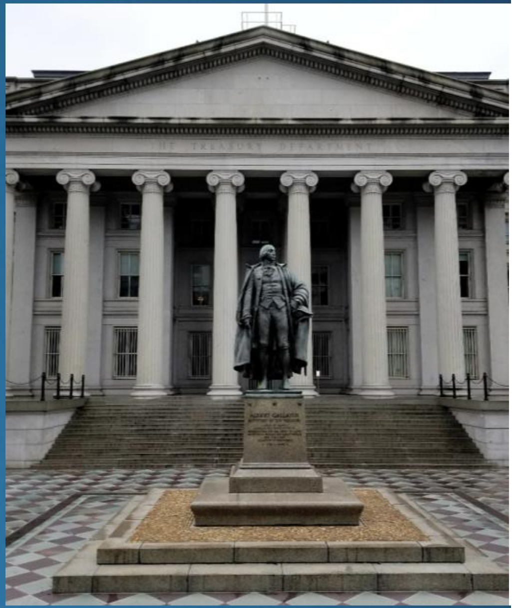

Global Markets Division

Inflation Risk Premia

Examining the long-term implications of a rising U.S. national debt in Nominal and TIPS Yields

Investment Horizon: Long-Term

Ariana Mirfakhraie, Anna Kostiukovych, Luka Bartyenyev, Matvii Polishchuck, Anastasiia Fisun

Vienna, June 25th 2025

Team Overview

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Agenda

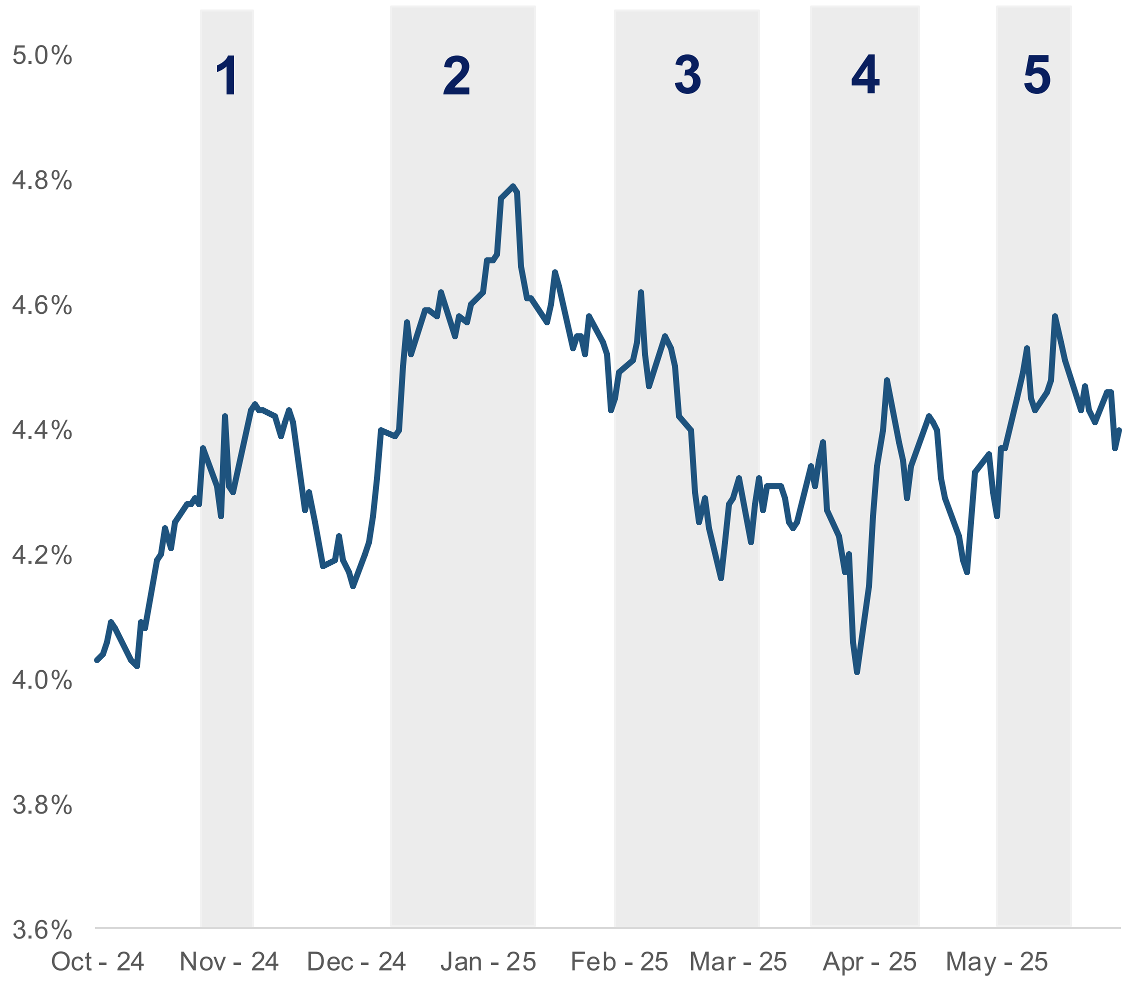
W U T I S

Macroeconomic Analysis

Yields

What Moved Markets

10-Y Treasury Yield



Events

1. **Bonds sold off** after November's election results as traders priced in Trump's campaign promises, including his **inflationary tariffs.**
2. Economic uncertainty started appearing in the Treasury market as investors became **weary about inflationary and Fed rate moves.**
3. Weaker manufacturing outlooks, lower real personal spending, and a rise in jobless claims **pointed toward a growth slowdown.**
4. While yields initially dropped, treasuries sold off due to fears of **inflation**, **trade retaliation**, and **reduced confidence in US assets.**
5. Although trade tensions eased, worries about the **deficit rose** in light of the **GOP Spending and Tax Bill** and **weaker auctions**.

Sources: Federal Reserve Bank of St. Louis, J.P. Morgan Wealth Management

Growth and Labor Market

Labor Market Loses Momentum Amid Weaker Growth

Economic Conditions

Softening of Economic Activity

While the labor market remains broadly stable, **momentum is gradually fading** and **signs of cooling conditions** emerge.

Real GDP contracted in Q1 2025 with higher imports and reduced government expenditure, while **growth expectations remain subdued.**

Ongoing **trade negotiations** and **potential tariff changes** add to near-term economic uncertainty.

Immigration Crackdown

62% of **U.S.-born** residents are of working age

77% of **immigrants** are of working age

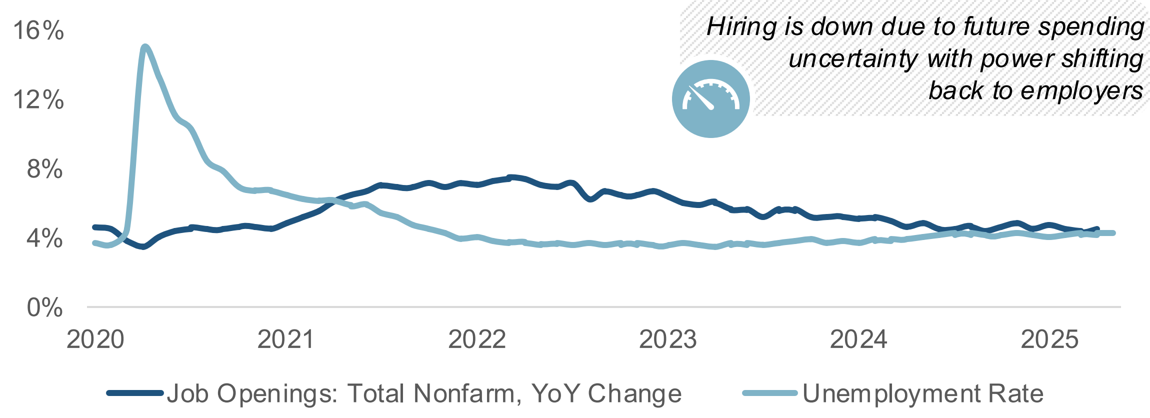
Labor Shortage

Slowing economic activity coupled with **unresolved trade risks.**

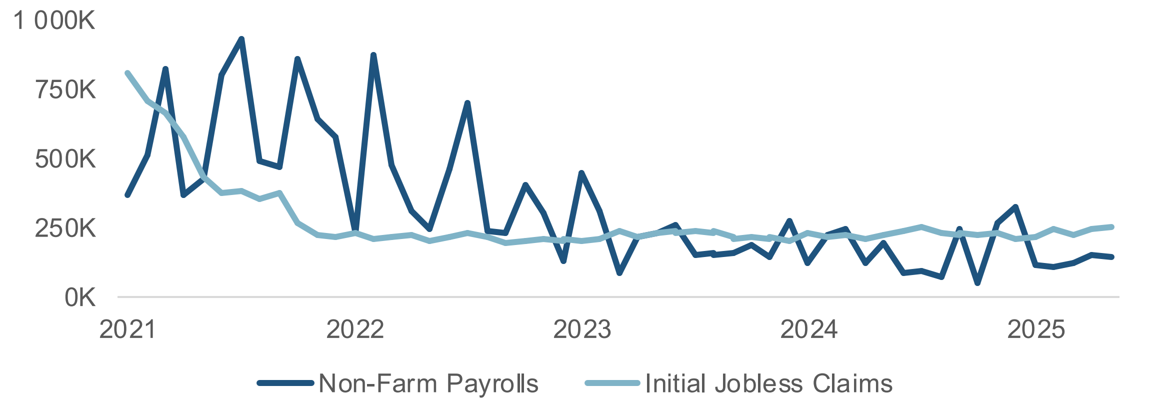
Diminishing labor market strength, with supply constraints likely to persist.

Uncertain near-term outlook sustained with policy dynamics, weakening growth and labor market.

Hiring Slowdown



Labor Market



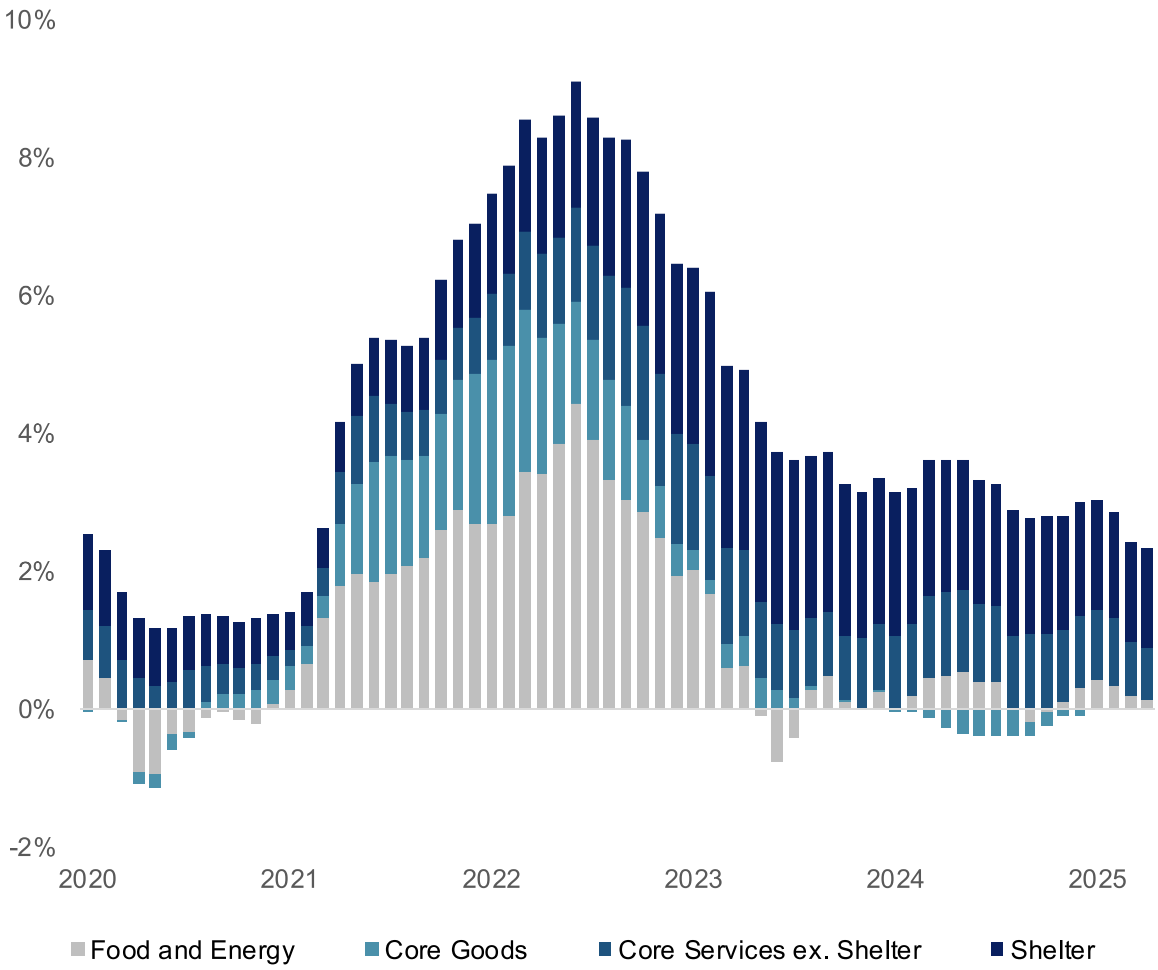
Sources: Federal Reserve Bank of St. Louis, American Immigration Council

Inflation

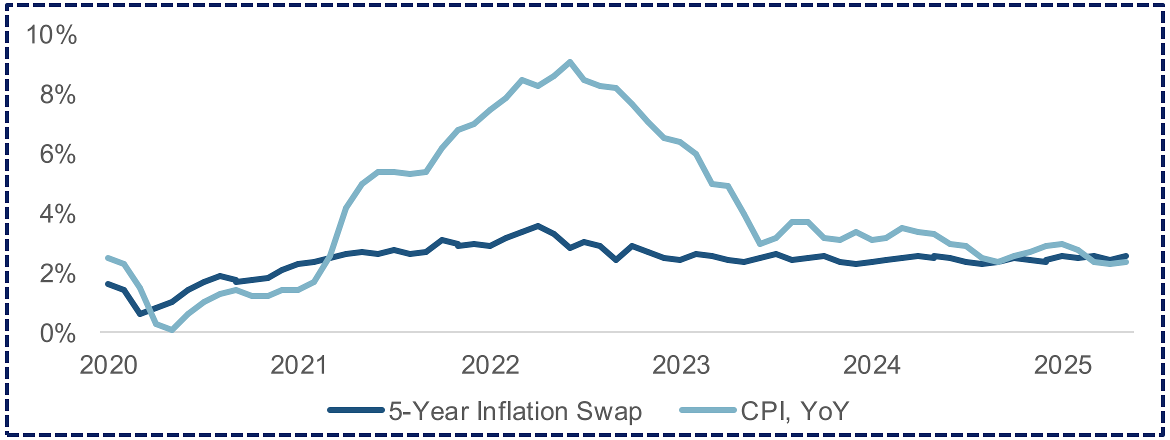
W U T I S

Cooling Headline Inflation, But Volatility Ahead

Inflation Decomposition, YoY



Inflation vs. Market Expectations



Outlook Uncertainty

Tariff impact on households remained relatively **limited**, as companies work through their **stock of products brought in before the tariffs** were in place.

While **housing and grocery prices continue to climb**, these gains are offset by **price reductions in other segments**, including petrol, airfares and apparel.

Persistent uncertainty renders short-term inflation path unclear, underscoring a focus on long-term structural trends.

Sources: Bloomberg Finance L.P.

Long-Term Inflation

The Structural Forces Behind Long-Term Inflation

While near-term inflation remains uncertain, structural forces are increasingly shaping the long-run inflation regime.

Demographics

An aging population **reduces labor force participation** and raises **entitlement spending**, placing sustained pressure on economic output and the federal budget.

Deglobalization

The reversal of global supply chains **increases production costs** and weakens price competition, as countries re-shore key **industries through tariffs and subsidies**.

Energy Transition

The shift to green energy requires **large upfront investment** in infrastructure, with governments funding the transition through **subsidies and fiscal support**.

Geopolitics

Heightened geopolitical tensions are driving **long-term increases in defense and industrial spending**. These are often combined with little budgetary offset.

Debt

Each of these forces pushes **governments to spend more**. With limited political appetite for consolidation, debt becomes the default tool, **reinforcing long-run inflation pressure**.

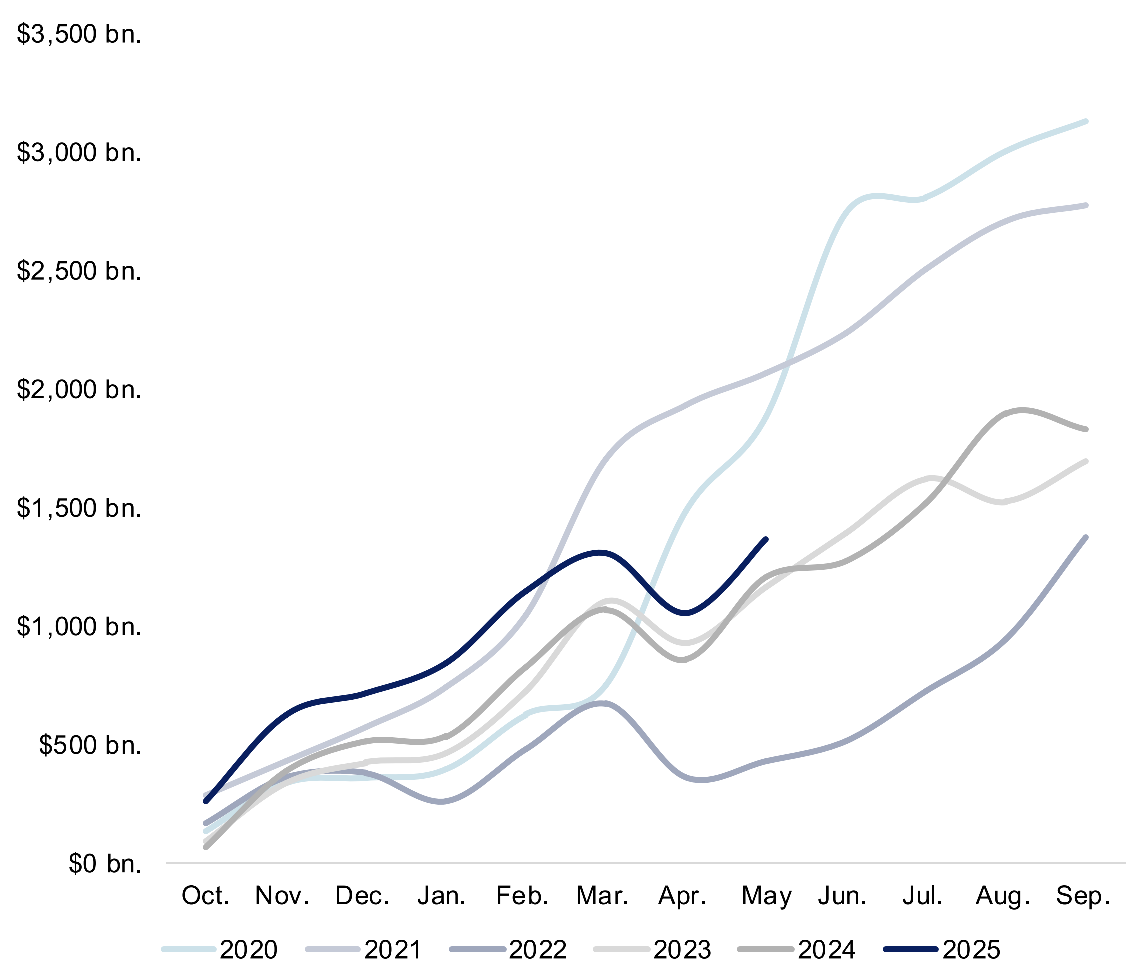
Sources: Allianz Research, Yale Budget Lab

U.S. Deficit and Debt

The Deficit

Deficits Continue to Expand

U.S. Yearly Deficit



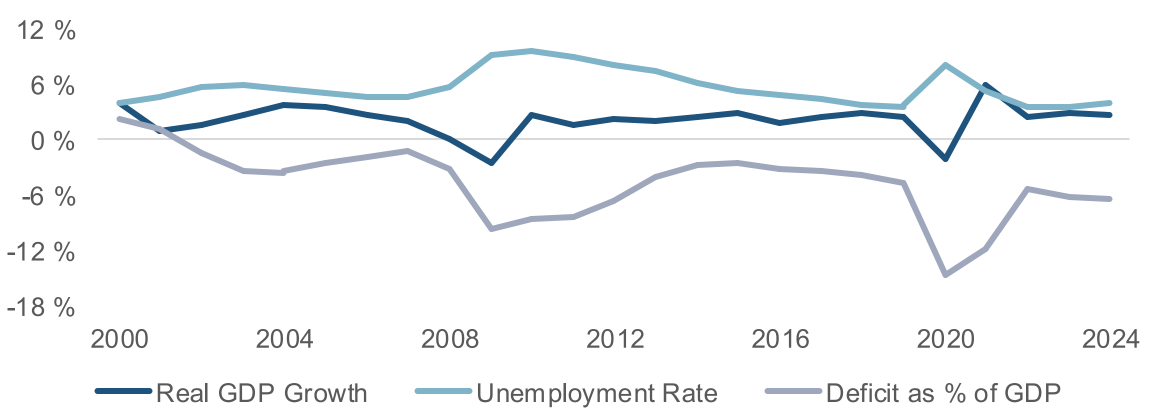
The Spending Problem

Every **fiscal year since 2002**, the federal government has **run a deficit** as it has spent more than it has collected in revenue.

Social Security, Medicare, Medicaid, and defense spending are major components of mandatory and discretionary spending.

In FY24 the deficit was equal to **6.4% of GDP**. Before 2020, the government would have to run such **deficits to get the economy out of a recession**.

A New Normal



Current Policy

W U T I S

Is Trump's Policy a Fiscal Blowout?

What Are the Current Implications?

Big Beautiful Bill

Spending Cuts	***Spending Boost***
Medicaid and Nutrition: **$1 trillion**	Debt Ceiling Increase: **$5 trillion**
Student Loan Relief: **$350 billion**	MAGA and Defense: **$891 billion**
Clean Energy Credit: **$560 billion**	SALT Limit raise: **$624 billion**

Trump Policy

Tariffs

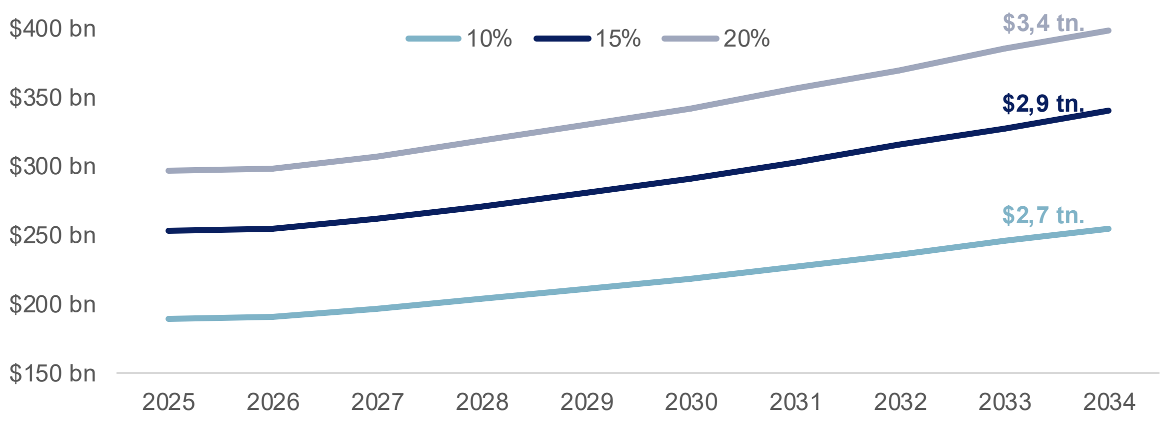
An 10-15% effective tariff rate on US imports will produce about **$2.8 trillion in revenue.**

Federal Job Cuts

Federal job cuts, will shrink the federal workforce by **10%** and add total cost savings of another **$280 billion.**

The House bill appears fiscally neutral for now, but its sustainability hinges on spending cuts that **may not survive Senate revisions.**

Estimated Yearly Tariff Revenue



Deficit Impact

$1.6 trillion in net offsets will most likely be **diluted in the Senate** especially as Medicare cuts **face resistance from the GOP.**

The Senate's concurrent resolution allows a **$5.8 trillion net deficit increase** and only a **$4 billion in gross deficit reduction.**

$1 trillion – $2 trillion added to national debt.

Increasing Deficits

Growing Mandatory Spending Pushes Deficits Further

Drivers

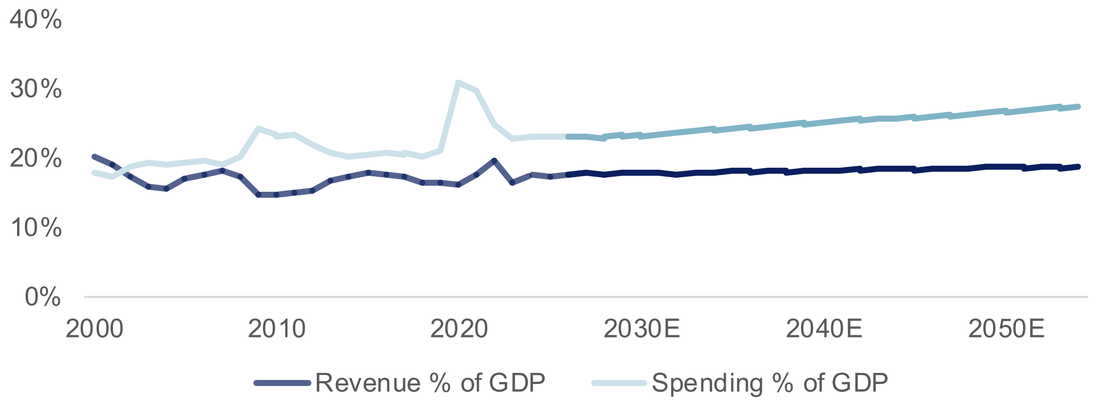
As seen from policy decisions, a **spending slowdown does not seem likely** and will be amplified through structural changes. These fiscal challenges could push the **deficit to 9% of GDP by 2035.**

Spending for **Social Security, Medicare and Medicaid programs** have increased since 2008 and will continue to do so with an aging population especially as the **65-and-older age** group's share of the total population is projected to rise from **17% to 23% by 2050**.

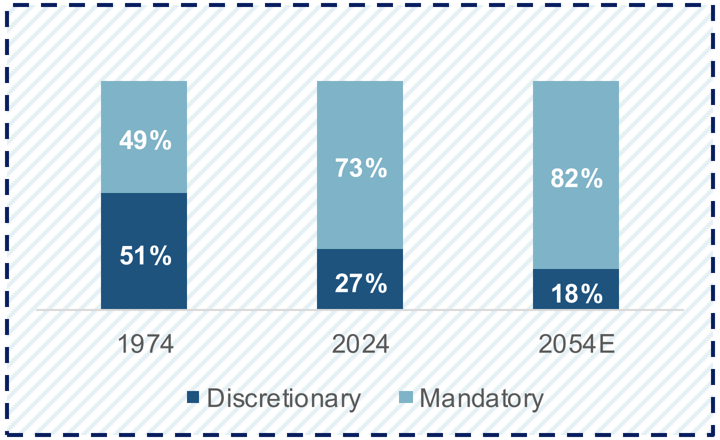
Net Interest spending is growing, with a **14% increase YoY in FY24.** Over the next 20 years, the U.S. federal government will spend about the **same on interest payments on its debt as on Medicare and defense spending.**

As revenues will not be able to keep up with increasing mandatory spending, **Treasury issuance** will continue to put **pressure on the U.S. national debt.**

Mismatch Between Federal Revenue and Spending



Mandatory vs. Discretionary Spending, % of Federal Spending



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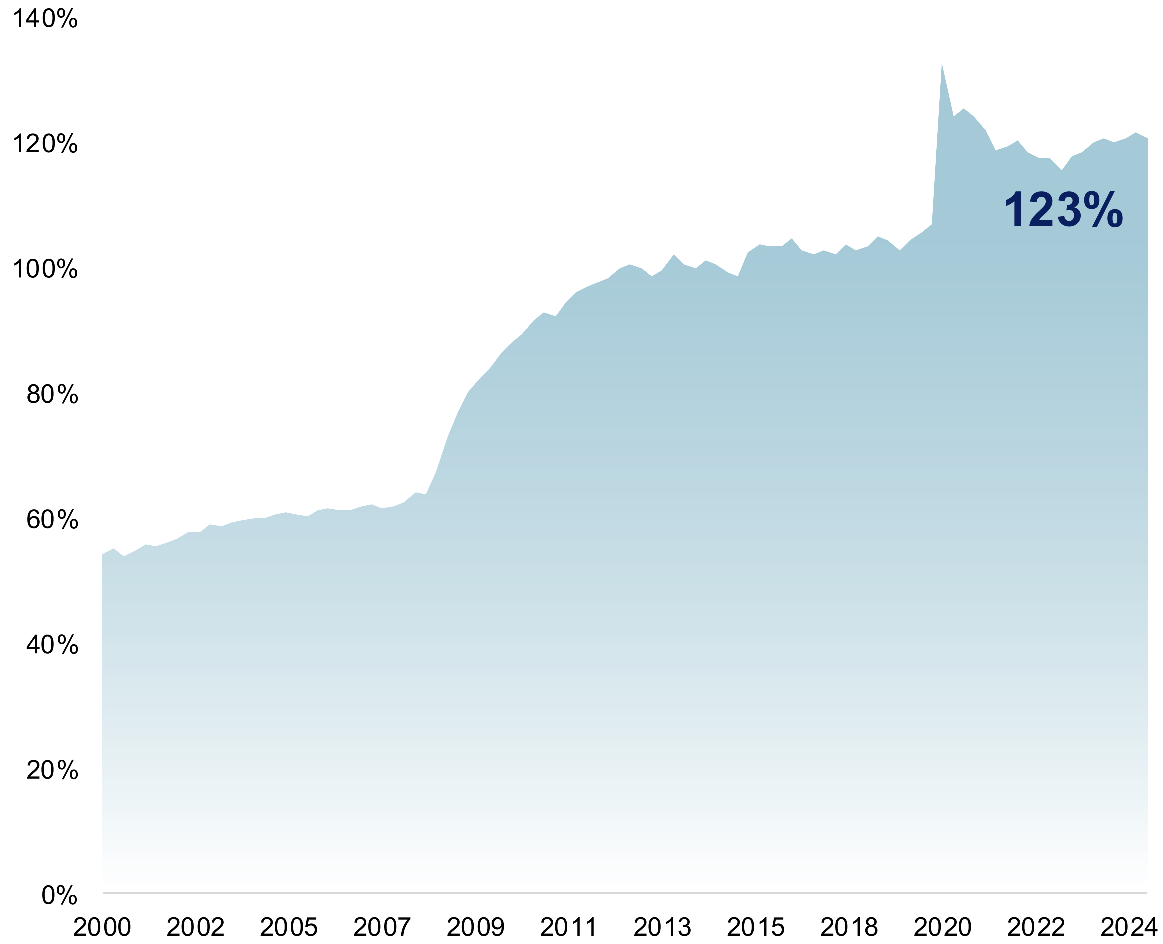
Mandatory spending is crowding out discretionary spending, nearly half of which goes to defense, leaving **little room** for investment in **growth-supportive areas.**

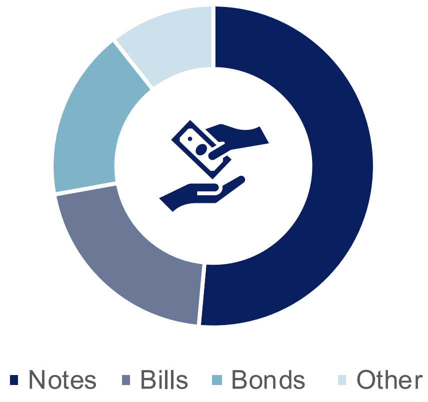
U.S. Debt

The Cycle of Rising Debt and Rates

Debt as a Percent of GDP



Public Debt Composition



1. **$36.21** trillion in debt is held by the public, with **2/3 by domestic holders**.
2. The current average rate is **3.362%**, compared **1.843%** 5 years ago.
3. About **32%** of marketable debt will be maturing **within the next 12 months**.

Outlook

With rising deficits, debt is projected to exceed **156% of GDP by 2055**, pressuring rates upwards.

The treasury plans to **refinance $3T** in maturing short-term debt into longer tenors in 2025, straining the intermediate and long ends.

Refinancing at higher rates reinforces a cycle of debt-driven issuance and rising costs: **a long-term drag on fiscal stability.**

Sources: Federal Reserve Bank of St. Louis, United States Joint Economic Committee

Unsustainable Debt

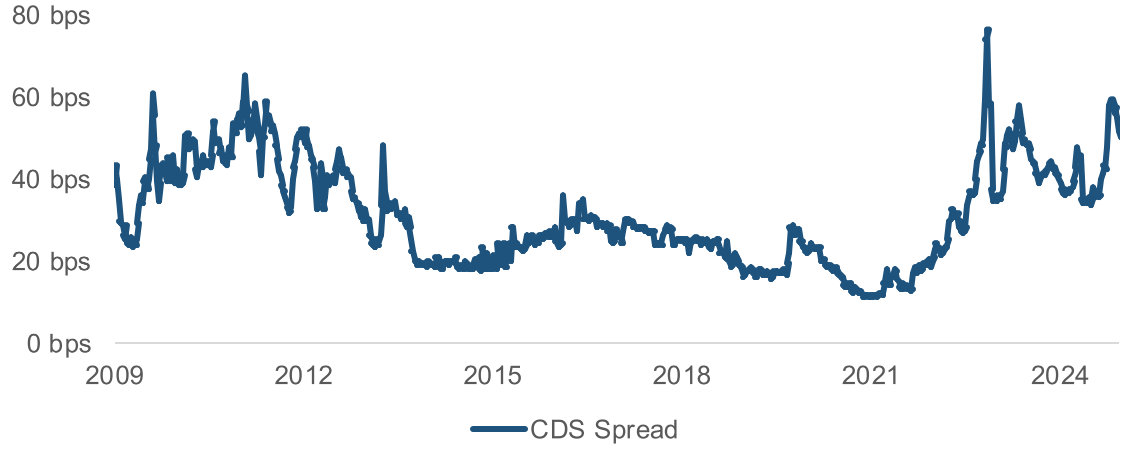
Rising Debt Loads are Structurally Inflationary

Debt Concerns in 5Y CDS

The date when the government can't meet its financial obligations (X-Date) is projected to fall between Aug. and Oct.

The debt-ceiling will most likely be raised by congress before the X-Date.

While a default is highly unlikely, a rising debt-tolerance underlines structural fragilities and changes.



Long-Run Implications

Increased entitlement spending through secular changes will continue the cycle of debt issuance, creating a growing source of future inflation pressure.

Higher Rates

As debt rises, markets demand **higher yields**, pushing up interest rates across the economy and **tightening overall financial conditions.**

Crowding Out

Rising debt **crowds out** private investment and shifts government spending toward interest and entitlements, **squeezing out supply-enhancing areas.**

Increasing Costs

Higher rates **raise the cost of mortgages, credit, and refinancing** which contributes to **upward pressure on consumer prices.**

Fiscal Dominance

High debt limits the Fed's ability to raise rates, as tighter policy worsens debt sustainability, **weakening the response to future inflation shocks.**

Sources: Bloomberg Finance L.P., BlackRock, Yale Budget Lab

Model & Trade

Affine Term Structure Model

W U T I S

Decomposing Breakeven Inflation Through Nominal and Treasury Inflation Protected Security Yields

Goal of the Model

$$BEI^{(n)} = E^{\mathbb{Q}}\left[\pi^{(n)}\right] + IRP^{(n)} - LP$$

BEI is **not an appropriate measure** of market-expected inflation.

Inflation risk premia is **market compensation** for bearing **inflation risk.**

Liquidity premia arise in the BEI due to **relative illiquidity of TIPS.**

Goal is to extract each of the components through affine term structure model

Model Specifications

$X \in \mathbb{R}^6 : X :=$
$(3\ PCs; 2\ PCs^{TIPS}; Liqui.)$

pricing series X

=

3 Treasuries-specific factors

+

3 TIPS-specific factors

~95% of yield movements

$$y_t^{(n)} = \frac{1}{n}[A_n + B_n' X_t]$$

Affine structure allows for a **closed-term solution** of B and A through regression of log-price returns.

Model produces **"backed out" yields**

$$E^{\mathbb{Q}}\left[\pi_t^{(n)}\right] = \tilde{y}_t^{(n)} - \tilde{y}_{t,R}^{(n)}$$

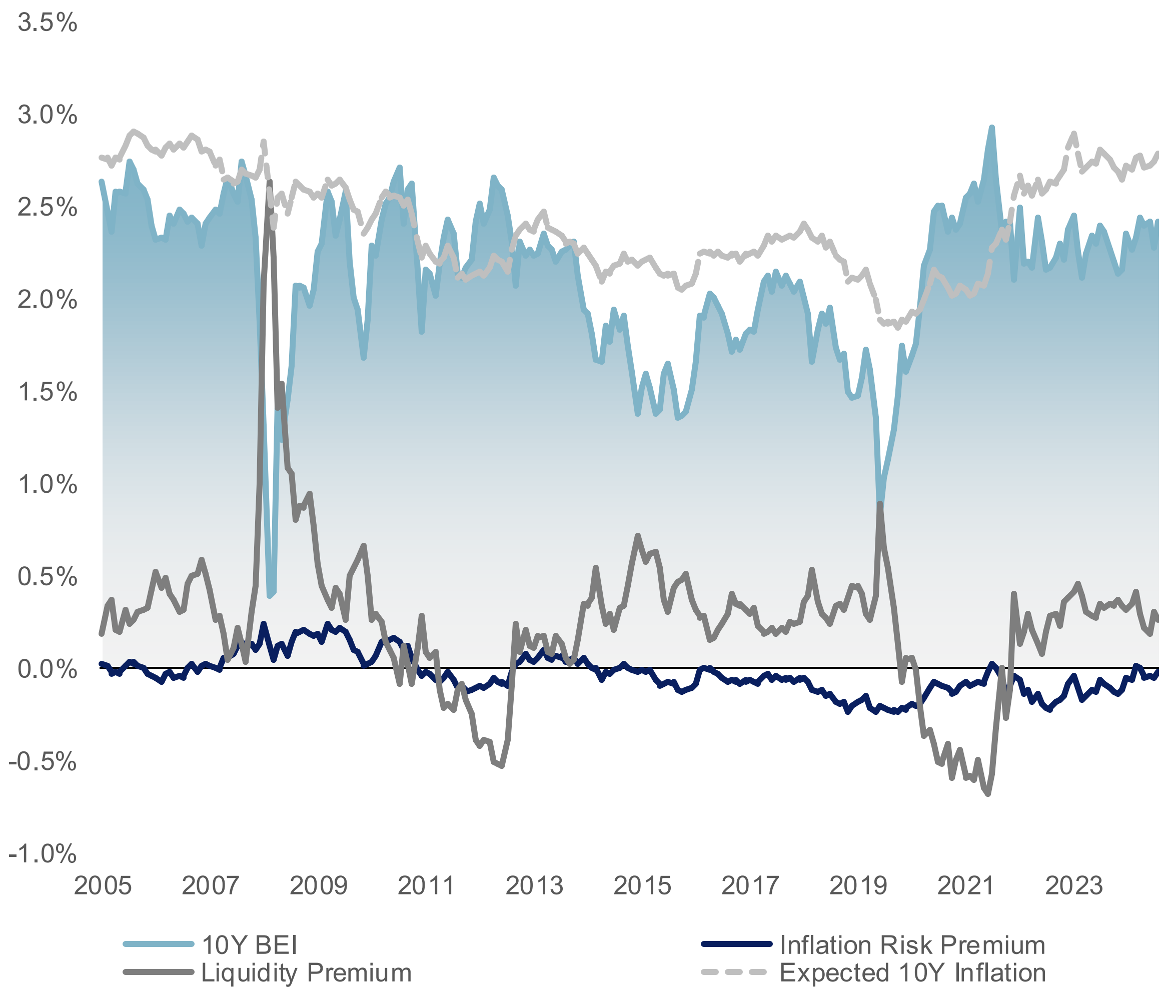
Expected inflation

"BEI" under model-implied yields.

Liquidity Premium

Modelled out explicitly within X

Breakeven Inflation



Model Output

Impact of the Term Premium on Inflation Expectation

Decomposition of Term and Inflation Risk Premia

Inflation Risk Premium

$$IRP^{(n)} = \mathbb{E}^{\mathbb{P}}[\pi^{(n)}] - \mathbb{E}^{\mathbb{Q}}[\pi^{(n)}] = TP^{(n)} - TP_R^{(n)}$$

IRP determines the **steepness of the break even inflation.**

Higher IRP **does not correspond to higher** expected inflation.

$TP^{(n)} = y^{\mathbb{P},(n)} - y^{\mathbb{Q},(n)}$

Decomposes into the **term premia gap between nominal and real rates.**

IRP-based trade reflects the degree of investor aversion to taking inflation risk.

Implications

The path of **inflation remains highly uncertain** amid shifting tariff policies, geopolitical instability, and the risk of economic downturns.

High debt tightens financial conditions, **crowds out investments**, and **reduces the ability to respond** forcefully to inflation shocks, while rising mandatory spending makes it increasingly difficult to rein in deficits.

Structural challenges surrounding fiscal and monetary policy will drive the premium for bearing long-term inflation risk higher.

Source: Abrahams et al. (2015) *Decomposing Real and Nominal Yield Curves*

Trade Overview

W U T I S

Structure of the Trade to Reflect Rising Inflation Risk Premium

The Strategy

Asset Box Spread

Pairs a **TIPS curve flattener** with a nominal **Treasury steepener** to isolate **changes in the inflation risk premium**. It profits if real yields flatten while nominal yields steepen, indicating a rise in long-term inflation compensation.

Co-Movement Isolation

DV01-weighed positions isolate the trade from value changes linked to parallel moves in either of the curves.

Inflation Expectation Neutral

Majority of unexpected inflationary movement leads to parallel shifts in the curves.

Trade Structure

Position	BUY 20Y TIPS	SELL 5Y TIPS	BUY 5Y Note	SELL 20Y Bond
DV01	0.08741	0.02326	0.04456	0.12782
Position	$ 1,000,000	$ 266,102	$ 521,992	$ 181,974

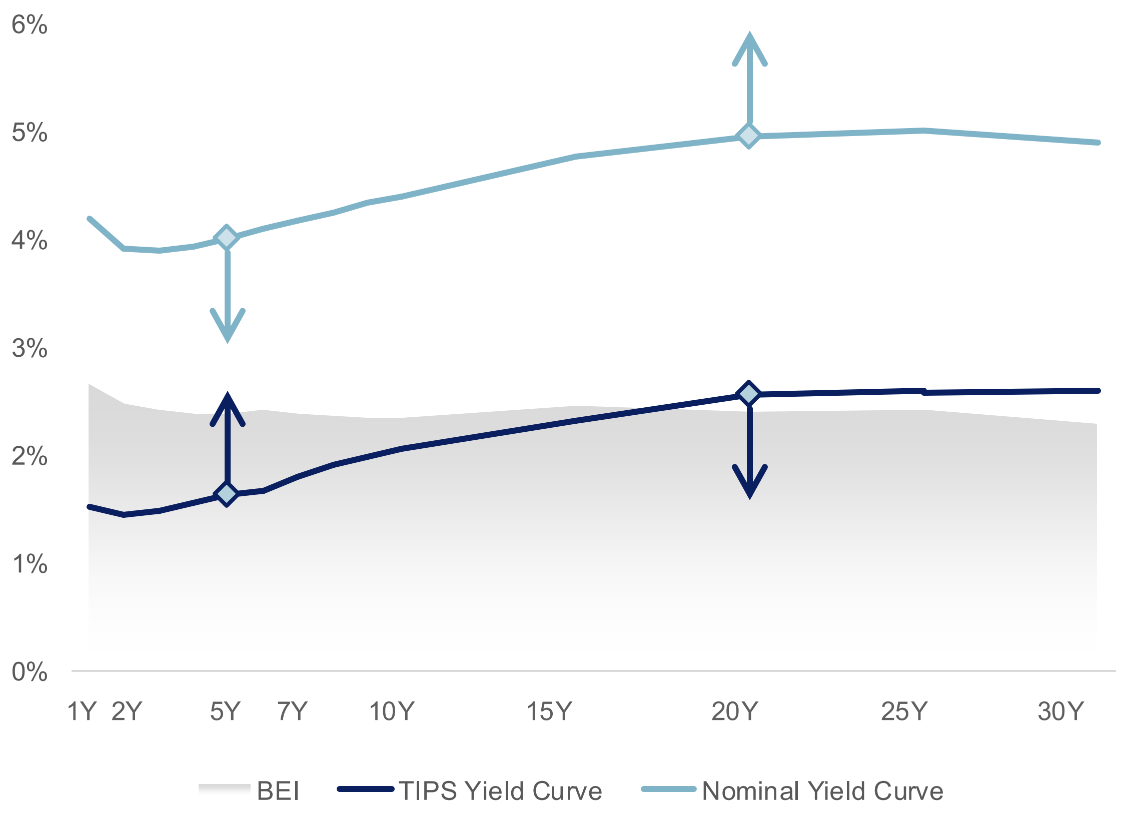
% **5bps** change in either direction based on historical movements.

1:1 Risk-Reward:

$ 116,300

Spread Widening

Rising inflation risk premia › steeper breakeven inflation



Appendix

Appendix

W U T I S

Sources

Source Name	Link	Date of Retrieval	Used for
Bloomberg Finance L.P.			Continuous Work
Federal Reserve Bank of St. Louis	Link	29.05.2025	Yields
J.P. Morgan Wealth Management	Link	29.05.2025	Yields
Allianz Research	Link	14.06.2025	Long-Term Inflation
Yale Budget Lab	Link	14.06.2025	Long-Term Inflation
Bipartisan Policy Center	Link	10.06.2025	Deficit
American Immigration Council	Link	15.06.2025	Demographics
Federal Reserve Bank of St. Louis	Link	10.06.2025	Deficit, Labor Market
Federal Reserve Bank of St. Louis	Link	10.06.2025	Deficit
Federal Reserve Bank of St. Louis	Link	10.06.2025	Deficit
Federal Reserve Bank of St. Louis	Link	10.06.2025	Labor Market
Federal Reserve Bank of St. Louis	Link	10.06.2025	Labor Market
Federal Reserve Bank of St. Louis	Link	10.06.2025	Labor Market

Appendix

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Sources

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Peter G. Peterson Foundation	Link	10.06.2025	Deficit
Federal Reserve Bank of St. Louis	Link	10.06.2025	Debt
United States Joint Economic Committee	Link	15.06.2025	Debt
BlackRock	Link	20.06.2025	Inflationary Impact
Abrahams et al. (2015) *Decomposing Real and Nominal Yield Curves*	Link	25.05.2025	Model
Yale Budget Lab	Link	15.06.2025	Big Beautiful Bill

Appendix

Code available upon request.

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