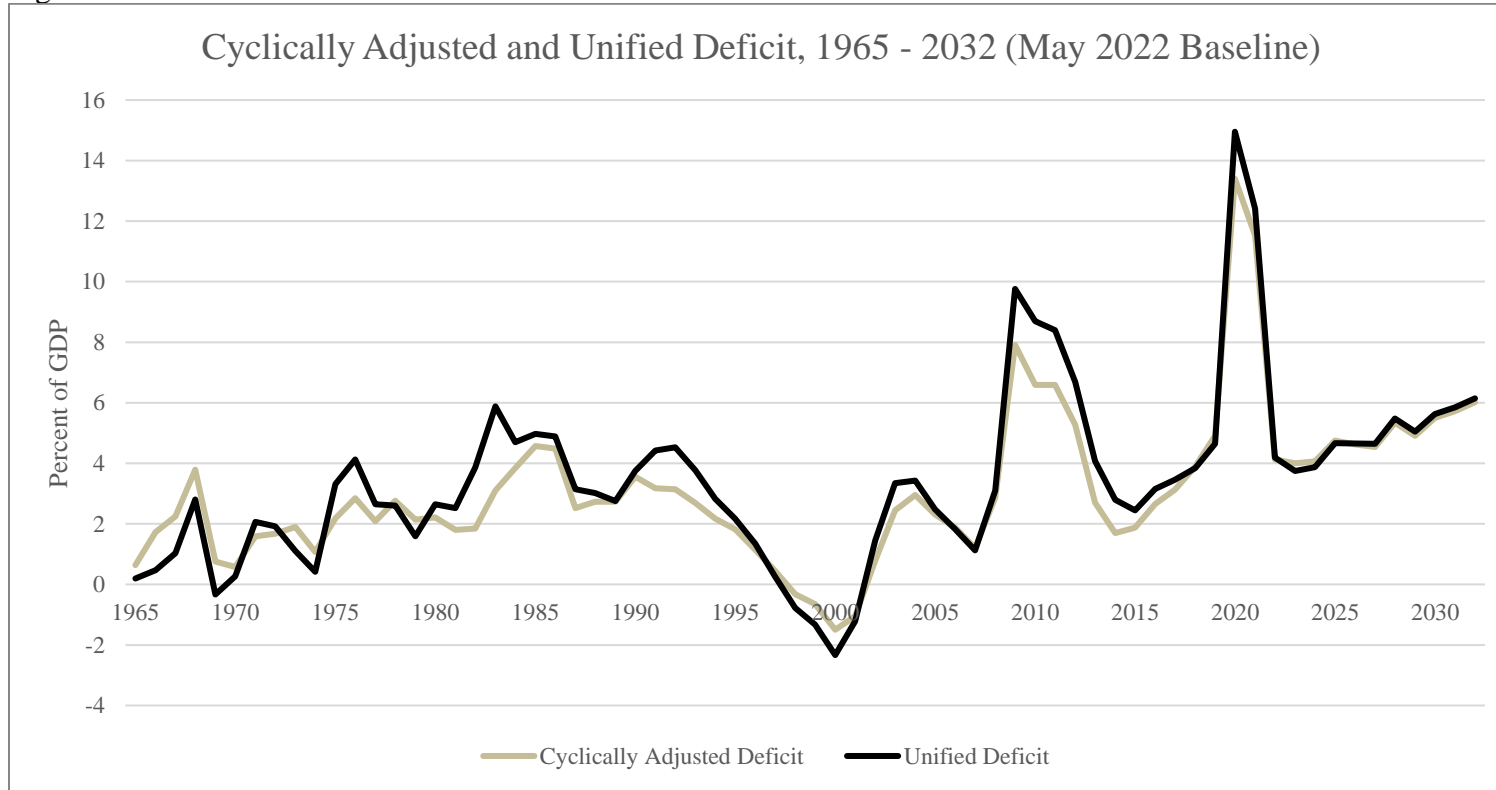
Figure 11*



Source: CBO (2020a, 2022)

* Historical data for 2020 and 2021 and projected data from the May 2022 baseline for 2022-2032.

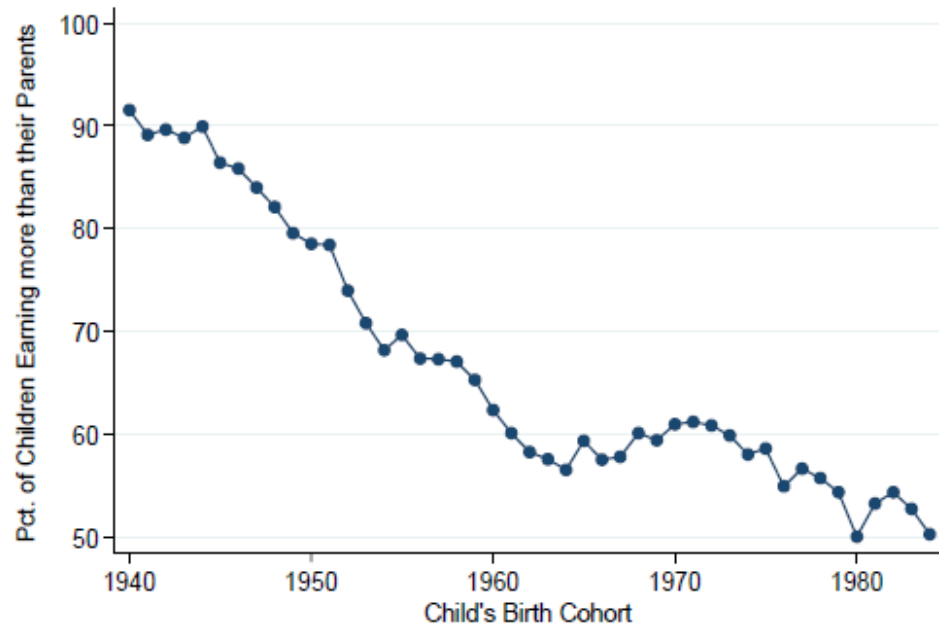
Figure 12*



Source: CBO (2020b, 2022) and authors' calculations

* CBO (2020b) reports the output gap and the size of automatic stabilizers (both variables as a share of GDP) for historical data from 1970-2019 and for projected data for 2020-2030. Regressing the size of automatic stabilizers on the output gap yields a coefficient of about 0.4, 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 (2022a) data on historical and projected GDP and potential GDP for 2020-2032, 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.

Figure 13
Mean Rate of Absolute Mobility by Cohort (Chetty et al. 2017)



Source: Chetty et al. (2017)

Table 1: Fiscal Gap

<i>Target</i>	<i>Current law beginning</i>		<i>Current policy beginning</i>	
	<i>2023</i>	<i>2028</i>	<i>2023</i>	<i>2028</i>
Debt = 98% of GDP	2.85	3.38	4.41	5.21
Debt = 150% of GDP	1.16	1.36	2.69	3.19
Net Interest = 3.2% of GDP	3.37	4.01	4.92	5.83
((Net Interest – (Inflation * Debt)) / GDP = 2%	1.13	1.35	2.65	3.16

Source: CBO (2022) and authors' calculations

Appendix Table 1: Pre-COVID Baseline*

Year	Non-Interest Spending	Total Spending	Total Revenue	Net Interest	Primary Deficit	Unified Deficit	Public Debt
2020	4,309.2 (19.289)	4,695.2 (21.017)	3,669.6 (16.426)	345.5 (1.729)	639.6 (2.863)	1,025.6 (4.591)	18,040.0 (80.752)
2021	4,464.7 (19.202)	4,862.9 (20.915)	3,852.7 (16.570)	398.1 (1.712)	612.0 (2.632)	1,010.0 (4.344)	19,067.9 (82.009)
2022	4,737.3 (19.625)	5,164.8 (21.396)	4,038.7 (16.731)	427.5 (1.771)	698.8 (2.895)	1,126.3 (4.666)	20,252.6 (83.900)
2023	4,899.1 (19.569)	5,373.3 (21.463)	4,243.9 (16.952)	474.2 (1.894)	655.2 (2.617)	1,129.3 (4.511)	21,441.5 (85.646)
2024	5,063.8 (19.510)	5,583.4 (21.512)	4,421.2 (17.034)	519.6 (2.002)	642.6 (2.476)	1,162.3 (4.478)	22,654.6 (87.284)
2025	5,363.3 (19.947)	5,929.1 (22.051)	4,602.7 (17.118)	565.7 (2.104)	760.7 (2.829)	1,326.4 (4.933)	24,037.9 (89.400)
2026	5,626.6 (20.191)	6,240.8 (22.395)	4,895.1 (17.566)	614.2 (2.204)	731.5 (2.625)	1,345.7 (4.829)	25,425.6 (91.239)
2027	5,864.1 (20.274)	6,528.4 (22.571)	5,202.8 (17.988)	664.4 (2.297)	661.2 (2.286)	1,325.6 (4.583)	26,796.4 (92.644)
2028	6,225.9 (20.746)	6,943.4 (23.137)	5,391.6 (17.966)	717.5 (2.391)	834.3 (2.780)	1,551.8 (5.171)	28,410.2 (94.669)
2029	6,308.0 (20.260)	7,076.4 (22.728)	5,596.5 (17.975)	768.4 (2.468)	711.4 (2.285)	1,479.8 (4.753)	29,941.3 (96.166)
2030	6,729.4 (20.836)	7,555.9 (23.395)	5,797.6 (17.951)	826.5 (2.559)	932.1 (2.886)	1,758.2 (5.444)	31,736.0 (98.263)
2031	7,030.6 (20.990)	7,928.3 (23.670)	6,009.0 (17.940)	897.7 (2.680)	1,021.6 (3.050)	1,919.3 (5.730)	33,683.9 (100.564)
2032	7,346.4 (21.154)	8,324.6 (23.971)	6,237.1 (17.960)	978.3 (2.817)	1,109.2 (3.194)	2,087.8 (6.012)	35,791.7 (103.063)

* The data show values in billions of nominal dollars (percent of GDP)

2033	7,671.3 (21.311)	8,738.3 (24.275)	6,471.2 (17.977)	1,066.6 (2.963)	1,200.5 (3.335)	2,267.1 (6.298)	38,071.1 (105.762)
2034	8,012.1 (21.479)	9,175.5 (24.598)	6,716.6 (18.006)	1,163.4 (3.119)	1,295.5 (3.473)	2,459.3 (6.593)	40,535.7 (108.669)
2035	8,361.2 (21.636)	9,631.1 (24.922)	6,971.6 (18.040)	1,269.9 (3.286)	1,389.7 (3.596)	2,659.5 (6.882)	43,193.1 (111.769)
2036	8,722.8 (21.790)	10,108.6 (25.252)	7,234.0 (18.071)	1,385.9 (3.462)	1,488.8 (3.719)	2,874.6 (7.181)	46,066.5 (115.077)
2037	9,096.5 (21.940)	10,609.9 (25.590)	7,510.7 (18.115)	1,513.3 (3.650)	1,585.9 (3.825)	3,099.2 (7.475)	49,163.6 (118.578)
2038	9,479.0 (22.077)	11,131.6 (25.926)	7,789.9 (18.143)	1,652.2 (3.848)	1,689.1 (3.934)	3,341.3 (7.782)	52,503.4 (122.283)
2039	9,870.6 (22.202)	11,675.1 (26.261)	8,080.2 (18.175)	1,804.6 (4.059)	1,790.3 (4.027)	3,594.9 (8.086)	56,096.7 (126.179)
2040	10,271.8 (22.315)	12,242.4 (26.596)	8,384.5 (18.215)	1,970.6 (4.281)	1,887.3 (4.100)	3,857.9 (8.381)	59,954.0 (130.247)
2041	10,684.7 (22.419)	12,836.0 (26.933)	8,701.6 (18.258)	2,151.8 (4.515)	1,983.1 (4.161)	4,134.9 (8.676)	64,089.4 (134.475)
2042	11,110.6 (22.517)	13,459.3 (27.277)	9,018.9 (18.278)	2,348.7 (4.760)	2,091.6 (4.239)	4,440.4 (8.999)	68,530.0 (138.885)
2043	11,557.8 (22.622)	14,121.6 (27.640)	9,365.0 (18.330)	2,563.7 (5.018)	2,193.3 (4.293)	4,757.1 (9.311)	73,288.5 (143.447)
2044	12,019.9 (22.719)	14,817.7 (28.007)	9,706.8 (18.347)	2,797.2 (5.287)	2,313.6 (4.373)	5,110.8 (9.660)	78,401.3 (148.187)
2045	12,493.5 (22.800)	15,545.6 (28.370)	10,070.4 (18.378)	3,052.1 (5.570)	2,423.6 (4.423)	5,475.8 (9.993)	83,880.1 (153.077)
2046	12,986.1 (22.879)	16,315.7 (28.745)	10,456.9 (18.423)	3,329.0 (5.865)	2,529.8 (4.457)	5,858.8 (10.322)	89,742.1 (158.108)
2047	13,499.2 (22.957)	17,129.0 (29.130)	10,856.0 (18.462)	3,629.8 (6.173)	2,643.1 (4.495)	6,273.0 (10.668)	96,017.8 (163.290)

2048	14,034.8 (23.037)	17,991.8 (29.532)	11,278.7 (18.513)	3,956.9 (6.495)	2,756.2 (4.524)	6,713.1 (11.019)	102,732.6 (168.627)
2049	14,594.0 (23.120)	18,905.3 (29.950)	11,706.8 (18.546)	4,311.3 (6.830)	2,887.2 (4.574)	7,198.5 (11.404)	109,931.2 (174.154)
2050	15,175.9 (23.204)	19,873.1 (30.386)	12,151.7 (18.580)	4,697.2 (7.182)	3,024.2 (4.624)	7,721.4 (11.806)	117,652.3 (179.891)

Source: CBO (2022)

Appendix Table 2: Current Law Baseline*

Current Law

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)

* The data show values in billions of nominal dollars (percent of GDP).

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)

Source: CBO (2022)

Appendix Table 3: Current Policy Baseline*

Year	Non-Interest Spending	Total Spending	Total Revenue	Net Interest	Primary Deficit	Unified Deficit	Public Debt
2022	5,472.8 (22.162)	5,871.8 (23.778)	4,836.0 (19.584)	399.0 (1.616)	636.8 (2.579)	1,035.8 (4.195)	24,172.6 (97.888)
2023	5,438.0 (20.724)	5,881.2 (22.413)	4,825.6 (18.390)	443.2 (1.689)	612.4 (2.334)	1,055.6 (4.023)	25,264.4 (96.283)
2024	5,468.8 (20.039)	5,996.3 (21.972)	4,873.9 (17.859)	527.4 (1.933)	595.0 (2.180)	1,122.4 (4.113)	26,355.2 (96.572)
2025	5,718.1 (20.226)	6,325.9 (22.376)	4,921.5 (17.408)	607.8 (2.150)	796.6 (2.818)	1,404.4 (4.968)	27,785.4 (98.282)
2026	5,993.1 (20.478)	6,685.1 (22.842)	5,041.7 (17.227)	691.9 (2.364)	951.4 (3.251)	1,643.3 (5.615)	29,428.9 (100.555)
2027	6,240.5 (20.574)	7,016.5 (23.132)	5,153.4 (16.990)	776.0 (2.558)	1,087.0 (3.584)	1,863.0 (6.142)	31,283.6 (103.138)
2028	6,645.8 (21.107)	7,520.8 (23.886)	5,326.6 (16.917)	875.0 (2.779)	1,319.1 (4.190)	2,194.2 (6.969)	33,531.7 (106.495)
2029	6,715.2 (20.526)	7,686.1 (23.493)	5,542.0 (16.940)	970.9 (2.968)	1,173.2 (3.586)	2,144.1 (6.554)	35,680.0 (109.059)
2030	7,130.0 (20.973)	8,198.2 (24.115)	5,763.3 (16.953)	1,068.2 (3.142)	1,366.7 (4.020)	2,434.9 (7.162)	38,250.5 (112.514)
2031	7,443.1 (21.075)	8,618.3 (24.402)	5,993.8 (16.971)	1,175.2 (3.327)	1,449.3 (4.104)	2,624.5 (7.431)	40,948.9 (115.945)
2032	7,803.1 (21.274)	9,090.5 (24.784)	6,239.1 (17.010)	1,287.5 (3.510)	1,564.0 (4.264)	2,851.4 (7.774)	43,810.7 (119.442)
2033	8,203.9 (21.543)	9,622.1 (25.268)	6,477.5 (17.010)	1,418.2 (3.724)	1,726.4 (4.534)	3,144.7 (8.258)	46,966.0 (123.332)
2034	8,592.7 (21.743)	10,124.3 (25.619)	6,759.0 (17.103)	1,531.6 (3.875)	1,833.7 (4.640)	3,365.3 (8.516)	50,342.4 (127.388)

* The data show values in billions of nominal dollars (percent of GDP).

2035	8,995.8 (21.943)	10,648.4 (25.974)	7,011.6 (17.103)	1,652.6 (4.031)	1,984.2 (4.840)	3,636.8 (8.871)	53,990.8 (131.698)
2036	9,371.5 (22.043)	11,150.6 (26.228)	7,311.0 (17.197)	1,779.2 (4.185)	2,060.5 (4.847)	3,839.7 (9.032)	57,842.4 (136.055)
2037	9,759.4 (22.143)	11,720.3 (26.592)	7,579.2 (17.197)	1,960.9 (4.449)	2,180.2 (4.947)	4,141.1 (9.396)	61,995.9 (140.663)
2038	10,206.4 (22.343)	12,310.6 (26.950)	7,855.4 (17.197)	2,104.2 (4.606)	2,351.0 (5.147)	4,455.2 (9.753)	66,463.9 (145.499)
2039	10,623.5 (22.443)	12,931.8 (27.320)	8,184.2 (17.290)	2,308.3 (4.877)	2,439.3 (5.153)	4,747.6 (10.030)	71,224.8 (150.470)
2040	11,103.1 (22.643)	13,570.3 (27.675)	8,478.2 (17.290)	2,467.2 (5.031)	2,624.9 (5.353)	5,092.1 (10.385)	76,330.7 (155.666)
2041	11,549.5 (22.743)	14,244.1 (28.050)	8,827.7 (17.384)	2,694.7 (5.306)	2,721.8 (5.360)	5,416.4 (10.666)	81,761.4 (161.005)
2042	12,063.8 (22.943)	15,060.7 (28.643)	9,140.4 (17.384)	2,996.9 (5.700)	2,923.3 (5.560)	5,920.3 (11.259)	87,696.5 (166.784)
2043	12,545.4 (23.043)	15,802.2 (29.025)	9,515.0 (17.477)	3,256.7 (5.982)	3,030.4 (5.566)	6,287.2 (11.548)	93,999.0 (172.656)
2044	12,989.9 (23.043)	16,517.5 (29.301)	9,852.1 (17.477)	3,527.6 (6.258)	3,137.8 (5.566)	6,665.4 (11.824)	100,680.3 (178.600)
2045	13,567.3 (23.243)	17,453.2 (29.900)	10,201.5 (17.477)	3,885.9 (6.657)	3,365.8 (5.766)	7,251.7 (12.424)	107,948.4 (184.935)
2046	14,049.1 (23.243)	18,243.5 (30.183)	10,620.3 (17.570)	4,194.4 (6.939)	3,428.9 (5.673)	7,623.3 (12.612)	115,588.7 (191.233)
2047	14,611.5 (23.343)	19,207.2 (30.685)	10,998.0 (17.570)	4,595.7 (7.342)	3,613.4 (5.773)	8,209.1 (13.115)	123,815.4 (197.807)
2048	15,196.8 (23.443)	20,141.3 (31.071)	11,450.4 (17.664)	4,944.5 (7.628)	3,746.4 (5.779)	8,690.9 (13.407)	132,524.5 (204.437)
2049	15,805.0 (23.543)	21,200.3 (31.580)	11,920.9 (17.757)	5,395.3 (8.037)	3,884.2 (5.786)	9,279.4 (13.823)	141,822.9 (211.260)

2050	16,365.8 (23.543)	22,150.0 (31.864)	12,343.9 (17.757)	5,784.2 (8.321)	4,022.0 (5.786)	9,806.2 (14.107)	151,648.6 (218.155)
2051	16,944.1 (23.543)	23,231.3 (32.279)	12,847.2 (17.851)	6,287.2 (8.736)	4,096.8 (5.692)	10,384.1 (14.428)	162,052.9 (225.167)
2052	17,689.9 (23.743)	24,412.1 (32.766)	13,299.8 (17.851)	6,722.2 (9.022)	4,390.1 (5.892)	11,112.3 (14.915)	173,186.2 (232.449)

Source: CBO (2022)