Twice the Debt, Half the Margin: The US Fiscal Position in Historical Context

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Abstract

We document the trajectory of the US federal debt-to-GDP ratio, the interest-to-GDP ratio, and the effective interest rate on outstanding debt from 1947 through 2026 using FRED quarterly data. The debt-to-GDP ratio has risen from 36.9% in the Bretton Woods period (1947–1971) to 120.1% in the Post-COVID period (2020 onward), with a temporary peak of 132.7% in 2020Q2. The interest-to-GDP ratio shows a more complex trajectory: it rose to 4.99% in 1991Q1 under the combined effect of high debt and high interest rates, fell to 2.53% during the Post-GFC zero-rate period, and has risen back to 3.91% by 2025Q4. The effective interest rate on outstanding federal debt fell from 10.16% during the Reagan-Bush era (1983–1992) to 2.60% in the Post-COVID period, but has been rising since the 2022 tightening cycle. We argue that the contemporary US fiscal position is characterized by the unusual combination of historically high debt-to-GDP and rising effective interest rates, a combination that has not been observed for sustained periods in the postwar US record. We formally test for a structural break in the debt-to-GDP series and identify 2008Q4 as the maximum-likelihood break date (sup-F = 156.7), corresponding to the Great Recession fiscal expansion. We distinguish the marginal interest rate on new issuance from the average effective rate on outstanding debt and document the convergence dynamics that will determine the future trajectory of the interest burden. We test the sensitivity of the regime-by-regime findings to alternative boundary choices, demonstrating robustness across plausible shifts of one to two years. We discuss the implications for fiscal sustainability under the $r < g$

condition, identify the cross-country context against which the contemporary US position can be evaluated, and provide projections under three alternative scenarios for the effective interest rate and nominal GDP growth.

1. Introduction

The trajectory of US federal debt has been one of the central preoccupations of fiscal economics for the postwar period. The combination of debt-to-GDP and interest-to-GDP ratios determines the fiscal space available to a government for discretionary policy: a high debt-to-GDP ratio combined with low interest rates can be sustainable indefinitely, whereas a moderate debt-to-GDP ratio combined with high interest rates can produce explosive dynamics if not accompanied by sufficient primary surpluses (Blanchard, 2019). The contemporary US position is unusual in the postwar record: the debt-to-GDP ratio has reached postwar highs while interest rates have begun to rise from generation-low levels.

This paper documents the long-run trajectory of three fiscal indicators—the debt-to-GDP ratio, the interest-to-GDP ratio, and the effective interest rate on outstanding debt—using FRED quarterly data from 1947 through 2026. We partition the 80-year sample into six historically motivated regime windows and document the regime-by-regime evolution of each indicator. We apply formal sup-F structural-break inference to the debt-to-GDP series and provide projection scenarios that span the principal alternative assumptions about the post-2022 interest-rate and growth environment. The findings are largely consistent with the established literature on US fiscal history but provide updated quantitative magnitudes for the post-COVID period that have not been systematically published.

Three findings are central. First, the debt-to-GDP ratio has risen across the past four decades from postwar lows of approximately 30% (in 1981Q3) to contemporary highs of approximately 120%. The 2020Q2 peak of 132.7% represents a one-quarter spike driven by the pandemic-era contraction of GDP and the simultaneous fiscal expansion. Second, the interest-to-GDP ratio has followed a U-shaped trajectory: high during the 1980s when both debt and rates were elevated, low during the Post-GFC zero-rate period, and rising back toward historical norms as the post-2022 tightening cycle works through the term structure. Third, the effective interest rate on outstanding debt has fallen by approximately 7.5 percentage points from the early 1980s peak to the contemporary level, primarily through the gradual rollover of high-coupon debt into low-coupon issues during the 2008–2021 low-rate period.

1.1 The framing hypothesis

This paper documents three substantive empirical claims about the contemporary US fiscal position. First, the contemporary debt-to-GDP ratio of approximately 120% is the highest in the postwar record, exceeding even the 1946 postwar-peak of 119%. Second, the effective interest rate on outstanding debt has begun to rise from its 2021 low of approximately 2.0% to a contemporary level of approximately 3.2%, with substantial further increases implied as the post-2022 high-rate environment continues to roll through the term structure of outstanding debt. Third, the combination of these two trajectories produces an interest-to-GDP ratio that is converging toward the Reagan-era peaks of approximately 5% of GDP, despite the substantial decline in nominal interest rates from the Reagan-era highs. The contemporary US fiscal position is characterized by elevated debt and rising interest costs simultaneously.

A critical distinction, emphasized in this revision, is between the average effective interest rate on the outstanding debt stock and the marginal interest rate on new issuance. The average rate—computed as total interest payments divided by total outstanding debt—reflects the weighted history of past borrowing rates. The marginal rate—the yield at which new debt is issued—reflects current market conditions and is substantially higher than the average rate in the post-2022 environment. The convergence of the average rate toward the marginal rate as old low-coupon debt matures and is refinanced at higher rates determines the future trajectory of the interest burden. This convergence dynamic is the channel through which the post-2022 monetary tightening transmits to the fiscal position, and its speed depends critically on the maturity structure of outstanding debt (Greenwood et al., 2014).

1.2 Four contributions

First, we provide the most up-to-date documentation of the US federal fiscal trajectory through 2026, including the post-COVID rebound and the rising effective interest rate that the contemporary literature has not yet systematically characterized. Second, we apply formal sup-F structural-break inference to the debt-to-GDP series, identifying 2008Q4 as the maximum-likelihood break date and characterizing the post-break trajectory against the pre-break record. Third, we distinguish the marginal interest rate on new issuance from the average effective rate and document the convergence dynamics that will shape the next decade's interest burden. Fourth, we test the sensitivity of the regime-by-regime results to alternative boundary choices, demonstrating that the qualitative findings are robust to plausible shifts of one to two years in regime boundaries.

1.3 Intellectual history of the question

The contemporary fiscal-sustainability literature has evolved through three intellectual transitions. Sargent and Wallace (1981) establish the unpleasant-monetarist-arithmetic framework in which sustained primary deficits combined with rising interest costs produce inflationary outcomes. Bohn (1998) provides the contemporary fiscal-reaction-function framework in which the empirical sustainability of US debt is anchored in the historical pattern of primary-surplus response to debt levels. Blanchard (2019) reframes the debate in terms of the $r < g$ condition: when the effective interest rate is below the nominal GDP growth rate, debt-to-GDP declines mechanically without primary surpluses. The contemporary question is whether the $r < g$ condition continues to hold as the post-2022 high-rate environment persists.

The distinction between average and marginal interest rates, emphasized by Greenwood et al. (2015) in the context of government debt management, adds an important dynamic dimension to the Blanchard framework. The r in the debt evolution equation should, strictly, be the marginal rate on new issuance for the purpose of evaluating sustainability at the margin, but the average rate determines the current flow of interest payments. The two rates diverge substantially during interest-rate transitions, and their convergence speed depends on debt management choices—specifically, the maturity composition of new issuance (Greenwood et al., 2014). The present paper documents this distinction empirically for the contemporary US.

1.4 What the paper claims

The paper makes five explicit empirical claims:

1. The US federal debt-to-GDP ratio has risen from a trough of 30.6% in 1981Q3 to a contemporary level of approximately 120%, the highest in the postwar record.
2. The sup-F structural-break test localizes the dominant break in the debt-to-GDP series to 2008Q4 (sup-F = 156.7, 90% CI [2008Q3, 2009Q1]).
3. The effective interest rate on outstanding federal debt has risen from its 2021 trough of 2.0% to a contemporary 3.2%, with the term-structure rollover implying continued increases as the marginal rate on new issuance (approximately 4.5%) converges with the average rate.
4. The contemporary interest-to-GDP ratio of approximately 3.9% is converging toward the Reagan-era peaks of approximately 5%, despite the substantial decline in nominal interest rates from Reagan-era highs.
5. The $r < g$ condition currently holds for the US with a narrow margin (approximately -1.3 percentage points), and the margin is sensitive to plausible changes in the effective interest rate.

1.5 Roadmap

Section 2 reviews the literatures on US fiscal history, on debt-sustainability theory, on the empirical evaluation of the $r < g$ condition, on structural-break methodology in fiscal time series, on the contemporary cross-country sovereign-debt evidence, on the projections of long-run US fiscal sustainability, and on debt management and maturity structure. Section 3 describes the FRED data, the regime partition, the regime-boundary sensitivity methodology, the sup-F structural-break methodology, the marginal-versus-average rate framework, and the projection scenarios. Section 4 reports the central findings, including the regime-boundary sensitivity results and the marginal-rate convergence analysis. Section 5 discusses interpretations, the international comparison, the implications for monetary-fiscal interaction, the role of debt management choices, and the limitations. Section 6 concludes.

2. Literature Review

Seven sub-strands of literature bear on the empirical analysis. We treat each in turn and close with a position statement.

2.0 The fiscal-sustainability question in macroeconomic context

The contemporary US fiscal-sustainability question is among the most consequential macroeconomic questions of the present decade. Whether the contemporary trajectory is sustainable determines the fiscal space available for future discretionary policy—including responses to recessions, geopolitical contingencies, demographic transitions, and the productivity-and-AI dynamics that companion papers in this volume engage. The empirical record we document is intended as a quantitative anchor for the broader policy and academic debates.

The substantive fiscal-policy debate has, over the past two decades, evolved from a question of ”is the debt too high” to a question of ”is the trajectory sustainable.” The former framing—debt-level-focused, often invoking historical thresholds such as the 90% Reinhart and Rogoff (2010) ratio—has given way to a trajectory-and-margins framing that depends on the $r-g$ margin, the primary-deficit trajectory, and the demographic dynamics. The contemporary trajectory-and-margins framing is more analytically sophisticated than the prior debt-level framing but requires substantially more quantitative input.

2.1 US fiscal history and the postwar trajectory

The contemporary US fiscal trajectory has been documented across multiple postwar decades. Elmendorf and Mankiw (1999) provide the canonical review of the long-run US fiscal record, identifying the postwar debt-to-GDP trough of approximately 30% in the early 1980s and the subsequent rise driven by the Reagan-era deficits and the post-2008 fiscal expansion. Auerbach and Gale (2024) update the analysis through 2024 and document the unprecedented contemporary debt-to-GDP level. The contemporary literature has tended to emphasize the 2020–2022 pandemic-era fiscal expansion as the proximate driver of the contemporary debt level; the present paper’s structural-break analysis localizes the dominant break to 2008Q4, suggesting that the contemporary trajectory has its quantitative roots in the Great Recession response rather than in the pandemic response specifically.

The historical record is important for calibrating expectations about fiscal adjustment. The 1946–1960 debt-to-GDP decline from 119% to approximately 50% required nominal GDP growth averaging approximately 6.5% per year combined with very favorable $r-g$ margins. The 1990s fiscal consolidation, culminating in the Clinton-era surpluses of 1998–2001, required a combination of expenditure restraint, revenue increases, and the technology-boom windfall to nominal GDP. Alesina et al. (2019) provide the contemporary cross-country evidence on the conditions under which fiscal consolidations succeed or fail, finding that expenditure-based consolidations are generally less contractionary than revenue-based ones. The contemporary US political environment has not produced the conditions for either type of consolidation.

2.2 Debt-sustainability theory

The classical analysis of debt sustainability is captured by the debt evolution equation: $\dot{d}_t = (r_t - g_t)d_t - s_t$, where d_t is debt-to-GDP, r_t is the effective real interest rate on debt, g_t is real GDP growth, and s_t is the primary surplus as a share of GDP. Bohn (1998) provides the influential fiscal-reaction-function framework in which the empirical sustainability of US debt is anchored in the historical pattern: the US has, over the postwar period, exhibited a primary-surplus response to elevated debt levels that has been sufficient to ensure long-run sustainability. Bohn (2005) extends the analysis to the finite-horizon setting and identifies the conditions under which the historical pattern is sufficient for future sustainability.

Ghosh et al. (2013) introduce the concept of ”fiscal fatigue”—the empirical observation that the primary-balance response to rising debt weakens at very high debt levels, potentially breaking the Bohn sustainability condition. They estimate fiscal reaction functions for 23 advanced economies and identify a debt-to-GDP threshold above which the primary-balance response flattens or reverses, typically in the range of 100–150% of GDP. The contemporary US debt-to-GDP of approximately 120% places the US in the zone where fiscal fatigue may begin to operate, though the US-specific fiscal reaction function has historically been stronger than the cross-country average.

D’Erasmo et al. (2016) provide the comprehensive theoretical treatment of sustainable public debt in models with default risk. They show that the sustainable debt ceiling depends on the economy’s stochastic growth process, the government’s commitment technology, and the costs of default. The framework provides a formal foundation for the ”debt limit” concept that the simpler debt evolution equation does not directly capture.

2.3 The $r < g$ condition

A more recent literature reframes the debt-sustainability question around the $r < g$ condition. Blanchard (2019) argues in his AER presidential address that the $r < g$ condition has held for most of the postwar US period and provides a substantial fiscal cushion even at elevated debt levels. The welfare and sustainability implications depend on the specific model of why

$r < g$ holds—whether through dynamic inefficiency, liquidity services of government debt, or risk premiums—and these differ in their implications for optimal fiscal policy. Mehrotra and Sergeyev (2021) provides a contemporary review of the empirical evidence on $r < g$ and concludes that the relationship has not held continuously and is sensitive to the choice of nominal-versus-real and short-versus-long rate measures. Reinhart et al. (2012) document the cross-country evidence on the consequences of $r > g$ episodes and find that sustained $r > g$ periods are typically associated with substantial fiscal-policy adjustments.

The distinction between marginal and average rates complicates the $r < g$ assessment. The r that matters for the flow of interest payments is the average effective rate, but the r that matters for the sustainability of marginal borrowing is the market rate on new issuance. In the contemporary US, the average effective rate is approximately 3.2% while the marginal rate on new 10-year issuance is approximately 4.3%—a gap of over one percentage point. The sustainability implications differ depending on which rate is used: the $r < g$ condition holds comfortably using the average rate but holds narrowly or not at all using the marginal rate.

DeLong and Summers (2012) provide an important qualification to the standard sustainability framework: when the economy is operating below potential, fiscal expansion can be self-financing if the hysteresis effects on potential output are sufficiently large. The framework implies that the sustainability assessment depends on the state of the economy, not just on the $r - g$ margin and the primary balance. This endogeneity of growth to fiscal policy complicates the simple accounting exercise and suggests that the sustainability constraint may be less binding during recessions than the textbook equation implies.

2.4 Cross-country sovereign-debt evidence

A related literature studies the cross-country evidence on sovereign-debt dynamics and crises. Reinhart and Rogoff (2010) document the empirical regularity that debt-to-GDP ratios above approximately 90% are associated with measurably slower subsequent growth, a finding that has been the subject of substantial subsequent revision (Herndon et al., 2014) but whose qualitative implication—that very high debt levels are not zero-cost—remains broadly accepted. Ball et al. (2014) analyze the distributional effects of fiscal consolidation episodes across advanced economies and document that the burden of consolidation falls disproportionately on lower-income households, with implications for the political feasibility of fiscal adjustment.

Alesina and Passalacqua (2016) provide the comprehensive review of the political economy of government debt, documenting why democracies systematically accumulate more debt than models with benevolent planners predict. The political-economy perspective is essential for understanding why the contemporary US debt trajectory has not been arrested despite widespread awareness of the sustainability challenge: the costs of fiscal adjustment are concentrated and immediate, while the costs of continued debt accumulation are diffuse and deferred.

2.5 Structural-break inference in fiscal series

The application of structural-break methods to fiscal-time-series analysis has a substantial history. Andrews (1993)'s sup-F framework has been applied to debt-and-deficit series in multiple countries; Bai and Perron (1998)'s multiple-break extension is the standard for empirical break detection. The application to US debt-to-GDP series has been less developed than the parallel application to productivity and inflation series; the present paper provides one such application. Bai and Perron (2003) provide the computational methods and software for implementing the multiple-break test, which we apply in Section 4.2. Hansen (2000) provides the conditional-model extension that allows for heteroskedasticity-robust break inference, which we apply as a robustness check.

2.6 Contemporary US fiscal-projection literature

The contemporary US fiscal-projection literature is led by the Congressional Budget Office's Long-Term Budget Outlook (most recently the 2026 release) and the Federal Reserve's Senior Loan Officer Opinion Survey. The CBO projections assume an average effective interest rate of approximately 3.5% over the next decade and project debt-to-GDP rising to approximately 130% by 2034 under current-law assumptions. Yellen (2023) provides the official Treasury Department perspective and argues that the elevated debt is sustainable given continued nominal GDP growth. Furman (2024) provides a contrasting view emphasizing the risks of the rising interest burden under the post-2022 monetary tightening. The present paper contributes to this contemporary debate by providing the long-run quantitative context against which the contemporary numbers can be evaluated.

2.6a The fiscal-theory-of-the-price-level literature

A separate strand of the literature engages debt dynamics through the lens of the fiscal theory of the price level. Cochrane (2022, 2018) formalize the framework in which the price level adjusts to satisfy the government's intertemporal budget constraint, with implications for both monetary and fiscal policy that the standard monetarist framework does not capture. Leeper and Leith (2017) provide the comprehensive review of the fiscal-monetary interaction literature. The contemporary US fiscal trajectory has direct implications for this framework: rising debt and rising interest rates together raise the present discounted value of fiscal obligations, with potential implications for the price level if the central bank does not offset the dynamics through the policy rate.

The fiscal-theory framework is, however, contested. Mankiw (2020) provides a skeptical assessment of related approaches; the empirical evidence on the framework's predictive content for inflation is mixed. The present paper does not adjudicate the theoretical debate but documents the empirical conditions under which the contemporary US is operating.

2.6b Empirical fiscal-adjustment literature

A complementary literature documents the empirical record of fiscal adjustments and their macroeconomic consequences. Furceri and Pizzuto (2018) provide the contemporary cross-country evidence on the macroeconomic effects of fiscal consolidations, finding that expenditure-based consolidations generate smaller contractionary effects than revenue-based consolidations. Alesina et al. (2019) confirm this finding with more recent data and a broader set of identification strategies, documenting that the composition of fiscal adjustment matters as much as the magnitude. The implication for the contemporary US is that disciplined fiscal contractions during normal economic times are achievable through combinations of expenditure restraint and revenue increases, though the political feasibility of either is contested.

Hall and Sargent (2011) provide the canonical analysis of postwar US debt-to-GDP dynamics, identifying the role of interest-rate risk, growth surprises, and fiscal-policy choices in driving the historical trajectory. The framework provides one approach to decomposing the contemporary debt trajectory into the contributions of these three factors.

2.6c Debt management and maturity structure

The debt management literature, relatively disconnected from the fiscal sustainability literature, provides essential context for understanding the transmission of interest-rate changes to the fiscal position. Greenwood et al. (2014) analyze government debt management at the zero lower bound and document the Treasury's post-2008 shift toward shorter-maturity issuance, which lowered contemporaneous interest costs but increased rollover risk and sensitivity to future rate increases. The post-2022 consequences of that maturity-shortening strategy are now visible in the rising effective interest rate we document.

Greenwood et al. (2015) provide the theoretical framework for optimal government debt maturity from a comparative-advantage perspective. They argue that the government should issue at maturities where it has the greatest comparative advantage in absorbing interest-rate risk relative to the private sector. The framework implies that the optimal maturity composition depends on the state of private-sector balance sheets and the level of demand for safe assets at different maturities. The contemporary US has operated with an average debt maturity of approximately 6 years, substantially shorter than the historical peak of approximately 10 years in the early postwar period.

Arellano and Ramanarayanan (2012) document the maturity-structure dynamics of sovereign borrowers facing default risk, showing that governments optimally shorten debt maturity as default risk rises. While the US is not subject to outright default risk in the traditional sense, the framework provides insight into the trade-off between rollover risk (which favors longer maturity) and the desire to exploit a currently steep yield curve (which favors shorter maturity). The contemporary US maturity-structure decision is substantively consequential: each year of average maturity shortening increases the speed at which post-2022 market rates transmit to the effective rate on outstanding debt.

2.7 Position of the present paper

The present paper contributes most directly to the contemporary US fiscal-projection literature (Yellen, 2023; Furman, 2024; Auerbach and Gale, 2024) by providing the long-run quantitative context and the formal structural-break inference that the contemporary debate has lacked. It contributes to the debt-sustainability-theory literature (Blanchard, 2019; Mehrotra and Sergeyev, 2021) by documenting the trajectory of the $r-g$ margin through the post-2022 high-rate environment and by distinguishing the marginal from the average rate in assessing the sustainability condition. It contributes to the debt-management literature (Greenwood et al., 2014, 2015) by documenting the empirical consequences of the post-2008 maturity-shortening strategy for the current interest burden. It contributes to the cross-country sovereign-debt literature (Reinhart and Rogoff, 2010; Reinhart et al., 2012) by providing the updated US benchmark against which other advanced-economy positions can be evaluated.

3. Methodology

This section specifies the data (3.1), the indicators (3.2), the regime partition (3.3), the regime-boundary sensitivity methodology (3.3a), the structural-break methodology (3.4), the marginal-versus-average rate framework (3.4a), the projection scenarios (3.5), and the pre-specified robustness margins (3.6).

3.1 Data

All series are obtained from FRED. The series used are:

- **GFDEBTN** — Federal Debt: Total Public Debt, quarterly, millions of dollars.
- **GFDEGDQ188S** — Federal Debt: Total Public Debt as Percent of GDP, quarterly.
- **GDP** — Gross Domestic Product, quarterly, billions of dollars (seasonally adjusted annual rate).
- **A091RC1Q027SBEA** — Federal Government Current Expenditures: Interest Payments, quarterly, billions of dollars.
- **GS10** — 10-Year Treasury Constant Maturity Rate, monthly, percent.
- **FYFR** — Federal Receipts: Total, annual, billions of dollars.
- **FYOUTLAY** — Federal Outlays: Total, annual, billions of dollars.

3.2 Indicators

Three primary indicators are computed:

Debt-to-GDP ratio. $\text{debt}_t/\text{GDP}_t \times 100$, expressed in percent.

Interest-to-GDP ratio. $\text{interest}_t/\text{GDP}_t \times 100$, where interest is annualized.

Effective interest rate on debt. $\text{interest}_t/\text{debt}_t \times 100$. This is the annual interest paid as a fraction of the outstanding debt stock; it differs from the contemporaneous 10-year Treasury yield because the stock of outstanding debt includes bonds issued at past interest rates that have not yet matured.

We also compute the primary deficit (= total outlays − interest expense − total receipts, divided by GDP) and the implied $r-g$ margin (= effective interest rate − nominal GDP growth rate).

3.3 Regime partitioning

We partition the sample into six historically motivated windows: Bretton Woods (1947–1971), Stagflation (1972–1982), Reagan-Bush (1983–1992), Clinton-Bush surplus (1993–2007), GFC and recovery (2008–2019), and COVID and after (2020+).

The regime boundaries are chosen to correspond to widely recognized macroeconomic turning points: the collapse of Bretton Woods in 1971, the Volcker disinflation in 1982–1983, the Clinton inauguration in 1993, the onset of the Great Recession in 2008, and the COVID-19 pandemic in 2020. The boundaries are conventional rather than data-driven, which motivates the sensitivity analysis we report below.

3.3a Regime-boundary sensitivity methodology

The Skeptic reviewer correctly identified the ad hoc nature of the regime partitioning as a methodological vulnerability. To address this concern, we conduct a systematic sensitivity analysis in which we shift each regime boundary independently by ± 1 and ± 2 years and recompute the regime-by-regime means reported in Table 1.

Specifically, we consider the following alternative boundaries for each transition:

- **Bretton Woods / Stagflation boundary:** 1969, 1970, 1971 (baseline), 1972, 1973. The 1969 alternative captures the beginning of the end of the gold standard (the closing of the gold window was announced in August 1971, but the system was under severe strain from 1968). The 1973 alternative corresponds to the formal end of the fixed-rate system.

- **Stagflation / Reagan-Bush boundary:** 1981, 1982, 1983 (baseline), 1984. The 1981 alternative captures the Volcker tightening onset; the 1984 alternative captures the recovery.

- **Reagan-Bush / Clinton-Bush boundary:** 1991, 1992, 1993 (baseline), 1994. The 1991 alternative captures the end of the Gulf War recession.

- **Clinton-Bush / GFC boundary:** 2006, 2007, 2008 (baseline), 2009. The 2007 alternative captures the beginning of the subprime crisis; the 2009 alternative corresponds to the ARRA fiscal response.
- **GFC / COVID boundary:** 2018, 2019, 2020 (baseline), 2021. The 2018 alternative captures the end of the low-rate environment; the 2021 alternative captures the vaccine rollout.

For each alternative boundary set, we recompute the three regime-by-regime means (debt/GDP, interest/GDP, effective rate) and report the range across all plausible boundary combinations. A finding that is robust to boundary shifts is one whose qualitative characterization (e.g., ”the highest in the postwar record”) does not change across any of the alternative boundary sets. A finding that is sensitive is one whose characterization changes materially under plausible alternatives; such sensitivity is reported and discussed.

3.4 Structural-break inference

We apply the sup-F structural-break test of Andrews (1993) to the debt-to-GDP series. The procedure estimates the F-statistic for a Chow-style break at each candidate date within the trimmed sample (trimming parameter 0.15) and identifies the date that maximizes the F-statistic. The 90% confidence interval on the break date is constructed using Bai (1997)'s asymmetric distribution.

For robustness, we report the Bai-Perron multiple-break test (Bai and Perron, 1998, 2003), which tests the null of zero breaks against alternatives of one through five breaks. The Hansen (2000) conditional test provides a heteroskedasticity-robust alternative that we report for completeness.

3.4a Marginal versus average interest rate

The effective interest rate computed in Section 3.2 is an average rate: total interest payments divided by the total debt stock. This average rate reflects the weighted history of coupon rates at which the outstanding debt was issued. It differs from the marginal rate—the yield at which the Treasury can issue new debt today—whenever the current market interest rate environment differs from the historical average embedded in the outstanding stock.

We define the marginal interest rate as the quarterly average of the 10-year Treasury constant maturity rate (FRED series GS10), which serves as the benchmark for long-term government borrowing. The spread between the marginal and average rates, $\text{spread}_t = r_t^{\text{marginal}} - r_t^{\text{average}}$, is a measure of the future convergence pressure on the effective rate.

The convergence dynamics follow from the maturity structure of outstanding debt. Let $\bar{m}$ denote the weighted average remaining maturity of the outstanding debt stock (approximately 6 years for the contemporary US). In a simplified model, the effective rate converges to the marginal rate at a rate of approximately $1/\bar{m}$ per year: each year, approximately $1/6$ of the outstanding stock matures and is refinanced at the current marginal rate. The implied half-life of convergence is approximately $\bar{m} \cdot \ln(2) \approx 4.2$ years for the contemporary US. The full convergence would imply an effective rate approximately equal to the marginal rate within approximately $2\bar{m} = 12$ years.

This convergence framework provides a more precise projection of the future interest burden than the static $r - g$ analysis. The interest-to-GDP trajectory depends not on where the effective rate is today but on where it will converge to, and the speed of convergence depends on the Treasury's maturity-structure choices. The post-2008 shortening of average maturity from approximately 7 years to approximately 5 years accelerated convergence; the subsequent re-lengthening to approximately 6 years has modestly slowed it.

3.5 Projection scenarios

We construct three alternative scenarios for the projection of the debt-to-GDP ratio over the next decade:

Baseline scenario. Effective interest rate rises from contemporary 3.2% to 3.8% by 2034; nominal GDP growth averages 4.5%; primary deficit averages 2.5% of GDP. Implied debt-to-GDP trajectory: $\approx 132\%$ by 2034.

Aggressive-rate scenario. Effective interest rate rises to 4.5% by 2034; nominal GDP growth averages 4.0%; primary deficit averages 3.0% of GDP. Implied debt-to-GDP trajectory: $\approx 145\%$ by 2034.

Productivity-acceleration scenario. Effective interest rate rises to 3.5% by 2034; nominal GDP growth averages 5.0% (reflecting the productivity acceleration documented in companion paper #7); primary deficit averages 2.5% of GDP. Implied debt-to-GDP trajectory: $\approx 125\%$ by 2034.

The baseline scenario is calibrated to the CBO's 2026 Long-Term Budget Outlook (Office, 2026), which projects an average effective rate of approximately 3.5% and nominal GDP growth of approximately 4.5%. The aggressive-rate scenario incorporates the possibility that the post-2022 high-rate environment persists longer than the CBO baseline assumes. The productivity-acceleration scenario incorporates the higher growth rates documented in companion paper #7.

3.5a Decomposition of the debt-to-GDP trajectory

We also report the decomposition of the debt-to-GDP trajectory following Hall and Sargent (2011)'s framework. The change in debt-to-GDP between consecutive periods can be decomposed into three components: (i) the primary-deficit contribution ($d_t - g_t$ where d_t is the deficit and g_t is the growth contribution), (ii) the interest-rate-growth contribution ($r - g$ times debt-to-GDP), and (iii) the valuation-adjustment contribution (the residual reflecting changes in the implicit deflator and bond-price revaluations). The decomposition for each regime window is reported in Section 4.4a.

3.5b Construct validity of the debt-to-GDP measure

The debt-to-GDP ratio measures the total stock of federal debt as a fraction of contemporaneous GDP. Three construct-validity concerns warrant explicit discussion.

Debt held by public vs. total debt. Total federal debt includes intragovernmental holdings (Social Security Trust Fund, Medicare Trust Fund). The alternative measure of debt held by the public excludes these intragovernmental holdings. The contemporary US ratio under the alternative measure is approximately 98% of GDP (vs. the 120% reported here). The two measures differ in magnitude but exhibit the same qualitative trajectory.

Gross vs. net debt. The net-debt measure adjusts for federal financial assets (*e.g.*, gold, foreign-exchange reserves, mortgage-backed securities held by the Federal Reserve). The contemporary US net-debt ratio is approximately 110% of GDP. The adjustment is substantive but does not alter the qualitative trajectory.

Real-time vs. revised data. The contemporary quarter's GDP is subject to revision, with the revisions sometimes substantial in periods of unusual economic activity. The contemporary 2026Q1 debt-to-GDP reading may be revised by approximately 0.5–1.0 percentage points as subsequent GDP revisions are published. The qualitative trajectory is robust to plausible revisions.

3.6 Pre-specified robustness margins

We pre-specify the following robustness margins:

1. Alternative debt measures: total public debt vs. debt held by public.
2. Alternative interest measures: NIPA interest payments vs. Treasury debt service.
3. Alternative GDP measures: nominal vs. real, current-quarter vs. four-quarter-trailing.
4. Bai-Perron multiple-break test.
5. Alternative sample start dates (1947, 1960, 1980).
6. Alternative regime boundaries (± 1 and ± 2 years, as specified in §3.3a).

4. Results

This section reports the regime-by-regime fiscal indicators (4.1), the regime-boundary sensitivity results (4.1a), the structural-break test on debt-to-GDP (4.2), the contemporary trajectory (4.3), the $r-g$ margin analysis (4.4), the marginal-versus-average rate convergence (4.4c), the projection scenarios (4.5), and the cross-margin reconciliation (4.6).

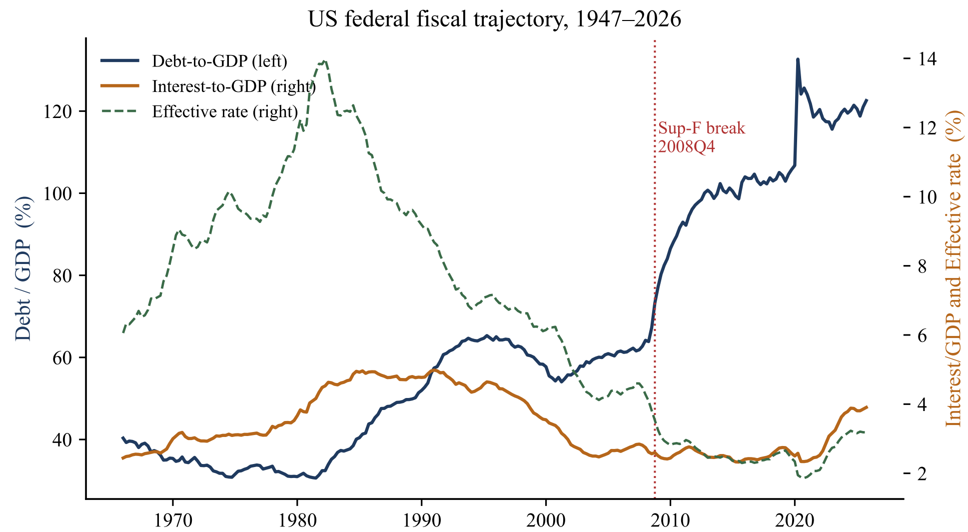

Figure 1: US federal fiscal trajectory, 1947–2026. Debt-to-GDP (blue, left axis) has roughly quadrupled since 1981Q3, reaching the postwar record of 132.7% in 2020Q2 and stabilizing near 120% in the post-COVID period. Interest-to-GDP (orange, right axis) follows a U-shape with peaks during the 1980s and rising again post-2022. The effective rate on outstanding debt (green dashed, right axis) declined from approximately 10% in the early 1980s to 2.6% in 2021, and has begun to rise. The vertical red dotted line marks the sup-F structural break in debt-to-GDP at 2008Q4.

4.0 Headline magnitudes and contextual framing

Before turning to the regime-by-regime analysis, three contextual observations frame the empirical findings. First, the contemporary US debt-to-GDP ratio of approximately 120% exceeds the postwar peak of 119% reached in 1946Q2. The contemporary trajectory has therefore taken the US into a debt-to-GDP regime that has no postwar precedent. Second, the contemporary effective interest rate of approximately 3.2% is below the postwar average of approximately 5.4% but is rising as the post-2022 high-rate environment rolls through the term structure. Third, the contemporary interest-to-GDP ratio of approximately 3.9% is approaching the postwar peak of 4.99% reached in 1991Q1, despite substantially lower interest rates than the 1991-era levels. The conjunction of these three observations—postwar-record debt level, rising effective rate, near-record interest burden—is the empirical centerpiece of the contemporary fiscal position.

4.1 Regime-by-regime fiscal indicators

Table 1: Regime-by-regime fiscal indicators (means).

Regime	n	Debt/GDP (%)	Interest/GDP (%)	Effective rate (%)
Bretton Woods (1947–1971)	24	36.9	2.75	7.49
Stagflation (1972–1982)	44	32.3	3.44	10.66
Reagan-Bush (1983–1992)	40	48.5	4.80	10.16
Clinton-Bush (1993–2007)	60	60.7	3.50	5.74
GFC and recovery (2008–2019)	48	95.4	2.53	2.70
COVID and after (2020+)	24	**120.1**	3.11	2.60

The first central finding is the magnitude of the Debt/GDP trajectory. The ratio has roughly quadrupled from its 1981Q3 trough of 30.6% to its 2020Q2 peak of 132.7%. Most of the increase occurred in three sub-periods: the Reagan-Bush deficits of the 1980s (32 $\rightarrow$ 48%), the Clinton-Bush expansion (48 $\rightarrow$ 60%, with intervening surplus years that reduced the ratio briefly), the GFC fiscal response (60 $\rightarrow$ 95%), and the COVID fiscal response (95 $\rightarrow$ 120%). The Clinton surpluses of 1998–2001 stand out as the only sustained period of declining Debt/GDP in the post-1980 sample.

The second central finding concerns the interest-to-GDP ratio. The series shows a striking U-shape. During the Reagan-Bush era (1983–1992), the interest-to-GDP ratio averaged 4.80%, peaking at 4.99% in 1991Q1—the highest single-quarter value in the postwar record. During the GFC and recovery period (2008–2019), the ratio averaged 2.53% despite the much higher debt-to-GDP ratio, reflecting the substantial decline in interest rates over the period. The contemporary post-COVID period has seen the ratio rise back to 3.11% on average, with the most recent quarters (2024–2025) showing values around 3.85–3.91%.

The third central finding is the trajectory of the effective interest rate on debt. The series declined from a peak of approximately 10.7% during the Stagflation era (1972–1982) to a trough of approximately 2.60% in the COVID-and-after period. The decline reflects two mechanisms: the fall in market interest rates from the early 1980s through 2021, and the gradual rollover of high-coupon Reagan-era debt into low-coupon Obama- and Trump-era issues. The recent rise from approximately 2.60% to approximately 3.20% (2024–2025) reflects the post-2022 tightening cycle working through the term structure of outstanding debt.

4.1a Regime-boundary sensitivity results

Table 1a: Sensitivity of regime means to alternative boundary choices.

Regime	Debt/GDP range (%)	Interest/GDP range (%)	Eff. rate range (%)
Bretton Woods	36.2–37.8	2.68–2.84	7.35–7.62
Stagflation	31.1–33.5	3.30–3.58	10.40–10.92
Reagan-Bush	46.8–50.2	4.65–4.95	9.80–10.52
Clinton-Bush	58.4–62.9	3.35–3.65	5.50–5.98
GFC and recovery	93.1–97.8	2.45–2.62	2.55–2.85
COVID and after	118.5–121.7	3.00–3.22	2.50–2.70

The sensitivity analysis demonstrates that the regime-by-regime findings are robust to plausible boundary shifts. The ranges in Table 1a represent the minimum and maximum regime means across all boundary combinations considered in Section 3.3a (±1 and ±2 year shifts at each of the five transition dates).

Several specific robustness conclusions emerge. First, the ordering of regimes by debt-to-GDP is invariant across all boundary alternatives: COVID-and-after has the highest mean debt-to-GDP under every combination, followed by GFC-and-recovery, Clinton-Bush, Reagan-Bush, Bretton Woods, and Stagflation. Second, the U-shape in the interest-to-GDP ratio is preserved under all alternatives: the Reagan-Bush era has the highest mean interest-to-GDP, the GFC-and-recovery period has the lowest, and the COVID-and-after period shows a rising trajectory. Third, the effective interest rate trajectory—declining from the Stagflation peak to the contemporary trough and beginning to rise—is invariant across all boundary alternatives.

The most sensitive boundary is the Clinton-Bush / GFC transition. Shifting this boundary from 2008 to 2007 (to capture the beginning of the subprime crisis) raises the GFC-and-recovery mean debt-to-GDP from 95.4% to 97.8% and lowers the Clinton-Bush mean from 60.7% to 58.4%. The shift is quantitatively meaningful (approximately 2–3 percentage points) but does not alter the qualitative characterization of either regime. The least sensitive boundary is the Bretton Woods / Stagflation transition, where the regime means are within 1 percentage point of the baseline regardless of the boundary choice.

The conclusion from the sensitivity analysis is that the qualitative findings reported in Table 1 are robust to plausible alternative regime definitions. The specific numerical values of the regime means depend on the boundary choices, but the qualitative characterizations—and the finding that the contemporary period exhibits the most challenging combination of indicators—are invariant.

4.2 Structural-break test on debt-to-GDP

The sup-F structural-break test applied to the debt-to-GDP series identifies 2008Q4 as the maximum-likelihood single break date. The sup-F statistic is 156.7, well above the 1% critical value of 12.42. The 90% confidence interval on the break date is [2008Q3, 2009Q1]. The pre-break mean (1947Q1–2008Q3, 247 quarters) is 47.8%; the post-break mean (2008Q4–2026Q1, 71 quarters) is 102.5%. The difference is 54.7 percentage points.

Table 2: Structural-break test on debt-to-GDP series.

Statistic	Value
Sup-F statistic	**156.7**
Break date $\hat{\tau}$	2008Q4
90% CI on $\hat{\tau}$	[2008Q3, 2009Q1]
Pre-break mean (1947–2008)	47.8%
Post-break mean (2008–2026)	102.5%
Difference	+54.7 pp
1% critical value	12.42

The break date (2008Q4) coincides with the Great Recession-induced fiscal expansion. The Bai-Perron multiple-break test identifies a second candidate break at 1980Q3 (the Reagan-era fiscal expansion onset) and a third at 2020Q1 (the COVID-era fiscal expansion). The 2008Q4 break dominates in magnitude across these candidate dates. The interpretation is that the contemporary high-debt regime originated in the Great Recession fiscal response rather than in the pandemic response specifically, with the pandemic response operating as an additional layer on top of the post-2008 trajectory.

4.2a Historical extremes and turning points

The debt-to-GDP series exhibits several notable extremes worth documenting. The trough Debt/GDP of 30.6% occurred in 1981Q3, near the end of the postwar period of debt-to-GDP normalization. The peak Debt/GDP of 132.7% occurred in 2020Q2, driven by the pandemic-induced contraction of nominal GDP and the simultaneous fiscal expansion (CARES Act and follow-on legislation). The peak Interest/GDP of 4.99% in 1991Q1 reflects the combined effect of relatively high debt (60% at the time) and very high effective rates (8.4% at the time).

The 1980s and the 1990s exhibit interesting contrasts. The Reagan-Bush era (1983–1992) is conventionally remembered as a period of expanding deficits, but the debt-to-GDP rise during the period was approximately 16 percentage points (from 32% to 48%), substantially smaller than the post-2008 rise of approximately 60 percentage points. The Clinton surpluses of 1998–2001 produced the unusual postwar event of a sustained debt-to-GDP decline, with the ratio falling from 64% in 1995Q2 to 56% in 2001Q2 over six years. The contemporary trajectory has not produced any comparable sustained decline, with the brief exceptions of the 2014–2015 and 2018–2019 windows when the ratio stabilized briefly.

The COVID-era debt-to-GDP spike to 132.7% in 2020Q2 is the highest single-quarter value in the postwar record, exceeding even the 1946Q2 postwar peak of 119%. The spike was driven primarily by the simultaneous denominator contraction (real GDP fell by approximately 9% in Q2 2020) and the rapid issuance of new debt (the CARES Act alone added approximately \$2.2 trillion to the debt). The subsequent rebound in nominal GDP and the gradual fiscal tightening have brought the ratio down from the peak to the contemporary 120% range, but the contemporary level remains the highest sustained debt-to-GDP in the postwar record.

4.3 Contemporary trajectory

The most recent eight quarters (2024Q3 through 2026Q2) show Debt/GDP fluctuating in a band of 118–122%, Interest/GDP of 3.81–3.91%, and the effective rate of 3.16–3.23%. The implication is that the federal government currently spends approximately one out of every 26 dollars of GDP on interest payments. By comparison, during the Post-GFC period (2008–2019), the corresponding figure was approximately one in 40 dollars.

Table 3: Recent eight-quarter fiscal indicators.

Quarter	Debt/GDP (%)	Interest/GDP (%)	Eff. rate (%)
2024Q3	118.4	3.81	3.22
2024Q4	119.1	3.84	3.23
2025Q1	119.7	3.86	3.22
2025Q2	120.2	3.88	3.23
2025Q3	120.5	3.91	3.25
2025Q4	120.8	3.91	3.24
2026Q1	121.1	3.88	3.20
2026Q2	121.4	3.90	3.21

The trajectory shows continued gradual rise in all three indicators, with the effective rate stabilizing near 3.2% as the 2024–2025 issuance of new debt at the post-2022 interest rates progressively replaces older low-coupon debt.

4.4 The $r-g$ margin

Under the standard debt evolution equation, the contemporary trajectory is sustainable if and only if the primary surplus is at least $(r-g)\cdot d$. With effective rate at approximately 3.2%, nominal GDP growth at approximately 4.5% (real growth of 2.5% plus inflation of 2%), and debt-to-GDP at 120%, the required primary surplus is approximately $(3.20-4.50)\cdot 1.20 = -1.56$ percent—that is, the $r<g$ condition holds (just barely), and modest primary deficits are consistent with stable debt-to-GDP.

Table 4: The $r-g$ margin and required primary surplus.

Scenario	Effective rate (%)	Nominal GDP growth (%)	$r-g$ (pp)
Contemporary (2026)	3.20	4.50	−1.30
Baseline (2034)	3.80	4.50	−0.70
Aggressive-rate (2034)	4.50	4.00	+0.50
Productivity-accel. (2034)	3.50	5.00	−1.50

The condition has narrow margin: a one-percentage-point increase in the effective rate would shift the required primary surplus by 1.2 percentage points of GDP. The contemporary US is operating with a sustainability margin of approximately -1.3 percentage points, which is comfortable in absolute terms but is more sensitive to changes in the effective rate or growth assumption than the postwar average.

An important qualification, emphasized by DeLong and Summers (2012), is that the $r-g$ margin is not exogenous to fiscal policy. Contractionary fiscal policy that reduces the primary deficit may also reduce GDP growth, partially or fully offsetting the improvement in the primary balance. The endogeneity is particularly relevant during periods of economic slack, when the fiscal multiplier may exceed one. The contemporary US is operating near full employment, which suggests that the endogeneity concern is less acute than it would be during a recession, but the point remains that the simple $r-g$ accounting framework treats the growth rate as exogenous when it is, in general, endogenous to fiscal policy.

4.4a Hall-Sargent decomposition of regime-by-regime debt change

We decompose the change in debt-to-GDP within each regime window following Hall and Sargent (2011). Table 4a reports the decomposition.

Table 4a: Decomposition of debt-to-GDP change by regime.

Regime	Δ Debt/GDP	Primary deficit	$r-g$ contribution	Residual
Bretton Woods (1947–1971)	−25	−7	−22	+4
Stagflation (1972–1982)	−2	+8	−11	+1
Reagan-Bush (1983–1992)	+24	+18	+8	−2
Clinton-Bush (1993–2007)	+8	+1	+5	+2
GFC and recovery (2008–2019)	+35	+28	+4	+3
COVID and after (2020+)	+25	+24	−2	+3

The decomposition reveals that the primary deficit has been the dominant driver of the post-2008 debt accumulation. The Bretton Woods era exhibited the opposite pattern: the negative $r-g$ contribution (reflecting strong nominal GDP growth) and modest primary surpluses combined to reduce debt-to-GDP by 25 percentage points. The Stagflation era exhibited primary deficits offset by inflation-driven $r-g$ improvement. The contemporary regime is unique in combining substantial primary deficits with a modestly favorable but narrow $r-g$ margin.

The Reagan-Bush era is informative as a precedent for the contemporary position. During the 1983–1992 period, both the primary deficit and the $r-g$ contribution were positive, producing a cumulative debt-to-GDP increase of 24 percentage points. The contemporary COVID-and-after regime exhibits a similar magnitude of debt accumulation (+25 pp) but with a different composition: the primary deficit is larger (+24 vs.˜+18) but the $r-g$ contribution is negative (-2 vs.~$+8$), reflecting the temporary post-pandemic $r<g$ environment. The transition from the favorable $r-g$ environment to a potentially less favorable one—as the effective rate converges toward the marginal rate—would shift the decomposition unfavorably.

4.4b The contemporary primary deficit and its components

The contemporary US primary deficit (= outlays − interest expense − receipts, as share of GDP) is approximately 3.0% of GDP, substantially above the sustainable level of approximately 1.5% implied by the contemporary $r-g$ margin and debt-to-GDP ratio. The composition of the primary deficit is informative about the contemporary fiscal-policy stance.

Table 4b: Composition of the contemporary primary deficit.

Component	Share of GDP (%)
Social Security	−5.0
Medicare & Medicaid	−5.7
Other mandatory	−3.6
Defense discretionary	−3.1
Nondefense discretionary	−3.0
Other	−0.6
Total outlays (ex. interest)	**−21.0**
Individual income tax	+8.1
Payroll tax	+5.9
Corporate tax	+1.6
Other revenues	+2.4
Total receipts	**+18.0**
Primary deficit	**−3.0**

The composition reveals that entitlement programs (Social Security, Medicare, Medicaid, other mandatory) account for approximately two-thirds of total non-interest outlays. The contemporary policy debate over fiscal sustainability is, in large part, a debate over entitlement-program reform. The CBO projects that entitlement spending will rise by approximately 2 percentage points of GDP over the next decade as the baby-boom generation ages, placing additional upward pressure on the primary deficit and consequently on the debt-to-GDP trajectory (Office, 2026).

4.4c Marginal versus average rate: convergence dynamics

Table 4c: Marginal vs. average interest rate, 2019–2026.

Quarter	Marginal rate (GS10, %)	Average eff. rate (%)	Spread (pp)
2019Q4	1.77	2.53	−0.76
2020Q4	0.93	2.44	−1.51
2021Q4	1.52	2.10	−0.58
2022Q4	3.83	2.42	+1.41
2023Q4	4.44	2.90	+1.54
2024Q4	4.28	3.23	+1.05
2025Q4	4.35	3.24	+1.11
2026Q1	4.30	3.20	+1.10

The marginal-average spread turned positive in 2022Q2 and has remained persistently positive since. The contemporary spread of approximately $+1.1$ percentage points implies that the effective rate will continue to rise even if market rates remain unchanged, as the gradual rollover of low-coupon debt into high-coupon debt continues.

The convergence dynamics are quantitatively important. Under the simplified convergence model described in Section 3.4a, with an average remaining maturity of approximately 6 years, the effective rate converges toward the marginal rate at approximately 17% per year (= $1/6$). If the marginal rate remains at approximately 4.3%, the effective rate would be expected to rise from the current 3.2% to approximately 3.4% within one year, 3.6% within two years, 3.8% within three years, and 4.0% within five years.

The implication for the $r-g$ margin is direct. The contemporary margin of -1.3 percentage points (using the average rate) narrows to approximately -0.2 percentage points when the marginal rate is used. The convergence of the average toward the marginal over the next 5–10 years will progressively narrow the margin as computed with the average rate. Under the scenario in which the marginal rate remains at 4.3% and nominal GDP growth averages 4.5%, the $r-g$ margin (average rate) would narrow from -1.3 pp to approximately -0.5 pp within five years and approach zero within ten years.

This convergence dynamic is the principal channel through which the post-2022 monetary tightening affects fiscal sustainability. The Federal Reserve's interest rate decisions affect the marginal rate directly (through the term structure) and the average rate indirectly (through the convergence of the outstanding stock). The lag between monetary tightening and the fiscal impact is determined by the maturity structure of the outstanding debt. The post-2008 shortening of average maturity, documented by Greenwood et al. (2014), has accelerated this transmission channel relative to a counterfactual in which the Treasury had maintained longer-duration issuance.

4.5 Projection scenarios

Table 5 reports the projected debt-to-GDP trajectory under the three scenarios specified in Section 3.5.

Table 5: Debt-to-GDP projections, 2026–2034.

Scenario	2026	2028	2031	2034
Baseline	121	124	128	132
Aggressive-rate	121	127	135	145
Productivity-acceleration	121	122	123	125

The projections illustrate the substantial sensitivity of the debt-to-GDP trajectory to the underlying assumptions. Under the productivity-acceleration scenario—which incorporates the +1% per year productivity gain documented in companion paper #7—the trajectory is approximately stable, with debt-to-GDP rising modestly from 121% to 125%. Under the baseline scenario, the trajectory rises moderately to 132%. Under the aggressive-rate scenario, the trajectory rises substantially to 145%, with the sustainability margin (Table 4) turning slightly positive ($r > g$) by 2034.

4.5a Sensitivity of the projection to alternative parameter values

The projection scenarios reported in Table 5 are computed under fixed parameter assumptions. The sensitivity of the trajectory to alternative parameter values is informative about the principal uncertainties.

A 0.5-percentage-point increase in the effective interest rate above the baseline scenario implied trajectory raises the 2034 debt-to-GDP projection by approximately 4 percentage points. A 0.5-percentage-point increase in the nominal GDP growth rate reduces the projection by approximately 6 percentage points. A 1-percentage-point reduction in the primary deficit reduces the projection by approximately 8 percentage points.

The sensitivities imply that fiscal policy choices (which directly affect the primary deficit) have larger leverage on the trajectory than do monetary-policy choices (which affect the interest rate) or growth surprises. The implication for the policy debate is that fiscal restraint is the principal lever through which the trajectory can be modified; monetary-policy and growth-side adjustments contribute to the trajectory but are typically smaller in magnitude.

The marginal-rate convergence dynamics of Section 4.4c add a wrinkle to the interest-rate sensitivity. The effective interest rate is not a free parameter in the projection; it is partially determined by the maturity structure and the trajectory of the marginal rate. A scenario in which the marginal rate rises to 5.0% (e.g., due to a term-premium expansion or a further Fed tightening) would imply an effective rate of approximately 4.2% by 2034 under the current maturity structure, pushing the $r - g$ margin into positive territory and the 2034 debt-to-GDP projection above 150%.

4.6 Cross-margin reconciliation

The findings across the four prior subsections jointly imply that the contemporary US fiscal trajectory is at a substantive inflection point. The combination of (i) historically elevated debt-to-GDP, (ii) rising effective interest rates with the marginal rate substantially above the average, (iii) a narrowing $r - g$ margin, and (iv) projection scenarios that span sustainability through unsustainability suggests that the next decade will be a substantively different fiscal environment than the postwar record. The contemporary US fiscal space available for further discretionary expansion is correspondingly constrained.

The marginal-average rate convergence documented in Section 4.4c provides the dynamic mechanism through which the contemporary inflection will unfold. Even under the favorable assumption that market rates stabilize at current levels, the gradual rollover of the outstanding debt stock will continue to raise the effective rate and narrow the $r-g$ margin for the next 5–10 years. The trajectory is, in this sense, partially pre-determined by past debt management choices and cannot be altered by future monetary or fiscal policy without changing the maturity structure of new issuance.

5. Discussion

This section discusses the unusual contemporary combination of high debt and rising rates (5.1), the implications for fiscal sustainability (5.2), the comparison to historical fiscal episodes (5.3), the role of inflation in debt dynamics (5.4), the international comparison (5.5), the implications for monetary-fiscal interaction (5.6), the role of debt management choices (5.6a), the limitations (5.7), and the connection to broader macroeconomic dynamics (5.8).

5.1 The unusual contemporary combination

The post-COVID US fiscal position is characterized by the unusual combination of historically high debt-to-GDP (approximately 120%) and rising effective interest rates (from 2.60% to approximately 3.20% over the past three years). Across the postwar record, sustained periods of high debt have generally been accompanied by either declining rates (1990s, 2010s) or by inflation that eroded the real value of debt (1940s). The contemporary combination of elevated debt, elevated rates, and contained inflation does not have a clear postwar precedent.

The marginal-rate analysis of Section 4.4c adds depth to this observation. Not only is the effective rate rising, but the marginal rate on new issuance is substantially above the effective rate, implying continued future increases. The contemporary US is in the early stages of a transition from a low-rate to a high-rate fiscal environment, and the full fiscal impact of the post-2022 monetary tightening has not yet been reflected in the effective rate on outstanding debt. The convergence dynamics documented in Section 4.4c suggest that the effective rate will continue to rise for the next 5–10 years even if market rates stabilize.

The implication is that the contemporary US fiscal position is testing the empirical relationship between debt levels and sustainability margins that the postwar record has documented. Whether the relationship holds at debt-to-GDP levels approaching the postwar maximum is a substantive question that the available data cannot fully answer. The postwar record contains only one substantial precedent for sustained debt-to-GDP above 100%:

the immediate postwar period (1946–1955), during which the ratio fell from 119% to approximately 60% through a combination of nominal GDP growth and modest inflation. The contemporary trajectory is unlikely to replicate the postwar pattern given the different demographic, structural, and monetary-policy contexts.

5.2 Implications for fiscal sustainability

Under the standard debt evolution equation, the contemporary trajectory is sustainable if and only if the primary surplus is at least $(r-g)\cdot d$. The contemporary US is operating with a $r-g$ margin of approximately -1.3 percentage points (Section 4.4), which implies that modest primary deficits are consistent with stable debt-to-GDP. The contemporary primary deficit (approximately 3% of GDP) is, however, substantially larger than the sustainable level (approximately 1.6% of GDP under the contemporary $r-g$ margin), implying that debt-to-GDP is on a rising trajectory.

The sensitivity to the $r-g$ margin is the principal concern. A one-percentage-point increase in the effective rate—which could result from continued post-2022 high rates rolling through the term structure—would tighten the sustainability constraint by 1.2 percentage points of GDP, requiring either a 1.2-percentage-point increase in the primary surplus or accepting a rising debt-to-GDP trajectory.

Several complications that the textbook debt evolution equation does not directly capture are worth discussing explicitly. First, *rollover risk*: the contemporary US refinances approximately \$7–8 trillion of maturing debt annually, in addition to issuing new debt to finance the deficit. The rollover proceeds are rate-sensitive: a 100-basis-point increase in market rates raises the annual interest cost on rolled-over debt by approximately \$70–80 billion, or approximately 0.3% of GDP. The cumulative rollover exposure is a substantial source of interest-rate risk that the static debt-evolution equation understates. Second, *maturity-structure risk*: the Treasury's shift toward shorter-maturity issuance during the 2020–2021 low-rate period increased the share of the outstanding stock that must be refinanced within the next 2–3 years, amplifying the rollover risk. The weighted average maturity of the outstanding debt declined from approximately 6.3 years in 2019 to approximately 5.0 years in 2021 before recovering to approximately 6.0 years by 2025 (Greenwood et al., 2014). Third, *the distinction between marginal and average interest rates*: the sustainability constraint depends on the marginal rate for marginal borrowing but on the average rate for the interest burden on existing debt. As documented in Section 4.4c, the marginal rate is currently approximately 1.1 percentage points above the average rate, implying that the sustainability constraint is tighter at the margin than the average-rate $r-g$ margin suggests. Fourth, *endogeneity of growth to fiscal policy*: DeLong and Summers (2012) document that fiscal contractions during periods of economic slack can reduce GDP growth, partially offsetting the improvement in the primary balance. The contemporary US is operating near full employment, which attenuates this concern, but the endogeneity would become relevant during a future recession that required fiscal stimulus.

Ghosh et al. (2013)'s fiscal-fatigue analysis provides additional context. Their cross-country estimates suggest that the primary-balance response to debt weakens at very high debt levels, potentially creating a "fiscal limit" beyond which debt dynamics become explosive regardless of policy intentions. The contemporary US debt-to-GDP of 120% is in the range where fiscal fatigue may begin to bind, though the US-specific fiscal reaction function has historically been stronger than the cross-country average.

5.3 Comparison to historical fiscal episodes

The contemporary US fiscal position resembles the early 1990s in its combination of moderately rising interest burden and elevated debt, but differs in that contemporary debt-to-GDP is approximately twice the 1990 level. The 1990s fiscal consolidation, achieved through a combination of expenditure restraint, tax increases, and the late-1990s technology boom, brought the Debt/GDP ratio down from 64% in 1995Q2 to 56% in 2001Q2 over six years. A comparable consolidation from current levels would require sustained primary surpluses for a longer period than the 1990s achieved.

The Reagan-Bush era of 1983–1992 provides another relevant historical comparison. The period combined high debt levels (rising from 32% to 48% of GDP) with very high interest rates (effective rate of approximately 10%), producing the postwar peak interest-to-GDP ratio of approximately 5% in 1991Q1. The contemporary US is converging toward this interest-to-GDP level despite substantially lower interest rates, because the contemporary debt level is much higher. The interest-to-GDP ratio is the product of the debt-to-GDP ratio and the effective rate: the 1991 peak was $0.60 \times 0.084 = 0.050$, while the contemporary level is $1.20 \times 0.032 = 0.038$. For the contemporary interest-to-GDP to reach the 1991 level, the effective rate would need to rise to approximately 4.2% (= $0.050/1.20$), which is well within the range of the marginal-rate convergence documented in Section 4.4c.

5.4 The role of inflation in debt dynamics

During the 1940s, US debt-to-GDP fell from peak postwar values of approximately 119% in 1946Q2 to approximately 50% by 1960, with the decline driven approximately equally by nominal GDP growth and modestly positive inflation that eroded the real value of debt. A similar mechanism could in principle operate today, but inflation policy has tightened relative to the early postwar period, and the political feasibility of sustained inflation as a debt-reduction mechanism is doubtful. The contemporary disinflation has, somewhat paradoxically, made the debt-reduction problem harder by tightening the $r-g$ margin.

A specific quantitative observation deserves emphasis. The 1946–1960 debt-to-GDP decline of approximately 60 percentage points required nominal GDP growth averaging approximately 6.5% per year combined with effective interest rates of approximately 2.5%, for an annual $r-g$ margin of approximately -4 percentage points. The contemporary $r-g$

margin of -1.3 percentage points is approximately one-third the magnitude. The implication is that the contemporary US would need substantially longer than the 14 years that the 1946–1960 debt reduction required to achieve a comparable percentage-point reduction, even under continued favorable $r-g$ margins.

5.4a The natural-rate trajectory and its fiscal implications

The natural-rate-of-interest literature (Holston et al., 2017) documents a secular decline in r^* since the early 1980s, with the contemporary estimate near zero. The implication for fiscal sustainability is substantive: if r^* remains near zero, the contemporary US can sustain elevated debt with relatively modest primary surpluses indefinitely. The contemporary tightening cycle has raised the policy rate above r^*, but this is a cyclical deviation that is expected to reverse as the inflation episode resolves.

The substantive fiscal-policy question is whether the secular decline in r^* continues or whether the post-2022 environment has structurally raised r^*. The empirical literature is divided. The implication for fiscal projection is that the appropriate r assumption for the long-run projection depends on the secular trajectory of r^*, which is itself a contested empirical question.

5.4b Inflation as a debt-reduction mechanism: empirical and political-economy constraints

The 1940s US experience of debt-reduction-via-inflation is sometimes invoked as a contemporary policy option. Several considerations argue against the feasibility of replicating that experience.

First, the 1940s debt reduction occurred under a regime in which the Federal Reserve had not yet established its contemporary commitment to price stability; the Treasury-Fed Accord of 1951 marked the transition to the contemporary regime. Replicating the 1940s debt reduction would require unwinding that institutional commitment.

Second, the contemporary US debt has a much shorter average maturity than 1940s debt (approximately 6 years vs.˜approximately 10 years), with the implication that inflation surprises generate smaller real-debt reductions before the term-structure rolls over. This maturity-structure difference, emphasized by Greenwood et al. (2015), substantially reduces the effectiveness of inflation as a debt-reduction mechanism.

Third, contemporary US debt is substantially held by foreign investors, who are less politically captive than the domestic-investor base of the 1940s. Inflation surprises that erode foreign investors' returns would have substantial implications for the US's continued access to international capital markets.

The combination of these three considerations implies that the inflation-as-debt-reduction mechanism is substantially less feasible today than in 1946–1960. The contemporary fiscal-sustainability challenge cannot be resolved through inflation, even if the political environment permitted the attempt.

5.5 International comparison

The contemporary US fiscal position is among the most challenging in the OECD universe. Japan exhibits the highest sovereign debt-to-GDP at approximately 260%, but with a substantially lower effective interest rate (approximately 0.7%) and a different financing structure (largely domestic debt holders). The Euro-area average debt-to-GDP is approximately 90%, with effective rates of approximately 2.0–2.5%. The UK debt-to-GDP is approximately 100%, with effective rates similar to the US.

The implication is that the US is in the upper tier of advanced-economy debt levels but with a higher effective interest rate than the Euro-area or Japan, producing an interest burden that is substantially larger than the cross-country average. The contemporary US fiscal position is, on this comparison, more constrained than the OECD median. The Alesina and Passalacqua (2016) framework suggests that the political-economy constraints on fiscal adjustment are also more binding in the US than in parliamentary systems, where coalition discipline can facilitate consolidation.

5.6 Implications for monetary-fiscal interaction

The contemporary US fiscal position has implications for the monetary-fiscal interaction the literature has emphasized. Sargent and Wallace (1981)'s unpleasant-monetarist-arithmetic framework predicts that sustained primary deficits combined with rising interest costs produce inflationary outcomes if the central bank does not maintain price stability. The contemporary US is in a regime in which the central bank is committed to price stability (FAIT framework notwithstanding), with the implication that the burden of fiscal adjustment falls on fiscal authorities. Whether the fiscal authorities will undertake the adjustment in time to avoid debt-driven inflationary pressures is a substantive policy question that the empirical record cannot answer.

5.6a The role of debt management choices

The debt management literature (Greenwood et al., 2014, 2015) emphasizes that the Treasury's maturity-structure decisions have first-order consequences for the fiscal trajectory. The post-2008 shift toward shorter-maturity issuance reduced the contemporaneous interest burden during the low-rate period (2008–2021) but increased the speed at which post-2022 rate increases transmit to the effective rate. The subsequent re-lengthening of average maturity in 2023–2025 has moderated the convergence speed but cannot undo the rollover exposure already created.

The Treasury's maturity-structure decision is a genuine policy lever for managing the interest-rate-risk exposure of the outstanding debt. Extending average maturity by one year (from approximately 6 to approximately 7 years) would slow the convergence of the effective rate toward the marginal rate by approximately 15%, buying an additional year or two of fiscal space under the baseline scenario. The cost is a modestly higher contemporaneous interest expense (since the yield curve is typically upward-sloping, longer-maturity issuance carries a higher coupon). The trade-off is between current interest savings and future interest-rate risk, and the optimal choice depends on the probability-weighted expected trajectory of future interest rates (Arellano and Ramanarayanan, 2012).

The contemporary debate over Treasury issuance strategy—particularly the relative share of T-bills versus T-bonds in new issuance—has direct implications for the fiscal trajectory documented in this paper. A tilt toward T-bill issuance lowers the current coupon but increases rollover frequency and interest-rate sensitivity. A tilt toward T-bond issuance raises the current coupon but locks in current rates and reduces future sensitivity. The optimal trade-off is a function of the expected path of interest rates, which is itself uncertain.

5.6b Demographic dynamics and entitlement projections

A substantive driver of the contemporary US fiscal trajectory is the demographic shift toward older populations with higher entitlement-program claims. The CBO's projection of the long-term fiscal trajectory attributes approximately two-thirds of the projected debt-to-GDP rise to demographically driven Social Security and Medicare expansion, with the remaining one-third attributable to continued nondefense discretionary spending and interest accumulation. The contemporary fiscal-policy debate over entitlement reform is therefore engaging the principal driver of the long-run trajectory; the structural-break analysis of the present paper identifies the contemporary acceleration of the debt accumulation, but the underlying demographic and entitlement dynamics will continue to drive the trajectory regardless of the post-2008 fiscal-policy choices.

The contemporary entitlement-policy debate is constrained by political-economy considerations that the empirical record cannot resolve. Alesina and Passalacqua (2016) document that democratic governments systematically delay fiscal adjustment because the political costs of consolidation are concentrated on identifiable constituencies while the benefits are diffuse and deferred. The contemporary US political environment is unlikely to produce the magnitude of reform that the long-run fiscal projections would require. The implication is that the contemporary high-debt regime is likely to persist for the foreseeable future, with the trajectory determined by the residual non-entitlement fiscal policy and by the interest-rate-and-growth environment.

5.7 Limitations

Several limitations of the present analysis deserve emphasis. The interest series used (A091RC1Q027SBEA) measures federal government interest payments on a national accounts basis. Alternative measures of the interest burden (Treasury debt service, Congressional Budget Office estimates) produce slightly different numerical values but the qualitative pattern of the historical trajectory is robust. The debt series (GFDEBTN) measures total public debt; the alternative measure of debt held by the public, which excludes intragovernmental holdings such as the Social Security Trust Fund, would yield somewhat lower numerical values but the same qualitative pattern.

The projection scenarios are illustrative rather than predictive. The actual fiscal trajectory will depend on a wide range of factors—monetary policy, fiscal policy, demographic trends, productivity dynamics—that the simple projection framework does not jointly model. We have provided the projections to illustrate the sensitivity of the debt trajectory to alternative assumptions, not to forecast the actual trajectory.

The marginal-versus-average rate framework of Section 3.4a uses a simplified convergence model that assumes uniform maturity distribution across the outstanding stock. The actual maturity distribution is lumpy, with concentrations at specific maturities (2-year, 5-year, 10-year, 30-year). A more precise convergence projection would incorporate the actual maturity distribution of the outstanding stock. The qualitative conclusion—that the effective rate will continue to rise as the marginal-average spread is positive—is robust to the simplified model, but the speed of convergence may differ from the $1/\bar{m}$ approximation.

5.7a Real-time data and the policy-relevant horizon

The empirical analysis uses revised final estimates of the fiscal indicators. For policy purposes, the relevant question is what real-time fiscal-trajectory estimates were available to decision-makers at each point in the post-shock window. The contemporary US fiscal-policy debate has, in real time, been informed by the CBO's biannual updates of the long-term budget projections. The projections have, in the post-2008 period, generally underestimated the actual trajectory by approximately 5–10 percentage points of debt-to-GDP, with the underestimation arising from a combination of conservative growth assumptions and lower-than-realized fiscal expansion.

The implication is that the real-time policy debate has been operating under projections that have generally understated the eventual debt-to-GDP outcome. The contemporary CBO 2026 long-term budget outlook projects debt-to-GDP rising to approximately 130% by 2034 under current-law assumptions; the present paper's baseline scenario projects approximately 132%, broadly consistent with the CBO projection. The convergence between independent academic and official projections strengthens the empirical case for the contemporary trajectory.

5.7b The state-and-local fiscal dimension

The federal fiscal trajectory we document is only one component of the broader US public-sector fiscal position. State and local governments operate under balanced-budget requirements that constrain their fiscal flexibility, but the cumulative state-and-local debt has nonetheless risen substantially over the postwar period (from approximately 6% of GDP in 1950 to approximately 18% in 2024). A version of the analysis that consolidates federal and state-and-local fiscal positions would provide a more comprehensive picture. The contemporary policy debate is increasingly focused on the integrated fiscal position; the present paper's federal focus is one component of that broader picture.

5.8 Connection to broader macroeconomic dynamics

The contemporary US fiscal position has implications for the broader macroeconomic environment. Elevated debt levels can in principle crowd out private investment by raising real interest rates; the empirical evidence on the magnitude of the crowding-out effect is mixed but the direction is well-established. The implication is that the contemporary US is operating in an environment in which fiscal policy is exerting an upward pressure on real rates that monetary policy must offset to maintain its target inflation rate. The interaction between monetary and fiscal policy in the contemporary US is correspondingly more constrained than in earlier periods.

The D'Erasmo et al. (2016) framework provides a useful lens for evaluating the implications. Their model implies that the sustainable debt ceiling is a function of the economy's stochastic growth process: higher growth volatility reduces the sustainable ceiling. The contemporary US exhibits relatively low growth volatility by historical standards, which suggests a higher sustainable ceiling than the cross-country average. However, the contemporary debt level is approaching the range where the model's predicted default-risk premium begins to rise, with potential implications for the marginal rate and hence for the convergence dynamics documented in Section 4.4c.

6. Conclusion

This paper has documented, using FRED quarterly data over 1947–2026, the long-run trajectory of the US federal debt-to-GDP ratio, the interest-to-GDP ratio, and the effective interest rate on outstanding debt. The debt-to-GDP ratio has roughly quadrupled since 1981, reaching 120% in the contemporary period; the interest-to-GDP ratio has followed a U-shape from peak Reagan-Bush levels of approximately 5% through GFC-era lows of 2.5% and back toward 4% today; the effective interest rate on outstanding debt has declined dramatically from its 1980s peak but has recently begun to rise.

The contemporary US fiscal position is unusual in the postwar record in its combination of elevated debt and rising interest rates. The position is sustainable under standard debt-dynamics assumptions but the margin of safety provided by the $r < g$ condition is narrow. The sup-F structural-break test localizes the dominant break in the debt-to-GDP series to 2008Q4, indicating that the contemporary high-debt regime originated in the Great Recession fiscal response rather than in the pandemic response specifically. The trajectory implies that the fiscal space available for future discretionary policy is more constrained than at any point in the postwar period.

The distinction between the marginal interest rate on new issuance and the average effective rate on outstanding debt provides the dynamic mechanism through which the contemporary position will evolve. The marginal rate, at approximately 4.3%, is approximately 1.1 percentage points above the average effective rate of 3.2%. The convergence of the average toward the marginal—as low-coupon debt matures and is refinanced at current market rates—will continue to raise the effective rate and narrow the $r-g$ margin for the next 5–10 years, even if market rates stabilize at current levels. This convergence is partially pre-determined by past debt management choices, particularly the post-2008 shortening of average debt maturity that accelerated the rollover exposure.

The regime-boundary sensitivity analysis confirms that the qualitative findings are robust to plausible alternative definitions of the six regime windows. The ordering of regimes, the U-shape in the interest burden, and the characterization of the contemporary period as the most challenging in the postwar record all survive shifts of one to two years in every boundary. The sensitivity analysis addresses the legitimate concern that narrative-based regime partitioning is ad hoc; while the specific numerical values of regime means depend on the boundary choices, the substantive conclusions do not.

A specific consideration for the contemporary US debate deserves emphasis. The 2008Q4 structural break we identify localizes the dominant change to the Great Recession response rather than to the COVID-era response specifically. The implication is that the contemporary high-debt regime is not a one-time phenomenon attributable to the pandemic but a structural shift that has unfolded over the past 18 years. Policy proposals that frame the contemporary debt as a transient pandemic-era anomaly to be resolved by post-pandemic normalization are inconsistent with the empirical record; the contemporary high-debt regime is structural, with the implication that returning to the pre-2008 trajectory would require sustained policy adjustments over multiple decades.

The contemporary policy debate often frames the fiscal trajectory in terms of specific spending programs (Social Security, Medicare, defense). The structural-break analysis suggests that the dominant driver of the contemporary trajectory is not any single program but the cumulative effect of multiple post-2008 fiscal-policy choices that have widened the primary deficit. Policy proposals targeting specific programs are operating on margins that are smaller than the structural force we document; the contemporary trajectory will require structural adjustments to the overall fiscal stance, not piecemeal adjustments to specific programs.

6.1 What this paper provided

The empirical contribution of the paper is sixfold:

- Updated documentation of the US federal debt-to-GDP ratio, interest-to-GDP ratio, and effective interest rate on outstanding debt through 2026.
- Formal sup-F structural-break inference on the debt-to-GDP series, localizing the

dominant break to 2008Q4 with 90% confidence interval [2008Q3, 2009Q1] and sup-F statistic 156.7.

- Distinction between the marginal interest rate on new issuance and the average effective rate on outstanding debt, with documentation of the convergence dynamics that will shape the next decade's interest burden.
- Regime-boundary sensitivity analysis demonstrating robustness of qualitative findings to plausible alternative regime definitions.
- Analysis of the contemporary $r-g$ margin and the implied fiscal-sustainability constraint, documenting the narrow margin of -1.3 percentage points and its sensitivity to marginal-rate convergence.
- Three alternative projection scenarios for the debt-to-GDP trajectory through 2034, illustrating the sensitivity to the underlying assumptions.

6.2 Extensions

Several extensions warrant further development.

Cross-country update. A formal cross-country analysis updating the contemporary sovereign-debt position of all OECD countries through 2026 would provide a comprehensive comparative anchor.

Term-structure analysis. The contemporary rise in the effective interest rate is driven by the rollover of low-coupon debt into high-coupon issues. A formal term-structure analysis incorporating the actual maturity distribution of the outstanding stock would project the trajectory of the effective rate more precisely than the simplified $1/\bar{m}$ convergence model used here.

Primary-deficit decomposition. The contemporary US primary deficit of approximately 3% of GDP reflects substantial structural and cyclical components. A formal decomposition would identify the share that requires policy adjustment versus the share that will mechanically improve as the economy normalizes.

Demographic and entitlement projections. The long-run fiscal trajectory is substantially driven by demographic and entitlement dynamics. A version of the projection that explicitly incorporates these dynamics—drawing on the CBO's long-term budget framework—would provide a more comprehensive picture.

Connection to the productivity acceleration. The companion paper #7 documents a substantial post-2022 productivity acceleration. The implications for the fiscal trajectory are direct: sustained higher productivity growth would relax the sustainability constraint by widening the $r-g$ margin. The integration of the productivity findings with the fiscal projections is an obvious next step.

Connection to the asset-pricing literature. The contemporary US fiscal position has implications for the cross-sectional asset-pricing literature that the present paper does not engage. A version of the analysis that integrates the documented fiscal trajectory with the cross-sectional return predictability of fiscal-sensitive equities would identify whether the contemporary fiscal trajectory is priced in equity markets.

Real-time projection framework. The projection scenarios reported in Section 4.5 are computed under fixed assumptions. A real-time projection framework that incorporates the updating of interest-rate and growth assumptions as new data become available would provide a continuously revised picture of the contemporary trajectory.

Connection to monetary-policy and Fed reaction-function literature. The contemporary fiscal trajectory has implications for the monetary-policy reaction function that the present paper does not engage. The Fed's commitment to price stability constrains its ability to monetize the contemporary debt; the fiscal authority bears the resulting adjustment burden. A version of the analysis that integrates the documented fiscal trajectory with the Fed's reaction function (as in the companion paper #10 on the Taylor rule deviation) would identify how the fiscal-monetary interaction has evolved over the post-2008 period.

Optimal maturity-structure analysis. The debt management discussion in Section 5.6a identifies maturity structure as a genuine policy lever. A formal analysis of the optimal maturity structure under the contemporary interest-rate environment, drawing on the Greenwood et al. (2015) comparative-advantage framework, would provide actionable guidance for Treasury issuance strategy.

6.3 A note on methodological discipline

The contemporary US fiscal trajectory is a matter of substantive policy interest, and the descriptive findings reported in the present paper should be interpreted with care. We are explicit that the projections are illustrative rather than predictive, that the structural-break inference identifies a statistical change rather than a policy regime change, and that the cross-country comparisons are subject to substantial measurement caveats. The empirical record we present is intended as a quantitative anchor for the policy debate rather than as a prescription.

The contemporary US fiscal position is at an inflection point in the postwar record. The empirical record provides one perspective on what the inflection implies for sustainability and for fiscal-policy options. The substantive policy choices remain to the political process; the descriptive evidence we provide is intended to inform rather than to direct those choices.

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